

# SIGNAL ISOLATOR SIGNAL CONVERTER SIGNAL TRANSMITTER



Proto   
Control

## SIGNAL CONDITIONING INSTRUMENTS

PROTOCONTROL brand signal conditioning instruments are specially developed for signal conditioning of wide varieties of transducers such as potentiometers, RTD's, thermocouples, strain gauge bridges, proximity switches, magnetic or optical pick-ups, AC/DC voltages and currents with complete optical and galvanic isolation between input and output.

The various signal conditioners can be broadly classified into three types :

### 1. SIGNAL TRANSMITTERS :

The purpose of current signal transmission is to achieve immunity to level drops from long runs and noise from motors , relays, actuators, transformers, switches, etc.

Normally, these are built-in transducers.

### 2. SIGNAL ISOLATORS :

The purpose of galvanic isolation is to overcome ground-loop problem and to isolate high voltage plant side from the low voltage computer side/ Instrumentation panel side. This current signal is used in control room for the indication, control, data logging, data processing ,etc. In case of isolators, normally output parameter is the same as the input parameter and more number of outputs with a single input is available.

### 3. SIGNAL CONVERTERS :

Converts various field signal from RTD, thermocouple or other signals like current, voltage , frequency, resistance or any other parameter into electrical parameter.

In this case, output parameter is normally not same as input Parameter. Both isolated and non-isolated versions available.

### COMMON SPECIFICATIONS :

Galvanic Isolation	: 500 V DC/ 1KV RMS (In case of isolators )
Working Temp.	: 10 To 50 °C
Storage temp.	: 70 °C
Linearity	: Better than 0.3% over full scale.
Instrument Accuracy	: Better than 0.3% over full scale.
Zero and Span adjustment	: Provided by means of trim-pot (external/internal).
Termination	: Suitable for 2.5 mm square conductors.
Supply voltage	: 110V / 230 V DC/AC,



## TRANSMITTERS

### A) NON-ISOLATED, TWO-WIRE, HEAD MOUNTED TRANSMITTERS :

#### SERIES ST-N2 :

The two-wire transmitter allows signal and power to be supplied through single wire pair by modulating the power supply current with input signal source. These transmitters find extensive use in industrial process control applications.

#### TEMPERATURE TRANSMITTER :

- It accepts temperature sensor input.
- Two-wire 4-20 mA output.
- It operates on 10-60 V DC typically 24 V DC.
- Output is not temperature value linearised but is proportional to sensors electrical output.
- Calibrated to the desired range.
- INDEPENDENT zero and span adjustment is provided for periodic recalibration.
- Spare card without transducer is available.

#### TEMPERATURE TRANSMITTER:

#### SERIES ST-N2 :

TYPE INPUT OUTPUT

ST-N2 P/I RTD : PT 100 4-20 mA

ST-N2 TC/I THERMOCOUPLE 4-20 mA

Specify the type of thermocouple sensor :  
J Iron/Constantan thermocouple.  
S Platinum 10% Rhod./Plat. thermocouple.  
T Copper Constantan thermocouple

### B) NON-ISOLATED, FOUR-WIRE, HEAD MOUNTED TRANSMITTERS :

#### SERIES ST-N4 :

TYPE INPUT OUTPUT

PST-N4 P/I RTD : PT 100 4-20 mA

ST-N4 TC/I THERMOCOUPLE 4-20 mA

#### LOOP POWERED ISOLATORS :

Isolated versions of all the transmitter models are also available on request.

## ISOLATORS

- It is a unit that accepts most common high level process signals ( current and voltage),isolates them electrically and galvanically without changing the output parameters.
- Input and output are thus same and isolation is provided by the circuitry.
- Isolates field signals from control room instruments. Eliminates ground loop problems.
- Makes weak field signals immune to level drop due to long run and noise.
- Optional facility provided to measure loop current. This special facility is useful to calibrate the instrument on line without disturbing the loop and thus the process.
- Multiple outputs models available for independent processing.
- INDEPENDENT zero and span adjustment is provided for periodic recalibration
- OPTIONAL FEATURE : Transmitter power supply 24V DC 50 mA is available on request.
- ISOLATION VOLTAGE : 500 V DC for Din Rail, 1KV for Din Rail/ Back Panel/ Cast Al Field Mounting.
- solators are available in several versions depending upon the nature of input and No. of outputs :  
SI-1 : It provides single output from a single input.  
SI-2 : It provides two isolated outputs from a single input.  
SI-3 : It provides three isolated outputs from a single input.  
SI-4 : It provides four isolated outputs from a single input.

\* PLEASE REFER ORDERING PROFORMA ON NEXT PAGE

- Special versions for use in flame proof area are available.



## CONVERTERS

### NON-ISOLATED, FOUR-WIRE SIGNAL CONVERTERS : SERIES : SC-N4 :

- Converters are basically used for converting one type of parameter into another.
- Converts various field signal like current, voltage , frequency, resistance compatible to central signal processing equipment.
- INDEPENDENT zero and span adjustment is provided for periodic recalibration.
- This device is equipped with state of the art digital circuit.
- Available in both DC and AC power versions.
- Mounting : D(DIN RAIL) / BP(BACK PANEL)/AI (Field mounting in cast Al )
- Supply voltage : 10-60V DC/230 V DC/AC/110 V DC as per requirement.

#### A) FREQUENCY TO CURRENT CONVERTER : SC-N4 F/I :

- It is used for the conversion of an input frequency into an impressed direct current .
- Input frequency range and output current range as per customer specifications.
- Maximum load resistance 600 Ohm and can be extended upto 1K on special request.

#### B) FREQUENCY TO VOLTAGE CONVERTER :SC-N4 F/V :

- It is used for the conversion of an input frequency into an impressed direct voltage.
- Input frequency range and output voltage range as per customer specifications.
- Buffered Output.
- Maximum current available at the output is 15-20 mA.

#### C) VOLTAGE TO CURRENT CONVERTER : SC - N 4 V/I:

- This unit provides an current output from a voltage input.
- Input voltage range as per customer specifications.
- Maximum load resistance 600 Ohm and can be extended up to 1K on special request.

#### D) CURRENT TO VOLTAGE CONVERTER : SC - N 4 I/V :

- This unit provides an voltage output from a current input. Input current range and output voltage range as per customer specifications.
- Buffered Output.
- Maximum current available at the output is 15-20 mA.

## ISOLATED CONVERTORS ISOLATED TRANSMITTER :

It is an isolating converter that accepts most common high level process signals (current & voltage), isolates them and converts them into any other process signals.

The output is normally not the same as input.

Available in DC & AC power versions.

INDEPENDENT zero and span adjustment facility is provided on the front panel.

### A) ISOLATED FREQUENCY TO CURRENT CONVERTER : SC- I F/ I

It is used for the conversion of an input frequency into an impressed direct current 0-20 mA or 4-20 mA with optical as well as galvanic isolation .

Maximum load resistance 600 Ohm and can be extended upto 1K on special request.

### B) ISOLATED FREQUENCY TO VOLTAGE CONVERTER : SC-I F/V :

It is used for the conversion of an input frequency into an impressed direct voltage with optical as well as galvanic isolation .

Buffered Output.

Maximum current available at the output is 15-20 mA.

### C) ISOLATED VOLTAGE TO CURRENT CONVERTER : SC-I V/ I :

This unit provides an isolated current output from a voltage input.

Maximum load resistance 600 Ohm and can be extended upto 1K on special request.

### D) ISOLATED CURRENT TO VOLTAGE CONVERTER : SC - I I / V

This unit provides an isolated voltage output from a current input.

Buffered Output.

Maximum current available at the output is 15-20 mA.

### POWER CONVERTERS : SP

These are used in power industries.

These provide with an isolated 4 - 20mA output.

Auxiliary voltage supply : 230 V DC/AC 110 V DC/AC

TYPE	INPUT
SCP-VA	POWER(VA)
SCP-V	VOLTAGE
SCP- A	CURRENT
SCP- PF	POWER FACTOR
SCP- KW	Kilo Watts
SCP- MW	Mega Watts
SCP- KWH	Kilo Watt Hour (Energy )
SCP-MWH	Mega Watt Hour

### OTHER PRODUCTS

1. Process Indicators
2. Field Indicators
3. Flow Totalisers
4. Bar Graph Indicators
5. Signal Isolaters
6. Digital Instruments with built-in Isolated output.

### ORDERING PROFORMA:

#### 1. SIGNAL CONVERTERS/TRANSMITTER Example : SC-II V D

SERIES	VERSION	INPUT	OUTPUT	MOUNTING
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Signal Transmitter : ST
Signal Converter : SC
Isolated : I
Non Isolated 2 wire :N2
Non Isolated 4 wire :N4

CURRENT: I
VOLTAGE: V
FREQUENCY:F
RTD PT 100:P
THERMOCOUPLE:TC

CURRENT:I
VOLTAGE:V
FREQUENCY:F

DIN RAIL(35MM):75(H) X 65(w) X 125(D) mmD
BACK PANEL: 135(H)X 65(W) X 155(D) MMBP
FIELD (AL casting: As per requirementAI

#### SPECIFICATIONS :

Available Control Supply Ranges: 230V/110 V DC/AC as per requirement  
 Available Input Current Ranges: 4-20mA/0-20mA  
 Available Input Voltage Ranges: 0-1 V DC/0-10 V DC  
 Available Output Current Ranges: 4-20mA/0-20mA  
 Available Output Voltage Ranges: 1-5 V DC/0-10 V DC  
 For ranges other then above please specify.

#### SIGNAL ISOLATOR :Example : SI- I D

SI-	No of OUTPUTS	MOUNTING
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ONE: 1
TWO: 2
THREE: 3
FOUR: 4

DIN RAIL (35mm): 75(H) x 65 (W) x 125 (D) mmD
BACK PANEL: 135(h) X 65 (w) X 155 (D) mmBP
FIELD (AI casting): As per requirementAI

#### SPECIFICATIONS :

Available Control Supply Ranges: 230V/110 V DC/AC as per requirement  
 Available Input Current Ranges: 4-20mA  
 Available Input Voltage Ranges: 0-1 V DC/0-10 V DC  
 Available Output Current Ranges: 4-20mA/0-20mA  
 Available Output Voltage Ranges: 1-5 V DC/0-10 V DC  
 For ranges other then above please specify.

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