

Digital Panel Meters



About Us

Originally formed in February 1975, AMELEC remains a wholly owned British manufacturing company celebrating our 35th year anniversary. In 2010 & 2011 we were awarded **100% score** in **quality** accreditation by the Achilles-UVDB verify scheme.

The instrumentation that AMELEC offers to the market place is based on analogue techniques, using readily available discrete components. The instruments contain no time dependent or microprocessor circuitry, are suitable for use in SIL 1, 2 or 3 rated safety systems/loops & all covered by up to 10 Year warranty.

Our design & everyday application engineering principles used in the instruments are based on well tried, proven in use for over thirty years, linear operational amplifier circuitry. Each instrument can be considered as a number of functional blocks assembled together to produce a specific control function.

A Signal Conditioner / Transmitter would comprise of an input circuit; a modulator / demodulator stage; an output circuit and the power supply/regulation circuitry. A trip amplifier might use the same input circuit, this time a comparator and relay driver stage plus the power supply / regulation circuitry.

By combining these functional blocks together we have produced a comprehensive range of Trip Amplifiers, Transmitters, Signal Converters / Isolators, Signal Splitters/Boosters, combined Trip Transmitters, Arithmetic (Add / Subtract / Select / Multiply / Divide) units, Power Supplies, Strain Gauge, Frequency & AC I/V Transducers, as well as Hart compatible units. The circuit building blocks we use today are essentially the same as the ones we have used for the last thirty years.

To confirm that the instruments are compliant with the latest standards, AMELEC have submitted a range of instruments with all the various circuit blocks in them to the test houses. The reference / standards used at the test houses have been:- the CEGB's EES1989, the BS6667, IEC801 and more recently the IEC61000. All instrumentation produced by AMELEC is controlled under our Lloyds approved **ISO 9001:2008 Quality system**.

Our vast client base is spread across all process industry sectors; originally to the likes of the CEGB, BNFL, GEC, British Gas, ICI, BP & Shell, today AMELEC continues to supply quality instrumentation to the Nuclear, Power Generation, Oil & Gas, Chemical, Pharmaceutical, Petrochem, Utilities, Food & Brewery sectors, as well as to many other general manufacturing industries & the Water Authorities throughout.

Here are some of our clients:



Tel: 01908-567003

E-mail: sales@amelec-uk.com

www.amelec-uk.com

Fax: 01908-566735

Cochran Close, Crownhill (Industry), Milton Keynes

MK8 0AJ



Client Feedback

"I recently had one of your trip amplifiers go faulty on me. The said item is at least 21 years old, and had been in service for all this time. I was really pleased when you told me that you could supply me with a direct replacement that would not need any modifications done to make it fit. It is very rare for electronic equipment not to be obsolete after a couple of years, never mind 21 years!"

In all my dealings with your company I have always been impressed with the quality of your products. The manuals provided with each item are excellent, as is your after sales technical help. I think that your 10 years warranty speaks volumes about your faith in your products. I would never hesitate I recommending your company to anyone"



"Many thanks for your prompt response.....Great Service!"



"Thanks for the fast response."



"Thank you for the great service."



"Thanks again for the prompt response."



"Thanks for your support."



"This is just what we needed, so many many thanks."



"Many thanks for your very prompt service...we thank you for helping us on this urgent request, it is much appreciated."



"Thank you very much...please say thanks to Oscar & David."



"I'd like to thank you for your quick response to our request, and for getting the item to us on time"



"I just want to say thanks to you and your staff for your speedy response and efforts, received the unit yesterday and works a treat!"

APM489-4 Process Panel meter

DESCRIPTION

- 4 Digit Red LED high-brightness Display.
- Most process inputs available.
- Two wire 24Vdc excitation available as standard.
- Available for next day delivery.
- Two years warranty



TECHNICAL SPECIFICATION

Input Range

Measuring Range DC		Input Impedance	Measuring Range DC		Input Impedance
Voltage	0~10 V	≥1M ohm	mA	(0) 4~20 mA	250 ohm
Voltage	0(1)~5 V	≥1M ohm	mA	0~1 mA	250 ohm

Other Input types / ranges available on request.

Calibration: Display calibration by front key

A/D converter: 12 bits resolution

Accuracy: DC: $\leq \pm 0.1\%$ of FS $\pm 1C$

Sampling rate: 15 cycles/sec

Response time: ≤ 100 msec

Display & Functions

LED: Numeric: 4 digits, 0.8"(20.0mm) red high-brightness LED

Display range: -1999~+9999

Scaling function: **IOsc:** Low Scale; Settable range: -1999~+9999

hisc: High Scale; Settable range: -1999~+9999

Decimal point: Programmable from 0 .000/ 00.00 / 000.0 / 0000

Over range Indication: **ovfl**, when input is over 110% of input range Hi

Under range indication: **-ovfl**, when input is under -0% of input range Lo

Reading Stable Function

Average: **avg** Settable range: 1~99 times

Moving average: **Mavg** Settable range: 1(None)~99 times

Digital filter: **Dfilt** Settable range: 0(None)/1~99 times

Power

Power supply: AC115/230V,50/60Hz; (24Vdc Supply option available)

Excitation Supply: DC 24V $\pm 10\%$, 30mA

Power consumption: 2.5VA maximum

Back up memory: By EEPROM

Electrical Safety

Dielectric strength: AC 2.0 KV for 1 min, Between Power / Input / Output / Case

Insulation resistance: $\geq 100M$ ohm at 500Vdc, Between Power / Input

Environmental

Operating temp.: 0~60 °C

Operating humidity: 20~95 %RH, Non-condensing

Temp. coefficient: ≤ 100 PPM/°C

Storage temp.: -10~70 °C

Enclosure: Front panel: IEC 549 (IP54); Housing: IP20

Storage temp.:

Dimensions: 96mm(W) x 48mm(H) x 72mm(D)

Panel cutout: 92mm(W) x 44mm(H)

Case materiel: ABS fire-resistance (UL 94V-0)

Mounting: Panel flush mounting

Terminal block: Plastic NYLON 66 (UL 94V-0);

Mechanical

20A/300Vac, M3.5, 1.3mm²~3.5mm² (22~12AWG)

Weight: 300g

APM489-5-AO-4RL Process Indicator / Controller

■ DESCRIPTION

- 5 Digit Red LED high-brightness Display.
- Measuring linear signal 0~10V and 0(4)~20mA (with Square Root function) in one indicator.
- 4 relays can be programmed individually to be Hi / Lo / Hi Latch / Lo Latch / Go energised with Start Delay / Hysteresis / Energised & De-energised Delay functions, or to be remote control.
- Analogue output fitted as standard with optional 1 RS485 (Modbus RTU Mode) interface with versatile functions such as control, alarm, re-transmission and communication for a wide range of industrial applications.
- 3 external control inputs can be programmed individual to be Relative PV (Tare) / PV Hold / Maximum or Minimum Hold / DI (remote monitoring) / Reset for Relay Energised Latch....
- Standard 115 / 230Vac with Optional 24Vdc.



■ TECHNICAL SPECIFICATION

Input

Input Range	Input Impedance	Input Range	Input Impedance
Voltage 0 ~ 10 V	≥ 1M ohm	Current 4(0)~20 mA	250 ohm

➤ Input 0~10V or 0~20mA can be selected by termination. (11 or 12)

Calibration:	Digital calibration by front key
A/D converter:	16 bits resolution
Accuracy:	≤± 0.04% of FS ± 1C;
Sampling rate:	15 cycles/sec
Response time:	≤100 msec.(when the AvG = "1") in standard
Input type:	0~10V / 0~5V / 1~5V / 0~10mA / 0~20mA / 4~20mA programmable for coding AV(option)
Input range:	Input High and Low programmable Ai.Hi: Settable range: 0.00~100.00% of input range Ai.Lo: Settable range: 0.00~100.00% of input range

Display & Functions

LED:	Numeric: 5 digits, 0.8"(20.0mm)H red high-brightness LED Relay output indication: 4 square red LED RS 485 communication: 1 square orange LED E.C.I. function indication: 3 square green LED Max/Mini Hold indication: 2 square orange LED
Display range:	-19999~29999;
Scaling function:	Lo.SC: Low Scale; Settable range: -19999~+29999 Hi.SC: High Scale; Settable range: -19999~+29999 Programmable from 0 / 0.0 / 0.00 / 0.000 / 0.0000
Decimal point:	Selectable for differential pressure transducers
Square root function:	Selectable for differential pressure transducers
Over range indication:	ovFL, when input is over 120% of input range Hi
Under range indication:	-ovFL, when input is under -20% of input range Lo
Max / Mini recording:	Maximum and Minimum value storage during power on.
Display functions:	PV / Max(Mini) Hold / RS 485 Programmable
Front key functions:	Up and down key can be set to be a function as ECI.
Low cut:	Settable range: -19999~29999 counts
Digital fine adjust:	Pv.Zro: Settable range: -19999~+29999 Pv.SPn: Settable range: -19999~+29999

Reading Stable Function

Average:	Settable range: 1~99 times
Moving average:	Settable range: 1(None)~10 times
Digital filter:	Settable range: 0(None)/1~99 times

Control Functions(option)

Set-points:	Four set-points
Control relay:	Four relays Relay 2 & Relay 3: Dual FORM-C, 5A/230Vac, 10A/115V Relay 1 & Relay 4: Dual FORM-A, 1A/230Vac, 3A/115V
Relay energised mode:	Energised levels compare with set-points: Hi / Lo / Go.12 / Go.23 / Hi.HLD / Lo.HLD: programmable DO function: Energised by RS485 command of master.
Energizing functions:	Start delay / Energised & De-energised delay / Hysteresis / Energised Latch Start band (Minimum level for Energizing): 0~9999counts Start delay time: 0:00.0~9(Minutes):59.9(Second) Energised delay time: 0:00.0~9(Minutes):59.9(Second) De-energised delay time: 0:00.0~9(Minutes):59.9(Second) Hysteresis: 0~5000 counts

External Control Inputs(ECI)

Input mode:	3 ECI points, Contact or open collect input, Level trigger
Functions:	Relative PV(Tare) / PV Hold / Reset for Max or Mini. Hold / DI / Reset for Relay Energised latch
Debouncing time:	Settable range 5 ~255 x (8m seconds)

Analogue output(option)

Accuracy:	≤±0.1% of F.S.; 16 bits DA converter
Ripple:	≤± 0.1% of F.S.
Response time:	≤100 msec. (10~90% of input)
Isolation:	AC 2.0 KV between input and output
Output range:	Specify either Voltage or Current output in ordering Voltage: 0~5V / 0~10V / 1~5V programmable Current: 0~10mA / 0~20mA / 4~20mA programmable
Output capability:	Voltage: 0~10V: ≥ 1000Ω; Current: 4(0)~20mA: ≤ 600Ω max

Functions:

Ao.HS(output range high): Settable range: -19999~29999

Ao.LS(output range Low): Settable range: -19999~29999

Ao.LMt(output High Limit): 0.00~110.00% of output High

Ao.Zro: Settable range: -38011~+27524

Ao.SPn: Settable range: -38011~+27524

Digital fine adjust:

RS 485 Communication(option)

Protocol: Modbus RTU mode
Baud rate: 1200/2400/4800/9600/19200/38400 programmable
Data bits: 8 bits
Parity: Even, odd or none (with 1 or 2 stop bit) programmable
Address: 1 ~ 255 programmable
Remote display: to show the value from RS485 command of master
Distance: 1200M
Terminate resistor: 150Ω at last unit.

Electrical Safety

Dielectric strength: AC 2.0 KV for 1 min, Between Power / Input / Output / Case
Insulation resistance: ≥100M ohm at 500Vdc, Between Power / Input / Output
Isolation: Between Power / Input / Relay / Analogue / RS485 / E.C.I.
EMC: EN 55011:2002; EN 61326:2003
Safety(LVD): EN 61010-1:2001

Environmental

Operating temp.: 0~60 °C
Operating humidity: 20~95 %RH, Non-condensing
Temp. coefficient: ≤100 PPM/°C
Storage temp.: -10~70 °C
Enclosure: Front panel: IEC 549 (IP54); Housing: IP20

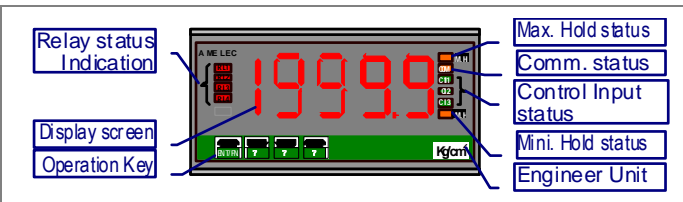
Mechanical

Dimensions: 96mm(W) x 48mm(H) x 120mm(D)
Panel cutout: 92mm(W) x 44mm(H)
Case material: ABS fire-resistance (UL 94V-0)
Mounting: Panel flush mounting
Terminal block: Plastic NYLON 66 (UL 94V-0)
 10A 300Vac, M2.6, 1.3~2.0mm²(16~12AWG)
Weight: 550g / 350g(Aux. Power Code: ADH or ADL)

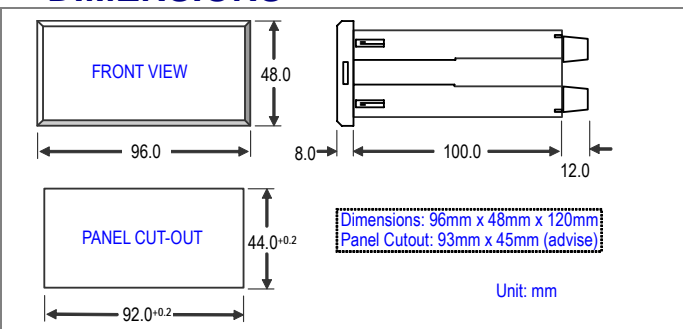
Power

Power supply: AC115/230V,50/60Hz;
 Optional: AC/DC 85~264V or 20~90V(RoHS version)
Excitation supply: DC24V/30mA maximum in standard
Power consumption: 5.0VA maximum
Back up memory: By EEPROM

FRONT PANEL

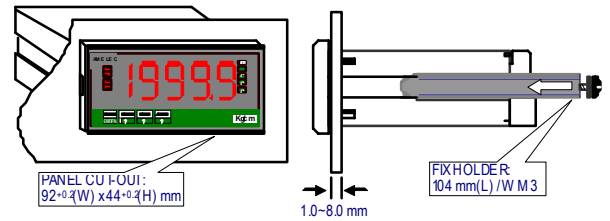


DIMENSIONS

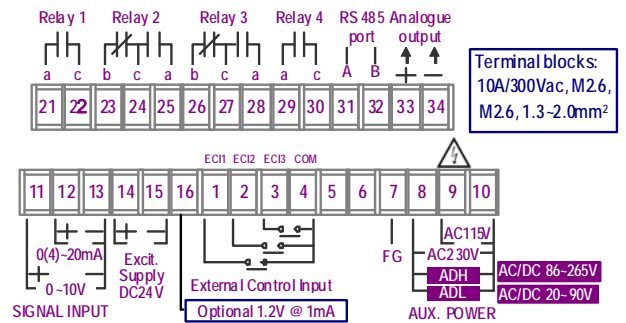


INSTALLATION

The meter should be installed in a location that dose not exceed the maximum operating temperature and provides good air circulation.

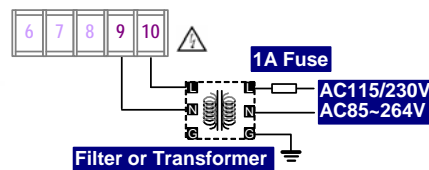


CONNECTION DIAGRAM

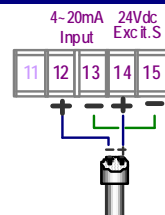


Please check the power supply voltage first, and then connect to the specified terminals. It is recommended that power supplied to the meter be protected by a fuse or circuit breaker.

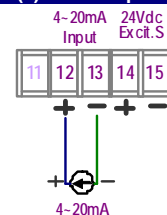
Power Supply



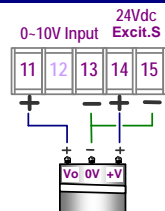
2 wire Transmitter connection



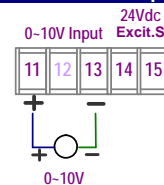
4(0)~20mA Input connection



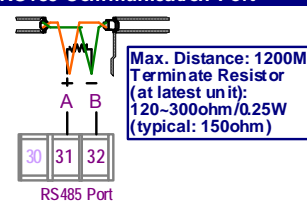
3 Wire Transmitter



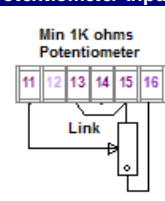
0~10V Source Input connection



RS485 Communication Port



Potentiometer Input



APM244-5-AO-2RL Process Indicator / Controller

■ DESCRIPTION

- 5 Digit Red LED high-brightness Display.
- Input any DC voltage and current (Sink & Source).
- 2 relays can be programmed individually to be Hi / Lo / Hi Latch / Lo Latch / Energise with Start Delay / Hysteresis / Energised & De-energised Delay functions, or to be remote control.
- Analogue output fitted as standard with optional 1 RS485 (Modbus RTU Mode) interface with versatile functions such as control, alarm, re-transmission and communication for a wide range of industrial applications.
- 1 external control input can be programmed to be Relative PV (Tare) / PV Hold / Maximum or Minimum Hold / DI (remote monitoring) / Reset for Relay Energised Latch....
- Standard 24Vdc supply.
- Front Panel mount as standard with optional Din rail / Surface mount.



Just 24 x 48mm
with 2 x Trips & Re-Tx

■ TECHNICAL SPECIFICATION

Input

Input Range	Input Impedance	Input Range	Input Impedance
Voltage 0 ~ 10 V	≥ 1M ohm	Current 0(4)~20 mA	250 ohm

➤ Any Input in the range of 0~10V or 0~20mA.

Calibration:	Digital calibration by front key
A/D converter:	16 bits resolution
Accuracy:	± 0.04% of FS ± 1C;
Sampling rate:	15 cycles/sec
Response time:	≤ 100 msec. (when the AvG = "1") in standard
Input type:	0~10V / 0~5V / 1~5V / 0~10mA / 0~20mA / 4~20mA Input range High and Low programmable Ai.Hi: Settable range: 0.00~100.00% of input range Ai.Lo: Settable range: 0.00~100.00% of input range

Display & Functions

LED:	Numeric: 5 digits, 0.8"(20.0mm)H red high-brightness LED Relay output indication: 4 square red LED RS 485 communication: 1 square orange LED E.C.I. function indication: 3 square green LED Max/Mini Hold indication: 2 square orange LED -19999~29999; Lo.SC: Low Scale; Settable range: -19999~+29999 Hi.SC: High Scale; Settable range: -19999~+29999 Programmable from 0 / 0.0 / 0.00 / 0.0000
Display range:	
Scaling function:	
Decimal point:	
Over range indication:	ovFL, when input is over 120% of input range Hi
Under range indication:	-ovFL, when input is under -20% of input range Lo
Max / Mini recording:	Maximum and Minimum value storage during power on.
Display functions:	PV / Max(Mini) Hold / RS 485 Programmable
Front key functions:	Up and down key can be set to be a function as ECI.
Low cut:	Settable range: -19999~29999 counts
Digital fine adjust:	Pv.Zro: Settable range: -19999~+29999 Pv.SPn: Settable range: -19999~+29999

Reading Stable Function

Average:	Settable range: 1~99 times
Moving average:	Settable range: None / 1~10 times
Digital filter:	Settable range: None / 1~99 times

Control Functions(option)

Set-points:	Two set-points
Control relay:	2 Relays SPCO, 1A/230Vac, 3A/115V

Relay energised mode:	Energised levels compare with set-points: Hi / Lo / Hi.HLd / Lo.HLd programmable Energised by RS485 command of master: DO programmable
Energising functions:	Start delay / Energised & De-energised delay / Hysteresis / Energised Latch Start band (Minimum level for Energising): 0~9999 counts Start delay time: 0:00.0~9(Minutes):59.9(Second) Energised delay time: 0:00.0~9(Minutes):59.9(Second) De-energised delay time: 0:00.0~9(Minutes):59.9(Second) Hysteresis: 0~5000 counts

External Control Inputs(ECI)

Input mode:	1 ECI points, Contact or open collect input, Level trigger
Functions:	Relative PV(Tare) / PV Hold / Reset for Max or Mini. Hold / DI / Reset for Relay Energised latch
Debouncing time:	Settable range 5 ~ 255 x (8m seconds)

Analogue output(option)

Accuracy:	± 0.1% of F.S.; 16 bits DA converter
Ripple:	± 0.1% of F.S.
Response time:	≤ 100 msec. (10~90% of input)
Isolation:	AC 1.5 KV between input and output
Output range:	Specify either Voltage or Current output when ordering. Voltage: 0~5V / 0~10V / 1~5V programmable Current: 0~10mA / 0~20mA / 4~20mA programmable
Output capability:	Voltage: 0~10V: ≥ 1000Ω; Current: 4(0)~20mA: ≤ 600Ω max