

INTRODUCING THE AH-RIS SERIES
REPLACEMENT OPTIONS WHEN
FACED WITH OBSOLETE ROCHESTER
INSTRUMENTATION ON PLANT

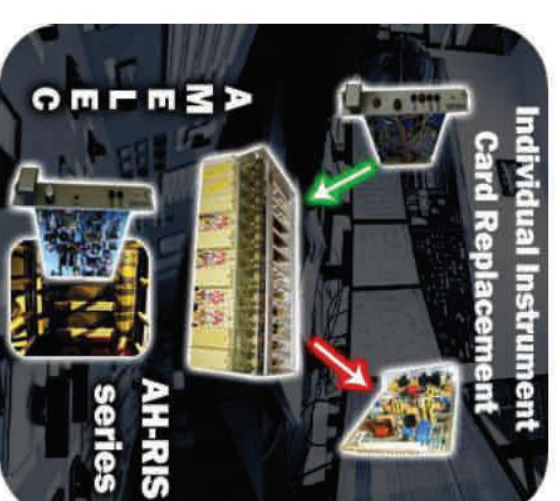




AMELEC manufacture & supply a vast array of analogue Signal Conditioning/Process Monitoring & Control Instrumentation with up to 10 Year Warranty.

35+ years' experience in the nuclear sector supplying to Sellafield, AWE, Urenco, Magnox, COFE, Westinghouse/Springfields Fuels, British Energy/EDF & the UK Nuclear fleet of Power Stations, for New Build through to Decommissioning Projects.

We still fully support our own instrumentation originally supplied over 30 years ago, and have also produced like-for-like pin compatible replacement products for systems not originally of our supply or manufacture!

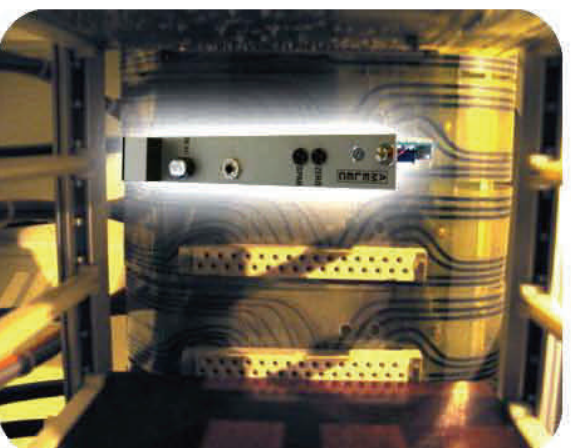


AMELEC also supports numerous clients throughout the petrochemical, oil and gas, food & brew, steels, railways, general utilities and power generation sectors.

This Obsolescence & Refurbishment Support service is especially favourable when you may be faced with potentially costly mechanical and wiring modifications on plant, as well as maintenance staff re-training, etc.

One of the recent example of AMELEC obsolescence and system life Extension support is;

The development of our Plug-in cards directly compatible with obsolete Rochester Instruments, suitable for use in the existing RIS rack systems across various plant facilities.





Individual instrument replacement cards available for:

- **ET8204(W)/8204A** Thermocouple Single Trip Amplifier
- **ET8205(W)/8205A** Thermocouple Dual Trip Amplifier
- **ET8214/8214A** Alarm Single Trip Amplifier
- **ET8215/8215A** Alarm Dual Trip Amplifier
- **ET8274/8274A** RTD Alarm Single Trip Amplifier
- **ET8275/8275A** RTD Alarm Dual Trip Amplifier
- **SC8300R** Slidewire Transmitter
- **SC8302/8302E** Isolated Transmitter
- **SC8326/8326W/8327** Isolated Thermocouple Transmitter
- **SC8330/8330E** Square Root Transmitter
- **SC8350** Frequency Transmitter
- **SC8372/8374** RTD Transmitter
- **SC8391** Strain Gauge Power Supply

AHT612-P-RIS Thermocouple Trip Amplifier

- Suitable for any BS4937 T/C type input
- Supply voltage 21 to 30Vdc
- Amelec standard 10 year guarantee
- Suitable for SIL Level 1, 2, & 3 (IEC 61508-2)
- RIS ET8205W Series Replacement Card.

TECHNICAL SPECIFICATION

FUNCTION

High Trip: Relay de-energise on rising temperature.
OR
Low Trip: Relay de-energise on falling temperature.

INPUT

Can be configured to accept mV signal from any thermocouple.
Type S, R, B, J, T, E, N and other special types also available on request.

Automatic Cold Junction compensation fitted as standard.

Typical input: 0-500 Deg°C / TC type "K"

OUTPUT

Each Trip output is a pair of changeover contacts SPCO, rated at 250VAC, 3A, 100VA (resistive).

CONTROLS

Zero / Span: 15 turn potentiometers, used to set internal reference 0 – 2Vdc for 0 to 100% input.

Set point: 15 turn potentiometer to set Trip point within set input range.

TEST POINT

Trip set points can be monitored using the supplied test plug on any standard DVM. 0 – 2Vdc for 0 – 100%.

INDICATOR

Amber Led: power ON indicator
Red Led: Trip status indicator
LED Off / Relay Energised = Healthy Condition
LED ON / Relay De-energised = Trip Condition

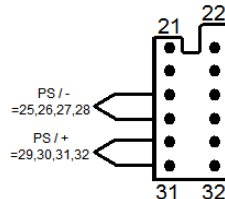
PERFORMANCE

Trip repeatability: < ±0.1%
Response time: Typically < 400ms
Trip settability: < ±0.1%
Hysteresis: 1%

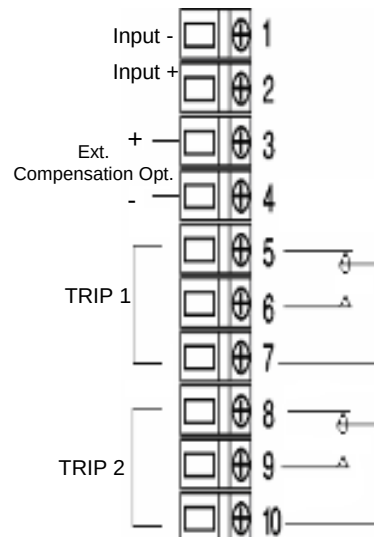
PROTECTION

Isolation 1000V RMS*. Input/Contacts/Supply/
Internal Fuse.
Fail safe on loss of power (Relay de-energised)
Input over range typically at 300%.

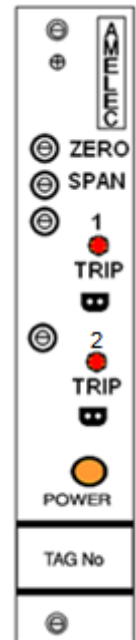
Internal 24Vdc
SUPPLY BUSS



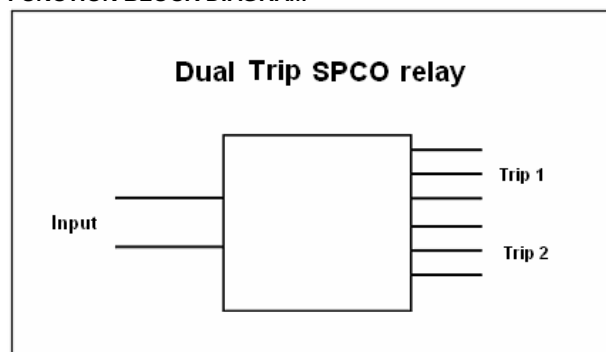
TERMINATION



FRONT VIEW



FUNCTION BLOCK DIAGRAM



ENVIROMENTAL CONDITION

Storage temperature: - 40 to +70 °C
Operating Ambient: -15 to +55 °C
Relative Humidity: 5 to 95% RH

MOUNTING / DIMENSION

Card 3U high 4E wide
Mounting 19" rack / 84E wide (See rack GA for details)
Card weight < 200g

ADD ON / OPTIONS

DI: Common LCD display for local monitoring
J: Input injection jack socket
P: Test point (Trip set point monitoring)
Non standard Power supply ranges available

AHT632-P-RIS Process Trip Amplifier

- Suitable for any DC current or Voltage input
- Supply voltage 21 to 30Vdc
- Amelec standard 10 year guarantee
- Suitable for SIL Level 1, 2, & 3 (IEC 61508-2)
- RIS ET8215/8215A Series Replacement Card.

TECHNICAL SPECIFICATION

FUNCTION

High Trip: Relay de-energise on rising I/V input.
OR
Low Trip: Relay de-energise on falling I/V input.

INPUT

DC current / voltage can be specified in the range of:
Current up to 100mA max (Passive)
Voltage 0.4 to 100V max
Typical input: 4 – 20mA (Passive)

OUTPUT

The Trip output is a pair of changeover contacts SPCO, rated at 250VAC, 3A, 100VA (resistive).

CONTROLS

Zero / Span: 15 turn potentiometers, used to set internal reference 0 – 2Vdc for 0 to 100% input.

Set point: 15 turn potentiometer to set Trip point within set input range.

TEST POINT

Trip set points can be monitored using the supplied test plug on any standard DVM. 0 – 2Vdc for 0 – 100%.

INDICATOR

Amber Led: power ON indicator
Red Led: Trip status indicator
LED Off / Relay Energised = Healthy Condition
LED ON / Relay De-energised = Trip Condition

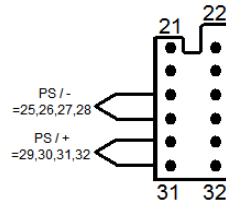
PERFORMANCE

Trip repeatability: < $\pm 0.1\%$
Response time: Typically < 100ms
Trip settability: < $\pm 0.1\%$
Hysteresis: 1%

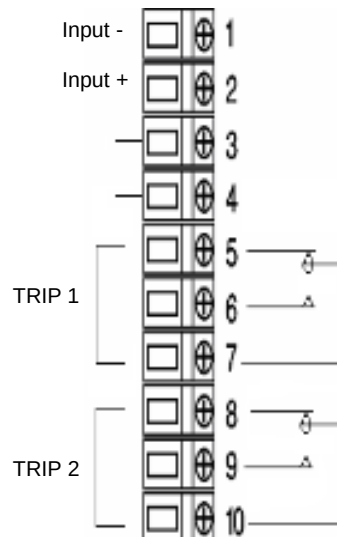
PROTECTION

Isolation 1000V RMS*. Input/Contacts/Supply/
Internal Fuse.
Fail safe on loss of power (Relay de-energised)
Input over range typically at 300%.

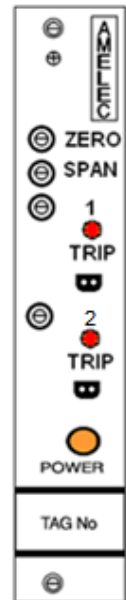
Internal 24Vdc
SUPPLY BUSS



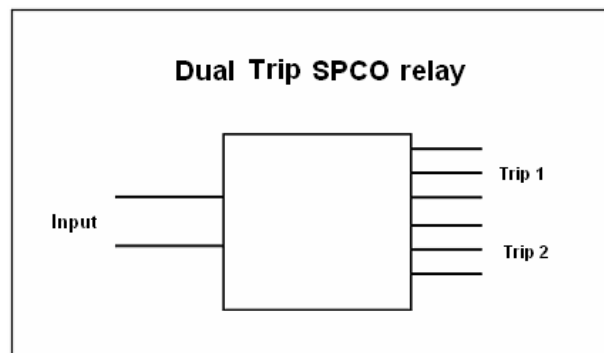
TERMINATION



FRONT VIEW



FUNCTION BLOCK DIAGRAM



ENVIROMENTAL CONDITION

Storage temperature: - 40 to +70 °C
Operating Ambient: -15 to +55 °C
Relative Humidity: 5 to 95% RH

MOUNTING / DIMENSION

Card 3U high 4E wide
Mounting 19" rack / 84E wide (See rack GA for details)
Card weight < 200g

ADD ON / OPTIONS

DI: Common LCD display for local monitoring
J : Input injection jack socket
P: Test point (Trip set point monitoring)
Non standard Power supply ranges available

AHM710-P-RIS Thermocouple Temperature Transmitter

- Suitable for any BS4937 Thermocouple input
- Supply voltage 21 to 30Vdc
- Amelec standard 10 year guarantee
- Suitable for SIL Level 1, 2, & 3 (IEC 61508-2)
- RIS SC8326W/8327 Series Replacement Card.

TECHNICAL SPECIFICATION

FUNCTION

Temperature input signal Converter / Isolator

INPUT

Can be configured to accept mV signal from thermocouple. Type S, R, B, J, K, T, E, N and other special types also available on request.

Automatic Cold Junction compensation fitted as standard.
(External compensation option available)

Typical input: 0 – 500 Deg °C / TC type “K”

OUTPUT

DC current or voltage specified in the range of:
Current up to 100mA max in Sink configuration (externally powered)
Current up to 22mA max Source configuration (Internally powered)
Voltage any from 0.4 to 20V max @ up to 20mA.
Typical output range: 4 - 20mA (Source)

CONTROLS

Zero / Span: 15 turn potentiometers to calibrate Output.

SUPPLY VOLTAGE

Nom 24Vdc Buss line within RIS Rack Backplane.

TEST POINTS

I/P & O/P Test Points on Front Fascia allows for simulation of the input & monitoring of the output signal (supplied with Test Plugs on flying leads)

INDICATOR

Amber Led: power ON indicator

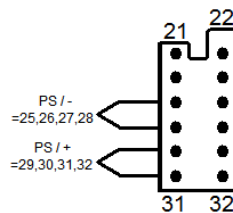
PERFORMANCE

Response time: Typically < 400mS
Linearity : $\pm 0.1\%$

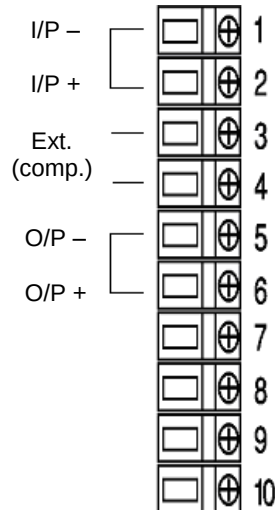
PROTECTION

Isolation 1000V RMS*. Input/Output/Supply
Internal Fuse.
Input over range typically at 300%.
Output saturation 125%

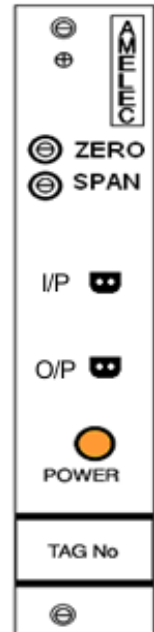
Internal 24Vdc SUPPLY BUSS



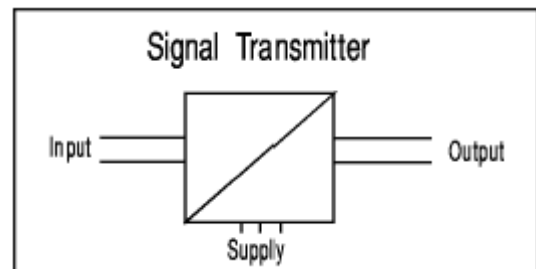
RIS Back Plate TERMINATION



FRONT VIEW



FUNCTION BLOCK DIAGRAM



ENVIRONMENTAL CONDITION

Storage temperature: - 40 to +70 °C
Operating Ambient: -15 to +55 °C
Relative Humidity: 5 to 95% RH

MOUNTING / DIMENSION

Card 3U high 4E wide
Mounting 19" rack / 84E wide (See rack GA for details)
Card weight < 200g

ADD ON / OPTIONS

DI: Common LCD display for local monitoring
J : Input injection jack socket
P: Test point

AHM730-P-RIS-8302 Process Transmitter

- Suitable for any DC Voltage or Milliamp input
- Supply voltage 21 to 30Vdc
- Amelec standard 10 year guarantee
- Suitable for SIL Level 1, 2, & 3 (IEC 61508-2)
- RIS SC8302 / 8302E / 8356 / 8358 Series Replacement Card

TECHNICAL SPECIFICATION

FUNCTION

Process input signal Converter / Isolator

INPUT

DC Current / Voltage can be specified in the range of:

Current up to 100mA max (Passive)

Voltage 0.4 to 10V max

Typical Input: 4 - 20nA (Passive)

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 any from 0.4 to 20V max @ up to 20mA.

Typical output range: 4 - 20mA (Source)

CONTROLS

Zero / Span: 15 turn potentiometers to calibrate Output.

SUPPLY VOLTAGE

Nom 24Vdc Buss line within RIS Rack Backplane.

TEST POINTS

I/P & O/P Test Point on Front Fascia allows for monitoring of the input signal & monitoring of the output signal.

(supplied with Test Plugs on flying leads)

INDICATOR

Amber Led: power ON indicator

PERFORMANCE

Response time: Typically < 400ms

Linearity : $\pm 0.1\%$

Input open circuit response - Downscale Drive as standard

PROTECTION

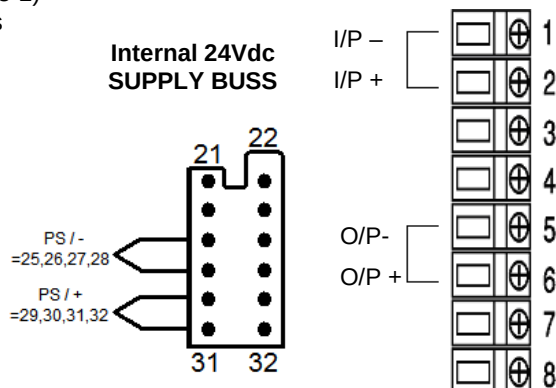
Isolation 1000V RMS*. Input/Output/Supply

Internal Fuse.

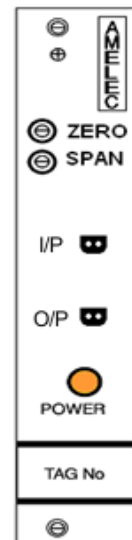
Input over range typically at 300%

Output saturation 125%

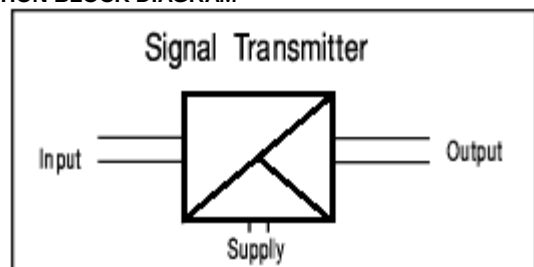
RIS Back Plate TERMINATION



FRONT VIEW



FUNCTION BLOCK DIAGRAM



ENVIROMENTAL CONDITION

Storage temperature: - 40 to +70 °C

Operating Ambient: -15 to +55 °C

Relative Humidity: 5 to 95% RH

MOUNTING / DIMENSION

Card 3U high 4E wide

Mounting 19" rack / 84E wide (See rack GA for details)

Card weight < 200g

OPTIONS

Suffix DI: Common LCD display for local monitoring

Suffix M: 24dc @ 21mA Input Loop Excitation for two-riee transmitter

Suffix X: Input O/C Upscale Drive



Complete replacement rack retro fit:

- **AHT611** Thermocouple Trip Transmitter
- **AHT612** Thermocouple Trip Transmitter
- **AHT621** RTD Trip Amplifier
- **AHT622** RTD Trip Amplifier
- **AHT631** Process Trip Amplifier
- **AHT632** Process Trip Amplifier
- **AHM710** Thermocouple Temperature Transmitter
- **AHM713** Millivolt Transmitter
- **AHM720** RTD Transmitter
- **AHM730** Process Signal Transmitter
- **AHM740** Slidewire Transmitter
- **AHM780** Frequency to Process Transmitter
- **AHM990DI** Display Unit

AHT612 Thermocouple Trip Amplifier

- Suitable for any BS4937 Thermocouple input
- Supply voltage 21 to 30Vdc
- Amelec standard 10 year guarantee
- Suitable for SIL Level 1, 2, & 3 (IEC 61508-2)

TECHNICAL SPECIFICATION

FUNCTION

High Trip: Relay de-energise on rising temperature.
Low Trip: Relay de-energise on falling temperature.

INPUT

Can be configured to accept mV signal from thermocouple Type S, R, B, J, K, T, E, N and other special types also available on request.

Automatic Cold Junction compensation fitted as standard.

Typical input: 0 – 500 Deg °C / TC type “K”

OUTPUT

The Trip output is a pair of changeover contacts SPCO per set point, rated at 250VAC, 2A, 100VA (resistive).

CONTROLS

Zero / Span: 15 turn potentiometers, only fitted when used with common display.

Set point: 15 turn potentiometer to set Trip point within set input range.

INDICATOR

Amber Led: power ON indicator
Red Led: Relay status indicators

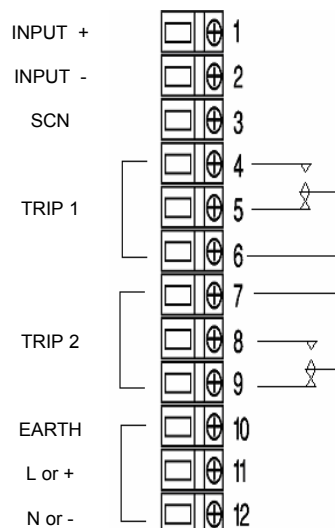
PERFORMANCE

Trip repeatability: < ±0.1%
Response time: Typically < 400mS
Trip settability: < ±0.1%

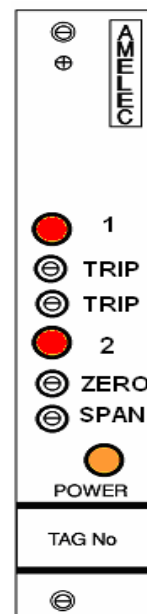
PROTECTION

Isolation 1000V RMS*. Input/Contacts/Supply/Earth
*500VDC if RFI option (K) is specified.
Internal Fuse.
Fail safe on loss of power
Input over range typically at 300%.

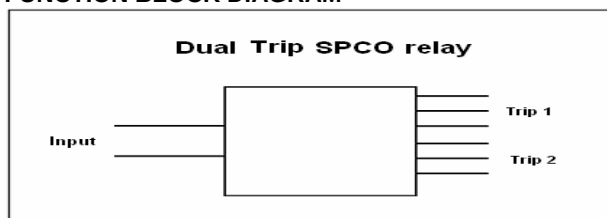
TERMINATION



FRONT VIEW



FUNCTION BLOCK DIAGRAM



ENVIRONMENTAL CONDITION

Storage temperature: - 40 to +70 °C
Operating Ambient: -15 to +55 °C
Relative Humidity: 5 to 95% RH

MOUNTING / DIMENSION

Card 3U high 4E wide
Mounting 19" rack / 84E wide (See rack GA for details)
Card weight < 200g

ADD ON / OPTIONS

DI: Common LCD display for local monitoring
J : Input injection jack socket
P: Test point (Trip set point monitoring)
K: RFI protection to IEC801-3
Non standard Power supply ranges available

AHT622 RTD Trip Amplifier

- Suitable for 2, 3 or 4 wire resistance temperature sensor
- Supply voltage 21 to 30Vdc
- Amelec standard 10 year guarantee
- Suitable for SIL Level 1, 2, & 3 (IEC 61508-2)

TECHNICAL SPECIFICATION

FUNCTION

High Trip: Relay de-energise on rising temperature.
Low Trip: Relay de-energise on falling temperature.

INPUT

Any 2, 3 resistance temperature sensor.
Lead resistance compensation as standard.

OUTPUT

The Trip output is a pair of changeover contacts SPCO per set point, rated at 250VAC, 2A, 100VA (resistive).

CONTROLS

Zero / Span: 15 turn potentiometers, only fitted when used with common display.

Set point: 15 turn potentiometer to set Trip point within set input range.

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INDICATOR

Amber Led: power ON indicator
Red Led: Relay status indicator

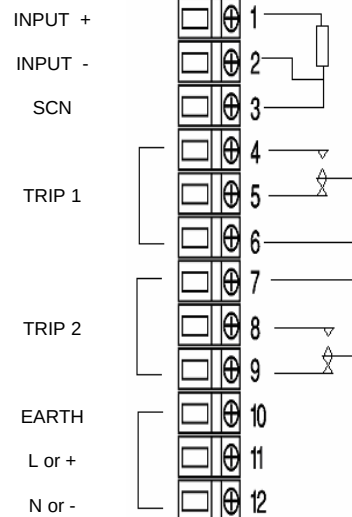
PERFORMANCE

Trip repeatability: $< \pm 0.1\%$
Response time: Typically $< 400\text{ms}$
Trip settability: $< \pm 0.1\%$

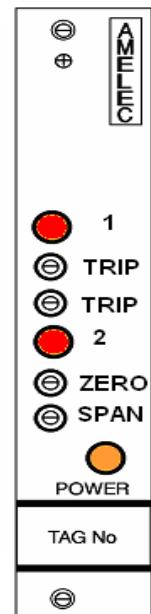
PROTECTION

Isolation 1000V RMS*. Input/Contacts/Supply/Earth
*500VDC if RFI option (K) is specified.
Internal Fuse.
Fail safe on loss of power
Input over range typically at 300%.

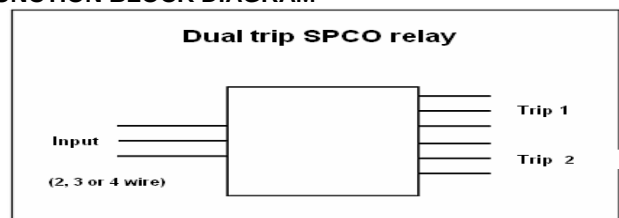
TERMINATION



FRONT VIEW



FUNCTION BLOCK DIAGRAM



ENVIRONMENTAL CONDITION

Storage temperature: - 40 to +70 °C
Operating Ambient: -15 to +55 °C
Relative Humidity: 5 to 95% RH

MOUNTING / DIMENSION

Card 3U high 4E wide
Mounting 19" rack / 84E wide (See rack GA for details)
Card weight $< 200\text{g}$

ADD ON / OPTIONS

DI: Common LCD display for local monitoring
J : Input injection jack socket
P: Test point (Trip set point monitoring)
K: RFI protection to IEC801-3
Non standard Power supply ranges available

AHT632 Process Trip Amplifier

- Suitable for any process input
- Supply voltage 21 to 30Vdc
- Amelec standard 10 year guarantee
- Suitable for SIL Level 1, 2, & 3 (IEC 61508-2)

TECHNICAL SPECIFICATION

FUNCTION

High Trip: Relay de-energise on rising input.
Low Trip: Relay de-energise on falling input.

INPUT

DC current / voltage can be specified in the range of:
Current up to 100mA max (Passive)
Voltage 0.4 to 100V max
Typical input: 4 – 20mA (Passive)

OUTPUT

The Trip output is a pair of changeover contacts SPCO per set point, rated at 250VAC, 2A, 100VA (resistive).

CONTROLS

Zero / Span: 15 turn potentiometers, only fitted when used with common display.

Set point: 15 turn potentiometer to set Trip point within set input range.

INDICATOR

Amber Led: power ON indicator
Red Led: Relay status indicators

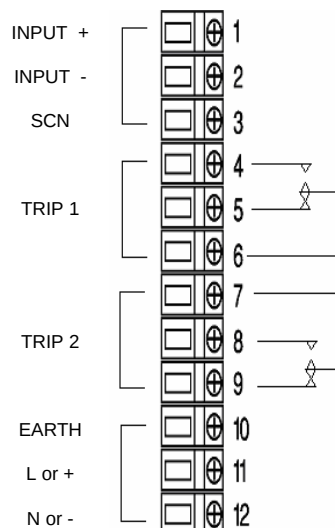
PERFORMANCE

Trip repeatability: $< \pm 0.1\%$
Response time: Typically $< 400\text{ms}$
Trip settability: $< \pm 0.1\%$

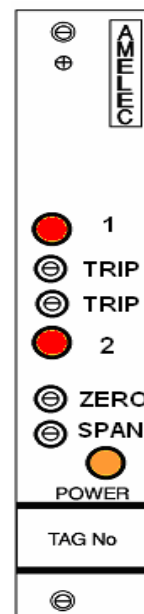
PROTECTION

Isolation 1000V RMS*. Input/Contacts/Supply/Earth
*500VDC if RFI option (K) is specified.
Internal Fuse.
Fail safe on loss of power
Input over range typically at 300%.

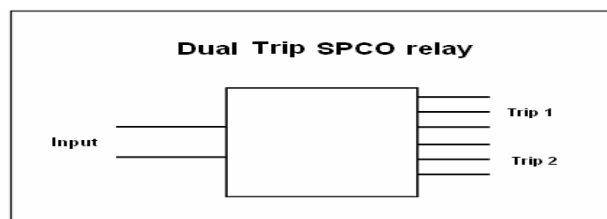
TERMINATION



FRONT VIEW



FUNCTION BLOCK DIAGRAM



ENVIRONMENTAL CONDITION

Storage temperature: - 40 to +70 °C
Operating Ambient: -15 to +55 °C
Relative Humidity: 5 to 95% RH

MOUNTING / DIMENSION

Card 3U high 4E wide
Mounting 19" rack / 84E wide (See rack GA for details)
Card weight $< 200\text{g}$

ADD ON / OPTIONS

DI: Common LCD display for local monitoring
J : Input injection jack socket
P: Test point (Trip set point monitoring)
K: RFI protection to IEC801-3
Non standard Power supply ranges available

AHM 710 Thermocouple Temperature Transmitter

- Suitable for any BS4937 Thermocouple input
- Supply voltage 21 to 30Vdc
- Amelec standard 10 year guarantee
- Suitable for SIL Level 1, 2, & 3 (IEC 61508-2)

TECHNICAL SPECIFICATION

FUNCTION

Temperature input signal Converter / Isolator

INPUT

Can be configured to accept mV signal from thermocouple Type S, R, B, J, K, T, E, N and other special types also available on request.

Automatic Cold Junction compensation fitted as standard.

Typical input: 0 – 500 Deg °C / TC type “K”

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 any from 0.4 to 20V max @ up to 20mA.
Typical output range: 4 - 20mA (Source)

CONTROLS

Zero / Span: 15 turn potentiometers to calibrate Output.

INDICATOR

Amber Led: power ON indicator

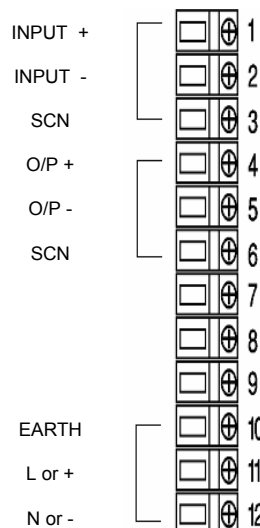
PERFORMANCE

Response time: Typically < 400mS
Linearity : $\pm 0.1\%$

PROTECTION

Isolation 1000V RMS*. Input/Output/Supply
*500VDC if RFI option (K) is specified.
Internal Fuse.
Fail safe on loss of power
Input over range typically at 300%.
Output saturation 125%.

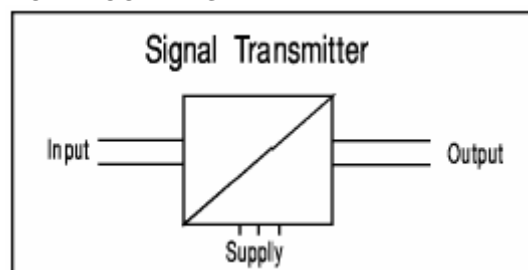
TERMINATION



FRONT VIEW



FUNCTION BLOCK DIAGRAM



ENVIRONMENTAL CONDITION

Storage temperature: - 40 to +70 °C
Operating Ambient: -15 to +55 °C
Relative Humidity: 5 to 95% RH

MOUNTING / DIMENSION

Card 3U high 4E wide
Mounting 19" rack / 84E wide (See rack GA for details)
Card weight < 200g

ADD ON / OPTIONS

DI: Common LCD display for local monitoring
J : Input injection jack socket
P: Test point (Trip set point monitoring)
K: RFI protection to IEC801-3
Non standard Power supply ranges available

AHM 730 Process Signal Transmitter

- Suitable for combinations of Process inputs and outputs
- Supply voltage 21 to 30Vdc
- Amelec standard 10 year guarantee
- Suitable for SIL Level 1, 2, & 3 (IEC 61508-2)

TECHNICAL SPECIFICATION

FUNCTION

Process V / I input signal Converter / Isolator

INPUT

DC current / voltage can be specified in the range of:
Current up to 100mA max (Passive)
Voltage 0.4 to 100V max
Typical input: 4 - 20mA (Passive)

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 any from 0.4 to 20V max @ up to 20mA.
Typical output range: 4 - 20mA (Source)

CONTROLS

Zero / Span: 15 turn potentiometers to calibrate Output.

INDICATOR

Amber Led: power ON indicator

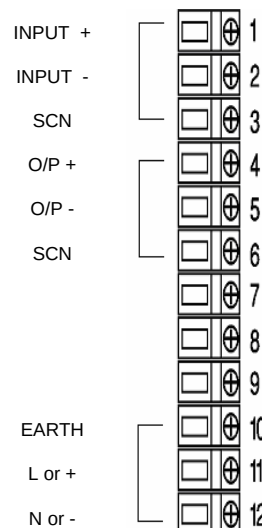
PERFORMANCE

Response time: Typically < 400mS
Linearity : $\pm 0.1\%$

PROTECTION

Isolation 1000V RMS*. Input/Output/Supply
*500VDC if RFI option (K) is specified.
Internal Fuse.
Fail safe on loss of power
Input over range typically at 300%.
Output Saturation 125%

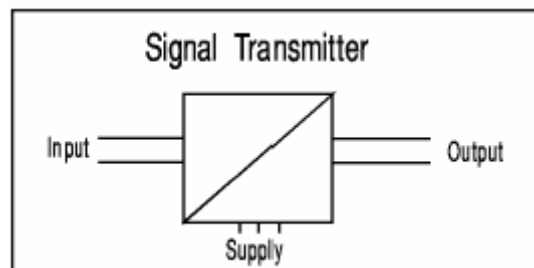
TERMINATION



FRONT VIEW



FUNCTION BLOCK DIAGRAM



ENVIRONMENTAL CONDITION

Storage temperature: - 40 to +70 °C
Operating Ambient: -15 to +55 °C
Relative Humidity: 5 to 95% RH

MOUNTING / DIMENSION

Card 3U high 4E wide
Mounting 19" rack / 84E wide (See rack GA for details)
Card weight < 200g

ADD ON / OPTIONS

DI: Common LCD display for local monitoring
J : Input injection jack socket
P: Test point (Trip set point monitoring)
K: RFI protection to IEC801-3
Non standard Power supply ranges available

AHM990DI Display Unit

- Suitable for any process input: typically 0–2V from read line
- Supply voltage 21 to 30Vdc
- Amelec standard 10 year guarantee
- Suitable for SIL Level 1, 2, & 3 (IEC 61508-2)

TECHNICAL SPECIFICATION

FUNCTION

Operating the push buttons (read or trip) on any card within the rack displays the relevant data on this common display module.

INPUT

DC current / voltage can be specified in the range of:
Current up to 100mA max (Passive)
Voltage 0.4 to 100V max
Typical input: 4 - 20mA (Passive)

For use as common display in our 19" Rack, the Input signal is from the internal read line and is typically 0-2V.

OUTPUT

Three and a half digit liquid crystal display,
Factory settable in the range of: -1999 to +1999,
Typically scaled 0-100.0%

CONTROLS

Zero / Span: 15 turn potentiometer to calibrate Display range.

INDICATOR

Amber Led: power ON indicator

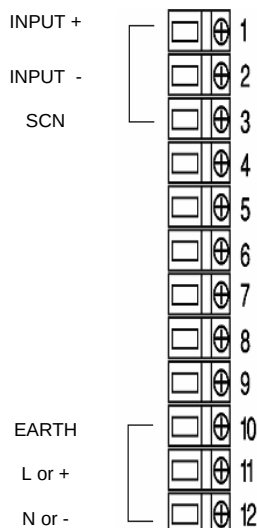
PERFORMANCE

Linearity: < $\pm 0.1\%$
Response time: Typically < 400ms
Accuracy: < $\pm 0.1\%$

PROTECTION

Isolation 1000V RMS*. Input/Supply/Earth
*500VDC if RFI option (K) is specified.
Internal Fuse.
Input O/C fail downscale or upscale on request.
Input over range typically at 300%.

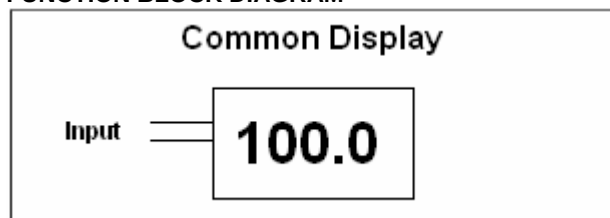
TERMINATION



FRONT VIEW



FUNCTION BLOCK DIAGRAM



ENVIRONMENTAL CONDITION

Storage temperature: - 40 to +70 °C
Operating Ambient: -15 to +55 °C
Relative Humidity: 5 to 95% RH

MOUNTING / DIMENSION

To the extreme right of the rack
Card 3U high 12HP wide
Mounting 19" rack / 84E wide (See rack GA for details)
Card weight < 200g

ADD ON / OPTIONS

J : Input injection jack socket
P: Test point
K: RFI protection to IEC801-3
Non standard Power supply ranges available