# Liquid Admixture Batching Equipment
# Advanced Training Guide


ManuFlo ®TM

*Flow Measurement Products*

AUSTRALIAN MADE

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# Contents

# 1.

# About
# Manu Electronics P/L

ManuFlo®

# About ManuFlo (Formerly Manu Electronics)


- Manu Electronics Pty Ltd was founded in 1965 by Tony Manu. Expanded by Alex Manu to 2021.
- From bottle dispenser manufacturer in the 1960's to digital equipment manufacturer from the 1970's and microprocessor technology from the 2000's.
- Specialises in design/manufacture of process control and measurement instrumentation, primarily for the concrete construction chemical additives industry.
- ManuFlo equipment dispenses admixtures with a high degree of accuracy coupled with continuous safety monitoring systems to provide comfort that the premixed concrete/cement is batched within tolerances.
- January 2000 - Moved to new 600m² office and manufacturing facilities at 41 Carter Road Brookvale Sydney NSW Australia.
- June 2001 - ManuFlo ®™ worldwide trademark

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# Tens of Thousands in Operation …

Manila
Philippines

ManuFlo products are:

- **Used in over 95% of all pre-mix concrete production plants** throughout Australia/NZ
- **Exported** to regions including the Asia/Pacific, South America, Europe and the Middle-East
- Used in varied liquid measurement applications including concrete admixtures, shotcrete, chemical, mining, irrigation, food, tradewaste, water and water-usage studies.

**Global Admixture manufacturer / supplier companies use ManuFlo products** for measurement and batching of liquids in their production facilities, distribution network and final dispensing at their customers' premix concrete production plant.

Selected distributors and end users use ManuFlo products for numerous applications worldwide.

ManuFlo has a **global pricelist in AUD$** with quantity discounts, maintaining pricing parity for its products to all its admixture supplier customers.

# ManuFlo Advantages

The ManuFlo Advantage

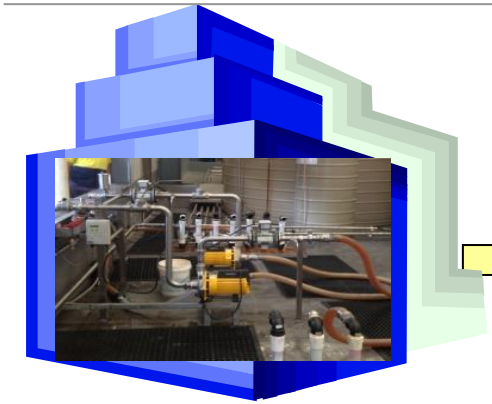
- ✓ Economically priced products, with Australian Quality Control.
- ✓ Global pricelist with quantity discount structure.
- ✓ Free on-going product and application support.
- ✓ Personal service and phone support with no service support fees.
- ✓ Simple to use, proven products with overdose or failure safety features.
- ✓ Direct delivery flow measurement, with no water flushing required.
- ✓ Stock and spare parts available on call.
- ✓ Up-to-date information at **www.manuelectronics.com.au / www.manuflo.com**
- ✓ Data Sheets, Installation and Troubleshooting Guides and User Manuals.
- ✓ Company with 55+ years history with ongoing R&D program.
- ✓ Deal direct with the Manufacturer or it's Representatives. Equipment training available.
- ✓ Products keep performing dispensing your liquids for decades on end.
- ✓ ManuFlo understands its clients needs / applications with chemical compatibility tests.

Quality proven products with no compromises for the critical concrete industry.

# 2.

# Measuring Admixtures. Production, Transfer and Use

# 2. SCOPE - Measuring Admixtures in Production, Transfer and Use in Premix Concrete Plants



Admixture Production Plant

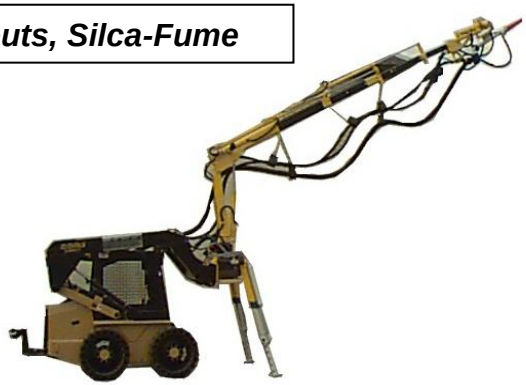
Admixture Delivery Tankers

Premix Concrete Plant

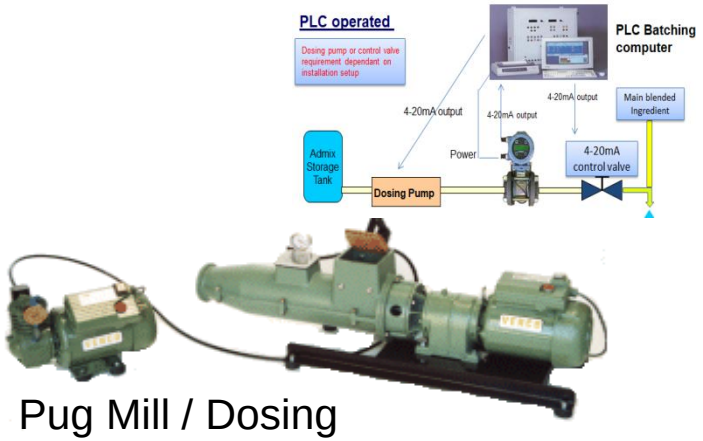
Concrete Trucks

***And Liquid slurries, Oxides, Grouts, Silca-Fume***

ManuFlo - suppliers of liquid measurement application products since 1965.



Shotcrete




Pug Mill / Dosing

# Volumetric Flow Metered Measurement for Liquid Admixtures

ManuFlo Advantage

## MES Series PD Flowmeters

- **Available in sizes 20, 25, 32 and 40mm.**
- **High resolution Digital Pulse-output**
- **Nutating Disc measurement allows a long operational life.**
- **MES-series flowmeters are the most commonly used devise for measurement of admixtures** (over 45,000 in use daily)

## AMM & CMM Series Mag Flowmeters



- **Available in sizes 15, 20 and 25mm**
- **No moving parts = near zero maintenance (for conductive fluids)**

## KMS Series Mag Flowmeters

- **Available in sizes 4 mm up to 150mm**
- **added display with multiple features for the most demanding applications**

# Admixtures – Flowmeter Selection Guide

The ManuFlo Advantage

| ADMIX Chemicals & Conditions | Positive Displacement Flowmeters | | | | | Electromagnetic Flowmeters | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MES20 | MES20-T | MES25 | MES32 | MES40 | CMM10 | CMM20 | CMM25 | AMM15 | AMM20 | AMM25 | KMS25 | KMS40 |
| Water Based | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Corrosive | – | ✓ | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| None Conductive | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | – | – |
| Slurries / Oxides | – | – | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1.5 - 70 Litres/min | ✓ | ✓ | – | – | – | 0.5-30 | ✓ | ✓ | 0.5-40 | ✓ | ✓ | ✓ | – |
| 2.7 - 112 Litres/min | – | – | ✓ | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 3.8 - 185 Litres/min | – | – | – | ✓ | – | – | – | ✓ | – | – | ✓ | ✓ | ✓ |
| 7.5 - 375 Litres/min | – | – | – | – | ✓ | ✓ | – | – | – | – | – | – | ✓ |
| > 375 Litres/min | – | – | – | – | – | – | – | – | – | – | – | ✓ | ✓ |
| *Pulses (> F) & (< R) | ✓ | ✓ | ✓ | ✓ | ✓ | – | – | – | – | – | – | ✓ | ✓ |
| Empty Pipe Detection | – | – | – | – | – | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Pulses per litre | 1000 | 1000 | 555 | 267 | 112 | 1000 | 500 | 100 | 1000 | 1000 | 500 | 1-1000 | 1-1000 |

* Pulses Forward & Reverse on same train


+ New "DSP-OC" Digital Smart Pulse output pulse-head
+ provides better performance & Vibration free pulsing.
+ New AMM-v2 –Magflow with empty pipe detection

- Simplistic technology easy to operate
- No issues with foaming product
- Most applications no solenoid valves required
- No flushing required
- Suitable for dosing applications
- Meet AS1379 & NMI NSS1672
- Easy calibration procedure & no need for expensive NATA approved personnel
-

# ADMIX Batch Plant – Instrument Selection Guide

| Type of Concrete Plant | Typical Dispensing Instruments Utilised | Instrument Description |
|---|---|---|
| • Manual Batching / Dosing<br>• Low Volume / Mobile<br>• Non computerised | MESLCD<br>KMS, RMS | Positive Displacement Flowmeter 20 - 40mm<br>Electromagnetic Flowmeter 4 – 50mm |
| • Semi Automatic Batching<br>• Print Out<br>• Low Volume / Mobile<br>• Non computerised | ME995 / ME3000<br>ME6008M (optional)<br>MES20<br>CMM25 / AMM20 | Batch Controllers with safety system<br>Batch Monitor / Logger / Printer Driver (optional)<br>Positive Displacement Flowmeter 20mm |
| • Automatic Batching<br>• Medium Volume<br>• Computer / PLC Controlled | ME995 / ME3000 – MC2 **or**<br>ME2008<br>MES20, MES25, MES32<br>AMM20 / CMM25 | Batch Controller with Computer Interface<br>Safety Management Interface to Computer<br>Positive Displacement Flowmeter 20 / 25mm<br>Electromagnetic Flowmeter 20 / 25mm |
| • Automatic Batching<br>• High Volume<br>• Computer Controlled | ME2008 /<br>MES20 to MES40 **or**<br>CMM25 / KMS25/KMS40 | Safety Management Interface to Computer<br>Positive Displacement Flowmeter (sizes 20-40mm)<br>Electromagnetic Flowmeter (depends on volume) |
| • Dosing / Bessa Block Plants<br>• Continuous Shotcrete Apps.<br>• Quarries | MM10/15/20/25<br>KMS25 / KMS40<br>RMS series | Display with Pulse & mA Outputs<br>For Manual or PLC Control |

# ADMIX Dispensing – Specification Requirements

| Typical Questions Concerning System Specifications | ManuFlo Volumetric Flowmeter (Comment) |
|---|---|
| Is system capable of simultaneous batching (adding multiple ingredients at same time) | Yes easily achieved cuts down on batch time therefore allows quicker throughput at the batch plant = more productivity. |
| Is system capable of continuous dosing of product during batch. e.g. shotcrete apps quarries etc) | Yes easily achieved, liquid can be pumped as fast or as slow through appropriate meter as required and at the regulated continuous doserate. |
| What is involved at design and installation stage | From the chemical type and volumetric output required select a suitable flowmeter using enclosed flowmeter matrix. Add pumps and box to hold equipment, mount at ground level if possible. |
| What is involved for an expansion of the dispensing line. | Modular system simply add pipelines and flowmeters (ex-stock) as required. (inexpensive and quick). |
| Comment on ongoing Calibration costs & maintenance requirements. | Calibrations can be performed by trained company employees to AS1379. Issues with flowmeters are immediately reported via the ME2000 safety system and can be dealt with by local personnel. If meter needs changing it's quick simple and cost effective! |
| Apart from pumps are there any other instruments or requirements for operation of dispensing equipment. | Generally simple mechanical check valves are used and on rare occasions solenoid valves depending on application. |
| If a new ADMIX chemical is to be batched does the system have to be flushed out first? | Not necessary. |
| Does excessive vibration cause an issue with measurement? | Possibly if incorrectly installed (MES-P versions). **MES-DSP DIGITAL SMART PULSEHEADS are vibration free new technology solves phantom pulsing issues from excessive vibration in batch plants.** |
| Comment on replacement of equipment, service and turn around of repairs . Do you have an R&D programme. | Stock available at all times with usually same day shipping. Free on-going product and application support. Repair turn around within 7 days. Ongoing R&D program with new instruments continuously under development following stringent survey of industry needs. |
| How many concrete plants Australia/NZ and throughout the Pacific Rim use your dispensing systems? | We estimate we have 90-95% of the Australian/NZ market. We also have significant numbers in Malaysia, Indonesia, Thailand, Nth China, Hong Kong, Vietnam Singapore, Chile , UK and other countries. |
| Are there any constraints on Batch Volume Sizes and how quickly a batch can be carried out? | Unlimited. If volume throughput is high simply select large bore MES or Magflow. Batch times are only restricted by the size of pipes or pumps selected. |

# Flow Metered Measurement for Batching - Points

| Features | FLOWMETERED - VOLUMETRIC | Flowmeter Advantage |
|---|---|---|
| **Usage** | • Wide use in Australia / NZ-Pacific / S.E.Asia / Nth China / Middle-East<br>• MES nutating disc positive displacement<br>• MM, RMS or KMS magflows no moving parts options<br>• Ex-stock equipment | • Deal with 50+ years experience<br>• Ex-stock equipment for rapid support and installation of systems worldwide<br>• Used in major concrete construction projects worldwide since the 1970's.<br>• Used in Fixed and Mobile concrete batch plants worldwide<br>• Flowmeter technology primarily used in Continental America |
| **Application** | • Well suited for applications needing simultaneous liquid batching and where precise measurement over a broad range of flow conditions is required<br>• Measurement of precision volumes from 1 millilitre resolution<br>• High volume speed batching possible | • Application throughput, versatility<br>• Unlimited system setups<br>• ME2008 batch safety system technology with digital signal flowmeter monitoring technology<br>• New upgraded ME2008-V1.8. New Software, + greater power efficiency |
| **Accuracy** | • Impurities can pass system<br>• ManuFlo Magflows available for more demanding applications | • Simple accuracy check.<br>• Calibration unaffected by specific gravity variations<br>• Precision measurement to 1 millilitre possible<br>• New "DSP" Digital Smart Pulse. Vibration Free Pulseheads<br>• No issues with foaming of liquids |
| **Delivery** | • For faster delivery, can pump faster or use bigger flowmeters<br>• Digital pulse | • Faster delivery possible<br>• No double handling, one stage process, most cases pneumatic solenoid valves not required<br>• Digital signal, less errors |
| **Operation Throughput** | • Allow simultaneous batching (adding multiple ingredients at the same time)<br>• Batch can be continuously batched and mixed for continuous dosing in block plants, cement plants or shotcreting applications | • Reduced total batch time due to simultaneous batching, increasing the effective capacity of the batch operation<br>• Original MES PD-flowmeters installed since 1995 with original measuring chambers still in use 21+ years later<br>• Optionally Magflows for higher volume, high speed, 24 hour batch plants |
| **Installation** | • Easy install by local plumber/electrician.<br>• Modular systems, easy to mix match or upgrade or add additional admixtures.<br>• Plant infrastructure in most cases already in place | • Lower setup costs and more cost effective to operate<br>• Reliable digital technology<br>• Unlimited amount of admixtures can be dispensed with flowmeter systems<br>• Lower infrastructure costs<br>• In most batch plants, infrastructure is already in place |

# Flow Metered Measurement for Batching - Points

| | | |
|---|---|---|
| **Maintenance** | • Easy maintenance.<br>• No ongoing flushing required | • **Low maintenance time and lower on-going costs**<br>• **Many flowmeter chambers in use for 20+ years without replacement**<br>• **Flushing system not required** |
| **Calibration** | • Measurement of wide range of varying viscosity and specific gravity liquids with minimal calibration variations | • **Lower ongoing calibration compliance costs**<br>• **Flowmeters supplied calibrated to National Measurements Institute reference NMI-NSS-1671.**<br>• **AS1379 allows +/-5% yet MES positive displacement flowmeters +/- 1.5% full flow range accuracy performance with 0.1% repeatability of rate.** |
| **Re-calibration** | • Simple calibration check procedure | • **AS1379 requirement +/-5%. Allows greater flexibility and lower compliance costs via flowmeters**<br>• **No requirement to open or inspect flowmeters, only if calibration is out by your accepted tolerances to 5% as per AS1379.** |
| **Interfacing** | • Digital output.<br>• **Can be noise-immune without deterioration during transmission and write/read cycle.**<br>• Digital hardware is flexible in implementation. Denoted by square waves.<br>• **Digital instruments are free from observational errors like parallax and approximation errors.** | • **No conversion errors**<br>• **ManuFlo ME2008 Batch Safety Monitoring Software Technology**<br>• **ME995 Missing Pulse Detection** |
| **Safeties** | • ME2008 digital batch safety software technology. | • **Early detection management and threshold safety features safeguards batching system**<br>• **Optional dual flowmeter comparator safety detection system** |
| **Traceability** | • ME6008M logging system<br>• Batch Computer reports | • **Full independent reporting capability** |

# SUMMARY: ADMIX Dispensing by Flow Measurement

- Batch records tie up with actual dosage via reported pulses to batch controller and plant computer.
- Each flowmeter is individually wet tested and calibrated on a calibration rig against an **NMI** traceable Master meter system. The batch computer holds a record of what has been requested from the flowmeter and there is high level of confidence that what is requested is what has been dispensed.
- Admixtures are able to be **batched directly into concrete mix**, which speeds up dispensing time.
- Calibration of flowmeters is **simple and effective** and there is no requirement for the tester to have NATA certification where a costly third party company is required.
- Start up costs for volumetric systems are low and adding a further chemical is simply an additional pipeline and flowmeter.
- Volumetric batching allows for **larger volumes** to be dispensed in one operation at any stage.

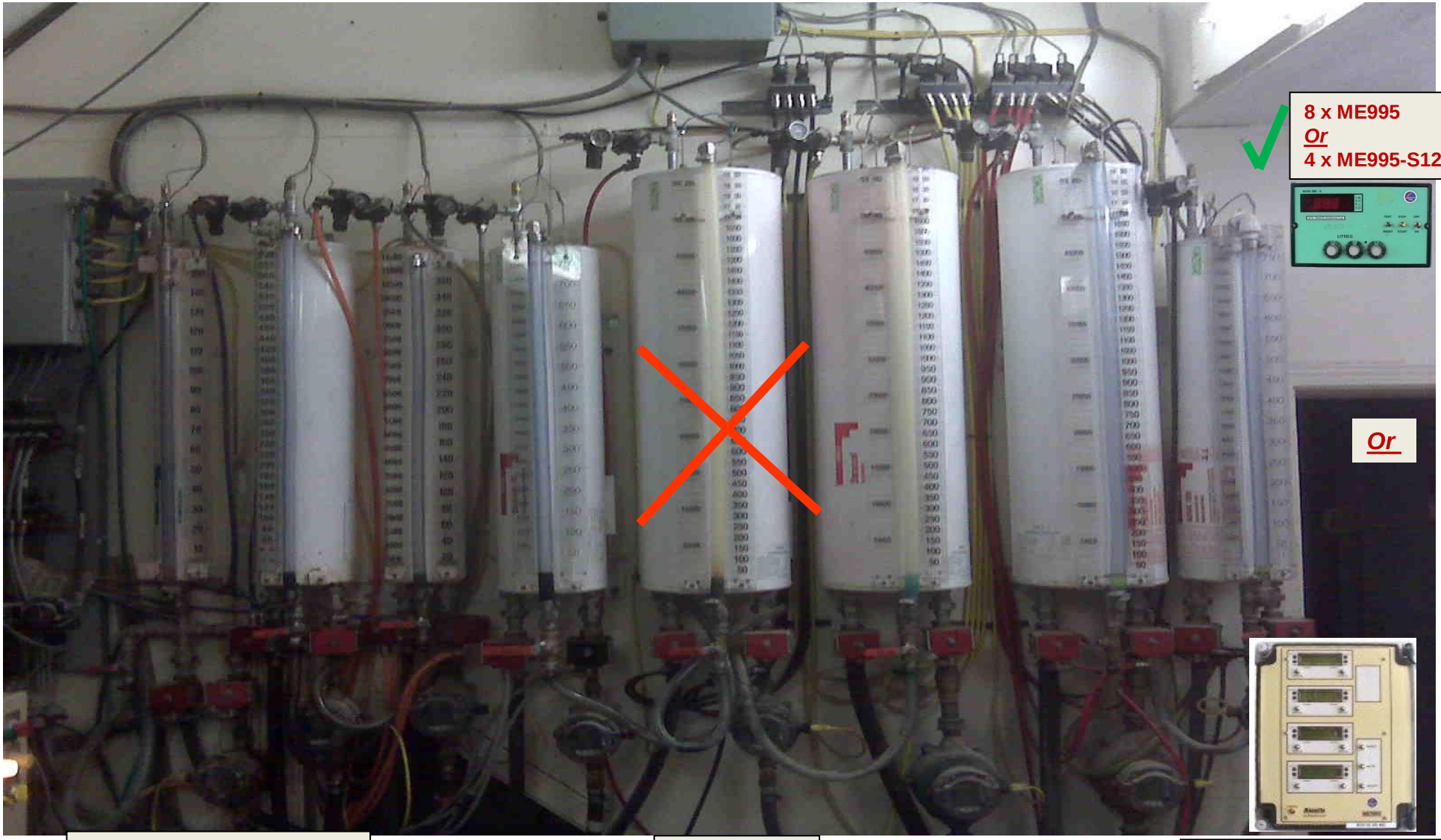
ManuFlo Flowmetered Systems since 1965.
Long lasting decades of uninterrupted performance....

# SUMMARY: ADMIX Dispensing by Flow Measurement

The ManuFlo Advantage

- Due to the high resolution of up to 1000 pulses per litre, unsurpassed accuracy can be assured.
- Any issues with flowmeters or computer batch requests are picked up early and reported by the safety system (ME2008/ME2000/ME995) and can be quickly addressed. For an added level of safety a dual comparator system can be utilized to satisfy the most demanding of clients.
- AS1379 allows a tolerance of ±5% or less, accuracy of flowmeters is better than +/-1.5% with 0.1% repeatability so are well within tolerances required for the industry.
- With ManuFlo's over 35,000 flowmeters performing daily worldwide the reliability is unsurpassed in the concrete industry.
- The simple, reliable and repeatable flowmeter and 'Manu' safety system technology has been a plant standard in Australia and many other parts of the world for over 40 years.

ManuFlo Flowmetered Systems since 1965.
Long lasting decades of uninterrupted performance....



8 x ME995
*Or*
4 x ME995-S12



*Or*



**8 x BOTTLES**

***verses***

**1 x ME2008**

**Why settle for this, when all this can be replaced with the one ME2008 or ME995's.**

Pictured is a batch plant in California -USA

ManuFlo ®™

# Canisters vs Flowmetering with ME2008 or ME995 Controllers

| Feature | Bottle | Flowmeter | Flowmeter advantage |
|---|---|---|---|
| usage | • chemical passes through Batch Room - must be mounted within sight and reach of the batch operator.<br>• can have accidental spillage. | • can be mounted outside Batch Room.<br>• cleaner Batch Room. | • cleaner to use. |
| installation space | • bulky.<br>• heavy. | • compact.<br>• relatively light. | • less space to install. |
| support equipment | • to fill and discharge, needs either 2 pumps or air pressure. | • only need 1 pump and/or solenoid.<br>• air not needed. | • less support equipment. |
| delivery | • fill cycle required. | • direct delivery via 1 operation.<br>• **half the time to dispense.** | • fast, direct injection of chemical. |
| batch size | • limited by bottle size. | • unlimited. | • no restriction on batch size. |
| maintenance | • must wash out daily. | • virtually no maintenance. | • less maintenance. |

- **Slow discharge time, Double handling.**
- **Messy, Large & cumbersome, Extra maintenance for cleaning = Expensive.**
- **Risk: bottles are pressurized - can explode.**
- **Quick exhaust valves can fail – not completely safe or foolproof.**
- **Replace your bottles now, save ongoing maintenance costs:**
  **ManuFlo offers ME2008 or ME995 (which incorporate safety features) with MES or AMM flowmeters in lieu of bottles or weighed.**

***New Technology wins new customers !!***

# Measuring Admixtures via volumetric flowmeter method with ManuFlo safeties.

(began in Australia in the 1970's)

= No more sight bottles or weigh canisters =

* No more water wash outs *

clean + efficient + maintenance savings

# 3.

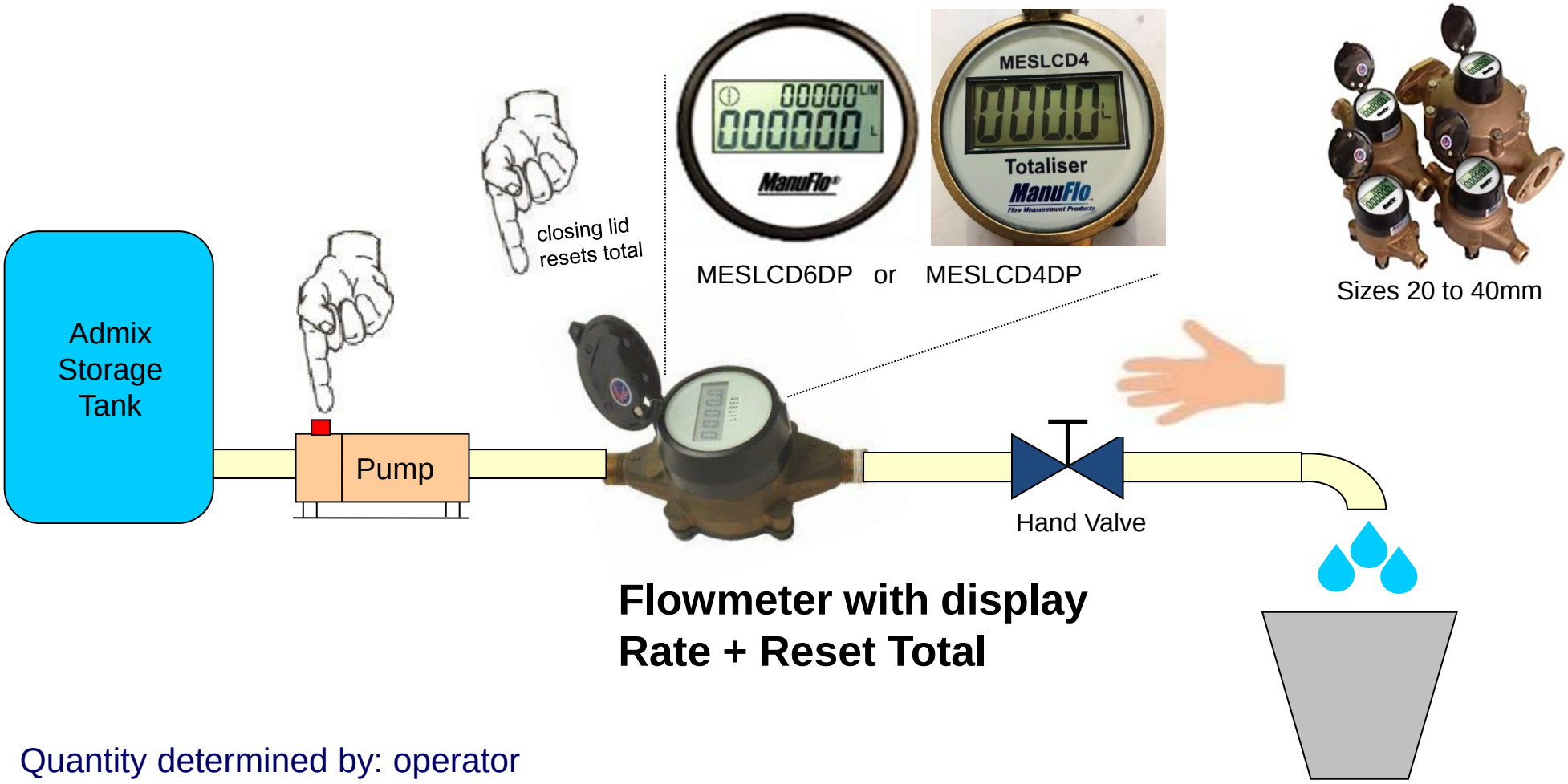
# Overview: Admix Batching with Flow metering

# Overview:
# Admix Batching with Flowmetering

| Batching Type | quantity set by | delivery controlled by | flowmeter with display | flowmeter with pulse output | Batch Controller | ME2008 | Computer/PLC |
|---|---|---|---|---|---|---|---|
| **MANUAL** | operator | operator | Y | | | | |
| **SEMI-AUTO** | operator | Batch Controller | | Y | Y | | |
| **AUTOMATIC** | Computer/PLC | Batch Controller/ME2000/ Computer/PLC | | Y | opt | opt | Y |

# A) Manual Batching

Example for Admixture




**Flowmeter with display**
**Rate + Reset Total**

Quantity determined by: operator
Delivery controlled by: operator
Internal battery powered meter

# B) Semi-Automatic Batching

*Latest Country Install Ghana Africa – dispensing chemicals easily, safely, simply & reliably !!*

Controllers can be configured to dispense 2 admixture products 2pumps/2flowmeters via 2way product control switch (#S1-2)


Used worldwide

**Batch Controller- ME995**


Contactor

Admix Storage Tank

tank Valve

Filter

Non-Return Valve

Pump

Gate Valve restricts flow

**Pulse Output Flowmeter**
e.g. MES20

optional 3-Way Valve (calibration point)

Non-Return Valve

Solenoid

*Outlet line at same level as Storage Tank*

**AMM-v2 or CMM Mag-flowmeter options**

Quantity set by: operator
Delivery controlled by:
ME995 Batch Controller with multiple safety features.
Some earlier models still in use since 1980 !!

# C) Automatic Batching via PLC/Computers (options)

**ME2008 (i)**
Microprocessor interface batch safety unit.


**Admix Flowmeter**
measures flow

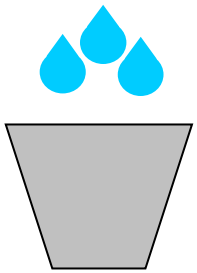
**UIC Interface Card (ii)**

pulse/voltage scaling

Pump

Admix Storage Tank

Direct Flowmeter Pulses (iii)




via interface i/o plugs –MC2 (iv.1)

**ME995 Batch Controller (iv)**
controls batch delivery

**ME5IC i/o Card (iv.2)**
i/o scaling and comms.

**Batching computer / PLC**
sets/controls/records batches

Quantity set by: Computer/PLC
Delivery controlled by: Batch Controller/MES2008/Computer/PLC

# 4.

# MES Flowmeters

## Used for Admixture Measurement Worldwide

# MES Series Flowmeters

Primary admixture flowmeter used worldwide since 1995 with over 45,000 used daily (to 2021).

- Available in sizes 20, 25, 32, and 40mm. (20mm sizes covers most applications)
- Digital Pulse high resolution output.
- Positive displacement Nutating Disc allows precise measurement.
- Proven Long operational measuring chamber life of over 20+ years.
- Accuracy virtually un-affected by Specific Gravity or viscosity changes.
- Measures SG's to 1.4. (or for more demanding apps. use Magflows).
- MES is the most cost effective flowmeter option.
- **Digital Smart Pulse "DSP"** output pulse-head near endless life cycle.

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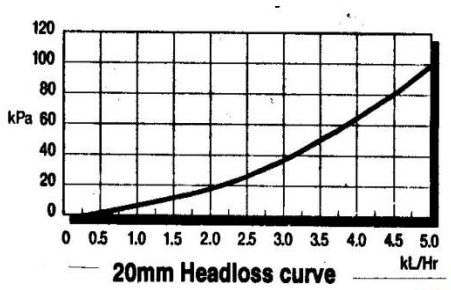
# MES Flowmeters - Types

- 20mm range most commonly used with 1000 pulses per litre (1ml./1pulse)
- Operational chamber life up to 20+ years
- New **MES20-NE Digital Smart Pulse (OC)** output pulse-head. (from Aug.2018). *VIBRATION FREE*




**Black Teflon coated body with Ryton chamber**

| | MES20 | MES20-N-DSP | MES20M | MES20LCD6DP | MES20S types -T |
|---|---|---|---|---|---|
| **Main Usage** | **General batching** | **High vibration areas** | **Manual** Accumulation | **Precision Manual Batching** | **aggressive chemicals** |
| **Display** | -- | -- | Yes | Yes | available |
| **Decimal point** | -- | -- | -- | Yes | available |
| **Power** | 5 to 25 VDC | 5 to 25 VDC | None | internal battery | DC or battery |
| **Pulse Output** | Transistor 1000 ppl | Transistor 1000 ppl | -- | -- | *Transistor 1000 ppl<br>* Reed 61 ppl |
| **for Manual Batching** | -- | -- | -- | Yes | Yes –LCD option |
| **for Semi-Automatic** | Yes | Yes | no | -- | Yes |
| **for Automatic** | Yes | Yes | no | -- | Yes |

*Pulserates for –S / -S-T can be from 810 to 1000 PPL must calibration check accordingly

# MES Flowmeters – Head Types

Digital Smart Pulse (DSP)
**1000 ppL***
For 20mm (Round J-Box or Hex. type)


LCD Resettable
Litres dec.pt
Large Display


LCD Resettable
Litres dec.pt
+Rate Display

Non-resettable
Mechanical Totaliser

**WARNING: Pulse output value (PPL) changes for the fitted body size.**

**WARNING: Use correct LCD head (size is on lid) for body size.**

***Now with Vibration Free technology -DSP***

**New Compact Body: MES20-NE**

Standard (gunmetal)

Teflon/Tefzel Coating for Acidic liquids (black or green)

**A Range of special sealing gaskets in Viton or EDPM and Bases available.**

**Various Body Sizes**
for 20, 25, 32, and 40mm Ø pipes

# MES Flowmeter Sizes - Specifications

***With DSP – no vibration issues – Pulses factory settable from 1 to 1000 PPL for all sizes).***

| Model Number | MES20-NE | MES25 | MES32 | MES40 |
|---|---|---|---|---|
| Size | 20mm (3/4") | 25mm (1") | 32mm (1¼") | 40mm (1½") |
| Transistor NPN pulse output rate (pulses per Litre) | 1000 | 555 | 261 | 116 |
| Reed Switch pulse output rate (pulses per Litre) | 61 | 34 | 16 | 7.2 |
| Start flow @ ±5% (Litres/min) | 0.6 | 1.1 | 1.5 | 3.0 |
| Minimum accurate flow @ ±1.5% (Litres/min) | 1.5 | 2.7 | 3.8 | 7.5 |
| Nominal flow (Litres/min) | 45 | 65 | 125 | 200 |
| Maximum flow (Litres/min) | | | | |
| Admixture (Specific Gravity 1.4) | 54 | 80 | 132 | 268 |
| Admixture (Specific Gravity 1.1) | 68 | 102 | 168 | 340 |
| Water (Specific Gravity 1.0) | 75 | 112 | 185 | 375 |
| Accuracy (Repeatability) | ± 1.5% (± 0.2%) | ± 1.5% (± 0.2%) | ± 1.5% (± 0.2%) | ± 1.5% (± 0.2%) |
| Voltage Supply | 5 - 25 VDC | 5 - 25 VDC | 5 - 25 VDC | 5 - 25 VDC |
| Supply Current (proportional to supply voltage) | 5 - 25 mA | 5 - 25 mA | 5 - 25 mA | 5 - 25 mA |
| Weight (# including connectors) | 1.8 kg | 2.6 kg | 6 kg | 17 kg # |
| Connection type | ¾" BSP (male) | 1" BSP (male) | 1¼" BSP (male) | 1½" (flanged) |
| Max. working pressure | 1160 kPa | 1160 kPa | 1160 kPa | 1034 kPa |
| Headloss at nominal flow | 25 kPa (3m) | 25 kPa (3m) | 25 kPa (3m) | 25 kPa (3m) |
| Max. liquid temperature | 50°C | 50°C | 50°C | 50°C |

New

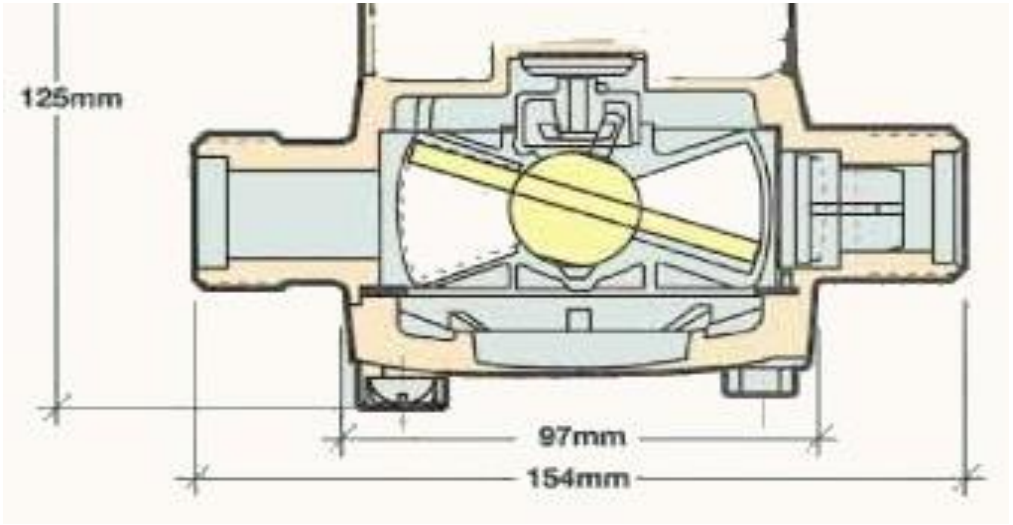

**MES-DSP/OC - field issues.**

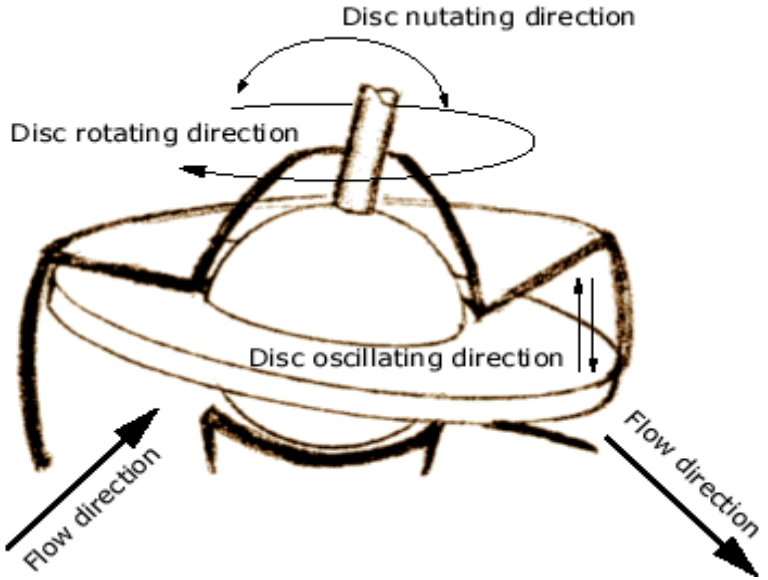
There are confirmed reports of some MES-DSP pulse-heads not being operational with ManuFlo ME2000/08 & ME995 equipment systems.
This is due to internal pull-up resistors already fitted in the inputs of the equip.
From December 2019 MES20-DSP-OC (open collector) version are supplied with (pull-up resistor removed).
(As indicated on the J-Box label)

**On some external non-ManuFlo equipment for DSP-OC heads a external pullup resistor 2K7 fitted across Pulse and +VDC is required to effect input switching.**

# MES20 Flowmeter – How it Measures

- Is a Positive Displacement type
  - Measures volume of liquid flowing by counting repeatedly the filling and discharging of a known fixed volume.
- Measuring chamber with nutating (wobbling) disk
  - Has a chamber that has inside it a nutating (wobbling) disk that creates fixed-volume discrete “parcels” from the passing liquid.
- Chamber is magnetically coupled to the pulsehead
  - The volume of the liquid that passes the chamber is found by counting the number of “parcels” (i.e. the number of revolutions of the nutating disk).



# MES20 Flowmeter – Installation - Rating

IPxxx

against solid
against liquid
against mechanical impact (often omitted)

## IP (Ingress Protection) Rating

| Protection rating against solids | Interpretation | Protection rating against liquids | Interpretation |
|---|---|---|---|
| X | No specific protection | X | No specific protection |
| 0 | Inherent degree of protection | 0 | Inherent degree of protection |
| 1 | Protected against solid objects larger than 50mm. (eg. accidental contact with the hand) | 1 | Protected against drops of water falling vertically. |
| 2 | Protected against solid objects larger than 12mm. (eg. accidental contact with finger) | 2 | Protected against water drops falling at up to 15 degrees from vertical. |
| 3 | Protected against solid objects larger than 2.5mm. (eg. tools and wires) | 3 | Protected against water drops falling at up to 60 degrees from the vertical. |
| 4 | Protected against solid objects larger than 1mm. (eg. fine tools and wires) | 4 | Protected against splashing water from all directions. |
| 5 | Protected against quantities of dust that could interfere with satisfactory operation | 5 | Protected against jets of water from all directions |
| 6 | Completely protected against dust | 6 | Protected against jets of water of similar force to heavy seas. |
| - | - | 7 | Protected against the effects of immersion. |
| - | - | 8 | Protected against the effects of submersion. |

http://www.greenhouse.gov.au/lgmodules/wep/toolkit/streetlighting/street_ip.html

# MES20 Flowmeter – Installation - Location

- Flush out pipes thoroughly before connecting flowmeter.
- **Install** under cover, in an accessible area for any future service.
- Multiple flowmeters should be grouped together off the ground on a stand.
- Avoid high vibration areas – move, use dampeners, or use MES20-DSP instead with ME2000, ME3000 or UIC/A.

- **Direction:** Arrow on meter body must coincide with flow direction.
- **Orientation:** in any plane, except upside down (to avoid deposits in chamber magnetic drive section).

- **Filter:** can pass small impurities & has internal strainer, but if liquid contains granules or many impurities, a filter box or strainer may be fitted before the flowmeter (800 micron cartridge filter recommended).

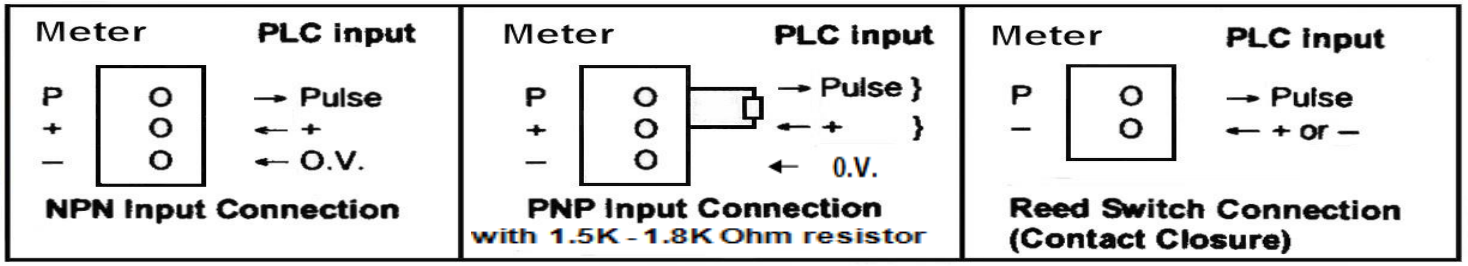
- Install any regulation valve preferably before the flowmeter.
- If injecting into water line, a solenoid may be needed at the discharge point to avoid syphoning.

# MES20 Flowmeter – Installation - Wiring

- To avoid water ingress into electronics, ensure cable entry glands are secure and loop cable down.

**To Wire:**
- **Remove colour cap**
- **Open Junction Box lid**
- **Pass cable through cable gland**
- **Strip cable ends**
- **Fit to terminal connector**
- **Check wiring**
- **Tighten gland**
- **Close Junction Box**

- Electrical connections:



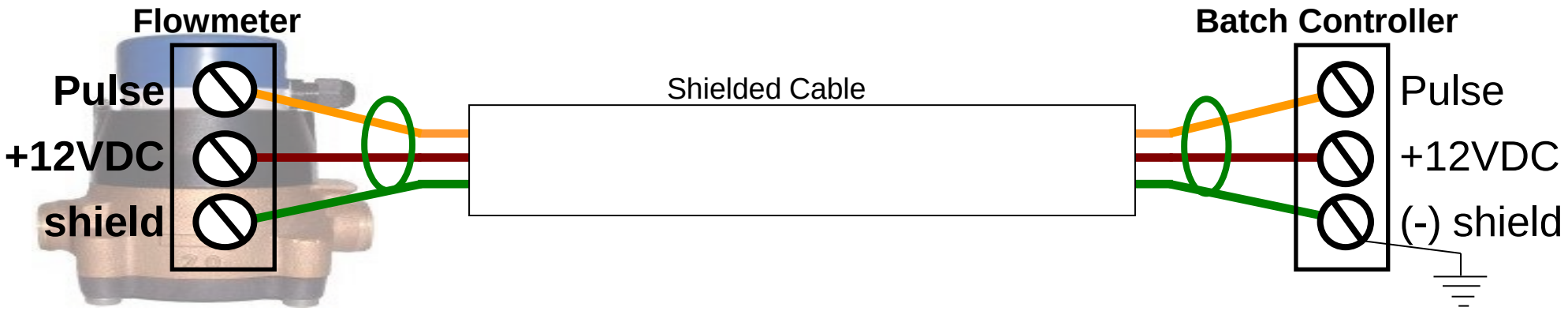

For PNP input (12 – 24 VDC) fit a 2.2 – 2.7K resistor (value depends on input impedance).

Current limiting resistor and debounce capacitor are fitted.

- Interface cards are available to scale output pulses.
- To avoid interference, use only shielded cable.
- Ensure only regulated DC voltages used (when using external power).

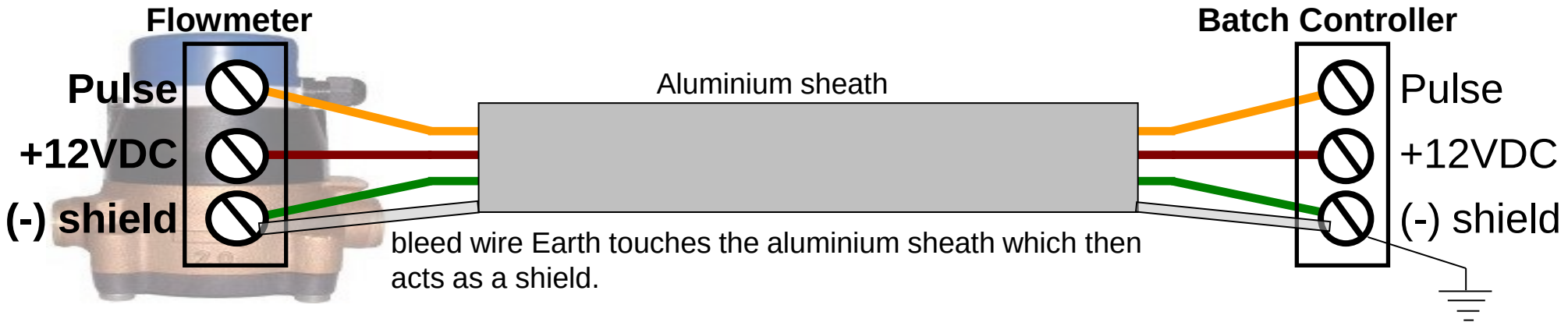
# MES20 Flowmeter – Installation - Wiring

**The shield is internally Earthed at the Batch Controller end only and not at the flowmeter end. (Earthing both ends would create a ground loop antenna).**




**Do not Earth shield at flowmeter**

**Shield goes to Earth internally**




**Do not Earth this end**

**Shield goes to Earth internally**

# MES Flowmeter – Installation -Multiple

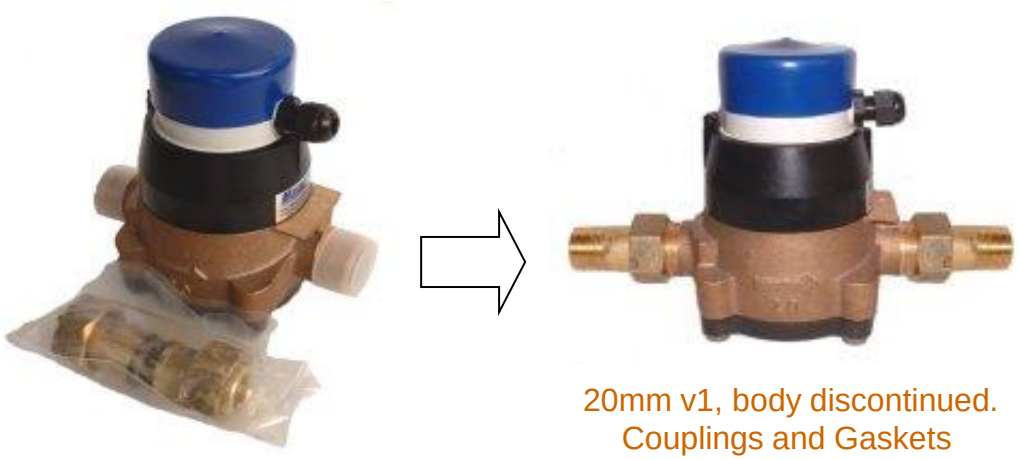
**Examples of multiple wiring and plumbing MES20 installations**

**MES Flowmeters are very easy to service.**
**Access to the measuring chamber is simple and easy to replace if ever required**

**MES Flowmeters now with new "DSP" Digital Smart Pulse. Vibration Free Pulseheads**

# MES Flowmeters – Body Types

## Old Body



20mm v1, body discontinued.
Couplings and Gaskets
still available.

- Body end threads are 25 mm gas metric.
- Shipped with 20mm (3/4”) BSP (male) coupling connectors.
- Couplings are screwed on for connecting to pipe.

## Current Body

## New Body


V2, V3

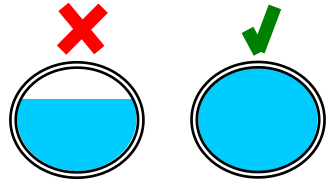
V1-new(compact fr. June.2018)

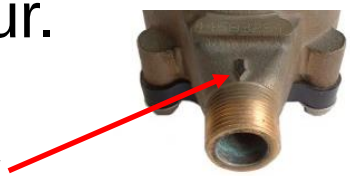
- 20mm (3/4”) BSP (male) threaded ends.
- Barrel Union Plastic Connectors Now optionally available

# MES20 Flowmeter – Operational flow range

- Do not exceed operating specifications as this can damage the meter


- Don't exceed recommended maximum flowrate*
  (75 Litres/min for MES20) - damage/overdose can occur.






- Must have full pipe at all times:
  - For accurate measurement,
  - To avoid dry chemical deposits (through exposure to air)
  - Fouling meter chamber

- A calibration check is recommended every 6 to 12 months.
- Replace chamber if accuracy out by > 5% (low replacement cost).

*** Note: The higher the Specific Gravity of the liquid, proportionally the lower the maximum flowrate.**

# MES20 Flowmeter – Head Removal

- Pulsehead is self-contained, and is attached to meter body via a bayonet turn and lock fitting mechansim.
- Don't deform the pulsehead copper face as that could damage internal parts.

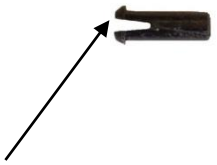

- Push in the locking pin with a screwdriver.

**MES20** ***Body Types*** ***MES20-N-(E)***

V1,V2,V3
1995 to present

V1 from
fr. 06/2018.
V2 (E) from 2022

- Turn pulsehead anti-clockwise 1/8 turn, then lift pulsehead off. **Don't lose pin.**



- To re-attach, reverse sequence, and tap-in locking pin (split end goes in first).

# MES20 Flowmeter – Operational Points

The MES20 (25,32,40mm) are high-resolution flowmeters (MES20 =1000 pulses/Litre). Note: **false counts** is usually due to excessive high **vibration** – either directly due to the meter installation, or in extreme rare cases from extreme plant vibration of the liquid.

Tap


Tap

This can be dealt with by:

- Checking the pulse-head is secured to the body (especially if swapped) and no free movement, if there is then a simple hammer tap to the grip wings will be sufficient to better secure the pulse-head tolerance clearances.
- If possible, install flowmeter **away from vibration areas**; or
- Using **rubber dampeners** to buffer the flowmeter from vibration e.g. from a nearby compressor, alternate pumps; or
- ***Or*** swap with **MES-DSP-OC Digital Smart Pulse** output pulsehead. (from Aug. 2018).

(Bi-Directional intelligent –free of any vibration issues)

Available as a complete flowmeter, or pulse-head only (which is interchangeable with the MES20 / MES20-N(E) pulse-head).

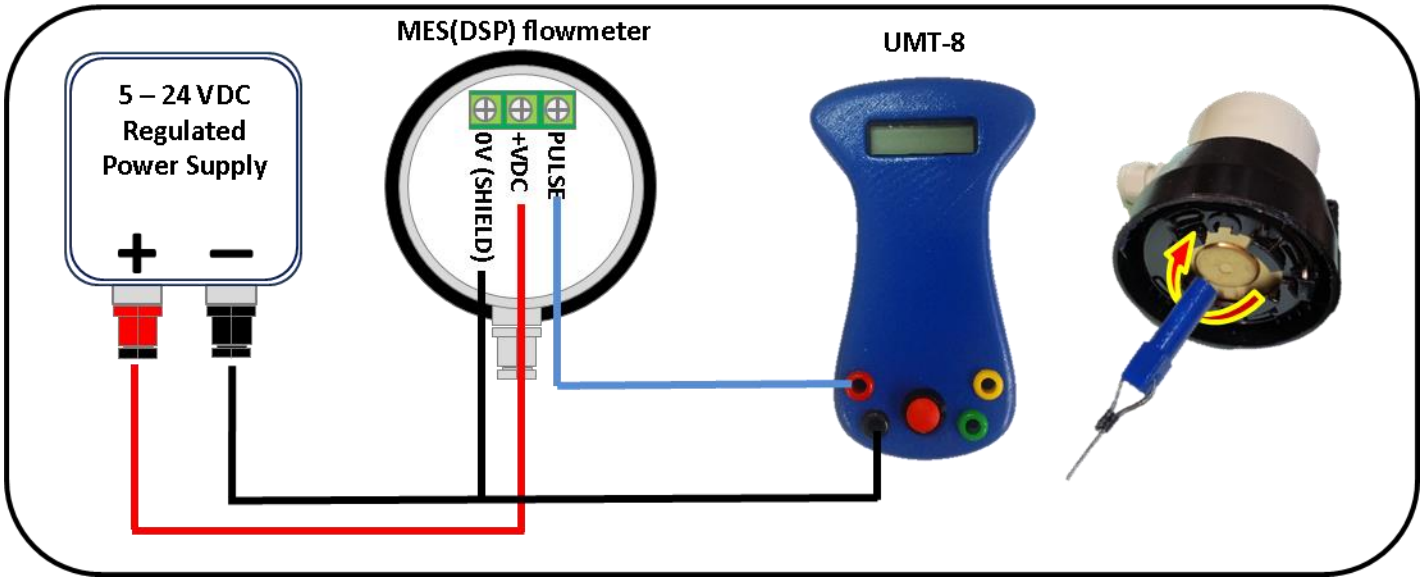
**Also:**

- Counts can result if a **Non-Return Valve** is faulty, and allows liquid to drain back (Back-Flow) into the storage tank. Replace the Valve if required.
- Ensure hoses are tied down to avoid unnecessary liquid vibration.
- Failing this the pulse cables may not be shielded.

# UMT8 – Multifunction Tester with MES

- **A must have for any MANUFLO product tester / technician**
- **Resettable 8-digit LCD resettable counter.**
- **Compatible for testing both Active (source) and**
- **Passive (sinking) Digital inputs / outputs.**
- **Internal signal generator function allows testing**
- **Digital inputs such as ME2008, ME995 controllers, UIC, counters, PLCs & etc.**
- **Magnetic reset wand can be also used for testing the new MES-DSP pulse-heads.**
- **An ideal commissioning or troubling shooting device.**

NEW



For existing systems already wired up with +5-24vdc from ME2000, ME995 etc, simply circulate the magnet wand on the underside of the copper housing to generate counts on the pre-existing equipment (ME995/ME2008 etc in the batch room.

# MES20 Flowmeter – Service

- Flush the flowmeter with water if the pipe runs dry.
  (Admixture dries and crystalizes if in contact with air and seizes the chamber /pumps/valves etc).
- If measuring chamber is blocked, there will be pressure loss on output and loss of flowrate and possible overdose may occur. Blockage will be detected by ME995, ME2000/2008, ME3000 systems with warning alarms or messages.
- If flow becomes excessively restricted, or meter is out of calibration or pulsehead stops sending pulses, then:
  - Reset the connected controller.
  - Remove flowmeter pulse-head.



  - Shake pulse-head (MES-P only) left-right to check if there are pulses (counts appear on Batch Controller etc).
    - If no pulses: (or use a magnet for the new DSP-OC digital pulse heads)
      - Check wiring cable connector and that 12VDC is delivered to pulsehead. If wiring/power OK:
      - Switch off connected equipment and replace pulsehead.
    - If receiving pulses, then check chamber:
      - Access chamber and inspect. Either:

      - For minimum service time, use a new chamber (E.G. Order Code: 20-5); or
      - Clean chamber parts in warm soapy water or diluted HC-acid (5 water : 1 acid).

        **After use with chemicals, if MES20 removed from pipeline, always flush out working chamber with water.**
        Ensure wobble disc roller pin (20-5D) is in place, shutter plate (20-5B) is refitted and the square O'ring chamber gasket (20-6) is also positioned.


      - Re-insert chamber, secure position with the strainer/locator. Refit or replace body gasket (20-7).
    - Re-assemble flowmeter

  - **Always perform a calibration check of the flowmeter vs volume vs display after any service.**

# MES20 Flowmeter - Maintenance

ManuFlo ®™



- **Abrasive particles** can wear out the chamber and create inaccuracy over time (detect this through calibration checks).
  In Australia, the admixture standard allows ± 5% tolerances. (AS-1379).
- Liquids should be **free of particles** to increase the accuracy life of the chamber to 20+ years – use **filters** if necessary.
  (***or CMM20 or KMS magflows –no moving parts flowmeters***)
- A **calibration check** is recommended every 6 to 12 months (admixtures only).
- If calibration is within +/- 3 to 4% there is no need to inspect the working chamber.
- If 5%> then if required, **clean chamber** parts in warm detergent water or diluted acid 5:1.
- If after cleaning still out of tolerance, **then check there are no broken parts or missing chamber inlet square gasket, roller pin or shutter plate –re-install if necessary. Lastly replace chamber** if out by more than 5%. (Note: Simple chamber swap is quickest method).
  (or change K-factors on input device –if delivery flowrate is consistant).
- After use with chemicals, if MES20 is removed from pipeline, be sure to **flush out working chamber** with water.
- To **avoid water damage to electronics**, ensure all cable entry glands are secure, cables are looped downwards and the meters are under cover and not prone to flooding.
- Treat underside of pulseheads with care – **do not deform** the copper face.

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- **After any service perform a calibration check of meter vs volume vs display.**

# PRODUCT UPDATE BULLETIN

## MES20– Introducing Upgraded Flowmeters MES20N

| Specification Parameter | Original Models MES20 (since 1995) | New Models MES20N (from May 2018) | Difference | Inter-changeable MES20 ⇔ MES20N |
|---|---|---|---|---|
| **Insertion length end to end** | 191 mm | 191 mm | None | Yes |
| **Connection thread** | ¾" BSP | ¾" BSP | None | Yes |
| **Pulse Head & resolution**<br>**LCD head** | Transistor, 1000 PPL<br>Reset Total &/or Flow Rate | **DIGITAL-DSP**, 1000 PPL<br>Reset Total &/or Flow Rate | None<br>None | Yes (same pulse head)<br>Yes (same LCD head) |
| **Performance (Full range)** | Acc. +/- 1.5%, Rate:+/-0.2% | Acc. +/- 1.5%, Rate +/- 0.2% | None | Yes |
| **Measuring chamber type** | Nutating disc with shrouded mag. | Nutating disc with shrouded mag. Improved chamber | Slightly lower dome height but with **Faster Flowrates** | No |
| **Meter body / base plate / base sealer gasket ring** | Gun metal / nylon / NBR rubber | Gun metal / nylon / NBR rubber | Slightly lower height size, lighter weight. | (YES – for some parts) |

New: Digital Smart Pulse "DSP" technology (vibration free) Pulsehead from Sept-2018 as standard

(Added features: Optional bi-directional pulse, forward/reverse pulse, pulse division programmable option e.g. 100ppl).

## F.A.Q.

**Q) The existing MES20 flowmeters work well, why are ManuFlo introducing a new model?**

A) The Meter body is lighter weight & chamber section of the flowmeter has been upgraded. Model 'N' is a compact improved design with better manufacturing uniformity for mass production with lower cost spare parts.

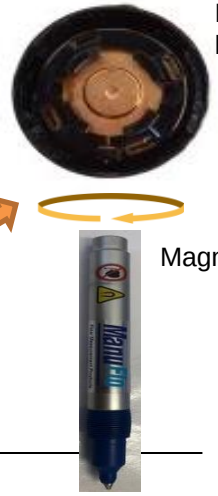
**Q) Can a current model MES20 be swapped out in their entirety for the new 'N' models?**

A) Yes this is a like for like exchange, with same threaded connections & insert length so no pipe mods. needed.

**Q) What if you want to swap a pulse head or LCD head from the new MES20N to an old MES20/LCD & vice versa?**

A) No problem exactly the same pulse head & LCD head is used in the N versions with turn/snap fit coupling.

B) For testing the pulse-head you can no-longer "shake" it to generate pulses (old model), you need a Magnet to activate the internal DSP sensors. (Instead of shaking pulsehead, just approach the underside of the pulse head with pen/stick magnet {or chamber magnet} and rotate, this will generate pulses for testing).

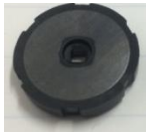



**Q) Can I use any of the internal measuring chambers from the new 'N' models in an MES20 & vice versa?**

A) Generally No, however we will be keeping metering section spares of the existing MES20 for atleast the next 10 yrs. (Note: Base plate, base and chamber gaskets, chamber base, shutter and roller, S/S screws interchangeable).

# MES20 flowmeters –new improved body model MES20N-(DSP)-OC + digital smart pulse





## New MES-DSP options / field issues.

**There are confirmed reports of some MES-DSP pulseheads not being compatible with ManuFlo ME2000/08 and ME995 equipment systems. This is due to internal pull-up resistor fitted.**
**From December 2019 the MES20-DSP-OC (open collector) version is supplied for any incompatibilities.**
**(pull resistor removed).**

New

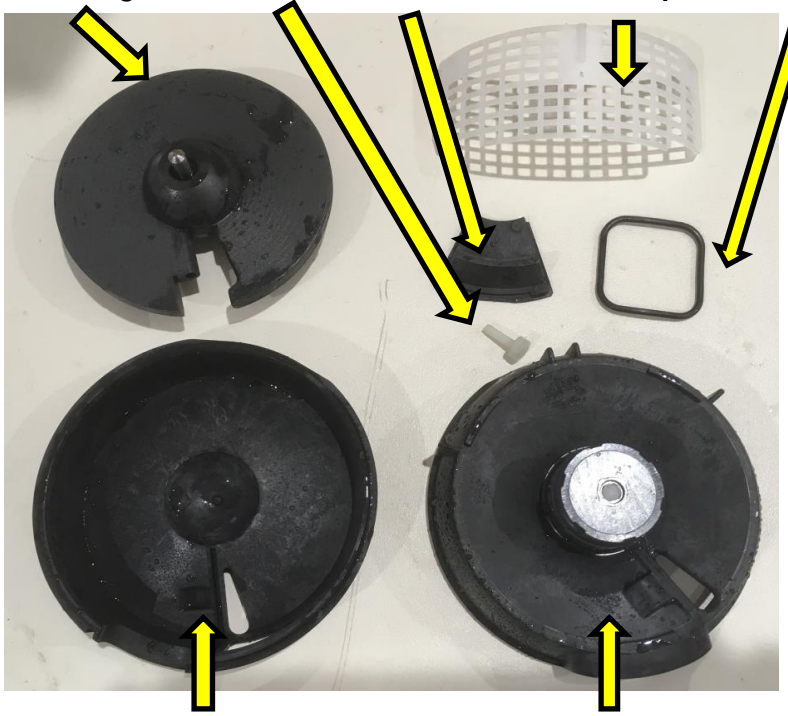

SAME PHYSICAL INSERTION LENGTH

Existing

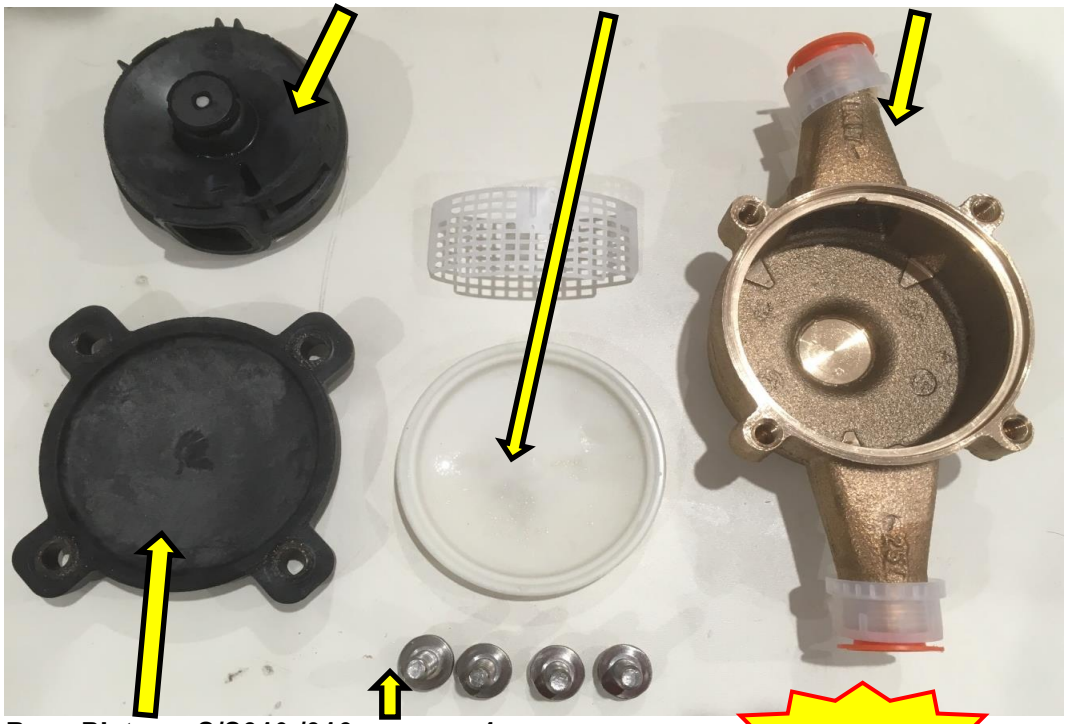
NEW = "-N"

# MES20-N(E) flowmeter: Body & Chamber Parts Dissected

Nutating disc., Roller, Shutter Plate , Filter Spacer, Chamber Gasket, 20-5N complete chamber, Body gasket (1st ver.), Body casting

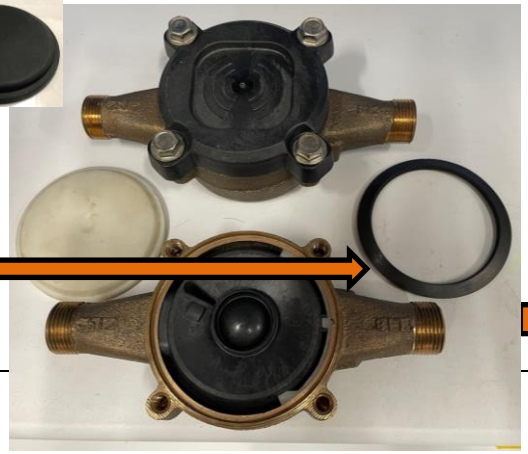


Chamber bottom ½ Chamber Top ½



Base Plate, S/S310 /316 screws x4

New



The Body Gasket (white rubber) has been upgraded to new Black EDPM base gasket. (remove the white gasket and replace with Blk.

New part order:-

**EDPM black base gasket**

**Part # 20-7-E.**

Fitted as standard MES20-NE

# MES20 Flowmeter – Chamber Access

(1) Rotate or remove meter body from pipe.
(2) Unscrew the 4 base screws


(3) Remove baseplate and base seal ring.
(4) Using long nose pliers, pry and pull out white strainer/ locator, so unlocking the measuring chamber assembly.

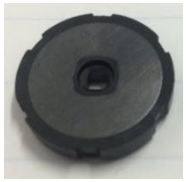
*Note: Don't lose strainer, as it also acts as a spacer/positioning element.

For any body gaskets that swell, replace with EDPM/VITON option.

# MES Flowmeters - Components

## Genesis of the MES flow measuring chamber. Part # 20-5 for 20mm size

**Original Ferrite Magnet**
(White driver shaft)
Discontinued old



**CBM magnet**


**Ceramic Magnet (-CSM)**
(Black driver shaft)
For upgrade of old chambers

**MES20 standard meter Ceramic-Barium Magnet c/w Plastic Shroud** (White driver shaft)
***Part# 20-5***


**MES20-NE compact profile flowmeter chamber with Ceramic-Barium Magnet Shroud**
***Part# 20-5N.***

Over the last 50 years ingredient composition of liquid chemical admixtures have changed. ManuFlo as a result have also introduced improvements in material technology to maintain compatibility and suitability of use.
From 1st July 2016: MES20 flowmeters measurement chambers are fitted with Ceramic-Barium Magnet Plastic Shroud magnet, the latest magnet technology to cater for many liquid additives.
From July 2019 the new MES20-N lower profile meter was introduced and in Jan.2020 with new MES20-NE EDPM seal. EDPM ring gasket from 12/2021.

Fitted as standard **MES20-NE**

# MES20 Flowmeter - Spares

**For MES spare parts, the Product Code format is "*size-code*"**

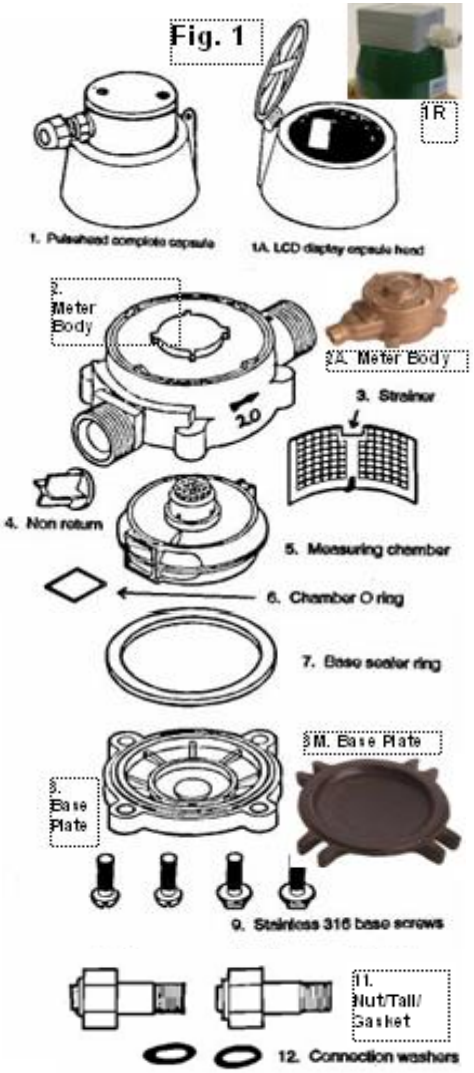
***e.g. "20-5" is a spare measuring chamber for a 20mm size MES flowmeter***
***e.g. "25-5" is a spare measuring chamber for a 25mm size MES flowmeter***

| Part No. | Description |
|---|---|
| 1 | Pulsehead complete NPN output (Round junction box) |
| 1R | Pulsehead complete REED output (Square junction box) |
| 1A | LCD Litres display capsule |
| 1B | LCD Litres dec. pt display capsule |
| 2 | Meter body(old type) * |
| 2A | Meter body(new type, coupling-free)* |
| 3 | Strainer |
| 4 | Non-return valve |
| **5** | **Measuring chamber (complete)** |
| 6 | Chamber O-ring |
| 7 | Base sealer ring |
| 8 or 8M | Base plate (8: plastic, 8M: metal) |
| 9 | Stainless 316 base screw |
| 11 | Nut/Tail/Gasket connection kit (pair) |
| 12 | Connection washer (each) |
| 13 | Oval flange kit (pair) |
| BC | Chamber and Body (parts 2 to 9) |
| 20-5-S | Special Ryton-MTL Chamber chemical/petroleum resistant |

* body comes without measuring chamber and without any couplings.

**NEW Compact Chamber**
**20mm size: Part # 20-5-N**

**Measuring Chamber**
**20mm size: Part # 20-5**



# MES Flowmeters – Summary points

**MESLCD**
**Resettable**
**range pictured**

## *Advantages*

- High resolution PD measurement
- Ideal for admixtures
- Internal Battery powered, no external power required, so is ideal in remote sites.
- Simple and cost effective.
- Sizes 20 to 40mm

**MES-P**
**Pulse-output**
**range pictured**

MES20

MES20-NE

AUSTRALIAN MADE

## *Advantages*

- High resolution PD measurement for accurate batching.
- Accuracy largely un-affected by S.G changes
- Ideal for admixtures (used worldwide)
- Safeties can be added via other equipment e.g. ME Batch Controllers, ME2008, PLC/Computer.
- Simple and cost effective. Sizes 20 to 40mm
- With new DSP Digital Smart Pulse –scalable
- VIRTUALLY VIBRATION FREE

# Flowmeters – Summary Advise

- Always perform a calibration check after any service.
- For admixtures we recommend a calibration test in 1 year cycles.
- MES pulseheads can be swapped between different flowmeter body sizes provided the **Pulses per Litre setting** is changed accordingly in the ME2000 / ME2008 / ME3000 / ME995-7 / UIC or other scalable devices.
- All ME995 Batch Controllers (except ME995-7 and ME3000) are only for use with MES20 / AMM15-20 / or other 1000ppl flowmeters (because of the fixed 1 pulse/1ml. input needed to Batch Controller).
- Never swap LCD display heads between different flowmeter body sizes (display counts will not represent actual volume as they are pre-calibrated to the specific size meter).
- If in doubt, call ManuFlo.

# Magnetic Flowmeter Options

**Ideal for acidic or chemicals with solids**
**(conductivity requirement ≥ 20 - 50µS/cm)**

## CMM Series: Magflows (budget cost –batching)


- **No moving parts, no blockages, virtually maintenance free.**
- **Pulses in forward direction with Virtual empty pipe detection**
- Very economical. All Alloy/Stainless316 construction, Peek liner, Pressure 16bar<
- For liquid conductivity ≥ 50µS/cm., temp. to 90c, +24VDC

**CMM10: 15mm bsp-m ( 7mm bore), 1000 pulses/Litre, 0.5 - 30 L/min**
**CMM20: 20mm bsp-m (10mm bore), 500 pulses/Litre, 1.0 - 60 L/min**
**CMM25: 25mm bsp-m (20mm bore), 100 pulses/Litre, 5.0 - 250 L/min**

***NOTE: To assure accuracy and long term operation only use ManuFlo Magflows. ManuFlo are the Magflow experts.***

For +24vDC mags Use optional 12-24VDC step-up voltage converter for ME995, ME3000 or select channel of ME2008.

Part # CV12-24

## AMM-v2 Series: Magflows (Direct upgrade swap for MES20)


- No moving parts or blockages, virtually maintenance free
- **Pulses in forward flow direction Virtual empty pipe detection**
- Pressure to 1000Kpa, Compact design all S/S316,≥ 20µS/cm., BSP-m connection
- +12 to 24VDC powered –powered directly from ME995 or ME2008 +12vdc pwr rail.

**AMM15: 15mm connection ( 8mm bore), 1000 pulses/Litre, 1 - 35 L/min.**
**AMM20: 20mm connection (12mm bore), 1000 pulses/Litre, 3 - 100 L/min.**
**AMM25: 25mm connection (15mm bore), 500 pulses/Litre, 5 - 180 L/min.**

**New**

**If backflow is a concern install a pneumatic valve,**

# 5. other flow measurement options

## KMS K-Mags

- No moving parts.
- No blockages.
- Virtually maintenance free.


New

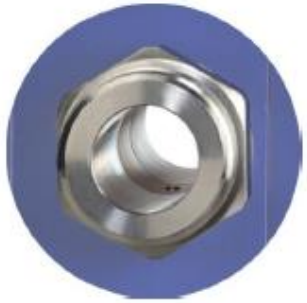
Pictured at a recent new Australian Concrete Batch plant - March-2019

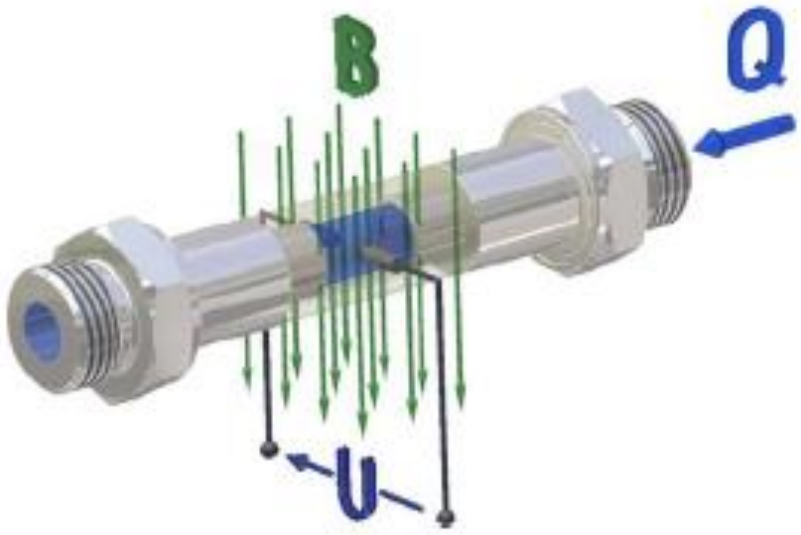
- **Ideal for high volume batch plants and or aggressive liquid batching applications**
- **Measures chemicals with high solid content, Acidic, Oxides, Slurries, Silica-Fume etc.**
- Sizes: 15 – 150mm.
- Series flow range: 0.5 – 10,000 LPM
- Displays Flowrate & totals.
- Pulse & 4-20mA output.
- **Dual Forward and Reverse Pulse**
- **Empty pipe detection**
- Other logic outputs
- For liquid conductivity ≥ 5µS/cm.
- AC or DC powered.

# Flowmeters- Magnetic Flowmeters ?

## Principle of Operation:

The magnetic inductive Mag flow sensor operates by the principle of induction,
That is, a DC voltage is induced by the movement of a conductor in a magnetic field:
The measuring sensor tube generates the magnetic field (B).
An electrically conductive liquid (Q) flows through the measuring sensor tube.
This generates a micro voltage which is captured by the two sensing probes (U).
The faster the flow velocity through the tube then the larger proportional voltage that is induced,
Processed by the electronics and transmitted as a known volume of liquid passed.






**Measures volumetrically with negligible accuracy changes regardless of specific gravities, densities or viscosities.**
**Means: No product specific re-calibration issues !!**

# Flowmeters –Selection Summary

Use the correct flowmeter for the type of liquid being measured.

- For accuracy and safety in dispensing Admixture use:
  - MES series positive-displacement flowmeters.
  - Electromagnetic flowmeters (must be 50ms>conductive liquid to measure).
  - KMS / RMS electromagnetic flowmeters. (must be 10ms> conductive liquid).

## Do NOT use:

Paddlewheel-type, Turbine, Ultrasonic type flowmeters or non positive displacement type flowmeters. They are not suitable for the accurate dispensing of Admixtures.

## Why?

Because the Admixture properties can easily cause the paddle wheel/turbine etc. to drag or stick, resulting in substantial undetected overdoses. Ultrasonics struggle with repeatability. Large accuracy changes with specific gravity / viscosity properties of liquids other than 1:0 s.g.

***NOTE: If unsure send a liquid sample to ManuFlo for suitability testing.***

# 6.

# PLUMBING and achieving Faster Volume Delivery Flow Rates

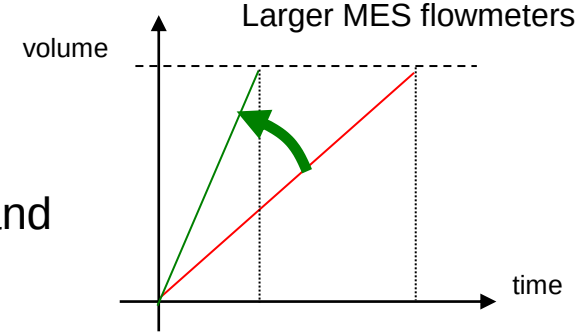
# 6. Achieving Faster Delivery/Volume Rates

## Advantages and Considerations

Larger MES flowmeters

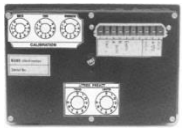
### Advantages

- Faster delivery rates.
- Can upsize MES20 flowmeter to MES25, 32, 40 or 50mm.
- Can use AMM/KMS Electromagnetic Flowmeters (faster max flows, no blockages, virtually maintenance free).




### Considerations

- Must upsize flowmeter or swap out to magflows or upsize pumps and upsize pipe diameters.
- Increased costs incurred
- Possible lower resolution - flowmeter pulse may represent a larger liquid unit quantity
  e.g. MES20 = 1000 pulse/Litre, MES25 =555 pulses/Litre.
- Accuracy can suffer if small quantities are attempted batched quickly.
- Not suitable with standard Batch Controllers models ME995-1 to ME995-6 (they are for MES20 1000ppl flowmeters). For larger flowmeters, **use only Batch Controllers ME995-7, ME995-7D, ME995-7D-S or ME3000** with K-factor calibration adjustment, or use ME2000, or UIC Interface cards to interface to computer.



- If injecting into water line, flowmeter selected must deliver the admix within the time cycle prior to end of water batch cycle

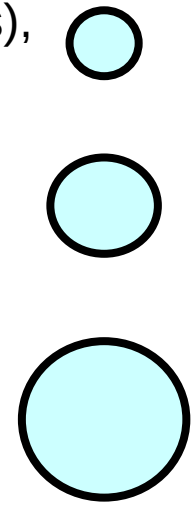
# Plumbing Install Guide (Admixtures)

## Selection of Pipeline Diameters


► For low flowrates and small batch quantities of liquid (approx < 2000mls), use ½" diameter pipe or hose (after the flowmeter).

► For medium to high flowrates, use ¾" to 1" diameter pipe.

► For very high flowrates, use 1¼".



NOTE: Pipeline can be
- Flexible reinforced hose (NOT flexible expandable soft hose)
- Rigid PVC
- Metallic

- For higher density chemicals, higher head requirements or injecting into water lines, consider positive displacement pumps to maintain or increase flowrates.

- **For faster flow, consider larger flowmeters (MES25, MES32, MES40. or Magflows)**

# Dispensing options for ADMIXTURE into concrete mix

**1.**

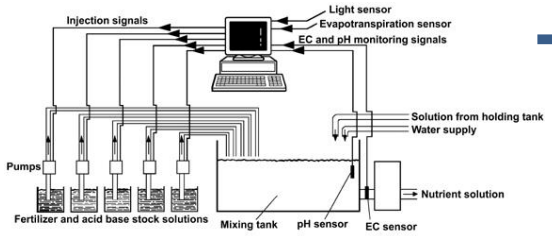
**Admixtures injected into the waterline –within the flowmetered water batch time cycle**.

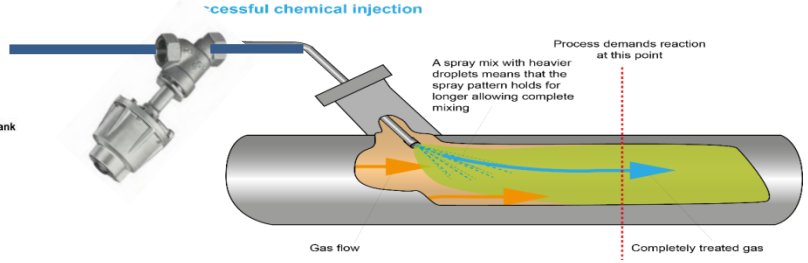
Admixture lines can be plumbed into the waterline and admixture sequenced to batch during the water dump time cycle when flowmetered. (Excellent for thoroughly mixing the admix).

Bigger admix flowmeters MES or MAGS sometimes required to batch with say 30 seconds.

Must use pneumatic solenoid valves at end of line near injection point to avoid syphoning issues.

Or admixture can be batched into the water hopper within the required time cycle.



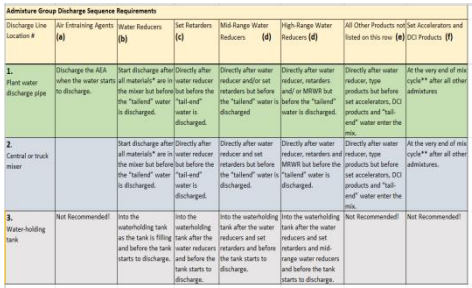




**2.**

**Admixture Discharge line locations and sequencing direct to the Sok (loading point chute) of truck inlet barrel.**

- **For further info refer to the ManuFlo website links:-**

- http://www.manuelectronics.com.au/pdfs/Admix-Discharge.pdf
- https://www.ccanz.org.nz/page/Admixtures.aspx



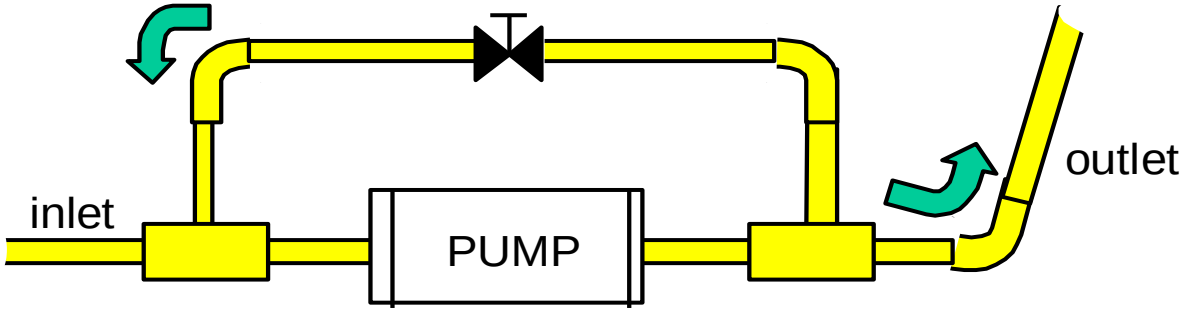
Admixture Group Discharge Sequence Requirements

| Discharge Line Location # | Air Entraining Agents (a) | Water Reducers (b) | Set Retarders (c) | Mid-Range Water Reducers (d) | High-Range Water Reducers (d) | All Other Products not listed on this row (e) | Set Accelerators and DCI Products (f) |
|---|---|---|---|---|---|---|---|
| 1. Plant water discharge pipe | Discharge the AEA when the water starts to discharge. | Start discharge after all materials* are in the mixer but before the "tailend" water is discharged. | Directly after water reducer but before the "tail-end" water is discharged. | Directly after water reducer and/or set retarders but before the "tailend" water is discharged | Directly after water reducer, retarders and/ or MRWR but before the "tailend" water is discharged. | Directly after water reducer, type products but before set accelerators, DCI products and "tail-end" water enter the mix. | At the very end of mix cycle** after all other admixtures |
| 2. Central or truck mixer | | Start discharge after all materials* are in the mixer but before the "tailend" water is discharged. | Directly after water reducer but before the "tail-end" water is discharged. | Directly after water reducer and set retarders but before the "tailend" water is discharged. | Directly after water reducer, retarders and MRWR but before the "tailend" water is discharged. | Directly after water reducer, type products but before set accelerators, DCI products and "tail-end" water enter the mix. | At the very end of mix cycle** after all other admixtures. |
| 3. Water-holding tank | Not Recommended! | Into the waterholding tank as the tank is filling and before the tank starts to discharge. | Into the waterholding tank after the water reducers and before the tank starts to discharge. | Into the waterholding tank after the water reducers and set retarders and before the tank starts to discharge. | Into the waterholding tank after the water reducers and set retarders and mid-range water reducers and before the tank starts to discharge. | Not Recommended! | Not Recommended! |

# Pump Selection -Admixtures

- When 20mm MES20 flowmeters are used with fluids of specific gravity 1 - 1.25, then use **centrifuge pumps** of 0.5 - 1 horse power (e.g. 1" Onga 413 or Davey SJ35-04 pumps. When using larger capacity flowmeters, a proportionally larger pump will apply). A flowrate upto 1.0 Litre per second can be achieved, depending on head height. You can restrict pump speed without damage to these type of pumps.

- For higher density fluids, **positive displacement (PD) pumps** or other types of positive displacement pumps (e.g. Mono) are more suitable. Because of the pressures generated by PD pumps, the flow is best controlled by using an inlet-to-outlet bypass flow valve to recirculate the flow line. (can push air)




**Note:** This method of restriction of flow eliminates air being counted by MES flowmeters when admix storage tank is empty.

# Plumbing Install Guide (Admixtures)

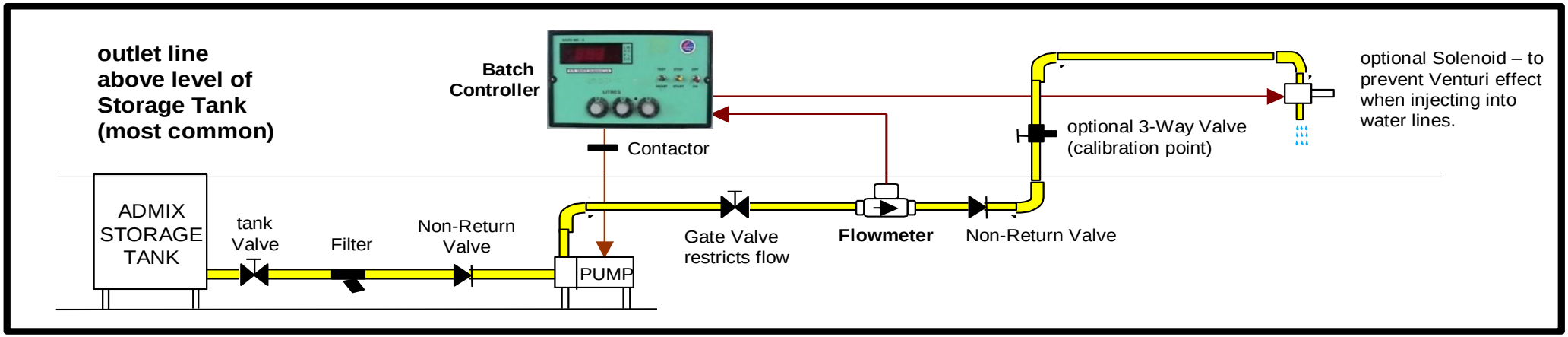
## Typical admixure dispensing system setup with MES flowmeters

**If the outlet point is above the top of the storage tank (the most commonly used setup)**, you will at least require the following equipment:

- A pump,
- Non-return valves or spring loaded check valves (12psi),
- Flow restriction gate or ball valve, a flowmeter with pulse output and,

optionally:

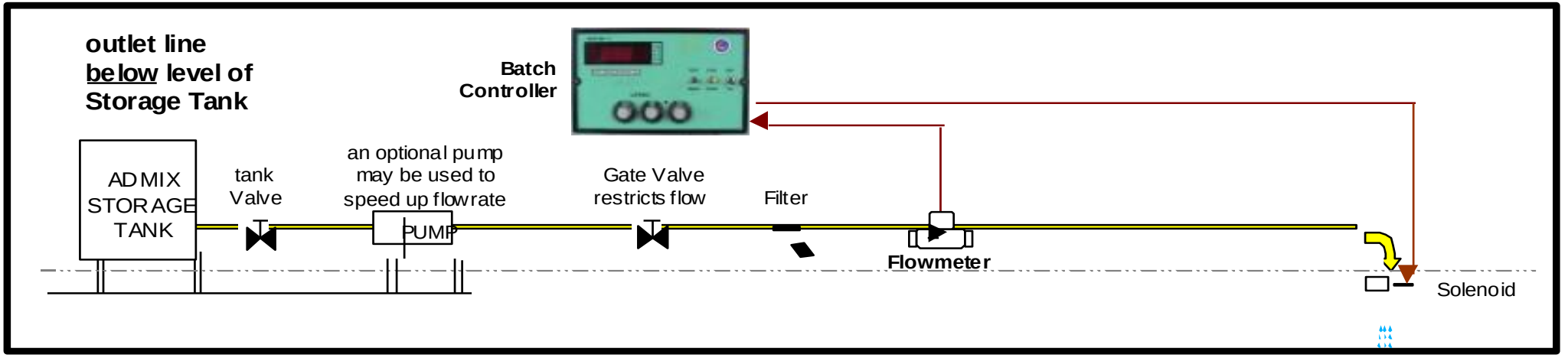
- A solenoid valve (air-assisted ball valve type) for instant shut off of flow, recommended to prevent the Venturi effect when injecting into water lines, but may not be required if the installation has reasonable head height.
- A 3-Way Valve to provide an easily accessible calibration point.



# Plumbing Install Guide (Admixtures)

**If the outlet point is <u>below</u> the level of the storage tank**, then the equipment you will at least require is:

- a flow control solenoid valve,
- a flow restriction gate or ball valve, and
- a flowmeter with pulse output.

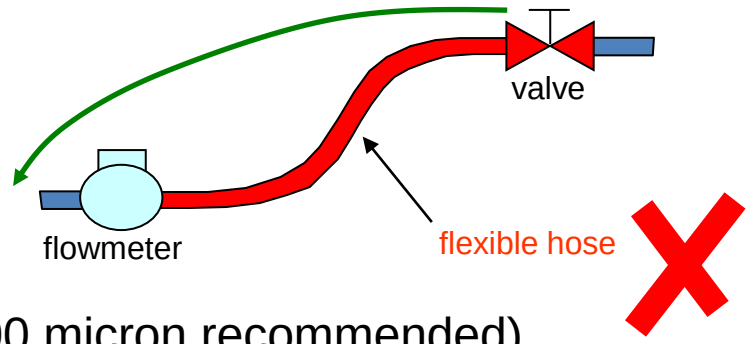


# Operational Issues - Piping

Common causes of batch overrun:

- Flowmeter is clutching, or chamber is worn out.
  Clutching can cause more liquid to be dispensed than is measured, but if significant then the ME995 or ME2008 Systems will Pulse Fail consistently.
  - ❑ clean or replace chamber.

- After flowmeter, any restriction (e.g. valve) at end of flexible hose will allow expansion of hose line in hot conditions, introducing a contraction/expansion “squeegee” effect that affects the amount dispensed at the end of a batch.
  - ❑ move restriction to before flowmeter;
  - ❑ use rigid/reinforced hose/pipe.




- Fluid particles block meter.
  - ❑ clean measuring chamber;
  - ❑ install filter prior to flowmeter (800 – 1000 micron recommended).
  - ❑ or replace with MAGFLOWS

# 7.

# Batch Controllers

## (ME995)

- Over 15,000 units in use.
- Simple & easy to use.
- Used in many countries around the world.
- Built with CMOS bullet proof technology.
- Proven technology earlier models still in use since 1982.
- Many model variants available.
- Ideal for manual batch plants or fitout and retain for PLC/Computer controlled batch plants integrating its safety features and a manual backup batch facility.

ME995 integrated in a PLC/computer controlled Batch Plant

# ME995 Batch Controllers

## Why still use sight bottles ? No need !

ME995's are simple to use, with inbuilt safety features,
near zero maintenance, service on average once only every 15-25 years.
Incredible proven long lasting durability.

Simple swap over –unplug/plug-in with another, return to ManuFlo for service & re-use.
Over 15,000 units used daily with MES20 flowmeters (+ others).

Many earlier models still in use since the 1980's (pictured below).
PLC/computer controlled options or fit-out later.

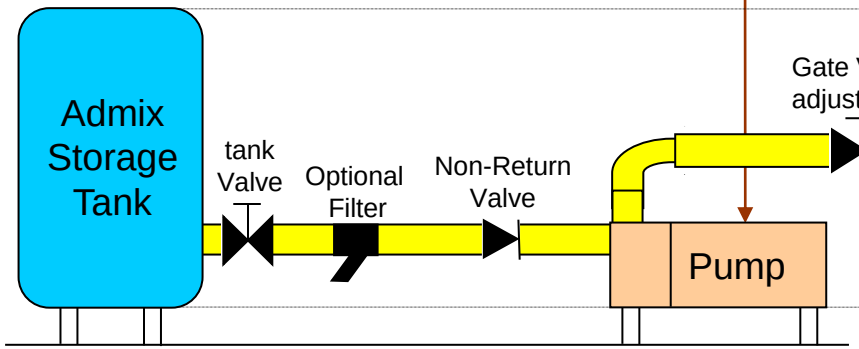

# Semi-Automatic Batching

*Latest Country Install Ghana Africa – dispensing chemicals easily, safely, simply & reliably !!*

Controllers can be configured to dispense 2 admixture products 2pumps/2flowmeters via 2way product control switch (#S1-2)


Used worldwide

**Batch Controller- ME995**


Quantity set by: Operator
Delivery controlled by:
ME995 Batch Controller with multiple safety features.
**Some earlier models still in use since 1980 !!**

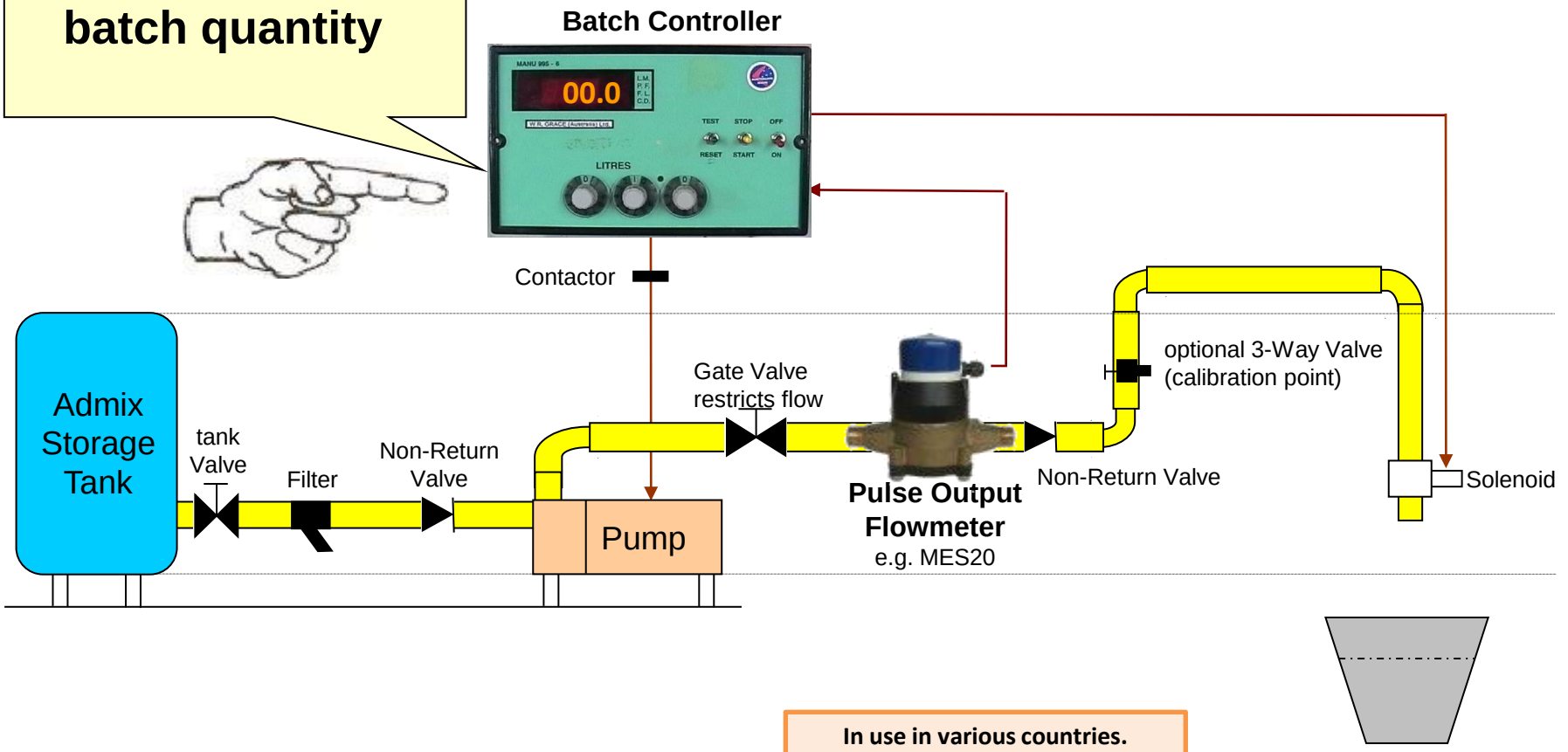
**Optional:**
**AMM-v2 Mag-flowmeter with no moving parts**

# Operation of Batch Controllers

**Batch Controller starts and stops flow so that a requested quantity Is safely monitored accurately and dispensed.**

**(1) Operator sets batch quantity**






**In use in various countries.**
**e.g. Australia/NZ, Asia-Pacific, South America, Middle-East**

# Semi-Automatic Batching


All
LEDs off.

**(2) Operator presses RESET, then STARTs batch.**


Contactor

**Batch Controller**

Admix Storage Tank

tank Valve

Filter

Non-Return Valve

Pump

Gate Valve restricts flow

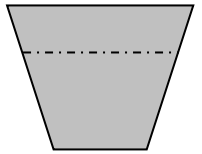
**Pulse Output Flowmeter**
e.g. MES20

optional 3-Way Valve (calibration point)

Non-Return Valve

Solenoid

*outlet line at same level as Storage Tank*



# Semi-Automatic Batching


Contact Drive LED goes on.

**(3) Batch Controller starts pump / opens solenoid to start flow.**


Contactor

**Batch Controller**

Admix Storage Tank

tank Valve

Filter

Non-Return Valve

Pump

Gate Valve restricts flow

**Pulse Output Flowmeter**
e.g. MES20

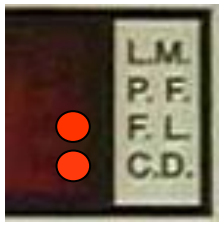
optional 3-Way Valve (calibration point)

Non-Return Valve

Solenoid

*outlet line at same level as Storage Tank*

# Semi-Automatic Batching




Contact Drive & FLow LEDs on.

**(4) Batch Controller monitors pulses from flowmeter to determine quantity delivered.**


Contactor

**Batch Controller**

Admix Storage Tank

tank Valve

Filter

Non-Return Valve

Pump

Gate Valve restricts flow

**Pulse Output Flowmeter**
e.g. MES20

optional 3-Way Valve (calibration point)

Non-Return Valve

Solenoid

*outlet line at same level as Storage Tank*

# Semi-Automatic Batching


CD, then FL LED, go off.

Batch Target was 9.2 litres

**(5) When desired quantity dispensed, Batch Controller stops pump / closes solenoid to stop flow.**


Contactor

**Batch Controller**

Admix Storage Tank

tank Valve

Filter

Non-Return Valve

Pump

Gate Valve restricts flow

**Pulse Output Flowmeter**
e.g. MES20

optional 3-Way Valve (calibration point)

Non-Return Valve

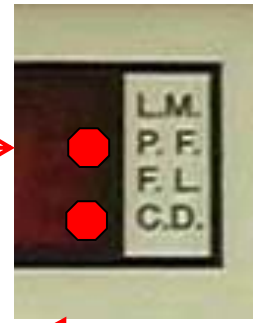
Solenoid

*outlet line at same level as Storage Tank*

**RESULT: Chemical Volume delivered safely and efficiently with a high degree of accuracy.**

# ME995 Series Batch Controllers - Safety Features

- **LIMIT (LM) LED** - illuminates if:
  - batch cycle reaches locked internal maximum limit, or
  - circuit diagnostics detect internal chip problem, with subsequent automatic shutoff of voltage contact drive.
- **PULSE FAIL (PF) LED** - activates if:
  - no flowmeter pulses arrive within initial 1.5 seconds (variable), or
  - pulses are interrupted or intermittent during batch cycle (fall below variable pulse scanning time, typical 30 Hz) with subsequent automatic shutoff of voltage drive to pump.
- **FLOW (FL) LED** - indicates pulses coming from field flowmeter, or if test is used.
- **CONTACT DRIVE (CD) LED** - output drive activated to pump or solenoid.





**Audible ALARM** sounds:

- momentarily upon completion of batch cycle,
- continuously if **PULSE FAIL** or **LIMIT** occurs LEDs are activated or if overflow runs 1000 ml (variable) past selected batch quantity.

**Warning: If Contact or Flow LED indicators are on,**

**but contoller is not counting, discontinue use –consult troubleshoot guide or call for service.**

# Batch Controllers – Selection Questions

(1) What is the minimum & maximum batch quantity volumes ?

(2) What is size of the intended connected flowmeter ?

(3) What batch quantity resolution units do you require ?

(4) Is a PLC/computer system being connected to the system ?

(5) What is the display to show – total dose, or delivered batch quantity ?

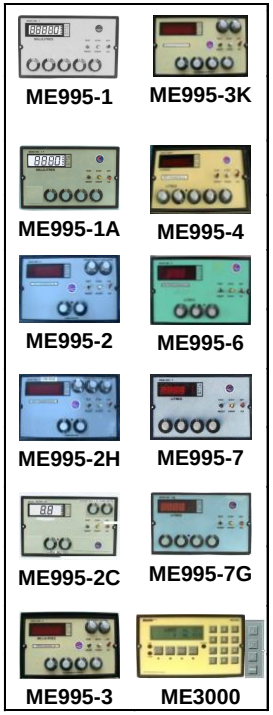
(6) Is Variable Dosage required ? If so:

(7) What dose units do you want ? (Kg's or m3)

(8) What is the maximum dose-rate ?

(hence do you require a maximum internal limited Dose rate fitted ?)

# Batch Controllers – configuration options



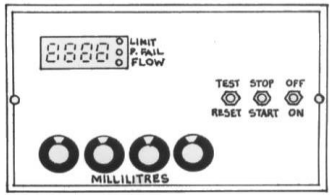
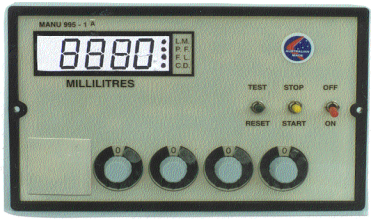
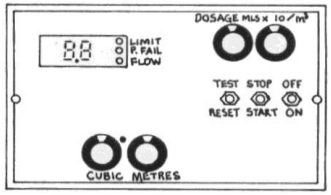
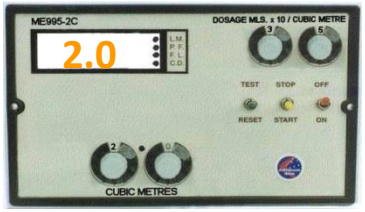
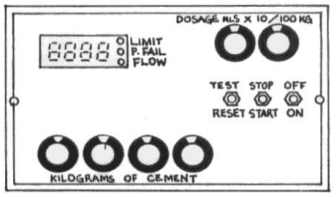
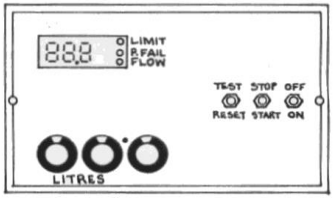
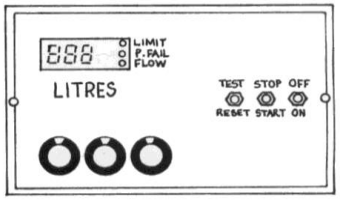

| | Batch Quantity | | | Dosage | | | Display | | Input from Flowmeter (2) | | Suggested Doselimit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Order Code | Units | Increment | Max Setting | Variable Dosage | Units | Max Setting | Shows | Units | PPL Accepted | K-factor Adjustment | |
| **ME995-1** | millilitres | 10 ml | 90000 | no | n/a | n/a | batch quantity | millilitres | 1000 | no | 30000 ml |
| **ME995-1A** | millilitres | 10 ml | 9000 | no | n/a | n/a | batch quantity | millilitres | 1000 | no | 3000 ml |
| **ME995-2** | cubic metres | 0.1 cubic metres | 9.0 | yes | mls x 10 / cubic metre | 99x10 | total dosage | millilitres | 1000 | no | 200mls/m3 |
| **ME995-2H** | cubic metres | 0.1 cubic metres | 9.0 | yes | mls x 10 / cubic metre | 900x10 | total dosage | millilitres | 1000 | no | 2000mls/m3 |
| **ME995-2C** | cubic metres | 0.1 cubic metres | 9.0 | yes | mls x 10 / cubic metre | 99x10 | batch quantity | cubic metres | 1000 | no | 200mls/m3 |
| **ME995-2CH** | cubic metres | 0.1 cubic metres | 9.0 | yes | mls x 10 / cubic metre | 900x10 | batch quantity | cubic metres | 1000 | no | 2000mls/m3 |
| **ME995-3** | kg of cement | 10 kg | 9000 | yes | mls x 10 / 100 Kg | 99x10 | total dosage | millilitres | 1000 | no | 900mls/100kg |
| **ME995-3H** | kg of cement | 10 kg | 9000 | yes | mls x 10 / 100 Kg | 900x10 | total dosage | millilitres | 1000 | no | 20000mls/100kg |
| **ME995-3K** | kg of cement | 10 kg | 9000 | yes | mls x 10 / 100 Kg | 99x10 | batch quantity | kg | 1000 | no | 900mls/100kg |
| **ME995-3KH** | kg of cement | 10 kg | 9000 | yes | mls x 10 / 100 Kg | 900x10 | batch quantity | kg | 1000 | no | 20000mls/100kg |
| **ME995-4** | Litres | 0.01 L | 99.990 | no | n/a | n/a | batch quantity | Litres | 1000 | no | 90 litres |
| **ME995-6** | Litres | 0.1 L | 99.9 | no | n/a | n/a | batch quantity | Litres | 1000 | no | 90 litres |
| **ME995-7** | Litres | 1 L | 9999 | no | n/a | n/a | batch quantity | Litres | 1 - 999 | yes | 9000 litres |
| **ME995-7D** | Litres | 0.1 L | 999.9 | no | n/a | n/a | batch quantity | Litres | 1 - 999 | yes | 900 litres |
| **ME995-7G** | Litres | 0.01 L | 99.99 | (1) | n/a | n/a | batch quantity | Litres | 1000 | no | |
| **ME995-7H** | Litres | 10 L | 99990 | no | n/a | n/a | batch quantity | Litres | 1 - 999 | yes | Consult manuFlo |
| **ME3000** | ml, L, KL | from 1ml | 9,999,999KL | no | n/a | n/a | batch quantity | ml, L, KL | 0.001 - 9999.999 | yes | For options |

Batch controller options: 110vac supply, 24 VDC supply, external command plug (stop/start/reset), PLC/Computer interfaces, 2 product changeover switch.

Notes - (1) : ME995-7G has as standard a 2-product selection switch with central computer hold, and a -5P interface plug. (2) Examples of 1000 pulse/Litre flowmeters are MES20, MEA15, MEK20.

**Typical maximum internal limits; are adjustable and configured at time of order**

# Older Model Batch Controllers – ME188 Series

| ME188 Built 1982 to 1994 | | | ME995 Built 1995 to present |
|---|---|---|---|
| ME188-1 |  | superseded by |  ME995-1A |
| ME188-2 |  | superseded by |  ME995-2C |
| ME188-3 |  | superseded by |  ME995-3K |
| ME188-6 |  | superseded by |  ME995-6 |
| ME188-7 |  | superseded by |  ME995-7 |

# ME995-2 Batch Controller - Use

- For use with Manu AMM15, MES20 and other 1000 ppL flowmeters
- **Mainly used in computer/PLC controlled batch plants**
- **Set on maximum permitted batch limits**

**DOSAGE 35 x 10 mls per m3.**
= 350 mls per cubic metre selected

Shows delivered Dose in ML


Batch Quantity up to 9.0, increment 0.1
e.g. **2.0 cubic metres**

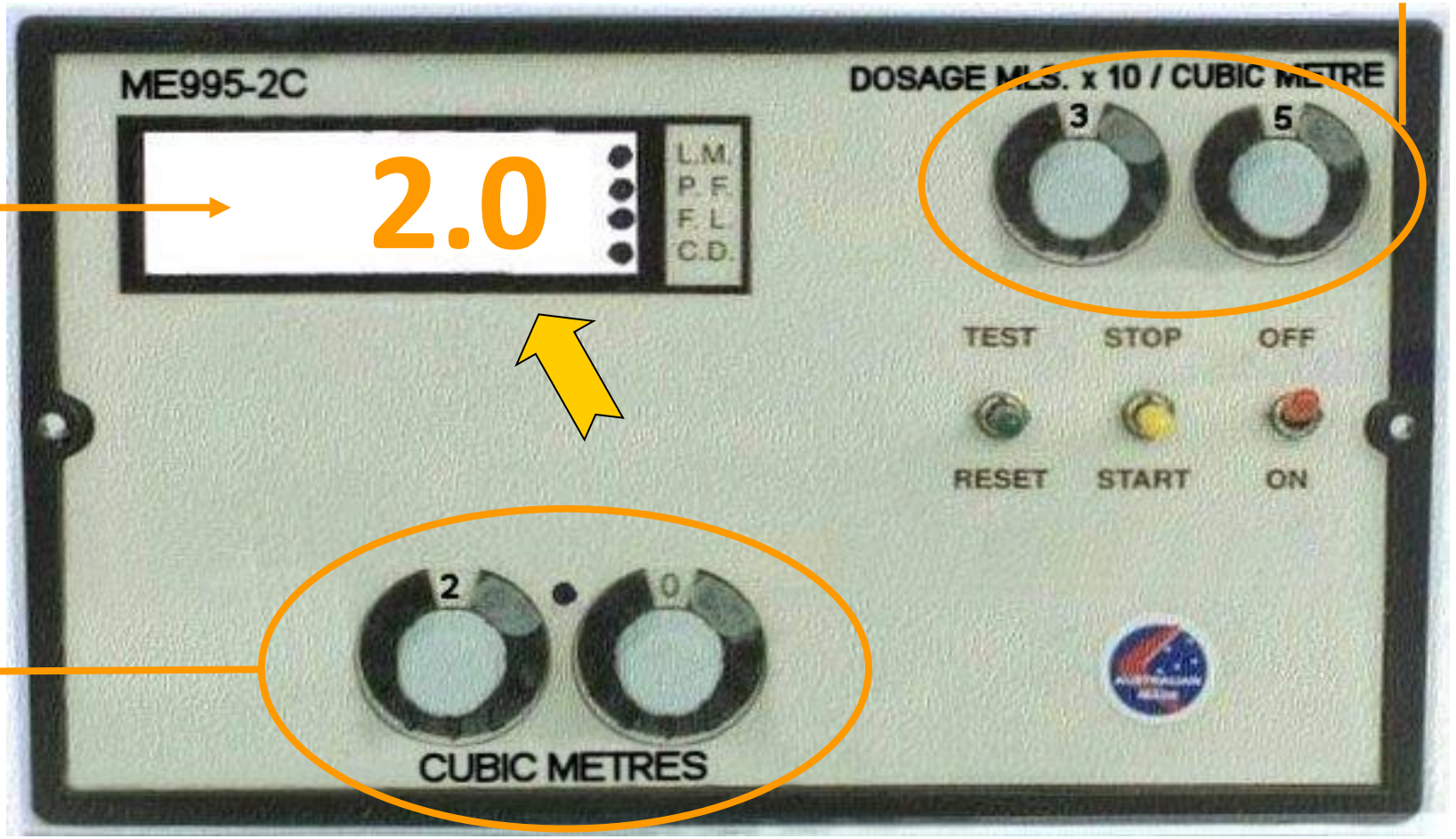
**Formula is: 350mls dosage rate x 2.0 m3 load of concrete = 700mls in liquid delivered and shown on display**

# ME995-2C Batch Controller - Use

- For use with Manu MES20 and other 1000 ppl flowmeters.
- **Mainly used in manual batch plants**

**DOSAGE 35 x 10 mls per m3.**
= 350 mls per cubic metre selected

Shows delivered Batch Quantity in cubic metres selected




Batch Quantity up to 9.0, increment 0.1 e.g. 2.0 cubic metres

**Formula is: 350mls dosage rate x 2.0 m3 load of concrete = 700mls in liquid delivered, and shown in m3 selected on display**

# ME995-3 Batch Controller

## Ideal for Computer plants to compare volumetric display in MLs.

- 5 Digit LED display.
- 4 x LED status indicators.
- Variable doserate selection.
- Display counts in total millilitres of dosage.
- Preact function and preset maximum limit
- Missing pulse detection
- Interchangeable with earlier ME188 models
- For use with Manu MES20, MEA15 1000 ppl flowmeters.
- Optional PLC and computer interface.
- Mainly used in computer/PLC controlled batch plants

| | | Display | |
|---|---|---|---|
| | | shows | units |
| * | ME995 - 3 | total dosage | ml |
| | ME995 - 3K | batch quantity | kg |

**Doserate**
**mls x 10 per 100kg**
**max 99 x 10**

**Shows Total Dosage in ML**


**Batch Quantity**
**up to 9000, increment 10**

# ME995-3 Batch Controller - Use

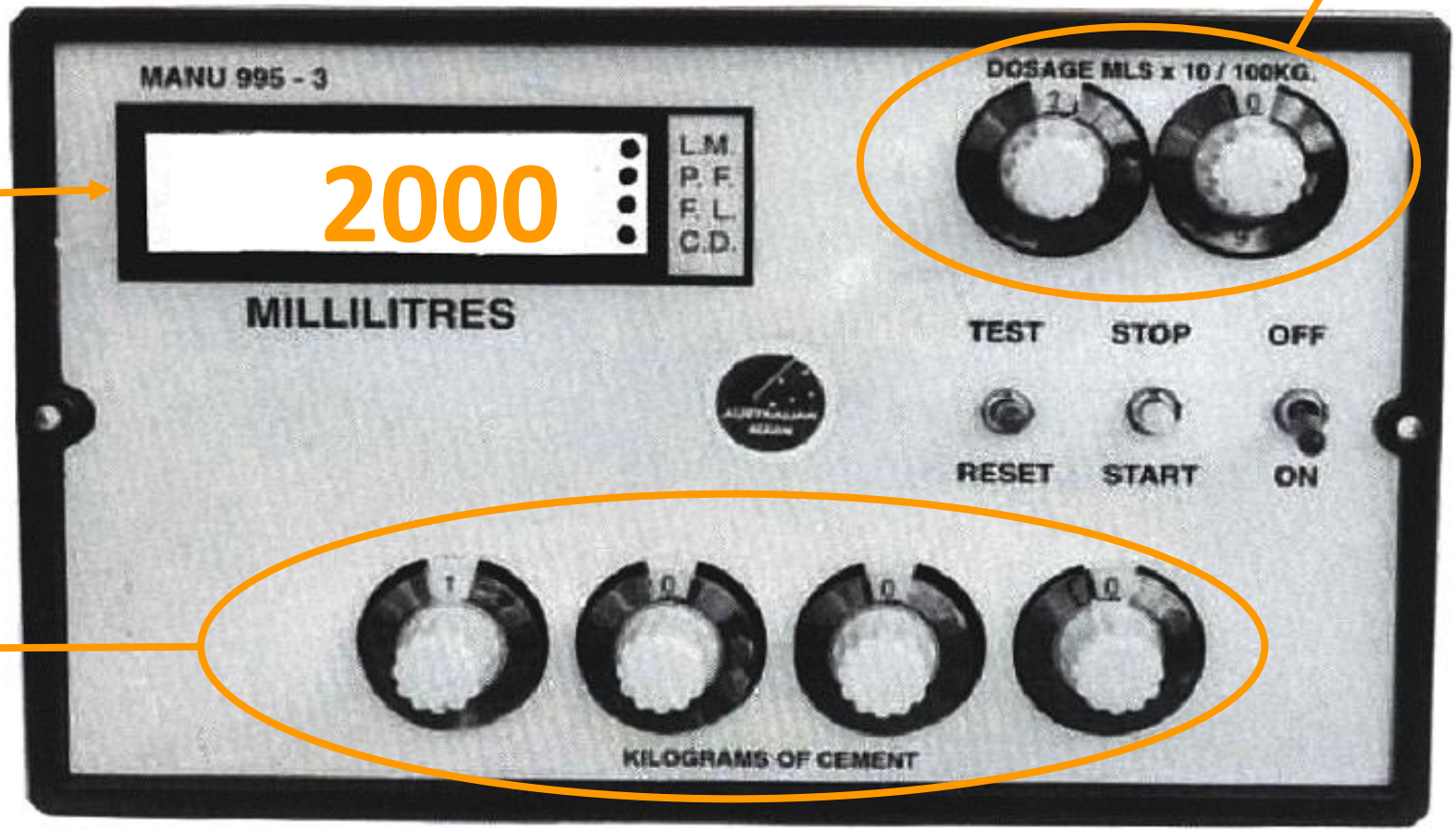
For use with Manu MES20 and AMM20 1000 ppl flowmeters

- **Mainly used in computer/PLC controlled batch plants**
- **Set on maximum permitted batch limit**

**DOSERATE**
Max 99 x10
e.g. 20 x 10ml/100kg

Shows delivered Dose in ML

Batch Quantity up to 9000, increment 10 e.g. 1000 kg



# ME995-3K Batch Controller – Features / use

- Variable doserate blending preset batch controller
- Rotary knob selector switches, for easy select of:
  - Doserate (top 2 selectors)
  - Batch Quantity (bottom 4 selectors)
- 4 Digit LED display - Display counts upward in 10 kg lots to kilograms of cement selected
- 4 x LED status indicators.
- Preact (overflow deduct) function
- Preset maximum batch limit
- Missing pulse detection safeties
- Contact output drive is via 1 (or optionally 2) relays
- For use with Manu MES20 20mm 1000 ppl flowmeters
- Optional PLC and computer interface
- **Mainly used in manual batch plants**

**MLs x 10 per 100KG**
**Max. Setting: 99x10**

**Shows Batch Quantity in KG**


**Batch Quantity up to 9000, increment 10**

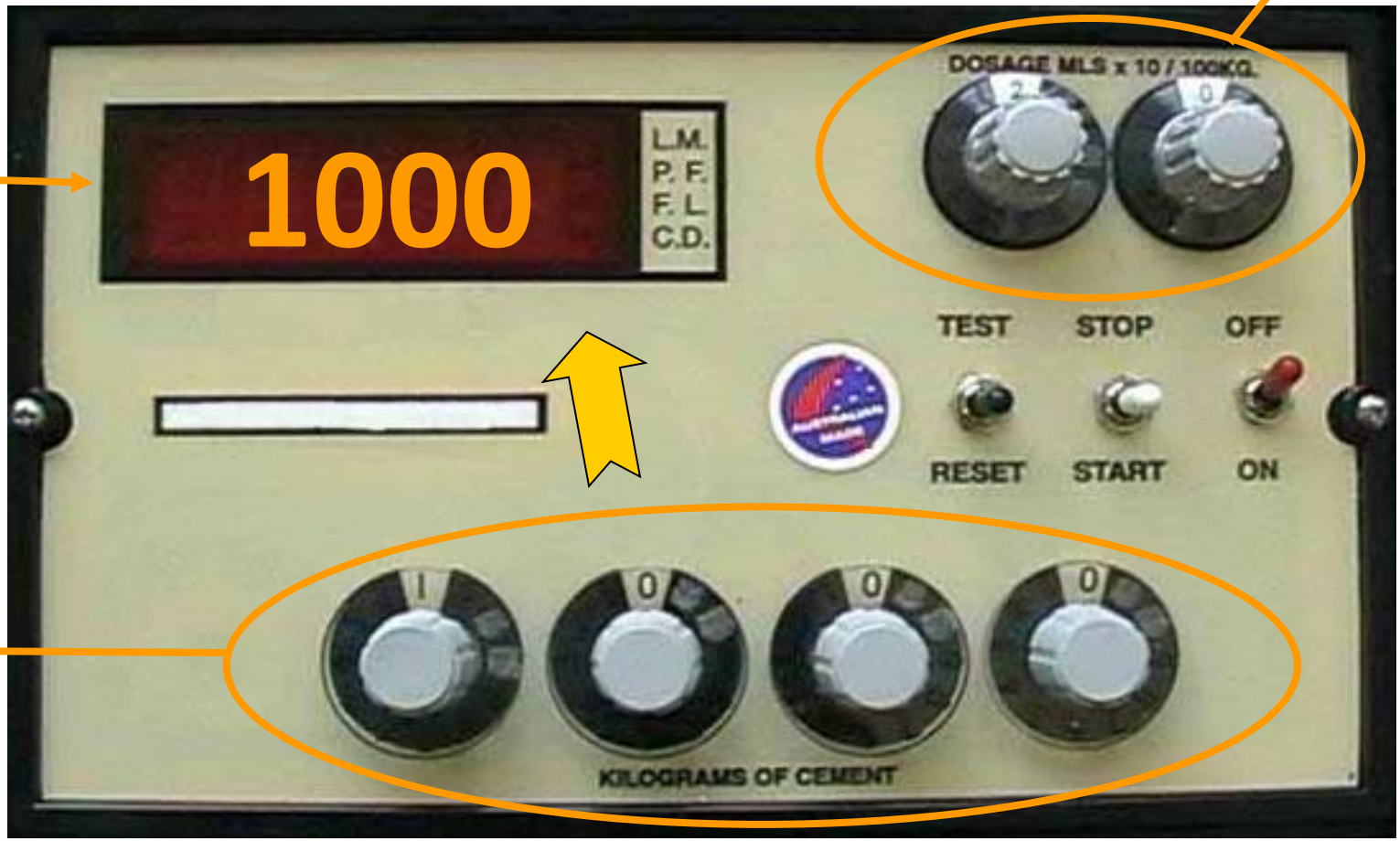
# ME995-3K Batch Controller - Use

For use with ManuFlo AMM20 and MES20
1000 ppL flowmeters **(mainly used manual batch plants)**

**DOSAGE: 20 x 10 mls.**
e.g. = 200mls./100kg

Shows delivered Batch Quantity in kg

Batch Quantity up to 9000, increment 10 e.g. 1000 kg cement.




**Formula = 200mls dosage rate x (10 lots of 100KGs) load of cement = 2000mls in liquid delivered, shown in KG selected**

# ME995 HIGH DOSERATE batch controllers- Use

## For use with ManuFlo 1000 ppL flowmeters

**(mainly used manual batch plants)**

Shows delivered dosed quantity in m3

**HIGH DOSAGE: 200 x 10 mls./m3**
e.g. = 2000mls./m3


Shows delivered Dosed quantity in KG's of cement

**HIGH DOSAGE: 900 x 10 mls./100kg**
e.g. = 9000mls./100kg


Batch Quantity up to 9.0 m3

.

Batch Quantity to 9000 kg cement.

| WARNING: See pages 88-90 | MODELS: |
|---|---|
| These units can dose chemical up to | ME995-2CH |
| 9 litres per m3 or 100KG's of cement. | ME995-2H |
| ON REQUEST : DOSE LIMITS CAN BE | ME995-3KH |
| INTERNALLY LOCKED AT NOMINATED SETTING | ME995-3H |

**Formula = 200mls dosage rate x (10 lots of 100KGs) load of cement = 2000mls in liquid delivered, shown in KG selected**

# ME995-4 Batch Controller - Use

For use with Manu MES20 and AMM20 1000 ppl flowmeters

Shows delivered Batch Quantity in Litres

Batch Quantity up to 99.990, increment 0.01 L e.g. 3.000 Litres

# ME995-6 Batch Controller

For use with ManuFlo AMM20 and MES20 1000 ppl flowmeters

Shows delivered Batch Quantity in Litres

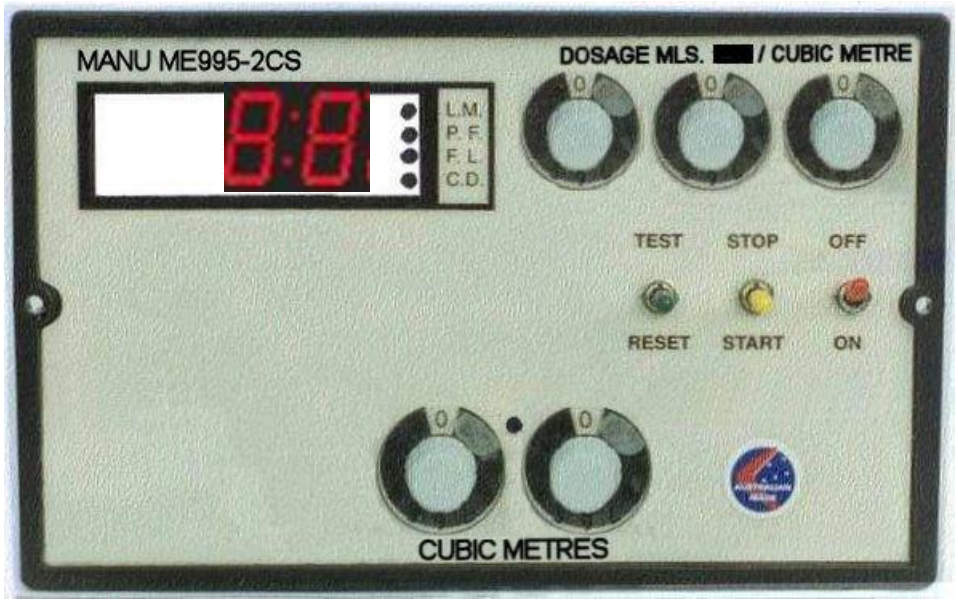
Batch Quantity up to 99.9, increment 0.1 L e.g. 1.0 Litres

# CAREFULL – of variants ME995(-S) Models

**No x10 Scaling on Doser Dials (HANSON –NSW-VIC ??)**

## ME995-2CS

**Straight mls /m3 selection**




## ME995-3KS

**Straight mls /100kg selection**


- **3 dials for direct selection of doserate**
- **No longer mls x10 calculation required**
- **First dial is fixed at zero**

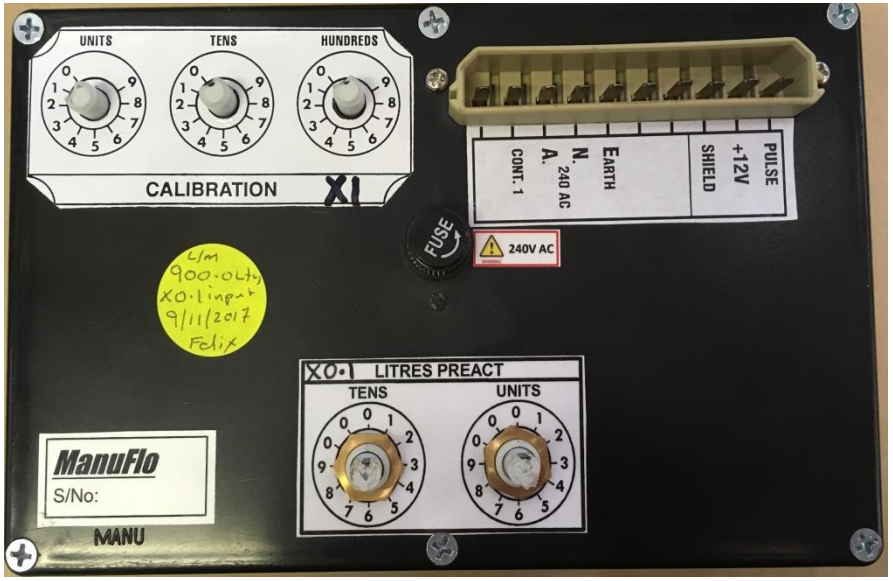
**Introduced due to some batchers miscalculating with the doserate mls x 10 option.**

# ME995-7DS / ME995-7D / ME995-7 Batch Controllers

## ( with x1 input ) K-Factor calibration adjustment precision option.

For use with ManuFlo MES20-S, MES20-S-T, MES25, AMM25 etc
and other flowmeters where pulse output values are NOT 1000 ppl.

K-Factor adjustment U,T,H →
(units/tens/hundreds)
Turn the flat shaft pointer
to the desired calibration
Setting value.
e.g. MES-S-T
UTH = 580 (HTU=085)
i.e. 85 pulses per 0.1 litre.




Pre-act (overflow deduct)


**ME995-7D-S** 3 dial to 90.0 Litres


**ME995-7D** **4** dial to 900.0 Litres

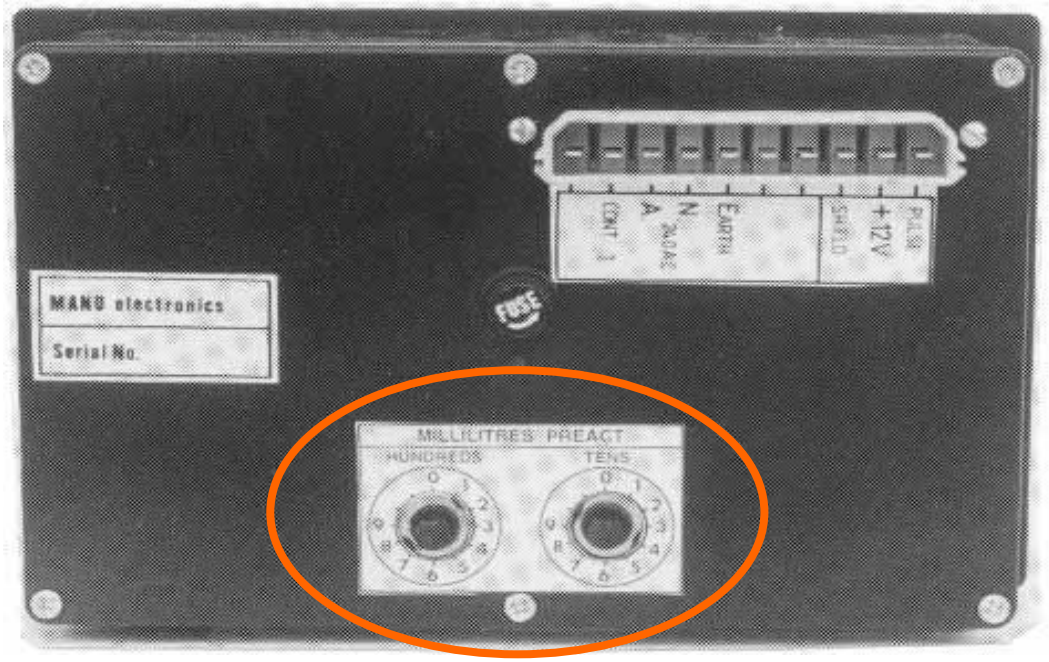
**Final Calibration:**

- If the liquid collected is **higher** than value shown on display, then **decrease** the calibration input set value (K-factor) by the same % difference.
- If the liquid collected is **less** than value shown on display, then **increase** the calibration input set value (K-factor) by the same % difference
- Note: Finally then set the Pre-Act to compensate for ant overrun from batch target..

# Batch Controller Pre-act Explained

**PREACT: Calibrating inflight overflow deduct:**

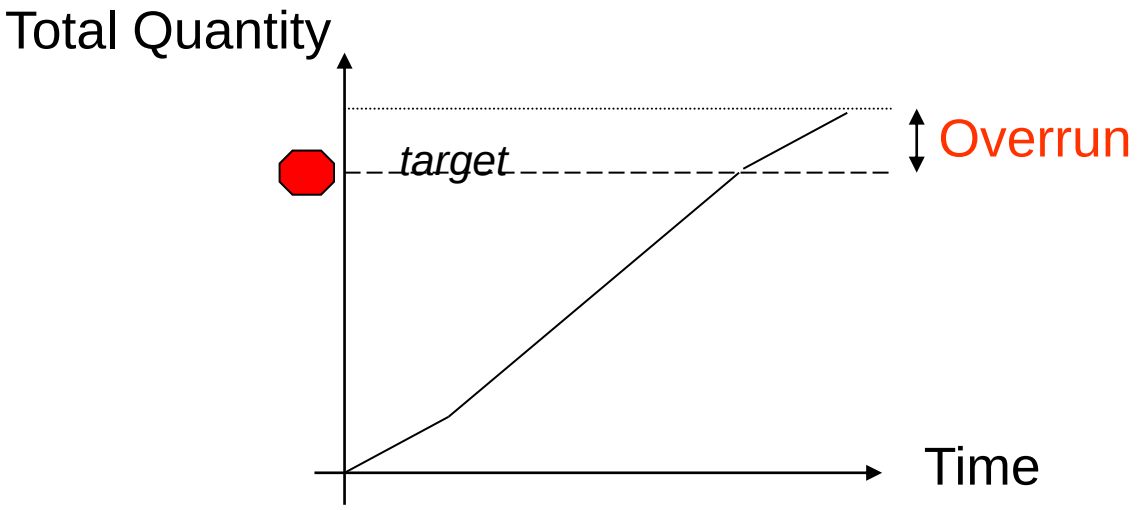
- Is via **two rotary knobs** marked (on ME995) “HUNDREDS” and “TENS" of mls located at the rear of the Batch Controller. (ME995-6 “TENS” & “UNITS”)
- As the batch display will indicate total kilograms of cement at the selected doserate, a calculation must be performed to convert the overrun displayed into actual overflow millilitres of dose.

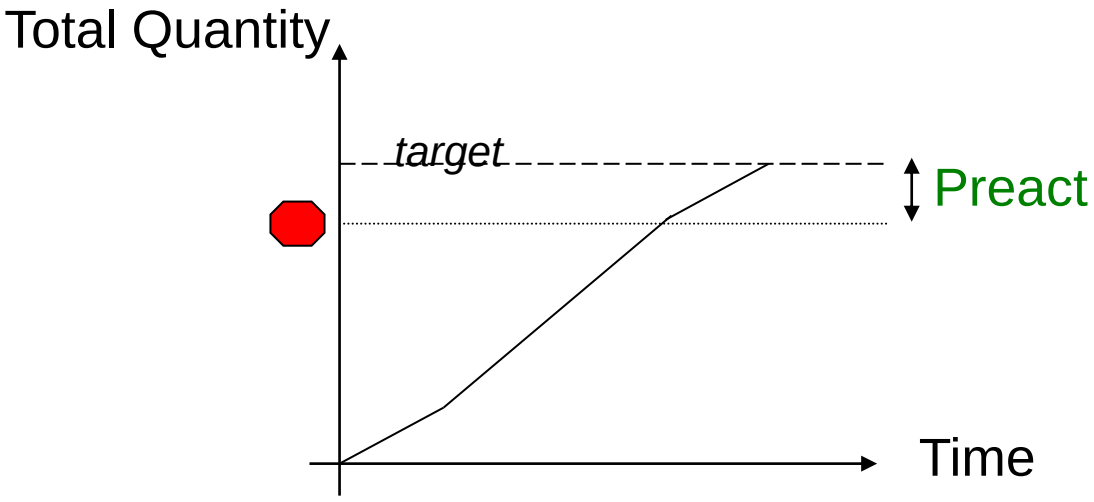



**PREACT KNOBS at rear of batch controller**

*NOTE: You cannot set a batch quantity below any set PREACT value. The controller will not start.*

# Batch Controller Pre-act



# Batch Controller Preact

## ME995-6, Example 1

- Total Litres selected was 11.2 Litres
- Actual quantity delivered shown on display was 11.4 litres

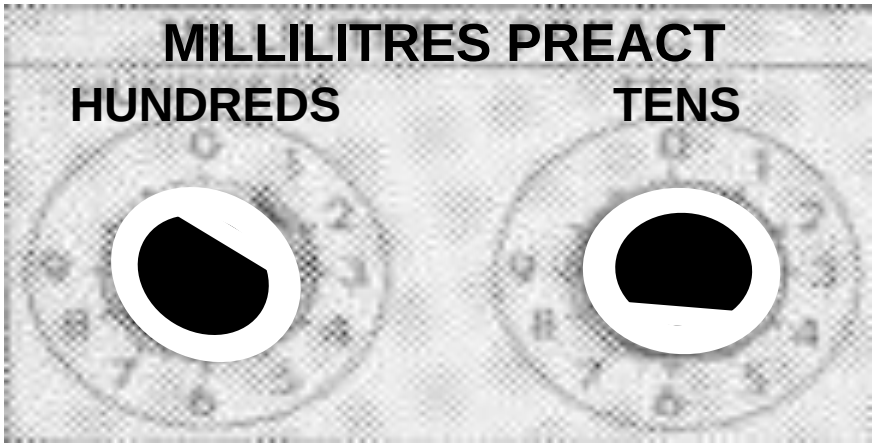
- Overflow is 0.2 Litres

- Set the Preact to TENS=0 and UNITS=2

- The flat shaft with notch is griped and turned to point of desired setting.

**ME995-6**


**ME995-1A, -1 (set on 16 = 160mls.**



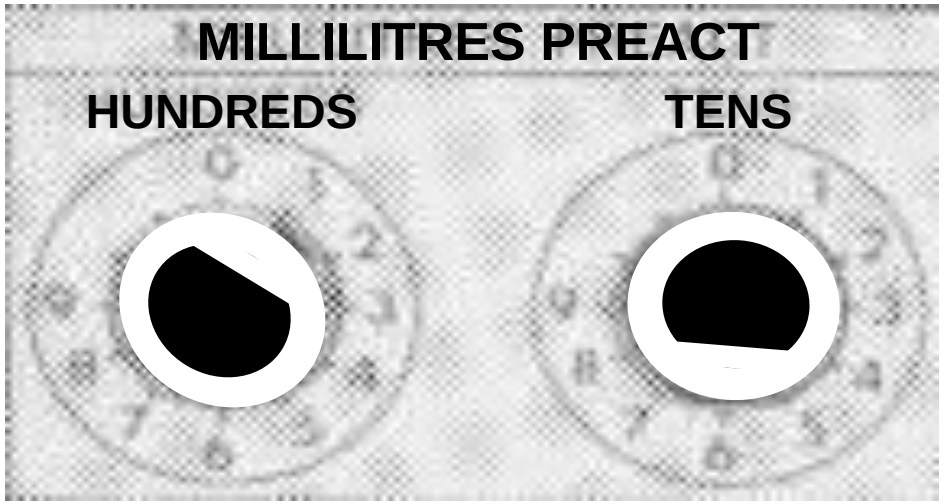
# Batch Controller Preact

ME995-3K, Example 1

- Doserate was **10 x 10 mls/100kg** (i.e. 100 mls/100 kg,
- Total kgs cement load selected was 2000kg,
- Actual quantity delivered shown on display was 2060kg (**60 kgs** over at the selected doserate).

$$\text{Dose Overflow} = \underbrace{60\ \text{kg}}_{\text{overbatch}} \times \frac{\overbrace{10 \times 10\ \text{mls}}^{\text{Doserate}}}{100\ \text{kg}} = \frac{60 \times 100\ \text{mls}}{100} = 60\ \text{mls} = 60\ \text{mls overflow}$$

Set the preact to HUNDREDS=0 and TENS=6 (0x100 + 6x10 = 0 + 60 = 60 mls)




**When doserate is set to 10x10 mls/100kg, then it is easy to calculate preact: Preact, in mls =**
**qty delivered, in kg (shown on display) –**
**qty requested, in kg (dialed by operator)**
**i.e. 2060 – 2000 = 60 mls preact**

**For pure volumetric selection controllers:**
**Models: ME995-1, -4, -6 and -7 simply if you selected 1000 mls but at batch complete the display shows 1110 mls, then simply set the rear pre-act knobs to 110mls. (Hundreds = 1 & Tens = 0).**

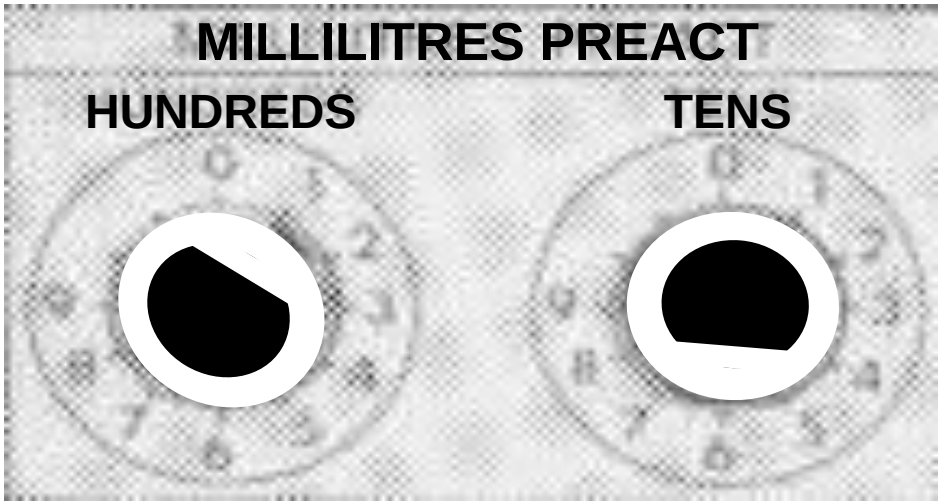
# Batch Controller Preact

ME995-3K, Example 2

- Doserate was **27 x 10 mls/100kg** (i.e. 270 mls/100 kg),
- Total kgs cement load selected was 2000kg,
- Actual quantity delivered shown on display was 2060kg (**60 kgs** over at the selected doserate).

$$\text{Dose Overflow} = \frac{\text{overbatch}}{\textbf{60 kg}} \times \frac{\text{Doserate}}{\textbf{27x10 mls}} = \frac{60 \times 270 \text{ mls}}{100} = 162 \text{ mls} = \sim 160 \text{ mls overflow}$$

Set the preact to HUNDREDS=1 and TENS=6 (1x100 + 6x10 = 100 + 60 = 160 mls)



# Batch Controller - Service Adjustments to Safety Timings and Limits for ME995

**INITIAL START (T2):**

- Once start toggle is pressed, controller allows 1.5 seconds for pulses to arrive from the flowmeter.
- If there are no pulses within the 1.5 second time period, controller will shut down the output voltage drive, and will turn on the pulse fail LED and alarm warnings.
- In some applications, the 1.5 second delay may not be long enough, due to slow opening solenoids or slow pressure buildup pumps etc.
- The initial start time period can be increased by soldering a tantalum capacitor in parallel with the standard capacitor value, found on the rear of the PCB.

**CAUTION**

**FLOWRATE (T1):**

- If pulses do arrive within the allocated initial start time, the controller then locks in pulserate safety.
- Most ManuFlo Batch Controllers have a standard 30 counts per second (30Hz) pulserate safety setting.
- If the pulses from the flowmeter drop below the 30Hz, the controller will shut down the output voltage drive, and turn on the Pulse Fail LED and alarm warnings.
- The 30Hz standard setting is typical with concrete admixture dispensing systems using MES20 (1ml/1 pulse) flowmeters, where if the flowrate drops below 30 millilitres per second the pulse fail safety will activate. T
- The flowrate (frequency) minimum setting can be adjusted by soldering a capacitor in parallel with the standard capacitor found on the PCB.

**Physical mods not needed for ME3000 (is programmable).**

Note: The flowrate safety timing is changed if required:

- because of viscosity changes due to seasonal temperatures, or
- by very low flowrate applications, or
- when using flowmeters other than the most commonly used (MES20 20mm 1 pulse/1ml output flowmeter) with Batch Controllers that have K-factor (ppl) calibration.

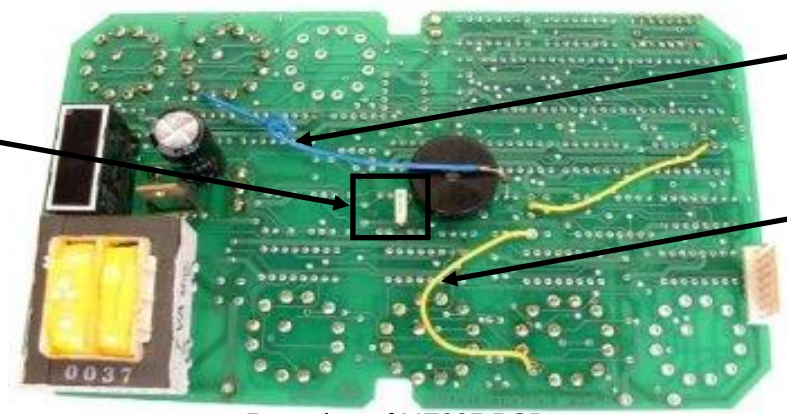
When controller/flowmeter systems are ordered, we supply the safety timing setting to suit your chosen flowmeter, thus always providing the safest possible watchdog system.

**BATCH LIMIT (LM):**

- The maximum permissible batch is determined by the internal limit value.
- The factory setting is always at the maximum value.
- The limit setting can be reduced by simply desoldering the limit lead wire (connected to the rear of the rotary switch solder pads) and resoldering to set the desired quantity.

**DOSERATE LIMIT (DRLM), on Doserate models only:**

- The maximum permissible doserate is determined by the internal limit value.
- The factory setting is always at the maximum value.
- The limit setting can be reduced by simply repositioning the limit wire at the rear of the rotary switch solder pads.



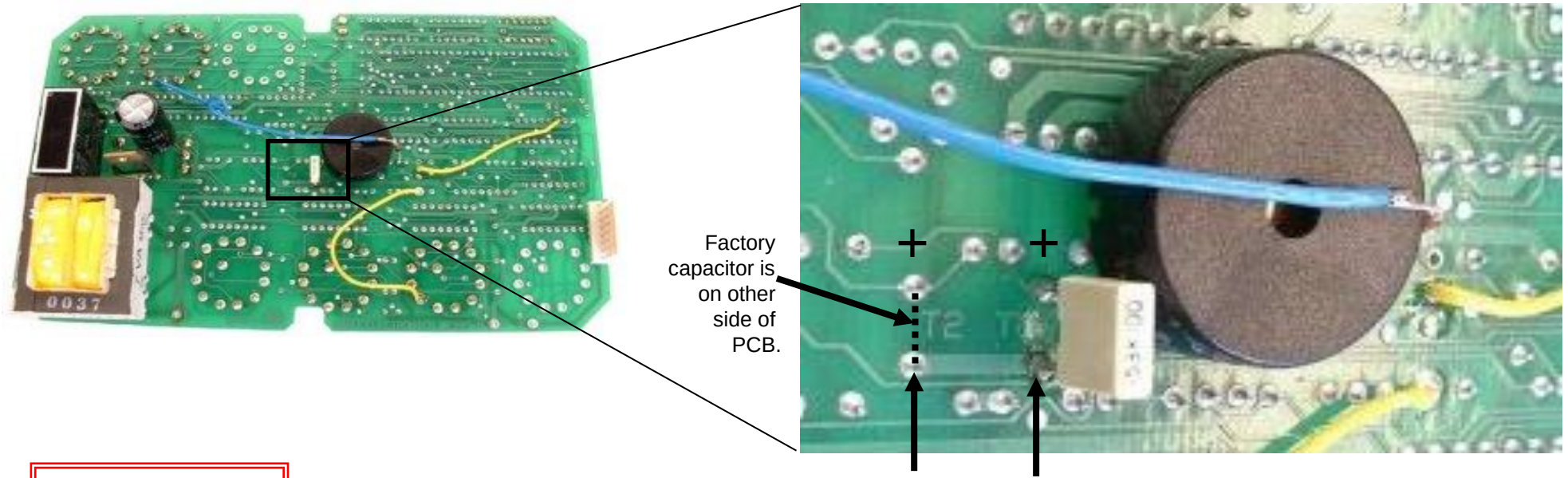

Rear view of ME995 PCB

Note: Setting are programmable in the ME3000.

To access PCB, unscrew 6x screws located at rear of controller case.

# Batch Controller – T2 (Initial Start) and T1 (Flowrate) Timing

CAUTION




**Physical mods not needed for ME3000 (is programmable).**

Initial Start capacitor T2.
Add Tantalum capacitor in parallel to adjust.

T1 flowrate capacitor.
Add capacitor in parallel to adjust.

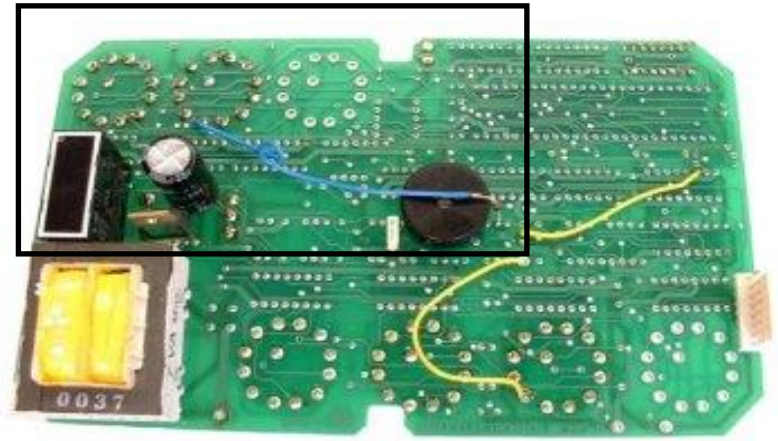
**Standard factory set values are T2: 1 µF capacitor, T1: 0.02 µF.**
**Use the following tables to change factory set values.**

| Table 1. INITIAL START TIMING (T2) | |
|---|---|
| **Extra Capacitor value** | **Extra timing** |
| 1 µF | 1.5 seconds |
| 2 µF | 3.0 seconds |
| 3.3 µF | 4.1 seconds |
| 4.7 µF | 5.8 seconds |

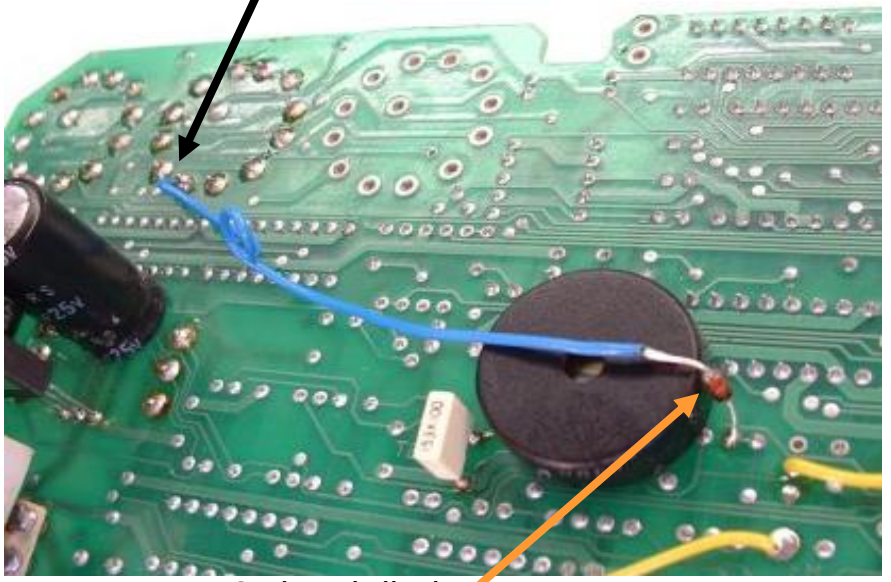
| Table 2. FLOWRATE TIMING (T1) | |
|---|---|
| **Total Capacitor value** | **Frequency Hz (pulses per second)** |
| 0.01 µF | 30 Hz |
| 0.02 µF | 25 Hz |
| 0.03 µF | 20 Hz (low flowrate MES20) |
| 0.1 µF | 07 Hz |
| 0.2 µF | 03 Hz |
| 1.0 µF | 0.2 Hz (PSM20-T flowmeters) |

# Batch Controller – DRLM Dose Rate Limit (Doserate Models Only)

To change doserate limit, move this end of the DRLM limit wire to a new pad on the rotary.

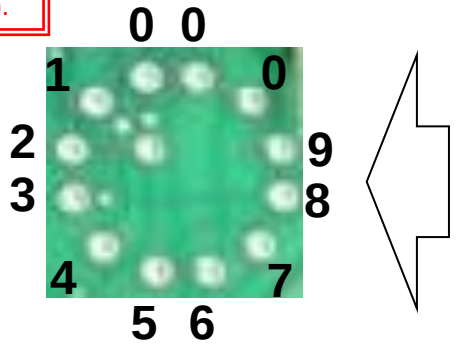


**Doserate Limit wire is connected to the right-most installed Doserate dial (as seen on this view).**




**Physical mods not needed for ME3000 (is programmable).**

## Doserate Limit Values, According to DRLM Limit Wire Position

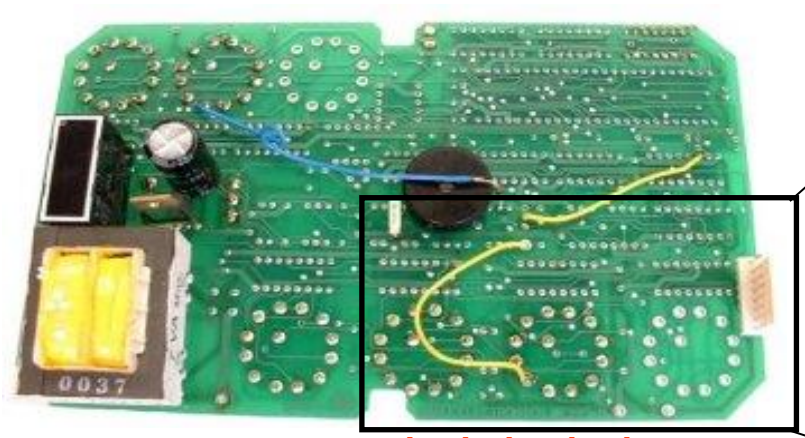


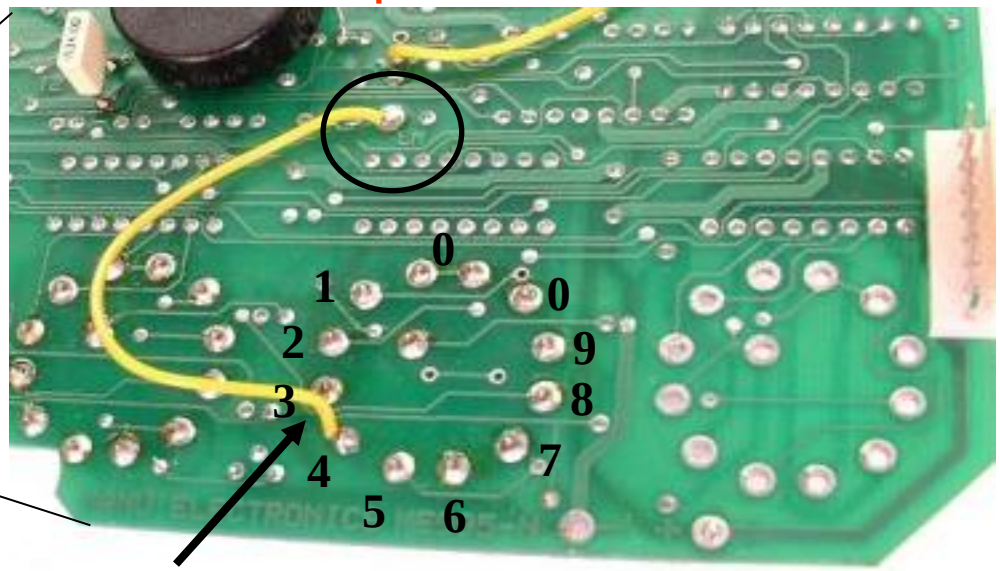

| | | ME995 model | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | -2 | -2H | -2C | -2CH | -3 | -3H | -3K | -3KH |
| | units -> | mls/m3 | mls/m3 | mls/m3 | mls/m3 | mls/100kg | mls/100kg | mls/100kg | mls/100kg |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P | 1 | 100 | 1 000 | 100 | 1 000 | 100 | 1 000 | 100 | 1 000 |
| o | 2 | 200 | 2 000 | 200 | 2 000 | 200 | 2 000 | 200 | 2 000 |
| s | 3 | 300 | 3 000 | 300 | 3 000 | 300 | 3 000 | 300 | 3 000 |
| l | 4 | 400 | 4 000 | 400 | 4 000 | 400 | 4 000 | 400 | 4 000 |
| t | 5 | 500 | 5 000 | 500 | 5 000 | 500 | 5 000 | 500 | 5 000 |
| l | 6 | 600 | 6 000 | 600 | 6 000 | 600 | 6 000 | 600 | 6 000 |
| o | 7 | 700 | 7 000 | 700 | 7 000 | 700 | 7 000 | 700 | 7 000 |
| n | 8 | 800 | 8 000 | 800 | 8 000 | 800 | 8 000 | 800 | 8 000 |
| | 9 | 900 | 9 000 | 900 | 9 000 | 900 | 9 000 | 900 | 9 000 |

# Batch Controller – LM Batch Limit

CAUTION

Start pad of Limit Wire is marked LM






Batch Limit wire is connected to the right-most installed batch dial (as seen on this view).

Physical mods not needed for ME3000 (is programmable).

To change batch limit, move this end of the **LM limit wire** to a new pad on the rotary.

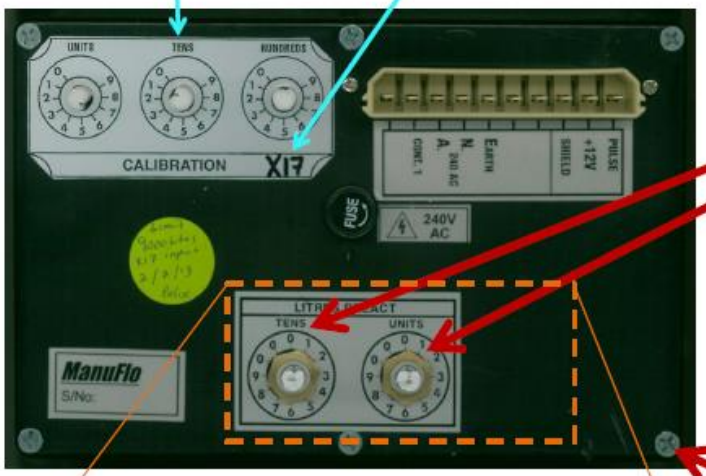
## Batch Limit Values, According to LM Limit Wire Position

| | | ME995 model | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | -1 | -1A | -2 | -2H | -2C | -2CH | -3 | -3H | -3K | -3KH | -4 | -6 | -7 | -7D | -7H |
| | units -> | mls | mls | m3 | m3 | m3 | m3 | kg | kg | kg | kg | L | L | L | L | L |
| | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0 | 0 | 0.000 | 0.0 | 0 | 0.0 | 0 |
| P | 1 | 10 000 | 1 000 | 1.0 | 1.0 | 1.0 | 1.0 | 1 000 | 1 000 | 1 000 | 1 000 | 10.000 | 10.0 | 1 000 | 100.0 | 10 000 |
| o | 2 | 20 000 | 2 000 | 2.0 | 2.0 | 2.0 | 2.0 | 2 000 | 2 000 | 2 000 | 2 000 | 20.000 | 20.0 | 2 000 | 200.0 | 20 000 |
| s | 3 | 30 000 | 3 000 | 3.0 | 3.0 | 3.0 | 3.0 | 3 000 | 3 000 | 3 000 | 3 000 | 30.000 | 30.0 | 3 000 | 300.0 | 30 000 |
| l | 4 | 40 000 | 4 000 | 4.0 | 4.0 | 4.0 | 4.0 | 4 000 | 4 000 | 4 000 | 4 000 | 40.000 | 40.0 | 4 000 | 400.0 | 40 000 |
| t | 5 | 50 000 | 5 000 | 5.0 | 5.0 | 5.0 | 5.0 | 5 000 | 5 000 | 5 000 | 5 000 | 50.000 | 50.0 | 5 000 | 500.0 | 50 000 |
| l | 6 | 60 000 | 6 000 | 6.0 | 6.0 | 6.0 | 6.0 | 6 000 | 6 000 | 6 000 | 6 000 | 60.000 | 60.0 | 6 000 | 600.0 | 60 000 |
| o | 7 | 70 000 | 7 000 | 7.0 | 7.0 | 7.0 | 7.0 | 7 000 | 7 000 | 7 000 | 7 000 | 70.000 | 70.0 | 7 000 | 700.0 | 70 000 |
| n | 8 | 80 000 | 8 000 | 8.0 | 8.0 | 8.0 | 8.0 | 8 000 | 8 000 | 8 000 | 8 000 | 80.000 | 80.0 | 8 000 | 800.0 | 80 000 |
| | 9 | 90 000 | 9 000 | 9.0 | 9.0 | 9.0 | 9.0 | 9 000 | 9 000 | 9 000 | 9 000 | 90.000 | 90.0 | 9 000 | 900.0 | 90 000 |

# ME995-7 or -7D

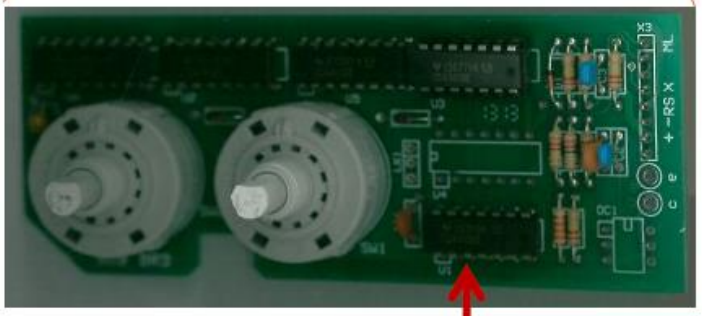
# To convert a x17 Batch Controller to a x1 Batch Controller

**For use with various unity or high pulse flowmeters e.g. MES20 / 25 etc**




(1) remove the 2 washe

(2) unscrew the 6 back panel screws, and remove back panel, to expose the circuit board that the 2 dials are on.



(3) use side cutters to cut pin 3 of chip U1.

pin 3 of chip U1

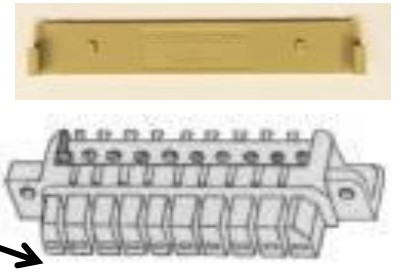
(4) Re-assemble.
(5) Change "x17" to "x1" on the calibration sticker.

(6) for use with a paddlewheel sensor in a 25mm pipesize, set Batch Controller calibration dials to Hundreds=0, Tens=7, Units=5

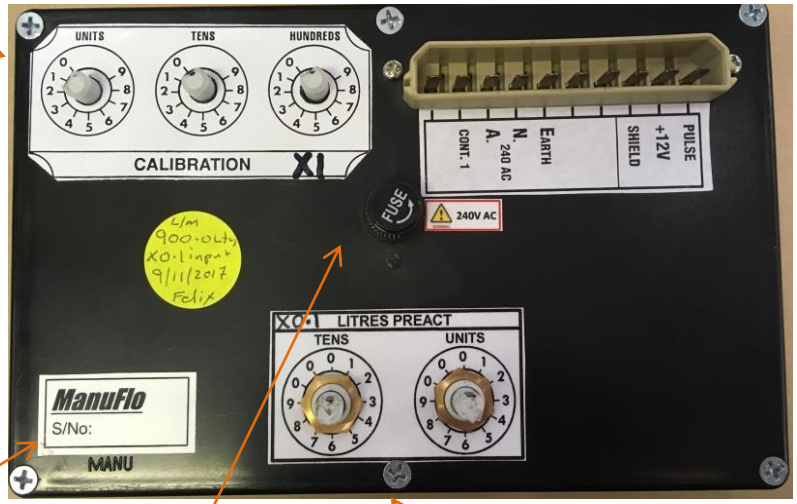
# ME995 Series Batch Controllers - Connections

## REAR VIEW

**Plug-in / Plug-out 10-pin recepticle – changeover and replacement is instant with no rewiring necessary.**
**Very simple to maintain and use**



Calibration knobs HTU (for ME995-7, ME995-7D & -7DS), to set LARGER flowmeter's K-Factor (the pulses/Litre).




**Serial No.**

**Fuse**

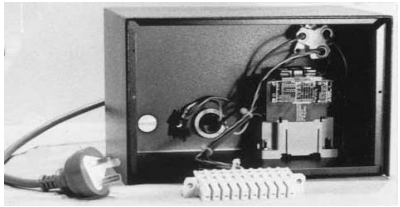
**Preact knobs - to adjust for overrun.**

## SPECIFICATIONS

| | |
|---|---|
| **Power supply** | 220-260 vac (optional 110 vac or 12-24 VDC) |
| **Output to flowmeter** | 12 VDC up to 100mA |
| **Relay outputs** | Max. 240 vac, 30 VDC 1 Amp |
| **Frequency input** | 5 KHz: x1 input, 340 Hz: x17 inputs |
| **Display** | 7 segment LED (14mm H) |
| **Connection** | 10-pin Weidmuller mating plug and socket |
| **Fuse** | 1 Amp (5 x 20mm case) |
| **Batch selection** | Visual rotary select switches |
| **Batch commands** | Push toggle switches |
| **Mounting** | Panel mount |
| **Instrument housing** | ABS hi-impact case |
| **External dimensions** | 206 L, 130 H, 90 D mm |
| **Panel cutout** | 190 L, 122 H mm |
| **Weight** | 1 kg |

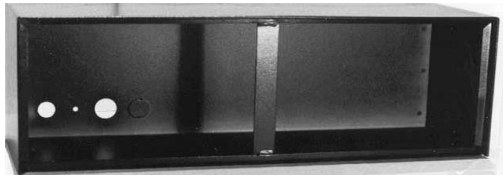
# Batch Controller Housing Boxes

**SHB** - SINGLE HOUSING BOX

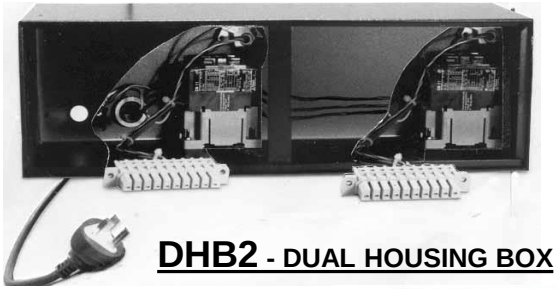


**SHB1** - SINGLE BOX WIRED

- The SHB/DHB housing boxes are for wall or bench mounting ME995 Batch Controllers.
- Metal black powder-coated paint finish.
- These boxes are also available fully wired with 110 or 240vac 15amp industrial contactors, pump plug-in 240vac power entries, power cord and 10-pin Weidmuller mating plug.
- Also available in a terminal strip entry version.



**DHB** - DUAL HOUSING BOX



**DHB2** - DUAL HOUSING BOX

| Order Code | Description |
|---|---|
| **SHB** | Single metal box (houses one ME995) |
| **SHB1** | Single, with contactor, pump outlet |
| **SHB2** | Single, with 2 contactors, 2 pump outlets |
| **DHB** | Dual metal box (houses two ME995s) |
| **DHB2** | Dual, with 2 contactors, 2 pump outlets |
| **DHB3** | Dual, with 3 contactors, 3 pump outlets |
| **-T** | Terminal strip entry (in lieu of outlets) |


## HB2500/2510 - WATERPROOF ENCLOSURES

**Order Code**

**HB2510** **IP65 Enclosure with S/S316 hinges**

Options

**-SSR** Start/Stop/Reset command buttons.

**-C240** Contactor, internally wired. 15 Amp, 240vac, 1phase.

Select a good viewing AND operating position for the Batch Controller.

# Batch Controller Housing Box - Use

**Do not install ME995 / ME3000 with SHB/DHB metal boxes in areas exposed to rain or wash-down areas. If so use the HB2510 IP65 waterproof/dust proof box**

# Batch Controller/Housing Box: 240vac re-labelling

## ME188/995/999/3000 WEIDMULLER PLUG 240vac Upgrade

The beauty of the ManuFlo pluggable batch controller modular systems now in use for over 40 years (since 1978) is that any faulty/malfunctioning batch controller can be easily removed/swapped, via its STV Weidmuller pluggable connector system and replaced with a another ME-series batch controller. They are a very safe/sturdy plug set for 240vac wiring. (Without having to removing wires or having to call an electrician).

This rapid replacement ability has allowed countless times to troubleshoot by swapping with another ME995 controller, where the batcher needs to complete a load of concrete so that the concrete trucks can deliver to construction sites on time.

This is increasingly important in country towns or remote sites, where rapid problem solving is required.

(There is available a further protection cover that's clips on top of the plug; Part # WC )

The procedure to swap controllers is to simply remove the two front screws, pull out the controller and then grabbing the Weidmuller plug at opposing ends pry apart the mating plugs. (Never pull apart plugs by the wires).

Due to the nature of the design of the plug, the chance of ever receiving an electric shock from frayed wires etc, if following this procedure is avoided. It's been common procedure for over 40 years, without any incidents.

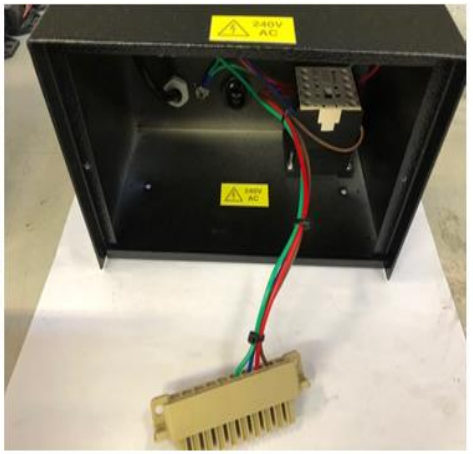
But with updated OH&S in industry sites and procedures... we suggest the following upgrade option to the ManuFlo equipment;

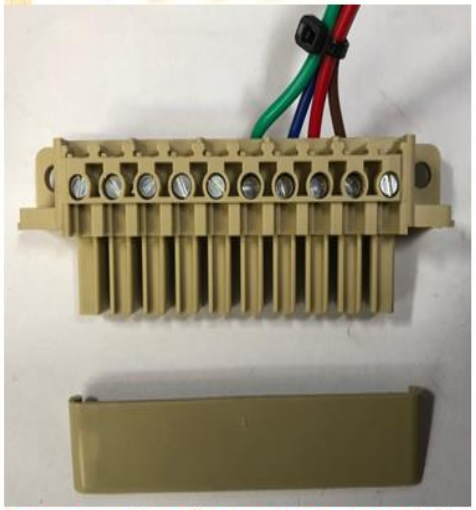
***WE RECOMMEND:-***

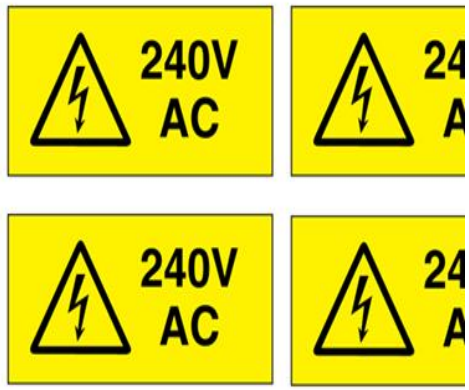
1/ Sticking 240vac labels inside/outside the housing boxes and on the top of the batch controllers.
2/ Upgrading the plug with the clip on cover (Part# WC). –as shown below diagrams.

We must bear in mind we have equipment out there still in use over 30 years old that predates a lot of today's current OH&S procedures.

So as a consequence the above procedures are recommended to satisfy any OH&S concerns.





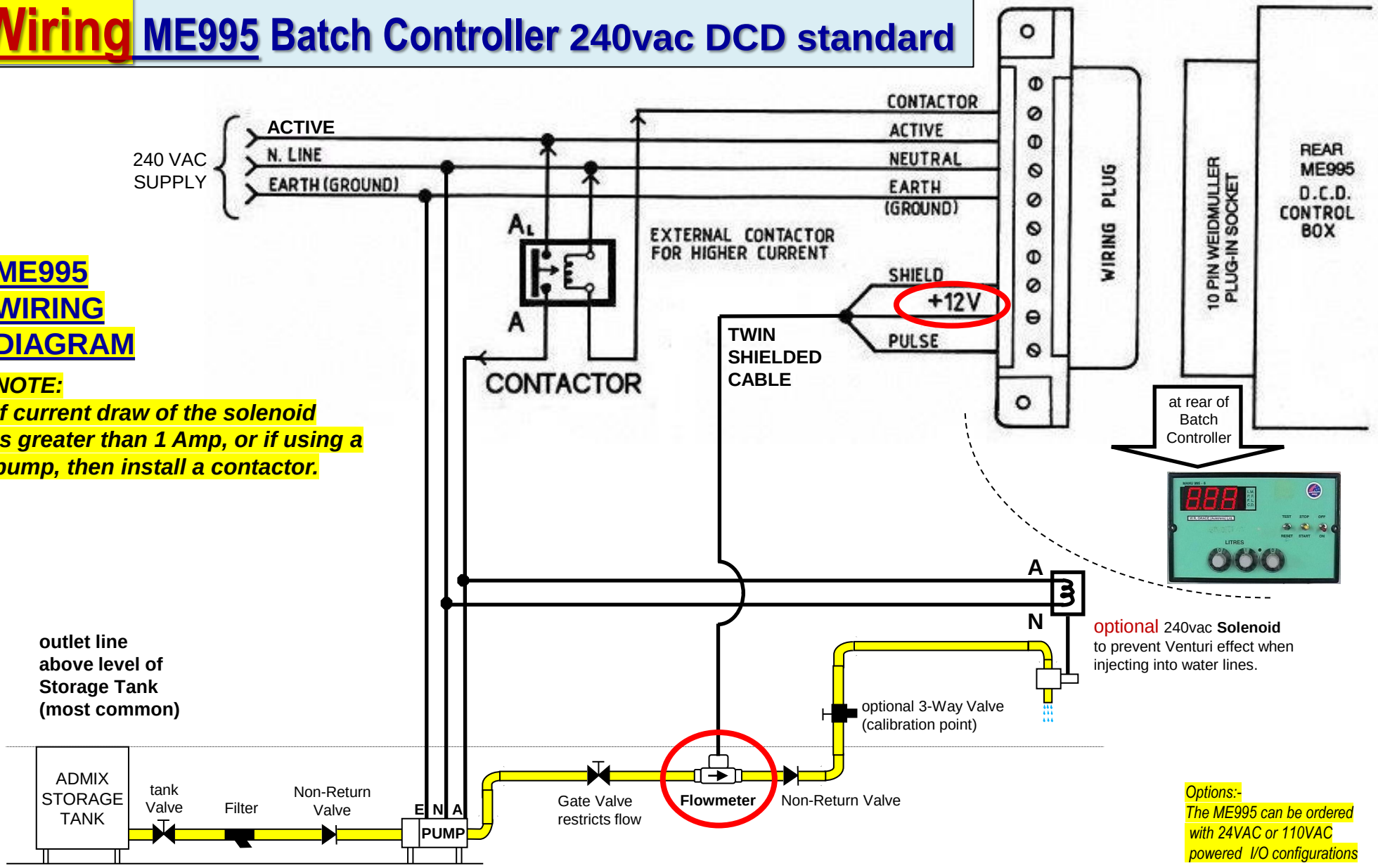

Extra protection clip-on covers are available. (Part# WC)

# Batch Controller Wiring - Guide

- Remove the detachable Weidmuller **10-pin plug** from the rear of Batch Controller.
- Connect the **flowmeter signal cable** into the 10pin Weidmuller plug. When wiring the flowmeter, use 2-core shielded cable (use more cores if wiring more flowmeters) - this will supply the flowmeter with 12VDC from the Manu Batch controller.
- Wire the **240VAC supply cables**.
- Wire the **Active/contact drive, Neutral and Earth from the solenoid valve** or return from the external contactor if driving a pump. If starting a pump, make sure the contactor is of sufficient amperage rating to handle the pump current draw (e.g. 10 Amps for Onga413 pump).
- **Don't use cheap plug-in relays in your installation** – they cannot handle pump surge currents and can stick/fuse. Must have industrial grade contactors (available from ManuFlo: **Order Code C240**, rated 3kW 1.5hp).

- Consider wiring an **override button** (N.O. with spring return) for manual batching or top-up of admix, which will be counted by the controller display.
- **Power up the system**. Reset and start a number of times to prime the system, until fluid appears at the outlet line and the Batch Controller digits begin counting.

# Wiring ME995 Batch Controller 240vac DCD standard




## ME995 WIRING DIAGRAM

***NOTE:***
***if current draw of the solenoid is greater than 1 Amp, or if using a pump, then install a contactor.***

*Options:-*
*The ME995 can be ordered with 24VAC or 110VAC powered I/O configurations*


ManuFlo ®™
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Rev: 0411/1

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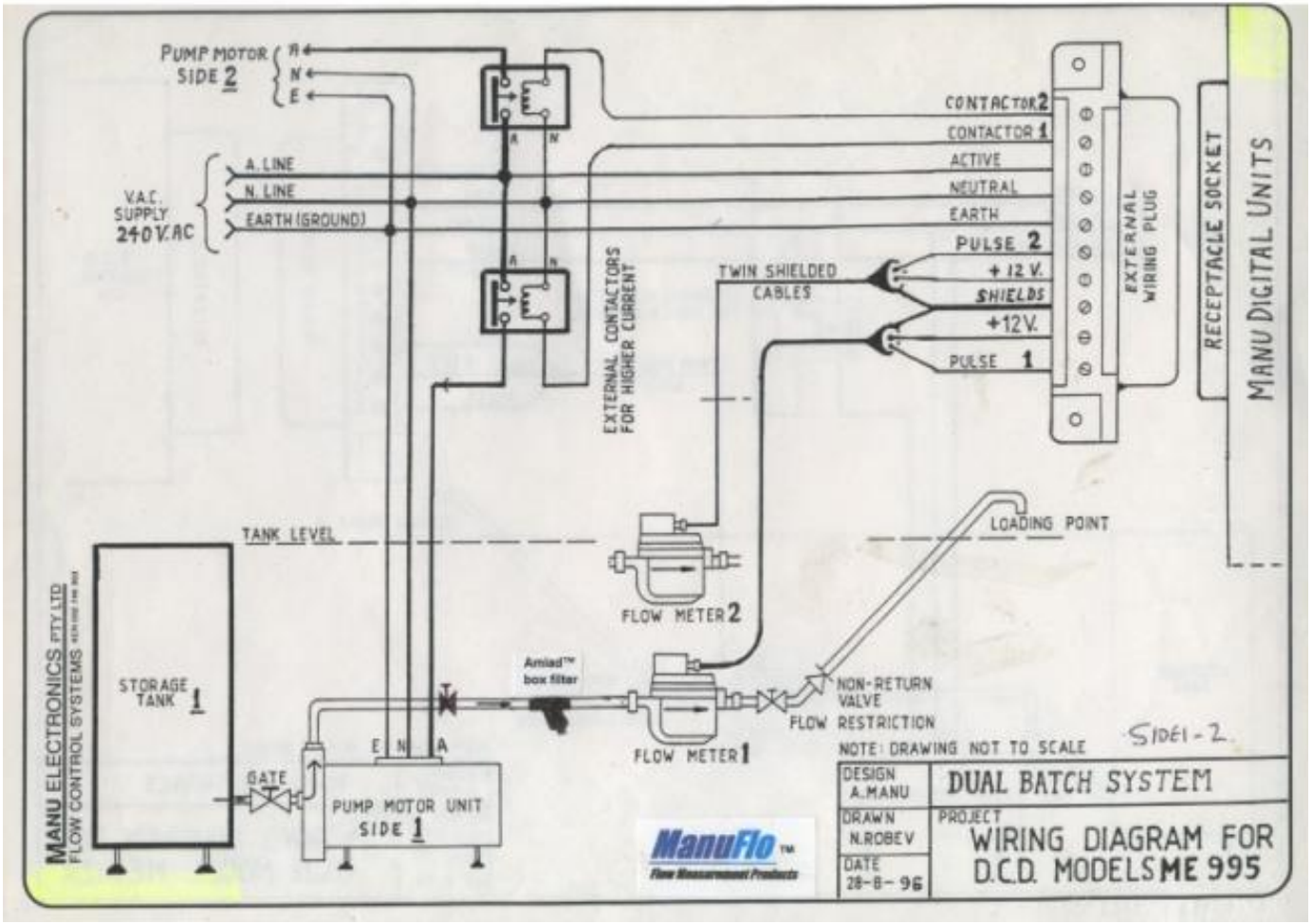
Email: sales@manuelectronics.com.au

# ME995 Batch Controller Wiring

- **Side1-2 : two way 2 product batch option.**

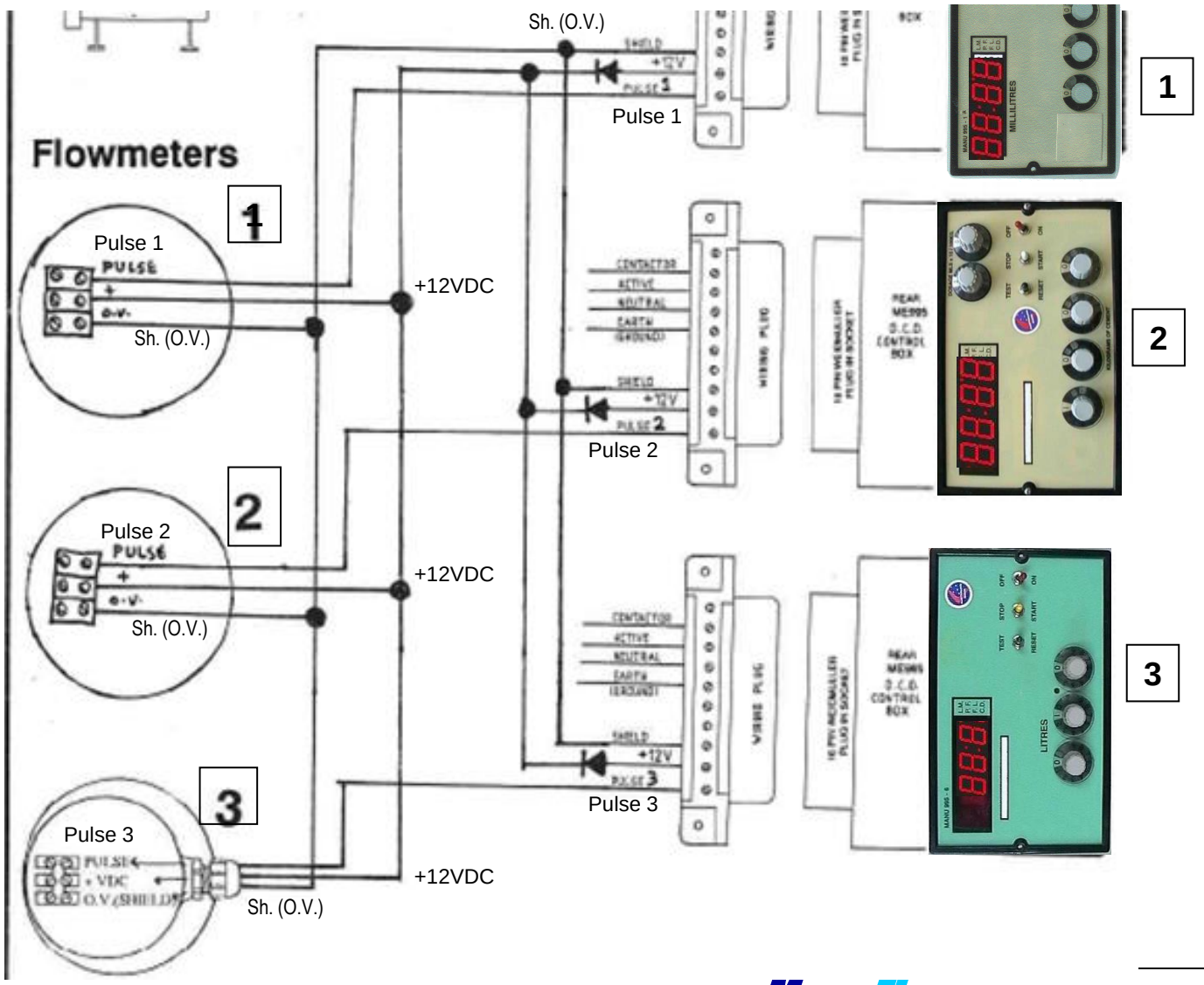





*ME995-4 with S1-2 pictured*

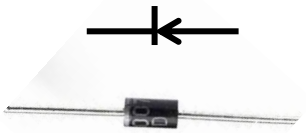
**Controllers can be configured to dispense 2 admixture products 2 pumps/2 flowmeters via 2way product control switch (# S1-2)**

# ME995 Batch Controller Optional Wiring using one cable




**When using one multicore shielded cable:**
**If deciding to use one common wire from the ME995 Batch Controllers for the +12VDC supply to power two (2) or more flowmeters, then you must NOT connect all +12VDC supply lines together unless you install 1N4004 heavy duty diodes as per the diagram.**
(the shield (o.v.) wire can be all connected together).

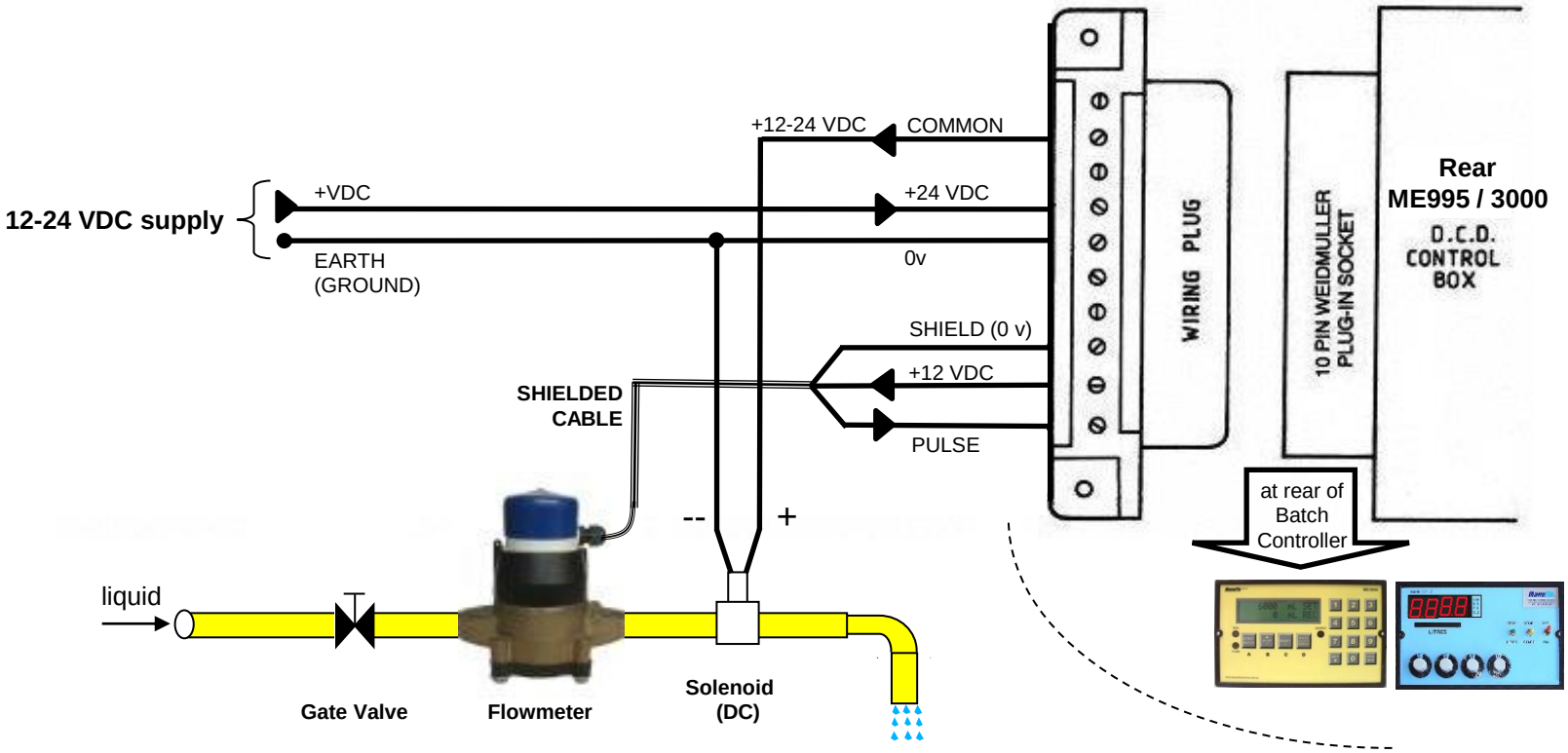
Diode Symbol



**Wiring Diagram for ME995 series and ME3000 Batch Controllers "Direct Power Drive option (DPD)".**

Batch Controller power supply: 12-24 VDC
Batch Controller output contact drive: 12-24 VDC
Flowmeter: +12vdc supply to MES type or RPFS-P (or other)

Please note the preferred configuration for 24-110VAC and 12-24VDC powered units is now code **"-DC/OC"** open contact drive, this configuration allows the Batch Controller to switch various voltages and for the internal relay to power up to 5amps directly before having to wire in a contactor. *Refer to the OC diagram*. (ideally if powering a pump always wire in a contactor to handle the current draw of the pump.




***NOTE: if current draw of the solenoid is greater than 1 Amp, or if using a pump, then install a contactor.***



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Ph: + 61 2 9905-4324, 9938-1425;
**Web: www.manuelectronics.com.au**

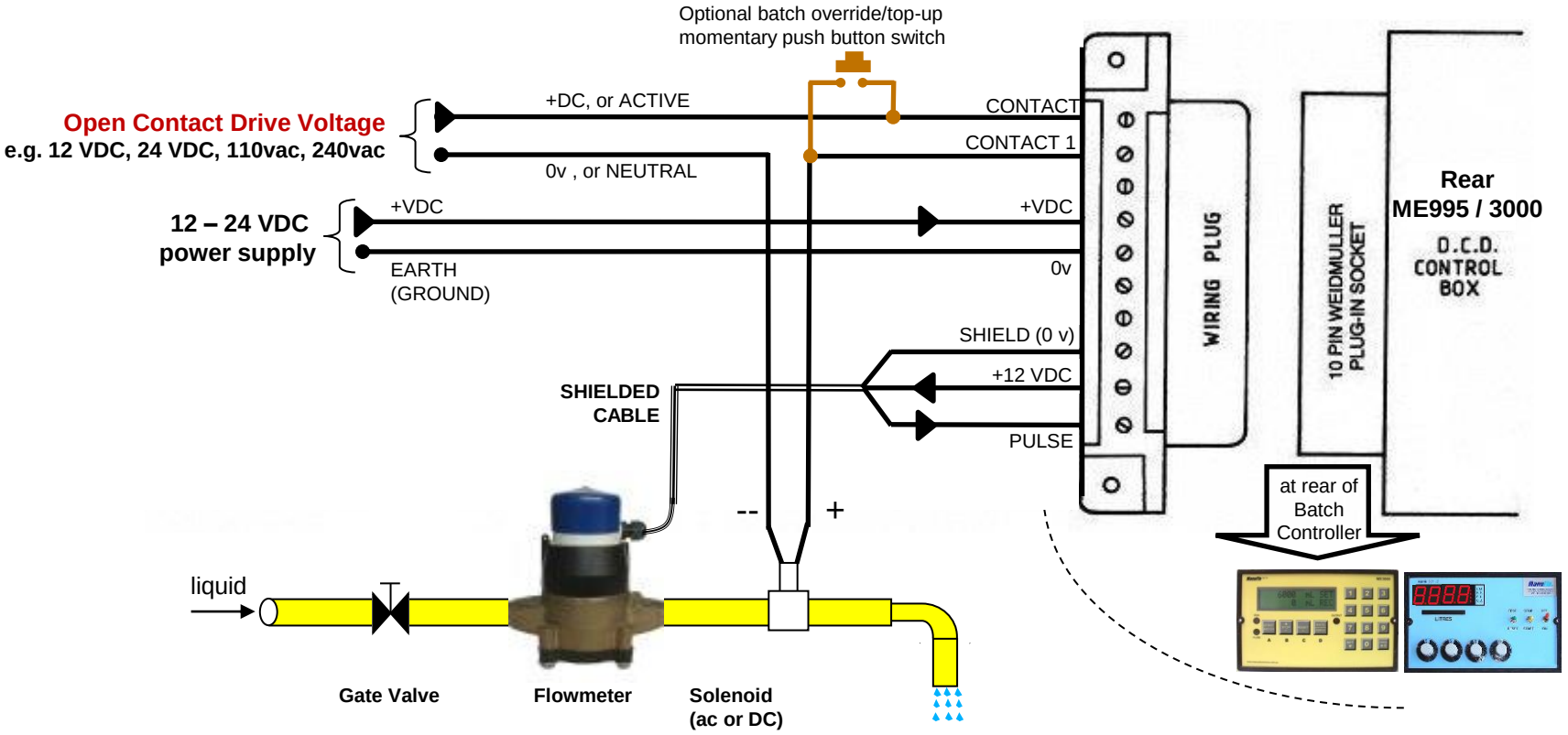
**Wiring Diagram for ME995 series and ME3000 Batch Controllers**

**Open Contact "OC" (external user supplied voltage),**

Batch Controller power supply: 12-24 VDC (or 24-110vac)

Batch Controller output contact drive: to 5 Amps <

Flowmeter: +12vdc supply to MES type or RPFS-P (or other)



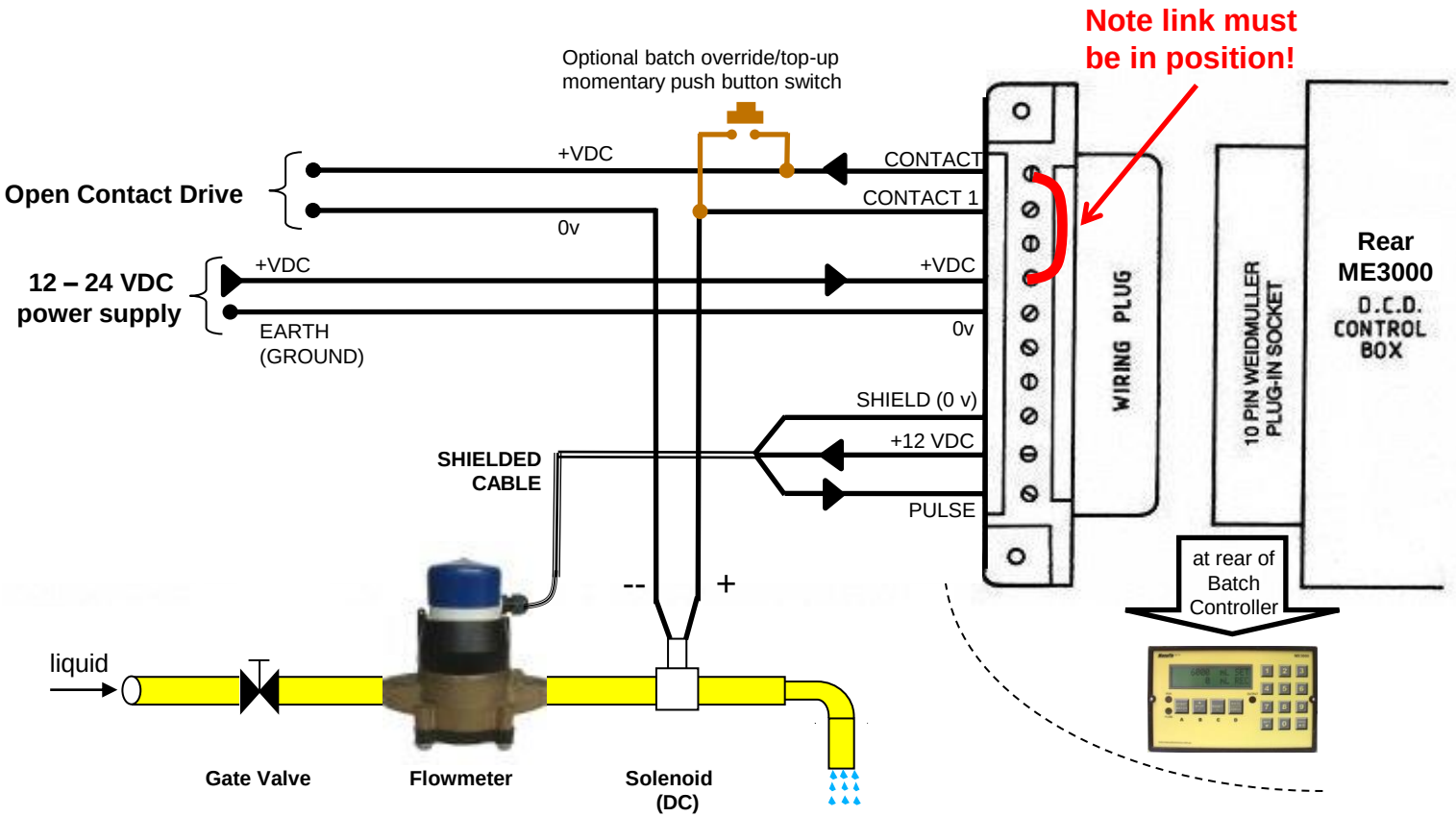

***NOTE: if current draw of the solenoid is greater than 1 Amp, or if using a pump, then install a contactor.***

**Wiring Diagram for ME995 series and ME3000 Batch Controllers**

Batch Controller power supply: 12-24 VDC

Batch Controller output contact drive: **Open Contact "OC" (same DC voltage as supply voltage)**, to 5 Amps

Flowmeter: + 12VDC to MES / RPFS or other flowmeter type





ManuFlo ®TM

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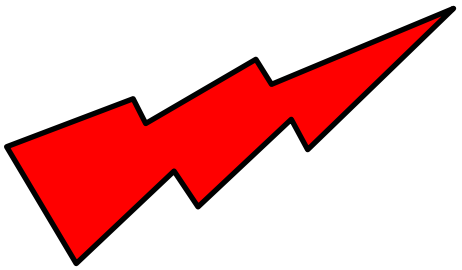
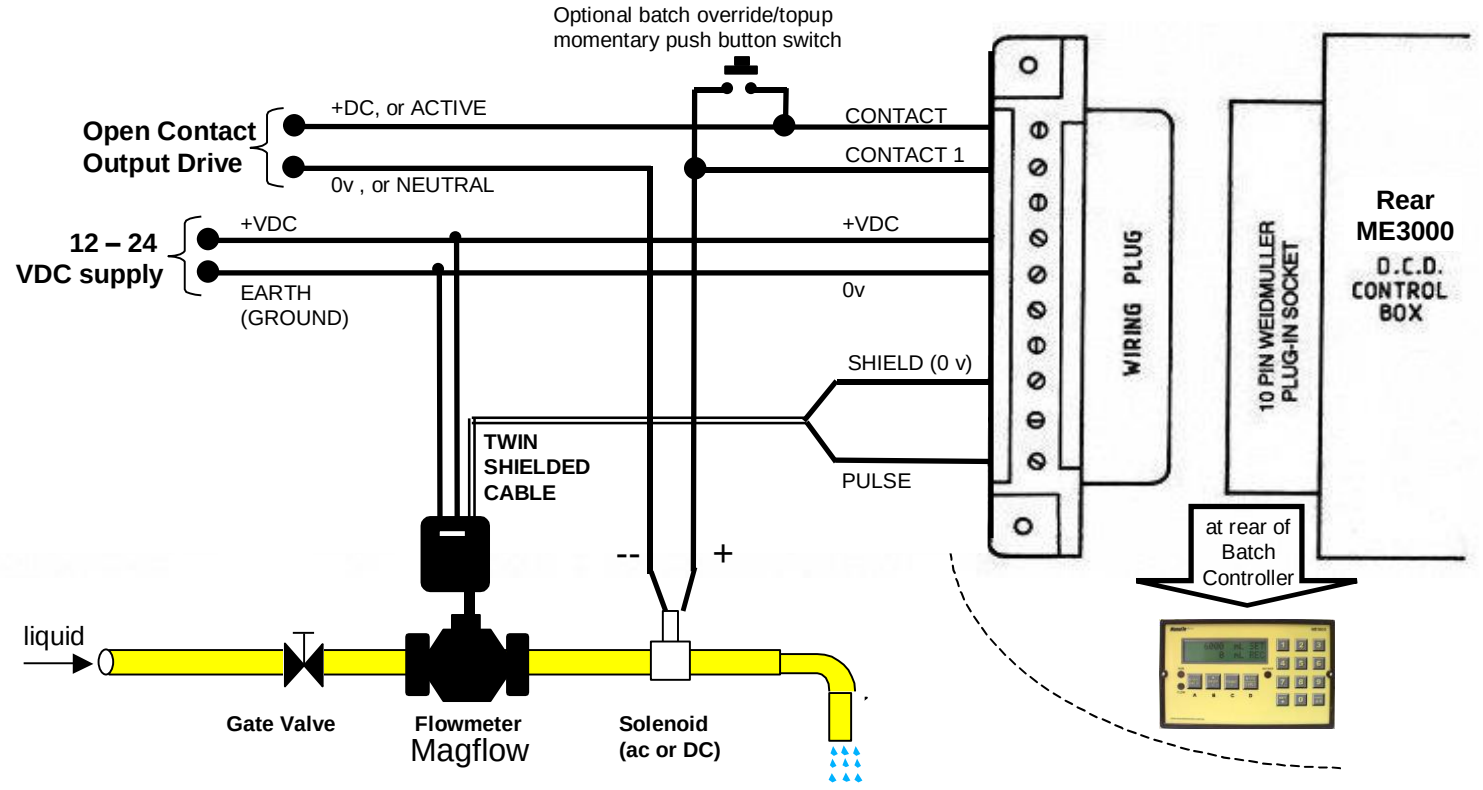
# ME995/ME3000 - Updates
# NEW Voltage Configuration Options






Now available with:

- 110vac, 24vac or 24VDC powered options
- Open contact output drive (to drive any external voltages)

WARNING: The Various configured voltage options are NOT interchangeable with the standard 240vac models.

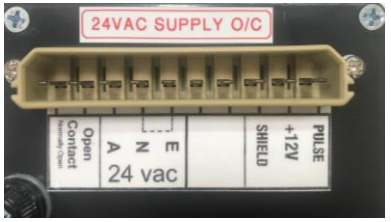
# ME995 / ME3000 - Configuration Options

## Voltage Power Supply and Contact Output drive

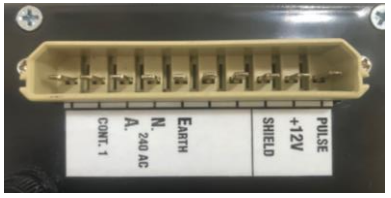
## DCD = Direct Contact Drive , OC = Open Contact


| *Product Ordering Code* | *Description of Configuration* |
|---|---|
| -DC-OC | 12-24 VDC power supply input / output drive, with Open Contact output drive (5 Amps)<br>*(which is via external voltages e.g. 12 or 24 VDC)* |
| -24VAC-OC | 24 vac power supply input / open contact output drive<br>*(Neutral can be to Ground or floating)* |
| -110-OC | 110 vac power supply input / open contact output drive (5 Amps) |
| -OC | 240vac supply, Open Contact output drive (5 Amps).<br>Drive is via external voltages e.g. 12 or 24 VDC, 110 or 240vac |
| ME995 | Will denote as a standard configuration of 240vac<br>*(output drive is also 240vac limited to 1 Amp, any current draw above this necessitates a industrial grade contactor be wired).* |


**-DC-OC**
(12-24vdc)




**-24VAC-OC**
(24vac)




**-ME995 DCD**
(240vac)

ManuFlo ®™ 2021

Before replacing any ME995 assure the voltage wiring label is like for like or call ManuFlo to identify via the serial number located at the rear of the unit.

# Batch Controller Calibration Test



**Volumetric Calibration Test should be performed when commissioning installation**

- place a **calibrated vessel** at the discharge point
- on the Batch Controller, **select an amount** of liquid e.g. 1000 mls.
- press Reset, then Start to **batch** the quantity
- at the calibrated container, **check** that the amount dispensed is as requested.

An overflow may occur due to the inability of the pump to stop instantly. The amount of overflow will depend on how fast the liquid is being dispensed and/or the closing time of the solenoid valve. The Batch Controller will count the overflow as part of the displayed total dispensed.

- if the system is totally controlled via PLC/Computer, overflow will be adjusted by the computer; otherwise,
- where a ME995 series Batch Controller is fitted with a Pre-act, simply set the Pre-act to the amount of overflow i.e

overflow =
(actual amount dispensed, as shown on the Batch Controller display)
minus (amount requested).

If required:

- slow down flow velocity by using a restriction gate valve;
- avoid over-batching by using the Preact function, or installing a quick-acting solenoid valve.

**Note: If the flow is restricted excessively, Batch Controller Pulse Fail circuitry will shut down the system for safety reasons, in which case open up the restriction gate valve.**

**Note: Volumetric Calibration check must be performed after any service to equipment.**

# Batch Controllers - Maintenance

- A calibration check should be performed periodically (say every 6-12 months).

- Return for service after 5-10 years, especially for manual plants.

- In winter, liquid can thicken because of the cold, and so can flow slower.
  If Pulse Fail continually occurs in winter on a ME995 series Batch Controllers (Even ME2008's), THROTTLE UP PUMP SPEED or adjust the pulsefail flowrate timing (T1).

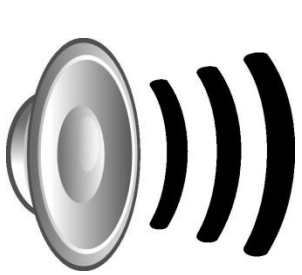
Note: The ME3000 Batch Controller (and ME2008) are programmable, so do not require any hardware modifications.

# Batch Controllers – Troubleshooting

IMPORTANT

## Questions to ask the batcher upon a batching problem:

- Which LEDs are on?
- Describe what faults are evident?




•If batcher gets Low Flow Alarm on two successive attempts at batching, then:
MOVE THE TRUCK MIXER AWAY FROM THE LOADING POINT
**stop using the Controller**; as each attempt doses 2 seconds worth of chemical into the mix.
**record the quantity displayed** on the ME995; and
**ring your local admixture supplier or service agent** for advise/service (or attempt to address).

**THIS WARNING GUIDE SHOULD BE DISPLAYED AT PREMIX PLANT FOR THE BATCHER / OPERATOR !!**

# Batch Controllers – Safeguards

**ME995 BATCHING DISPENSER**

**IN CASE OF ALARM WARNING:-**

- **If any of the safety features are triggered, the alarm will sound.**
- **The LED's warning indicators will illuminate with PF or LM.**

- DO NOT push RESET immediately - observe display and take note of the batch display reading.
  then push RESET, redial residue quantity required to be batched to complete the load.
- **If batcher gets an Alarm again at batching, then**:

- MOVE THE TRUCK MIXER AWAY FROM THE LOADING POINT
  - **stop using the controller**; as each attempt doses 2 seconds worth of chemical into the mix.
  - **refer to the ManuFlo website "technical support ME995" or your contact local admixture supplier** for advise/service.

- **LIMIT (LM) LED** - illuminates if:
  - batch cycle reaches locked internal maximum limit, or internal fault.
- **PULSE FAIL (PF) LED** - activates if:
  - no flowmeter pulses arrive within initial 1.5 seconds (variable), or
  - pulses are interrupted or intermittent during batch cycle (blocked flowmeter, seizing pump, valve closed, cut signal wire).
- **FLOW (FL) LED** - indicates pulses coming from field flowmeter.
- **CONTACT DRIVE (CD) LED** - output drive activated to pump or solenoid.

**Audible ALARM** sounds:
- momentarily upon completion of batch cycle,
- continuously if PF or LM occurs LEDs are activated or if overflow runs excessively past selected batch quantity.

**Warning: if CONTACT or FLOW LED indicators are on,**

**but contoller is not counting, discontinue use, call for service.**


**THIS WARNING GUIDE SHOULD LAMINATED AND BE DISPLAYED AT PREMIX PLANT FOR THE BATCHER / OPERATOR !!**

# Batch Controllers – Troubleshooting

**Incorrect Batching from Selected to LED display**


1. The selector knob number dials on the Batch Controller may not be aligned correctly, and therefore do not correspond to the rotary switch numeric values.
2. To test, set all numbered dials to the zero position, then press the RESET toggle. The alarm should beep momentarily. This will indicate correct alignment of dials. If alarm does not beep, this indicates incorrect alignment of numbered dials.
    - To rectify, remove the grey-colored cap from each dial, the grip nut is now exposed, un-tighten and the knob grip will release from switch shaft and pull off knob.
    - Check that the exposed switch shaft flat side notch is in horizontal. If not, turn shafts to horizontal as pictured above and refit the numbered dial knob to the zero number setting.
    - For dosage switches, position to zero and push up hold the TEST button. Digits should not count (except in the ME995-3 model). If digits count, then remove grey knob and check the numbered dial alignment –same procedure as above.
3. If batch controller is tested and found to be operating correctly, then proceed to checking and testing flowmeter components.

# Batch Controllers – Service guide

## Older heavily used ME188 and ME995

Q. *Client would enter the amounts needed eg 1490kg cement would cut out when reached 490, stop 1000 short. It would only do this on random loads.*

A. The thousands digit internal switch spring contact sounds intermittent. This would only possibly start occurring on units over 15yrs old (and there are plenty still out there approaching 30+ yrs). For newish units to do this is possible due to transit damage large knock on the knob face could cause an issue (very rare).

FYI the plastic face ME995's were introduced in the year 1995 to present day. Any aluminum face units are from 1982 to 1994 manufacture.

Number Selector knob dials can be purchased… changing the larger ones requires a special tool to remove them. The smaller ones requires a tube spanner.

Very important to reposition them properly in correct position and clamp them firmly on the switch shaft. Failure to do so can be catastrophic.

PART No: # SK price is $ 19.95 for the bottom row of switches and # SKD @ $ 26.95 for any top row dosage switches.

NOTE:

Batch controllers that have been in the field for 10-15 years we strongly recommend that they be returned for a full Authorized ManuFlo factory service overhaul.

What you don't see is what we do on the inside, we fully open the units up, Open up the switches and check the spring contacts… as they can become intermittent contact after prolonged use. We either fix or replace the switches, also the toggle start/stop/reset command switches are replaced if they seem to be seizing.

Internal voltage operation checked and sometimes voltage reg. / capacitor and bridge rectifiers changed. This assures another 10-15 yrs of SAFE operation. (averages at $40p/a)

Summarizing 15yr+ old units should come back for a full health check. The serial number at rear determines the age.

# Batch Controllers – Troubleshooting

| PROBLEM | POSSIBLE CAUSE | SUGGESTED SOLUTION |
|---|---|---|
| ○ No power to batch controller, displays not on | ○ Blown fuse or fuse holder not tight/broken<br>○ +12vdc and O.V. shorted<br>○ No main power supply<br>○ Broken transformer | ○ Check fuse, tighten fuse holder (at rear of controller)<br>○ Check wiring, rear of controller & at flowmeters, replace cables.<br>○ Check power supply, check wiring<br>○ Return to ManuFlo for repair |
| ○ Pulse fails at start of batch | ○ Air pocket<br>○ Restriction gate valve closed<br>○ Empty liquid tank<br>○ Pump not turning<br>○ Solenoid valve not opening<br>○ Seized flowmeter chamber<br>○ Flowmeter pulsehead faulty<br>○ Signal cable cut or bad joint<br>○ Pipes/hoses clogged or air pocket.<br>○ Buildup coagulated admix at discharge point<br>○ **Seized PUMP due to sticky admix** | ○ Prime line by shorting output drive (C=Contact & A=Active)<br>○ Open gate valve<br>○ Check liquid level<br>○ Check and service pump<br>○ Check and service solenoid valve or non return valve stuck closed . Flush out the flow-line, purge air pocket<br>○ Service and clean flowmeter chamber, replace if required<br>○ Replace with new pulsehead, or connections corroded.<br>○ Check signal cable<br>○ **Hit the PUMP with a Rubber mallet to loosen it, then re-batch. Failing that then strip/clean or change the pump** |
| **WARNING: In any pulse-fail or repeat malfunction condition, remove the truck mixer from the sock loading point.** | | |

NOTE: In winter, liquid may flow slower causing Pulse Fail. We recommend:
- Opening up the restriction valve ***OR***
- Fitting the capacitor to change Batch Controller T1 timing

***Flowrate lower than average speeds*** . Pipes hoses are clogged. Clogged near SOK -- pump has a lot of rubbish in the centrifuge rotor -- clean out pump -- gate valve seized -- rubbish jammed in non return valve -- suction side of pump issues -- piping blockages etc. change to PD pump -- close bypass valve if installed to increase pressure of flowrate.

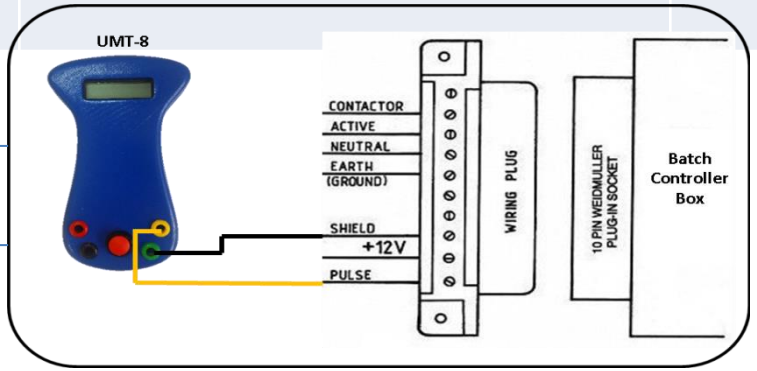
# Batch Controllers – Troubleshooting

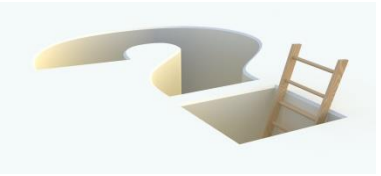
| PROBLEM | POSSIBLE CAUSE | SUGGESTED SOLUTION |
|---|---|---|
| ○ Pulse fails during batch cycle | ○ Flowrate too slow<br>○ Flowrate too fast<br>○ Blocked filter restricting flow<br>○ Measuring chamber clutching | ○ Open restriction gate valve or increase flowrate pulse fail timing capacitor (see service guide).<br>○ Chamber clutching, slow down flowrate via restrictor valve. Check flowmeter specs for performance operating range<br>○ Cleanout filter<br>○ Cleanout chamber or replace<br>○ Clean, service or replace the flowmeter parts |
| ○ Display digits count slowly after batch complete | ○ Non return valve faulty (jammed open)<br>○ Vibration | ○ Clean, service or replace<br>○ If Vibration – eliminate or use new MES-DSP Pulseheads. |
| ○ Batch target display counter above batch selection | ○ Flowrate too fast, excessive overflow | ○ Turn down gate valve to restrict flowrate or set preact (overflow deduct) function to compensate (ME995 models –located at rear of unit)<br>○ Reduce delivery pipe diameter |
| ○ During calibration test, more admix collected than indicated | ○ Flowmeter chamber part missing<br>○ Chamber excessively worn, liquid is slipping through without registration<br>○ S.G. below 1.0<br>○ MES20 under excessive pressure with AEA slippery admix | ○ Check flow chamber, check O-rings are seated correctly (MEK20/MES20 roller bush or O ring)<br>○ Replace with new chamber, recheck calibration<br>○ Replace chamber and restrict flowrate or recalibrate via controller (certain models only) or recalibrate via card<br>○ Place restriction valve after pump and prior to flowmeter |
| **NOTE: After servicing any flowmeter, always perform a volumetric calibration test. Make sure glands are sealed, pulse cable is lopped downward, and meters are under cover and protected from water ingress.** | | |

# Batch Controllers – Troubleshooting

| PROBLEM | POSSIBLE CAUSE | SUGGESTED SOLUTION |
|---|---|---|
| ○ Less admix collected than displayed | ○ Possible syphoning effect if fed (mixing) into flowing water line<br>○ Liquid flows backward after batches | ○ Fit ball valve solenoid or do not feed into flowing water line, or check valve<br>○ Non-return valve faulty, service or replace |
| ○ Controller starts counting when power switched on, does not stop at batch complete | ○ Active and contact power drive short circuited<br>○ Contactor sticky or fused | ○ Short circuit on PCB, check PCB or replace<br>○ External pump contractor relay fused or need higher ampere rating, replace contractor |
| ○ Controller not counting but flow and/or contact drive LED's are on | ○ Controller malfunction, IC failure | ○ Replace controller, ring ManuFlo for urgent advice |
| ○ Controller counts although pump off (contact drive LED off) | ○ Dried out main electro capacitor, leads to unstable +12VDC line to circuit.<br>○ Moisture on PCB –return to ManuFlo dry out clean | ○ Replace electrolytic capacitor (Pre ME995 units) |
| ○ Controller counts up a batch cycle but no admixture delivered | ○ Flowmeter (MES) measuring air | ○ Can occur with positive displacement pumps. Fit a recirculation line on inlet/outlet of pump. See install guide brochure. |
| ○ Controller Limit "LM" LED light triggers disabling controller or spike of counts appears on display counts suddenly when engaging start toggle | ○ Spike caused by 240vac contactor coil | ○ Fit a 0.1uF 275vac> mains capacitor across the coil to filter initial start spikes |

**Use UMT-8 Tester to check the functions of the inputs.**



# *Low Doserate issues Q&A (e.g. AEA)*

- What are the specific problems experienced ?**Accuracy when dosing 20 Mls Per Cubic Mtr !** Provide some stats ? **Asked for 2.4 on the Controller , run anywhere between 2.6 > 3.6 on a regular basis .**
- Does this mean, you dial up 2.4m3 and the display reads 2.4 but you get 2.6 to 3.6 in volume in your jug. Or the display runs up and over to 2.6-3.6 and the volume is the same collected as is shown on the display ?
- Confirming ..it sounds the display overshoots right ? and the overshoot display corresponds to volume. ??
- The overshoot should be consistently the same. If its after performing below tasks and you achieve a consistant overrun…then you set the 'Preact" overshoot volume deduct setting at rea of unit. (fr page.18).
- Is it a pulse fail issue when using ME995-2C batch controllers ? **Never a pulse fail , always an over run issue . Ok so choke the gate down so the pump runs at a slower flowrate. Less overflow. If you choke it a lot the ME995 might pulsefail… the you need to fit a capacitor to reduce sensitivity (page.24 of training manual).**
- Is it an over-run issue with liquid ? i.e. **Yes O/Dose of AEA Air (soapy liquid) which is critical to get right** . agreed
- Is it an accuracy issue ? **Yes !**
- Problems when using the ME2008 **?** **Not using a ME2000 , using a 995 . Ok**
- What are your minimum batch quantities you are trying to achieve ? **They are asking to achieve 20 Milliliters Per Cubic Mtr of Concrete . So 20 Mls is the smallest amount asked for. We are going to downsize the hose from the pump to the flowmeter to 12 mm also to see if this helps . Yes the complete hoseline from flowmeter onward should be ½". There should be a gate valve to restrict flowrate between pump and flowmeter inlet as well. If it's a PD pumps then you should fit a re-circulation line to take out the pressure and causing overshoot (see page.2). The same may apply to centrifuge pumps, choking pumps under pressure can stuff the seals… hence recirc line.**

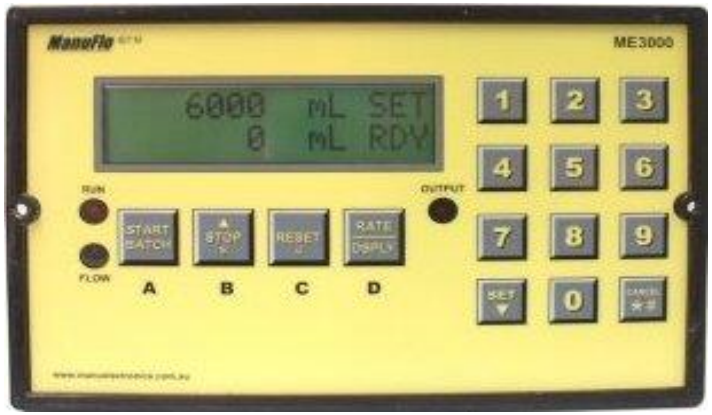
- The MES20 when restricted is still capable of measuring precisely even at low flows down to 1.5 LPM … 25 mls/sec. @1.5% accuracy. (lowest 0.8 LPM … 13mls/sec. @5%)

- NOTE: Backflow issues… unit stops… but then slowing counts up after batch complete. Could be a faulty non-return valve… as unit will count as liquid flows back.
- Failing all this we could offer a small bore magflow e.g. AMM15, MM15

---

# ME3000 – programable ManuFlo Batch Controller

## Displays
- Set/Run
- Flowrate
- Backflow
- Grand Total (resetable)
- Batch Id (resetable)
- 6 digits




## Alarms
- Batch Limit
- Max Flow Limit
- Min Flow Limit
- Backflow
- Output Rate
- Overbatch

## Features
- Event log (500 batches)
- Run/flow/output indicator LEDs

## Features (Optional)
- Computer control interface
- RS232 interface for printing batch tickets and/or downloading event log
- Front Port RS232 for easy access

## Configuration
- Calibration I/P
- Output Pulse
- Max output rate
- Max. batch limit
- Max. backflow
- Min. flow alarm level
- Max. flow alarm level
- Start delay
- Stop delay
- 4-20 mA current o/p
- Preact overrun
- Time & date
- Date last calibrated

# Portable Kits - Batch Controller / Flowmeter Systems

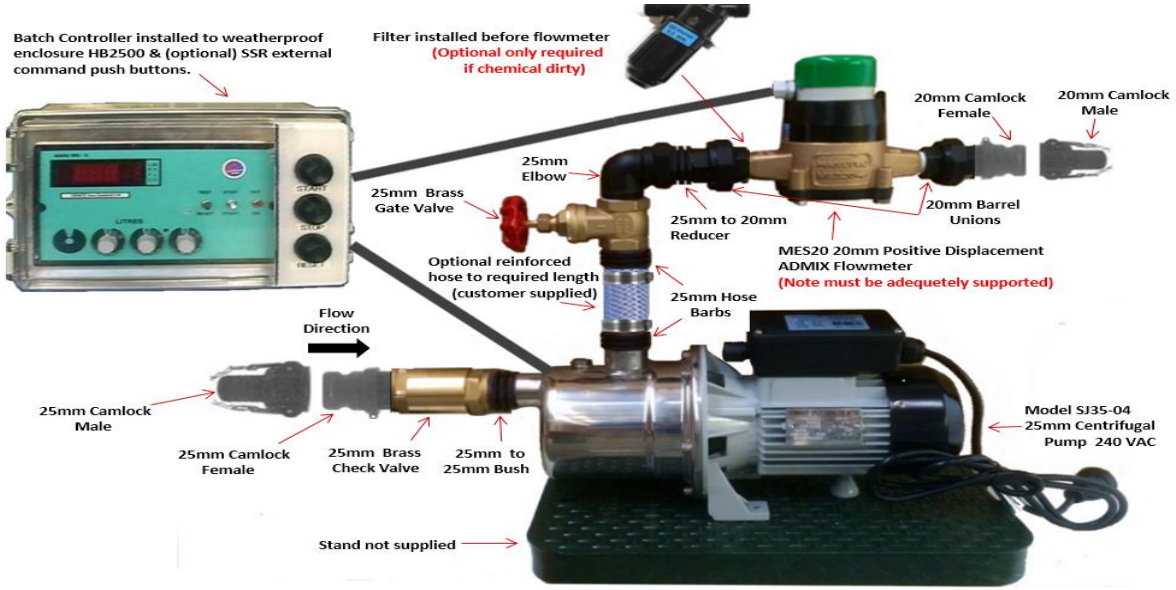
**5. Concrete Batch Plant Admix System Kit**

- **Batch Controller:-**
- **order ME995 model of your choice, to suit,**
- **Batch Controller Housing Box: order housing SHB, DHB, HB2500 options to suit.**
- **Flowmeters: -**
- **order MES or MM flowmeter to suit.**
- **Pump:-**
- **order pump to suit**
- **Ancillary Kit:-**

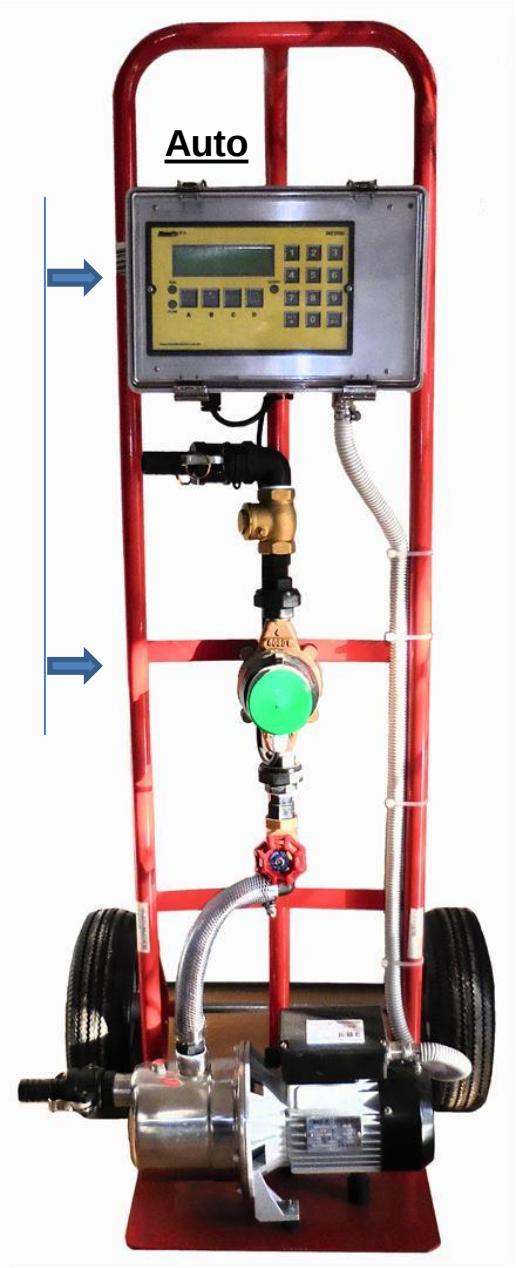
**with filter, gate valve, non-return valve, elbows & camlocks.**

**Cable:-**

**order length of cable from flowmeter to Batch Controller.**



# Portable Trolley -
# Admix Batch Flowmeter Systems




## *TYPICAL CONFIGURATIONS:*

| | |
|---|---|
| ***Type:*** | ***Manual or Automatic*** |
| ***Pump options:*** | ***Centrifugal or Positive Displacement*** |
| ***Controller:*** | ***ME995 series or ME3000*** |
| ***Flowmeter:*** | ***MES disc flowmeter or CMM magnetic flowmeter, Size 20mm or 25mm.*** |

***…… Fitted out complete ready to go.***

# 8.

# Interfacing Flowmeters to PLC/Computer Controlled Batch Plants

# 3. Automatic Batching via PLC/Computers (options)

**ME2008 (i)**
Microprocessor interface batch safety unit.

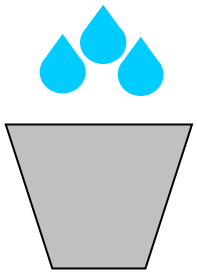
**Admix Flowmeter**
measures flow

**UIC Interface Card (ii)**

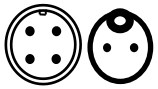
pulse/voltage scaling

Pump

Admix Storage Tank



Direct Flowmeter Pulses (iii)



via interface i/o plugs –MC2 (iv.1)

**ME995 Batch Controller (iv)**
controls batch delivery

**ME5IC i/o Card (iv.2)**
i/o scaling and comms.

**Batching computer / PLC**
sets/controls/records batches

Quantity set by: Computer/PLC
Delivery controlled by: Batch Controller/ME2008/Computer/PLC

# Batching Computers with ManuFlo equipment

- Types of Batching Computers include:
  - Command-Batch, Eagle/Alkon (see http://www.commandalkon.com)
  - Jonel-Archer (see http://www.jonel.com/readyMixBatch.htm) . Dorner and others.

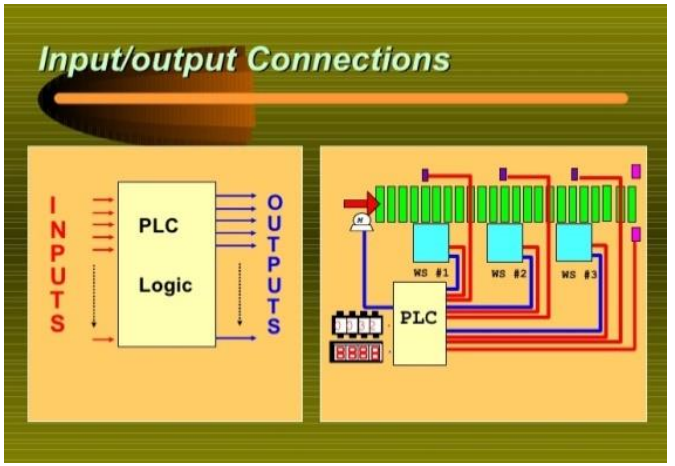
  - PC based systems include CompuBatch, Axion, Eagle by IPE, Batch-Tec, Matcon-Matic, United-Software and others.

- ManuFlo do not supply Batching Computers/PLC's but our equipment & or flowmeters interface with computers in customer installations.
- Call ManuFlo if you are unsure as to the interface required.

# Computer/PLC Interface to ManuFlo Equip.
# Considerations

When interfacing a Computer/PLC controlled Batch System with ManuFlo ME2008, Batch Controller, UIC or just our flowmeters, consider the PLC's:-

- **Input / Outputs:**
  - ❑ Supply voltage
  - ❑ Command voltages
  - ❑ Command types / sequence
  - ❑ AC or DC pulses?
  - ❑ DC sink or source pulses?
- Maximum input frequency
- Scan time (width of pulse read)




Please consult with ManuFlo if you have any interfacing questions.

# Computer/Batch Controller Interface - Common Issues

- With AC voltage I/O PLC/computers, **AC pulse input frequency limit is 15 Hz**.
  Ensure the AC input frequency from the interface card and or flowmeter to the computer is not exceeded, else overdose could occur!
  Be particularly careful when using AEA at 10 mls/pulse – speeding up the flow can cause computer to lose pulses.
  **DC pulse inputs are higher speed at 35 Hz**. (PC based systems with DC can be 1000's Hz).
- Why do they use AC inputs ? Better isolation from lightning strikes, less industrial noise issues.

❑ scale input to the computer by using ManuFlo:

- UIC – Universal Interface Card with pulse scaling
- ME2008 – Microprocessor Interface Batch safety Unit
- ME5IC – interface card with pulse dividers (via ME995 batch controllers)
- MC2 -- interface plugs
- Direct -- scaled output from flowmeters (e.g. scaled Magflows)

- **NOTE: FOR HIGH SPEED DIGITAL INPUT PLC CARDS THERE IS NO ISSUE**

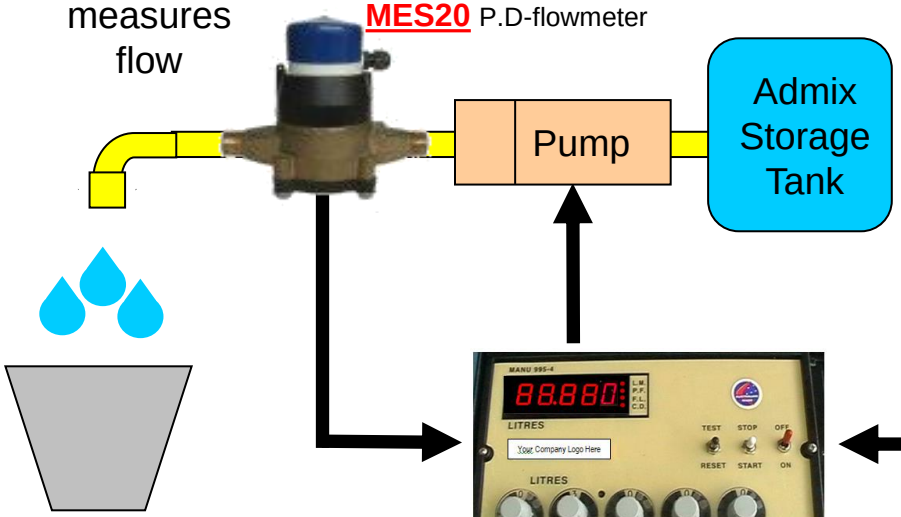
Kowloon Hong Kong

# A) "-MC2" PLC control with ME995 Batch Controllers

- Having Batch Controller incorporates safeties e.g. Batch Limit, Pulse Fail.
- Batch Controller provides manual control should Computer/PLC fail.

**Flowmeter** measures flow

MES20 P.D-flowmeter




**Batch Controller**
controls batch delivery

MC2 via interface plugs

**Batching computer**
sets/records batch

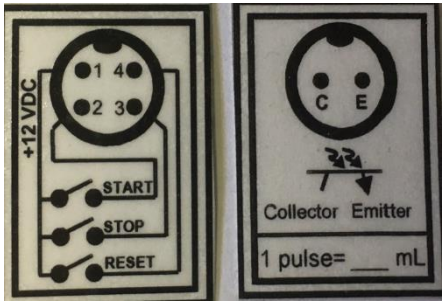
In use in various countries.
e.g. Australasia-Pacific,
Sth America, Middle-East etc

Quantity set by: Computer/PLC
Delivery controlled by: Batch Controller/Computer/PLC

**Eliminates Bottle Requirement**

# (A) Interfacing to PLC using – MC2


With PLCs, ME995 or ME3000 used as a Set Point Controller, or for added safety.




Located at rear of ME995 /ME3000 (4pin and 2 pin plugs

**For safety**, when using ManuFlo Batch Controllers in a system controlled by a PLC/Computer with batch recipe software: **on the Batch Controller use the front selector switches to set the maximum batch limit and/or doserate**. Thereafter, in the event of a flowmeter or PLC malfunction, the Batch Controller will override the computer and stop the batch.

<u>If unsure about any aspect of installation, please check the appropriate wiring diagram, product brochure and trouble shooting guide.</u>

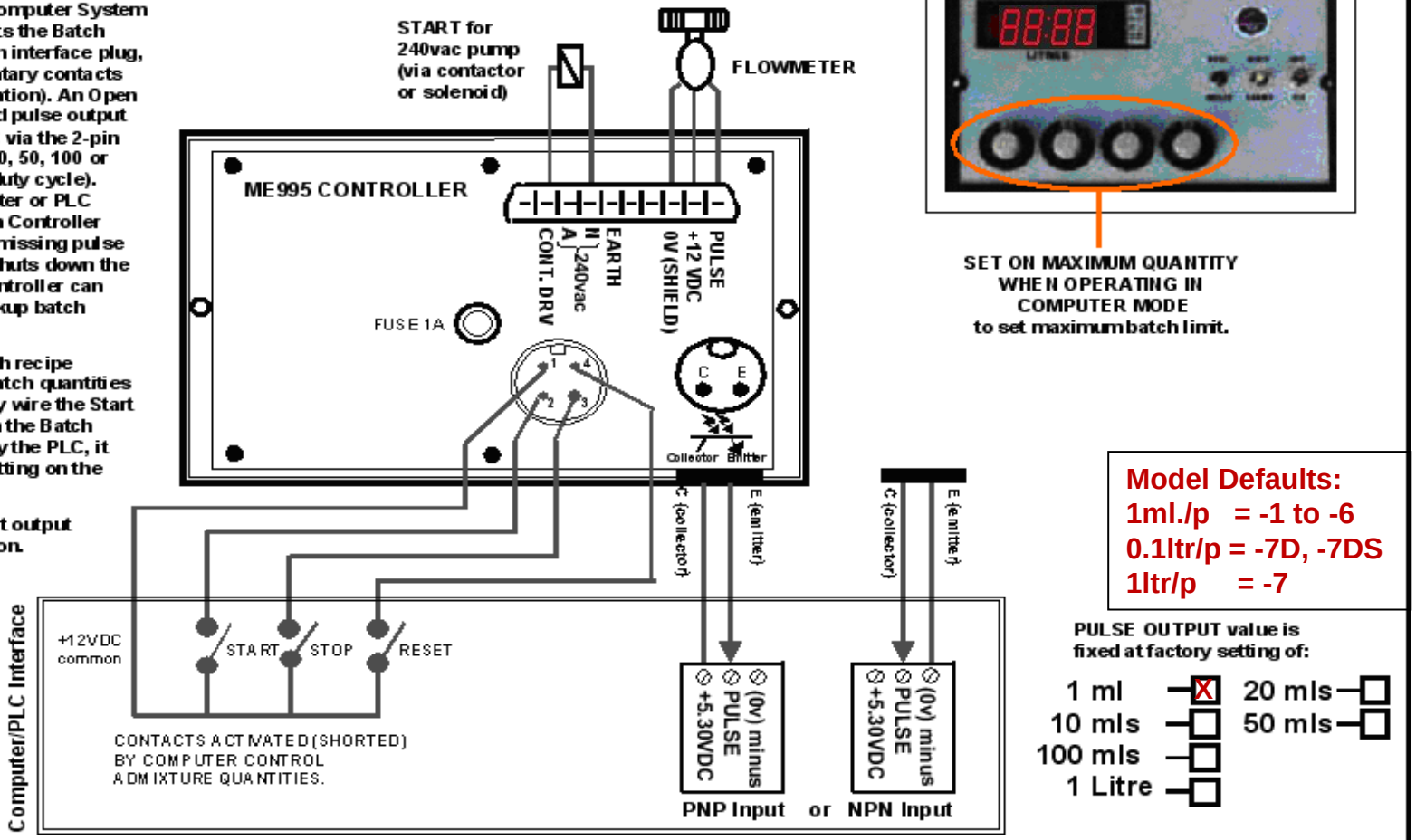
# (A) Interfacing to PLC using – MC2

**OPERATION OF BATCH CONTROLLER WITH PLC CONTROLLED SYSTEM**

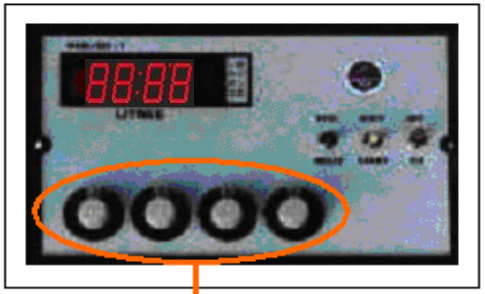
A maximum batch limit is set using the front selector switches of the Batch Controller. The PLC/Computer System starts, stops and resets the Batch Controller via the 4-pin interface plug, using volt-free momentary contacts (minimum 0.5 sec duration). An Open Collector opto-isolated pulse output is provided to the PLC via the 2-pin plug (fixed value 10, 20, 50, 100 or 1000 mls/pulse; 50% duty cycle). In the event of flowmeter or PLC malfunction, the Batch Controller overrides through its missing pulse detection safety and shuts down the system. The Batch Controller can also be used as a backup batch facility.

If the PLC has no batch recipe software control (or batch quantities are repeatable), simply wire the Start and Reset lines. When the Batch Controller is started by the PLC, it will batch up to the setting on the front dials.

Note: An alarm contact output is available as an option.




ME 995 series Batch Controller



SET ON MAXIMUM QUANTITY WHEN OPERATING IN COMPUTER MODE to set maximum batch limit.

**Model Defaults:**
**1ml./p = -1 to -6**
**0.1ltr/p = -7D, -7DS**
**1ltr/p = -7**

PULSE OUTPUT value is fixed at factory setting of:

| | | | |
|---|---|---|---|
| 1 ml | X | 20 mls | |
| 10 mls | | 50 mls | |
| 100 mls | | | |
| 1 Litre | | | |

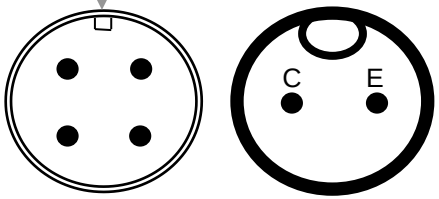
**WIRING DIAGRAM: ME995 Batch Controller and Computer Batching System.**

# (A) Interfacing to PLC using – MC2

For interfacing a Batch Controller to PC-based, low-voltage DC input Computers e.g. CompuBatch Systems, Dickinson Autocon, United Weighing etc

**-MC** option

4-pin PLC command plug (volt free) : start, stop, rest.




2-pin plug with OPTO 4N33 open collector pulse output 1 or 10ml / pulse

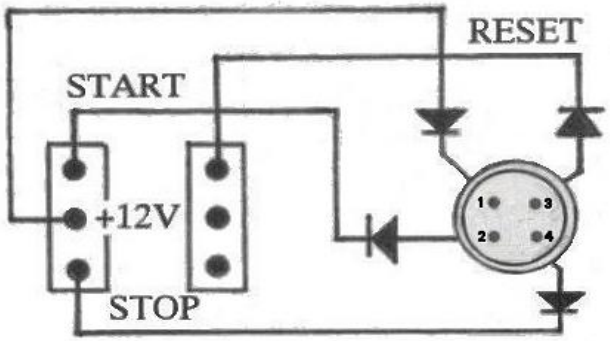
**-MC2** plugset option

-MC2 for **Dickinson Autocon** computers (sink) , and others.

**-S*n*** option, combined with MC2, for 10, 20, 50 or 100 ml/pulse output (where *n* is the pulse value required) depending on the PLC input rate.

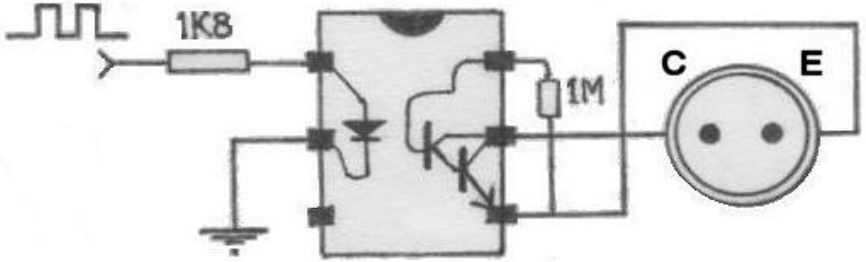
Note: On ME3000 Batch Controllers, the pulse o/p is scaleable via software.

Inside Batch Controller




The 4-pin plug allows an external PLC to command a Batch Controller (to start/stop/reset the Batch Controller) via a volt-free momentary (minimum 0.5 second) contact that actuates the internal 12 VDC of the Controller's Start/Stop/Reset signal.

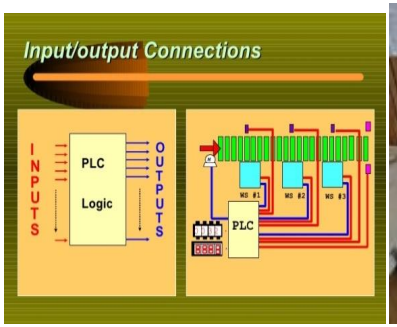
Inside Batch Controller




The 2-pin plug provides opto-isolated open collector 5-25VDC (maximum 120mA via the internal 4N33 opto) pulse output to the PLC inputs.

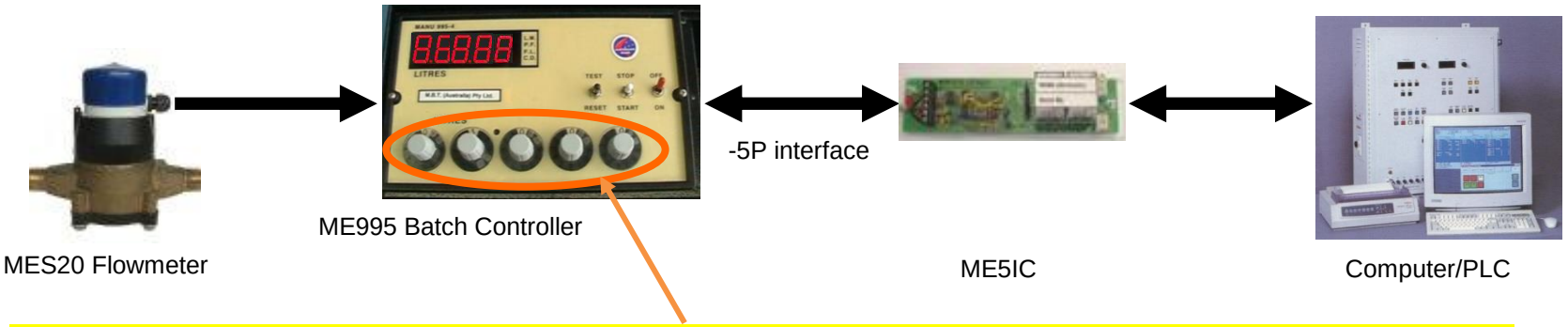
# Interfacing Flowmeters via ME995 batch controllers to PLC/Computer Controlled Batch Plants

# with ME5IC cards




- ManuFlo do not supply Batching Computers/PLC's but our equipment & or flowmeters interface with computers in customer installations.
- Call ManuFlo if you are unsure as to the interface required.

# Interface Cards – Using ME5IC with ME995 / MES20




- **When the PLC/batch Computer controls the system, then set the ME995 rotary dial knobs on the maximum permissible batch limit required. E.g. 50,000 Milliliters or 50 liters.**
  **(The PLC will now control the starting and resetting the system for each batch selection via the ME5IC interface card).**

- **Interface card (1 to 5 channel options)**

- Provides interfacing and control of ManuFlo **Batch Controllers with Computer/PLC's**. Primarily designed for interfacing to American Command-batch, Eagle, Alkon and Jonel industrial computer batching systems. (which only have a PLC Start & Hold batch active drive – no stop signal).

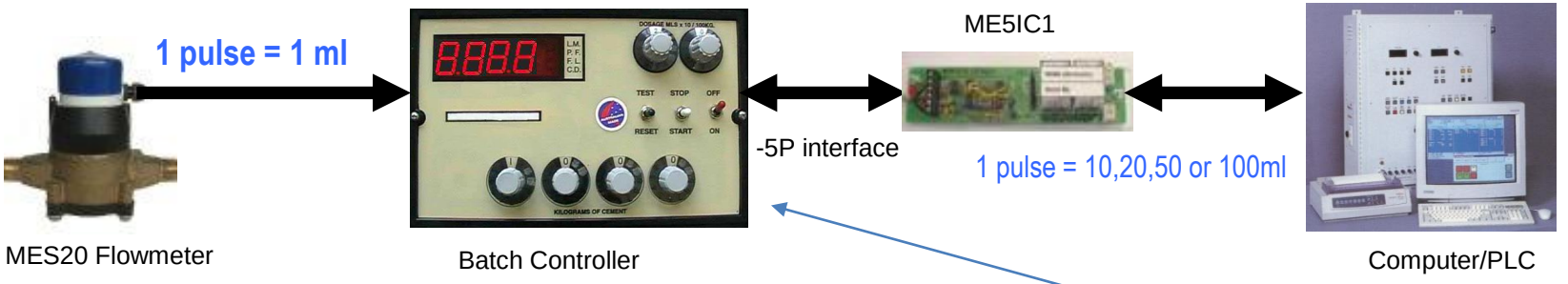
- Enables incorporation of the ME995 Batch Controllers and their **safeties** to the Computer/PLC batch system, & provides an **independent backup batch facility**.

**Superseded by ME2008.**

- **Batch Controller must be fitted with the "–5P" 5-pin interface plug option.**

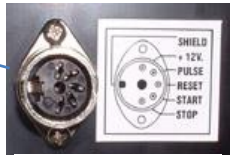
# Interface Cards – with ME5IC

Superseded by ME2008.




**ME5IC** enables:

- PLC/computer to control the ManuFlo Batch Controller, and receive divided/scaled graduations of 10, 20, 50 or 100mls pulses which are opto isolated in divided pulse form.




**Ordering Option Codes:**

| ***No: CHANNELS (on Card)*** | | ***POWER SUPPLY (To Card)*** | ***PULSE OUTPUT (to computer input)*** |
|---|---|---|---|
| ME5IC-5 | 5 channel card | 1A - 240vac power supply | 2A - 110-240vac triac pulse output switching |
| ME5IC-4 | 4 channel card | 1B - 110vac " | 2B - 24vac " " |
| ME5IC-3 | 3 channel card | 1C - 24vac " | 2C - 5-24vdc opto isolated pulse switching (sink=pulse to O.V.) |
| ME5IC-2 | 2 channel card | 1D - 24VDC " | 2D - 5-24vdc (source = pulse to +). |
| ME5IC-1 | 1 channel card | | |
| ME5IC-1W | 1 channel card | | |

-W for water batch applications)

ME5IC-5

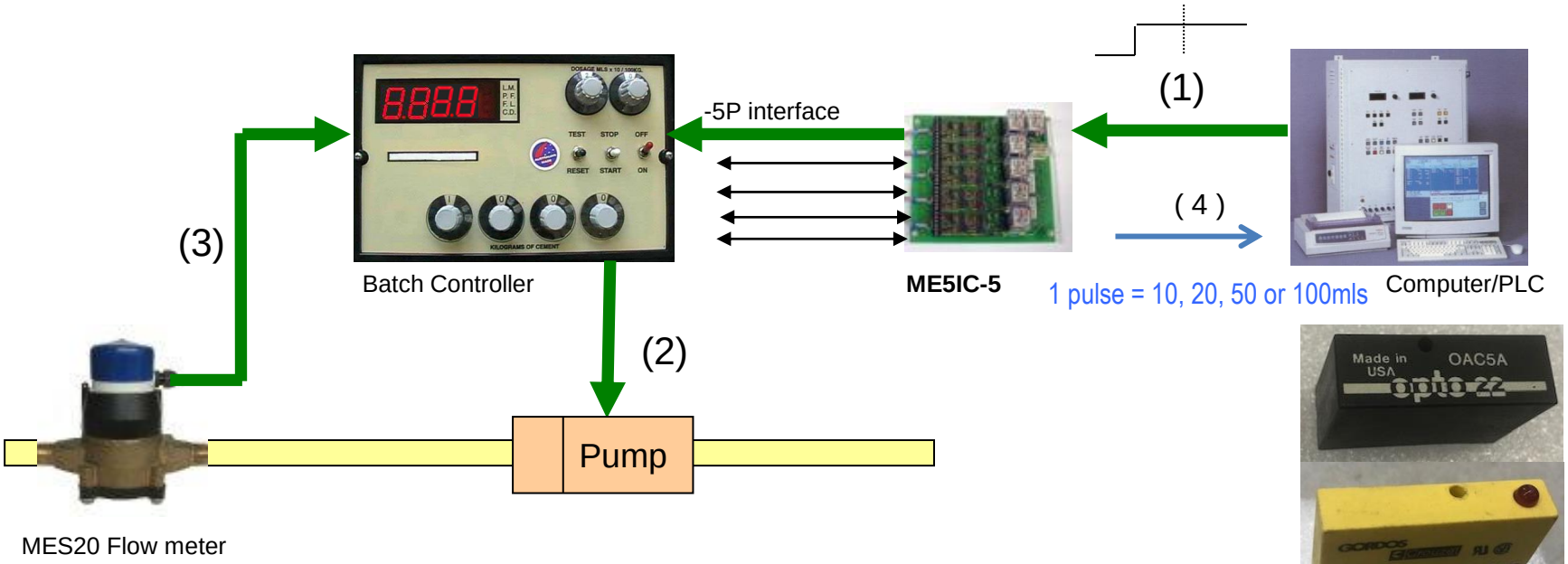
| ***START DRIVES (from computer output control drives)*** | | ***CABLE LENGTH*** |
|---|---|---|
| 3A - | 240vac start and reset relays | 4A - 2 metres cable x 5 cords (Card to ManuFlo controllers) |
| 3B - | 110vac " | 4B - 3 " |
| 3C - | 24vac " | 4C - 4 " |
| 3D - | 24VDC " | 4D - 5 |

ME5IC-1

# Interface Cards – ME5IC-5 – Operation

Superseded by ME2008.

(e.g. 240vac Command – 5 channel Admixtures)



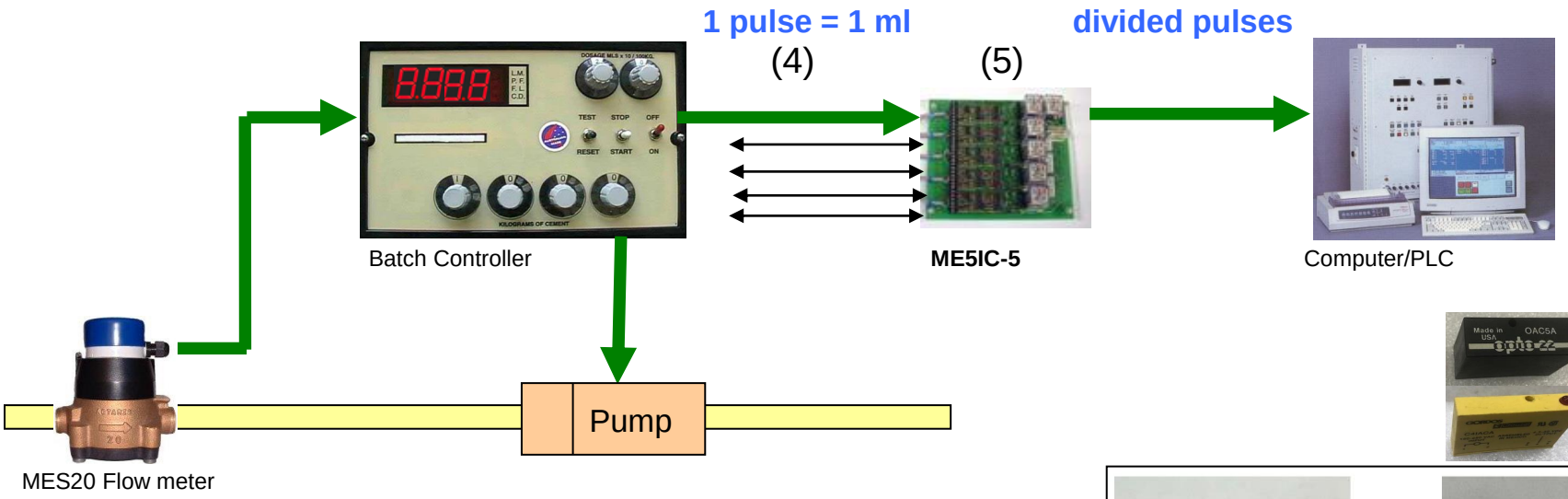


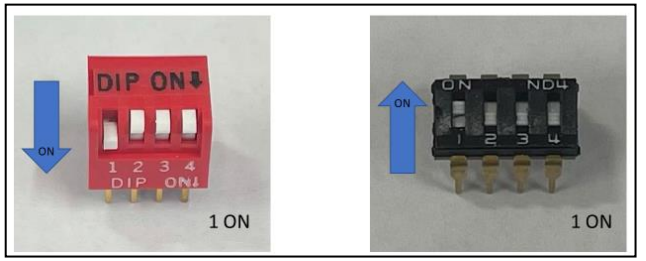
(1) The **computer 'start' command** is via Computer's (Black) Opto22.
The Opto stays on for the duration of computer batch cycle.
The start voltage to the Batch Controller must be **on for at least 1.0 second**

(2) **Batch Controller starts** : activates 240vac drive to pump and/or solenoid.

(3) Once liquid flow begins, flowmeter will **pulse** to the Batch Controller.
(4) Scaled pulses from the ME5IC card are sent to computer OPTO (yellow) input.

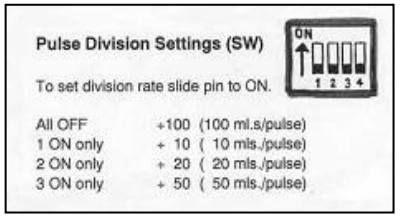
# Interface Cards – ME5IC-5 – Operation



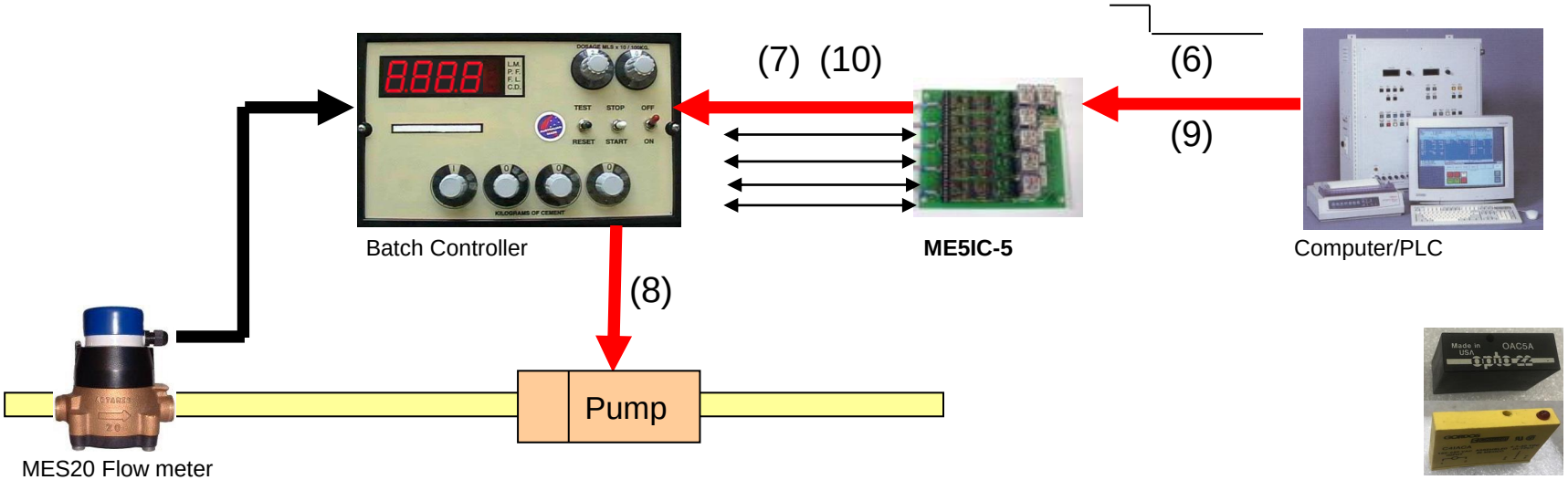




(4) Batch Controller outputs 1 pulse / 1 millilitre to ME5IC card.

(5) **ME5IC divides pulses** by either 10, 20, 50 or 100.
The divide factor on each of the 5 channels can be individually set by the 4 way **DIP**.
Each divided pulse passing through the card is indicated via **LED**.
The 12VDC **pulse is then converted** to 24-240vac pulse via Crydom AO241 triac opto.
The Crydom opto then pulses to the computer (Yellow) Opto22 input.



# Interface Cards – ME5IC-5 – Operation



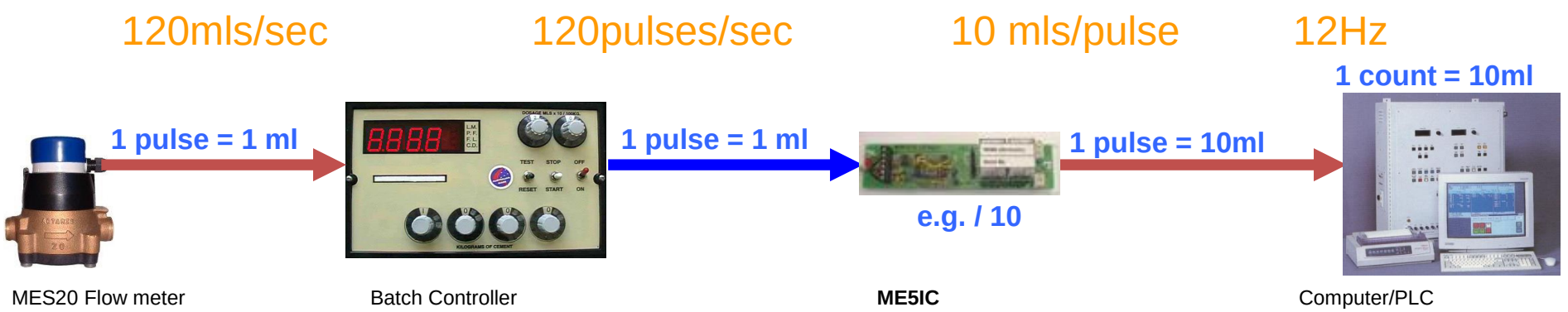

**When computer determines batch target is reached: (receives desired graduation pulses)**

(6) the START (black) Opto22 switches off;

(7) then the ME5IC card then internally generates a stop pulse to ME995 Batch Controller(s) which then (8) stop pump(s) and or solenoid valve drive(s);

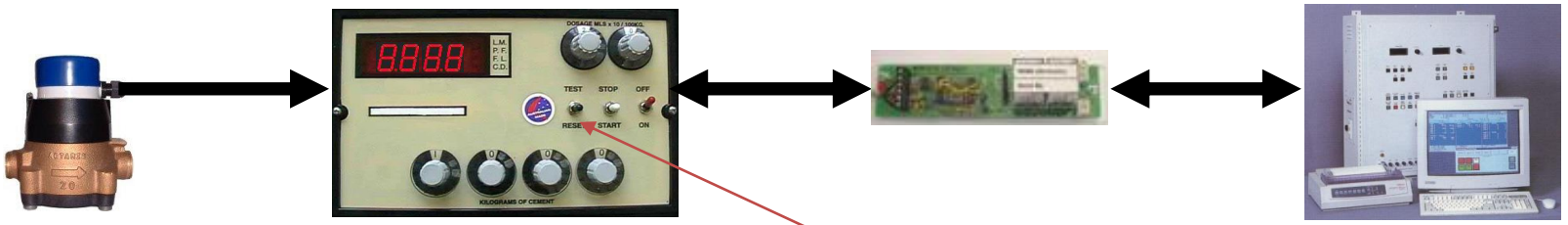
(9) at batch complete, the computer will provide **24-240vac Master RESET** to ME5IC master reset relay, (10) resetting the Batch Controller(s).

# Interface Cards – ME5IC-5 – PULSE Overview Operation




- Batch Controller outputs 1pulse/1ml to the ME5IC interface card.
- The ME5IC then divides the pulses (according to the onboard 4-way DIP setting) to be 10, 20, 50 or 100 mls per pulse.
- The set pulse divided value must be then be entered into the computer software graduation input parameters e.g. divide by 10 on card, so set computer input to 1count = 10mls.
- NOTE: The output rate to the computer input must not exceed 12-15Hz for AC-inputs or beyond the maximum permitted scan time.

# Interface Cards – ME5IC-5 – TEST Operation





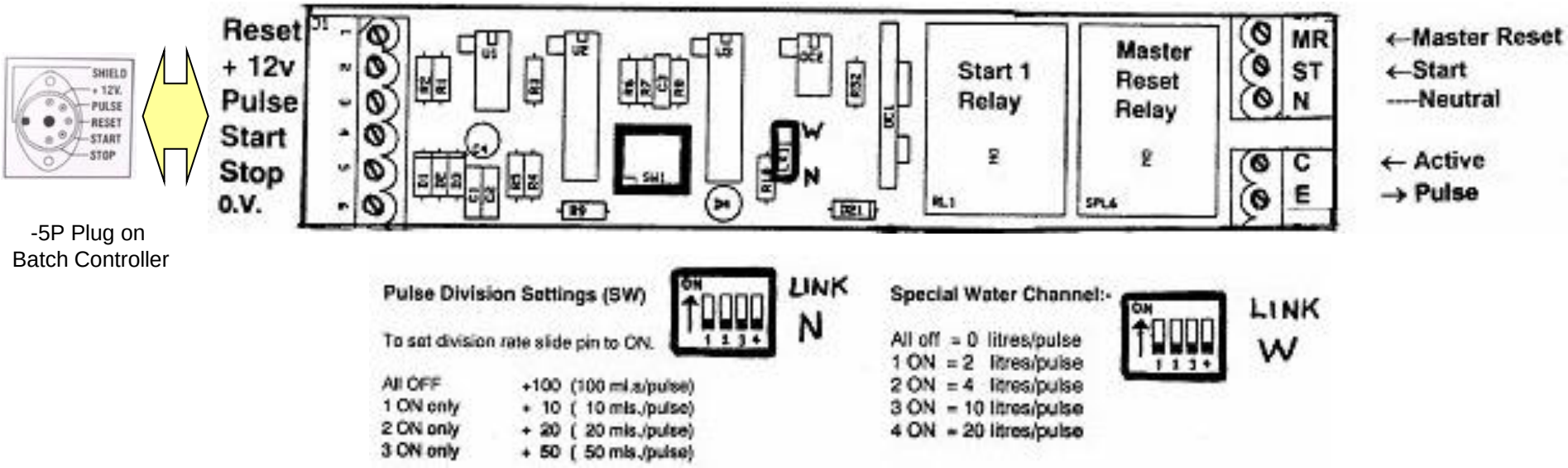
## To test the system:

- Push and hold **test toggle** on ManuFlo controller.
- Pulses are generated through ME5IC card to computer input and screen.
- Release the test toggle.

- Check that **readout** on Batch Controller and computer screen correspond (the computer input parameter must be programmed to the same divided output pulse value).

- Perform a **batch test** via computer start or via Batch Controller start. The volumetric quantity received should correspond with Batch Controller and computer displays (a small % variation is acceptable).

# Interface Cards – ME5IC-1




ME5IC-1 Single channel Card Schematic

**MR** (Master Reset) connect to computer OPTO output control active RESET signal.
**ST** (Start) connect to computer OPTO output control START signal (will stay ON for duration of batch).
**N** (Neutral) connect to Neutral voltage line from computer/PLC supply board.

**<u>5-24 VDC pulse option</u>:**

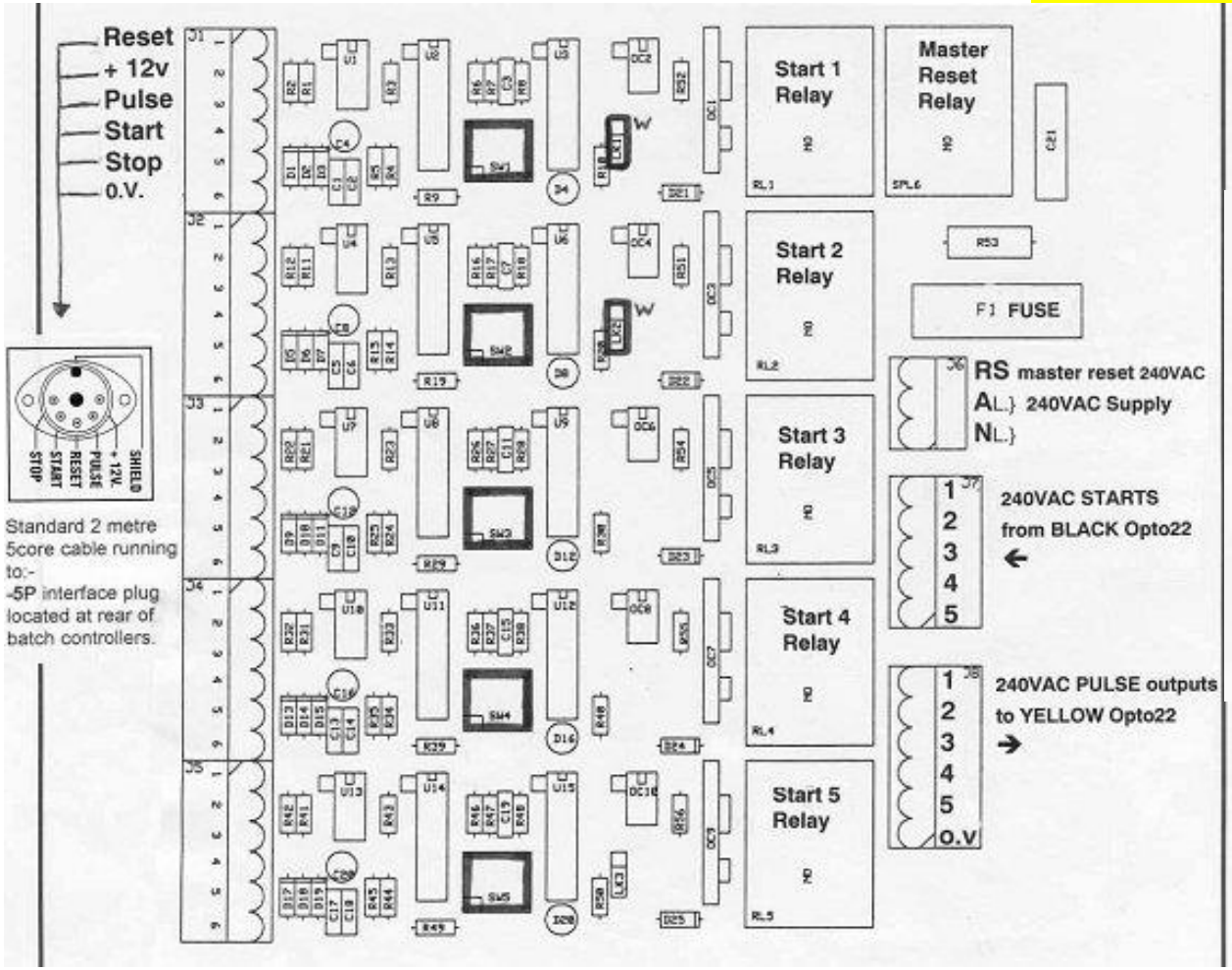
**C** (Collector) ← : connect to Computer pulse input line OPTO (White),
**E** (Emitter) → : connect to 0.V. input line.

**<u>24-240 vac pulse option</u>:**

**C** (Collector) ← : Active line from Computer supply line
**E** (Emitter) → : 24-240 vac pulse to Computer input pulse OPTO (Yellow).

Card can be piggy-backed to existing ME5IC-5 multi-channel cards by paralleling Neutrals and Master reset wires.

# Interface Cards – ME5IC-5 – DIP Pulse Graduation Settings




**Pulse Division Settings (SW)**


To set division rate slide pin to ON.

| | |
|---|---|
| All OFF | ÷100 (100 ml.s/pulse) |
| 1 ON only | ÷ 10 ( 10 mls./pulse) |
| 2 ON only | ÷ 20 ( 20 mls./pulse) |
| 3 ON only | ÷ 50 ( 50 mls./pulse) |

Special:- DIP switches 1 & 2 optionally for water batch controllers: Set LINK to W. ÷2 ( 2 litres per pulse)

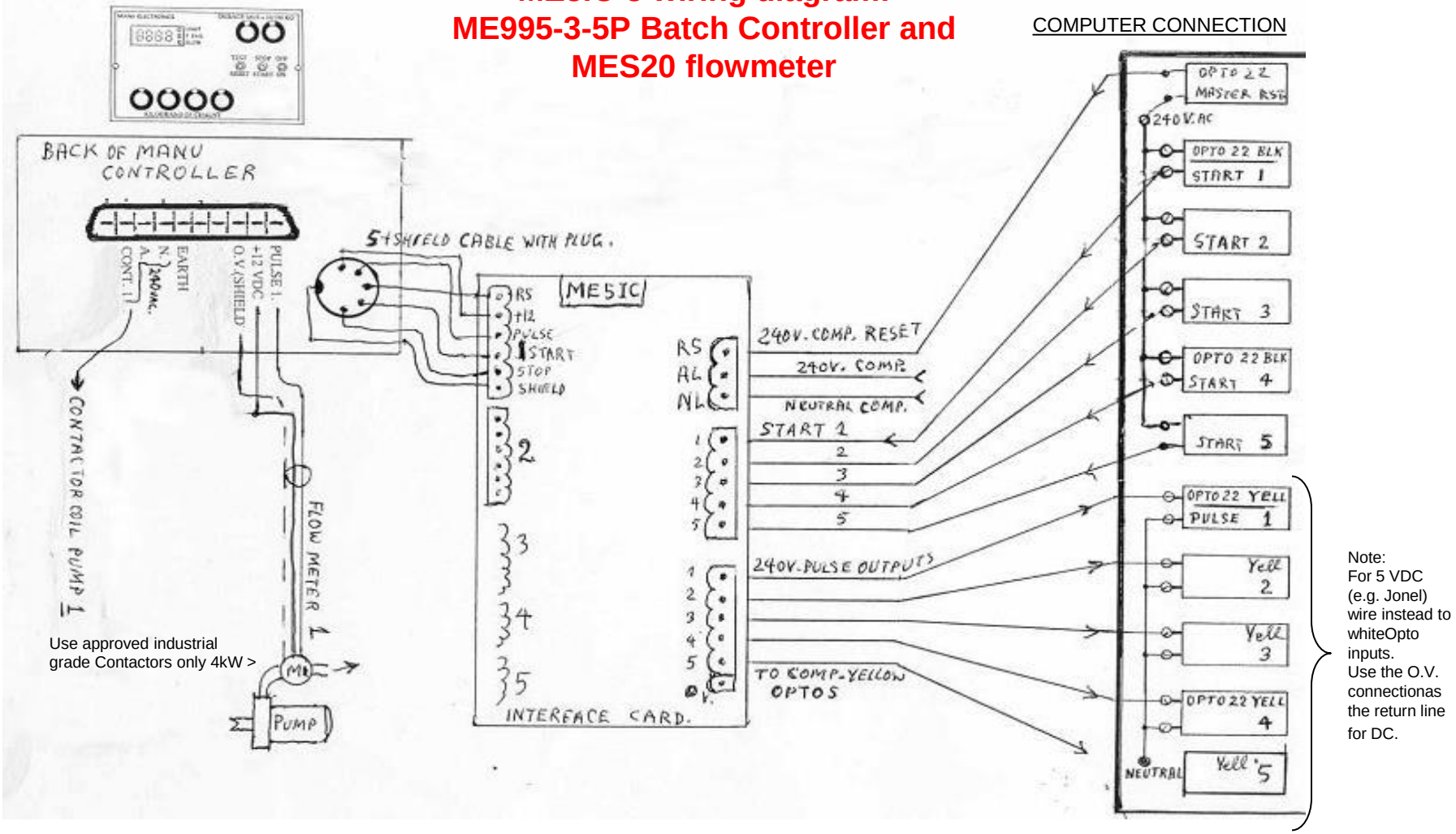
2 ON only÷2 (2 litres/pulse)
3 ON only÷5 (5 litres/pulse)
All OFF ÷10 (10 litres/pulse)

**Superseded by ME2008.**

# Interface Cards – ME5IC-5 - wiring

Batch Controllers set on maximum dosage (batch) quantity limit.

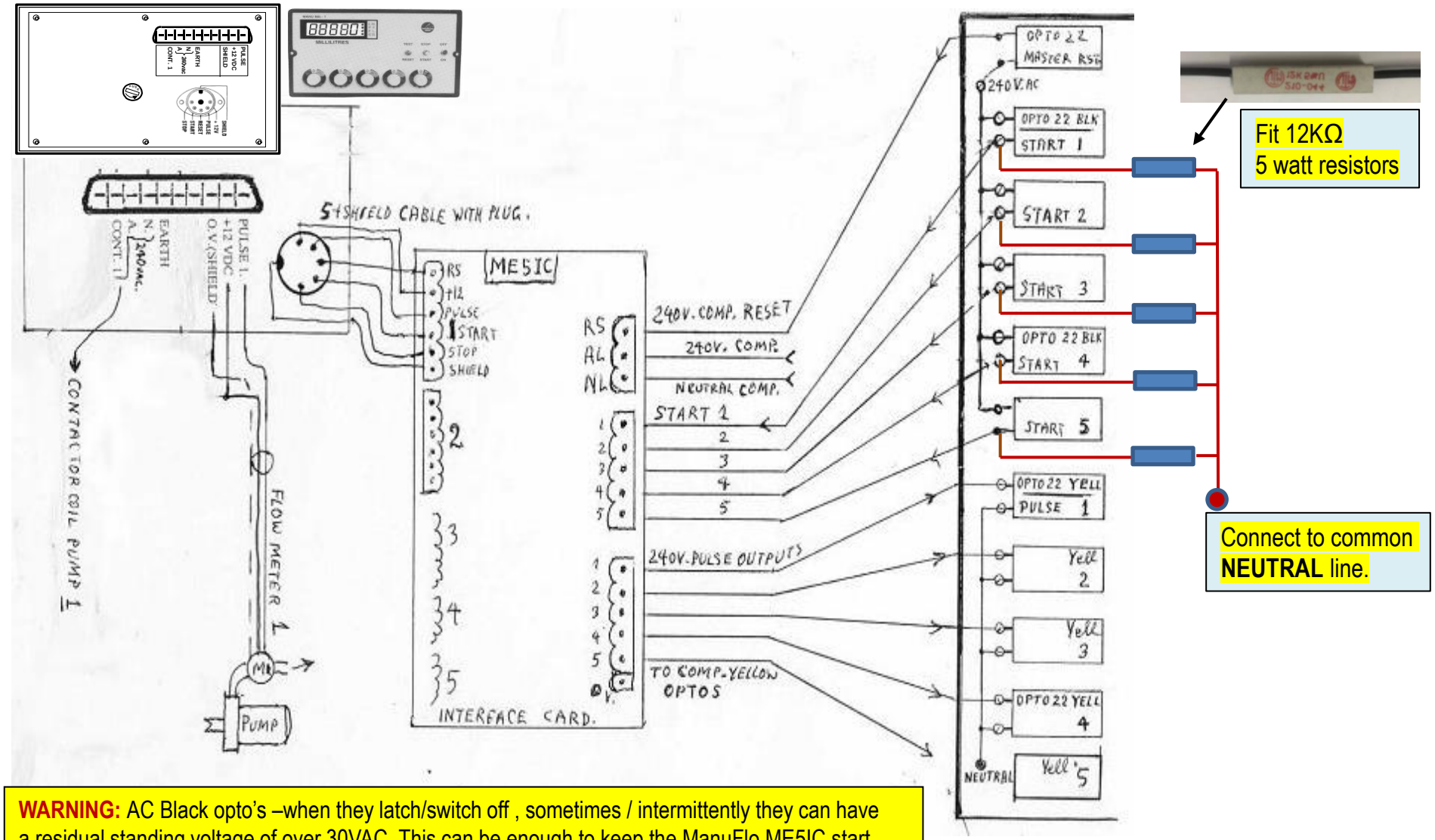
## ME5IC-5 wiring diagram: ME995-3-5P Batch Controller and MES20 flowmeter



# Interface Cards – ME5IC – Troubleshooting

| Symptom | Solution |
|---|---|
| 1. ME995 SYSTEM continues batching after batch complete target is reached. Computer continues to receive pulses after batch target. LEAKY voltage on OPTO's drives the ME5IC start/drive relay coil | Optos when switching off, can have residual leakage voltage, high enough to keep relay coil of ME5IC in on-state, driving Batch Controller and pump until it reaches its setting on front dials. Measure between Neutral and Active of Opto, if above 50vac in off-state, fit a 10-15K 10watt resistor to drain leakage to neutral. Generally in this situation, batch will run to setting on ManuFlo controller. If running past settings, contactor coil may be stuck on (i.e. is faulty). Turn off power and replace contactor. |
| 2. Computer display and ME995 display not matching. | Check that the divided pulse value on ME5IC and computer pulse input value are matched e.g. 10mls/pulse. Note: Preferably use ME995 controllers that display in total millilitres or litres dispensed. |
| 3. Calibrated collected quantity matches ME995 display but not computer display quantity. Computer misses pulses. | Check pulse divider value on ME5IC card, check computer input value. Pulses to AC computer inputs must not exceed 13HZ or max. scanning time. Check pulse dividers and compter input (Admix Flowspeed mls/sec) divided by (divided pulse value) =< 13HZ. E.g. AEA flowing at 150ml/sec through divider of 10ml/pulse = 15HZ. Means computer i/p will miss pulses, and overdose will occur. So, restrict flow or increase divider to 20mls/pulse. |
| 4. Reset, start or stop function to ME995 not working. ME995 counts but no counts to ME5IC (LED pulse not blinking). | Check 5-pin (-5P) interface plug at rear of ME995 Batch Controller, may not be properly secured and locked (intermittent contact), or wire broken inside plug. Open plug and inspect wiring joints. Inspect connections from cable entering ME5IC interface plug. Wire may be shorted – inspect. |
| 5. ME995 Batch Controller stops under batch target. | Front dial batch settings below computer batch targets. Select to higher value. Pulsefail LED activated, flowmeter blockage/problem, check flowmeter. |
| 6. ME995 alarm condition | This indicates batch has been interrupted, or overbatched. Before releasing truck load, check ME995 and computer displays. If discrepancy, dump load or compensate. Call for service. Refer to ME995/MES20 troubleshooting/maintenance guides. |
| 7. After above checks, ME5IC still appears defective. | After consultation with installer/admix supplier or ManuFlo, replace ME5IC card or ME995 controller or Flowmeter or OPTO. Check operation guides for each product. |

# How to solve leaky opto's that keep the ME5IC start drive relay activated




**WARNING:** AC Black opto's –when they latch/switch off , sometimes / intermittently they can have a residual standing voltage of over 30VAC. This can be enough to keep the ManuFlo ME5IC start relay HELD ON & ACTIVATED. This will keep the batch controller ON and powering the PUMP until power is cut off. Install the resistor to reduce / minimize OPTO leakage to solve the issue.

# ii) Batch Safety Interface with ME2000/2008

The ManuFlo Advantage


**ME2000**
2, 4 or 6 channel


**ME2008**
2, 4, 6 or 8 channel

***In use in over 2000 batch plants Globally.***



**ME2000-CV**
2 channel Compact

# Interfacing with ME2008

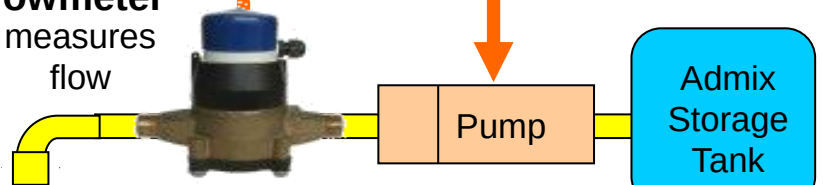
***Or*** **CMM / AMM / KMS**
Mag-flowmeter
options

**ME2008**
Microprocessor intelligent
interface batch safety unit.

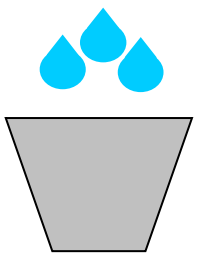
Up to 8 flowmeters

**Batching Computer**
sets/records
batch

**Flowmeter**
measures
flow




**MES**



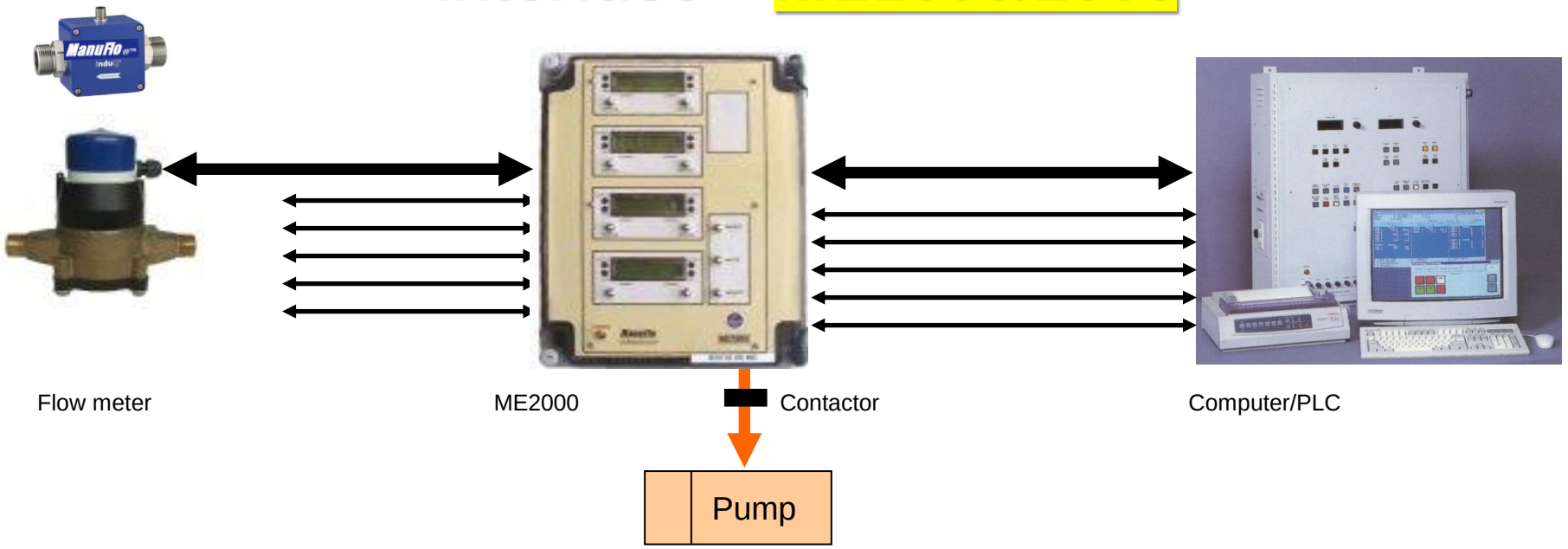
**Eliminates Bottle Requirement**

In use in Australia,
NZ, HK, Nth China

Quantity set by: Computer/PLC
Delivery controlled by: ME2008/Computer/PLC

**Safest and cost effective method of Admix batching in computer controlled plants**

# Interface – ME2000/2008




- The ME2000 and ME2008 are microprocessor-based batch safety interface units for management of flowmetering admixture liquids in the concrete production industries.
- Designed at the request and requirement of suppliers/producers/users of construction chemical products for safely dispensing chemicals replacing the need of sight bottles or load cell canisters
- A sophisticated **safety management** watches for any malfunction in the flowmeter or batch Computer during the batch cycle. If a fault is detected, the ME2000/2008 will override and shutdown the faulty channel, and will alarm with a message on the display.

# PLC - ME2008 OPERATION SEQUENCING FLOW CHART

1

The operator initiates the sequence at the PLC which signals the 'START & HOLD' command operation to the ME2008 & simultaneously starts and holds all pump contactors to begin chemical Admixture flow.

2

Flowmeters then transmit volumetric pulses back to the ME2008 which in turn transmits scaled pulses to inputs of the plant PLC.

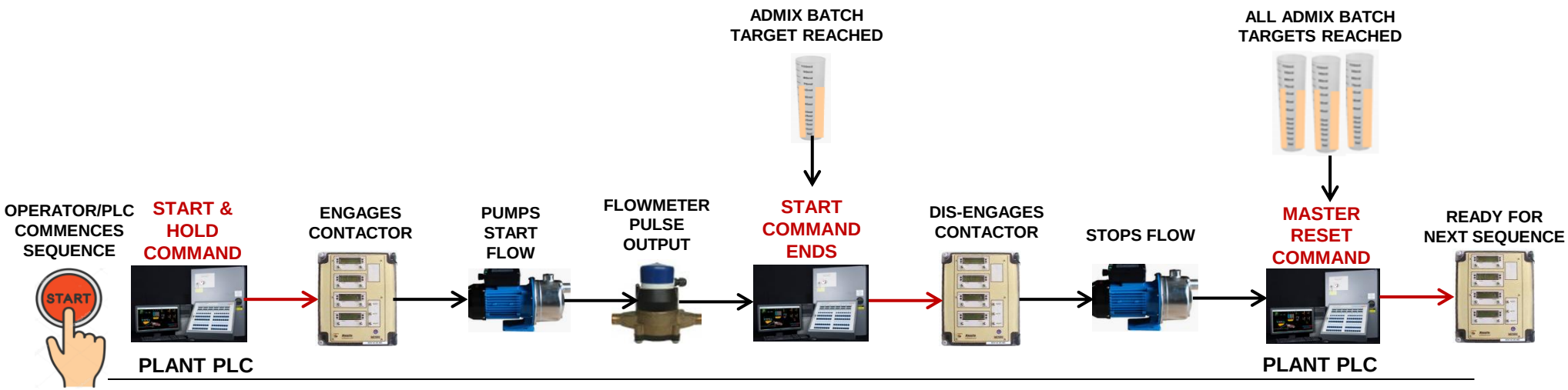
3

Depending on the individual batch recipe the PLC waits until target pulse amounts are reached (volume), once reached the 'START' drive disengages the ME2008 Start drives to contactors.

4

Once all Admixture chemicals (channels) have reached their target and following a pre-programmed period of time the 'MASTER RESET' command to ME2008 is automatically engaged by the PLC (or in some cases by manual operator means) and the next batch is ready for repeat or new sequence to begin.

START AGAIN



Admix Tank

Pump starts

Flow meter

Water

Solids

Admix Discharging

WHT or SOK or WOK

START & HOLD

Contactor Closes On

2

ME2008

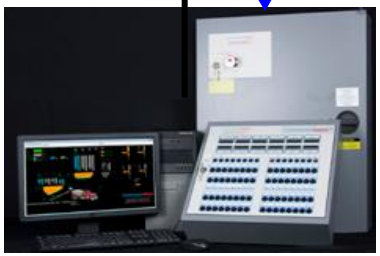
PULSE SIGNAL transmits

1

Mixer Truck

START & HOLD command

SCALED PULSES TO PLC



PLANT PLC

1) The operator initiates the batch start sequence at the Computer/PLC which signals the **'START & HOLD'** command operation to the ME2008 & simultaneously which starts and holds all pump contactors to begin chemical Admixture flow. (Note: Up to 8 starts)

2) Flowmeters then transmit volumetric pulses back to the ME2008 which in turn transmits scaled pulses to inputs of the plant PLC. (Note: Up to 8 return pulse lines)

Admix Tank

Pump stops

Flow meter

Water

Solids

WHT

SOK

WOK

or

or

Admix Amount Reached

Mixer Truck

START disengages

Contactor Off

3

PULSE SIGNAL ends

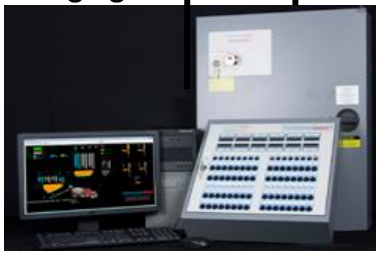
ME2008

3

START Command disengages

MASTER RESET Command at completion

4



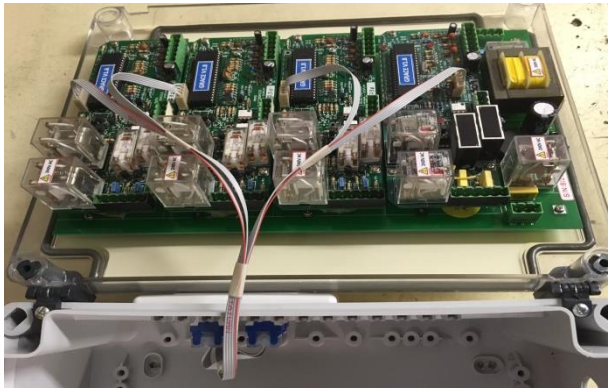
PLANT PLC

3) Depending on the individual batch recipe the PLC waits until target pulse amounts are reached (volume), once reached the **'START'** disengages the ME2008 Start drives to contactor.

4) Once all Admixture chemicals (channels) have reached their target and following a pre-programmed period of time the **'MASTER RESET'** command to ME2008 is automatically engaged by the PLC (or by manual means), then the next batch is ready for repeat or new sequence to begin.

# Interface – ME2000/2008 - Features

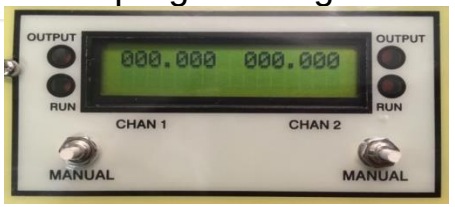
- All parameters and entries are **fully programmable** via a plug-in hand held keypad.
- **Dual-Channel Modules** (mount up to 4) on motherboard, for creation of 2, 4, 6 or 8 channel unit.
- Optional Pulse Comparator for Dual Flowmeter system.
- Optional Dual Display Counters for each channel (for Comparator function).
- **Input Pulse scalable for use with most types of Flowmeters.**
- All display readouts in **Litres to 3 decimal places**, with instantaneous **flowrate** display reading.
- Accumulated **batch totals (grand totals)** for inventory records.
- Initial Start and Pulse-fail **Safety**.
- **Low and High Flow range settings**. Real-time Pulse-fail Safety monitoring safeguards against exceeding flowmeter operating ranges.
- **Maximum pulse output frequency alarm, for PLC input safety**.
- Maximum **Batch Limit Safety**.
- **Output Pulse Division** to PLC/Computer scalable.
- 24-240 vac or 5-25 VDC pulse switching.
- Input/Output control with optional voltages.
- **Manual Batch facility**, with Disable option.
- Master Audible **alarm** function
- Alarm condition for leaky check valves (back flow).
- Can be used for water channels e.g. RPFS-P paddlewheel.

# Interface - ME2000/ME2008 – Display Menu

*On powering up the unit allow 30 seconds for ME2000/08 to fully boot up all functionalities before use.*

- Switch on power to the ME2008 interface safety unit.
- Scroll through the settings by pressing SELECT.
- Go to the desired display to change a parameter via re-programming.





⇒ Power On:

| MANU ELECTRONICS<br>ME2000 V1.8 |
|---|

⇒ 1. Push Select:

| 000.000 000.000<br>000.000 000.000 |
|---|

**Channel 1**
**Flowmeter A**
**Flowmeter B**

**Channel 2**
**Flowmeter A**
**Flowmeter B**

Batching function display in "LITRES" to 3 decimal places. At anytime you can skip functions and return to normal by pushing RESET (You cannot reset while pumping is in progress).

⇒ 2. Push Select:

| Flow (Lt./sec)<br>00.000 00.000 | Flow Rate Function in Litres/second (to 3 decimal places). |
|---|---|

Use Software ver: V1.8 or at least V1.7. Versions 1.6, 1.5, 1.4 should be upgraded

**New option to enable/disable comparator function**

⇒ 3. Push Select:

| Total (Litres)<br>000000 000000 | Grand Total accumulation.<br>To reset: push 2 buttons at once on 4-button programmer. |
|---|---|

⇒ 4. Push Select:

| Input (p/l)<br>1000.00 1000.00 | K-factor / Calibration:<br>sets pulse input value per litre, according to flowmeter used<br>e.g. MES20 1000pulses/litre, MES25 0555pulses/litre. |
|---|---|

⇒ 5. Push Select:

| Output (l/p)<br>00.010 00.010 | Pulse Output Volume Value (Litres /pulse).<br>Sets division of output pulses to suit computer/PLC.<br>Resolution from 1ml. Example shows 10ml.<br>See also "Program Record Sheet" (page 9). |
|---|---|

# Interface - ME2000/2008 – Display Menu

⇒ 6. Push Select:

| | |
|---|---|
| Min. Flow (l/s)<br>**00.010 00.010** | Minimum flowrate<br>(set this according to flowmeters' recommended minimum).<br>Pump will be stopped if the flowrate falls below this value.<br>Previously known as Pulsefail in ME697, ME995/188 units. |

Monitoring is always live during batch even for Intermittent flowmeter signals

⇒ 7. Push Select:

| | |
|---|---|
| Max. Flow (l/s)<br>**01.000 01.000** | Maximum flowrate<br>(set this according to flowmeters' recommended maximum).<br>Pump will be stopped if the flowrate exceeds this value. |

⇒ 8. Push Select:

| | |
|---|---|
| Dose Limit (l)<br>**010.000 010.000** | Sets maximum acceptable limit per batch<br>(overrides computer selection). If limit is reached,<br>pump is stopped and "Overdose" warning will be displayed. |

⇒ 9. Push Select:

| | |
|---|---|
| Max Backflow (l)<br>**000.100 000.100** | The Backflow function raises an alert if<br>the check (non-return) valves leak.<br>Set to the desired maximim allowance of backflow |

Monitoring is always live even after batch

⇒ 10. Push Select

| | |
|---|---|
| Difference (%)<br>**05.0 05.0** | COMPARATOR (5% = ±2.5%)<br>This function is used to compare 2 flowmeters in series.<br>If the flowmeters differ by more than the allowed percentage,<br>the pump will be stopped and an alarm triggered.<br>From software Version 1.5 onwards, the comparator function only operates during batching. |

# Interface - ME2000/2008 – Display Menu

⇒ 11. Push Select

| | |
|---|---|
| Start Delay (s)<br>**02.0 02.0** | Start Delay is the time (in seconds) allowed for pump to start before the Pulse Fail safeties activate. After the Start Delay period, the safeties will shut down the pump drive if no flowmeter pulses are received. |

⇒ 12. Push Select:

| | |
|---|---|
| Stop Delay (s)<br>**02.0 02.0** | Stop Delay is the time (in seconds) allowed for the pump to settle after stopping, before back flow detection commences. |

⇒ 13. Push Select

With memory buffer to capture all PLS counts

| | |
|---|---|
| Max Out Rate (Hz)<br>**0012** | Max Out Rate is the maximum allowed rate of output pulses to the computer. If the maximum is exceeded, then the pump stops, then the ME2000 memory sends extra pulses to the PLC/Computer's AC Yellow Optos (under the 12 Hz max. input rate) or low scan rate systems. |
| **AC = 15 Hz**<br>**DC = 40 Hz** | Extra pulses received (above the allowed rate) represent actual extra volume measured by the flowmeter and ME2000, but which would have otherwise not been fully counted by the PLC/Computer system. (This situation is different to actual "inflight overflow", where a DEDUCT value must be programmed in the computer system to stop the pump earlier). |

**15Hz for AC**

**35Hz for DC**

WARNING:- Setting should not exceed 100hz as pulse width is clipped resulting in many PLC's missing the counted pulses.

⇒ 14. Push Select

| | |
|---|---|
| MANU ELECTRONICS<br>**ME2000** **V1.8** | Returns to intro display. |

⇒ 15. Push Reset:

| | |
|---|---|
| **000.000 000.000**<br>**000.000 000.000** | Returns to the Batch function.<br>Display is in "LITRES" to 3 decimal places. |

# Interface – ME2000/2008 Order Codes

| Order Code | Description |
|---|---|
| ME2008-8 | MICROPROCESSOR INTERFACE BATCH SAFETY UNIT. (inbuilt rate +inventory totals)<br>• Accepts most flowmeter types. Interfaces with computer/PLC systems.<br>• Dot-matrix dual LCD counters, 4x plug-in dual-channel modules.<br>• 8 channels (8 admixtures) on motherboard, variable pulse divisions, AC triac or DC opto output pulse switching with pulse limiter.<br>• Standard unit comes with 240vac supply and start/reset/pulse logic, 240vac pulse output (suits COMMANDbatch etc). Wall mount enclosure.<br>• with a hand held plug-in keypad programming module. |
| ME2008-6 | • as for ME2008 above, but with plug-in modules for 6 admixures.<br>• has 3x dual counter/processor modules (can fit 1 more dual module), in motherboard. |
| ME2008-4 | • as for ME2008 above, but with plug-in modules for 4 admixures.<br>• has 2x dual counter/processor modules (can fit 2 more dual module), in motherboard. |
| ME2000-6 | • Similar to ME2008 above, but motherboard has maximum of 6 channels.<br>• has 3x dual counter/processor modules (can't fit more), plugged in to motherboard. |
| ME2000-4 | • as for ME2000 above, but with 4 channels (2x dual module) for control of 4 admixtures. |
| ME2000-2 | • as for ME2000 above, but with 2 channels (1x dual module) for control of 2 admixtures. |
| ME2000-2-CV | • as above, but ADMIX COMPACT VERSION. 2 channels only (no expansion).<br>• Box size (mm) : 225 L x 180 W x 90 D |

***Refer to: ManuFlo Catalogue***

| Options | Description |
|---|---|
| 6CAT5E | For 6-channel ME2000: 3-way external panel, for programming up to 3 dual-ch modules. (Includes HP-CAT5E programmer with CAT5E plug – only when ordered with a ME2000). |
| 8CAT5E | For 8-channel ME2008: 4-way external panel, for programming up to 4 dual ch modules. (Includes HP-CAT5E programmer with CAT5E plug - only when ordered with a ME2008). |
| -IR | Independent Reset, per 2-channel module in the ME2008. |
| -USoz | USA units (non-metric) - Display in US ounces |
| -V1.8 | Software version IC to enable/disable the display/comparator function (replacement/upgrade). |
| -AO | Alarm logic output. Open contact relay. |
| WSC | Wima suppression capacitors, with long leads. 0.1µF, 275 volts (placed across contactor coils) |
| RP10 | 5watt 12K ceramic resistors (for possible leak voltage suppression for 240vac optos) 1 pack of 10 |
| 4N33 | IC: 5 -30 VDC white OPTO (for U3 & U4 sockets of ME2000/2008, for DC pulse output) |
| MOC3043 | IC: 24-240 vac Triac OPTO (for U1 & U2 sockets of ME2000/2008, for ac pulse output) |

| Supply Voltage | (Motherboard) |
|---|---|
| -1A | 240 vac power supply |
| -1B | 110 vac power supply |
| -1C | 24 vac power supply |
| -1D | 24 VDC power supply |
| **Start Input/Output Drives and Master Reset (Modules)** | |
| -2A | 240 vac start/reset relay logic fitted |
| -2B | 110 vac start/reset relay logic fitted |
| -2C | 24 vac start/reset relay logic fitted |
| -2D | 24 VDC start/reset relay logic fitted |
| **Pulse output** | |
| -3A | 240 vac (Moc3041) triac pulse output switching (only with -1A 240v power supply option) |
| -3B | Same ac voltage as for the start/reset option (i.e 24 vac or 110 vac) |
| -3C | 5-30 VDC open collector pulse output. Suits Jonel/Compubatch/Autocon computers. |

**WARNING: +24VDC powered models must be powered by a UPS with pure regulated Voltage type of 120W+**

# SYSTEM UPGRADE OPTIONS

The ManuFlo Advantage

1/ Are you experiencing any bug issues with your ManuFlo ME2008 admixture flowmetered-dispensing operating system ?
(E.G: random flickering of dot-matrix displays, intermittent "low flow"alarms (yet flowmeters/pumps/pipes are Ok)
If so, consider updating some of your existing ManuFlo equipment system infrastructure.

New

2/ The Concrete Batch Plant may have ManuFlo equipment originally installed dating back to year 2000 or earlier.
The new power regulation upgrade for ME2000/2008 provides optimal stability when multiple products are batched simultaneously (up to 8 per unit). ME2000 was introduced in the year-2000…so far a 20+ year product operation life.
Latest Software version v1.8, incorporates additional improvements to the ME2008 operating system.
There has been a global roll-out with DC pulse input conversions & the ME2000/2008 and corresponding computer input, these should be upgraded to the faster count (35-40hz) resolution which further improves the pulse resolution.
The upgrade enhances the system with all optimal improvements, with a potential 10-20mls per pulse count resolution for PLC input capture and even down to 1 milliliter per count if the Computer has a high speed PLC input card installed.

***We suggest offer in a staged sequence of options;***

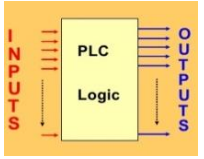
A) New ME2008 systems to swap out the old ones; this will enhance the system operation.
(send back older units for fit out with the latest upgrades and re-install).

B) Offer the new MES20-DSP-OC vibration free pulse-heads another major technological advancement.
Simple swap out of old pulse-heads for new "DSP-OC" units.

C) Install AMM or CMM Mini-Mag flowmeters on any troublesome products.


*Premium Upgrade Option;*

D) New KMS015/25-F 15 to 25mm flanged magnetic flowmeters –maintenance free option.
With added flowrate + inventory totals. Other logic outputs for future technology options.
Client consider change the Computer Batch System PLC input card to a high speed type to take 2kHz>
(to accept resolution from the ManuFlo flowmeters of 1 milliliter per pulse)




***Contact ManuFlo for an obligation free consultation / Quote estimate***

# ME2008 - LATEST UNIT UPGRADES

**Power Supply to ME2008**

The power supply must come from the PLC/Computer or dedicated power supply, which should have lightning arrestors / power surge protection already fitted to its Uninterruptable Power Supply (UPS).

**Software Upgrade**

Software version V1.8 should now be used (shown on Menu display start up or marked on channel IC).


Fuse RHS rear of PCB)

**Fuses and Hardware upgrades**

With the advent of **24VDC I/O + powered** units are becoming the preferred industry standard, coupled with the Increased number of admixtures simultaneously batched in a load;

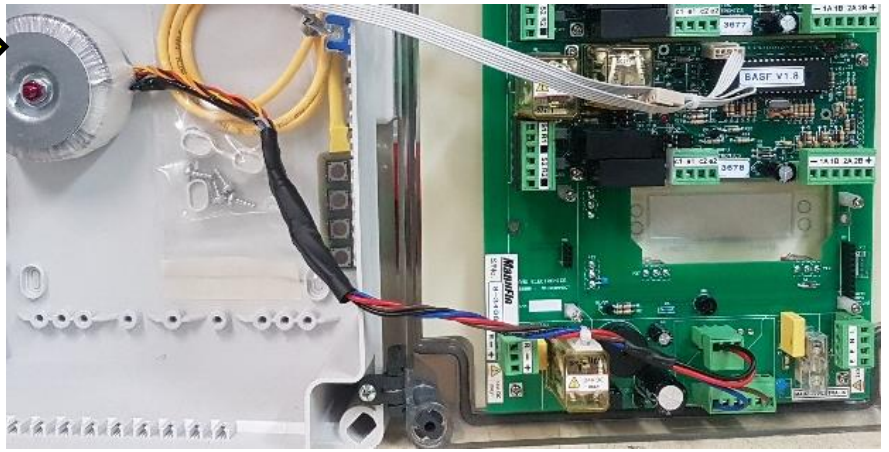
- **Due to extra current drawn on the units**, Fuses should be upgraded to 2 to 2.5 amps..


- **DC powered units** should be returned for upgrade / install & modification with the latest technology high efficiency DC voltage converter now available.

DC

- **AC powered units** should be returned for upgrade/install & Modification with an enhanced more powerful 240vac Toriod Transformer.

AC

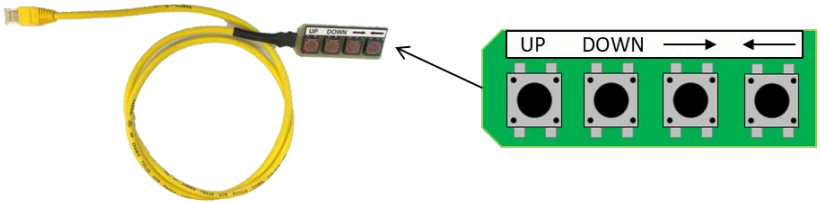


**Alarm outs or non-operation due to excessive current draw**

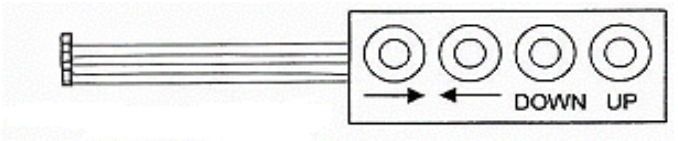
Due to higher current draw, (possible leakage/short of signal cables) or 5+ admixes batched simultaneously.
Stage the starts drives from PLC with 0.5 - 1 sec start sequential duration, **BUT return the units for upgrade with special regulator for DC units and the transformer for AC units**.

**NOTE: Units built or reconditioned after 20th April 2018 have the latest enhancement pre-fitted as standard.**

# Interface – ME2000/2008 - Programming




New




Old

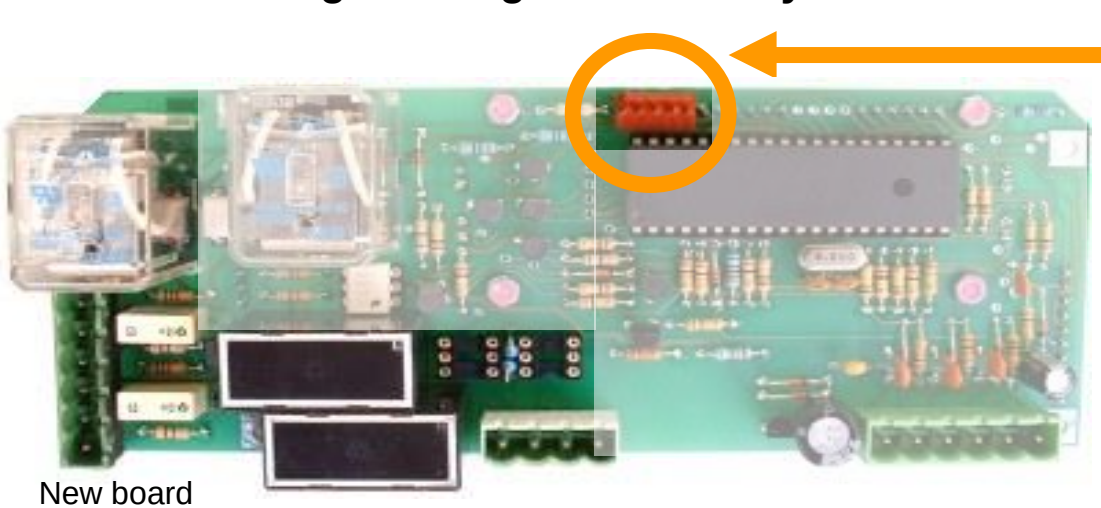
**4-way 8CAT5E with included HP-CAT5E programmer**

- Each 2-channel module is programmed one at a time.
- To start programming, push either arrow button **( → ← )**, cursor (digit) will flash.
- Push UP or DOWN to change numeric values.
- Push arrows to scroll through the individual numeric settings.
- Once programming is completed, push either arrow button **( → ← )** until no digits are blinking, data is now entered into memory.
- Unplug keypad, then plug in to next module or CAT5E entry point and repeat data entry to programme another module.

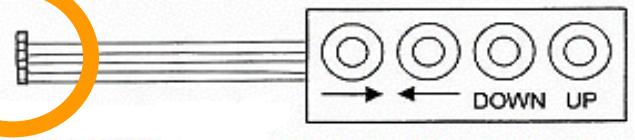
When programme the unit via keypad, it does not allow any 0 value. I.E. To change 0.10 to 0.01 it needs to be 0.11 first and then back to 0.01, As 0.00 is not allowed during programming –due to safety precaution.

# Interface – ME2000/2008 - Programming

Data entry is via a 4-button **keypad programmer** that is plugged into the 5-pin inline plug rail located on each 2-channel module.
**Programming socket is keyed. Or via the later CAT5-E external entry panel**



New board




Old

**NEW**
Reprogrammer access via external panel:
- 6CAT5E: 3-way panel for 6-channel ME2000.
- 8CAT5E: 4-way panel for 8-channel ME2008.
- HP-CAT5E: Programmmer with Cat5E plug.


***Upgrade with kit now***

# ME2000/2008 – Able or Disable Dual Display on Ch.

Channel 1
Flowmeter A
Flowmeter B

| | |
|---|---|
| 000.000 | 000.000 |
| 000.000 | 000.000 |

Channel 2
Flowmeter A
Flowmeter B

Batching function display in "LITRES" to 3 decimal places.
At anytime you can skip functions and return to normal by pushing RESET (You cannot reset while pumping is in progress).

**SINGLE COUNTING CHANNEL**

Customer feedback is that some confusion can result due to the comparator function (which is commonly used in Asia) i.e.
* double display of count per channel; and
* the need to have a wire link to short Flowmeter A and B inputs for each channel.

We are now able to offer the ME2000 / ME2008 with:
* count displayed only for Flowmeter A on each channel (Flowmeter B count is blank); and
* no need for wire link to short Flowmeter A and B inputs.

Channel 1
Flowmeter A
Flowmeter B

| |
|---|
| 000.000 000.000 |

Channel 2
Flowmeter A
Flowmeter B

**With Software Version V1.8**

additional configuration menu →

Diff. channels
1 1

**(available from software Version 1.8)**
**Difference Channels** : enables/disables the comparator function, for each channel of the two-channel module.
When value is "1", the comparator is disabled, and the display for that channel shows the reading from one flowmeter.
When value is set to "2", the comparator is enabled, and the display for that channel shows the readings of two flowmeters in series.

# Computer Resolution display gradients

- **Resolution as fine as 1 millilitre is available when using a MES20 20mm 1000ppl flowmeter or with ManuFlo's electromagnetic flowmetering options.**

- **The resolution of the system is totally dependant on capability of the Computer / PLC input specifications, that is the scanning time / speed capability of the computers PLC input card.**

- **High speed PLC based systems can provide accuracy down to measuring 1 millilitre per 1 pulse gradients (or better) with upto 10,000 Hz counting speed capability.**

- **To our knowledge current Command Batch / Jonel-Archer and other USA based batching systems are using PLC solid state digital inputs with the following Opto input capability;**
  **i) AC inputs capable of speeds upto 15Hz (15 counts per second).**
  **ii) DC inputs capable of speeds upto 40Hz (40 counts per second).**

- **In some cases If Batch Systems use high speed PLC input cards there would be no need to divide or slow down the pulse resolutions from the ManuFlo flowmeters.**

- ***REFER to following pages with TABLES FOR CURRENT BEST SAFE MODE SETTINGS WITH CURRENT COMMAND-BATCH SOLID STATE INPUTS;***

# Pulse Output Resolution Guide (DC input)

BEST OUTPUT PULSE RESOLUTION VALUES

with MES flowmeters to DC input CommandBatch Computers

| Model | Size | **Pulse Output value** | Max Safe Flowrate not to exceed computers Current DC digital input count limit speed of 35-40Hz (& flowmeter max) | (set in Max. Out Rate) ↓ | |
|---|---|---|---|---|---|
| MES20 | 20mm | **10 mls per pulse** | 0.4 litres/sec. | 24 litres/min. | 40hz |
| " | " | **20 mls per pulse** | 0.8 litres/sec | 48 litres/min. | 40hz |
| " | " | **25 mls per pulse** | 1.0 litres/sec | 60 litres/min. | 40hz |
| " | " | **30 mls per pulse** | 1.2 litres/sec | 72 litres/min | 40hz |
| " | " | **40 mls per pulse** | 1.40 litres/sec | 84 litres/min | 40hz |
| " | " | **50 mls per pulse** | 1.40 litres/sec | 84 litres/min | 40hz |
| MES25 | 25mm | **40 mls per pulse** | 1.60 litres/sec | 96 litres/min. | 40hz |
| " | " | **50 mls per pulse** | 1.85 litres/sec | 115 litres/min. | 36hz |
| MES32 | 32mm | **100 mls per pulse** | 3.00 litres/sec | 180 litres/min. | 30hz |
| MES40 | 40mm | **100 mls per pulse** | 4.00 litres/sec | 240 litres/min. | 40hz |

NOTE: ME2000 can emit 1mls/1 pulse if PLC computer input cards have high speed input capability

**(Output overrun is set to 35 to 40Hz to safeguard the system settings).**

FOR OTHER FLOWMETERED OPTIONS : CONSULT MANUFLO e.g. MAGFLOWS

# Pulse Output Resolution Guide (AC input)

BEST OUTPUT PULSE RESOLUTION VALUES

with MES flowmeters to AC input CommandBatch/Eagle Computers

| Model | Size | **Pulse Output value** | Max Safe Flowrate not to exceed computers Current AC digital input count limit speed of 14Hz (set in Max. Out Rate) ↓ | | |
|---|---|---|---|---|---|
| MES20 | 20mm | **10 mls per pulse** | 0.14 litres/sec. | 8.4 litres/min. | 14hz |
| " | " | **20 mls per pulse** | 0.28 litres/sec | 16.8 litres/min. | 14hz |
| " | " | **25 mls per pulse** | 0.35 litres/sec | 21.0 litres/min. | 14hz |
| " | " | **30 mls per pulse** | 0.42 litres/sec | 25.2 litres/min | 14hz |
| " | " | **50 mls per pulse** | 0.70 litres/sec | 42.0 litres/min. | 14hz |
| " | " | **100 mls per pulse** | 1.40 litres/sec | 84.0 litres/min | 14hz |
| MES25 | 25mm | **100 mls per pulse** | 1.40 litres/sec | 84.0 litres/min. | 14hz |
| MES32 | 32mm | **150 mls per pulse** | 2.10 litres/sec | 126.0 litres/min. | 14hz |
| MES40 | 40mm | **200 mls per pulse** | 2.80 litres/sec | 168.0 litres/min. | 14hz |

NOTE: (Output overrun is set to 14Hz to safeguard the system settings).

FOR OTHER FLOWMETERED OPTIONS : CONSULT MANUFLO e.g. MAGFLOWS

Most practical safe setting for MES20 is 50mls per pulse output for current AC inputs.
(Allows 42 litres/min. ME2000/2008 flowrate display will indicate)

# ME2008 - Typical Settings – MES20

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | big dose | big dose | AEA small dose | AEA small dose | AEA small dose | |
| | Parameter | | 20mm MES20 | 20mm MES20 | 20mm MES20 | 20mm MES20 | 20mm MES20 | |
| | Input (p/l) | | 1000.00 | 1000.00 | 1000.00 | 1000.00 | 1000.00 | Pulses per litres |
| or | Output (l/p) to ac computer | *# | 00.100 | 00.050 | 00.050 | 00.020 | 00.010 | Millilitres / pulse |
| or | Output (l/p) to DC computer | *# | 00.050 | 00.025 | 00.025 | 00.010 | 00.005 | Millilitres / pulse |
| | Min. Flow (l/s) | | 00.100 | 00.100 | 00.010 | 00.010 | 00.010 | Litres per sec. |
| | Max. Flow (l/s) | *# | 01.250 | 00.750 | 00.750 | 00.300 | 00.150 | Litres per sec. |
| | Dose Limit (l) | # | 050.000 | 050.00 | 010.000 | 010.000 | 010.000 | Litres |
| | Max Backflow (l) | # | 000.500 | 000.500 | 000.100 | 000.100 | 000.100 | Litres |
| | Difference (%) | | 05.0 | 05.0 | 05.0 | 05.0 | 05.0 | |
| | Start Delay (s) | # | 02.0 | 02.0 | 02.0 | 02.0 | 02.0 | Seconds |
| | Stop delay (s) | # | 02.0 | 02.0 | 02.0 | 02.0 | 02.0 | Seconds |
| | Diff. Channels | | 1 | 1 | 1 | 1 | 1 | |
| or | Max Out rate (Hz) to ac computer | | 0015 | 0015 | 0015 | 0015 | 0015 | Output Overrun (counts/second) |
| or | Max Out rate (Hz) to DC computer | | 0035 | 0035 | 0035 | 0035 | 0035 | |

**# =** Adjust to whatever is suitable for your application.

*** =** For ac output pulses: $\frac{\text{Max. Flow (l/s)}}{\text{Output (l/p)}} \leq 15$

*** =** For DC output pulses $\frac{\text{Max. Flow (l/s)}}{\text{Output (l/p)}} \leq 35$

# ME2008 - Typical Settings – MES (20,25,32,40mm)

| | Parameter | | 20mm MES20R | 25mm MES25 | 32mm MES32 | 40mm MES40 | |
|---|---|---|---|---|---|---|---|
| | Input (p/l) | | 0061.00 | 555.00 | 0261.00 | 0116.00 | Pulses per litres |
| or | Output (l/p) to ac computer | *# | 00.100 | 00.150 | 00.200 | 00.500 | Millilitres / pulse |
| or | Output (l/p) to DC computer | *# | 00.050 | 00.100 | 00.100 | 00.200 | Millilitres / pulse |
| | Min. Flow (l/s) | | 00.100 | 00.100 | 00.150 | 00.250 | Litres per sec. |
| | Max. Flow (l/s) | *# | 01.100 | 01.800 | 03.000 | 05.500 | Litres per sec. |
| | Dose Limit (l) | # | 050.000 | 100.000 | 100.000 | 150.000 | Litres |
| | Max Backflow (l) | # | 000.500 | 000.500 | 001.000 | 001.000 | Litres |
| | Difference (%) | | 05.0 | 05.0 | 05.0 | 05.0 | |
| | Start Delay (s) | # | 02.0 | 02.0 | 02.0 | 02.0 | Seconds |
| | Stop delay (s) | # | 02.0 | 02.0 | 02.0 | 02.0 | Seconds |
| | Diff. Channels | | 1 | 1 | 1 | 1 | |
| or | Max Out rate (Hz) to ac computer | | 0015 | 0015 | 0015 | 0015 | Output Overrun (counts/second) |
| or | Max Out rate (Hz) to DC computer | | 0035 | 0035 | 0035 | 0035 | |

# = Adjust to whatever is suitable for your application.

* = For ac output pulses: $\frac{\text{Max. Flow (l/s)}}{\text{Output (l/p)}} \leq 15$

* = For DC output pulses $\frac{\text{Max. Flow (l/s)}}{\text{Output (l/p)}} \leq 35$

# ME2008 – Typical Settings – AMM mags

**Note: used mainly in HK.**

| | Parameter | | 15mm AMM15 | 15mm AMM15 | 20mm AMM20 | 25mm AMM25 | |
|---|---|---|---|---|---|---|---|
| | Input (p/l) | | 1000.00 | 1000.00 | 1000.00 | 0500.00 | Pulses per litres |
| or | Output (l/p) to ac computer | *# | 00.100 | 00.050 | 00.125 | 00.250 | Millilitres / pulse |
| or | Output (l/p) to DC computer | *# | 00.050 | 00.020 | 00.050 | 00.100 | Millilitres / pulse |
| | Min. Flow (l/s) | | 00.010 | 00.010 | 00.100 | 00.100 | Litres per sec. |
| | Max. Flow (l/s) | *# | 00.900 | 00.500 | 01.600 | 03.500 | Litres per sec. |
| | Dose Limit (l) | # | 050.000 | 050.000 | 050.000 | 100.000 | Litres |
| | Max Backflow (l) | # | 000.500 | 000.500 | 000.500 | 000.500 | Litres |
| | Difference (%) | | 05.0 | 05.0 | 05.0 | 05.0 | |
| | Start Delay (s) | # | 02.0 | 02.0 | 02.0 | 02.0 | Seconds |
| | Stop delay (s) | # | 02.0 | 02.0 | 02.0 | 02.0 | Seconds |
| | Diff. Channels | | 1 | 1 | 1 | 1 | |
| or | Max Out rate (Hz) to ac computer | | 0015 | 0015 | 0015 | 0015 | Output Overrun (counts/second) |
| or | Max Out rate (Hz) to DC computer | | 0035 | 0035 | 0035 | 0035 | |

**# =** Adjust to whatever is suitable for your application.

*** =** For ac output pulses: $\frac{\text{Max. Flow (l/s)}}{\text{Output (l/p)}} \leq 15$

*** =** For DC output pulses $\frac{\text{Max. Flow (l/s)}}{\text{Output (l/p)}} \leq 35$

# ME2008 – Typical Settings – CMM mags


| | Parameter | | 15mm CMM10 | 20mm CMM20 | 25mm CMM25 | size item | |
|---|---|---|---|---|---|---|---|
| | Input (p/l) | | 1000 | 500 | 100 | PPL | Pulses per litres |
| or | Output (l/p) to ac computer | *# | 0.100 | 0.050 | 0.250 | AC-out | Millilitres / pulse |
| or | Output (l/p) to DC computer | *# | 0.050 | 0.050 | 0.100 | DC-out | Millilitres / pulse |
| | Min. Flow (l/s) | | 0.010 | 0.010 | 0.100 | flow-min.LPS | Litres per sec. |
| | Max. Flow (l/s) | *# | 0.500 | 1.000 | 4.000 | flow-max.LPS | Litres per sec. |
| | Dose Limit (l) | # | 50.000 | 50.000 | 100.000 | dose limit | Litres |
| | Max Backflow (l) | # | 0.500 | 0.500 | 0.500 | Max.Back.Fl | Litres |
| | Difference (%) | | 05.0 | 05.0 | 05.0 | 05.0 | |
| | Start Delay (s) | # | 02.0 | 02.0 | 02.0 | 02.0 | Seconds |
| | Stop delay (s) | # | 02.0 | 02.0 | 02.0 | 02.0 | Seconds |
| | Diff. Channels | | 1 | 1 | 1 | 1 | |
| or | Max Out rate (Hz) to ac computer | | 0015 | 0015 | 0015 | 0015 | Output Overrun (counts/ second) |
| or | Max Out rate (Hz) to DC computer | | 0035 | 0035 | 0035 | 0035 | |

# = Adjust to whatever is suitable for your application.

* = For ac output pulses: $\frac{\text{Max. Flow (l/s)}}{\text{Output (l/p)}} \leq 15$

* = For DC output pulses $\frac{\text{Max. Flow (l/s)}}{\text{Output (l/p)}} \leq 35$

# ME2008 - Typical Settings - KMS/RMS mags

| | Parameter | | 25mm PMS/RMS25 | 40mm PMS/RMS40 | 40mm PMS/RMS40 | 50mm PMS/RMS50 | 50mm PMS/RMS50 | |
|---|---|---|---|---|---|---|---|---|
| | Input (p/l) | | 0100.00 | 0010.00 | 0010.00 | 0010.00 | 0010.00 | Pulses per litres |
| or | Output (l/p) to ac computer | *# | 00.500 | 00.750 | 00.500 | 01.000 | 01.000 | Millilitres / pulse |
| | Output (l/p) to DC computer | *# | 00.200 | 00.500 | 00.200 | 00.500 | 00.500 | Millilitres / pulse |
| | Min. Flow (l/s) | | 00.100 | 00.250 | 00.250 | 00.250 | 00.250 | Litres per sec. |
| | Max. Flow (l/s) | *# | 05.000 | 10.000 | 06.000 | 15.000 | 10.000 | Litres per sec. |
| | Dose Limit (l) | # | 150.000 | 250.000 | 250.000 | 250.000 | 250.000 | Litres |
| | Max Backflow (l) | # | 001.000 | 002.000 | 002.000 | 003.000 | 003.000 | Litres |
| | Difference (%) | | 05.0 | 05.0 | 05.0 | 05.0 | 05.0 | |
| | Start Delay (s) | # | 02.0 | 02.0 | 02.0 | 03.0 | 03.0 | Seconds |
| | Stop delay (s) | # | 02.0 | 02.0 | 02.0 | 03.0 | 03.0 | Seconds |
| | Diff. Channels | | 1 | 1 | 1 | 1 | 1 | |
| or | Max Out rate (Hz) to ac computer | | 0015 | 0015 | 0015 | 0015 | 0015 | Output Overrun |
| | Max Out rate (Hz) to DC computer | | 0035 | 0035 | 0035 | 0035 | 0035 | (counts/second) |

# = Adjust to whatever is suitable for your application.

* = For ac output pulses: $\frac{\text{Max. Flow (l/s)}}{\text{Output (l/p)}} \leq 15$

* = For DC output pulses $\frac{\text{Max. Flow (l/s)}}{\text{Output (l/p)}} \leq 35$

# Interface - ME2000/2008 – Default settings

**DEFAULT –Software settings**

| Display Functions | | |
|---|---|---|
| Operation | via plug-in 4-button hand-held programmer. | |
| Volume displayed | In Litres, to 3 decimal places (smallest increment is 1 millilitre). | |
| Flowrate display | In Litres per Minute, to 3 decimal places. | |
| Grand Total | In total Litres. | |
| Input calibration | Pulses per Litre, to 9999.99 | (Default:1000.00 = MES20) |
| Output pulse value | From 1 ml to 99.999 Litres per pulse | (Default: 00.010 = 10mls) * |
| Min flowrate safety * | Min. from 1 mls to 99.999 Litres per second | (Default: 00.010, 10 mls for MES20) |
| Max flowrate safety | Max. 99.999 Litres per second | (Default: 01.000, 1 Litre for MES20) |
| Dose Limit | Max. 999.999 Litres per batch cycle | (Default: 010.000) |
| Max Backflow | From 1 mls to 999.999 Litres | (Default: 000.100) |
| Comparator difference | 0.1 to 99.9% | (Default: 5.0% i.e. +/-2.5%) |
| Start Delay | 0.1 to 99.9 seconds | (Default: 2.0) |
| Stop Delay | 0.1 to 99.9 seconds | (Default: 2.0) |
| Max Output pulse rate | 0001 to 9999 Hz | (Default: 12) |
| Pulse fail | Is the function of Min/Max flowrate safety functions. | |

* Change to higher value, except for AEA

**Note: default values, you must change onsite to match app./flowmeter.**

**ME2008 - Program Record Sheet** Channel

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Flowmeter Model (part no.) | | | | | | | | |
| K-FACTOR (CALIBRATION) | | | | | | | | |
| If not known: Set input parameter to 1, then run liquid, divide volume by count = pulses per unit. | | | | | | | | |
| Input Pulses • per Litre | | | | | | | | |
| PULSE OUTPUT VOLUME VALUE TO PLC | | | | | | | | |
| Output Pulses • Litres/pulse | | | | | | | | |
| MINIMUM FLOWRATE CUTOFF | | | | | | | | |
| Min. flow • Litres/sec | | | | | | | | |
| MAXIMUM FLOWRATE CUTOFF | | | | | | | | |
| Max. flow • Litres/sec | | | | | | | | |
| MAXIMUM BATCH LIMIT | | | | | | | | |
| Dose Limit • total Litres | | | | | | | | |
| MAXIMUM BACKFLOW | | | | | | | | |
| • Litres | | | | | | | | |
| Comparator difference % | | | | | | | | |
| Start Delay (seconds) | | | | | | | | |
| Stop Delay (seconds) | | | | | | | | |
| Max Output Rate (Hz) | | | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Date Programmed | : | | Date Commissioned: | | |
| By | : | | By: | | |
| Comments | : | | | | |
| | | | | | |
| Serial Number | : | | Date | : | |
| ME2008 Part No. Config | : | | Software Version | : | |
| Voltages | : | | | | |

**Sample :– final software setting parameters Record sheet. Place a sheet inside The ME2008 box for future reference. Label each channel of t ME2008 panel with any flowmeter other than MES20 e.g. MES25 =555ppl**

# ME2008 - Troubleshooting Guide -Summary

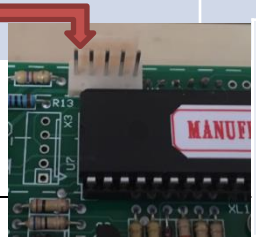
| Text on the LCD display/Alarm | Possible Cause | Remedy |
|---|---|---|
| "Low Flow" | -Flow Rate below setting<br>-Pulse Fail due to flowmeter failure<br>-Airlock in flowline | -Check "Min. flow" value<br>-Check flowmeter,& pulsecable wiring<br>-Check delivery line for line restriction<br>-**All Ok then return to ManuFlo for upgrade to v1.8 software +new Power upgrade** |
| "High Flow" | -Flow Rate above Max.-Flow setting | -Check "Max. flow" value, has been exceeded<br>-Check gate valve, restrict if necessary |
| "Output Overrun" | -Higher pulse rate than pulse out Hz (frequency) maximum setting (AC=15Hz, DC=35Hz). | -Check "Max Out Rate" value<br>-Adjust pulse output value resolution<br>-Check Flow Rate, restrict the gate valve. |
| "Over Dose" | -Dose Limit exceeded during batch | -Check "Dose Limit" (batch limit) value<br>-Check PLC/Computer Settings |
| "Back Flow" | -Backflow of liquid after batch complete<br>-Or excessive vibration at flowmeter install<br>-Stuck external contactor/pump. | -Check Non-return valve, clean or replace.<br>-Eliminate vibration source or swap with **MES-DSP** vibration free smart pulse-heads<br>*see also Troubleshooting-Backflow on next page<br>-rare case continuous backflow is external stuck contactor/pump running.<br>kill power, replace contactor/pump or ME2000 drive relay stuck.<br>(if the flow runs substantially backwards after batches this will result in short under batches of liquid volumes) |
| "Diff Flow" (where used) | -Flowmeter Percent difference 5% exceeded (when comparator function is used with 2 flowmeters per 1 line) | -Check flowmeters<br>(see comparator function explained) |
| "Setting Lost" | -Power Surge or major power loss to systems | -Check power supply/source<br>-Use handheld programmer to reset the system and re-enter the parameters. |

***Flowrate lower than normal speeds*** . Pipes hoses are clogged. Clogged near SOK -- pump has a lot of rubbish in the centrifuge rotor -- clean out pump -- gate valve seized -- rubbish jammed in non return valve -- suction side of pump issues -- piping blockages etc. change to PD pump -- close bypass valve if installed to increase pressure of flowrate.

*WARNING:-*
*On powering up the unit allow 30 seconds for ME2000/08 to fully boot up all functionalities before use.*

**WARNING: +24VDC powered models must be powered by a UPS with pure regulated Voltage type of 120W+**

Or short the 2 pins as shown



To re-enable the module showing "settings lost", proceed as follows:

- Plug the hand-held Programmer into the Dual Channel Module;
- To restore the default settings (which are input calibration 1000 pulses/Litre, divided pulse output 10mls/pulse), push 2 buttons simultaneously on the Programmer, being either the 2 arrow buttons or the DOWN and UP buttons;
- Re-enter parameters (via the Programmer) and refer to program sheet settings.

ManuFlo ®TM

# ME2008 – "Settings Lost" -Detail

| Text on the LCD display/Alarm | Possible Cause | Remedy |
|---|---|---|

**Definition: 'Settings Lost'.**

**Explanation:** This message may occur if an external power surge, dirty external power supply or major external power loss to system or extreme electrical spikes may have affected the ME2008's vital microprocessor operations. NOTE: It is a vary rare occurrence/phenomenon. Lightning strikes that have damaged other equipment in the vicinity may also trigger the unit.

**Reasons/Operation:**

'Settings Lost' will trigger on a respective module 'DCPM' if the internal circuit software diagnostics of the ME2008 detects a distortion in the external power supply that supplied power to the unit which may have corrupted its internal software settings which perform the critical operation of monitoring the pulses of the flowmeters that are delivered to the batching computer/PLC inputs.
As a safety precaution the unit will then trigger the 'Settings Lost' condition. This condition is to safeguard against any overdoses due to any possible corruption of the internal set Software settings for the respective designated flowmeter measuring a particular chemical. As a safety precaution the module unit cannot be used until the issue is attended to.

When the 'Settings Lost' has triggered the DCPM channel: to use the channel the handheld programmer must be used to wake the unit to re-engage operation and re-enter previous recorded parameter settings. As a safety feature the module's software parameter settings will automatically reset back to the "default program settings."

The operator must then re-enter all parameters to match the flowmeter input pulses, match the output pulse values to the computer input. Then take a calibration check to see all values correspond. **Volume collected and ME2008 display and Computer screen must all match.**

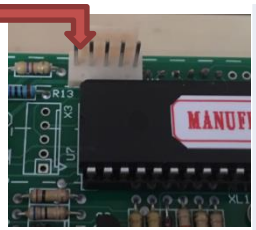
**WARNING**: Default is for MES20 20mm size flowmeters 1000 pulses / litre. Always check the flowmeter type (refer to label) e.g. for MES32 32mm 267 pulses / litre… input = 267ppl, CMM25 25mm 100ppl to be entered into K-Factor.

**Comment:**

The ME2000 / 2008 is batch safety management interface card that provides a high level of safety features to monitor the incoming pulse signals of the admixture chemical flowmeters that feed the respective batch plant PLC/computer systems. There are over 1900+ units in daily operation around the world, the 'Settings Lost' event is a very rare occurrence.

**Findings / Repair:** We suggest if the event occurs again that a dedicated regulated +24VDC power supply Module of regulated Voltage type of 120W+ be fitted to power the unit. (Details supplied on request). Also, then consider the external contactors have snubbers fitted to further prevent this issues at this plant. This action only to be suggested if a the settings lost re-appears.

Or short the 2 pins as shown



To re-enable the module showing "settings lost", proceed as follows:

- Plug the hand-held Programmer into the Dual Channel Module;
- To restore the default settings (which are input calibration 1000 pulses/Litre, divided pulse output 10mls/pulse), push 2 buttons simultaneously on the Programmer, being either the 2 arrow buttons or the DOWN and UP buttons;
- Re-enter parameters (via the Programmer) and refer to program sheet settings.

# ME2008 – “missing/failed OPTO” -Detail

**Question: “What if the pulse output OPTO on ME2000/08 is missing or not working ?**

**Result : T**he ME2008’s output pulse visual red LED will not light (flash) or not work. When operating, each flash of the LED represents the divided pulse output transmitting to the PLC/Computers respective input channel for the chemical product.

The Computer Screen will then not be receiving pulses and the screen will not be counting for that particular channel. Therefore the batch recipe cannot complete for that designated load.

As a consequence the Computer/PLC output RUN drive to the ME2008 will stay on, hence the ME2008’s drive to the contactor will stay on until the following:-

A) The PLC receives its desired number of pulses to reach batch target. ***or***

**B) The computer’s internal fail safe system for missing pulses triggers (if there is one, but reported as 5 seconds after no pulses)).**

C) The ME2008 reaches its internal selectable set Maximum Dose batch safety limit –where it then override the drive from the PLC and shuts drive to Contactor/pump regardless of any external command. (this function will override points A or B).

**Awareness:**

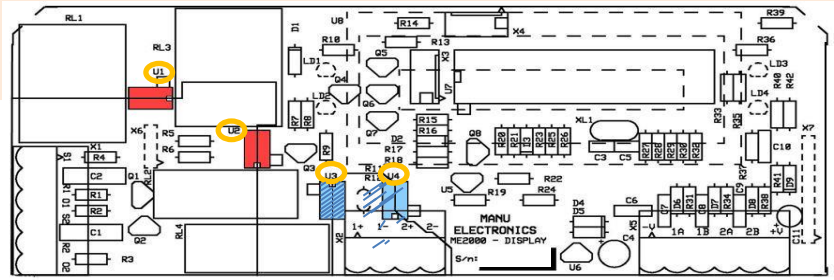
The regular batch operator or site service personnel would quickly notice the issue within the first few attempted batches.

**Comment:**

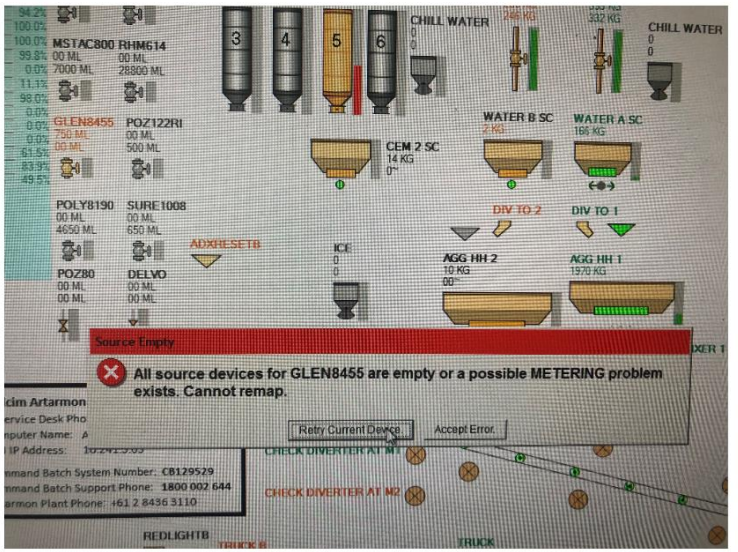
The ME2000 / 2008 is batch safety management interface card that provides a high level of safety features to monitor the incoming signals of the admixture chemical flowmeters which then monitors and transmits the out going pulse signals that feed the batch plant PLC/computer system inputs.

**QA:**

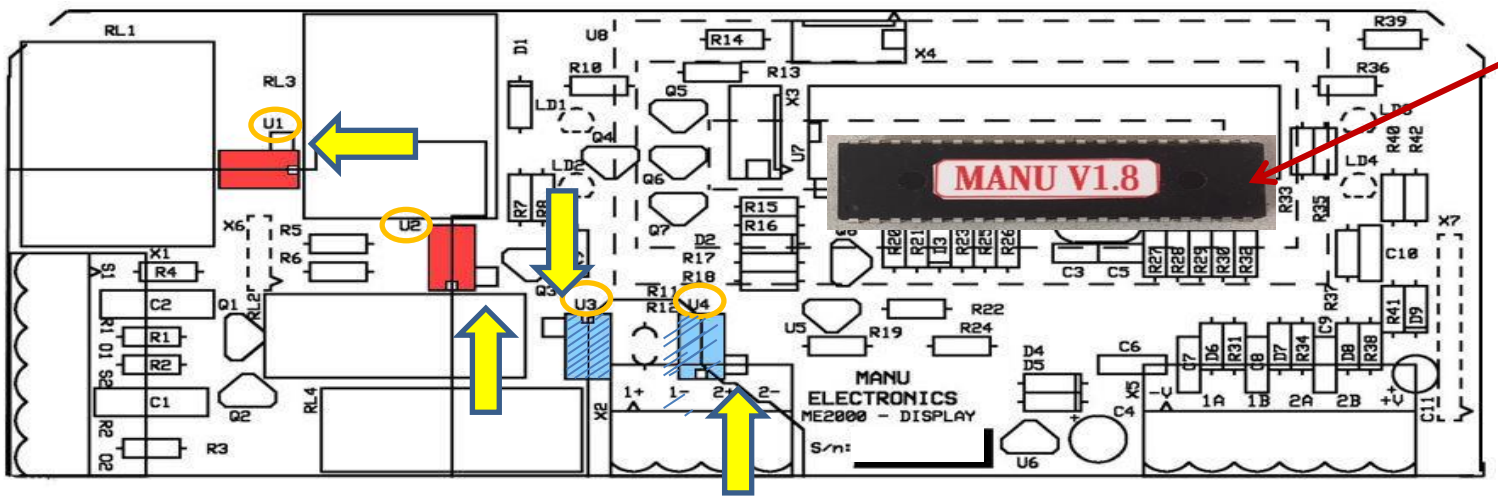
All ME2000/08 new or reconditioned units that leave the ManuFlo production facility at Brookvale are fully QA tested with a procedure and testing sheet with serial numbers recorded.




Batch Computer Screen snapshot



# ME2008 – replacing/converting Pulse output from AC to DC




**DCPM software chip**
**Can be upgraded by removing from IC socket.**
Gently with a flat blade pry out slightly each end repeatedly until it comes away from the socket –Note: polarity

**Note polarity on ICs**

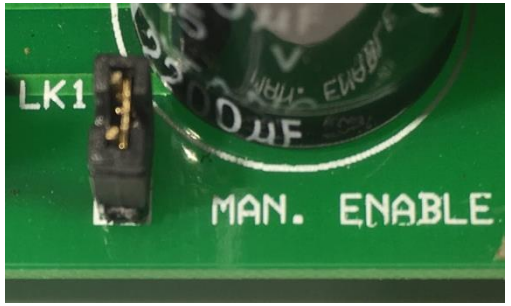
pin 1

For 24-240 VAC pulse output: insert MOC3043 ICs into U1 and U2 (remove U3,U4 IC's) (white color only)

For 5-30 VDC pulse output: insert 4N33 ICs into U3 and U4 (remove U1,U2 IC's) (careful as white or black color)

# ME2008 – Disabling manual push button pumps starts

**Warning:**
**Turn off power.**
**Live 240vac at rear where applicable.**



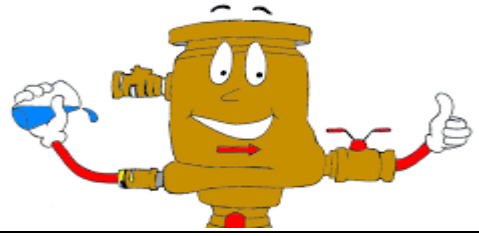

**To disable the front manual batch push buttons**, remove (with pliers) link (jumper) LK1 located on motherboard near the Alarm buzzer & Capacitor rear bottom of PCB. This will avoid misuse of manual starts. Plug-in LK1 to re-activate manual batch functions.

# ME2008 Troubleshooting - Backflow

In some installations with MES flowmeters, the ME2008 may count without batching being in progress, causing a “Back Flow” alarm.

| | |
|---|---|
| **1** | Usually, this is due to the Non-Return Valve or Solenoid not closing, thus allowing backflow which results in counts as the liquid runs back thru the flowmeter. Ensure that the Non-Return Valve is clean (spring or flap type) and operating correctly or replace with pneumatic controlled type. The counts will be at a slow rate due to liquid tricking backwards. |
| **2** | If Non-Return Valve is OK, then ensure that shielded cable is used. If cable is not shielded, then interference may be picked up and transmitted to the ME2008 which will interpret it as backflow. |
| **3** | If shielding is OK, then possible cause is vibration in plant near MES meters. Install flowmeters away from vibration causes, or anchor meters with rubber mounts. Or tap the grip wings on the flowmeter body to better secure the pulsehead –see page 40. |
| **4** | If after batch complete and the shut off solenoid valve fails to close, then “backflow” alarm will engage. (lower loading points or syphoning) |
| **5** | If vibration is still prevalent, then using new **MES-DSP-OC** pulseheads is recommended.<br>• The **MES-DSP-OC** pulsehead is marked on the junction box lid (or new hexagonical J-box) - this distinguishes them from the ordinary MES pulseheads.<br>• The new **MES-DSP-OC** pulsehead is much less sensitive to vibration, having much higher hysteresis and using latest ManuFlo technology.<br><br>**Use NEW : MES20-DSP-OC Special digital smart pulse pulsehead to eliminate any issue.**<br><br>**WARNING:**<br>**If the blackflow alarms/counts rapidly and does not stop within 1-2 litres; then in extreme rare circumstances the contactor/pump drive is stuck on, CUT POWER to system (seek rectification).** |

Wire a neon/globe across coil of suspect contactors

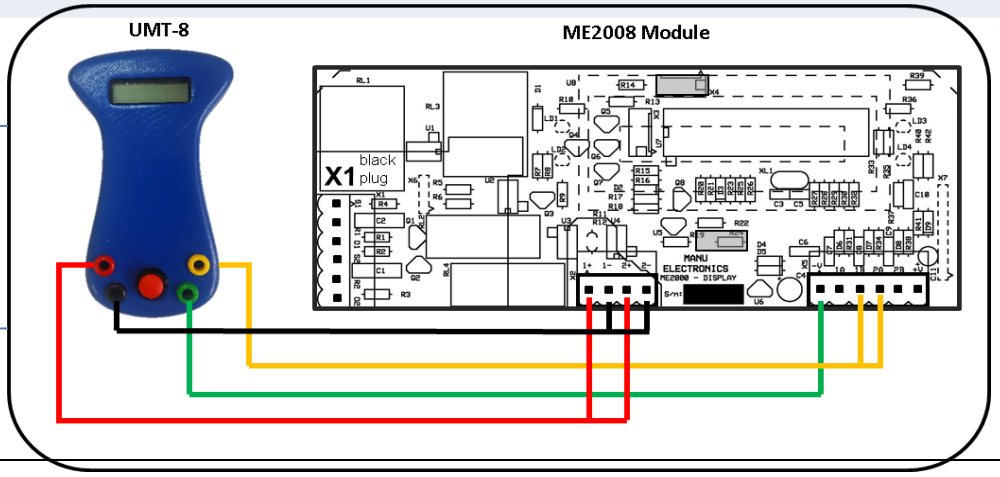


# ME2008 Output Over-run explained



| | |
|---|---|
| **Max Out Rate (Hz) 0035** | Max Out Rate is the maximum allowed rate of output pulses to the computer. If the maximum is exceeded, then the pump stops and the ME2008 memory sends the extra pulses to the PLC/Computer's DC Optos (under the 35 Hz max. input rate) or low scan rate systems. |
| | Extra pulses received (above the allowed rate) represent actual extra volume measured by the flowmeter and ME2008, but which would have otherwise not been fully counted by the PLC/Computer system. (This situation is different to actual "inflight overflow", where a DEDUCT value must be programmed in the computer system to stop the pump earlier). |
| **Industrial Grade Input OPTO's count speed:**<br><br>**DC White Optos : 35Hz**<br><br>**AC Black Optos: 15Hz**<br><br>• **(MENU 14)**. Push Select: | IMPORTANT: PLC/Computers with White Opto DC inputs have a pulse input frequency limit of 35 Hz, so for the ME2008 to protect such systems and prevent overdose, set values in the ME2008:<br>* MAX OUT RATE to 35Hz or less; and<br>* OUTPUT (LITRES/PULSE) to a value so that, at your maximum operating flowrate, pulses to PLC/Computer input will not exceed 35Hz<br>e.g. If your maximum operating flowrate is 40 Litres/minute<br>(Max Flow = 0.67 l/s) and pulse output is 20 mls/pulse<br>(Output=00.020 l/p), the ME2008 will output 33.3 pulses/second (i.e. < 35Hz) to the PLC/Computer when flow is 40 Litres/minute.<br>Output Rate (Hz) = Maximum flowrate (l/s) / Pulse output (l/p)<br>**Is a pulse data storage buffer to Capture all pulses (= volume).** |

**UMT8 tester for testing of ME2000/08 DCPM modules**
**DC Inputs & outputs**



# ME2008 Low and High Flow Limits

## Program Setting in the ME2008

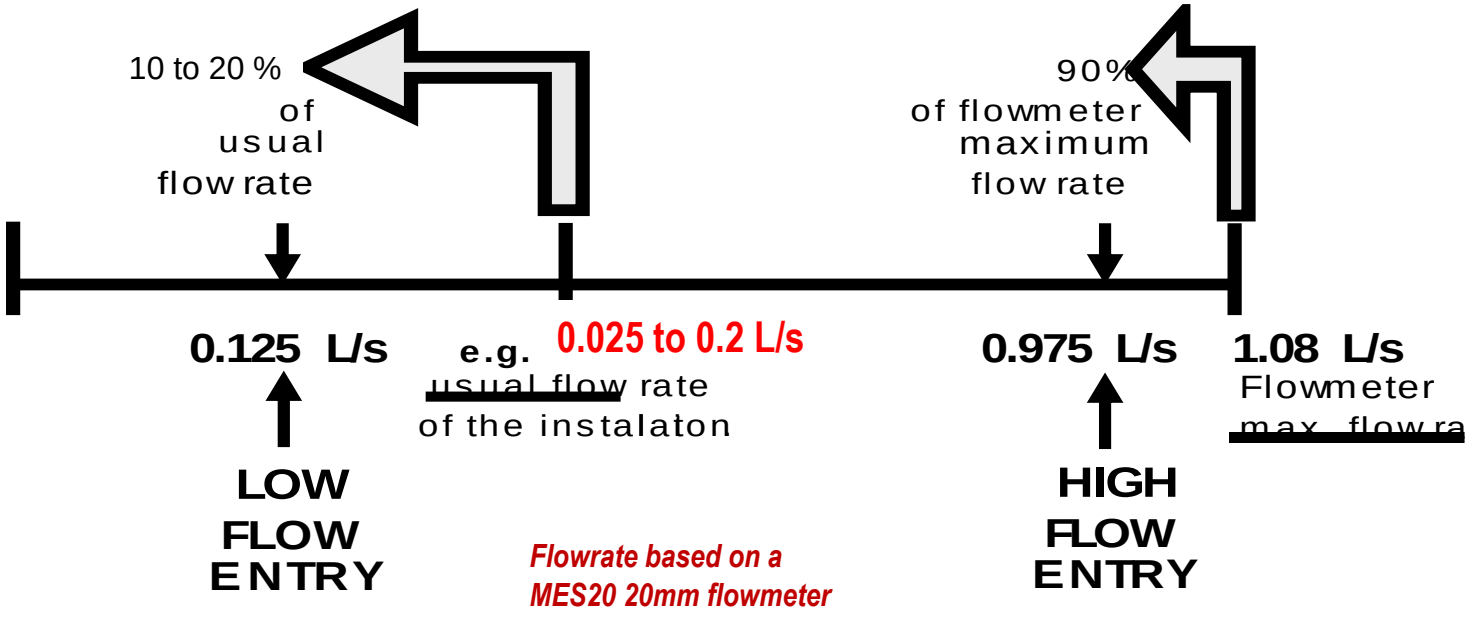
**To improve the ability of the ME2008 to detect a problem** should a batch error occur due to measurement malfunction, the **settings for Low and High Flow must give a narrow operating window**, especially with mechanical flowmeters. ME2008s are programmed according to the conditions of each plant e.g. according to flowrates and maximum batch quantities.

On each channel of the ME2008:

•the **Low Flow** setting must be set at **10 to 20% of the usual flow rate** of that channel; and

•the **High Flow** setting must be set at **90% of the specified maximum flowrate** of the flowmeter on that channel.

Also, the **pump start period** should be programmed to atleast 2 seconds according to how quick the flow stabilizes.

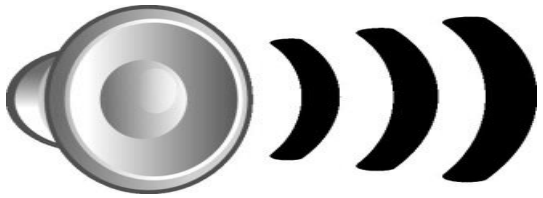


# ME2008 – On Alarm condition

## ALARMS

- **If any of the safety features are triggered, the relevant alarm will come on.**
- **The Display will indicate status of the channel that is in alarm condition,** in which case, as a precaution the ME2008 will shut down pump drive of the faulty channel only, allowing for further examination of the problem.

- If the alarm comes on, DO NOT push RESET immediately - observe display and take note of the batch readings and the alarm message.
- WAIT for other channels to complete batch, then push RESET to be ready for the next batch.



- If batcher gets Low Flow Alarm on two successive attempts at batching, then:
- MOVE THE TRUCK MIXER AWAY FROM THE LOADING POINT
- **stop using that chemical channel**; as each attempt doses 2 seconds worth of chemical into the mix.
- **record the quantity displayed** on the ME2008 and the batch computer; and
- **ring your local admixture supplier or service agent** for advise/service (or attempt to address).

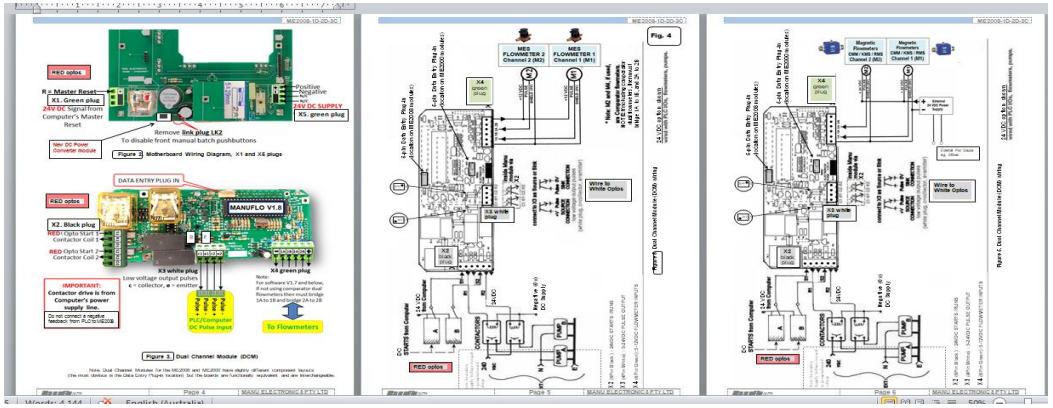
---

- **THIS WARNING GUIDE SHOULD BE DISPLAYED AT PREMIX PLANT FOR THE BATCHER / OPERATOR !!**

# ME2008

## Wiring of Flowmeters

**(Refer to ME20008 product datasheet)**



http://www.manuelectronics.com.au/pdfs/Me2008-1d-2d-3c.pdf

## Install Guides

**(Refer to ME2008 system datasheet)**

http://www.manuelectronics.com.au/pdfs/Admix_Batching_System-ME2008.pdf

**Go to the Website links**

## Admixture Discharge Lines and Sequencing

**(Refer to info sheet)**

http://www.manuelectronics.com.au/pdfs/Admix-Discharge.pdf

# ME2000/08 calibration adjustment guide

A **volumetric calibration test** is performed when commissioning a new installation and periodic follow-up tests.

- To calibrate a vessel is placed near the sock or by-pass port, a selected batch quantity is either;
  a) set on computer and batched or
  b) can be manually batched by push & holding the manual batch over-ride pump drive button.

Now compare volume displayed on ME2008 Display and that collected.
If incorrect check flowmeter specification pulse output value which must match the input Pulses per Litre (PPL).
e.g. MES20 =1000ppl so **Input p/L** K-factor must be same 1000.00 p/L {on pg.131 (menu:4)}.
Then divided output pulse value Output L/p e.g. 00.100 must match the computer input pulse value = 100mls/p.

## Final Calibration:

- If the liquid collected is **more** than pulse value shown on computer screen or volumetric amount on display, then **decrease** the calibration input set value (K-factor) by the same % difference
- If the liquid collected is **less** than pulse value shown on computer screen or volumetric amount on display, then **increase** the calibration input set value (K-factor) by the same % difference
- *Note: Final calibration check can also be performed via computer software scaling*.
  **Always perform a calibration check of the flowmeter vs volume vs display after any service.**

*Possible Reasons for Less fluid collected than indicated*:-
Fluid back flow due to faulty non-return valve.
Input K-factor set too low. Faulty Flowmeter so replace it.
*Possible reasons for More fluid collected than indicated*:-
Input K-factor set too high. Output Pls & PLC input not matching.
Flowmeter chamber worn, or parts missing, change flowmeter.

Take a few volumetric test volumes of say 0.25, 0.5, 1.0 or 2.0 Litres.
The percentage difference should be repeatability the same.
If so its is a digital error –the settings, if not then it is analogue error –the install/meter.


# ME2000/08 Final Commission / service proceedures



When commissioning the plant it is imperative that the settings be entered and recorded on the below programming data form.
Flowmeter model type/size/ and K-Factor (input pulses per litre :PPL) and pulse output settings to computer/PLC are most important.
Then 1 copy be placed inside the ME2008 unit and copy entered into your company database for future referencing.
Any flowmeter other than a MES20 20mm 1000ppl when used, place a sticker on the front panel of the ME2008 to warn of the different K-Factor (e.g. MES32 267ppl). **Incorrect value for PPL will cause over or under dose of chemical**.
When any servicing is then later performed avoids any issues.
**ALWAYS perform a volumetric calibration check before leaving plant**. Volume Collected = ME2008 display = Computer Screen (+/-5%)

## ME2008 PROGRAMMING DATA

| | | | |
|---|---|---|---|
| Client Name | | Date | |
| Order Code | | Invoice # | |

| Serial Numbers | | | | |
|---|---|---|---|---|
| Mainboard | DCPM 1 | DCPM 2 | DCPM 3 | DCPM 4 |
| | | | | |

| Program Setting | CH1 | CH2 | CH3 | CH4 | CH5 | CH6 | CH7 | CH8 |
|---|---|---|---|---|---|---|---|---|
| Flowmeter Model | | | | | | | | |
| Input Pulses per Litre | | | | | | | | |
| Output Litres per Pulse | | | | | | | | |
| Min Flow Litres/Sec | | | | | | | | |
| Max Flow Litres/Sec | | | | | | | | |
| Dose Limit | | | | | | | | |
| Max Backflow (Litres) | | | | | | | | |
| Comparator Difference | | | | | | | | |
| Start Delay (Sec) | | | | | | | | |
| Stop Delay (Sec) | | | | | | | | |
| Differential Channels | | | | | | | | |
| Max Output Rate (Hz) | | | | | | | | |

**Concrete batch Plant Site Details:-**

ManuFlo ™ ®
*Flow Measurement Products*

**MANUFLO PTY LTD**
www.manuelectronics.com.au

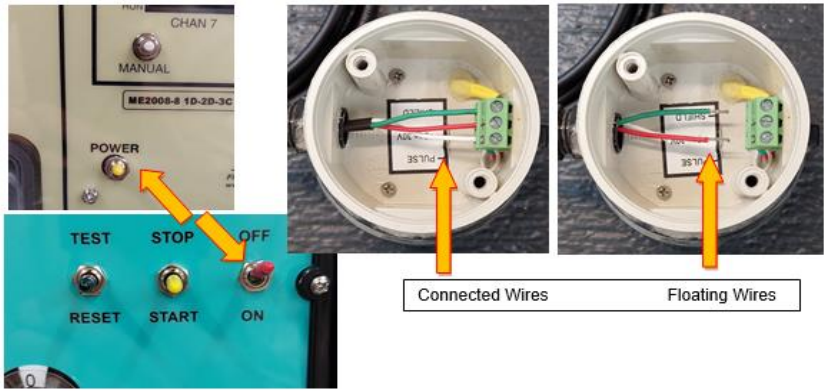
# TECHNICAL BULLETIN

## ME2000 / ME2008 / ME995 - WARNING

**ManuFlo is warning field technicians to be mindfull of the following conditions when installing or servicing the equipment;**

✖ **When installing or servicing any MES admix flowmeters, RPFS-P or any other Flowmeters; make sure the power supply to the flowmeters supplied from the ME2000 / ME2008 / ME995 instruments or other external power supply is turned OFF at the ON/OFF of the power switch.**

Failure to following this simple (but sometimes overlooked) procedure can result in short circuiting the electronic pulsehead and other devices if accidently touching the +VDC and O.V. - (Sh.) pulse signal cable lines while terminating/connecting/disconnecting wires.




*When measuring the newer style DSP and DSP-OC with volt meter;*
**ME2008 / ME995 power ON provides +12VDC to flowmeters**
+ and - = +12VDC
P and - = +11.9VDC (Pulse always remains onstate -high)
P and - = +VDC (you might see 0.1V this is OK)
*So when the unit is operating transmitting pulses they drop + to -.*
*(Too fast to see with a Voltmeter, only a ManuFlo UMT8 or Multimeter with frequency oscilloscope).*

**ME2008 / ME995 power OFF provides +0 VDC to flowmeters**
+ and - = +0 VDC., P and - = +0 VDC., P and - = +0 VDC

*(Note: The older Pulseheads have an opto light interrupter so the pulse can be on or off state at dormant mode).*

✖ **When suppling power to ME2000 / ME2008 / ME995 +24VDC powered units, make sure the dedicated power supplies are:**

Pure regulated +DC Power supplies to the +24VDC ME2008 / ME995 models which then in turn supply normally +12VDC to the field flowmeters (namely MES20, MES20DSP, MES20DSP-OC). The DC supply must be powering the equipment with a proper flat line voltage with no ripple. *(Fig.1)*

To test, connect the '+' and '-' supply lines (feeding power to the ME2008) to a multi-meter with an oscilloscope facility.
If there is a ripple wave (as per Fig.2) then make sure to connect an earthing wire from the '-' connection to a master earth.

This will assist with any non-grounded power supplies and can assist to avoid external voltage spikes which may cause damage to the external field equipment flowmeters (or other devices).
*If in doubt connect as a course of standard practice, as the ManuFlo Flowmeters must be grounded at one end only to provide proper shielding.*

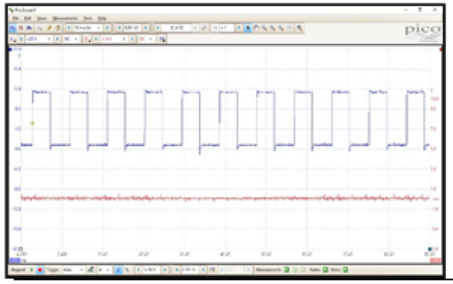


Fig. 1

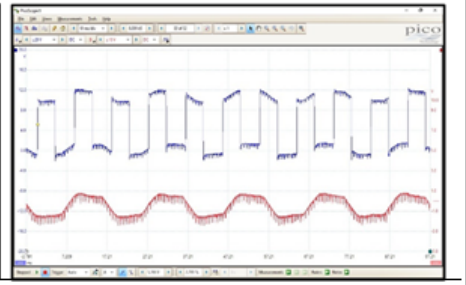


Fig. 2

***FIG. Descriptions:***
*Blue line shows the incoming flowmeter pulse signals.*
*Red line shows the correct required voltage supply line.*

The above is a fundamental industry principle, this can be overlooked in modern times with newer type switch-mode type power supplies which are not properly grounded nor supplying pure flat line regulated DC.

***Technical Note:***
*With AC powered ManuFlo Devices the "-" (o.v.) master shield of the field flowmeters are internally inter-connected to the AC master earth of our devices. Thus achieving a proper grounding and shield when connected to the AC (A/N/E) power supply line.*

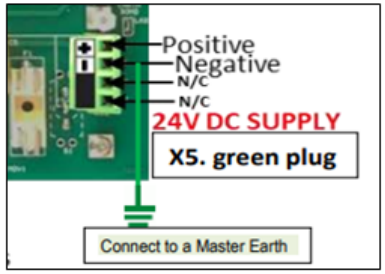


Fig. 3. *Rear view ME2008 DC powered motherboard connection Master Earth wire connection.*

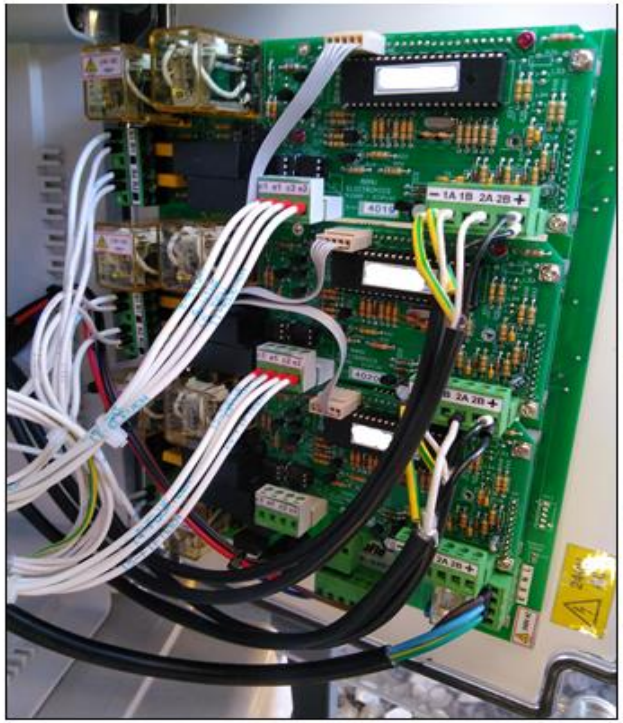
✖ If available , **Make sure the Computer/PLC pulse-INPUT has missing pulse detection activated.**
This will allow the PLC to stop start drives to ME2008 in case of Opto output/input failures at both ends of the ManuFlo or PLC/computer .

**Bad field Wiring practices -connecting the ME2008 input/outputs/commands to the external PLC/computer devices.**

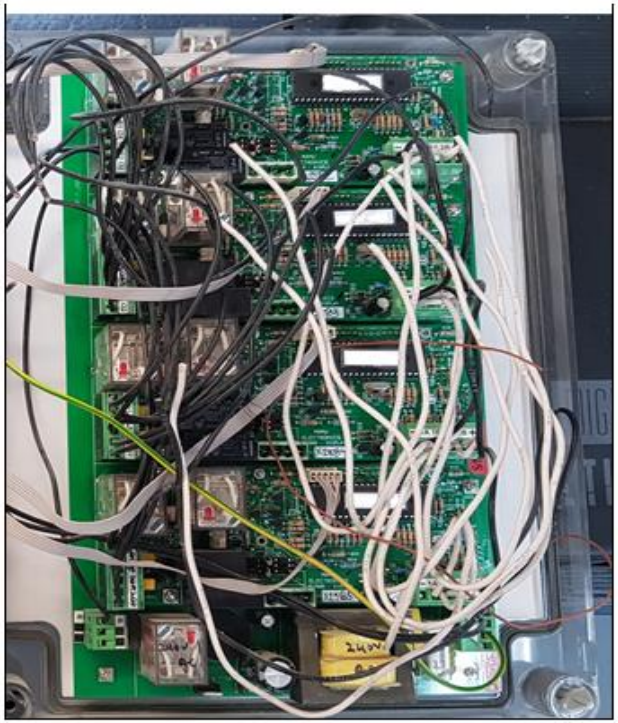
ManuFlo has become aware of wiring practices that are not to an acceptable industry standard, This can compromise the integrity, stability and long term safe operation of its equipment.

Picture-A is an example of endorsed properly terminated connections.

Picture-B clearly shows unacceptable wiring practices, which can lead to potential future problems. This can lead to short circuits and be impossible to trace wires for any future service work. (Performed by an unknown installer).



Picture A



Picture B

# UIC water cards powered from ME2000/08

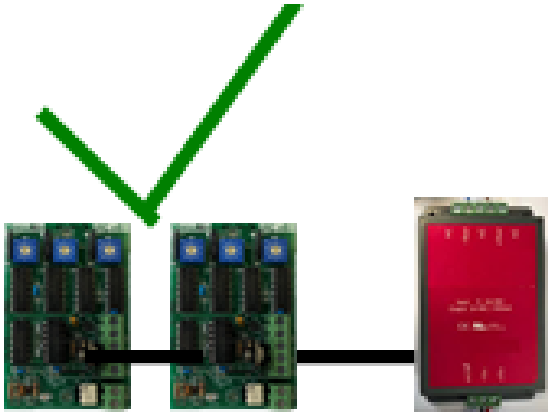
## TECHNICAL BULLETIN rev.1

### ME2000 / ME2008 - WARNING

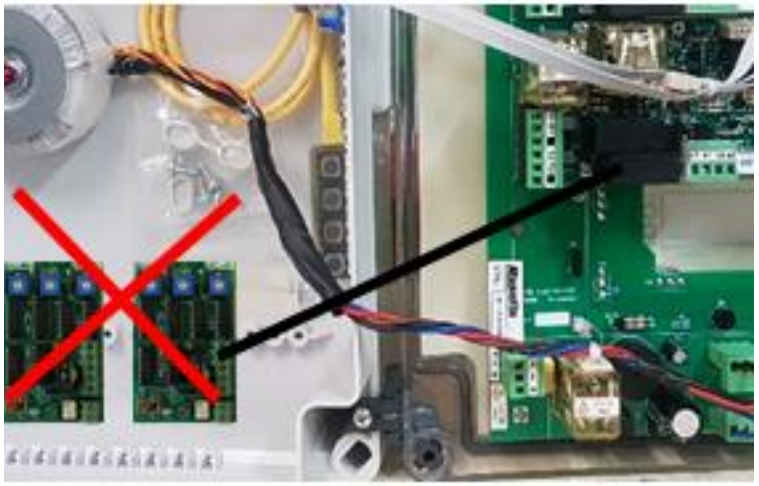
ManuFlo has become aware of the following **issues** in field use of equipment;

- ✘ No ancillary equipment being installed within the ME2000/ME2008 dedicated enclosure.
- ✘ No Universal Interface Cards (used for the water flowmeters) be installed within the housing enclosure.
- ✘ The ME2000/ME2080's dedicated +12VDC output power supply must only be used for powering the MES admixture pulse flowmeters (not other any other devices).
- ✘ Using the internal +12VDC power supply to power Universal Interface Cards (UIC and its RPFS-P flowmeters) will eventually cause overload of the (older style) PCB mounted voltage regulators causing them malfunction, breakdown and cause possible damage to the units.

ManuFlo now recommends Universal interface cards must now be installed exernally of the ME2000/08 enclosure and further must be powered by their own dedicated external regulated power supply of normally +12VDC or +24VDC depending on the model type.
(UIC's could also malfunction due to insuficent regulated pwr).
Further, having UIC cards within enclosure makes future access difficult and potentially dangerous for water callibrators.
Installations with UIC cards installed internally should eventually be re-positioned externally.



UIC cards wired with independent external regulated Power supply

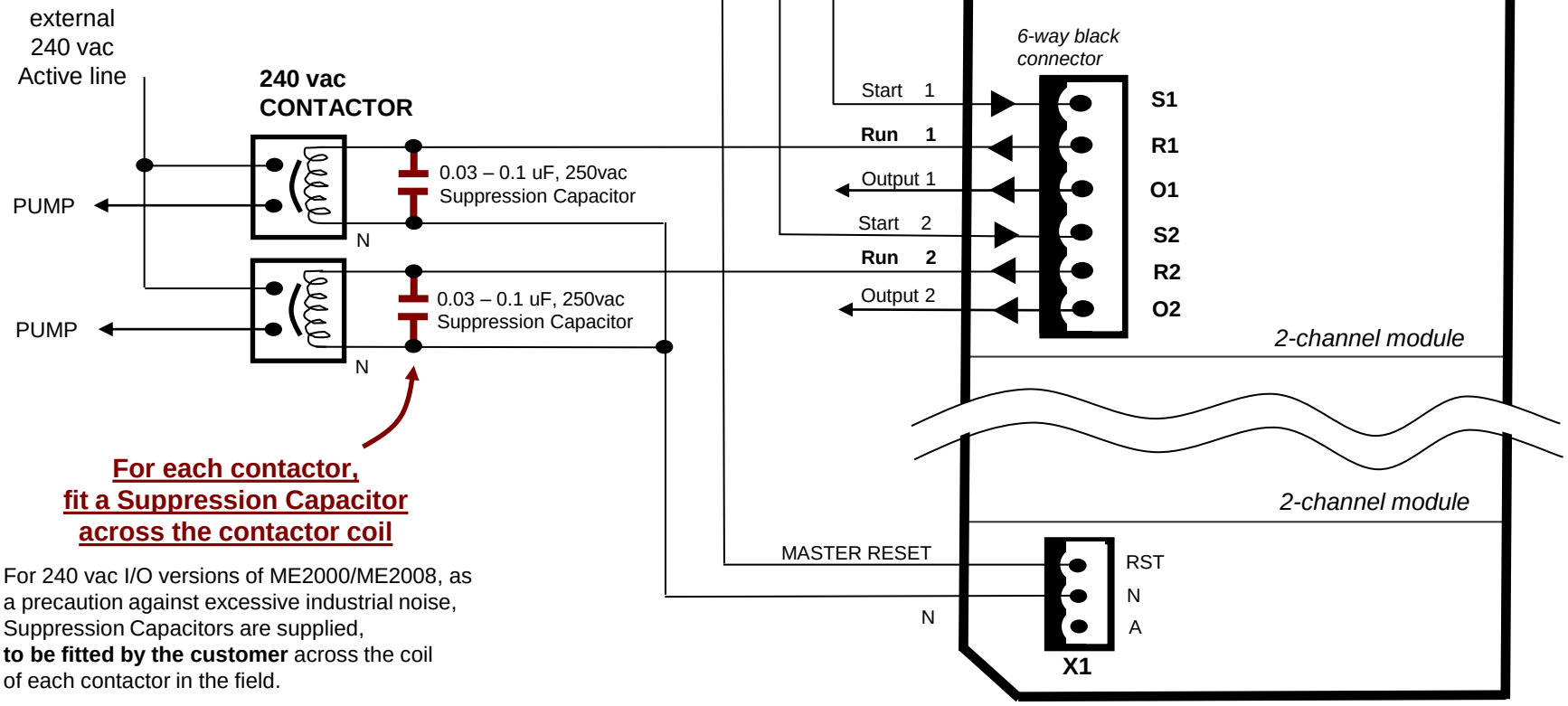


UIC cards wired with internally from ME2008 DC power is not recommended

- Computer may have leaky Optos. On computer batching system, the installing electricians:
  - ❑ must measure, on the batching computer, **the leakage voltage** (when a batch is NOT in progress) **between each black Opto's start 240v Active and Neutral.**
  - ❑ If the leakage > 50 volts ac, then **resistor** (about 12 KΩ to 15 KΩ, 10 Watt) must be installed to each Opto on the batching computer to drain the leakage to Neutral.

  Otherwise, a relay activated by 240 vac could still be held on by 90-110 vac leakage and, consequently, pumping will not stop until the maximum batch limit (as set on Batch Controller or ME2000) is reached, and **an overdose of admixture will occur**.

Wire a neon/globe across coil of suspect contactors


**For each contactor, fit a Suppression Capacitor across the contactor coil**

For 240 vac I/O versions of ME2000/ME2008, as a precaution against excessive industrial noise, Suppression Capacitors are supplied, **to be fitted by the customer** across the coil of each contactor in the field.

ManuFlo ®TM
*Flow Measurement & Control Products*

# Installer Note: ME2008 – 240v AC I/O considerations

# INDUSTRY BULLETIN 14/1

| | |
|---|---|
| Benefit: | Detection of pumping air via PD pumps. |
| Product: | ME2008, Microprocessor Interface Controller Safety Card |
| Feature: | Batching computer, ME2008 settings, batching procedure. |
| Date: | 25th August 2014 |

To safeguard against possible pumping and recording of air if admixture chemical storage tanks run out (empty) and positive displacement pumps push air through MES pulse flowmeters causing false counting of air miss-interpreted as liquid chemical;

**(1) Field Report**

A majority of admixture dispensing installations in premix concrete plants are using centrifuge pumps. These type of pumps do not pump/push air in significant capacity.

We were advised that a positive displacement pump was installed in an installation with an MES20 positive displacement pulse flowmeter and ME2008 system. The chemical storage tank ran empty of liquid and the pump continued to push air through the MES flowmeter. The flowmeter continued to transmit pulses to the ME2008. The system interpreted this as liquid whereas it was air, causing under dose of liquid.

**(2) ManuFlo factory test**

The same installation and equipment conditions were setup at ManuFlo. We found that pumping air registration occurs in a fluctuating manner from 0.06 to 0.340 litres/sec. (60 to 340 millilitres/sec).

**(3) Recommendation Setting for the ME2000 / ME2008**

**To improve the ability of the ME2000/08 to detect a problem** if tanks empty and a positive displacement pump pushes air and the MES flowmeter transmits pulses, the **settings for Low Flow {menu:6 of the display screen** [min.flow (l/s)] } **should be set to 000.100 ,** this equates to 0.1 litres/sec, or 100mls/sec or 6 litres/min. The value is changed via the hand held programmer.

As general guide, to fully utilize the safety management system of the ME2000/08:

- the **Low Flow** setting should be set at **20%* of the usual flow rate (or 000.100 which ever is the greater)*** of that channel; and
- the **High Flow** setting should be set at **90% of the specified operational maximum flowrate** of the flowmeter on that channel.

**(4) When Batching**

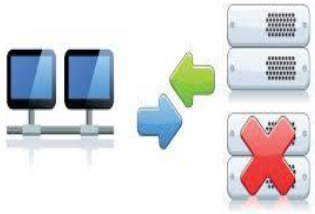
**Or use KMS Magflows With empty pipe detection**

MOST IMPORTANT

If a batcher gets a Low Flow Alarm on two successive attempts at batching, then the batcher must:

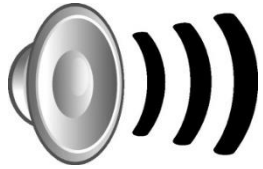
- stop using that channel; and
- record the quantity displayed on the ME2000/08 and the batch computer; and
- ring your local admixture supplier or ManuFlo for service.

Note: ManuFlo has an advanced training course available for relevant personnel.



# INDUSTRY BULLETIN 16/8

| | |
|---|---|
| Benefit: | **DETECTION AND RECORDING OVER BATCHES** |
| Product: | ME2008 /ME2000, Microprocessor Interface Controller Safety Card |
| Feature: | Batching computer with ME2008 over-batch DOSE-LIMIT alarm. |
| Date: | 4th August 2016 |



The following is an explanation of the functionality of the ME2008/ME2000 logic in conjunction with the PLC/computer system during an over-batch "**Over Dose**" alarm being triggered due to:

- ✓ Malfunction of PLC/computer START Opto drive ( seized ON-state ).
- ✓ Oversized recipe or quantity request of the PLC/computer software batch load operator.
  - ( PLC/Computer Set Quantity ≥ ME2008/ME2000 Set "Dose Limit" Quantity )

**THE SEQUENCE & LOGIC OF THE SAFETY SYSTEM SCENARIOS EXPLAINED;**

I. The PLC/Computer provides a continuous START drive from its Opto's to the ME2008.
II. The ME2008 then provides a continuous RUN drive to the external contactor/solenoid to start the flow of admixture/liquid.
III. The ME2008 allows 2 seconds (adjustable "Start Delay") for pulse signals from flowmeters to arrive.
IV. The ME2008 software now counts then totalise the incoming pulses received and continuously monitor (watchdog safety mode) if no safety setting is being breach ( e.g Minimum/Maximum Flow, **Dose Limit** and Max Out Rate settings ).
V. Once the computer has received its desired pulse target quantity the START drive dis-engages and the ME2008 RUN drive dis-engage also at the same time.
VI. A MASTER RESET command from the PLC/computer will then reset the ME2008 totalisers and ready for the next batch.

**Scene 1:** ***Malfunction of PLC/computer START Opto drive***

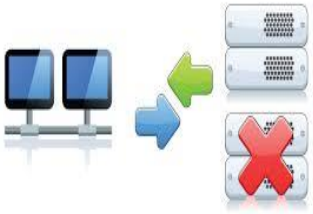
If the PLC/computer START Opto drive is stuck-on then the ME2008 will count continuously to the **Dose Limit** setting and will continue to record and send the incoming pulses from the flowmeter on the ME2008 display to the PLC/computer.
MASTER RESET command will be received by the ME2008 totalisers if the set batch quantity has been met by the PLC/Computer, at this point if the PLC/computer channel inputs close off, it may or may not be live to register further incoming pulses (software dependent), the ME2008 will not accept any RESET command while the START and RUN drive is still active due to START Opto drive malfunction so the total count will not be reset and will continue to transmit pulses to the computer until the Dose Limit quantity is reached and "Over Dose" alarm safety and function will be activated.

**Scene 2:** ***Oversized recipe or quantity request of the PLC/computer software batch load operator.***

If the PLC/Computer Set Quantity is equal or more than the ME2008 Set "Dose Limit" Quantity, then the PLC/computer will provide a continuous START drive to the ME2008 until a desired pulse target quantity is achieved but the ME2008 is also continuously monitoring the total quantity being delivered and must not reach the Dose Limit amount setting otherwise "Over Dose" alarm safety and function will be activated.
*Note:* No MASTER RESET command will be received by the ME2008 totalisers if the batch size has not been met by the PLC/Computer.

**Alarm safety and function:** ***"Over Dose"***

If "Over Dose" alarm is activated, the ME2008 will override the PLC/computer START drive and disengage the RUN drive to the contactor/solenoids to stop the flow and avoid over dosing of admixture/liquid, and at the same time will raise a visual and audible "Over Dose" Alarm to notify the operator.



# INDUSTRY BULLETIN 16/12

| | |
|---|---|
| CASE: | **Over-dose Alarm/Batch count accumulation Troubleshooting** |
| Product: | ME2008 /ME2000, Microprocessor Interface Controller Safety Card |
| Feature: | Batching computer/PLC with ME2008/2000 intermittent master reset issue and batch count accumulation resulting to Over-dose Alarm (one or more channels only but not all channels) |
| Date: | 14th December 2016 |

The following is an explanation of the functionality of the ME2008/ME2000 logic in conjunction with the PLC/computer system during batching and resetting of batch count to zero.

## THE SEQUENCE & LOGIC OF THE SAFETY SYSTEM SCENARIOS EXPLAINED;

I. The PLC/Computer provides a continuous START drive from its Opto's to the ME2008.
II. The ME2008 then provides a continuous RUN drive to the external contactor/solenoid to start the flow of admixture/liquid.
III. The ME2008 allows 2 seconds (adjustable "Start Delay") for pulse signals from flowmeters to arrive.
IV. The ME2008 software now counts then totalizes the incoming pulses received and continuously monitors (watchdog safety mode) that no safety setting is being breached ( e.g Minimum/Maximum Flow, **Dose Limit** and Max Out Rate settings ).
V. Once the computer has received its desired pulse target quantity the START drive dis-engages and the ME2008 RUN drive dis-engage also at the same time.
VI. A MASTER RESET command from the PLC/computer will then reset the ME2008 totalizers and ready for the next batch.

## Programming the Computers PLC: Avoiding accumulation of batch count or Over-dose Alarm due to PLC/Computer MASTER RESET timing issue and conflict with START drives;

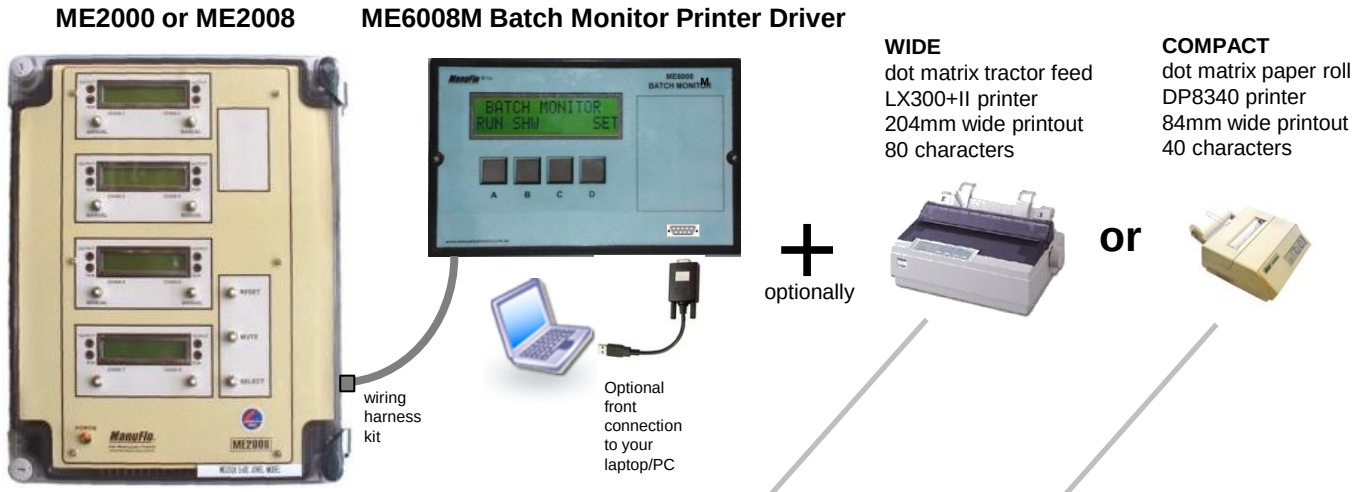
**PLC Master Reset option Logic 1: MASTER RESET is applied after each batch.**
After each batch, make sure that all the channels have already completed batching (START drives all dis-engage) **then program the PLC to wait for at least two seconds gap** before applying at least a one second duration RESET signal to the ME2008/2000 MASTER RESET RELAY.

**PLC Master Reset option Logic 2: MASTER RESET is applied before the next batch.**
Before the next batch commences, apply at least one second duration RESET signal to the ME2000/2008 MASTER RESET RELAY to reset counts from the previous batch, **then program the PLC to wait for at least two seconds** before START drive is applied on any channels.

***Note:*** If any RESET signal is applied too soon or at the same time with START drive, then any channels that are batching (START drive active) will ignore any reset signal and the total count will not be reset to zero, this count will be accumulated on the next batch and will trigger an "Over-dose" alarm if the previous accumulated batch total reaches the programmed Over-Dose settings in the ME20008. Channels that already finished batching (START drive dis-engage/inactive) will acknowledge any reset command and the total count will be reset to zero.

.

# Upgrade your ME2008 to add Batch Log/Print capability!




| | DATE | TIME | CH:1 | CH:2 | CH:3 | CH:4 | CH:5 | CH:6 | CH:7 | CH:8 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | L | mL | mL | mL | mL | L | L |
| B-0001 | 20-06-11 | 10:34 | 000000 | 000349 | 000000 | 000000 | 000000 | 000000 | 000000 | 000000 |
| B-0002 | 20-06-11 | 10:34 | 000000 | 000000 | 000450 | 000000 | 000000 | 000000 | 000000 | 000000 |
| B-0003 | 20-06-11 | 10:35 | 000250 | 000000 | 000000 | 000000 | 000000 | 000000 | 000000 | 000000 |
| B-0004 | 20-06-11 | 10:36 | 000000 | 000620 | 000000 | 000000 | 000000 | 000000 | 000000 | 000000 |

| BATCH No<br>CH-1<br>CH-5 | DATE<br>CH-2<br>CH-6 | TIME<br>CH-3<br>CH-7 | CH-4<br>CH-8 |
|---|---|---|---|
| B-0001<br>000010mL<br>000010L | 21-03-11<br>000005L<br>000090mL | 10:48<br>000000mL<br>000000L | 000000L<br>000000mL |
| B-0002<br>000700mL<br>000004L | 21-03-11<br>000002L<br>000080mL | 10:49<br>000080mL<br>000004L | 000000L<br>000000mL |

Batch Log

**Provides multi-channel batch log/printout for ME2000/ME2008 units in batch plants, providing an independent batch record.**

# WH10 Installation of ME2008 to ME6008M-FP Upgrade

**Components**

- 1x Wiring harness for ME2008, comprising:
  - ME2008 internal connection wiring harness

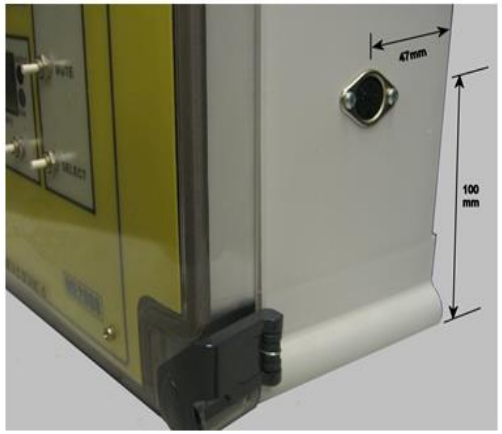
  - ME2008 to ME6008M wiring harness

- 1x ME6008M-FP, comprising:
  - Batch Monitor Printer Driver Unit

  - RS232 to USB adapter cable

**ME2008**

(a) In the right side of the ME2008 housing box, drill a 15mm diameter hole, whose centre is 100mm from the bottom of box, and 47mm from the back.




From outside the ME2008, thread the **ME2008 internal connection** wiring harness through the hole and into the ME2008, until the socket sits flush with the outside of the ME2008..

Using the socket as a template, drill two 1/32" holes on either side of the hole, and then use two ¼" self tapping screws to affix the socket to the ME2008.

(b) Inside the ME2008, connect the pulse cables of the **ME2008 internal connection** wiring harness to the corresponding pulse inputs on the plugs marked 'X5' on the two-channel modules in the ME2008 (thereby paralleling any existing inputs from flowmeters). The colour code is:

| | | | | |
|---|---|---|---|---|
| Green | Channel 1 | 1st (top) | module | X5 plug, pin 1A |
| Black | Channel 2 | 1st (top) | module | X5 plug, pin 2A |
| Blue | Channel 3 | 2nd | module, | X5 plug, pin 1A |
| Brown | Channel 4 | 2nd | module, | X5 plug, pin 2A |
| Orange | Channel 5 | 3rd | module, | X5 plug, pin 1A |
| Red | Channel 6 | 3rd | module, | X5 plug, pin 2A |
| Yellow | Channel 7 | 4th (bottom) | module, | X5 plug, pin 1A |
| Grey | Channel 8 | 4th (bottom) | module, | X5 plug, pin 2A |
| Shield (0v) | | any module | | X5 plug, pin '-' |

1st (top) module

2nd module,

3rd module,

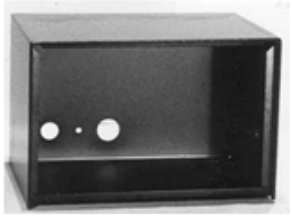
4th (bottom) module

Note: if the ME2008 is not fully populated with dual-channel modules, then any unused harness wires must be taped up to avoid causing random contacts or short circuits.

## ME6008M

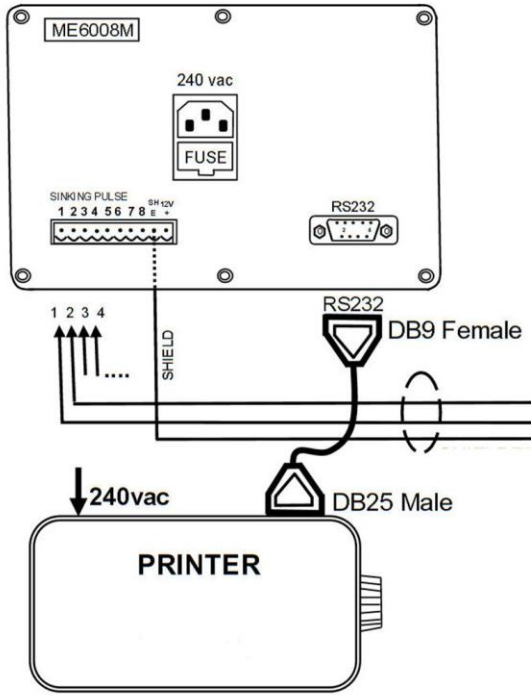
- Position ME6008M-FP in a location that allows easy access and viewing.
- If panel mounting the ME6008M, create a 190mm long and 122mm high cutout in the panel. Otherwise, use a ManuFlo SHB Single Housing box for remote mounting.


**ME6008M-FP**



**SHB**
**Single Housing Box**

- Plug the **ME2008 to ME6008M wiring harness** into the ME2008 socket.




- Plug the 10-way plug of the **ME2008 to ME6008M wiring harness** into the 10-way socket on the back of the ME6008M, thus connecting channels 1 to 8, and the shield.
- Connect 240 vac to the rear of the ME6008M via the IDC power plug.

- Program the ME6008M according to its datasheet (see http://www.manuelectronics.com.au/pdfs/ME6008M.pdf) and the parameters of the flowmeter of each channel e.g. the pulses/Litre for each channel (according to the programme in the ME2008).

**Printer (if used with ME6008M)**

- Plug a communications cross-over cable from the RS232 port at the rear of the ME6008M to the printer.
- Test a download of the log from the ME6008M to the PC (see ME6008M datasheet http://www.manuelectronics.com.au/pdfs/ME6008M.pdf on how download the log).

**PC/Laptop (if used with ME6008M)**

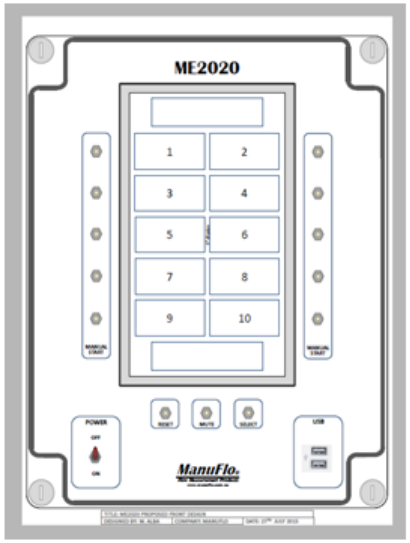
- Connect the **RS232 to USB adapter cable** from the front RS232 port on the ME6008M to the USB port of your PC/Laptop.


- Configure the HyperTerminal software in your PC/Laptop (see section 10.5 in the ME3000 User Manual http://www.manuelectronics.com.au/pdfs/ME3000_uman.pdf for how to configure Hyperterminal).

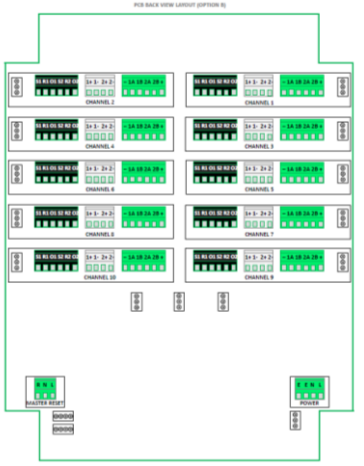
  Note: HyperTerminal was provided with Windows operating systems up to and including Windows XP, but is not provided in Windows Vista or Windows 7. However, it can be downloaded from the Internet e.g. http://download.cnet.com/HyperTerminal-Private-Edition/3000-2155_4-10966768.html

- Test a download of the log from the ME6008M to the PC (see ME6008M datasheet http://www.manuelectronics.com.au/pdfs/ME6008M.pdf on how download the log).

# R&D Under Development
# ME2008 IoT/Bluetooth/GMS/log smart Motherboard with software patch –V2.2 (release date 2022)










# iii) Interface Cards

UIC

# iii) With UIC Interface Card

The UIC **Universal Interface Card** provides: signal **scaling** and an **isolation interface** to pulse flowmeter outputs, and re-transmits to PLC/computer inputs.
Models available: **UIC/A2** = 24-240vac switching or **UIC/D** = 5-30vdc switching.

In use in Thailand, Indonesia, Philippines, Malaysia, HK, Vietnam, Nth China, Singapore & elsewhere.

**UIC Interface Card**

**MES PD Flowmeter**
measures flow

Pump

Admix Storage Tank

pulse/voltage scaling

**Batching computer**
sets/records batch

**or AMM Mag Flowmeters**

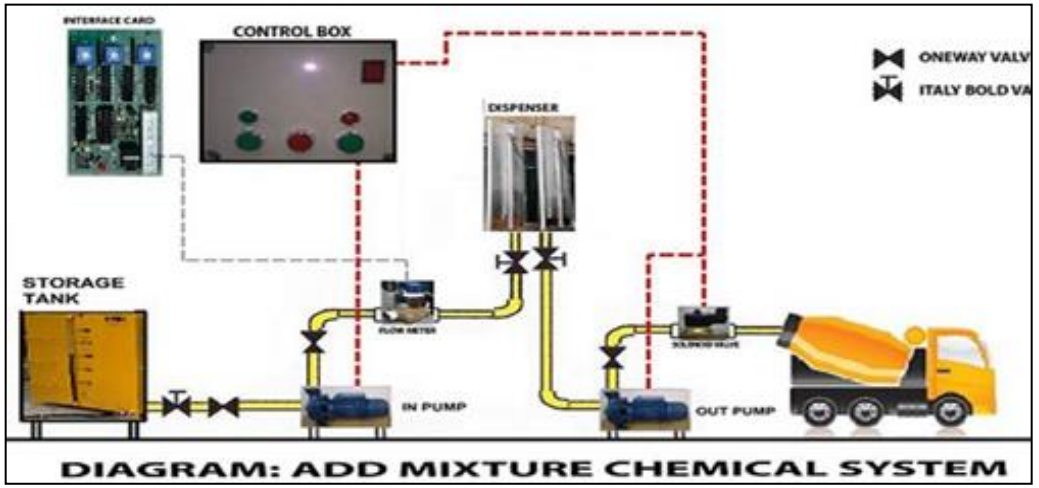


DIAGRAM: ADD MIXTURE CHEMICAL SYSTEM

Quantity set by: Computer/PLC
Delivery controlled by: Computer/PLC

**Usually used for bottle systems in Asia with Computers**

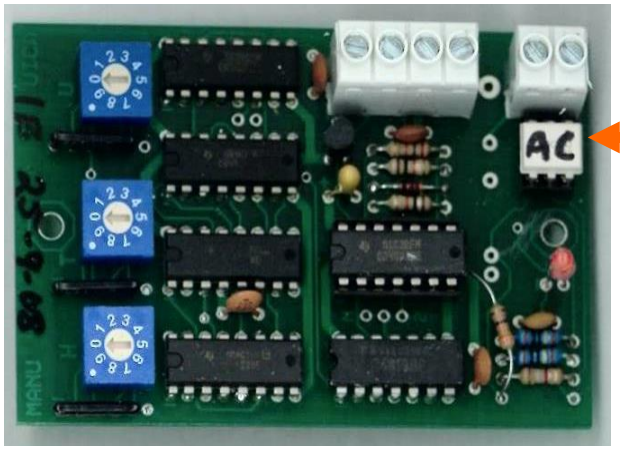
# UIC Interface Card - Configurations

## UIC/A2 • switches 220-240vac, 5-12 VDC powered

ASO241 AC-triac

no IC

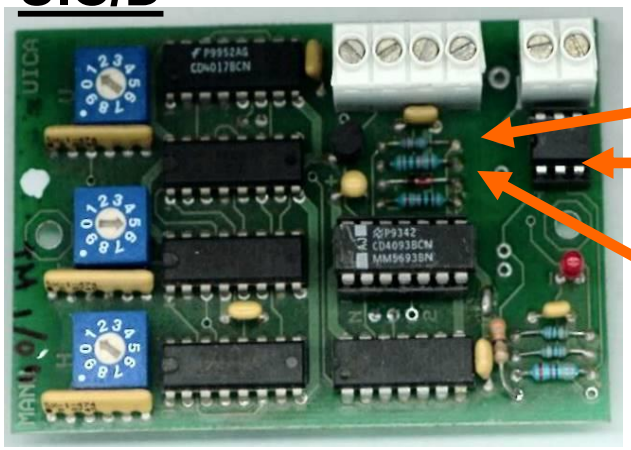
## UIC/A1 • switches 110-240vac, 5-12 VDC powered




white IC, MOC3041-triac labelled “AC”

**Code: -24DC for 24VDC powered**

## UIC/D • switches 5-30VDC, 5-12 VDC powered

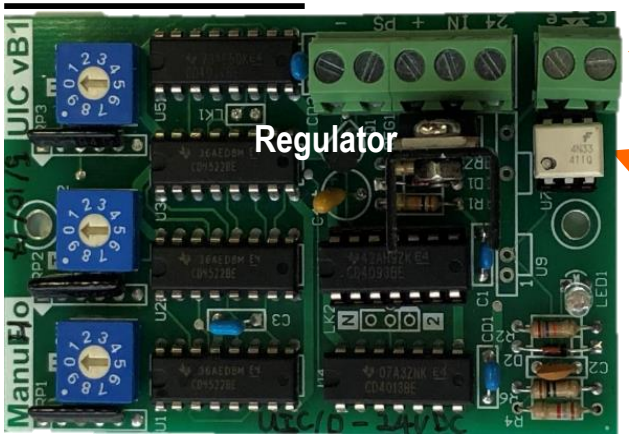


no regulator

6pin 4n33 wh/blk IC opto

no triac

## UIC/D-24DC • switches 5-30VDC, 24 VDC powered




7 pos.term.blk

6pin 4n33 IC opto (Wht/Blk)

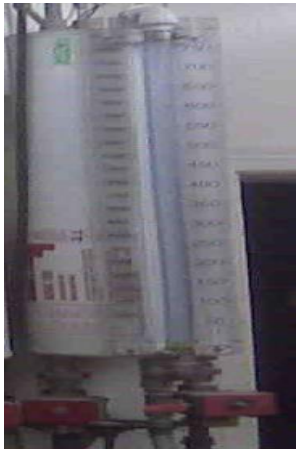
# Interface Cards – UIC for Admixtures

**Usually used with Bottle Systems Mainly in Asia.**

Flowmeter

UIC

Computer/PLC



The UIC **Universal Interface Card** provides:

- signal **scaling** and
- an **isolation interface**

to pulse flowmeter outputs, and re-transmits to PLC/computer inputs. Models available:

1) **UIC/A1** : 110-240 **vac** pulse switching via a triac opto
2) **UIC/A2** : 24-250 **vac** pulse switching via a **heavy duty** triac opto
3) **UIC/D** : 5- 30 **VDC** NPN/PNP (sink/source) pulse switching via a 4N33 opto

**4) -24DC : for 24VDC powered option**

UIC/A1

UIC/A2

UIC/D

# Interface Cards - UIC

**WARNING:**
**Power supplies must be powered by a UPS with pure regulated Voltage type (no ripple voltages)**

2 mounting holes, for fixing to panels, enclosures etc.

all scaled output pulses are indicated by a **LED**

## VOLATGE SUPPLY

- Requires strictly regulated **supply** of 5 to 12VDC, which in turn supplies flowmeter.
  If only 24 VDC available, an optional voltage regulator is pre-fitted on card **(-24DC)**.

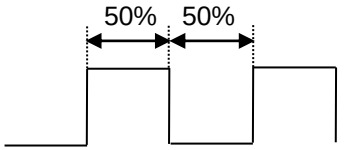
input

- Schmitt trigger input filters possible industrial noise.

| **Pulse input frequency max:** | |
|---|---|
| **x 10 input** (standard) | 2 kHz (e.g. with MES20) |
| **x 50 input** (optional) | 350 Hz (used with low frequency pulse output flowmeters). |

output

- produces low voltage 5-12 VDC NPN (sinking) **scaled output pulse** (proportional to supply voltage), which can be used for connection to counters or other devices.
- output pulses feeding PLC input have 50% **duty cycle** (square wave).

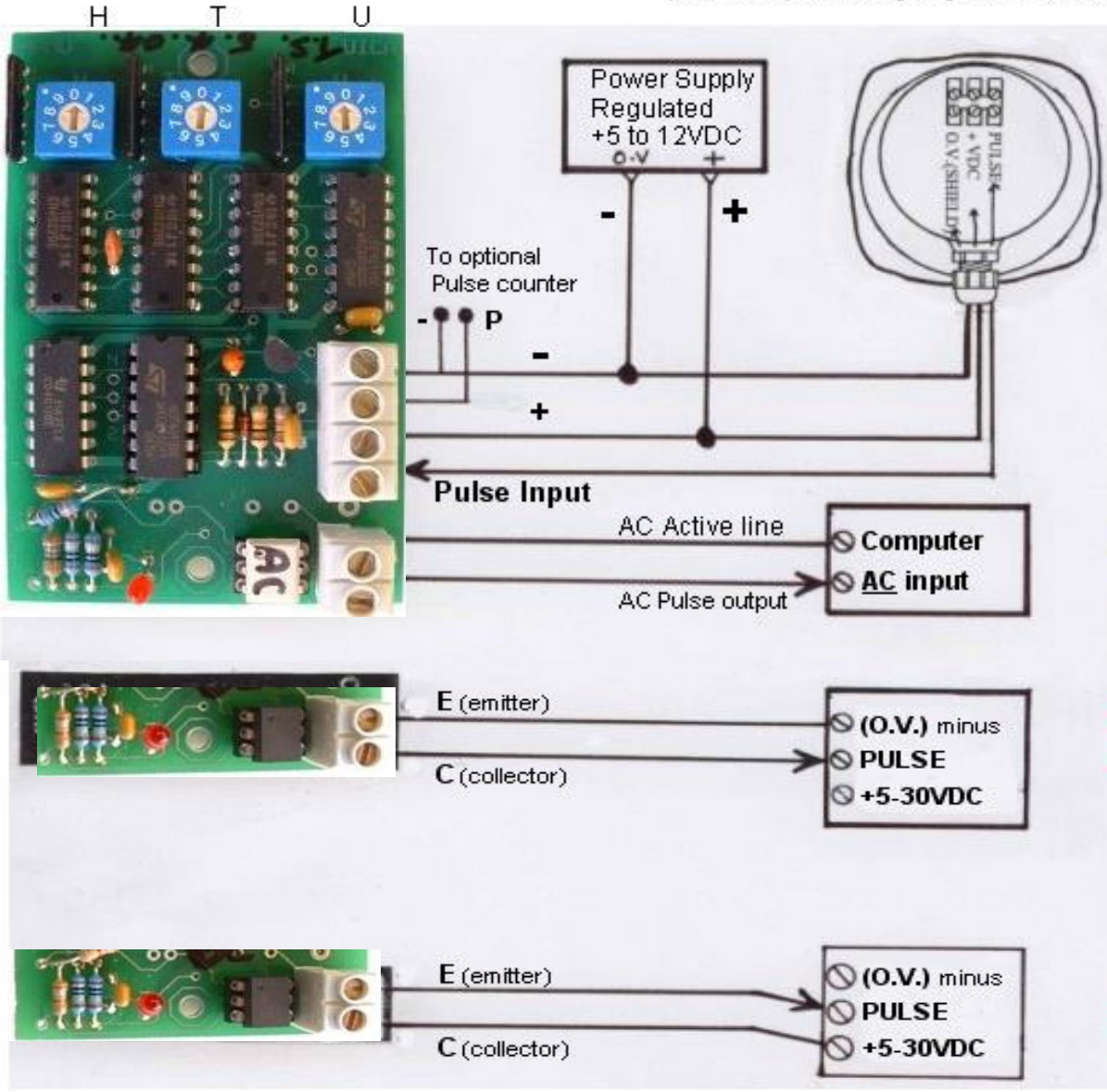


# Interface Cards - UIC –Wiring for AC or DC inputs



**WIRING /CONNECTION DETAILS**

Note: Supply voltage must be regulated 5-12 VDC only
(Unless the special voltage regulator is fitted on UIC card)




Flowmeter Pulsehead entry
MES20 or other meter
Upto 1km distance
USE SHIELDED CABLE ONLY

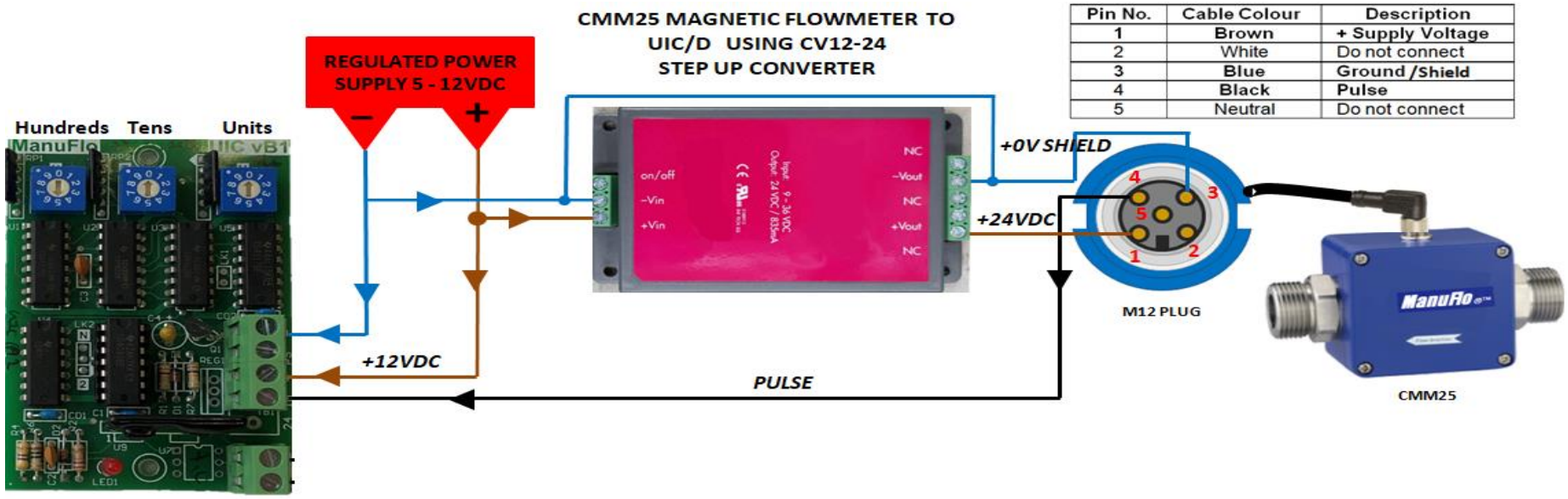
**UIC/A1 or A2**
**AC Pulse version**
**AC Pulse to TRIAC**

**UIC/D SINK**
**DC Pulse wiring**
Pulse & Ground (o.v.) Connection

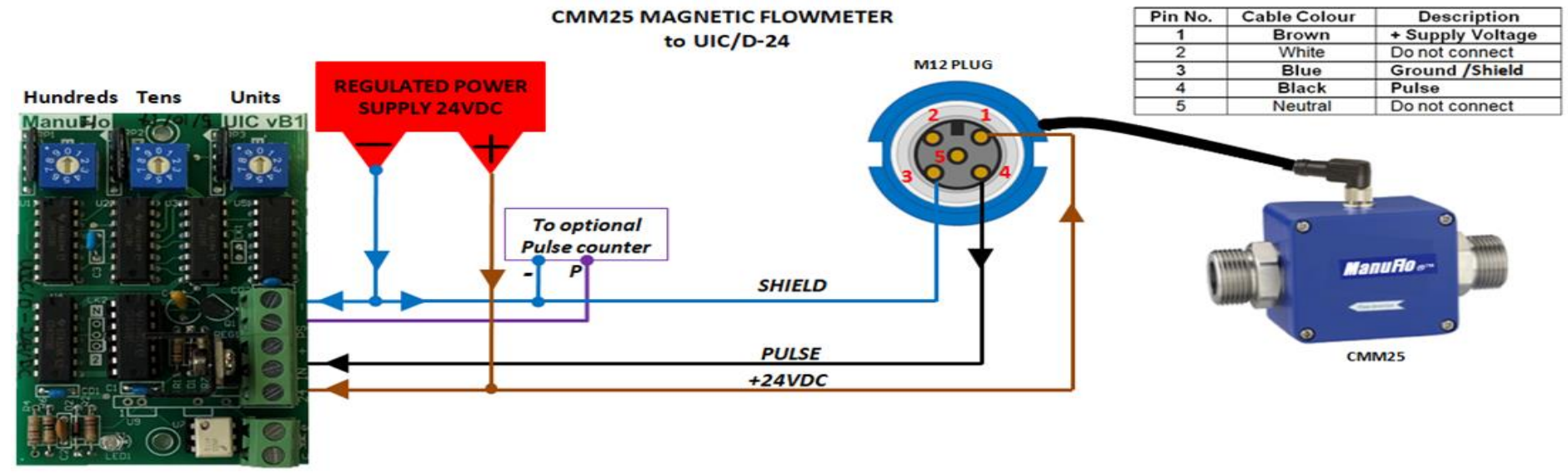
**UIC/D SOURCE**
**DC Pulse wiring**
Pulse & Positive (+) Connection

# Interface Cards - UIC –with CMM25 Magflows






| Pin No. | Cable Colour | Description |
|---|---|---|
| 1 | Brown | + Supply Voltage |
| 2 | White | Do not connect |
| 3 | Blue | Ground /Shield |
| 4 | Black | Pulse |
| 5 | Neutral | Do not connect |




| Pin No. | Cable Colour | Description |
|---|---|---|
| 1 | Brown | + Supply Voltage |
| 2 | White | Do not connect |
| 3 | Blue | Ground /Shield |
| 4 | Black | Pulse |
| 5 | Neutral | Do not connect |

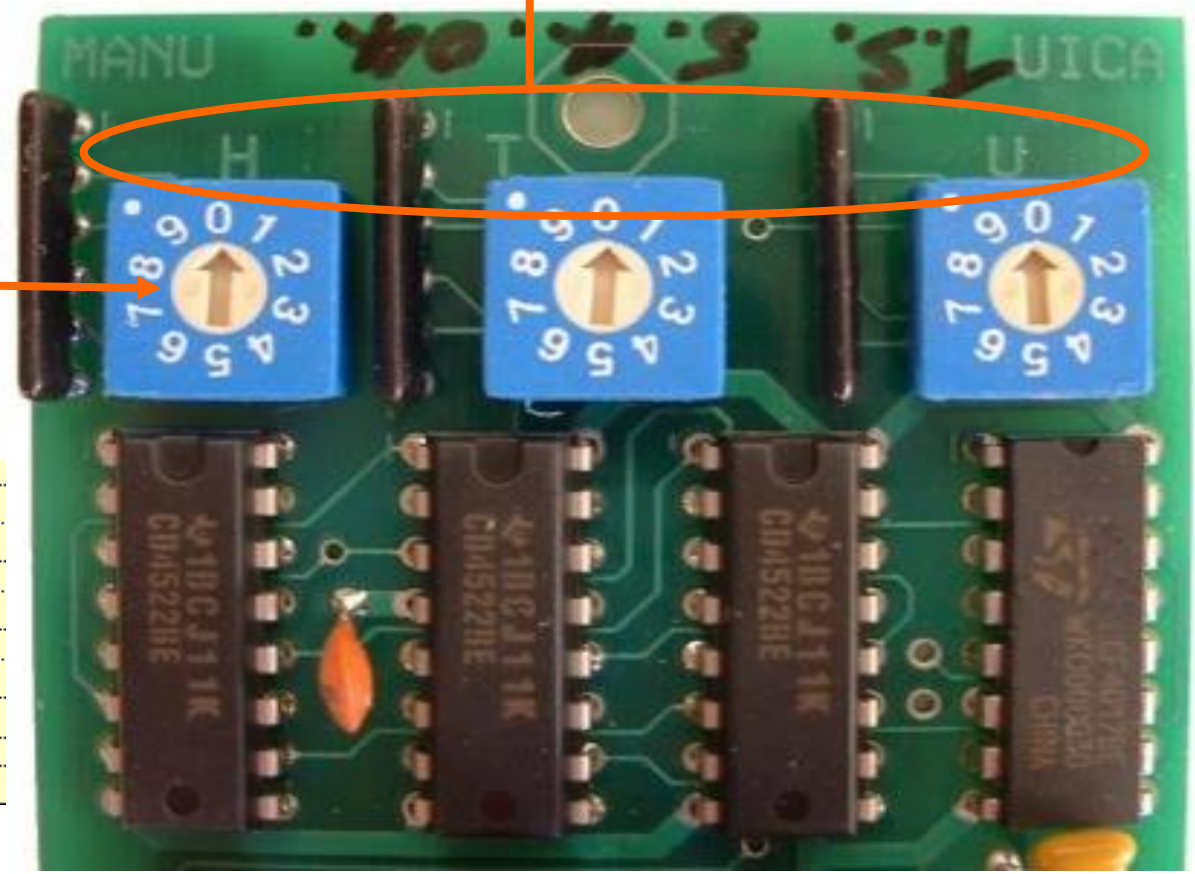
# Interface Cards - UIC – Installation

- Mount UIC interface cards on a suitable **panel or inside an enclosure** near the Computer/PLC input panel.
- When wiring the flowmeter, use **shielded cable**.
  For example, when wiring 4 flowmeters in the one installation, use at least 6-core shielded cable: 4 cores for each pulse wire and at least one core for the positive DC voltage supply linked to each UIC card and the flowmeters, and one core coupled with the shield as O.V.
- Wire the **Pulse Output and return line** from the dual (white) terminal to the computer/PLC pulse input(s).
- Wire the **external power supply** (also available from ManuFlo), to the UIC card which in turn supplies voltage to flowmeter(s).
  **Power supply must be strictly regulated +5 to 12 VDC only, noting each UIC card/flowmeter can draw up to 25mA each.**
  **Or 24VDC if UIC-24VDC input powered option is installed.**
- Select the appropriate **calibration pulse ratio** setting via the 3 decade rotary pots, marked **Hundreds(H) Tens(T) and Units(U).**
- **Power up the system**.
- **Prime the admix line**, until liquid appears at outlet line, UIC card's pulse LED is blinking and the computer screen is counting.
- A **volumetric calibration test** must be performed when commissioning a new installation, and a follow-up quarterly test: a calibrated vessel is placed near the sock, a selected batch quantity set on computer, and batched.

# Interface Cards - UIC - Scaling

**Calibrating or scaling of pulse output signals** is via 3 rotary select switches (numbered 0-9) marked **Hundreds (H), Tens (T) and Units (U).**

Use small flat-bladed screwdriver, insert into switch slot and turn arrow to desired number.

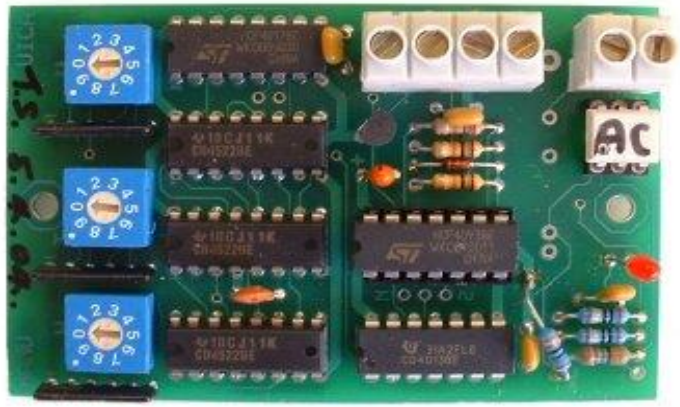



| | | |
|---|---|---|
| HTU = | input pulses/Litre / output pulses/Litre | x 5 |

e.g. to convert 20 pulses/Litre to 1 pulse/Litre:

| | | |
|---|---|---|
| HTU = | 20 pulses/Litre / 1 pulse/Litre | x 5 |
| HTU = | 100 (i.e. H=1 T=0 U=0) | |

# Interface Cards - UIC - Scaling



For batching with concrete admixtures, the MES20/MES20S 20mm pulse flowmeters are primarily used. Scaling values (x10 input card standard) :

**Final Calibration:**

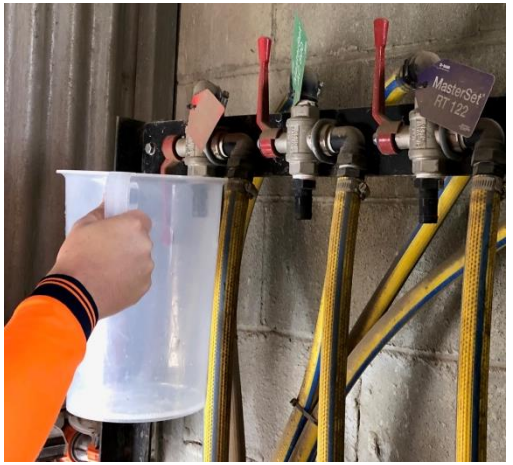
- If the liquid collected is **more** than pulse value shown on computer screen, then **decrease** the rotary decade set value by the same % difference.
- If the liquid collected is **less** than pulse value shown on computer screen, then **increase** the rotary decade set value by the same % difference.
- Note: Final calibration can also be performed via computer software scaling.

| Rotary decade value H T U | Pulse output rate |
|---|---|
| 0 2 5 | 5 mls/pulse |
| 0 5 0 | 10 mls/pulse |
| 1 0 0 | 20 mls/pulse |
| 1 5 0 | 30 mls/pulse |
| 2 5 0 | 50 mls/pulse |
| 5 0 0 | 100 mls/pulse |
| 9 9 9 | 200 mls/pulse |

# Interface Cards - UIC - Calibration

**Volumetric Calibration example:**

- MES20 flowmeter used.
- **10.1** Litres called on batch computer program.
- 100 mls/pulse set on UIC (HTU=500)
- **10.1** Litres of admixture collected in container.
- 101 counts on computer.



101 x100mls/count =10.1 litres = **CORRECT RESULT.**

# Interface Cards - UIC - Calibration

**Volumetric Calibration Example:**

- MES20 flowmeter used.
- **10.1** Litres called on batch computer program.
- 100 mls/pulse set on UIC (HTU=500)
- **10.3** Litres of admixture collected in container.
- 101 counts on computer.

**INCORRECT RESULT.** This is

10.3

------ = 102% or 2% excess admix, so

10.1

- subtract 2% from the current HTU=500 setting i.e. set HTU= 500-10 = 490.
- Batch again, result should BE CORRECT.

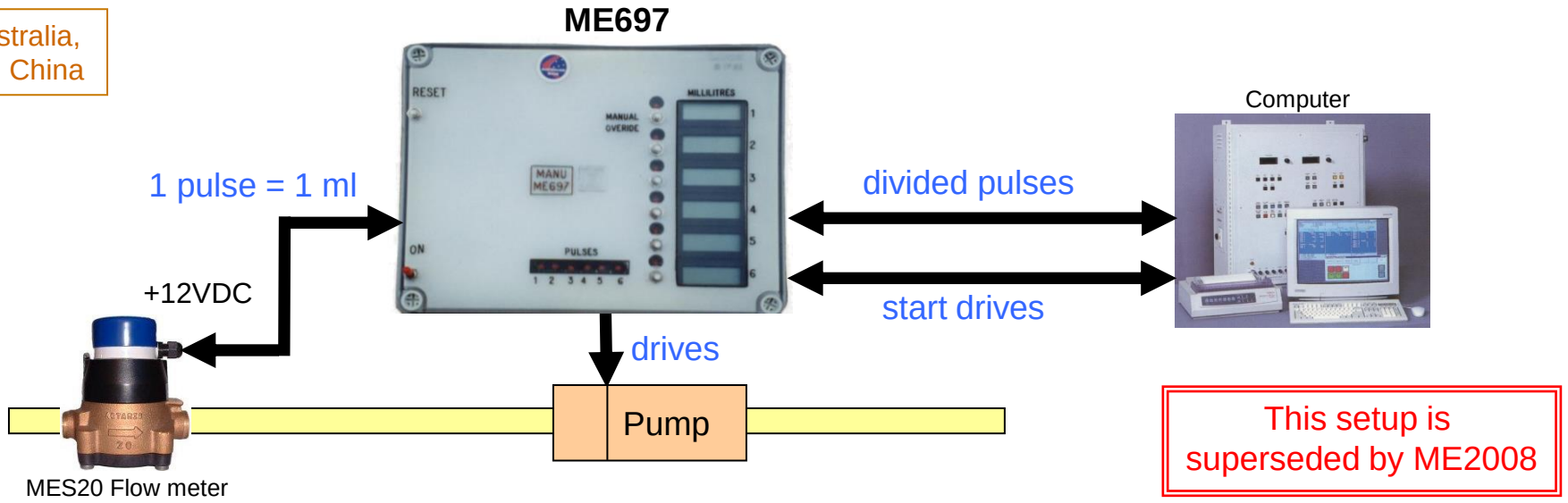
# Interface Cards - UIC – Pulse Trouble Shoot

- **If there is no pulse output or it is erratic from the UIC**

1. Check that the HTU settings on the UIC card are not set to H=0 T=0 U=0, and are correct for your application.
2. Turn off power to the UIC, NOW SET a VALUE e.g. HTU=100, then turn the power on again.
3. Run some fluid through the flowmeter (or simulate flow by inputting pulses to the UIC card).
4. Observe if the UIC's output LED blinks at the rate expected for the divided output pulse rate.
5. If the problem still exists, repeat steps 1 to 4 (2-3 times) until the UIC card autocorrects itself.
6. If the UIC does not autocorrect, then return the suspect UIC card to ManuFlo for further checking or repair.

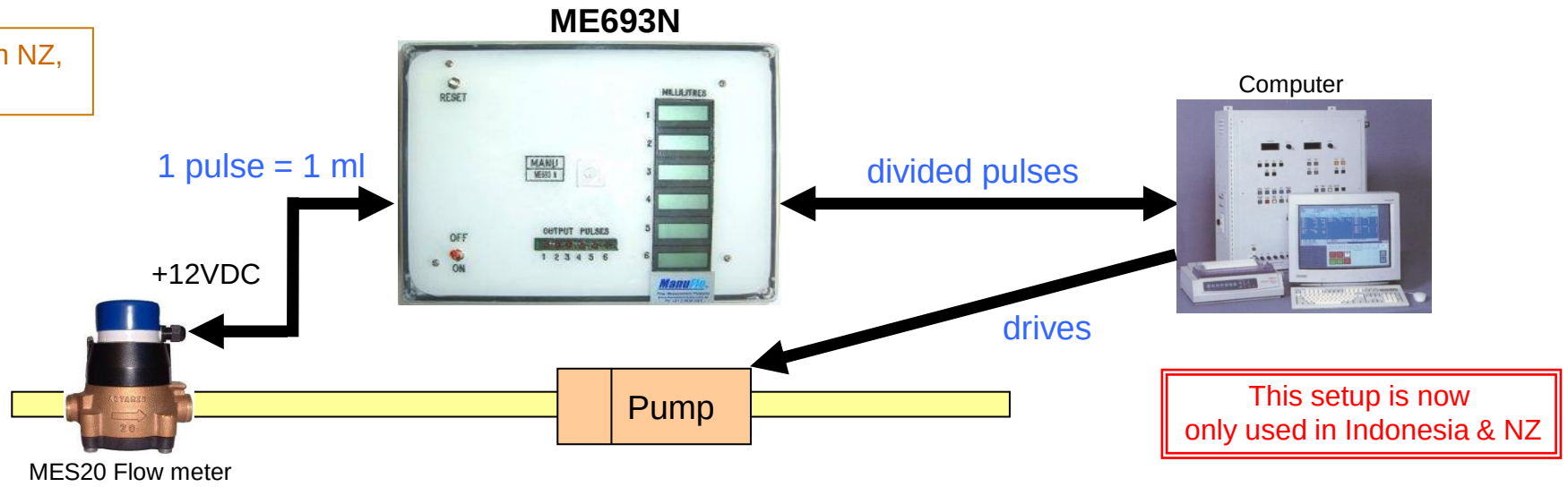

# iv) Interface Cards – with ME697 / ME693N

In use in Australia, NZ, HK, Nth China



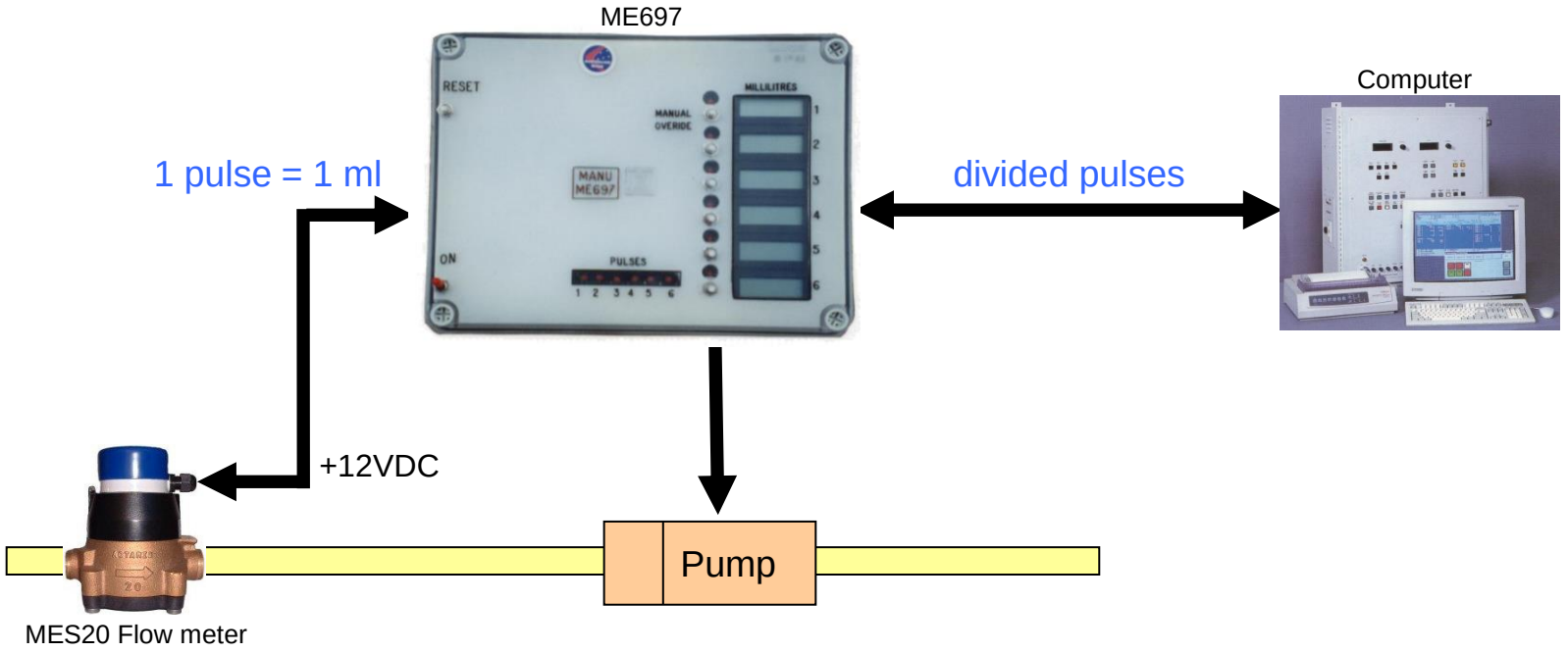

This setup is superseded by ME2008

Still in use in NZ, Indonesia




This setup is now only used in Indonesia & NZ

# Interface Cards – ME697




**FUNCTION**

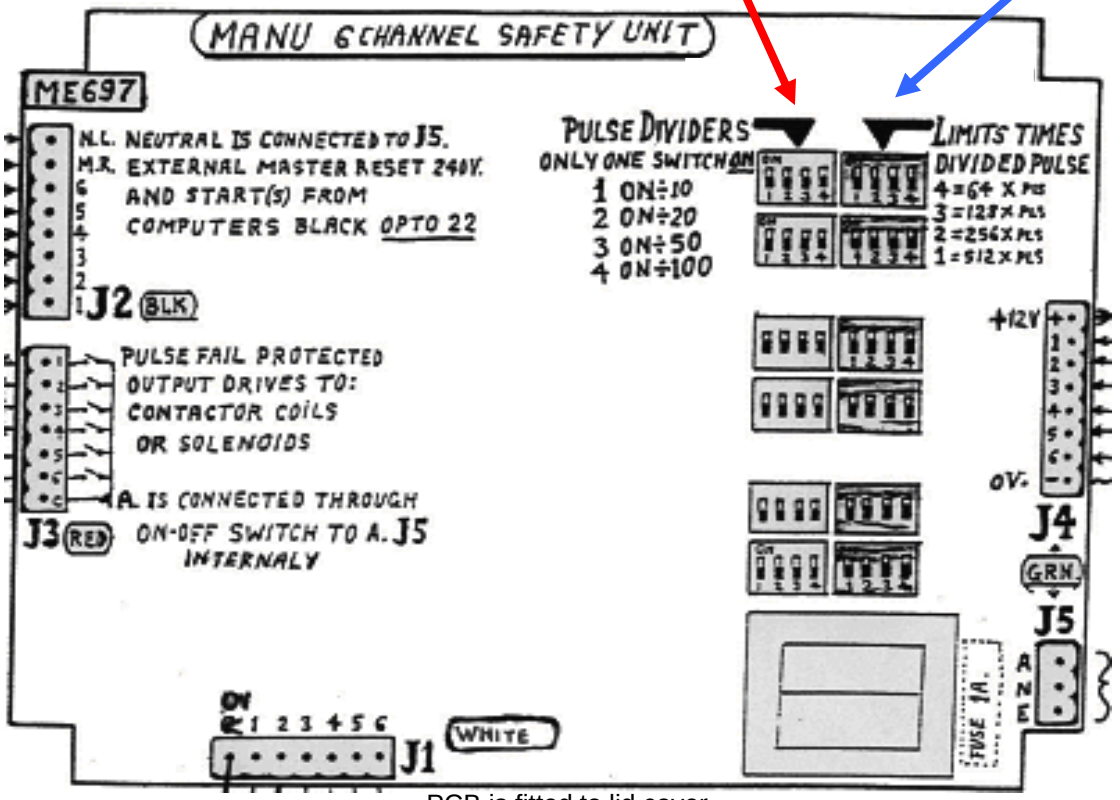
The computer system provides an AC output start and hold drive signal (black Opto22) to ME697 start input. The ME697 output drive supplies power to external contactor coils driving pumps and or solenoids.
ME697 supplies +12VDC to flowmeters which in turn send back pulses, these are counted by individual channel LCD displays in millilitres. The pulses are then sent to computer inputs (yellow Opto22). When the computer system has OPTO 22, 110 - 240VAC input opto's, incoming pulses are limited to 14Hz max. Due to high resolution pulsing of flowmeters, the pulse rates must be divided. The onboard selectable dip switches are then set to the desired pulse division rate. (see fig.1)

The divided output pulses are indicated by the pulse LED's. The pulse are stepped up (via a Motorola MOC3041 Triacs) to 110 - 240VAC switching pulse. These pulses are received by the computer input card (through Yellow OPTO22). When computer has completed batch cycle, a 110 or 240VAC reset signal is supplied to the ME697 master reset relay, thus reseting all counters.

Pulse inputs to ME697 are 1 pulse = 1 ml and are counted on the LCD displays.

(1) Using the **red** 4 way DIP switches, select the appropriate divider pulse ratio setting for each channel. (Make sure the divided pulse value corresponds with the computer software input parameter e.g. divide by 100 is 100 mls per Computer input count.

(2) Using the **blue** 4 way DIP switches, select the override limit settings




PCB is fitted to lid cover.

**Pulse Division settings**

To set division rates slide up pins to ON.


| | |
|---|---|
| 1 ON only | ÷10 (10mls./pulse) |
| 2 ON only | ÷20 (20mls./pulse) |
| 3 ON only | ÷50 (50mls./pulse) |
| 4 ON only | ÷100 (100mls./pulse) |

**Limits x Divided pulse**

4 = 64 x PulseDiv
3 = 128 x PulseDiv
2 = 256 x PulseDiv
1 = 512 x PulseDiv

**Pulse Division settings**

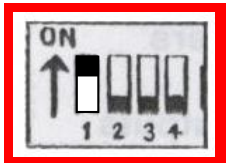
To set division rates slide up pins to ON.


1 ON only = / 10 ( 10 mls per pulse)
2 ON only = / 20 ( 20 mls per pulse)
3 ON only = / 50 ( 50 mls per pulse)
4 ON only = /100 (100 mls per pulse)

**Limit x Divided pulse**

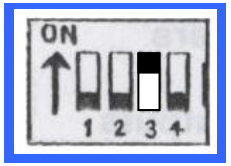

4 = 64 x PulseDiv
3 = 128 x PulseDiv
2 = 256 x PulseDiv
1 = 512 x PulseDiv

(1) Pulse Division setting




**Pulse Division = 10 mls per pulse**

(2) Limit x Divided Pulse




**Limit = 128 x Pulse Division**
**= 128 x 10 mls**
**= 1280 mls**

# 9.

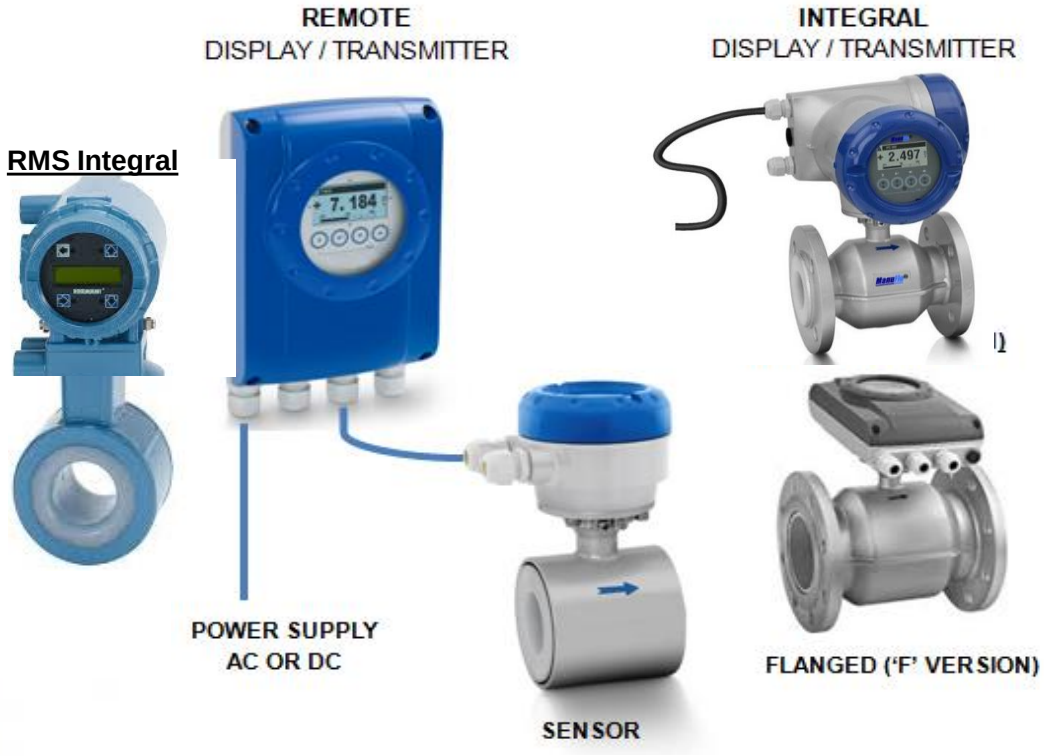
# Flowmeters for Admix Shotcrete, Grout Mix, Slurry and oxides. Continuous-Dosing Measurement

# Shotcrete / Grout, Slurry, Oxide, SilicaFume Flowmeters

## K-Mag & RMS-Mag

- Ideal for shotcrete chemical applications.
- 15mm electromagnetic flowmeter. (upto 150mm)
- Obstructionless bore – nothing to block.
- Pulse & 4-20mA output.
- LCD backlit display shows Flowrate and optionally resetableTotal.
- ANSI-150 flanged, PTFE liner, for sizes ≥15mm;
- RMS8711 WAFER for high pressure GROUT to 740psi.
- Hastelloy-C4 electrodes.
- IP65 sensor and transmitter. Sensor potable to IP68 protection.
- Accuracy to @ ±0.2%
- For liquid conductivity ≥ 5µS/cm.
- 11 – 30 VDC powered (also available as 90 - 250 vac version).

FLANGE KITS available




Shotcrete Spray Rig

# Admix Continuous Dosing Flowmeters

***PLC or manually operated***

**For a resetable total + flowrate remote larger display screen use with**

## MM15 Mag or MES20 PD-flowmeters

- or shotcrete applications.
- All S/S316 construction, to 16bar.
- Very compact. Light weight. IP67.
  15 & 20mm BSP (male) threaded ends.
- Flowrange: from 0.1 - 25 Ltrs/min.
  or 1 to 75 ltres./min. (or others)
- For liquid conductivity ≥ 20µS/cm.
- **Other options available**.

## FRT303 Indicator

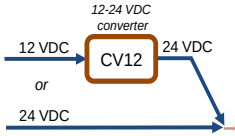
- LCD shows **Flowrate, resetable Total and Grand Total.**
- Programmable.
- DC or AC powered
- Pulse & 4-20mA outputs
- High/Low rate set outputs
- IP65 enclosure.


## MES20LCD6DP-F Chemicals.

- **20mm resettable flowmeter.**
- **Ideal for batching.**
- LCD shows total Litres -1 dec.pl. & Rate.
- Closing lid resets to zero.
- Flowrange @ ±1.5% accuracy: repeat 0.2% at 1.5 - 75 Litres/min.
- PD-disc type measuring chamber.
- Internal Lithium battery powered
- Options: Teflon-coated body.
  sizes 20, 25 & 32mm

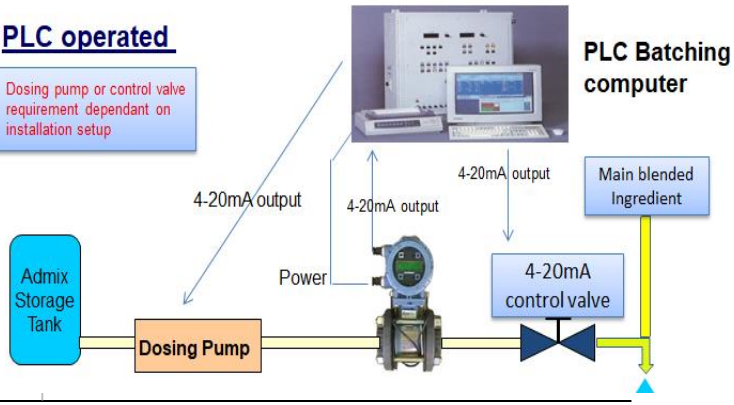

***Manually operated***

**FRT303-MM15**
**Complete package wired**




**PLC operated**

Dosing pump or control valve requirement dependant on installation setup



# Continuous Dosing

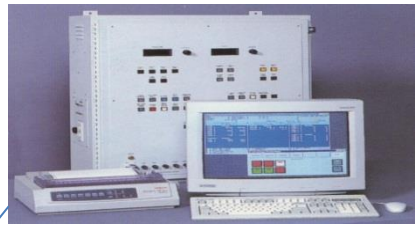

Instantaneous Flowrate display
e.g. MES20LCD5DP-F

## Manually operated - visual

FRT303-E with MES20

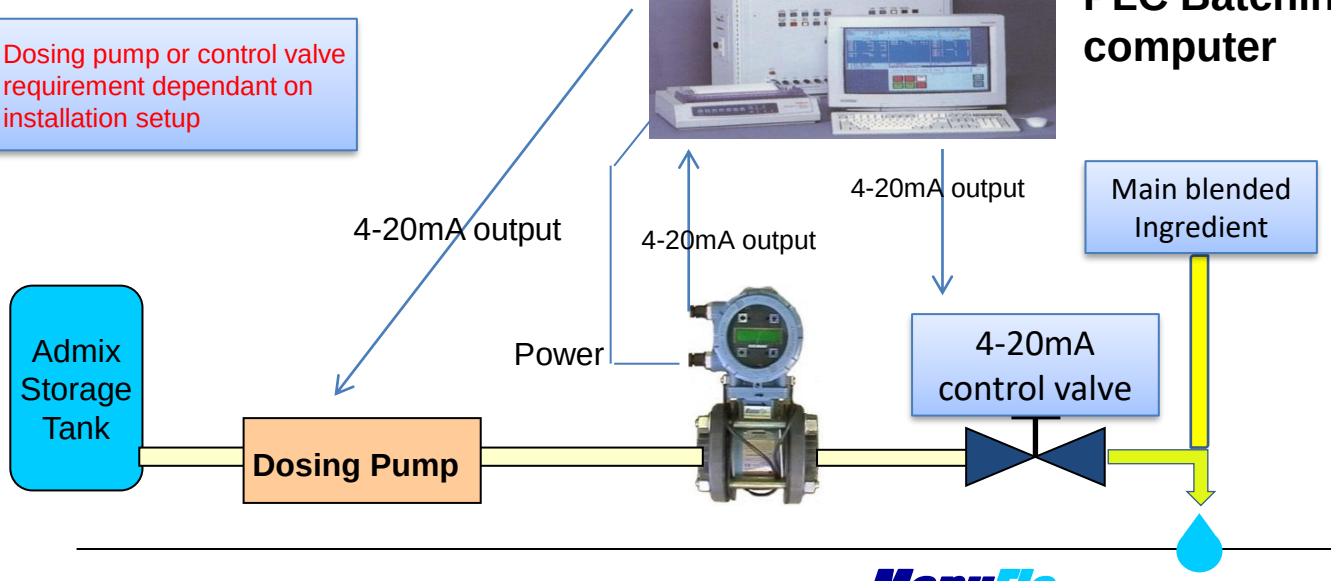
## PLC operated

Dosing pump or control valve requirement dependant on installation setup



**PLC Batching computer**

**Use a range of flowmeters for manual or instruments with 4-20mA output for PLC / computer control. Bore sizes to suit flowrate application range.**

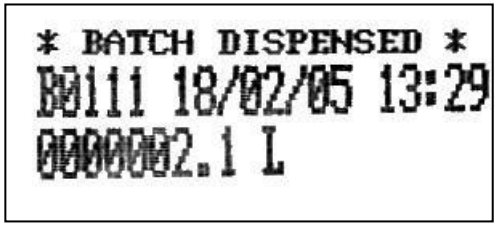



RMS004 or other magflows

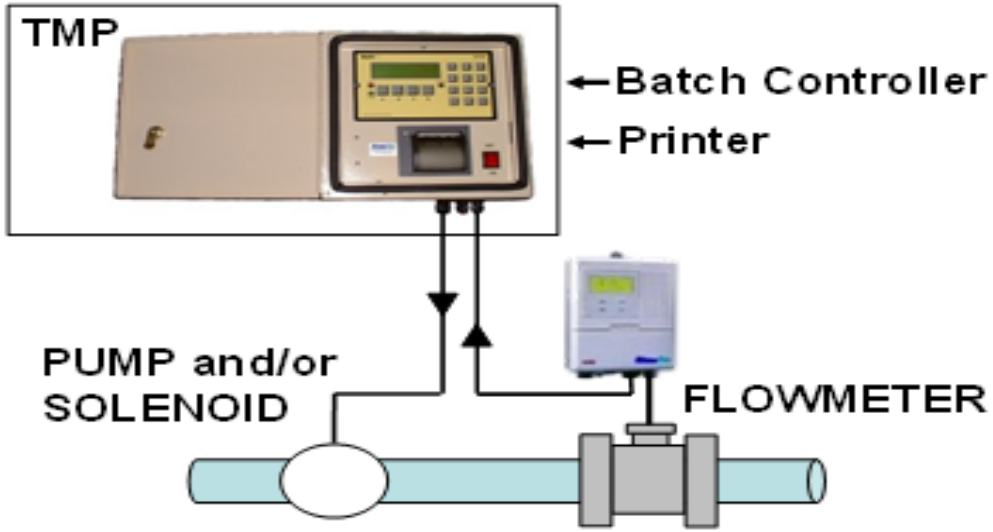
# 10.
# for Delivery Trucks and Admix Production

# TMP – Admix Delivery Truck Mounted Batching Printer System

- **Batch Controller and Printer for automatic ticketing.**
- Ideal for admixture delivery trucks or loading and discharge locations where custody transfer docket is required.
- Prints Batch ID, quantity, time and date.
- Paper easily changed.
- Rugged IP64 hinged enclosure, with key lock.
- contains wired and mounted ME3000-SC Batch Controller and APM-n93XS printer.




Batch Ticket



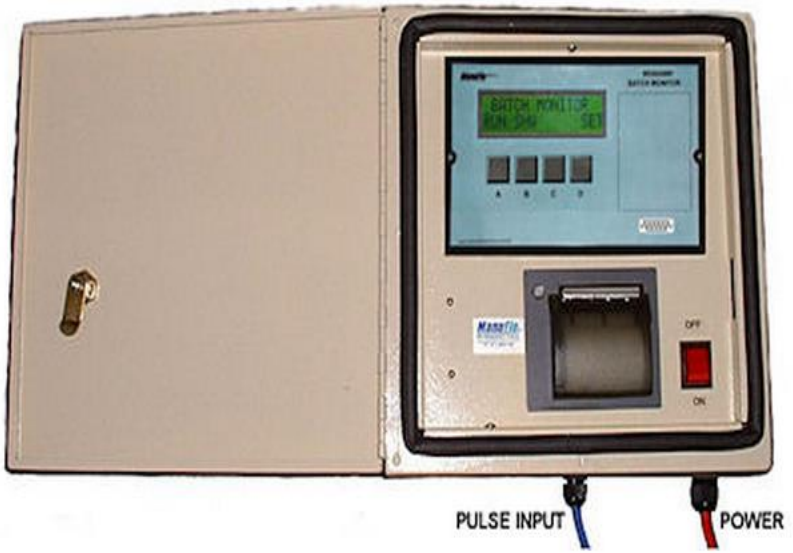

**The TMP interfaces to other equipment on the truck:**

- **controls pump and/or solenoid; and**
- **receives pulses from flowmeter.**

# TMP1 – Truck Mounted Batch Monitor Ticket Printer System

**TMP-1 Batch Docket Printer System with logging**

- Printer for ticketing of **manual batches**.
- Ideal for delivery trucks or loading and discharge locations where custody transfer docket is required.
- Prints Batch ID, quantity, time and date.
- Optional front port, for downloading internal log of 500 batches.
- Paper easily changed.
- Rugged IP64 hinged enclosure (optionally in Stainless Steel), with key lock.
- contains wired and mounted ME6008M1 single channel Batch Monitor Printer Driver Unit and APM-n93XS printer.
- single channel.
- enclosure: 300 L x 300 H x 200 D mm.




At the end of each manual batch, the TMP-1 (after a settable period of wait time after there is no liquid flow) automatically prints a batch ticket. The printing of double dockets is optional, selectable via the menu.

```
* BATCH DISPENSED *
B0111 18/02/05 13:29
00000002.1 L
```

Batch Ticket

# Use with KMS Electromagnetic Flowmeter

- Unsurpassed **accuracy to ± 0.2 %**
- **Virtually unaffected by varying viscocities**

- Sizes from 15 to 150 mm, widest possible **flow ranges.**

- Handles widest range of **aggressive liquids.**
- Hasteloy-C4 electrodes (Platinum-Irridium for HCL)

- **Virtually maintenance free with no moving parts**. **Robust** construction for industrial use.

- Eliminates headlosses and need for filters.

- Multi-function display shows **Flowrate & Resetable Total.**
- Frequency (Pulse), analogue and alarm **outputs.**

- Empty pipe detection. **Fully programmable** via display.
- Fully **bi-directional** operation.

- Power: standard 85-265 vac, or optional 11-30 VDC


Polypropylene
Lined full Bore sensor.

**Ideal for:**

- **Manual and automatic-batching of aggressive/high-volume admixtures**
- **Use on truck tankers with TMP System**
- **Use in Admix production plants**

# Flowmeters used in Admixture Plants

Admix plant in Singapore

Portable trolley for filling IBCs with Magflow's


**For the batching & blending in production plants**

**For the tank farm and admix truck loading point**


Admix Plant Jakarta Indonesia


Admix plant in Sydney

AUSTRALIAN MADE

***Locations include: Dubai, Egypt, Saudi Arabia, Bahrain, Indonesia, Malaysia, Philippines, Vietnam, Thailand, Laos, Burma, China, HK, Singapore, Australia, NZ, Chile and many other sites.***

# 11.

# Equipment for Water Measurement in Concrete Plants

# CONCRETE INDUSTRY WATER MEASUREMENT PRODUCTS

ManuFlo servicing & supplying the concrete industry for over 55 years, quality custom built flow measurement and batching system products, with rapid stock support and service!

## BATCH ROOM

### Batch Monitor

**ME6008M**
(8 Channel Monitor)

### Batch Controllers

**ME3000**
(Keypad Version)

*OR*

**ME995-7**
(Rotary Switch Version)

### Resettable Totaliser

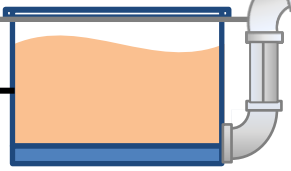
**ME5-T-D**
(Dual display slumpstand)

## Water Supply

Overhead Tank
(**Fresh water / Mains** )

***OR***

Ground Pit
(**Recycled water**)



**Pump**

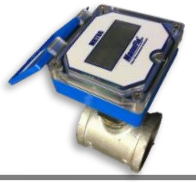
Start/Stop

Pulses

Open/Close

**Flowsensor**

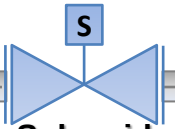
**RPFS**
Paddlewheel type
(Fresh water/Mains)



**MRTU4**
Resettable Battery Powered Flowmeter
**(MANUAL BATCHING)**
**Size: 25-100mm**

**KMS** **RMS**
Electromagnetic Flowmeter
(Fresh /Recycled water)
**NO MOVING PARTS**

S



**Solenoid Operated Valve**

**e.g B50**
50mm Butterfly valve

Water Discharge

**MRT20-T2**

**MRP20-T2**
Adding water (mounted at the back of agitator/ mixer truck)

## Slumpstand

**MRTU4-GAL25-T2**
(**standalone** or **dual display** **(-P)** slumpstand flowmeter)

***OR***

**ME4T with CMM25**
(**Magflow for recycle water**)

**ManuFlo also supplies equipment for:**
- ✓ Grout mix
- ✓ Shotcrete
- ✓ Admixtures
- ✓ Tradewaste
- ✓ Calibrations


ManuFlo® ™
*Flow Measurement & Control Products*
Web: www.manuelectronics.com.au
Email: sales@manuelectronics.com.au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**MANU ELECTRONICS PTY LTD**
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**Sydney NSW 2100 Australia**
Ph: + 61 2 9905-4324, 9938-1425
Fax: + 61 2 9938-5852

# CONCRETE INDUSTRY WATER MEASUREMENT PRODUCTS

ManuFlo servicing & supplying the concrete industry for over 50 years, quality custom built flow measurement and batching system products, with rapid stock support and service!

## ME995-7 Preset Batch Controller

- 9999 Litres Preset Batch Controller.
- 4 Digit LED display.
- Counts in Litres up to 9999.
- 4 x LED status indicators.
- Preact + Preset maximum limit.
- Missing pulse detection.
- Optional PLC interface.
- K-factor (calibration) adjustment.
- Compatibility with most flowmeters.

## MRP20-T2 & MRT20-T2

- 20mm LCD Resettable Counter Flowmeters.
- Screwed & Slip insertion types.
- Custom designed & built primarily for use on Concrete Transit Mixers.
- 4 digit counts in LITRES.
- (-P) for pulse output option.

## RPFS-P Flow Sensor

- Paddlewheel type.
- For fresh/mains water.
- Fits into pipe adapters of various types and sizes 20-200mm.

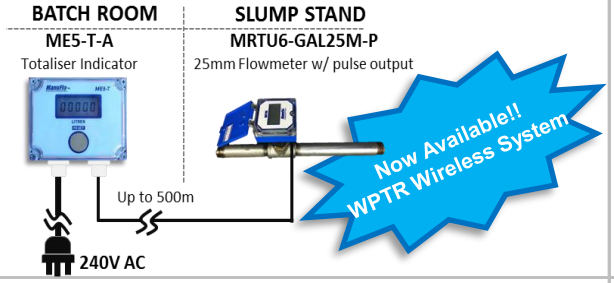
**e.g SS25**
25mm Stainless Steel pipe adapter

## ME3000 Preset Batch Controller

- 6 digit LCD **Microprocessor Batch Controller**. Panel mount
- Front keypad. IP64.
- Displays batch in ml / Litres
- Flowrate display.
- Fully programmable.
- Batching safety features.
- With logic, pulse, and current output options.

## DSSS-1 Dual Display Slump Stand / Batch Room

water measurement system package




KMS

RMS

## KMS or RMS Electromagnetic Flowmeters

- In sizes from 4-250mm.
- No moving parts.
- Virtually maintenance free.
- For heavy recycled water.
- Optional connection kits available in PVC or Gal.

## ME6008M Batch Monitor

- Monitors up to 8 channels.
- For manual batch plants that need QA printout of flowmetered additives or water.
- Automatic end-of-batch printing and datalogging. Used with serial printers LX-300+II or DP8340.
- Optional: 1 channel also available **ME600M1**

## MRTU4-GAL25-T2

- 25mm slump stand meter.
- 4-digit LCD shows total Litres.
- Closing lid resets Litres count.
- Flowrange: 18-235 Litres/min.
- Available in larger sizes for manual batching of plant water

e.g. 50mm MRTU4-GAL50M.

## Solenoid Valves

- Fast acting solenoid valves.
- For water.
- In various types and sizes.
- With or without air assist.

## ME4T with CMM25

(Magflow for recycle water)


ManuFlo® ™
*Flow Measurement & Control Products*
Web: www.manuelectronics.com.au
Email: sales@manuelectronics.com.au

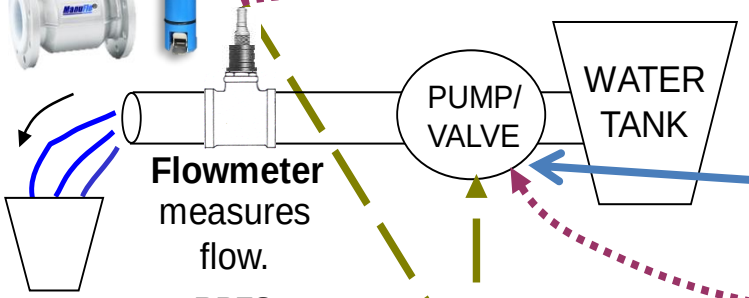
a division of

**MANU ELECTRONICS PTY LTD**
**41 Carter Rd, Brookvale**
**Sydney NSW 2100 Australia**
Ph: + 61 2 9905-4324, 9938-1425
Fax: + 61 2 9938-5852

# OPTIONS:- Flow Metered Plant Water Batching via PLC/Computer Control

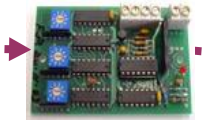
**1/ RPFS-P Paddlewheels for fresh water**
**2/ KMS or RMS Magflows for fresh & recycle / slurry water**

Optionally incorporated into a ME2008-8 Interface ADMIX unit




**Flowmeter** measures flow.

**RPFS** (for clean water) or **RMS** (for slurry water)



**UIC Interface Card**

NEW !

**ME2002-CV-W**


**ME2002-CV-W**

via interface –**MC2**

**Batch Controller** controls batch delivery **ME995-7** or **ME3000**

**ME5IC Interface Card** i/o scaling and comms i/f

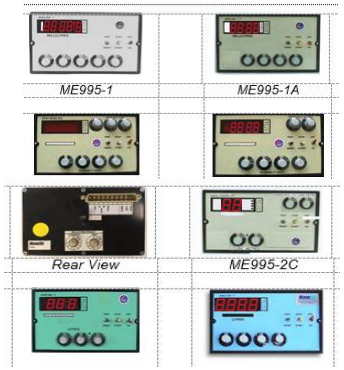
**Batching computer** sets/records batch

AUSTRALIAN MADE

# 12.
# Other Equipment

# ME6008M Batch Monitor Printer Driver Unit

New!




*Connect up to 8x ME188 / ME995*


+

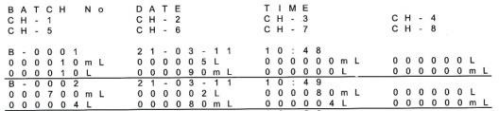
**WIDE Printer**
dot matrix tractor feed
LX350+II printer
204mm wide printout
80 characters

***or***

**COMPACT Printer**
dot matrix paper
Roll DP8340 printer
84mm wide printout
40 characters

USB connection to your laptop/PC

| DATE | TIME | CH:1 | CH:2 | CH:3 | CH:4 | CH:5 | CH:6 | CH:7 | CH:8 |
|---|---|---|---|---|---|---|---|---|---|
| | | L | L | mL | mL | mL | mL | L | L |
| B-0001 | 20-06-11 | 10:34 | 000000 | 000349 | 000000 | 000000 | 000000 | 000000 | 000000 | 000000 |
| B-0002 | 20-06-11 | 10:34 | 000000 | 000000 | 000450 | 000000 | 000000 | 000000 | 000000 | 000000 |




## Provides multi-channel batch log/printout for manual premix concrete batch plants using ME188 and ME995 batch controllers.

Batch Log

- **Monitors/prints up to 8 channels of admixture or water.**
- Provides an automatic QA end-of-batch printout, for use in concrete batch plants.
- Internally logs at least 500 batch events, downloadable to your laptop/PC
  now via optional front-access DB9 RS232 connector (comes with RS232-to-USB adapter).
- All records are time stamped from the unit's Real Time Clock, and have a Batch Number ID, time and date.
- Simply parallel flowmeter pulses and connect to the ME6008M, which then connects to a serial printer or PC.
- Grand Totals and the Batch History can also be printed(or dumped to a PC) on demand.
- Fully programmable, and the user can set parameters including K-Factors (PPL).
- Simple to install - same size as the ME995-series Batch Controllers, with same cutout.
- **New features:**
  - Extra RS232 connector on front, for easy access to download log to laptop.
  - Units (mL or L) indicated in printout.
- **NEW "-E" version for remote PLC command functionality (from ANMAR)**

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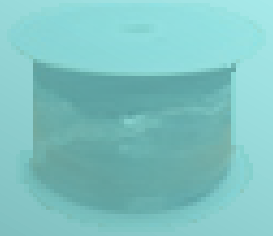
# 12. Other Equipment

**Generic items can be sourced locally or from ManuFlo.**


Filters

Solenoid valves

Power converters



Cables

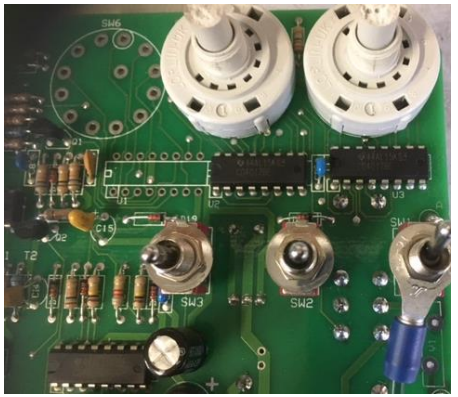

TANK Level Warning probes

Contactors

Butterfly valves

# YES WE REPAIR ITEMS
## & stock / supply spare parts

- Batch Controller reconditioning upgrades and modifications
- Flowmeters reco's
- Chemical Compatibility Tests
- ME2000/08 upgrades
- In-house calibration tests



***MANUFLO SAVES ITS CLIENTS $$$$$$$$$***
***By maintaining / reconditioning equipment***

# 14.

# General Advice

If unsure contact ManuFlo for advice or obtain datsheets on our website.

# 15.

# ManuFlo Website

www.manuelectronics.com.au
www.manuflo.com


There is an abundance of information and resources available on the ManuFlo website. If you still have any queries however, please feel free to call us for application advice, product recommendations, calibrations, equipment servicing, etc.

**ONLINE TECHICAL SUPPORT GUIDES / DATASHEETS:-**

**http://www.manuelectronics.com.au/technical.html**

# Questions


- **Questions?**
- **Improvements?**
- **Product design suggestions?**

CapMag.


ME999


ME2020

# 16. QUIZ / QUESTIONAIRE COMP.

- 10 Questions for a Prize


# Training Quiz:


**Question 1** - What is the standard pulse output (resolution per Litre) from the MES20 flowmeters? (1 pt)

**Question 2** - After carrying out a calibration on an MES20 the accuracy is 4%, should it be replaced? (1 pt)

**Question 3** – What are the implication of changing from a MES20 20mm to a MES25 25mm ? (1 pt)

**Question 4** - If a standard MES20 flowmeter is suffering from false (phantom) counts what is the likely cause (1 pt) and what options are available to resolve this problem? (1 pt)

**Question 5** - When programming the ME2008 What is the recommended High and Low MES20 flow settings (%)? (2 pt)

**Question 6** - If a batch operator gets two consecutive 'Low Flow' alarms on the ME2008 what should be his 'Immediate' course of action? (1 point) - what's the consequence if he keeps trying to batch? (1 pt)

**Question 7** - With AC Voltage I/O computers what is the AC pulse input frequency limit?..... and for DC ? (1 pt)

**Question 8** - If the none return valve after the flowmeter is faulty what alarm might you expect on the ME2008? (1 pt)

**Question 9** - If the liquid collected is <u>more</u> than pulse value shown on ME2008 display, should you <u>increase</u> or <u>decrease</u> the calibration input set value (K-factor) by the same %? (1 pt)

**Question 10** - When would you consider using an alternative flowmeter such as an electro-magnetic? (1pt)



# Training Quiz: (Answers)


**Question 1** - **What is the standard pulse output (resolution per Litre) from the MES20 flowmeters?** (1 point)
**Answer: 1000** (slide 28, 29 & 30)
**Question 2** - **After carrying out a calibration on an MES20 the accuracy is 4%, what be replaced?** (1 point)
**Answer: No only at 5% accuracy should the meter be replaced as per the Australian standard** (slide 43)
**Question 3** - **What are the implications of changing from MES20, 20mm to MES25, 25mm?**
**Answer: Higher flow rate capability (**slide 30) **and pulse changes from 1000 to 555 ppl** (slide 53)**.**
**Question 4** - **If a standard MES20 flowmeter is suffering from false (phantom) counts what is the likely cause** (1 point) **and what options are available to resolve this problem?** (1 point)
**Answer: Backflow –check non-return valve, Vibration -fit rubber dampeners or replace with MES-DSP head** (p 38)
**Question 5** - **When programming the ME2008 What is the recommended High and Low MES20 flow settings (%)?**
**Answer: Low is 25%, High is 90%** (slide 149 & 150) (2 points)
**Question 6** - **If a batch operator gets two consecutive 'Low Flow' alarms on the ME2008 what should be his 'Immediate' course of action?** (1 point) **- what's the consequence if he keeps trying to batch?** (1 point)
**Answer: Stop using chemical and move truck away from loading point, record amount displayed on ME2008 and batch controller. The consequence if keep batching is potential overdose of chemical as you dose 2 secs . volume every time.** (slide 148)
**Question 7** - **With AC Voltage I/O computers what is the AC pulse input frequency limit?..... and for DC ?** (1 point)
**Answer: 35Hz for DC, 15 Hz for AC** (slide 135)
**Question 8** - **If the none return valve after the flowmeter is faulty what alarm might you expect on the ME2008?**
**Answer: 'Back flow'** (slide 140) (1 point)
**Question 9** - **If the liquid collected is <u>more</u> than pulse value shown on ME2008 display, should you <u>increase</u> or <u>decrease</u> the calibration input set value (K-factor) by the same %?** (1 point)
**Answer: Decrease.** (slide 156)
**Question 10** - **When would you consider using an alternative flowmeter such as an electro-magnetic?** (1 point)
**Answer: High volume and/or aggressive/oxide/slurry type ADMIX chemicals** (slide 178)


# ManuFlo equipment used in major construction projects globally since 1965

**Sydney Harbour Tunnel, Lap Kok Airport HK, M4/M5 upgrades, Dam projects, High Rise Towers.**
**Wherever concrete chemical additives are used ManuFlo products have their presence in some capacity large and small.**

AUSTRALIAN SMALL BUSINESS CHAMPION AWARDS 2015

FINALIST

MANUFACTURING

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***Flow Measurement Products***






***a division of***


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