

TECHNICAL SPECIFICATIONS

SPECIFICATIONS

POWER : 24 VDC \pm 10%
 230 VAC \pm 10% 50/60 Hz
 115 VAC \pm 10% 50/60 Hz

CONSUMPTION: <3.8 VA

OUTPUT SIGNALS : 4/20 mA (STANDARD)
 0/10 VDC AND OTHERS (OPTIONAL)

ACCURACY : <0.2% AND <0.3% UNITS

LINEARITY : <0.1% AND <0.2% UNITS

THERMAL DRIFT : <150PPM/°C AND 250PPM/°C TYPICAL
 DEPENDS ON UNIT TYPE

RESPONSE TIME : 70 mSECONDS (PROCESS AND DC) AND
 250 mSECONDS (TEMPERATURES AND AC)

ISOLATION : 3500 V_{EFF} – 60 SECONDS

OPERATING TEMPERATURE : FROM 0 TO 60 °C

STORAGE TEMPERATURE : FROM -20 TO +70 °C

MAXIMUM VOLTAGE OUTPUT: 11VDC APROX.
 MINIMUM VOLTAGE OUTPUT : -1VDC APROX.
 MINIMUM LOAD RESISTANCE: \geq 1KOHM

MAXIMUM CURRENT OUTPUT: 22mA APROX.
 MINIMUM CURRENT OUTPUT : -1.5mA APROX.
 MAXIMUM LOAD RESISTANCE: \leq 400 OHMS

GENERAL CHARACTERISTICS

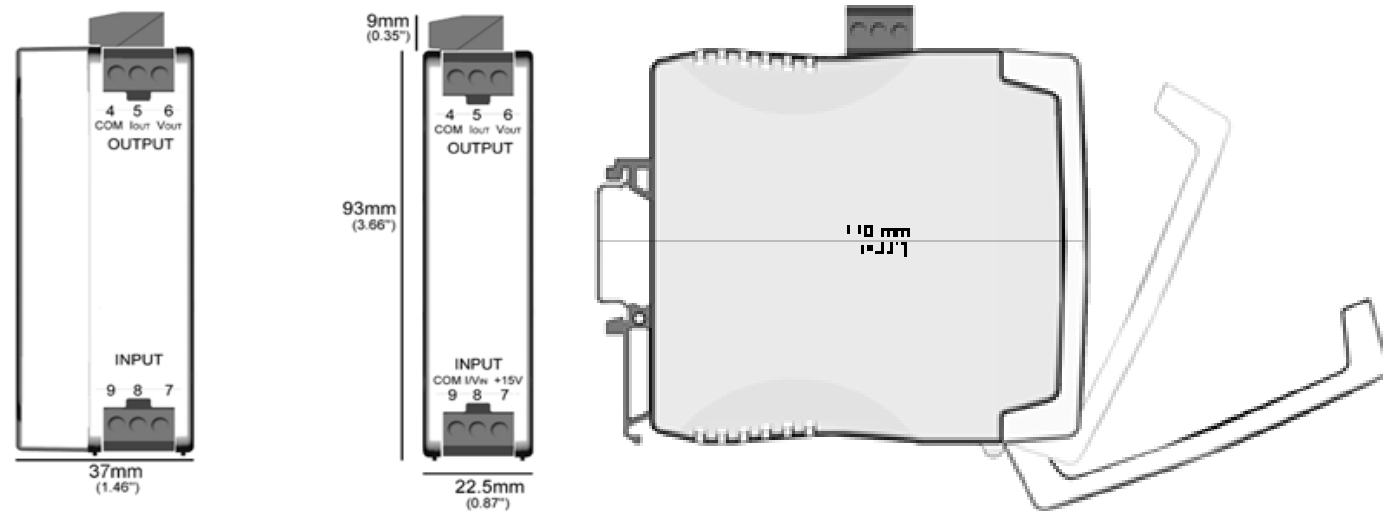
ELECTRICAL CONNECTIONS : PLUG-IN SCREW TERMINALS
 PROTECTION IP-30

VOLTAGE OUTPUT FOR TRANSDUCERS EXCITATION :
 +15VDC \pm 10% (22mA MAX.)

MECHANICAL DIMENSIONS

WEIGHT DC : 120 GR. - 22.5x93x110MM

WEIGHT AC : 200 GR. - 37x93x110MM



FEMA ELECTRONICA provides a wide range of products orientated to industrial automation

With a wide knowledge on the industrial area, FEMA ELECTRONICA manufactures and commercializes mainly digital meters with a wide range of sizes and formats, and signal converters for signal acquisition and re-transmission.



Our experience on export and quality of our products is demonstrated by our presence in the most qualified international markets.

Our R+D department allows us to maintain high levels of quality and technology in our products.

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FEMA ELECTRÓNICA, S.A.
 Pol. Ind. Santiga
 Altimira 14 (T14 - N2)
 E08210 Barberà - BARCELONA

Tel. +34.93.729.6004 - www.fema.es
 Fax +34.93.729.6003 - info@fema.es

ISOLATED
 SIGNAL
 CONVERTER

Series ISC

SIGNAL CONVERTERS WITH GALVANIC ISOLATION



FEMA ELECTRÓNICA

info@fema.es
 www.fema.es

Tel. +34.93.729.6004
 Fax +34.93.729.6003



FEMA ELECTRÓNICA, S.A.

SERIES ISC SIGNAL CONVERTERS WITH GALVANIC ISOLATION



- ✓ PROCESS SIGNALS
- ✓ VOLTAGES AC AND DC
- ✓ CURRENTS AC AND DC
- ✓ FREQUENCY
- ✓ RESISTANCE
- ✓ POTENTIOMETER
- ✓ THERMOCOUPLES
- ✓ PT-100 / RTD
- ✓ LOAD CELLS

- ✓ GALVANIC ISOLATION 3 WAYS
3500 V_{EFF} (60 SECONDS)

- ✓ MOUNTING IN STANDARD
35 MM DIN RAIL

- ✓ 2 YEARS WARRANTY

THE ISC SERIES

THE ISOLATED SIGNAL CONVERTERS FOR DIN RAIL MOUNTING OF THE ISC SERIES ARE DESIGNED TO ACCEPT A WIDE RANGE OF DIFFERENT INPUT SIGNALS, SUCH AS VOLTAGES AND CURRENTS IN AC AND DC, TEMPERATURES (PT100/RTD AND THERMOCOUPLES), PROCESS SIGNAL TRANSDUCERS, ETC, OFFERING A PROCESS SIGNAL OUTPUT IN 4/20mA OR 0/10 VDC. THE ISC SERIES IS INTEGRATED TOGETHER WITH HOUSING OF ERGONOMIC DESIGN, EASILY MOUNTED ON A STANDARD DIN RAIL. CONNECTIONS ARE EASILY AND SAFELY PERFORMED WITH PLUG-IN SCREW TERMINALS, BEING THE INPUT AND OUTPUT CONNECTIONS WIDELY SEPARATED ON OPPOSITE SIDES OF THE INSTRUMENT.

THE FUNCIONALITY

THE ISC SERIES IS DESIGNED TO MAXIMIZE THE FUNCIONALITY OF EACH UNIT. THE FRONT DOOR OF THE HOUSING GIVES EASY

ACCES TO SPAN AND OFFSET POTENTIOMETERS, FOR AN EASY, FAST AND ACCURATE RE-ADJUSTMENT FO THE UNIT TO ANY OF THE AVAILABLE INPUT AND OUTPUT SIGNALS RANGES.

THE DESIGN : ACCURACY AND SPEED

THE ISLATED SIGNAL CONVERTERS FROM THE ISC SERIES OFFER AN EXCELLENT RELATION BETWEEN CONVERSION SPEED AND MEASURE ACCURACY. OFFERING AN ACCURACY UP TO 0.2% AND A RESPONSE TIME OF DOWN TO 70ms (DEPENDS ON MODEL), ALLOWS TO PROCESS INFORMATION COMING FROM SENSORS OR TRANSDUCERS IN A WAY THAT CAN BE FAST AND ACCURATELY RETRANSMITTED TO DATA ACQUISITION SYSTEMS OR PLC'S. THE ISC SERIES OF ISOLATED SIGNAL CONVERTERS ARE IDEAL FOR INTEGRATION ON 12 BIT DATA ACQUISITION SYSTEMS.

THE ISOLATION

THE INPUT, OUTPUT AND POWER CIRCUITS ARE ISOLATED BETWEEN THEM WITH A POWERFUL 3.500 V GALVANIC ISOLATION, OFFERING A HIGH DEGREE OF SECURITY TO THE MEASURING SYSTEMS, AND PREVENTING THE PROPAGATION OF ELECTRICAL PHENOMENA SUSCEPTIBLE OF DAMAGING THE SYSTEMS, SUCH AS TRANSIENT PEAKS, AND ENERGY DISCHARGES OF OTHER CIRCUITS ATTACHED TO THE SYSTEM. THE DECOUPLING BETWEEN CIRCUITS AVOIDS PERNICIOUS EFFECTS AGAINST THE OUTPUT SIGNAL, SUCH AS GROUND LOOPS OR DRIFTS, PREVENTING FALSE INFORMATION TO BE ADDED TO THE ACQUIRED DATA, SUCH NOISES ARE EXTREMELY DIFFICULT TO ISOLATED ONCE ADDED TO THE SIGNAL.

OUTPUTS- AVAILABLE WITH CURRENT OUTPUT 4/20 mA AND VOLTAGE 0/10 VDC (ONLY ONE OUTPUT ACTIVE AT A TIME) AMONG OTHERS.

ISC signal for PT100 / RTD



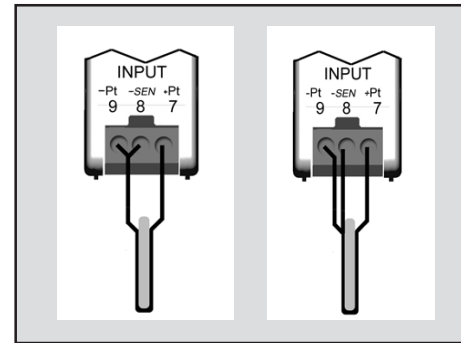
- ✓ Signal from a Pt100/RTD temperature probe
- ✓ Configurable for 2 and 3 wire probes
- ✓ Accuracy 0.2%
- ✓ Response Time <250 mSeconds
- ✓ Detection of broken probe by high output level
- ✓ Galvanically isolated input/output/power
- ✓ Cable resistance compensation up to 10 Ohms

Units ISC-PT100 accept signals coming from 2 and 3 wire PT100-RTD probes and provide an analogue signal, isolated and conditioned at 0/10 Vdc or 4/20 mA (among other possibilities).

All units with 24 Vdc power (Standard), 230 Vac or 115 Vac.

All units to be mounted on 35mm standard DIN rail. All units galvanically isolated 3500 Veff.

Linearity 0.1%. Thermal driftless than 250 ppm/°C.



References
ISC-[model]- [power]-[input]-[output]

Pt100 and RTD signals with 2 and 3 wires
ISC-PT100- 24VDC-[input]-[output]
ISC-PT100-230VAC-[input]-[output]
ISC-PT100-115VAC-[input]-[output]

input signal ranges
0/600°C, 0/450°C, 0/300°C, 0/200°C,
0/100°C, -50/+150°C, -25/+75°C

Other Ranges
The wide range of the ZERO and SPAN potentiometers allows to realize adjustments out of the indicated ranges. For example, the following adjustments can be adjusted :
0/250°C=4/20mA or
0/75°C=0/10Vdc or
...

ISC signal for THERMOCOUPLES

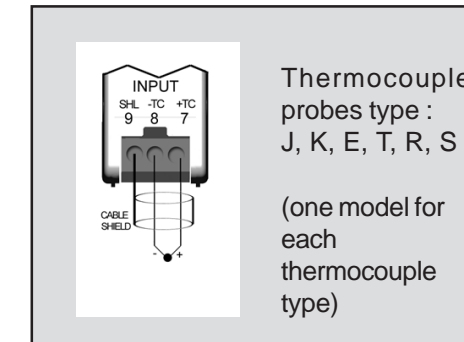
- ✓ Units for Thermocouples J, K, E, T, R and S
- ✓ Accuracy 0.3%
- ✓ Response Time for AC Signals, 250 mSeconds
- ✓ Probe break detection by high output level
- ✓ Linearized output signal proportional to temperature
- ✓ Galvanically isolated input/output/power

ISC units for thermocouples accept thermocouples probes from types J, K, E, T, R and S, conditioning and generating an analog output isolated at 0/10 Vdc or 4/20 mA (among other possibilities).

All units available at 24 Vdc power (Standard), 230 Vac or 115 Vac.

All units to be mounted on 35mm standard DIN rail. All units galvanically isolated 3500 Veff.

Thermocouple Cold Junction compensated automatically. Linearity 0,2%. Thermal drift due to compensation 0.1°C/°C. Response time less than 250 mSeconds.



Thermocouple probes type : J, K, E, T, R, S

(one model for each thermocouple type)



References
ISC-[model]- [power]-[input]-[output]

for Thermocouple J
ISC-TJ- 24VDC-[input]-[output]
ISC-TJ-230VAC-[input]-[output]
ISC-TJ-115VAC-[input]-[output]

temperature ranges
0/700°C, 0/400°C, 0/250°C, 0/150°C
minimum 0/85°C

for Thermocouple K
ISC-TK- 24VDC-[input]-[output]
ISC-TK-230VAC-[input]-[output]
ISC-TK-115VAC-[input]-[output]

temperature ranges
0/1200°C, 0/700°C, 0/400°C, 0/250°C
0/150°C, minimum 0/85°C

Other Ranges
The wide range of the ZERO and SPAN potentiometers allows to realize adjustments out of the indicated ranges. For example, for a thermocouple J we can select 0/400°C range and then adjust a relation 0/350°C = 4/20 mA or 0/350°C = 0/10 Vdc

for Thermocouple E
ISC-TE- 24VDC-[input]-[output]
ISC-TE-230VAC-[input]-[output]
ISC-TE-115VAC-[input]-[output]

temperature ranges
0/800°C, 0/500°C, 0/300°C, 0/175°C
0/100°C, minimum 0/85°C

for Thermocouple S,R,E (select TS or TR or TE)
ISC-TS- 24VDC-[input]-[output]
ISC-TS-230VAC-[input]-[output]
ISC-TS-115VAC-[input]-[output]

temperature ranges
Check technical manual

ISC signal for FREQUENCY



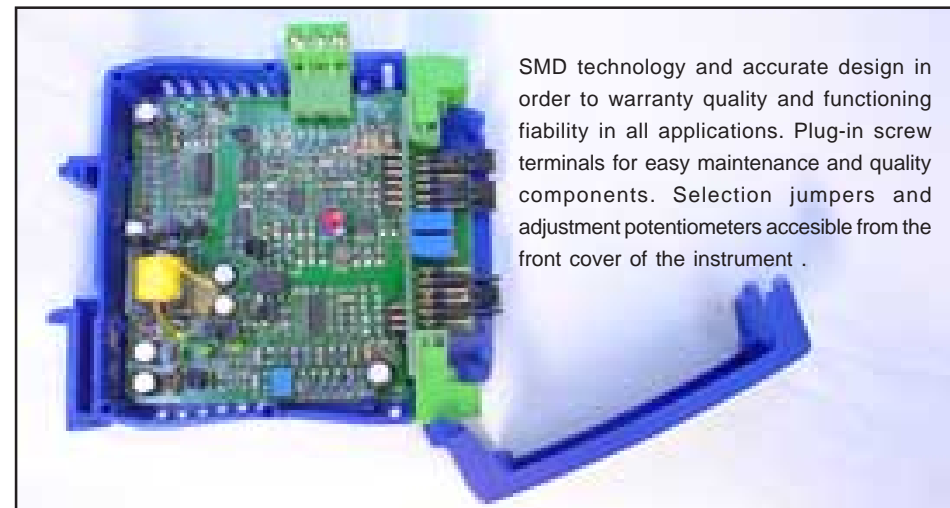
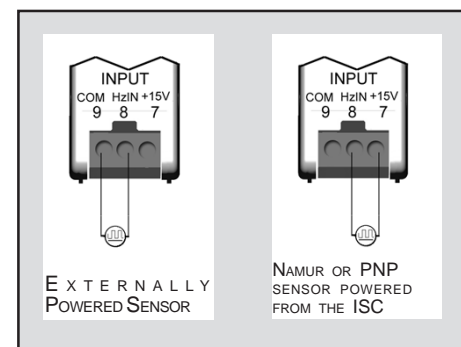
- ✓ NPN, PNP, NAMUR, PICK-UP, Voltage AC (*up to 200 Vac*)
- ✓ Frequency signal from 10Hz up to 50 KHz
- ✓ accuracy 0.2%
- ✓ Excitation Voltage 15Vdc (20mA) or 9V2 for NAMUR
- ✓ Galvanically Isolated input/output/power

The ISC-HZ signal converters accept signals from a wide range of frequency transducers, including NPN, PNP, NAMUR and AC Voltages up to 200 Vac, and cover a wide range of frequencies. The ISC-HZ generates an isolated analog output signal conditioned at 0/10 Vdc or 4/20 mA (among other possibilities).

All units available with 24 Vdc power (Standard), 230 Vac or 115 Vac.

All units to be mounted on 35mm standard DIN rail. All units galvanically isolated 3500 Veff.

Linearity 0.1%. Thermal drift less than 250 ppm/°C.



SMD technology and accurate design in order to warranty quality and functioning fiability in all applications. Plug-in screw terminals for easy maintenance and quality components. Selection jumpers and adjustment potentiometers accessible from the front cover of the instrument .

References

ISC-[model]- [power]-[input]-[output]

Frequency Signals

ISC-HZ- 24VDC-[input]-[output]
ISC-HZ-230VAC-[input]-[output]
ISC-HZ-115VAC-[input]-[output]

Input Signal Ranges

50KHz, 30KHz, 20KHz, 10KHz, 5KHz, 3KHz
2KHz, 1KHz, 500Hz, 300Hz, 200Hz, 100Hz
60Hz, 40Hz, 20Hz

Other Ranges

The wide range of the ZERO and SPAN potentiometers allows to realize adjustments out of the indicated ranges. For example, the following relations can be adjusted :

0/10Hz=4/20mA or
0/39.500 KHz=0/10Vdc or
...

AC and DC in Voltage and Current



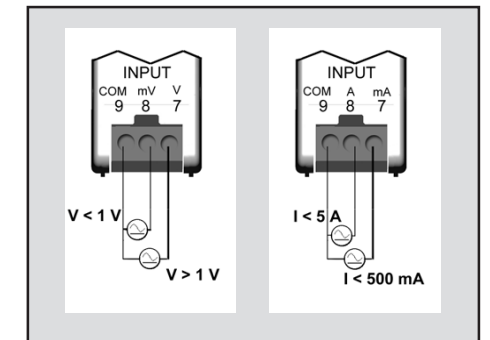
- ✓ AC and DC in voltage from 60mV up to 650V signals
- ✓ AC and DC in currents from 0/100 mA up to 0/5A signals
- ✓ Accuracy 0.3%
- ✓ Response Time for DC signals , 70 mSeconds
- ✓ Response Time for AC signals , 250 mSeconds
- ✓ High Impedance inputs for Voltage signals
- ✓ Low Impedance inputs for Current signals
- ✓ Ranges for Current Transformer X/5 and X/1 signals
- ✓ Ranges for shunts of 60mV, 100 mV and 150 mV
- ✓ Galvanically Isolated input/output/power

ISC units for AC and DC signals accept currents and voltage signals and generate an analog output, isolated and conditioned at 0/10 Vdc or 4/20 mA (among other possibilities).

Unit ISC-VDC accepts DC voltages, and unit ISC-VAC accepts AC voltages. Unit ISC-IAC accepts AC currents. Unit ISC-DC is specially designed for DC currents coming from electrical systems.

For DC current signals coming from processes, use model ISC-P.

All units available with power 24 Vdc (Standard), 230 Vac or 115 Vac.



References

ISC-[model]- [power]-[input]-[output]

DC Voltage signals

ISC-VDC- 24VDC-[input]-[output]
ISC-VDC-230VAC-[input]-[output]
ISC-VDC-115VAC-[input]-[output]

signal input ranges

650V, 300V, 65V, 15V, 7.5V, 1V
650 mV, 300 mV, 150 mV and 75 mV

AC Voltage signals

ISC-VAC- 24VDC-[input]-[output]
ISC-VAC-230VAC-[input]-[output]
ISC-VAC-115VAC-[input]-[output]

signal input ranges

650 V, 300V, 65V, 15V, 7.5V, 1V
650 mV, 300 mV, 150 mV and 75 mV

Other Ranges

The wide range of the ZERO and SPAN potentiometers allows to realize adjustments out of the indicated ranges. For example, the following relations can be adjusted :
0/10Hz=4/20mA or 0/39.500 KHz=0/10Vdc or ...

DC Current signals

ISC-IDC- 24VDC-[input]-[output]
ISC-IDC-230VAC-[input]-[output]
ISC-IDC-115VAC-[input]-[output]

signal input ranges

5A, 3A, 2A, 1A
300mA, 200mA y 100mA

AC Current signals

ISC-IAC- 24VDC-[input]-[output]
ISC-IAC-230VAC-[input]-[output]
ISC-IAC-115VAC-[input]-[output]

signal input ranges

5A, 3A, 2A, 1A
300mA, 200mA and 100mA

PROCESS Signals



- ✓ Process signals up to 10 Vdc and up to 50 mA
- ✓ Signals of 0/10Vdc and 4/20mA
- ✓ Accuracy 0.2%
- ✓ Response Time <70mSeconds
- ✓ Excitation Voltage for Transducers +15Vdc (20mA)
- ✓ Galvanically Isolated input/output/power

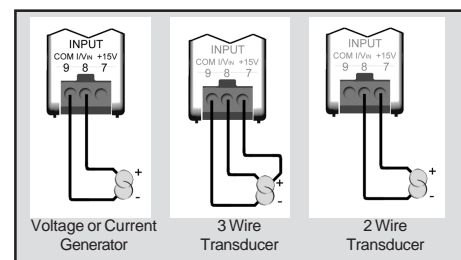
The ISC-P unit for process signals accepts signals in mA and Vdc, and generates an analog signal isolated and conditioned from 0/10Vdc or 4/20 mA (among other possibilities).

The wide range of the zero and span potentiometers allows a great flexibility on selecting the appropriate input and output signals.

All units available with 24 Vdc power (Standard), 230 Vac or 115 Vac.

Units to be mounted on 35mm standard DIN rail. Units galvanically isolated 3500 Veff.

Linearity 0.1%. Thermal drift typical less than ppm/°C.



POTENTIOMETER and RESISTANCES



- ✓ Potentiometers between 100 Ohms min. and 1 MOhm maximum
- ✓ Excitation Voltage 1 V
- ✓ Resistances between 1K and 10 K
- ✓ Excitation Current 0.2mA
- ✓ Galvanically Isolated input/output/power
- ✓ Accuracy 0.2%
- ✓ Response Time 70 mSeconds



ISC-RES Photo at 230 Vac Power
ISC-POT Photo at 24 Vdc Power

The unit ISC-POT accepts 3 wire potentiometers (such as positioning systems).

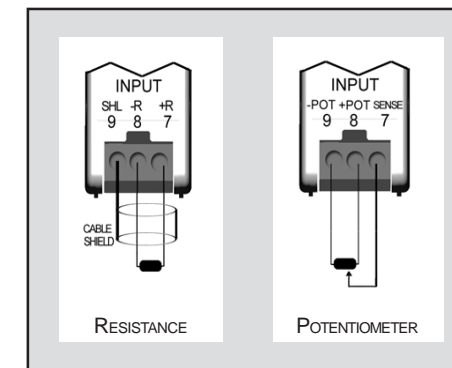
The unit ISC-RES accepts 2 wire resistance signals.

Both units provide an isolated analog signal 0/10 Vdc or 4/20 mA.

All units powered 24 Vdc (Standard), 230 Vac or 115 Vac.

Units to be mounted on 35mm standard DIN rail. All units galvanically isolated 3500 Veff.

Linearity 0.1%. Thermal drift less than 250 ppm/°C.



References
ISC-[model]-[power]-[input]-[output]

process signals
ISC-P- 24VDC-[input]-[output]
ISC-P-230VAC-[input]-[output]
ISC-P-115VAC-[input]-[output]

input signal ranges
0/10Vdc, 0/1 Vdc
4/20mA, 0/20mA, 0/50mA, 0/5mA

Other Signal Ranges

The wide range of the ZERO and SPAN potentiometers allows to realize adjustments out of the indicated ranges. For example, the following relations can be adjusted :

0/6.8Vdc=4/20mA or
0/7.5mA=0/10Vdc or
...

References
ISC-[model]-[power]-[input]-[output]

Potentiometers
ISC-POT- 24VDC-[input]-[output]
ISC-POT-230VAC-[input]-[output]
ISC-POT-115VAC-[input]-[output]

input signal ranges 0/100%, 0/50% and 0/25%
other ranges scalable with span and offset frontal potentiometers

Resistances
ISC-RES- 24VDC-[input]-[output]
ISC-RES-230VAC-[input]-[output]
ISC-RES-115VAC-[input]-[output]

input signal ranges 0/10K, 0/5K, 0/3K and 0/1.5K
other ranges scalable with span and offset frontal potentiometers

