

### FEATURES

- Simple calibration setup and use.
- Suitable with most NPN & contact closure flowmeters
- Fully isolates & scales flowmeter pulses to PLCi nput.
- Australian Made



The Universal Interface Card (UIC) provides signal scaling and an isolation interface to pulse flowmeter outputs, and re-transmits to PLC/computer inputs. Three model variants are available:

- 1) **UIC/A2** : 24-250 vac pulse switching via a heavy duty triac opto. (+5-12VDC supply)
  - 2) **UIC/A1** : 110-240 vac pulse switching via a triac opto. (+5-12VDC supply)
  - 3) **UIC/D** : 5- 30 VDC NPN/PNP (sink/source) pulse switching via a 4N33 opto.(+5-12VDC supply)
- Or any of the above configurations powered by an optional 24VDC supply # "24VDC"

■ x10 input is standard.. ■ Common to all is a low voltage auxiliary 5-12 VDC NPN (sinking) scaled output pulse (proportional to supply voltage), which can be used for connection to counters or other devices. ■ All scaled output pulses are indicated by a LED, with pulses feeding the PLC input device having near 50% duty cycle (square wave). There are two mounting holes, for fixing to panels, enclosures etc. ■ The card requires a regulated voltage supply of 5 to 12VDC, which in turn supplies the flowmeter. If only 24 VDC supply is available, then, as an option, a special voltage regulator is fitted to the card and still supplies +12vDC to the flowmeter if utilized.

### CALIBRATION AND USE

■ The UIC is suitable for use with most types of pulse output flowmeters. ■ Calibrating or scaling of pulse output signals is via three decade rotary select switches (numbered 0-9) marked H (Hundreds), T (Tens) and U (Units). ■ To change calibration, use a small flat-bladed screw driver, insert into switch slot and turn arrow to desired number (**see calibration calculation examples on page 3**) ■ **For batching with concrete admixtures, the MES20 / MES20N / AMM20 - 20mm pulse flowmeters are primarily used awhen all outputting 1000 pulse/liter.** For pulse scaling setpoint values, refer to the the following table (for a x10 input standard UIC card):

When flowmeter is outputting 1000ppL (1ml./1pulse);

Rotary value	UIC card	Volume
H T U	pulse o/p rate	per pulse
0 2 5	200 pulses/Litre	5 ml/pulse
0 5 0	100 pulses/Litre	10 ml/pulse
1 0 0	50 pulses/Litre	20 ml/pulse
1 5 0	33.3 pulses/Litre	30 ml/pulse
2 5 0	20 pulses/Litre	50 ml/pulse
5 0 0	10 pulses/Litre	100 ml/pulse
9 9 9	5 pulses/Litre	200 ml/pulse

#### 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.

For calibration for use with larger MES meters and other flowmeters (e.g. RPFS paddlewheel) see calibration calculation examples on Page 3.

### SPECIFICATIONS

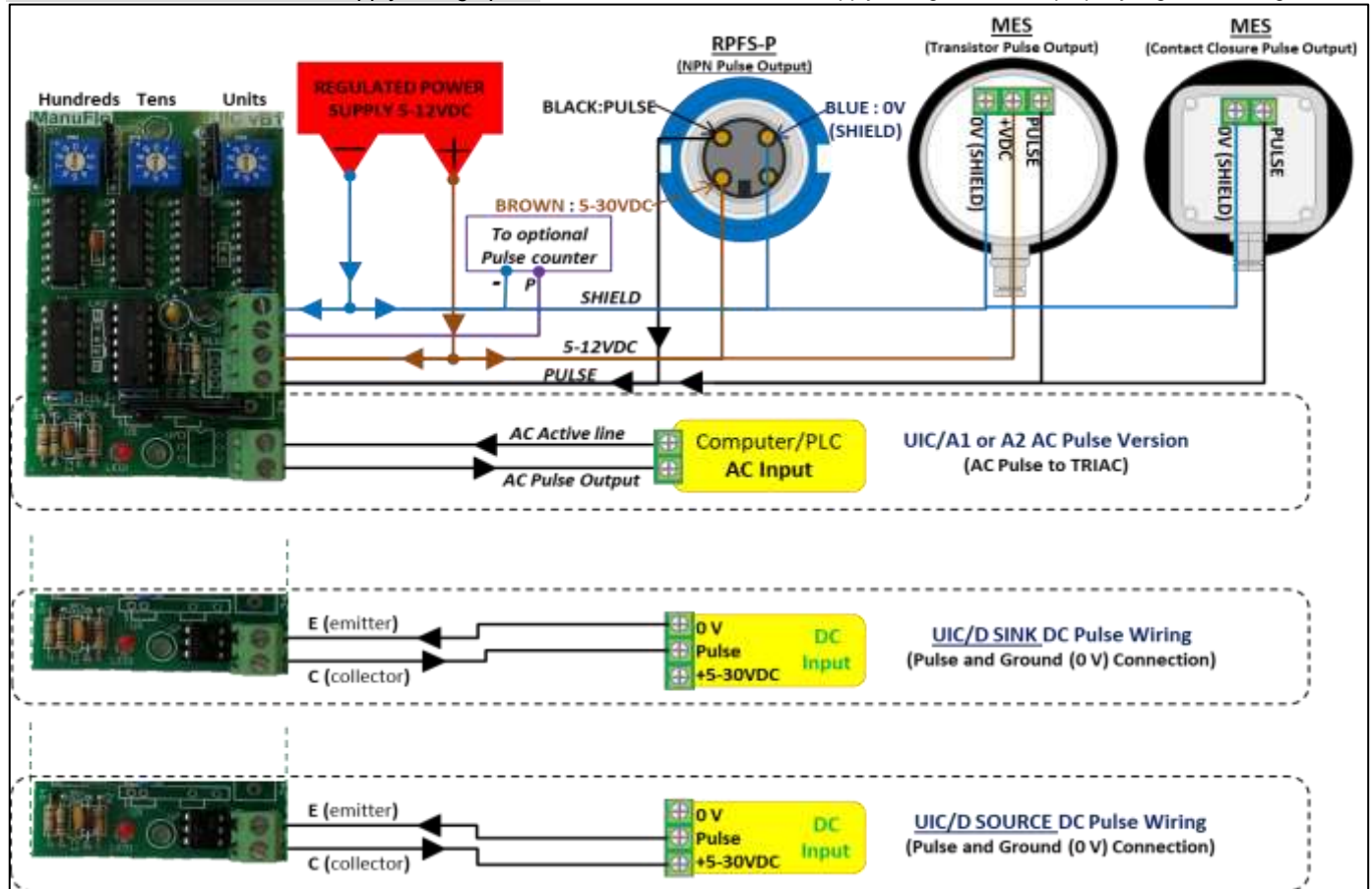
Supply voltage	5 to 12 VDC, must be regulated DC voltage (optional 24 VDC input with voltage regulator)
Input	Accepts Digital -OC, NPN Transistor or contact closure input flowmeter pulses
Pulse input frequency max: x 10 input (standard)	2 kHz (e.g. with MES20)
UIC/A2 AC switching UIC/A1 AC switching	24 - 250 vac switching* up to 1 Amp via CRYDOM-AO241 solid state opto triac, with surge protection to 2500 V RMS. Drives yellow Opto22 input modules or equivalent solid state inputs. 110-240 vac switching* 3041 opto triac drives solid state inputs. * Due to AC triac opto isolator characteristics, frequency output to computer inputs should not exceed 15Hz.
UIC/D Open Collector switching	5-30 VDC via 4N33 Motorola opto, open collector (sink or source), surge protection to 7500 V RMS. (Drives white Opto22 or other solid state inputs)
Pulse Data	Pulses from flowmeters can be needle shaped, so UIC's Schmitt trigger input filters possible industrial noise. UIC output pulses are conditioned to near 50% duty cycle.

Due to continuous product improvement, specifications are subject to change without notice.

**WIRING / CONNECTION DETAILS**

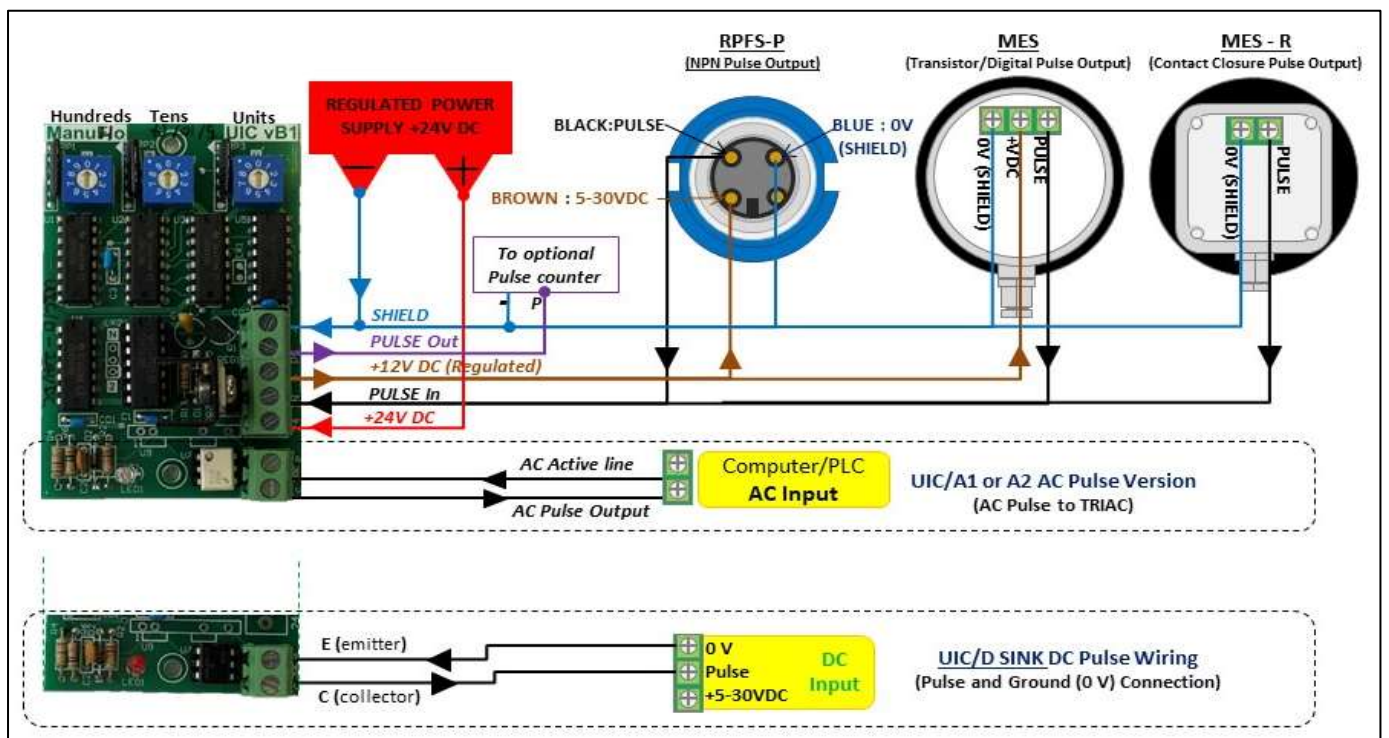
Below shows the +5 to 12VDC supply wiring option.

Note: Supply voltage must be a properly regulated voltage.



Below shows the wiring for +24VDC powered supply input option.

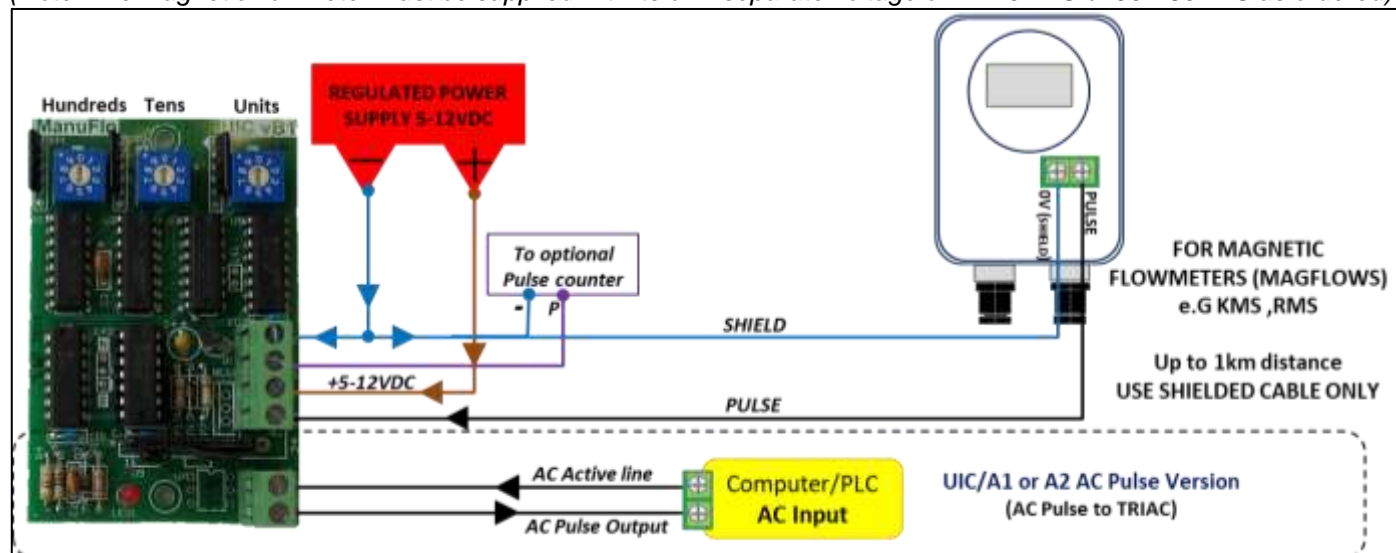
Note: Supply voltage must be a properly regulated voltage



Pictured MES20 and AMM20-v2 both 20mm sizes.  
1000 pulses /liter flowmeters both wired as per above.



Pictured below +12VDC powered UIC/A2 with wiring for a KMS Magnetic Flowmeter, switching an AC PLC input.  
 (Note: The magnetic flowmeter must be supplied with its own separate voltage of 11-40VDC or 90-250VAC as ordered).



Note: Pulse output rate to AC input PLC/computers must not exceed 13-15Hz (13 pulses per second rule). Any pulserate faster than 13Hz will cause overdose, as computer will miss pulses due to its AC input or scanning time limitations. Relates to any 24-240 vac PLC pulse inputs . To use UIC/A card with each MES flowmeter size, refer to the scaling chart on the bottom of Page 3 (other combinations can be set).

#### COMMISSIONING FLOWMETER / UIC INTERFACE CARD SYSTEM(s)

- Electricians must refer to the relevant system wiring diagram. Mount the UIC interface cards on a suitable panel or inside an enclosure near the computer/PLC input panel.
- When wiring the flowmeter(s), 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 0.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 +5 to 12 VDC only, noting each UIC card/flowmeter can draw up to 25mA each.
- Before power up, Set the appropriate calibration setting on the UIC via the 3 decade rotary pots, marked H (Hundreds), T (Tens) and U (Units).
- Power up the system. Prime the admix line, until liquid appears at outlet line, UIC's pulse LED is blinking and your 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. See UIC card's brochure for calibration details.  
 Example: MES20 flowmeter used, 10.1 Litres called on batch computer program, 100mls/pulse set on UIC (HTU=500), 10.1 litres of admixture collected in container, 101 counts on computer. 101 x100mls =10.1 Litres = CORRECT RESULT. If 10.3 Litres collected in container, is approximately 2% excess admix, so subtract 2% from the current HTU=500 setting i.e. set HTU=490. Batch again, result should BE CORRECT.

#### TROUBLESHOOT GUIDE: If there is no pulse output from the UIC

If there is no pulse output or it is erratic from the UIC, 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. Turn off power to the UIC, NOW SET a VALUE e.g. HTU=100, then turn the power on again.  
 Run some fluid through the flowmeter (or simulate flow by inputting pulses to the UIC card).  
 Observe if the UIC's output LED blinks at the rate expected for the divided output pulse rate.  
 If the problem still exists, repeat steps 1 to 4 (2-3 times) until the UIC card auto corrects itself.  
 If the UIC does not auto correct, then return the suspect UIC card to ManuFlo for further checking or repair.

CALIBRATION VALUES using: RPF5-P paddlewheel flowmeters for water		
Pipe size (mm)	UIC card with STANDARD x10 pulse input multiplier	
	UIC Set Value	Output pulses per Litre
	H T U	to PLC/computer
25	3 7 5	1 pulse per 1 Litre
32	2 3 0	1 pulse per 1 Litre
40	1 5 0	1 pulse per 1 Litre
65	0 6 0	1 pulse per 1 Litre
80	3 6 5	1 pulse per 10 Litre
80	0 7 3	1 pulse per 2 Litre
100	0 9 2	1 pulse per 4 Litre

All values are starting reference values for RPF5-P and are approx only, due to possible variations in installation conditions e.g. due to pipe direction, water quality etc. Values could vary up to 10%.

CALIBRATION VALUES using: MAGFLOWS (e.g. KMS, MFS, RMS) MRPU4-P / MRTU4-P LCD-pulseoutput (-P)		
UIC card with STANDARD x10 pulse input multiplier		
Output pulse	UIC Set Value	Output pulses per Litre
from Magflow / MRT	H T U	to PLC/computer
1 pulse per 1 Litre	0 1 0	1 pulse per 2 Litres
	0 2 5	1 pulse per 5 Litres
	0 5 0	1 pulse per 10 Litres
10 pulses per 1 Litre	0 5 0	1 pulse per 1 Litre
	1 0 0	1 pulse per 2 Litres
	2 5 0	1 pulse per 5 Litres
	5 0 0	1 pulse per 10 Litres

Note:  
 1 pulse IN to 1 pulse OUT value is not possible. i.e. HTU =005

$HTU = \frac{\text{input pulses/Litre}}{\text{output pulses/Litre}} \times 5$	e.g. to convert 20 pulses/Litre to 1 pulse/Litre: $HTU = \frac{20 \text{ pulses/Litre}}{1 \text{ pulse/Litre}} \times 5$ $HTU = 100 \text{ (i.e. H=1 T=0 U=0)}$
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Calculation Example

## CALIBRATION VALUES using MES 20, 25, 32, 40mm flowmeters

Meter Model	Size	UIC/A card setting			Pulse Output value	Flowrate	Equivalent AC input pulse frequency
		H	T	U			
MES20	20mm	5	0	0	100 mls per pulse	1.2 Litres/sec	12 Hz **
"	"	2	5	0	50 mls per pulse	0.65 Litres/sec	13 Hz
"	"	1	0	0	20 mls per pulse	0.26 Litres/sec	13 Hz
"	"	0	5	0	10 mls per pulse	0.13 Litres/sec	13 Hz
(Maximum flowrate of MES20 is about 1000mls/sec i.e. 1Litres/sec, 60 LPM)							
MES25	25mm	2	7	7	100 mls per pulse	1.3 Litres/sec	13 Hz
"	"	5	5	5	200 mls per pulse	1.8 Litres/sec	09 Hz **
"	"	6	9	3	250 mls per pulse	1.8 Litres/sec	7.2 Hz
(Maximum flowrate of MES25 is about 1830mls/sec i.e. 1.83 Litres/sec, 110 LPM)							
MES32	32mm	1	3	0	100 mls per pulse	1.3 Litres/sec	13 Hz
"	"	2	6	1	200 mls per pulse	2.6 Litres/sec	13 Hz **
"	"	3	2	6	250 mls per pulse	3.0 Litres/sec	12 Hz **
"	"	6	5	2	500 mls per pulse	3.0 Litres/sec	06 Hz
(Maximum flowrate of MES32 is about 3000mls/sec i.e. 3 Litres/sec, 180 LPM)							
MES40	40mm	1	4	5	250 mls per pulse	3.2 Litres/sec	13 Hz **
"	"	2	9	0	500 mls per pulse	5.0 Litres/sec	10 Hz **
"	"	5	8	0	1 Litre per pulse	10.0 Litres/sec	10 Hz
(Maximum flowrate of MES40 is about 6000mls/sec i.e. 6 Litres/sec, 300 LPM)							

\*\* means best and most common settings for AC input. NOTE: For DC inputs the pulse input speeds can be faster 40hz+

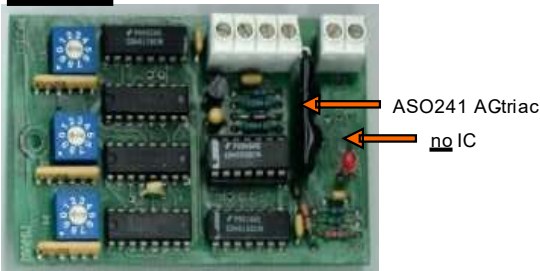
## CALIBRATION VALUES using AMM25 -25mm Magflow flowmeter 500p/ltr.

Meter Model	Size	UIC card setting			Pulse Output value
		H	T	U	
AMM25	25mm	2	5	0	100 mls per pulse
"	"	1	2	5	50 mls per pulse
"	"	0	5	0	20 mls per pulse
"	"	0	2	5	10 mls per pulse

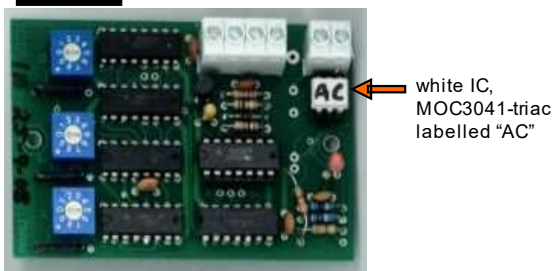
Notes: Maximum flowrate for each meter size must never be exceeded, in order to prevent damage to flowmeter chamber parts and/or overdose problems. Install a Flow Restrictor Valve inline for safety, or use the ME2008 pulserate limiter.  
For long-life durability of the MES flowmeter chamber parts, best flowrange is nominal continuous rating (Qnom.) - see MES brochure.

## UIC Interface Card - Configurations

**UIC/A2** • switches 220/240vac, 512 VDC powered

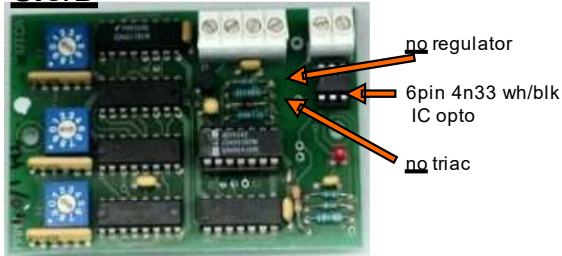


**UIC/A1** • switches 110/240vac, 512 VDC powered

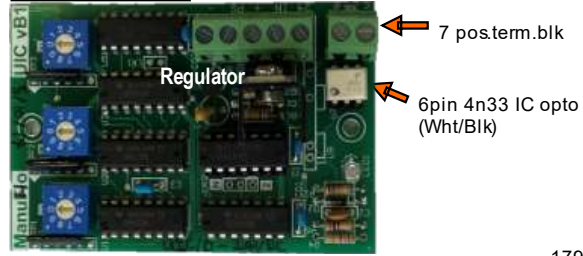


Code: -24DC for 24VDC powered

**UIC/D** • switches 530VDC, 5 -12 VDC powered



**UIC/D-24DC** • switches 530VDC, 24 VDC powered



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## NOTES: