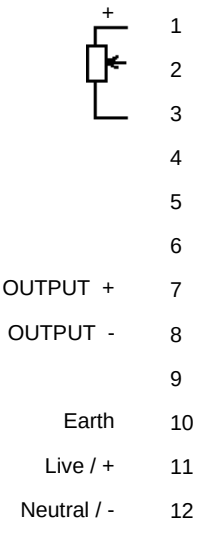
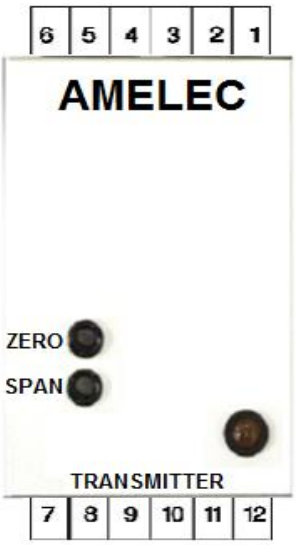
ADM240K Slidewire / Resistance Transmitter / Isolator

- Suitable for use in SIL 1 & SIL 2 rated (EN61508) safety instrumented system (SIS) loop applications, as 1oo1 architecture (HFT:0)
- Suitable for Any Resistance /Slidewire/ Potentiometer type Input
- Supply voltage: 115Vac ±20%
  240Vac ±20%
  24Vdc ±10%
  48Vdc ±10%
- RFI Protection to EN61000-3:2006/A2:2010
- **Non-Smart/ Non-uProcessor based, Type A instrument**
- AMELEC standard 10 year warranty

TERMINATION



FRONT VIEW



APPLICATION

- Any application where a potentiometer, thermistor or other type resistance needs to be converted, isolated and retransmitted.

TECHNICAL SPECIFICATION

INPUT

2 or 3-wire Potentiometers may be specified in the range of: 1KΩ up to 50KΩ wire wound potentiometer. Version also available for plastic film pots. (Input excitation 1V dc @ 2mA max, other options available).
Resistance input spans available in the range of: 100Ω up to 60KΩ

OUTPUT

DC current or voltage specified in the range of:
Current up to 100mA max in Sink configuration (externally powered)
Current up 22mA max Source configuration (Internally powered)
Voltage up to 20V max @ up to 5mA per output.
Typical output range: 4 - 20mA (Source port, into 1200Ω load max)

CONTROLS

15 turn potentiometer.
Zero ± 25%
Span ± 25%

INDICATOR

Power ON: LED, Amber.

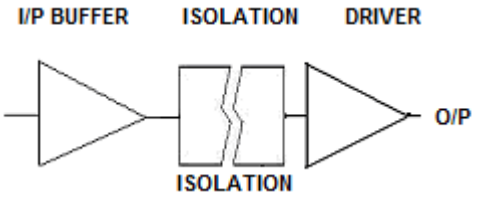
PERFORMANCE

Accuracy/Linearity: ≤±0.1% resistance span
Response time: < 400mS (10-90% span step change)
Supply consumption: < 3VA
Input O/C response: Upscale drive as standard
(O/C response Downscale drive 'X' option available)

PROTECTION

Isolation 500V DC: Input/Output//Supply/Earth
Internal Fuse.
Input over range up to typically 300%.
RF Immunity: 20MHz-3GHz/5.25GHz 10V/m, 80MHz-1GHz/5.6GHz 30V/m
(889MHz/1.75GHz 40V/m)

FUNCTION BLOCK DIAGRAM



ENVIRONMENTAL CONDITIONS

Storage temperature: - 40 to +70℃
Operating Ambient: -15 to +55℃
Relative Humidity: 5 to 95% RH (Non-condensing)
EMC: 2014/30/EU, EN 61326-1:2013 (Generic Industrial)

MOUNTING / DIMENSIONS

Enclosure: 50w x 75h x 182d mm
Mounting: Din Rail std. (Surface/Seismic Keyhole plate & Front of Panel Mounting options available on request)
Weight < 550g

ADD ON / OPTIONS

P: Test point (Output loop monitoring)
DI: Digital Display on front fascia available
(Non standard supply or output ranges available)

AD SERIES GENERAL SPECIFICATION

INPUT DATA

Input source

For details see individual specification

Open circuit response

For details see individual specification.

Input Impedance (Voltage input)

>1Mohm at amplifier input. This will be shunted by burnout drive or input conditioning components.

SUPPLY DATA

Power supplies

AC models	115 / 230 VAC ±20%
DC models	24 / 48 VDC ±10%
2 wire	12- 60 VDC

Consumption

Transmitter / Trip amplifier	3VA
2 Wire transmitter	250mW

OUTPUT DATA

Output signals

Standard units

Any constant current from 0-100uA to 0-20mA (at up to 20V loop) or any constant voltage from 0-1V to 0-10V (at up to 20mA loading).

2-wire units

4-20mA or 10-50mA as modulation of supply voltage.

Response time

<400mSec. Unless otherwise stated.

Typical response time for a Trip with 4-20mA input; <150uS for 1% step change and <100mS for 100% step change.

Relay specification

DP/DT or SP/DT for each trip, unless otherwise stated. Contacts are rated at 250 VAC, 2A, 100 VA (Resistive).

Relay function

Selected by PC link. Default is normally energised, relay to de-energise on trip (fail safe operation).

Relay status

Indicated by a red LED for each trip, mounted on the front panel. Lit when relay is energised.

Controls

ZERO	± 25%
SPAN	± 50%
TRIP (When fitted)	0-100%
DEADBAND (When fitted)	1-20%

CONDITIONS

Ambient temperature

Working	-20°C to +60°C
Storage	-40°C to +70°C

Humidity

From 5% to 95% RH.

Vibration

1g at 15Hz to 150Hz.

ELECTRICAL STANDARDS

Insulation Input-output-contacts-earth

1000V RMS continuous. 2000V for 2OuSec. Derate to 500VDC for option 'K' enclosures.

Fusing

Power supply fused.

WIRING AND MOUNTING

Terminals

For conductors up to 2.5mm²

Weight

<1kg per module.

Position

Any position is acceptable.

Mounting

Standard units will fit onto a low profile 35mm DIN rail or be surface mounted by corner fixing holes. Option 'K' and 'DI' have enclosures suitable for Din rail, Surface or front of Panel mounting.

Additional protection

Enclosures are available to NEMA 12 oiltight, NEMA 4 watertight and IP54 for N-protection.

PERFORMANCE

Input/output linearity

<0.1% error, unless otherwise stated

Series mode rejection

<01% error for 50Hz input at 5% of span amplitude.

Common mode rejection

<01% error for 250V RMS.

Temperature effect on zero

<0.02% per °C.

Temperature effect on span

<0.01% of span per °C or <0.1°C per °C, whichever is the greater.

Temperature effect on suppression/elevation <0.02% of suppression/elevation per °C.

Supply voltage effect

<0.01% per % input change.

Trip adjustment

By multiturn potentiometers, which are accessible through the front panel.

Deadband

Standard fixed 1%. Option adjustable from 1 to 20% span by multiturn potentiometer also available on request

RFI rejection

Standard units meet the CE requirements for use in Controlled Environments. For additional RFI protection, specify option 'K'.

Permissible Input overload

mV input	20V
DC voltage Input	200V
DC current Input	500%
AC voltage Input	200%
AC current input	500%
Resistance Input	6V

AMELEC SIGNAL CONDITIONING

PROOF TEST / CALIBRATION CHECK PROCEDURE

ADM240 / ADM240K (Resistance/Potentiometer Input, 4-20mA Output, 24V DC Supply)

Even small voltages can cause potentially fatal shocks; this product is only to be tested by an electrically competent person.

The ADM240 / ADM240K is a single channel Resistance input signal converter/isolator, please refer to the general data sheet for termination details. The output is adjustable via the Zero/Span multi-turn blindset potentiometers located through the unit front fascia. The instrument will have been factory calibrated and shouldn't require any further adjustments, however if you do need to check or adjust the output then please follow the procedure below;

Equipment required

- 24V DC power supply unit (PSU)
- Variable Resistance source/ Decade box or Potentiometer, to represent the input for your instrument
- Digital multi-meter (DMM) to be able to measure the supply voltage and the output signal
- Small instrument screwdriver with slotted flat blade head for any blindset potentiometer adjustments
- 500ohm Resistor to simulate a typical output loop device(s) loading.

Calibration check procedure

1. Connect the 24Vdc PSU to the supply terminals as shown on the general data sheet**,** check the front fascia power ***ON*** LED illuminates and leave on for 25 minutes to allow the unit to acclimatise.
2. Connect the Resistance source to the input terminals as shown on the instrument label or data sheet.(TB1-3 for 3-wire potentiometer connection or TB1-2 for 2-wire connections)
3. Set the DMM to measure mA, and connect the DMM to the output terminals (TB7 +ve, TB8 -ve)
4. Apply 0% of the calibrated input resistance range from the Resistance source
5. Measure output on the DMM and check/adjust the Zero potentiometer to read 0% of range (4mA)
6. Change input resistance source to 100% of the input range
7. Measure output on the DMM and check/adjust the Span potentiometer to read 100% of range (20mA)
8. Repeat steps 4 to 7 until the output is calibrated accurately to within +/-0.1% at 0% & 100% of span
9. Measure the output at 25% steps of the input range to ensure the output is linear (≤+/-0.1% resistance span)
10. Open circuit the input and check that the output drives upscale (>20.5mA)
11. Fit the 500ohm resistor loading across the output terminals & re-apply 100% input temperature range
12. Set the DMM to measure Volts DC & check for 10V measurement across the output resistor (±0.1% span)
13. Vary the 24Vdc PSU by +/-10% (2.4V) and check that the output remains stable.
14. End. Re-install unit to the plant safety loop wiring.
15. Should any of the above steps not be achievable, replace the suspect unit with a spare calibrated unit asap and contact AMELEC technical support team for further assistance.

For more information and/or to discuss your application, please contact our technical staff at the factory in Milton Keynes;

Postal address: Cochran Close, Crownhill, Milton Keynes, Bucks. MK8 OAJ
Tel: 01908 567003 **Fax:** 01908 566735
Email: sales@amelec-uk.com

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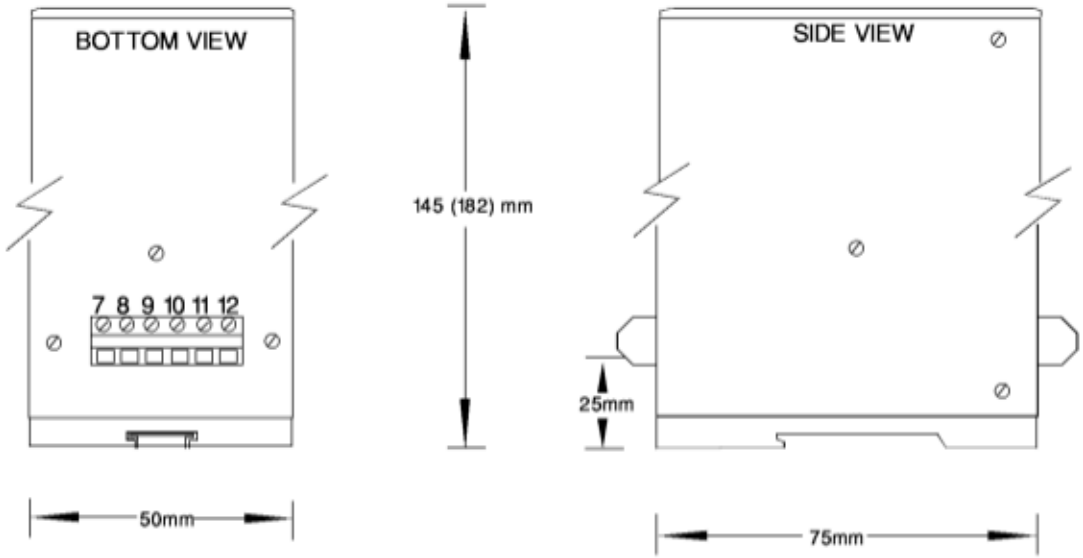

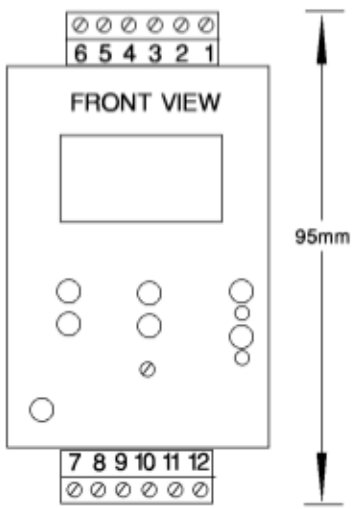

NOTES:

1) The main part of the enclosure is a one-piece aluminium extrusion. The front panel is machined from solid aluminium block. The rear is machined from Din rail extrusion.

2) Dimensions in brackets refer to the increase in length for a type 'K' enclosure.

DIMENSIONS in mm TOLERANCES ± Nominal 0.4 mm Decimal 0.15 mm Unless shown otherwise	Drawn: SLK Checked: Approved: Date: 11/7/00	REVISION Redrawn 7/2000	TITLE: Din Rail enclosure Views of enclosure showing major dimensions. Used on Assembly AD series products	SCALE N.T.S.	AMELEC INSTRUMENTS Cochran Close, Presley Way Crownhill, Milton Keynes, MK8 0AJ DRAWING NO. AD Din Enclosure Sht 1 of 1

AMELEC SIGNAL CONDITIONING

Notes: Good Practice when installing any Din Rail mounted instrumentation

To increase the life expectancy of your din rail mounted instruments, it is recommended that the following guidelines are adhered to:

Mounting Instruments along a Din Rail

Any signal conditioning/process control modules will contain electronic components and circuits which in certain conditions have to lose their excess energy as HEAT. Suppliers of such instruments cannot predict the site conditions or situations, so to make sure that hot spots do not occur it is recommended that electronic instruments are not bunched together horizontally in groups of more than FIVE units.

A space of 5-10mm every five units max will minimise any temperature rise within that group of instruments.

If mounted vertically it is recommend that no more than two instruments are stacked together, then with a minimum 5mm spacer between adjacent units/pairs.

Cabling/Relay Transient Suppression

The electronics in process control units are generally mounted in a small enclosure, which by the very size means that the wiring entering and leaving each enclosure is physically close together. All wiring must be carried out in accordance with current BS EN / IEC regulations. To avoid interference from one port to another the following rules of thumb are recommended:

a) Power cables and wires that carry transients are routed separately to the signal wiring, ideally crossing at 90° to each other.

b) Low level signal cables are kept as screened &/or twisted pairs where possible. On screened cables only earth the screen at one end.

c) Relay contacts that switch inductive loads or other arcing devices should be suppressed, ideally at or across the inductance or other source.

On DC circuits a free wheeling diode should be used, it's PIV at least 4 times the working voltage.

On AC circuits use an RC network, the values of the R and C chosen to match the L and R value of the coil itself.

These rules are very general, so if you encounter any specific problems please contact our sales support team for further assistance.

Amelec product

The Amelec Din Rail mounted instruments are available in a number of product packages:-

The Plastic enclosures; A variety, which may be supplied as either DIN rail or individually Surface mounting instruments. The AD, AEC or AS series' units can be clipped on to the TS35 rail, the ADG series units can be clipped on to either TS35 or G rail (light or heavy duty). The AD series units can also be surface mounted by utilising their corner fixing holes.

The Metal enclosure; is supplied as standard for DIN rail mounting (TS35 heavy duty rail). An optional rear Keyhole plate is available to surface mount the instrument for extra rigidity if required.

The Panel mounted enclosure is supplied in a metal enclosure. The panel cut out needs to be 51w x 76h mm (I.e. approx. 1mm more than the 50w x 75h mm enclosure extrusion dimensions). Two brackets from inside your panel secure the units as std. Optional front plate with corner fixing holes available if preferred.