

FEATURES



- Simple calibration setup and use.
- Suitable with most NPN & contact closure flowmeters
- Fully isolates flowmeter pulses to PLC input.
- 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/A2-24DC** : 24 – 250 vac pulse switching via a heavy duty triac opto.
- 2) **UIC/A1-24DC** : 110 – 240V AC pulse switching via a triac opto.
- 3) **UIC/D-24DC** : 5 - 30 VDC NPN/PNP (sink/source) pulse switching via a 4N33 opto.

■ x10 input. ■ Common to all is a 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. ■ All scaled output pulses are indicated by a LED, with pulses feeding the PLC input device having 50% duty cycle (square wave). There are two mounting holes, for fixing to panels, enclosures etc. ■ A special voltage regulator is fitted on to the card for use with a +24 VDC power supply. The UIC card supplies regulated +12VDC power to the flowmeter (where required).

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 when 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.

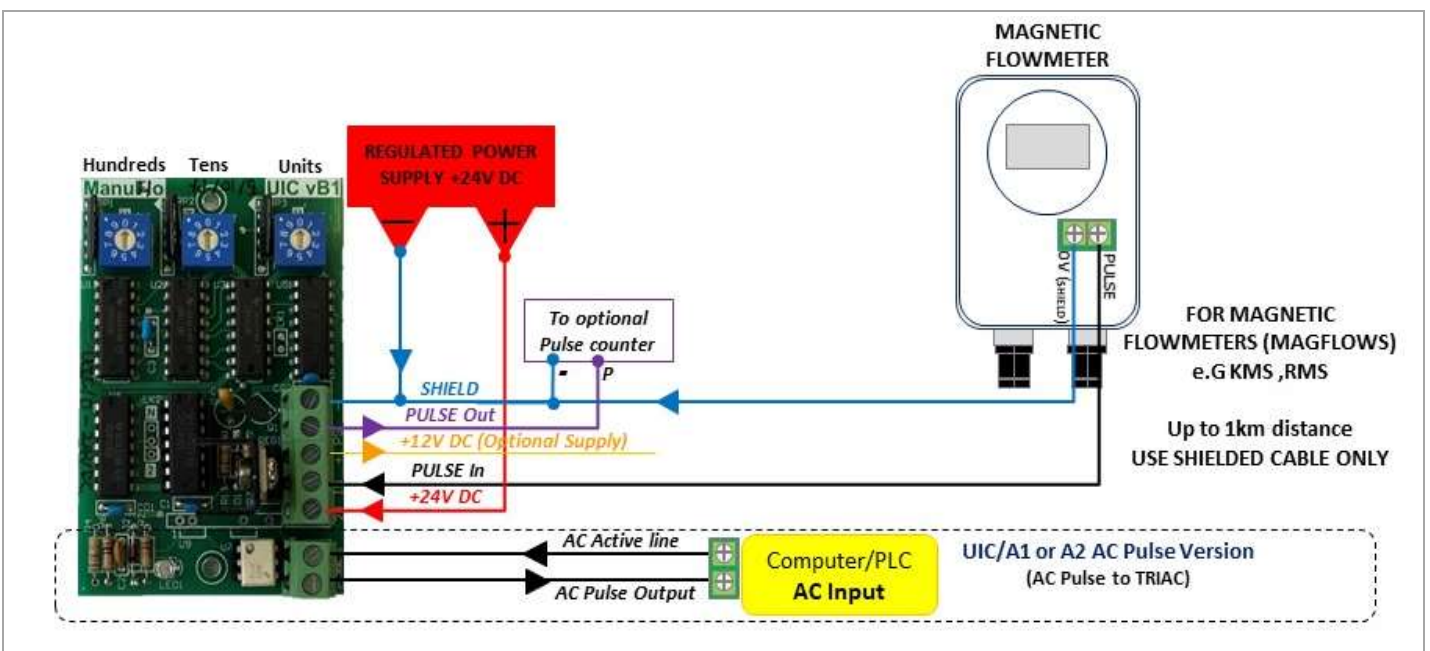
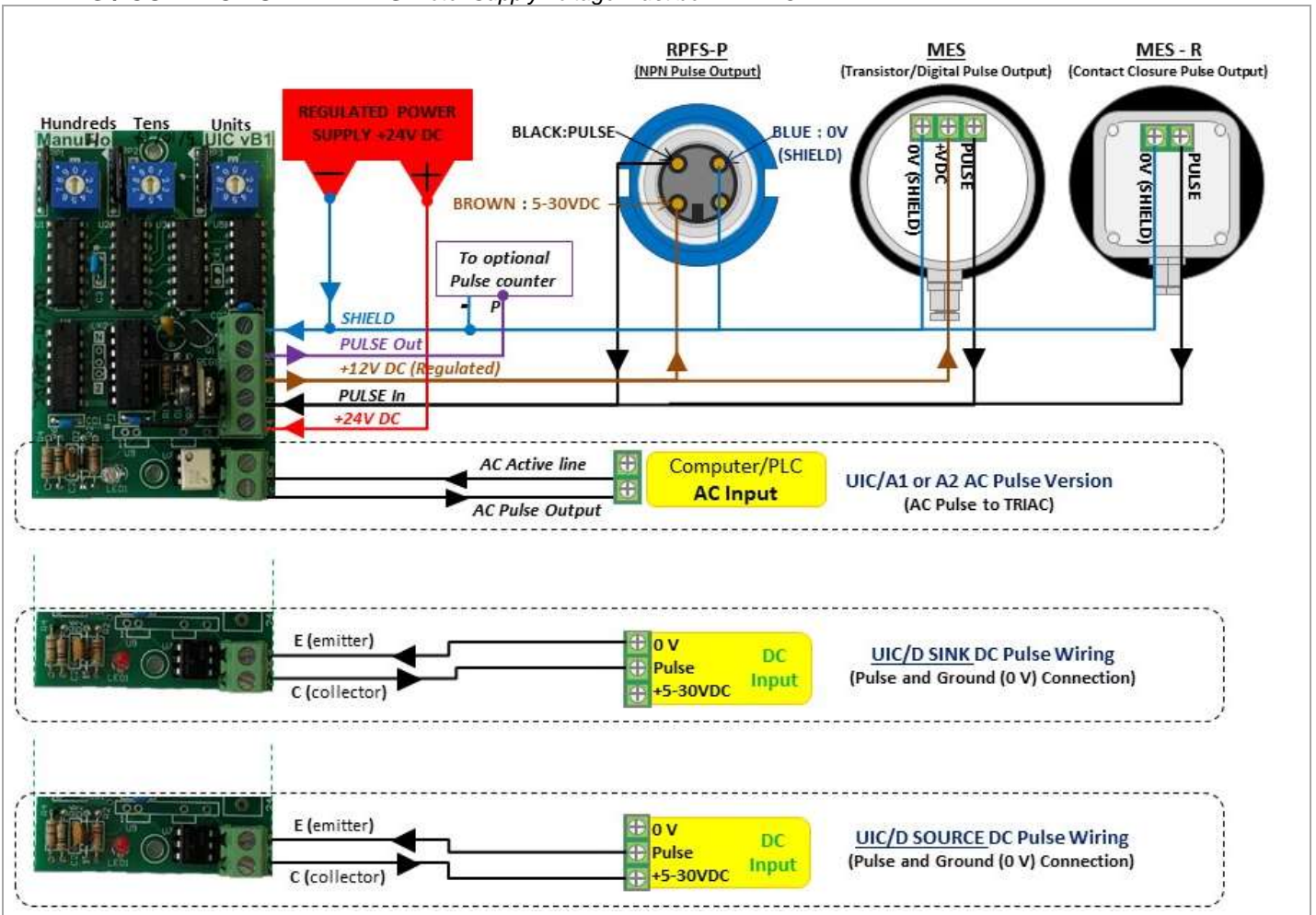
Note: Final calibration can also be performed via computer software scaling.

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	+24V DC
Voltage to flowmeter	+12 VDC regulated, supplied by UIC to power the flowmeter
Input	Accepts NPN Transistor or contact closure input
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* Motorola 3041 opto 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.
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 50% duty cycle.

WIRING / CONNECTION DETAILS *Note: Supply voltage must be +24V DC.*



Note: Pulse output rate to AC input PLC/computers must not exceed 13Hz (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 pulse inputs (Eagle/Alcon/Jonel etc). 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).



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



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 24V DC only, noting each UIC card/flowmeter can draw up to 25mA each.
- 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 RPFS-P paddlewheel flowmeters for water		
UIC card with STANDARD x10 pulse input multiplier		
Pipe size (mm)	UIC Set Value H T U	Output pulses per Litre 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
50	1 0 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 RPFS-P and are approximate 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 from Magflow	UIC Set Value H T U	Output pulses per Litre to PLC/computer
1 pulse per 1 Litre	0 1 0 0 2 5 0 5 0	1 pulse per 2 Litre 1 pulse per 5 Litres 1 pulse per 10 Litres
10 pulses per 1 Litre	0 5 0 1 0 0 2 5 0 5 0 0	1 pulse per 1 Litre 1 pulse per 2 Litres 1 pulse per 5 Litres 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. 1Litre/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)							

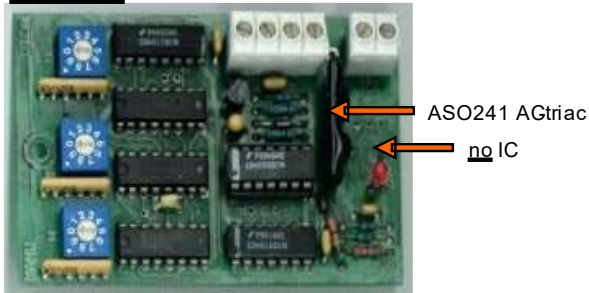
** means best and most common settings for AC input. NOTE: For DC inputs the pulse input speeds can be faster 40hz+

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

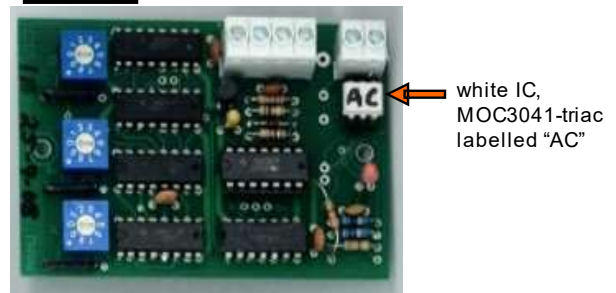
Meter Model	Size	UIC card setting H T U	Pulse Output value
AMM25	25mm	2 5 0	100 mls per pulse
"	"	1 2 5	50 mls per pulse
"	"	0 5 0	20 mls per pulse
"	"	0 2 5	10 mls per pulse

UIC Interface Card - Configurations

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

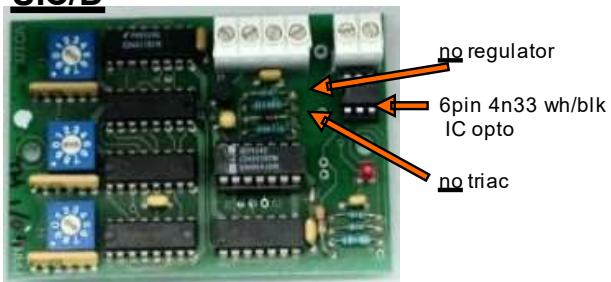


UIC/A1 • switches 110/240vac, 512 VDC powered

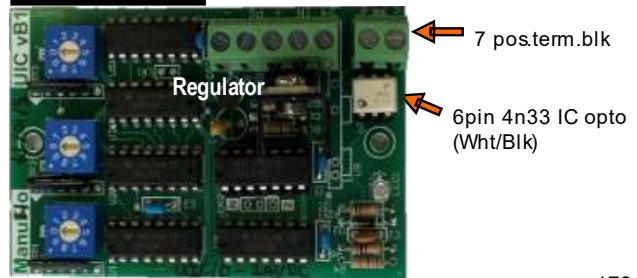


Code: -24DC for 24VDC powered

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



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



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