

## INT5

*Universal Input Panel Meter*



### KEY FEATURES

- Universal input
- 6 digit, 3 colour, LED display
- Real time diagnostics of sensor wiring
- Sensor drift correction
- Direct or theoretical calibration
- Readings linearised or non-linearised
- Adjustable display brightness
- 6 logic input ports with selectable functionality
- 95-265V AC or 11-30V DC powered
- IP65 front panel sealing
- Comprehensive user manual

### DESCRIPTION

The INT5 is the fifth generation of our popular 1/8 DIN INTUITIVE panel meter range and has been designed with a universal sensor input.

The INT5 is the fastest, highest performing, panel meter we have produced to date and our patented multi-sensor design makes it the most universal meter ever.

The 6 digit, 7 segment, LED display is our own custom designed module and gives the user a choice of red, green or yellow digits.

#### SENSOR INPUTS

4-20mA Active
4-20mA Passive
0-10V
DC Shunt - 50mV, 60mV, 75mV or 100mV
Load Cell - Up to 4 x 350 Ohm
Elapsed Timer - START, STOP, RESET inputs
Potentiometer - 3 wire or 4 wire
Pulse (NPN or contact closure) - Rate/RPM
Pulse (NPN or contact closure) - Total
Resistance - Up to 20 kOhms
RTD - PT100 or PT1000
Thermocouple - Type B, E, J, K, N, R, S or T
Onboard ambient temperature
Power frequency monitor
Real time clock

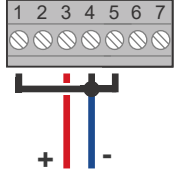
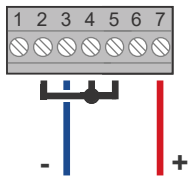
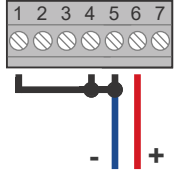
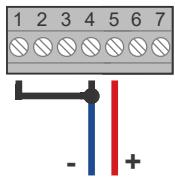
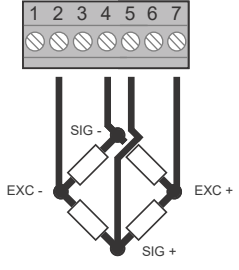
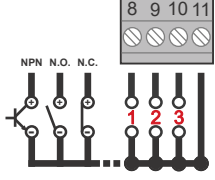
#### OUTPUTS

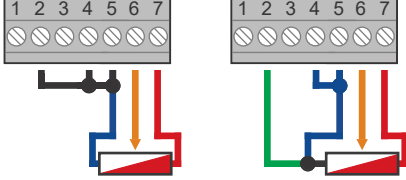
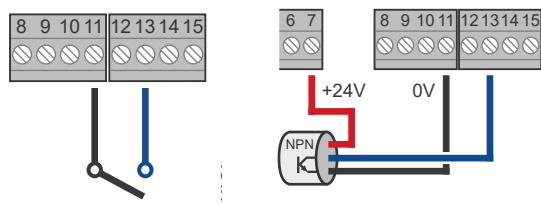
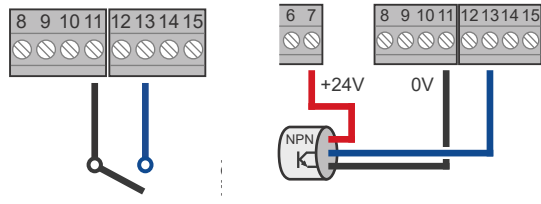
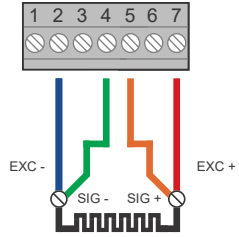
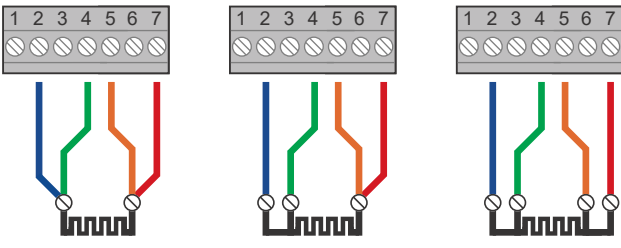
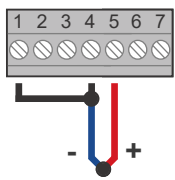
0-10V or 4-20mA active source or passive sink
1, 2, 3 or 4 x SPDT mechanical relays
1 or 2 x RS232 or RS485, ASCII, Modbus ASCII or Modbus RTU

#### LOGIC INPUTS



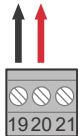
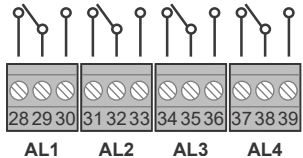
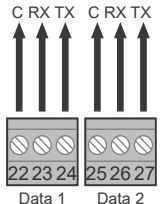
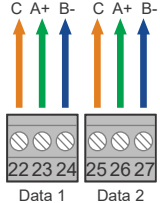
6 x NPN or contact closure inputs configurable as:-		
Tare	Peak Gross	Gross
Show Tare	Peak Nett	Nett
Reset	Valley Gross	Mirror Image
Hold	Valley Nett	Ambient Temperature






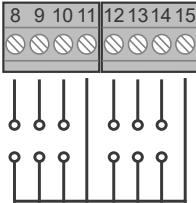
SENSOR INPUTS		
Input	Description	Connections
<b>4-20mA Active</b>	<p>Suitable for 4-20mA sent from an active device.</p> <p>In this mode, the meter can accept an input of -40 to +40mA and it will tolerate up to 30V DC across the current input terminals without damage.</p>	
<b>4-20mA Passive</b>	<p>In this mode, the meter provides 24V DC excitation voltage to power a 2-wire 4-20mA transmitter.</p>	
<b>0-10V</b>	<p>Suitable for connecting an active DC voltage signal sent from another device.</p> <p>In this mode, the meter can accept -20 to +20V DC.</p>	
<b>DC Shunt or mV</b>	<p>This mode is ideal for DC current measurements.</p> <p>The meter accepts shunts of all current ratings with mV outputs from 5mV full scale to 100mV full scale.</p>	
<b>Load Cell</b>	<p>Ideal for all weighing, torque, strain and force measurements.</p> <p>The meter only needs a 4-wire connection for high performance cable resistance compensation, thanks to our new patented signal processor.</p> <p>You can connect up to 4 x 350 Ohm or 8 x 700 Ohm load cells.</p>	
<b>Elapsed Timer</b>	<p>This mode is ideal for a wide range of applications such as process timing, takt timing, countdown to completion, etc.</p> <p>START, STOP and RESET contact inputs with selectable UP or DOWN counting modes.</p>	

SENSOR INPUTS		
Input	Description	Connections
<b>Potentiometer</b>	<p>Ideal for position, displacement and angle applications using a resistive 3-wire potentiometer as the sensor.</p> <p>A 4-wire connection reduces the effect of cable resistance.</p>	
<b>Pulse Rate/RPM</b>	<p>Rate mode works well in production line applications. Measurements can be taken over short or long periods.</p> <p>You can average the rate over a chosen time period from as little as 1 second up to 24 hours.</p>	
<b>Pulse Total</b>	<p>Totaliser mode is ideal for most counting applications. It is easy to scale and has non-volatile memory to store the count if power is lost.</p>	
<b>Resistance</b>	<p>This mode is ideal for measuring the resistance of components such as inductors, heaters, transformers and earth bonds.</p> <p>The 4-wire connection gives high performance cable resistance compensation thanks to our new patented signal processor.</p>	
<b>RTD</b>	<p>Accepts 2, 3 or 4 wire PT100 or PT1000.</p> <p>Displays measured temperature in Centigrade, Fahrenheit, Kelvin or Rankine and has 0.1 or 1.0 degree selectable resolution.</p>	
<b>Thermocouple</b>	<p>Accepts type B, E, J, K, N, R, S or T thermocouples.</p> <p>Displays measured temperature in Centigrade, Fahrenheit, Kelvin or Rankine and has 0.1 or 1.0 degree selectable resolution.</p>	

## OUTPUTS

Output	Description	Connections
<b>4-20mA Active</b>	<p>This will drive a current into a passive device (&lt;600 Ohms) such as a moving coil meter.</p> <p>This is the most common 4-20mA output configuration.</p>	
<b>4-20mA Passive</b>	<p>This will modulate a current from a connected external excitation voltage.</p> <p>The output stage acts similar to a 4-20mA 2-wire transmitter.</p>	
<b>0-10V</b>	<p>Suitable for sending an active DC voltage signal to another device.</p> <p>Can drive into loads greater than 600 Ohms.</p>	
<b>Alarms</b>	<p>1, 2, 3 or 4 SPDT mechanical relays.</p> <p>Rated 2A @ 250V AC resistive load.</p>	
<b>RS232</b>	<p>1 or 2 RS232 output ports with selectable protocols:-</p> <p>Continuous ASCII stream Polled London ASCII Polled Modbus ASCII Polled Modbus RTU</p>	
<b>RS485</b>	<p>1 or 2 RS485 output ports with selectable protocols:-</p> <p>Continuous ASCII stream Polled London ASCII Polled Modbus ASCII Polled Modbus RTU</p>	

SPECIAL INPUTS		
Input	Description	Connections
<b>Ambient Temperature</b>	<p>A temperature sensor on the rear of the meter measures the ambient temperature.</p> <p>This measurement can be viewed on the display or used as a source for the optional outputs.</p>	<p>NO CONNECTION NEEDED</p> 
<b>Power Frequency</b>	<p>AC powered meters can be factory configured to measure the power frequency.</p> <p>This measurement can be viewed on the display or used as a source for the optional outputs.</p>	<p>NO CONNECTION NEEDED</p> 
<b>Real Time Clock</b>	<p>The clock option module provides accurate time of day or date in several formats.</p> <p>It can also be used as a day counter for "Days Since Last Accident" or to count down days to an event.</p>	<p>NO CONNECTION NEEDED</p> 

LOGIC INPUTS		
Input	Description	Connections
<p><b>NPN</b></p> <p>or</p> <p><b>Contact Closure</b></p>	<p>6 inputs configurable as:-</p> <ul style="list-style-type: none"> <li>Tare</li> <li>Show Tare</li> <li>Reset</li> <li>Hold</li> <li>Peak Gross</li> <li>Peak Nett</li> <li>Valley Gross</li> <li>Valley Nett</li> <li>Gross</li> <li>Nett</li> <li>Mirror Image</li> <li>Ambient Temperature</li> </ul>	

ACCESSORIES		
Splashproof Cover	Wall Mounting Enclosure	DIN Rail Mounting
		

## TECHNICAL DATA

### Display Specifications

<b>Type</b>	7 segment LED
<b>Number of Digits</b>	6
<b>Digit Colour</b>	User selectable green, red or yellow
<b>Digit Height</b>	14.2mm (0.56 inches)
<b>Viewing Distance</b>	7m (23 feet)
<b>Brightness</b>	10 levels of adjustment
<b>Annunciators</b>	4 x display status, 4 x alarm status, 1 x lock status
<b>Display Update Rate</b>	10 readings per second

### Input Specifications

<b>Current</b>	-40 to +40mA - 2.5 Ohm impedance - 24V @ 30mA excitation
<b>Voltage</b>	-20 to +20V - 1 MOhm impedance
<b>DC Shunt or mV</b>	-100.5 to +100.5mV - 10 MOhm impedance
<b>Load Cell</b>	Up to 4 x 350 Ohm or 8 x 700 Ohm cells - Nominal 8V @ 120mA excitation
<b>Elapsed Timer</b>	3 x NPN or contact closure inputs for START, STOP and RESET
<b>Potentiometer</b>	3 or 4-wire resistive
<b>Pulse - Rate / RPM</b>	NPN or contact closure input - 24V @ 30mA excitation - Maximum pulse rate 400Hz
<b>Pulse - Total</b>	NPN or contact closure input - 24V @ 30mA excitation - Maximum pulse rate 400Hz
<b>Resistance</b>	4-wire - 1 Ohm, 10 Ohm, 100 Ohm, 1 kOhm, 10 kOhm, or 20 kOhm ranges
<b>RTD</b>	2, 3 or 4-wire - PT100 or PT1000 - Centigrade, Fahrenheit, Kelvin or Rankine - 0.1 or 1.0 degree resolution
<b>Thermocouple</b>	Type B, E, J, K, N, R, S or T - Centigrade, Fahrenheit, Kelvin or Rankine - 0.1 or 1.0 degree resolution
<b>Ambient Temperature</b>	Solid state silicon chip - 0.01°C resolution - -20 to +60°C range
<b>Power Frequency</b>	47.000 to 63.000Hz, 95-265V AC
<b>Real Time Clock</b>	Internal crystal oscillator - Automatic Summer / Winter time adjustment - +/- 10 seconds per month accuracy

### Power Specifications

<b>AC Version (red connector)</b>	95-265V AC - 47-63 Hz - 8W max. - Fuse with 2A 'T' rated (anti-surge) fuse - Also accepts 100-300V DC
<b>DC Version (black connector)</b>	11-30V DC - 8W max. - Fuse with 5A 'T' rated (anti-surge) fuse - Source must provide at least 2A peak current
<b>Isolation</b>	Switch-mode transformer galvanic isolation

### Case Specifications

<b>Bezel</b>	96mm (3.78 inches) wide x 48mm (1.89 inches) high
<b>Panel Cutout</b>	92mm (3.62 inches) wide x 45mm (1.77 inches) high
<b>Front of Panel Projection</b>	13mm (0.51 inches)
<b>Depth Behind Panel</b>	125mm (4.92 inches)
<b>Maximum Weight</b>	360 grams (12.69 ounces) with all options installed
<b>Case Material</b>	Black polycarbonate

### Environmental Specifications

<b>Front Panel Sealing</b>	IP65 (standard), IP67 with optional SPC4 cover
<b>Rear Sealing</b>	IP20
<b>Storage Temperature</b>	-25 to +60°C
<b>Operating Temperature</b>	0 to +50°C
<b>Humidity</b>	+10 to +95%, non-condensing
<b>Altitude</b>	-1000m to +3000m
<b>Vibration / Shock</b>	0-5G, less than 200Hz
<b>Cleaning</b>	Use only damp cloth moistened with water



## TECHNICAL DATA

### Analogue Output Specifications

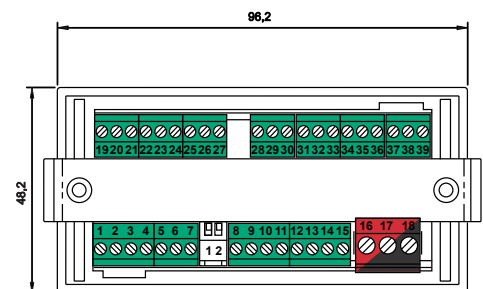
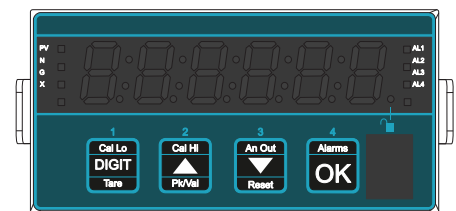
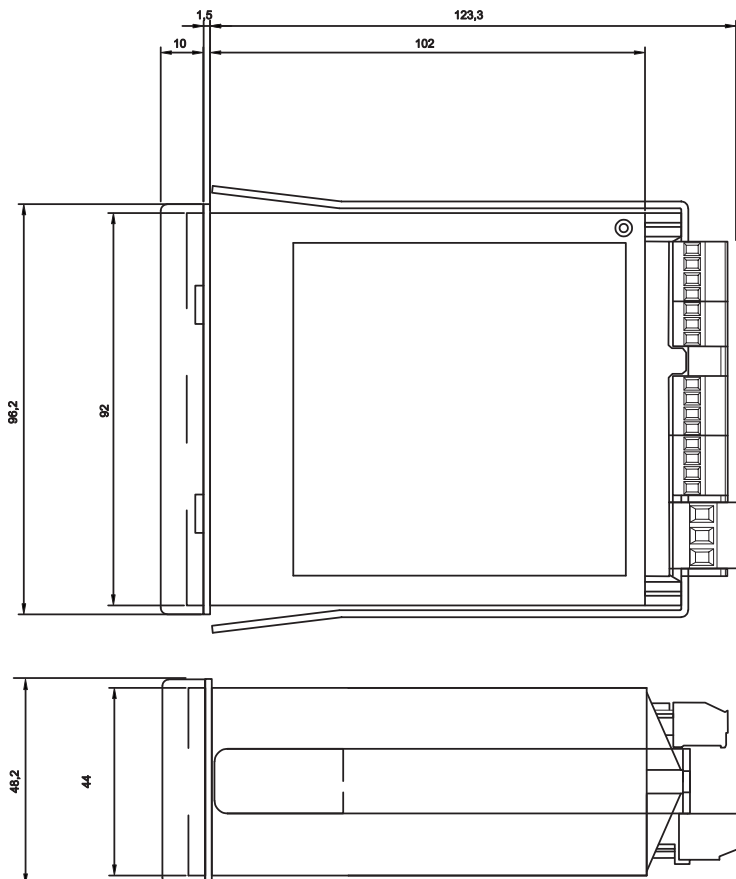
<b>ANI Option</b>	0-20mA or 4-20mA into loads <600 Ohms
<b>ANV Option</b>	0-10V into loads >600 Ohms
<b>Galvanic Isolation</b>	Optically isolated from all ports up to 250V AC
<b>Response Speed</b>	10 updates per second
<b>Resolution</b>	18 bit
<b>Precision</b>	+/- 0.05% of range
<b>Temperature Stability</b>	+/- 50ppm of range per °C

### Alarm Relay Outputs Specifications

<b>AL1, AL2, AL3 or AL4 Option</b>	1, 2, 3 or 4 mechanical relays
<b>Relay Type</b>	Single Pole Double Throw (SPDT)
<b>Contact Rating</b>	2A @ 250V AC resistive load
<b>Galvanic Isolation</b>	Optically isolated from all ports up to 250V AC
<b>Response Speed</b>	10 updates per second, mechanical response 15mS

### Data Ports Specifications

<b>232 Option</b>	RS232 full duplex
<b>485 Option</b>	RS485 half duplex
<b>Galvanic Isolation</b>	Optically isolated from all ports up to 250V AC
<b>Response Speed</b>	Up to 10 updates per second depending on selected baud rate
<b>Baud Rates</b>	300, 600, 1200, 2400, 4800, 9600, 19200, 38400 or 115200
<b>Address Range</b>	2 bytes, 01 to FE
<b>Data Format</b>	7 or 8 data bits - odd, even or no parity - 1 or 2 stop bits
<b>Protocols</b>	Continuous ASCII stream, Polled London ASCII, Polled Modbus ASCII or Polled Modbus RTU



ORDERING CODES		INT5	- X	- X	- X	- X	- X	- X	- X	- X
<b>Function / Input Type:</b>										
Digital input (counter, rate meter, elapsed timer)	D									
Power frequency monitor (AC powered only)	PFM									
Real time clock	RTC									
Universal input (analogue and digital signals)	U									
<b>Analogue Output:</b>										
None	0									
4-20mA	ANI									
0-10V	ANV									
<b>Alarm Outputs:</b>										
None	0									
1 x SPDT mechanical relay	AL1									
2 x SPDT mechanical relays	AL2									
3 x SPDT mechanical relays	AL3									
4 x SPDT mechanical relays	AL4									
<b>Data Output 1:</b>										
None	0									
RS232	232									
RS485 + Modbus ASCII + Modbus RTU	485									
<b>Data Output 2:</b>										
None	0									
RS232	232									
RS485 + Modbus ASCII + Modbus RTU	485									
<b>Power:</b>										
95-265V AC or 100-300V DC	AC									
11-30V DC	DC									
<b>Options:</b>										
Power frequency monitor (AC powered only)	PFM									
Real time clock	RTC									
<b>Accessories:</b>										
DIN rail mounting	DIN									
IP67 front cover	SPC4									
IP65 wall mounting enclosure for 1 x meter	WALLBOX									
IP65 wall mounting enclosure for 2 x meters	WALLBOX2									

**Examples:**

**INT5-D-0-AL2-0-0-DC**

- D** = Digital input (counter, rate meter, elapsed timer)
- 0** = Analogue output not fitted
- AL2** = 2 x SPDT mechanical relays
- 0** = Data output 1 not fitted
- 0** = Data output 2 not fitted
- DC** = 11-30V DC powered

**INT5-U-ANI-0-0-0-AC**

- U** = Universal input (analogue and digital signals)
- ANI** = 4-20mA output
- 0** = Alarm outputs not fitted
- 0** = Data output 1 not fitted
- 0** = Data output 2 not fitted
- AC** = 95-265V AC or 11-30V DC powered

