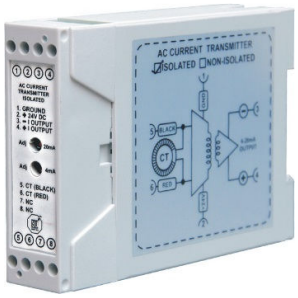
YUTECH Instruments

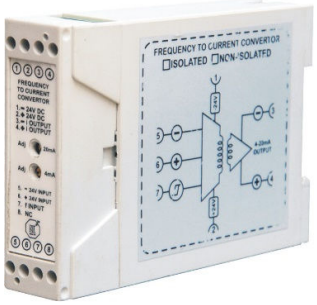
Measure Transmit Control Repeat

ISOLATION PRODUCTS DATASHEETS & APPLICATION NOTES

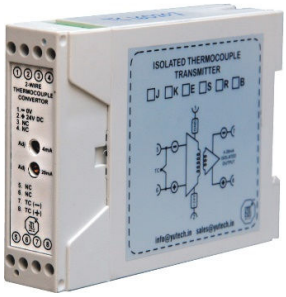
DOC NO: A-ISO-DS-2018-1005



Isolating CT Transmitter



Isolating Frequency Transmitter



Isolating Thermo-Couple Transmitter

Isolating 3W RTD Transmitter

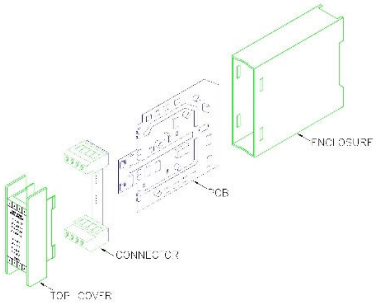
Isolator: Single Input Dual Output Current Splitter

Isolator: Single Input Single Output (Current Channel)

Isolator: Dual Input Dual Output (Independent Current Channels)

Isolating V to I Converter

Various Isolators



Isolator Assembly

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Index

A Study on Isolation:

What is Electrical Isolation and Isolation Barrier?
Isolate means to keep away or separate. Electrical Isolation Barrier is a Device which separates two electrical circuits from each other so that there is no flow of electric current between these two circuits. Isolation Barrier is Dielectric component between the two isolated circuits. The Barrier Voltage is the Voltage required to breakdown or flash over this barrier.

How can you transfer signals over Isolation Barrier?
Mutual Inductance: The most common of all Isolation Devices which Transfers Electric Energy across an Isolation Barrier is an Electric Transformer which uses the Principle of Mutual Induction. In a Transformer, flow of Current in the Primary Winding creates a magnetic field and induces current in the Secondary Winding which is in close vicinity of the Primary Winding.

Capacitance: Electric Energy is transferred across a Capacitor. YUTECH devices use optical isolation for DC Signal Transfers.

Opto-Coupler: Another way is by Opto-Coupler where Electric Current is converted to light by an LED and a Photo Transistor reconverts this light to electric current.

Why is Isolation important?
Any Electric Signal coming from the Field to the Automation System comes coupled with many impurities like Electrical Noise, Looping Faults, Voltage Surges etc. This causes the Signal to be unstable and also sometimes unsafe for the Expensive Controller Circuitry. Isolator Isolates the Controller from these field related Electrical Problems.

What problems can be avoided by Isolation?
Incorrect Readings due to separate reference: An Instrumentation or Automation System consists of many devices like transmitters, controllers, drives, relays, contactors etc. All these devices come from different manufacturers, this may lead to different references (Ground) connected to each other and may result in incorrect reading due to ground and current looping problems. Isolation separates the reference points of the two circuits such that there is no Electric Contact between the two and thus avoids conflict.

Ground Looping: In circuits such as pH or conductivity, one of the input references is the body earth. This is a perfect recipe for Ground Looping Fault. The fault occurs whenever the return path of least resistance for the signal is via the earth or ground. An Isolation Barrier will separate the two ground references electrically from each other and avoid errors.

Current Looping: Typically this fault occurs when signal from a 2-Wire transmitter has to be given to two different circuits having the same power supply. The path with minimum resistance for current flow is not the actual intended path, hence the error. Here isolating the input side, output side and the power supply would solve the problem. This is achieved by using a dual output dc current isolator.

Circuit Protection: Besides avoiding reference problems and providing true readings the Isolation Barrier also serves to protect the circuitry from various electrical interferences and transient surges.

Floating Voltage generated by Electromagnetic Interference (EMI) and Switching Surge Protection: Sometimes for no rhyme or reason a perfectly working transmitter or I/O channel just fails all of a sudden, why do such failures occur? The culprit is Floating Voltage. Another culprit is Switching Surge. Both Floating Voltages and Switching Surge can go up to very dangerous levels of a few hundred volts. Floating voltages are generated at various points due to various inductive loads creating Electromagnetic Interferences in circuit. Switching Surge is generated while switching of Inductive Load. Isolation Barrier with proper EMI filtering and Switching Surge protection will filter out these Voltages before they reach delicate circuitry and thus protect it from damage.

Electric Noise: Electric Noise can be categorized as Common Mode Noise or Harmonics generated by Electric Motors and devices like Variable Frequency Drives, DC Drives and also by various Thyristor Drives. Other Noise is the Radio Frequency Interference (RFI) which is generated by the operation of several RF devices like Mobile Phones, Walky-Talky etc. This Noise often results in jittery and dancing readings. Isolation Barrier with proper RFI and Harmonic filtering will help in giving true and stable readings. Using twisted pair shielded cables also helps in reducing Electric Noise.

Wrong Connections: It is often seen that human errors in connection diagrams or actual connections can create havoc in circuitry. Isolation Barrier with proper protection (short circuit protection, over and under voltage protection, polarity reversal protection) helps prevent damage due to such errors.

Isolation Products Overview:

YUTECH Isolation products are made with the view of suiting a wide range of applications of Automations and Instrumentations. You can choose a suitable product from our 42 Models in regular production.

Broad Classification of Isolation Products:

YUTECH Isolation Products are divided in two broad categories which we have termed as “Series”, likewise A-Series and L-Series. This Classification is based on the Product Specifications. The products though on the onset may seem similar but changes in specifications of each Series are made to suit different needs and may lead to price variations.

A Brief Overview of the Isolation Products is as below:

A-Series:
A-Series Isolation Products are designed for all the High Accuracy High Protection Instrumentation and Automation Applications which require Isolation. The products have excellent accuracy and linearity specifications and can be used for very high accuracy Instrumentation and Automation Applications. Output loads up to 650 ohms can be easily connected to these products. The Products also sport various Input, Output and Power Supply Protections.

Further Sub Classification:

The Isolation Products are further sub classified by the Particular Application for which they are designed. They are all available in A-Series.

DC Current Isolators: This Product range features various DC Current Input and Output Combinations.

DC Voltage Isolators: This Product range features various DC Voltage Input and Output Combinations.

Isolating DC Signal Converters: This Product range features DC Signal Converters which convert one DC signal type to another type, say Voltage to Current and vice versa.

Isolating AC Signal Converters: This Product range features AC Signal Converters which convert AC Voltage and Frequency Signals to standard DC Current or Voltage Outputs which are easily interfaced with any modern Controller, PLC, DCS or Process Indicator.

Isolating CT Converters and Transmitter: These Products Convert and Transmit AC Current Signals from HT / LT Current Transformers standard DC Current Output which can be interfaced with any modern Controller, PLC, DCS or Process Indicator.

Isolating Temperature Transmitters: These Products convert Temperature Signals to standard DC Current Output which can be interfaced with any modern Controller, PLC, DCS or Process Indicator. Temperature Sensors like RTD and Thermocouple can be interfaced with directly to obtain a Linearized and Compensated output.

Please refer to the Datasheets and Ordering Information for all Isolation Products for complete Technical Specifications.

Application Notes have been created to throw light on how the Isolation Products can be used for better ways of getting Excellent Signal Quality for Control and Monitoring Applications. We urge you to please go through the Notes.

Isolation Products:

DC Current Isolator: 4 – 20 mA Input and Output Combinations, 24 VDC or 230VAC Power Supply.

- DC Current Isolator having Single Input and Single Output Channel -SISO (Isolating Repeater)
- DC Current Isolator having Single Input and Dual Output Channels – SIDO (Isolating Splitter)
- DC Current Isolator having Single Input and Quad Output Channels – SIQO (Isolating Splitter)
- DC Current Isolator having Dual Input and Dual Output Channels – DIDO (Save space by half as two channels are accommodated in the same space)
- DC Current Isolator having Auxiliary Power Supply to Power 2-Wire Transmitter – SISO-AP

DC Voltage Isolator: Various DC Voltage Input and Output Combinations, 24 VDC or 230VAC Power Supply.

- DC Voltage Isolator
- DC milli-Volt Isolator

Isolating DC Signal Converters: Various DC Voltage and Current Input and Output Combinations, 24 VDC or 230VAC Power Supply.

- Voltage to Current Converter
- Current to Voltage Converter
- millivolt to Current Converter
- Resistance to Current Converter

Isolating AC Signal Converters: Various AC Voltage Inputs converted to Standard 4-20mA DC Current, 24 VDC or 230VAC Power Supply.

- AC Voltage to Current Converter
- AC Voltage to Standard DC Voltage Converter
- AC milli-Volt to Current Converter
- AC milli-Volt to Standard DC Voltage Converter
- Frequency to Current Converter

Isolating CT Converters: Various AC Current Inputs converted to Standard 4-20mA DC Current, 24 VDC or 230VAC Power Supply.

- Isolating CT Converter can be used where CT is fitted with Shunt Resistor.
- Isolating HTCT Converter
- Isolating LTCT Converter

Isolating Temperature Transmitter:

- Isolating RTD Converter
- Isolating RTD Converter Dual Output Channels
- Isolating Thermo-Couple Converter (J, K, S and R)

DC Current Isolator also called as DC Current Isolation Barrier:

Various Input and Output Options for DC Current Isolators are as below:

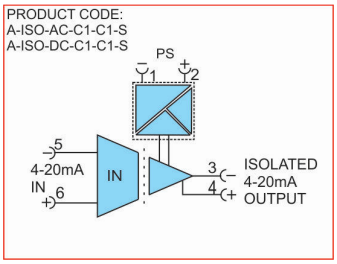
- DC Current Isolator having Single Input and Single Output Channel -SISO (Isolating Repeater)
- DC Current Isolator having Single Input and Dual Output Channels – SIDO (Isolating Splitter)
- DC Current Isolator having Single Input and Quad Output Channels – SIQO (Isolating Splitter)
- DC Current Isolator having Dual Input and Dual Output Channels – DIDO (Save space by half as two channels are accommodated in the same space)
- DC Current Isolator having Auxiliary Power Supply to Power 2-Wire Transmitter – SISO-AP

The Isolator is an ideal product to use for Electrically Isolating any two Devices and Protecting the Drive / DCS / PLC Cards from Wrong Connections, Excess Voltage and Ground Looping, also from Electro Magnetic Interference (EMI), Harmonic Distortion and RF Noise, caused by switching of Inductive Loads and other Electrical Disturbances. A must in all PLC and DCS Panels it protects your expensive circuitry at the same time ensures true and stable readings at all times. The Devices in this Category deal with DC Current Signal and are so named Current Isolators.

Datasheet - DC Current Isolator:

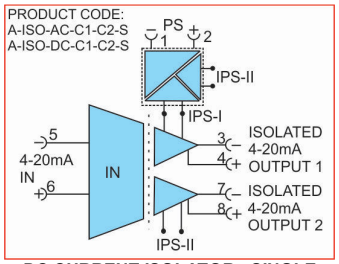
Enclosure	:	Material of Construction – ABS, Rectangular Shape, DIN Rail Mounted
Enclosure Dimensions	:	L: 107.5mm, H: 75mm; W: Please see Product Code
Ingress Protection	:	Enclosure is IP 40, Shock and Contamination Proof
Enclosure Flammability	:	Class V0 according to UL 94.
Ambient Temperature	:	-20°C to 55°C
Power Consumption	:	1W Maximum
Power Supply Voltage (AC or DC)	:	16 to 36 VDC, We Recommend 24 VDC Standard Power Supply. 85 to 265VAC, 50 / 60Hz, 110 or 230VAC Standard PS Recommended.
Auxiliary Power Supply	:	24VDC Loop (Optional in select models).
Power Supply Isolation	:	3 Point, Rail AC or DC Power Supply internally isolated from Input and Output PS.
Barrier Voltage	:	Threshold Voltage of Isolation Barrier is 5KV RMS
Isolation Type	:	Optical
Input Signal	:	DC Current: 4 to 20 mA
Input Loop Voltage Drop	:	5VDC drop across Input, for 4-20mA Input circuits.
Protections and Filtering	:	Reverse Loop Protection for DC Power Supply, EMI & RFI Filters for Input Signal
Output Signal	:	DC Current: 4 to 20 mA
Maximum Output Load	:	600 Ohms Permissible Resistive Load for Current Output
Maximum Non-linearity	:	±0.1% with respect to Full Scale Range at maximum ambient temperature.
Output Calibration	:	On Fascia, Slope Adjust for SIDO, SIQO & DIDO, Zero and Span for rest.

Product Code: A-ISO-AC-C1-C1-S, A-ISO-DC-C1-C1-S



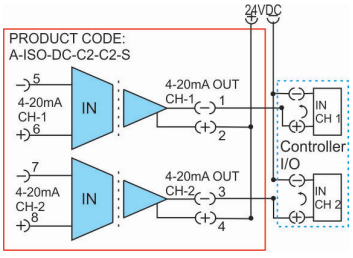
DC CURRENT ISOLATOR – SINGLE CHANNEL INPUT SINGLE CHANNEL OUTPUT (SISO)

Product Code: A-ISO-AC-C1-C2-S, A-ISO-DC-C1-C2-S



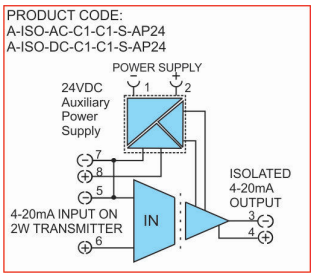
DC CURRENT ISOLATOR - SINGLE CHANNEL INPUT DUAL CHANNEL OUTPUT (SIDO)

Product Code: A-ISO-DC-C2-C2-S



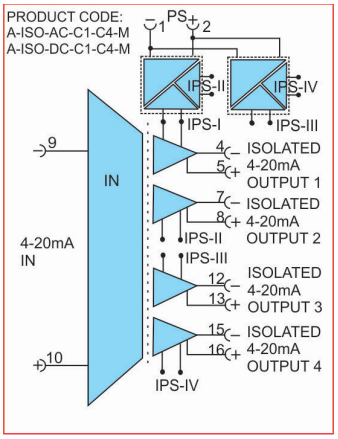
DC CURRENT ISOLATOR - DUAL CHANNEL INPUT DUAL CHANNEL OUTPUT (DIDO)

Product Code: A-ISO-AC-C1-C1-S-AP, A-ISO-DC-C1-C1-S-AP



DC CURRENT ISOLATOR - SINGLE CHANNEL WITH 24 VDC AUXILIARY POWER SUPPLY FOR 2 WIRE TRANSMITTER (SISO-AP24)

Product Code: A-ISO-AC-C1-C4-M, A-ISO-DC-C1-C4-M



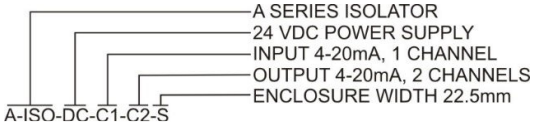
DC CURRENT ISOLATOR - SINGLE CHANNEL INPUT QUAD CHANNEL OUTPUT (SIDO)

DC Current Isolator Ordering Information

Product Code (PC) A-Series		Product Description
A-ISO-DC-C1-C1-S	:	DC Current Isolator - Single Channel (Single Input*, Single Output)
A-ISO-AC-C1-C1-S	:	DC Current Isolator - Single Channel (Single Input* Single Output, AC Mains Power Supply)
A-ISO-DC-C1-C2-S	:	DC Current Isolator - Single Input Dual Outputs (Repeats the Input over Two Output Channels)
A-ISO-AC-C1-C2-S	:	DC Current Isolator - Single Input Dual Outputs (Repeats the Input over Two Output Channels, AC Mains Power Supply)
A-ISO-DC-C2-C2-S	:	DC Current Isolator - Dual Channel (Two independent Input and Output Channels).
A-ISO-DC-C1-C4-M	:	DC Current Isolator - Single Input Quad Outputs (Repeats the Input over Four Output Channels).
A-ISO-DC-CI-C1-S-AP24	:	DC Current Isolator - Single Channel with 24 VDC Auxiliary Power Supply for Two Wire Transmitter

Product Coding (PC) Information:

Item Description	Item Code	Item Specification
Product Description	A-ISO	A-Series Isolator
	L-ISO	L-Series Isolator
Power Supply	DC	Power Supply Voltage 16-36VDC, recommended 24 VDC.
	AC	Power Supply Voltage 85 to 265 VAC.
	AP24	24 VDC Auxiliary Power Supply for Two Wire Transmitter.
	XX	No Power Supply.
Input / Output	C	Input or Output DC 4 to 20mA. (C1 means Single Channel 4-20mA Input or Output, similarly for C2 and C4)
Channels	1	Single Channel
	2	Two Channels
	4	Four Channels
Enclosure	S	Standard 22.5mm Width.
	M	Medium 45mm Width.
Decoding the Product Code		



*Single Input refers to Single or One Input Channel, similarly Dual Output means Two Output Channels independent of each other.

DC Voltage Isolators Also called Barriers:

Various Input and Output Options for DC Voltage Isolators are as below:

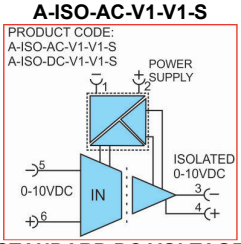
- Standard DC Voltage Isolator
- DC milli-Volt Isolator
- High DC Voltage Isolator:

Devices such as Eddy Current Coupling Drives, DC Drive and sometimes even VFDs accept 0-10VDC Signal for Speed Control as External Speed Reference. Many times it so happens that when you connect the Controller Output Voltage Signal to these Devices the Voltage Signal Drops for no apparent reason. Why does this happen? This fault or failure can be attributed to many reasons explained in the Topic "**A Study on Isolation**" which we recommend you read. Voltage Isolator provides a perfect solution to such problems.

Datasheet - DC Voltage Isolator:

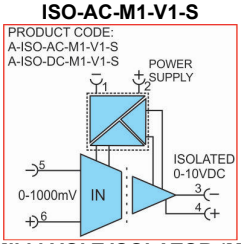
Enclosure	:	Material of Construction – ABS, Rectangular Shape, DIN Rail Mounted
Enclosure Dimensions	:	L: 107.5mm, H: 75mm; W: Please see Product Code
Ingress Protection	:	Enclosure is IP 40, Shock and Contamination Proof
Enclosure Flammability	:	Class V0 according to UL 94.
Ambient Temperature	:	-20°C to 55°C
Power Consumption	:	1W Maximum
Power Supply Voltage (AC or DC)	:	16 to 36 VDC, We Recommend 24 VDC Standard Power Supply. 85 to 265VAC, 50 / 60Hz, 110 or 230VAC Standard PS Recommended.
Power Supply Isolation	:	3 Point, Rail AC or DC Power Supply internally isolated from Input and Output PS.
Barrier Voltage	:	Threshold Voltage of Isolation Barrier is 5KV RMS
Isolation Type	:	Optical
Input Signal	:	DC Voltage: 0 to 10 VDC
Protections and Filtering	:	Reverse Loop Protection for DC Power Supply, EMI & RFI Filters for Input Signal
Output Signal	:	DC Voltage: 0 to 10 VDC
Maximum Non-linearity	:	±0.1% with respect to Full Scale Range at maximum ambient temperature.
Output Calibration	:	On Fascia, Zero and Span adjust.

Product Code: A-ISO-DC-V1-V1-S, A-ISO-AC-V1-V1-S



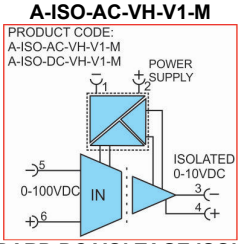
STANDARD DC VOLTAGE ISOLATOR (VIVO)

Product Code: A-ISO-DC-M1-V1-S, A-ISO-AC-M1-V1-S



DC MILLI-VOLT ISOLATOR (MIVO)

Product Code: A-ISO-DC-VH-V1-M, A-ISO-AC-VH-V1-M



STANDARD DC VOLTAGE ISOLATOR (VHVO)

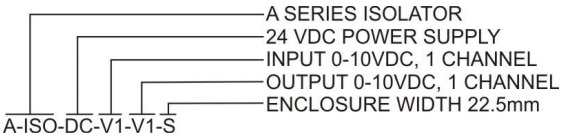
DC Voltage Isolator Ordering Information

Product Code (PC)		Product Description
A-Series		
A-ISO-DC-V1-V1-S	:	DC Standard Voltage Isolator (0-10VDC Input Isolated 0-10VDC Output)
A-ISO-DC-M1-V1-S	:	DC Milli Volt Isolator (0-1000mVDC Input Isolated 0-10VDC Output)
A-ISO-DC-AVH-V1-S	:	DC High Voltage Isolator (0-100VDC Input Isolated 0-10VDC Output)
A-ISO-AC-V1-V1-S	:	DC Standard Voltage Isolator (0-10VDC Input Isolated 0-10VDC Output) AC Power Supply
A-ISO-AC-M1-V1-S	:	DC Milli Volt Isolator (0-1000mVDC Input Isolated 0-10VDC Output) AC Power Supply
A-ISO-AC-AVH-V1-S	:	DC High Voltage Isolator (0-100VDC Input Isolated 0-10VDC Output) AC Power Supply

Product Coding (PC) Information:

Item Description	Item Code	Item Specification
Product Description	A-ISO	A-Series Isolator
Power Supply	DC	Power Supply Voltage 16-36VDC, recommended 24 VDC.
	AC	Power Supply Voltage 85 to 265 VAC.
Input / Output	V1	Input or Output 0 to 10 VDC.
	M1	milli-Volt Input 0 to 1000 mV (Standard Range. Other ranges maybe specified while ordering).
	VH	Input 0 to 100 VDC other Value can be requested.
Channels	1	Single Channel
Enclosure	S	Standard 22.5mm Width.
	M	Medium 45mm Width.

Decoding the Product Code



*Single Input refers to Single or One Input Channel, similarly Dual Output means Two Output Channels independent of each other.

Dual Channel Output can be ordered as a special order. The enclosure in this case will be Medium size.

Isolating DC Signal Converters:

This Isolation Products Group contains:

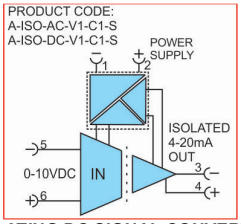
- **Voltage to Current Isolating DC Signal Converters**
- **Current to Voltage Isolating DC Signal Converter**
- **millivolt to Current Isolating DC Signal Converters**
- **Resistance to Current Isolating DC Signal Converters**

Signal Converters are required in a variety of applications where devices of different specifications need to be interfaced with each other. DC Isolating Converters are designed to suit such applications with the additional advantage of Electric Isolation. These Devices have all the virtues of Isolators like Electrically Isolating any two Devices and Protecting the Drive / DCS / PLC Cards from Wrong Connections, Excess Voltage and Ground Looping, also from Electro Magnetic Interference (EMI), Harmonic Distortion and RF Noise, caused by switching of Inductive Loads and other Electrical Disturbances. A must in all PLC and DCS Panels it protects your expensive circuitry at the same time ensures true and stable readings at all times.

Datasheet - Isolating DC Signal Converters:

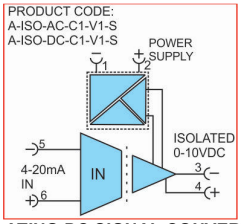
Enclosure	:	Material of Construction – ABS, Rectangular Shape, DIN Rail Mounted
Enclosure Dimensions	:	L: 107.5mm, H: 75mm; W: Please see Product Code
Ingress Protection	:	Enclosure is IP 40, Shock and Contamination Proof
Enclosure Flammability	:	Class V0 according to UL 94.
Ambient Temperature	:	-20°C to 55°C
Power Consumption	:	1W Maximum
Power Supply Voltage (AC or DC)	:	16 to 36 VDC, We Recommend 24 VDC Standard Power Supply. 85 to 265VAC, 50 / 60Hz, 110 or 230VAC Standard PS Recommended.
Auxiliary Power Supply	:	24VDC / 5VDC Loop (Optional in select models).
Power Supply Isolation	:	3 Point, Rail AC or DC Power Supply internally isolated from Input and Output PS.
Barrier Voltage	:	Threshold Voltage of Isolation Barrier is 5KV RMS
Isolation Type	:	Optical
Input Signal	:	0 to 100VDC, 0 to 10VDC / 4-20mA / 0-1K-Ohms, select model as per requirement.
Input Loop Voltage Drop	:	5VDC drop across Input, for 4-20mA Input circuits.
Protections and Filtering	:	Reverse Loop Protection for DC Power Supply, EMI & RFI Filters for Input Signal
Output Signal	:	0 to 10VDC / 4-20mA select model as per requirement.
Maximum Output Load	:	600 Ohms Permissible Resistive Load for Current Output
Maximum Non-linearity	:	±0.1% with respect to Full Scale Range at maximum ambient temperature.
Output Calibration	:	On Fascia, Zero and Span adjust.

Product Code: A-ISO-DC-V1-C1-S, A-ISO-AC-V1-C1-S



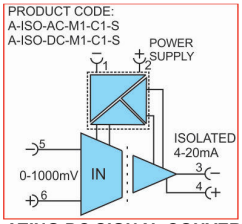
ISOLATING DC SIGNAL CONVERTER (V TO I) VOLTAGE TO CURRENT

Product Code: A-ISO-DC-C1-V1-S, A-ISO-AC-C1-V1-S



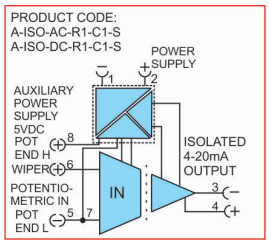
ISOLATING DC SIGNAL CONVERTER (I TO V) CURRENT TO VOLTAGE

Product Code: A-ISO-DC-M1-C1-S, A-ISO-AC-M1-C1-S



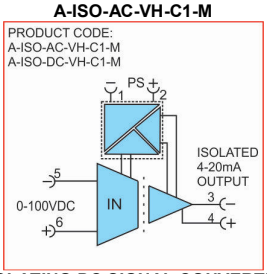
ISOLATING DC SIGNAL CONVERTER (M TO I) MILLI VOLT TO CURRENT

Product Code: A-ISO-DC-R1-C1-S, A-ISO-DC-R1-C1-S



ISOLATING DC SIGNAL CONVERTER (R TO I) RESITANCE TO CURRENT

Product Code: A-ISO-DC-VH-C1-M, A-ISO-AC-VH-C1-M



ISOLATING DC SIGNAL CONVERTER (V TO I) HIGH VOLTAGE TO CURRENT

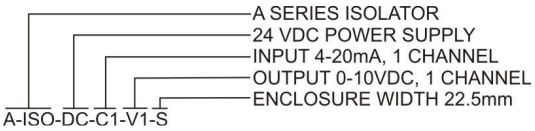
Isolating DC Signal Converters Ordering Information

Product Code (PC)		Product Description
A-Series		
A-ISO-DC-C1-V1-S	:	Isolating DC Signal Converter – Current to Voltage.
A-ISO-DC-V1-C1-S	:	Isolating DC Signal Converter – Voltage to Current.
A-ISO-DC-M1-C1-S	:	Isolating DC Signal Converter – milli-Volt to Current, 0-1000mV Input standard, other values on request
A-ISO-DC-R1-C1-S	:	Isolating DC Signal Converter – Resistance to Current, 1K-Ohm Input standard, other values on request
A-ISO-AC-C1-V1-S	:	Isolating DC Signal Converter – Current to Voltage.
A-ISO-AC-V1-C1-S	:	Isolating DC Signal Converter – Voltage to Current.
A-ISO-AC-M1-C1-S	:	Isolating DC Signal Converter – milli-Volt to Current, 0-1000mV Input standard, other values on request
A-ISO-AC-R1-C1-S	:	Isolating DC Signal Converter – Resistance to Current, 1K-Ohm Input standard, other values on request

Product Coding (PC) Information:

Item Description	Item Code	Item Specification
Product Description	A-ISO	A-Series Isolator
Power Supply	DC	Power Supply Voltage 16-36VDC, recommended 24 VDC.
	AC	Power Supply Voltage 85 to 265 VAC.
Input / Output	C1	Input or Output DC 4 to 20mA.
	V1	Input or Output 0 to 10 VDC.
	M1	milli-Volt Input 0 to 1000 mV (Standard Range. Other ranges maybe specified while ordering).
	R1	Input Resistance Potentiometer
	VH	Input 0 to 100 VDC Standard. Other range can be requested.
Channels	1	Single Channel, Always with prefix of Current / Voltage as C1 or V1
Enclosure	S	Standard 22.5mm Width.
	M	Medium 45mm Width.

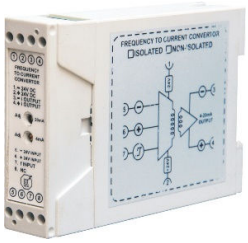
Decoding the Product Code



Isolating AC Signal Converters:

This Isolation Products Group contains:

- **AC Voltage to Current Isolating Converter**
- **AC Voltage to Standard DC Voltage Isolating Converter**
- **AC milli-Volt to Current / Standard DC Voltage Isolating Converter**
- **Frequency to Current / Voltage Isolating Converter**

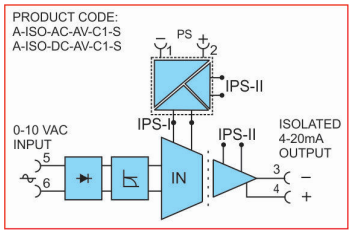


Many Industrial Machines and Devices generate AC Signals like AC Voltage or Frequency which are proportional to Load Current, Speed, Vibration or any other Physical Quantity. AC Isolating Converters are designed for interfacing these AC Signals with standard Instrumentation and Automation Controllers and Process Indicators and at the same time Electrically Isolating the two Devices. These Devices also have all the virtues of Isolators like Electrically Isolating any two Devices and Protecting the Drive / DCS / PLC Cards from Wrong Connections, Excess Voltage and Ground Looping, also from Electro Magnetic Interference (EMI), Harmonic Distortion and RF Noise, caused by switching of Inductive Loads and other Electrical Disturbances. A must in all PLC and DCS Panels it protects your expensive circuitry at the same time ensures true and stable readings at all times.

Isolating AC Signal Converters Datasheet:

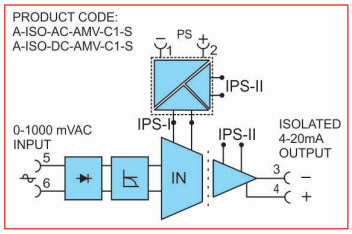
Enclosure	:	Material of Construction – ABS, Rectangular Shape, DIN Rail Mounted
Enclosure Dimensions	:	L: 107.5mm, H: 75mm; W: Please see Product Code
Ingress Protection	:	Enclosure is IP 40, Shock and Contamination Proof
Enclosure Flammability	:	Class V0 according to UL 94.
Ambient Temperature	:	-20°C to 55°C
Power Consumption	:	1W Maximum
Power Supply Voltage (AC or DC)	:	16 to 36 VDC, We Recommend 24 VDC Standard Power Supply. 85 to 265VAC, 50 / 60Hz, 110 or 230VAC Standard PS Recommended.
Auxiliary Power Supply	:	24VDC / 5VDC Loop (Optional in select models).
Power Supply Isolation	:	3 Point, Rail PS 24VDC internally isolated from Input and Output PS.
Barrier Voltage	:	Threshold Voltage of Isolation Barrier is 5KV RMS
Isolation Type	:	Optical
Input Signal	:	0-100VAC / 0-1000mVAC / 0-100 K-Hz, select model as per requirement.
Protections and Filtering	:	Reverse Loop Protection for DC Power Supply, EMI & RFI Signal Filters.
Output Signal	:	4-20mA
Maximum Load	:	650 Ohms Permissible for Current Output, at 24 VDC Power Supply
Maximum Non-linearity	:	±0.1% with respect to Full Scale Range at maximum ambient temperature.
Output Calibration	:	On Fascia, Zero and Span adjust.

Product Code: A-ISO-DC-AV-C1-S, A-ISO-AC-AV-C1-S



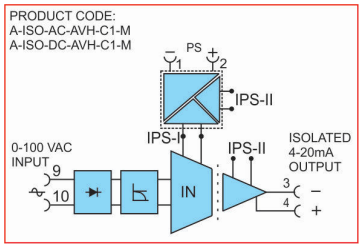
ISOLATING AC SIGNAL CONVERTER – AC VOLTAGE TO STANDARD DC CURRENT

Product Code: A-ISO-DC-AMV-C1-S, A-ISO-AC-AMV-C1-S



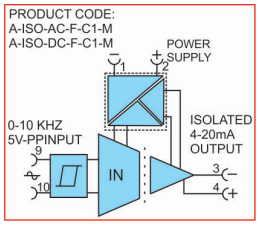
ISOLATING AC SIGNAL CONVERTER – AC MILLI VOLT TO STANDARD DC CURRENT

Product Code: A-ISO-DC-AVH-C1-M, A-ISO-AC-AVH-C1-M



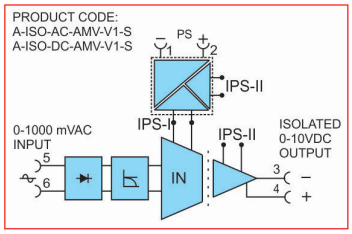
ISOLATING AC SIGNAL CONVERTER - HIGH AC VOLTAGE TO CURRENT

Product Code: A-ISO-DC-F-C1-M, A-ISO-AC-F-C1-M



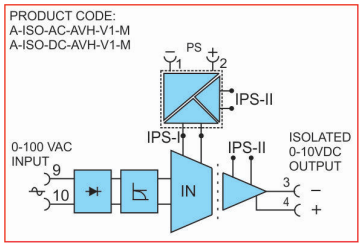
ISOLATING AC SIGNAL CONVERTER - FREQUENCY TO CURRENT

Product Code: A-ISO-DC-AMV-V1-S, A-ISO-AC-AMV-V1-S



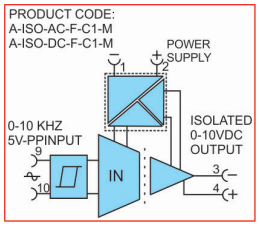
ISOLATING AC SIGNAL CONVERTER – AC MILLI VOLT TO STANDARD DC VOLTAGE

Product Code: A-ISO-DC-AVH-V1-M, A-ISO-AC-AVH-V1-M



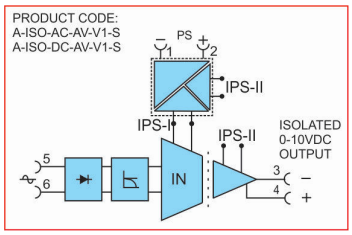
ISOLATING AC SIGNAL CONVERTER - HIGH AC VOLTAGE TO STANDARD DC VOLTAGE

Product Code: A-ISO-DC-F-V1-M, A-ISO-AC-F-V1-M



ISOLATING AC SIGNAL CONVERTER - FREQUENCY TO VOLTAGE

Product Code: A-ISO-DC-AV-V1-S, A-ISO-AC-AV-V1-S



ISOLATING AC SIGNAL CONVERTER – AC VOLTAGE TO STANDARD DC VOLTAGE

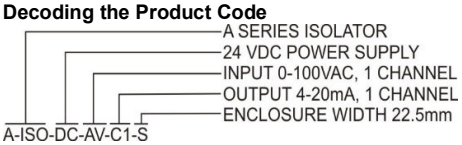
Ordering Information

Product Code (PC)		Product Description
A-Series		
A-ISO-DC-AV-V1-S	:	Isolating AC Signal Converter – AC Voltage (0-10VAC) to standard DC Voltage (0-10VDC).
A-ISO-DC-AV-C1-S	:	Isolating AC Signal Converter – AC Voltage (0-10VAC) to standard DC Current (4 – 20 mA).
A-ISO-DC-AVH-C1-M	:	Isolating AC Signal Converter – AC High Voltage (0-100VAC) to standard DC Current (4 – 20 mA).
A-ISO-DC-AVH-V1-M	:	Isolating AC Signal Converter – AC High Voltage (0-100VAC) to standard DC Voltage (0-10VDC).
A-ISO-DC-AMV-C1-S	:	Isolating AC Signal Converter – AC milli-Volt to standard DC Current (4 – 20 mA).
A-ISO-DC-AMV-V1-S	:	Isolating AC Signal Converter – AC milli-Volt to standard DC Voltage (0-10VDC).
A-ISO-DC-F-C1-M	:	Isolating AC Signal Converter – Frequency to Current (4 – 20 mA).
A-ISO-DC-F-V1-M	:	Isolating AC Signal Converter – Frequency to Voltage (0-10VDC).
A-ISO-AC-AV-V1-S	:	Isolating AC Signal Converter – AC Voltage (0-10VAC) to standard DC Voltage (0-10VDC).
A-ISO-AC-AV-C1-S	:	Isolating AC Signal Converter – AC Voltage (0-10VAC) to standard DC Current (4 – 20 mA).
A-ISO-AC-AVH-C1-S	:	Isolating AC Signal Converter – AC High Voltage (0-100VAC) to standard DC Current (4 – 20 mA).
A-ISO-AC-AVH-V1-S	:	Isolating AC Signal Converter – AC High Voltage (0-100VAC) to standard DC Voltage (0-10VDC).
A-ISO-AC-AMV-C1-S	:	Isolating AC Signal Converter – AC milli-Volt to standard DC Current (4 – 20 mA).
A-ISO-AC-AMV-V1-S	:	Isolating AC Signal Converter – AC milli-Volt to standard DC Voltage (0-10VDC).
A-ISO-AC-F-C1-M	:	Isolating AC Signal Converter – Frequency to Current (4 – 20 mA).
A-ISO-AC-F-V1-M	:	Isolating AC Signal Converter – Frequency to Voltage (0-10VDC).

Product Coding (PC) Information:

Item Description	Item Code	Item Specification
Product Description	A-ISO	A-Series Isolator
Power Supply	DC	Power Supply Voltage 16-36VDC, recommended 24 VDC.
	AC	Power Supply Voltage 85 to 265 VAC.
Output	C	Output DC 4 to 20mA.
	V	Output 0 to 10 VDC.
	B	Bipolar Voltage Output -10 to 10 VDC.
Input	AMV	AC milli-Volt (0 to 1000 mV) (Standard Range. Other maybe specified while ordering).
	AV	0 to 10 VAC (Standard Range. Other maybe specified while ordering).
	AVH	0 to 100 VAC (Standard Range. Other maybe specified while ordering).
	F	Frequency: 0 – 10KHz (From 3 to 10 VAC Peak to Peak, Standard Range. Any other Voltage range should be specified in your enquiry for us to customize the product. Also note that Enclosure will change from S to M for higher Voltages).
	C1	Input or Output DC 4 to 20mA Single Channel
	V1	Input or Output 0 to 10 VDC Single Channel
Enclosure	S	Standard 22.5mm Width.
	M	Medium 45mm Width.

Decoding the Product Code



Isolating CT Converters:

This Isolation Products Group contains:

- **Isolating CT Converter**
- **Isolating HT CT Converter**
- **Isolating LT CT Converter**

Many Machines and Devices like Induction Furnaces, Motors, Compressors etc., work either on Low or High Tension Electric Power Supply and draw load currents in very large quantities.
The commonest and non-intrusive way of measuring Current is by passing one or all of the three Mains Conductors of Phases through Current Transformers (CT). Current Passing through the Conductor generates a Proportional albeit lower easily measureable Current in the CT Coil, typically 0-1A or 0-5A. Isolating CT Converter converts this Current Signal to standard 4-20mA while Electrically Isolating the AC Side from the Control Side.
YUTECH Offers Two Types of CT Converters:

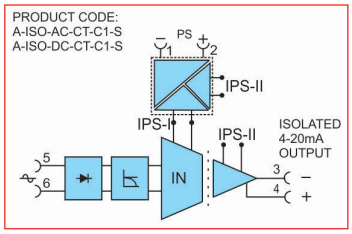
1. The Isolating CT Converter can be fixed in another Panel / JB while CT is fixed with a Shunt Resistor and kept in the MCC / LT or HT Panel. Shunt prevents CT from dangers and damage of open circuit.
2. HT and LT Isolating CT Converters can be placed inside the MCC / LT or HT Panel and work on AC Mains 4-20mA Output is processed with necessary filtering which is taken to Controller / PLC / DCS Panel as Process Signal.

Please see the application notes for further explanation.

Isolating CT Converters Datasheet:

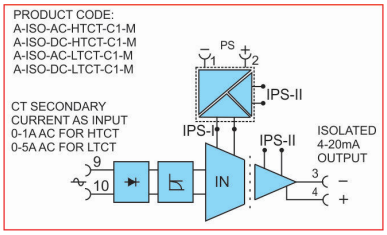
Enclosure	:	Material of Construction – ABS, Rectangular Shape, DIN Rail Mounted
Enclosure Dimensions	:	L: 107.5mm, H: 75mm; W: Please see Product Code
Ingress Protection	:	Enclosure is IP 40, Shock and Contamination Proof
Enclosure Flammability	:	Class V0 according to UL 94.
Ambient Temperature	:	-20°C to 55°C
Power Consumption	:	1W Maximum
Power Supply Voltage (AC or DC)	:	16 to 36 VDC, We Recommend 24 VDC Standard Power Supply. 85 to 265VAC, 50 / 60Hz, 110 or 230VAC Standard PS Recommended.
Auxiliary Power Supply	:	24VDC / 5VDC Loop (Optional in select models).
Power Supply Isolation	:	3 Point, Rail PS 24VDC internally isolated from Input and Output PS.
Barrier Voltage	:	Threshold Voltage of Isolation Barrier is 5KV RMS
Isolation Type	:	Optical
Input Signal	:	0-1A AC / 0-5A AC / 0-500mV AC select model as per requirement.
Protections and Filtering	:	Reverse Loop Protection for DC Power Supply, EMI & RFI Signal Filters.
Output Signal	:	4-20mA
Maximum Load	:	650 Ohms Permissible for Current Output, at 24 VDC Power Supply
Maximum Non-linearity	:	±1% with respect to Full Scale Range at maximum ambient temperature.
Output Calibration	:	On Fascia, Zero and Span adjust.

Product Code: A-ISO-DC-CT-C1-S, A-ISO-AC-CT-C1-S



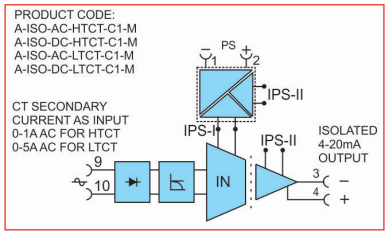
ISOLATING CT CONVERTER (CT SHUNT RESISTANCE IS EXTERNAL)

Product Code: A-ISO-DC-HTCT-C1-M, A-ISO-AC-HTCT-C1-M



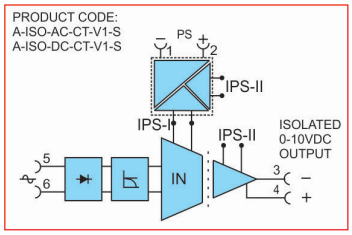
ISOLATING HT CT CONVERTER

Product Code: A-ISO-DC-LTCT-C1-M, A-ISO-AC-LTCT-C1-M



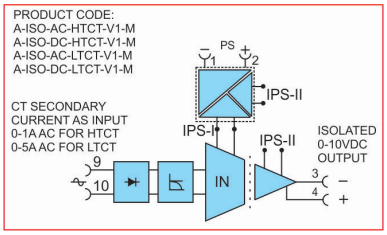
ISOLATING LT CT CONVERTER

Product Code: A-ISO-DC-CT-V1-S, A-ISO-AC-CT-V1-S



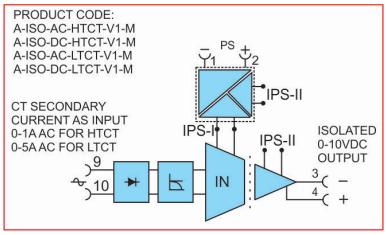
ISOLATING CT TO VOLTAGE CONVERTER (CT SHUNT RESISTANCE IS EXTERNAL)

Product Code: A-ISO-DC-HTCT-V1-M, A-ISO-AC-HTCT-V1-M



ISOLATING HT CT TO VOLTAGE CONVERTER

Product Code: A-ISO-DC-LTCT-V1-M, A-ISO-AC-LTCT-V1-M



ISOLATING LT CT TO VOLTAGE CONVERTER

Ordering Information

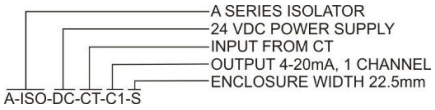
Product Code (PC)		**Product Description**
A-Series		
A-ISO-DC-CT-C1-S	:	Isolating CT Converter – LT CT Output AC Current of 0-5A to standard DC Current (4 – 20 mA). This Order Code includes Resistance to be connected across CT. DC Power Supply*.
A-ISO-DC-HTCT-C1-M	:	Isolating HT CT Converter – HT CT's Secondary Current Output (0-1A AC) is taken as input and converted to standard DC Current (4 – 20 mA). DC Power Supply*.
A-ISO-DC-LTCT-C1-M	:	Isolating LT CT Converter – LT CT's Secondary Current Output (0-5A AC) is taken as input and converted to standard DC Current (4 – 20 mA). DC Power Supply*.
A-ISO-AC-CT-C1-S	:	Isolating CT Converter – LT CT Output AC Current of 0-5A to standard DC Current (4 – 20 mA). This Order Code includes Resistance to be connected across CT. AC Power Supply**.
A-ISO-AC-HTCT-C1-M	:	Isolating HT CT Converter – HT CT's Secondary Current Output (0-1A AC) is taken as input and converted to standard DC Current (4 – 20 mA). 24 VDC Power Supply**.
A-ISO-AC-LTCT-C1-M	:	Isolating LT CT Converter – LT CT's Secondary Current Output (0-5A AC) is taken as input and converted to standard DC Current (4 – 20 mA). 24 VDC Power Supply**.

Note: HT / LT CT, Cable, Panel etc is not part of the supply. We also provide turnkey solutions and enquiry for these items can be sent to us at info@yutech.in / sale@yutech.in.
*, ** See Power Supply in PC Information

Product Coding (PC) Information:

Item Description	**Item Code**	**Item Specification**
Product Description	A-ISO	A-Series Isolator
Power Supply	DC	Power Supply Voltage 16-36 VDC.
(*, **)	AC	Power Supply Voltage 85 to 265 VAC.
Input / Output	CT	Input 0-500mVAC across 0.1Ohm Resistor
	HTCT	Input HT CT Secondary Current 0-1 A AC
	LTCT	Input LT CT Secondary Current 0-5 A AC
	C1	Output DC 4 to 20mA, single channel.
	V1	Output 0 to 10 VDC.
Enclosure	S	Standard 22.5mm Width.
Enclosure	M	Standard 45mm Width.

Decoding the Product Code:

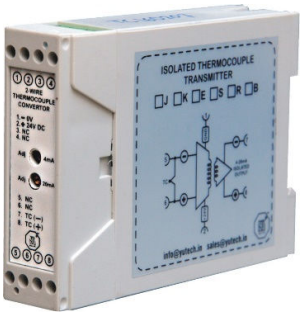


Isolating Temperature Transmitter:

- **Isolating RTD Converter Transmitter (Linearized Output) having 2/3 Wire PT-100, 4-Wire PT-100 and 4-Wire PT-1000 Inputs**
- **Isolating Thermo-Couple Converter (J, K, S, R and B Type) Transmitter**

The Isolating Temperature Transmitter Coverts Signals from Temperature Sensors like RTD and Thermocouple to Standard Current Signal of 4-20mA whilst Electrically Isolating the Field side from the Controller side.

Resistance Temperature Dependent or RTD is a Temperature Sensor whose Resistance Varies in Direct Proportion with rising Temperature. The **Isolating RTD Converter Transmitter** is designed for RTD PT-100 as the standard Temperature Sensor and factory default calibration is for 0 – 200 ºC. The Output is Linearized 4-20mA with Built-in Linearity Equation. A Head Mounted Non-Isolated version of RTD Transmitter is also available details of which are discussed further in this document.



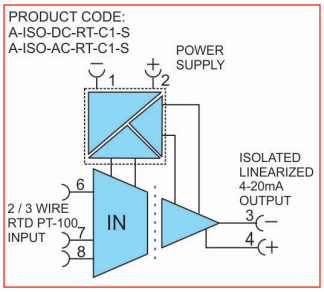
Thermocouple generates EMF which is in direct proportional to the upward change in temperature. Various TCs like J Type, K Type, S Type and R Type are used as Standard Temperature Sensors for various applications with K type being the most common as it has a larger voltage variation with fairly linear output. **Isolating Thermo-Couple Converter** with K Type is the most common product with default calibration range of 0-1200 ºC.

This product also carries the Virtues of the Isolator like Isolating any two Devices and Protecting the Drive / DCS / PLC Cards from Wrong Connections, Excess Voltage and Ground Looping, also from Electro Magnetic Interference (EMI), Harmonic Distortion and RF Noise, caused by switching of Inductive Loads and other Electrical Disturbances. A must in all PLC and DCS Panels it protects your expensive circuitry at the same time ensures true and stable readings at all times.

Isolating Temperature Transmitter Datasheet:

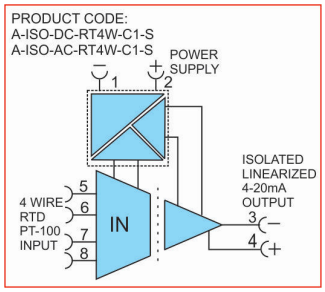
Enclosure	:	Material of Construction – ABS, Rectangular Shape, DIN Rail Mounted
Enclosure Dimensions	:	L: 107.5mm, H: 75mm; W: Please see Product Code
Ingress Protection	:	Enclosure is IP 40, Shock and Contamination Proof
Enclosure Flammability	:	Class V0 according to UL 94.
Ambient Temperature	:	-20°C to 55°C
Power Consumption	:	1W Maximum
Power Supply Voltage (AC or DC)	:	16 to 36 VDC, We Recommend 24 VDC Standard Power Supply. 85 to 265VAC, 50 / 60Hz, 110 or 230VAC Standard PS Recommended.
Auxiliary Power Supply	:	24VDC / 5VDC Loop (Optional in select models).
Power Supply Isolation	:	3 Point, Rail PS 24VDC internally isolated from Input and Output PS.
Barrier Voltage	:	Threshold Voltage of Isolation Barrier is 5KV RMS
Isolation Type	:	Optical
Input Signal	:	2/3 Wire RTD PT-100 / PT-1000, Thermocouples of different types mentioned in PC Information, select model as per requirement.
Protections and Filtering	:	Reverse Loop Protection for DC Power Supply, EMI & RFI Signal Filters.
Output Signal	:	4-20mA
Maximum Load	:	600 Ohms Permissible for Current Output, at 24 VDC Power Supply
Maximum Non-linearity	:	±0.1% with respect to Full Scale Range at maximum ambient temperature.
Output Calibration	:	On Fascia, Zero and Span adjust.

Product Code: A-ISO-DC-RT-C1-S, A-ISO-AC-RT-C1-S



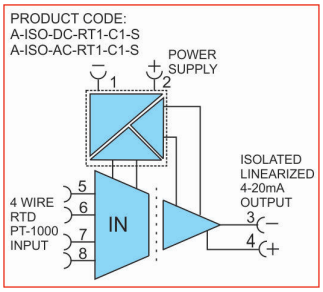
ISOLATING RTD (2/3 WIRE PT-100) CONVERTER

Product Code: A-ISO-DC-RT4W-C1-S, A-ISO-AC-RT4W-C1-S



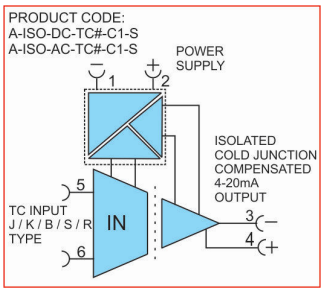
ISOLATING 4W RTD (4 WIRE PT-100) CONVERTER

Product Code: A-ISO-DC-RT1-C1-S, A-ISO-AC-RT1-C1-S



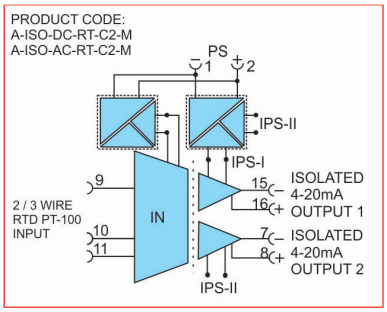
ISOLATING RTD-1000 (4 WIRE PT-1000) CONVERTER

Product Code: A-ISO-DC-TC#-C1-S, A-ISO-AC-TC#-C1-S



ISOLATING THERMOCOUPLE CONVERTER (# DENOTES TYPE J / K / B / S / R)

Product Code: A-ISO-DC-RT-C2-S, A-ISO-AC-RT-C2-S



ISOLATING RTD (2/3 WIRE PT-100) CONVERTER WITH DUAL CHANNEL OUTPUT

Ordering Information

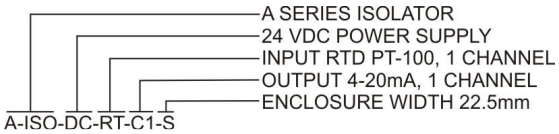
Product Code (PC)		Product Description
A-Series		
A-ISO-DC-RT-C1-S	:	Isolating Temperature Transmitter – Input: 2/3W RTD PT-100 Output: 4 – 20 mA
A-ISO-DC-RT-C2-M	:	Isolating Temperature Transmitter – Input: RTD PT-100 Output: 4 – 20 mA Dual Channel
A-ISO-DC-RT1-C1-S	:	Isolating Temperature Transmitter – Input: 2/3W RTD PT-1000 Output: 4 – 20 mA
A-ISO-DC-TCJ-C1-S	:	Isolating Temperature Transmitter – Input: Thermocouple J Type Output: 4 – 20 mA
A-ISO-DC-TCK-C1-S	:	Isolating Temperature Transmitter – Input: Thermocouple K Type Output: 4 – 20 mA
A-ISO-DC-TCS-C1-S	:	Isolating Temperature Transmitter – Input: Thermocouple S Type Output: 4 – 20 mA
A-ISO-DC-TCR-C1-S	:	Isolating Temperature Transmitter – Input: Thermocouple R Type Output: 4 – 20 mA
A-ISO-DC-TCB-C1-S	:	Isolating Temperature Transmitter – Input: Thermocouple B Type Output: 4 – 20 mA

Note: RTD / Thermocouple, Compensation Cable, Shielded Armoured Cable are not a part of supply for Isolating Temperature Transmitters. These items can be ordered separately by giving us information on the application and temperature ratings.

Product Coding (PC) Information:

Item Description	Item Code	Item Specification
Product Description	A-ISO	A-Series Isolator
Power Supply	DC	Power Supply Voltage 24 VDC.
Input / Output	RT	RTD Input 2 or 3 Wire PT-100
	RT4W	RTD Input 4 Wire PT-100
	RT1	RTD Input PT-1000
	TC#	Thermocouple Input # denotes various Types as J, K, S, R & B being regular, E, N & T being non regular products made only on special request with 100% advance.
	TCJ	Thermocouple Input J Type
	TCK	Thermocouple Input K Type
	TCS	Thermocouple Input S Type
	TCR	Thermocouple Input R Type
	TCB	Thermocouple Input B Type
	C1	Single Channel Output DC 4 to 20mA
	C2	Dual Channel Output DC 4 to 20mA
Enclosure	S	Standard 22.5mm Width.
	M	Medium 45mm Width.

Decoding the Product Code



Application Notes:

Application Notes are intended to throw light on Good Automation Practices.

In spite of having Good Control Systems as in PLC or DCS and Field Instruments of Reputed makes, if an Automation System doesn't deliver good results or the Integrator faces problems in commissioning the system, then Common Mistakes in Integrating Automation Systems are to blame. Proper use of Isolation Products may eliminate many of these problems.

Some Basic Precautions to be taken while designing an Automation System:

1. Never use common power supply for Field and Controller, this will render all signal isolation useless as the grounding will be common.

2. Never connect the Field Side Ground to the Controller Side Ground.

3. Wherever possible use separate earth pits for Field and Controller. The distance between any two earth pits should be a safe 10 mt. If that is not possible then minimum 5 mt distance should be maintained.

4. It is advisable to have the Isolators fitted in the DCS / PLC Panel so that the System as a whole is Electrically Isolated. Also use an Isolation Transformer to isolate the Power from mains.

5. If you use Isolation for Analog I/Os and connect any one of the Digital I/Os directly to any field Coil then the whole Isolation will be rendered useless as the controller's internal earth circuit will be connected to the field side Earth Circuit. You may avoid doing this by using Optical Isolation or Relay Banks between Field and Digital IO Cards, thus keeping the field side Electrical Connections Isolated from the Controller.

6. Many times Digital Signal is taken from the Field and Connected to Controller DI Card through Optical Isolation but, while doing this if the Field Signal is powered by Controller Side Power Supply, then all isolation will be rendered useless.

7. Use Shielded and Twisted Pair of Cables for Analog I/Os as this will minimize noise pick up. Ground the shielding at the Controller end. Never Ground the Shielding on both sides of the wire.

8. If using a Multi-Core Cable, make sure that AC Power and Field Signals are not carried in the same cable, use different cables for these. So far as possible use separate cables Analog (Multi-Strand, Twisted Pair, Shielded) and Digital (Multi-Core) Signals.

9. Keep your Equipment Free from Dust and Moisture.

Application Notes - DC Current Isolator:

Product Code: A-ISO-AC-C1-C1-S, A-ISO-DC-C1-C1-S:
DC Current Isolator having Single Input and Single Output Channel -SISO (Isolating Repeater):

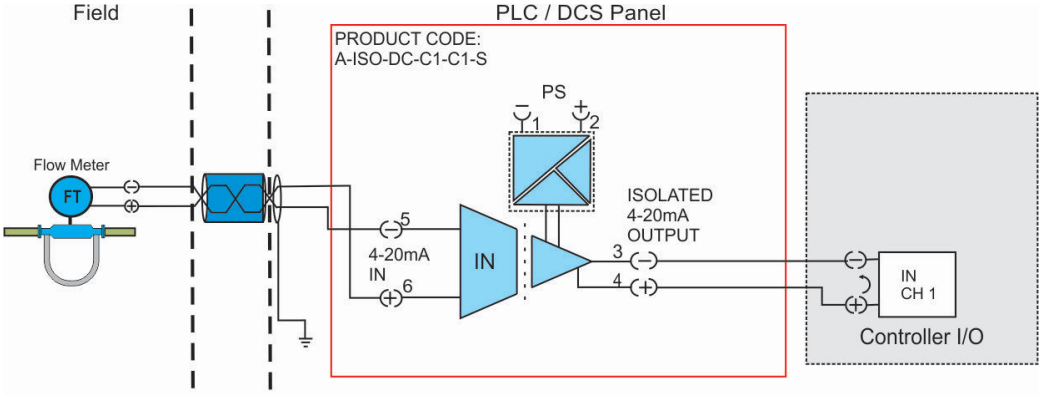
Application – Mass Flow Control using Automatic Variable Frequency Drive Speed Variation:

A VFD is used for Pump Speed Variation and subsequent Flow Control. A Mass Flow Meter Senses the Flow of Mass, this Flow Signal is Transmitted to a PLC / DCS / Controller as 4-20mA.

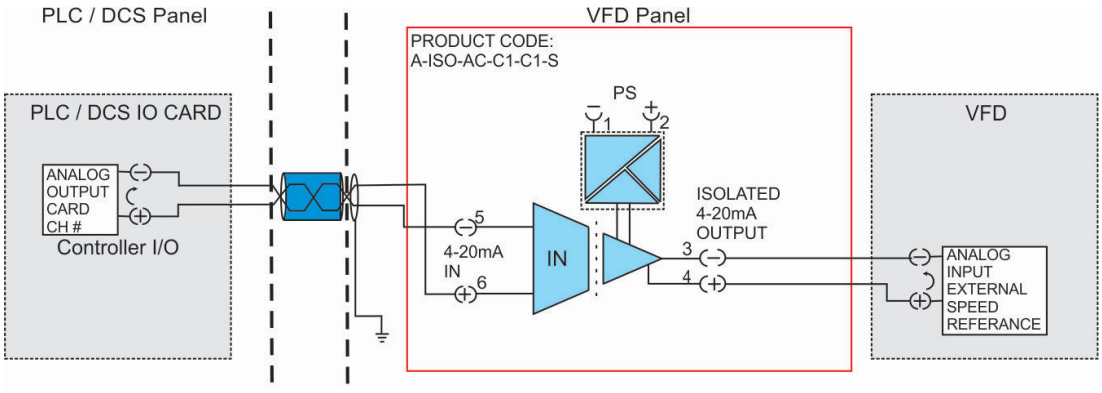
PLC / DCS / Controller generates Control Output for Flow Control in a PID Loop. An Analog Output Card gives this PID Output as 4-20mA to the Variable Frequency Drive as an External Speed Reference to Vary the Pump Speed and in turn regulate the Mass Flow rate.

We use SISO DC Current Isolator for both Input and Output.

Input Loop uses (A-ISO-DC-C1-C1-S) SISO DC Current Isolator powered by 24 VDC Power Supply as it is installed in the Controller Panel and shares the Power Supply with Controller and its IOs.



Output Loop uses (A-ISO-AC-C1-C1-S) SISO DC Current Isolator powered by 230 VAC Power Supply as it is installed in the VFD Panel and we want to avoid installing a Switch Mode Power Supply (SMPS) just for the Isolator.
This same Output Loop can also be executed by using **(A-ISO-DC-C1-C1-S)** SISO DC Current Isolator powered by 24 VDC Power Supply. In this case the Isolator can be installed in the Control Panel itself.



Product Code: A-ISO-AC-C1-C2-S, A-ISO-DC-C1-C2-S:
DC Current Isolator having Single Input and Dual Output Channels – SIDO (Isolating Splitter):

Application – Mass Flow Control using Automatic Variable Frequency Drive Speed Variation, Flow Rate also needs to be displayed by an Overhead Jumbo Display in Factory, Likewise Control Output needs to displayed on VFD Panel as Percentage Output:

A VFD is used for Pump Speed Variation and subsequent Flow Control. A Mass Flow Meter Senses the Flow of Mass, this Flow Signal is Transmitted to a PLC / DCS / Controller as 4-20mA.

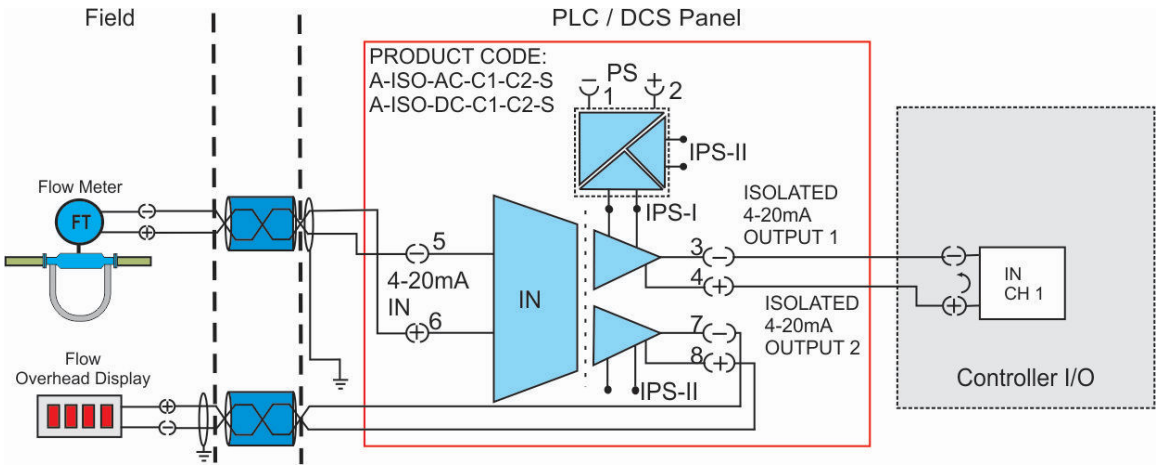
PLC / DCS / Controller generates Control Output for Flow Control in a PID Loop. This Flow Rate also needs to be displayed in the Factory for Engineers to easily view it on the go. Hence we use SIDO and take this signal in a second Isolated Output Channel to a Jumbo Overhead Display.

An Analog Output Card gives this PID Output as 4-20mA to the Variable Frequency Drive as an External Speed Reference to Vary the Pump Speed and in turn regulate the Mass Flow rate.

We use SIDO DC Current Isolator for both Input and Output.

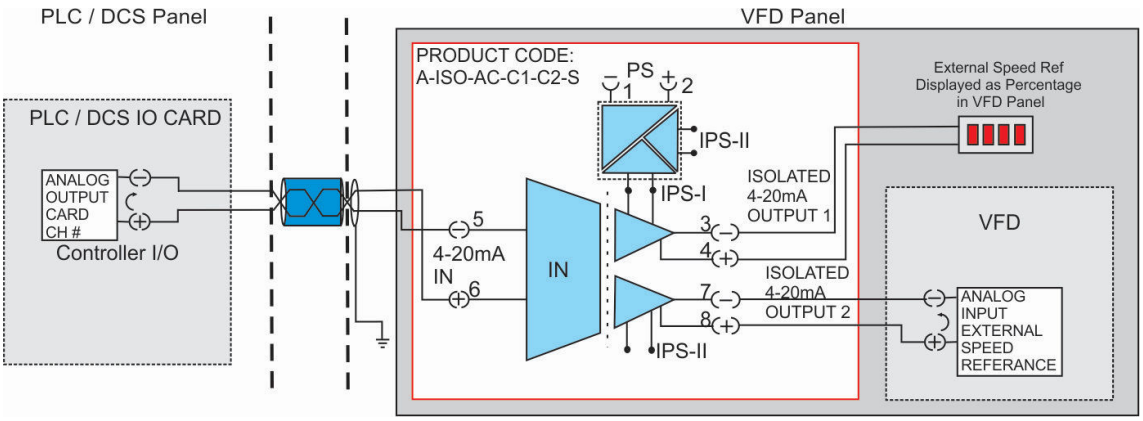
Input Loop uses SIDO DC Current Isolator powered by 24 VDC Power Supply as it is installed in the Controller Panel and shares the Power Supply with Controller and its IOs. Input Signal is Replicated as Two Separate Isolated Signals. One of these Signal Replicas goes to the Controller and other goes to Overhead Display.

Notice: Shielding is always grounded on the side which receives the Signal.

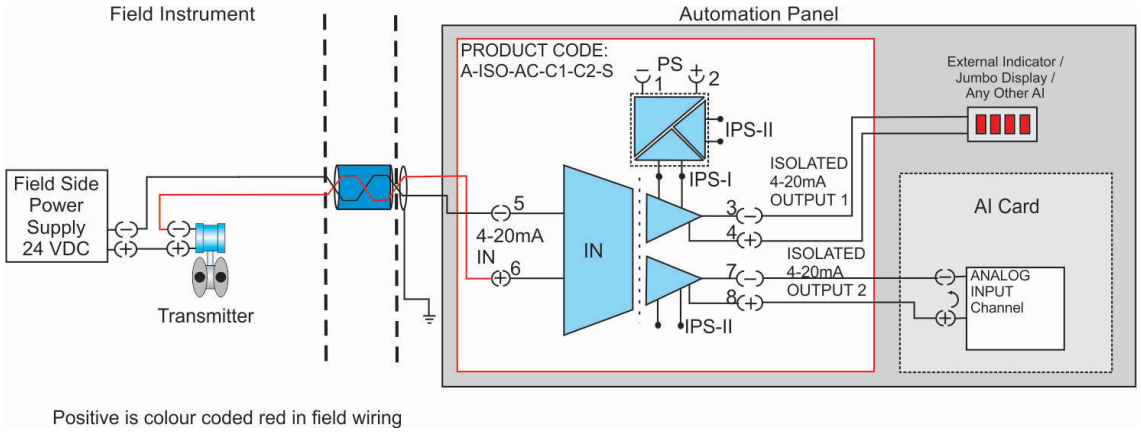


Similarly **Product Code: A-ISO-AC-C1-C4-M, A-ISO-DC-C1-C4-M** ***DC Current Isolator having Single Input and Quad Output Channels – SIQO (Isolating Splitter):***
Can be used where 4 Isolated Replicas of the Signal are required.

Output Loop uses A-ISO-AC-C1-C2-S SIDO DC Current Isolator powered by 230 VAC Power Supply as it is installed in the VFD Panel and we want to avoid installing a Switch Mode Power Supply (SMPS) just for the Isolator. One of SIDO's output is used as External Speed Reference of the VF Drive. While Other Output is used to locally display this Value as Output Percentage for Speed Variation on the Drive Panel.



Input Loop uses A-ISO-AC-C1-C2-S SIDO DC Current Isolator powered by 24 VDC Power Supply to isolate Field Instruments side from the Automation side. In this example a 2-Wire Transmitter is powered by external field side 24VDC power supply (Important note: Never use the Automation side Power Supply to Power any Field Instrument. It's always advisable to have a Separate Field Side Power Supply. Else Isolation will be breached by the common Ground.) the signal is isolated and connected to the Analog Input (AI) channel of the Automation Controller (PLC / DCS / PID Controller) other channel is given for external display or to any other analog input.

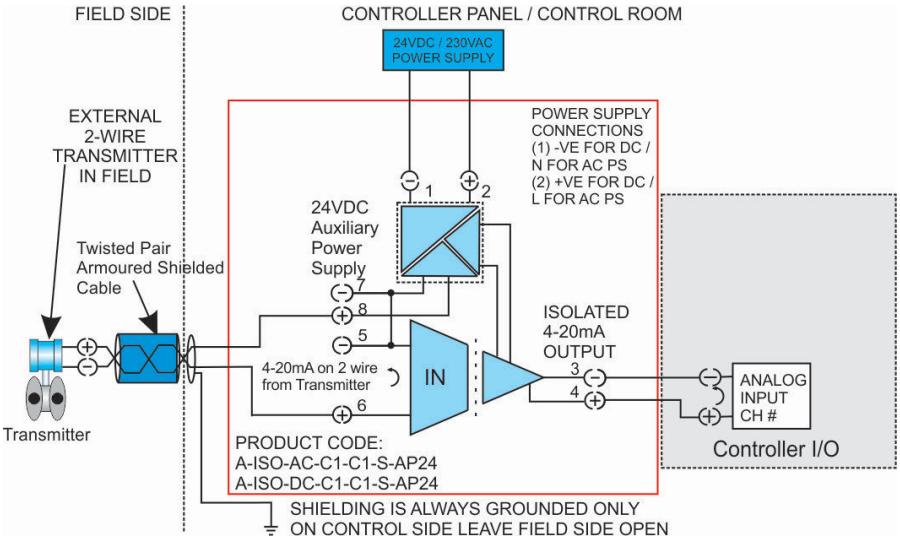


Product Code: A-ISO-AC-C1-C1-S-AP-24, A-ISO-DC-C1-C1-S-AP24:
DC Current Isolator having Auxiliary Power Supply to Power 2-Wire Transmitter – SISO-AP:

Application – Differential Pressure Sensing using 2-Wire Transmitter without using a Separate Field Power Supply:

A Differential Pressure Transmitter is Powered by 24VDC Auxiliary Power Supply in SISO-AP24 and the Signal is read on the same wires forming a 2-Wire Transmitter Loop. This Signal is Isolated and used in the PLC / DCS / Controller.

This Sensing Loop uses (A-ISO-DC-C1-C1-S-AP24) SISO-AP24 DC Current Isolator powered by 24 VDC Power Supply. It is installed in the Controller Panel and shares the Power Supply with Controller and its IOs. It Isolates the Signal Completely before giving to the Controller.



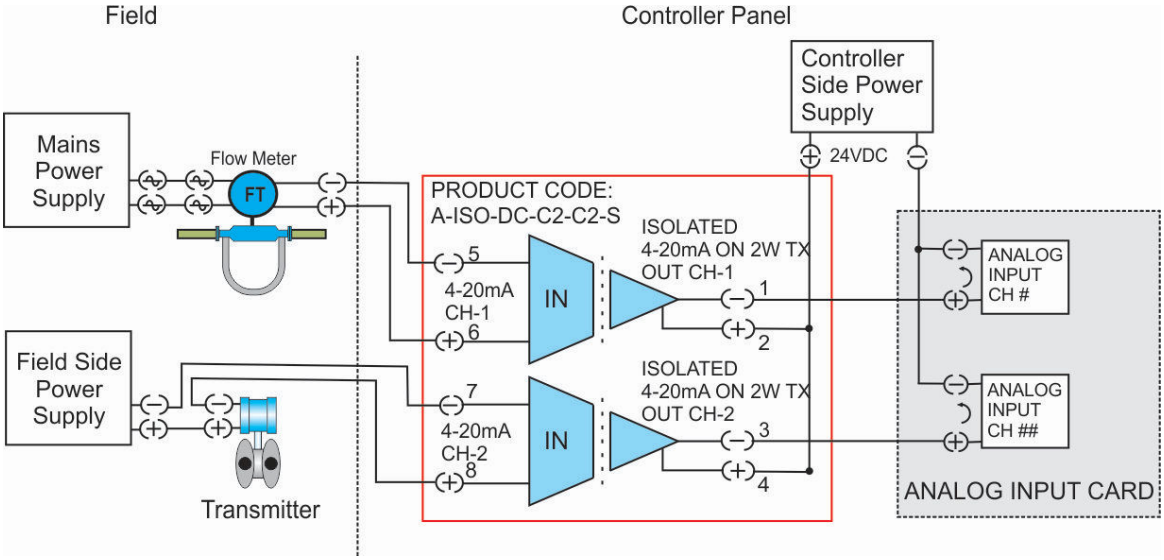
Product Code: A-ISO-DC-C2-C2-S:
DC Current Isolator having Dual Input and Dual Output Channels – DIDO:

Application – Two Current Inputs are to be sensed Isolated and Re-Transmitted to PLC / DCS / Controller but due to Lack of Space, both Isolators should be housed in the space of one:

A-ISO-DC-C2-C2-S, DC Current Isolator having Dual Input and Dual Output Channels – DIDO uses the same 22.5mm Width enclosure as the SISO or SIDO. It contains Two Isolators in the Space of One. This is a huge space saver as it fits two Barriers in place of one and can be used as Input Isolator in any Automation Panel.

Both the Outputs are 2-Wire Transmitters and can be powered by Controller Side Power Supply. Both the Inputs are Loop Powered meaning the Input Circuitry is powered by the Signal itself.

The figure elaborates on how DIDO Isolator can be used to Isolate a Sourcing Current from a Magnetic or Coriolis Mass Flow Meter and a Two Wire Current Signal from a Pressure Transmitter at the same time. Controller Side Power Supply powers the Output Circuitry thus Electrically Isolating Field Side from Controller Side.



Application Notes - DC Voltage Isolator and Isolating DC Signal Converters:

Product Code: A-ISO-AC-V1-V1-S, A-ISO-DC-V1-V1-S:
Standard DC Voltage Isolator:

DC Voltage Isolator electrically isolates and repeats incoming DC Voltage Signal which maybe Unipolar or in milli-Volt range. And can be used in to connect two devices while Electrically Isolating them. Some devices especially old devices have Bipolar Voltages as Input or Output Signals typical example is a Heenan Coupling which is type of Eddy Current Drive used for Speed Variation.

Voltage Isolator is an excellent device with which to such devices in control loops while isolating them electrically from the main control circuit.

Product Code: A-ISO-DC-M1-V1-S, A-ISO-AC-M1-V1-S
DC milli-Volt Isolator:

Many Sensors and other Devices have milli-Volt Outputs. Most of these can be connected to the milli-Volt range Voltage Isolator or milli-Volt to Current Converter.

Product Code: A-ISO-DC-VH-V1-M, A-ISO-AC-VH-V1-M
High DC Voltage Isolator:

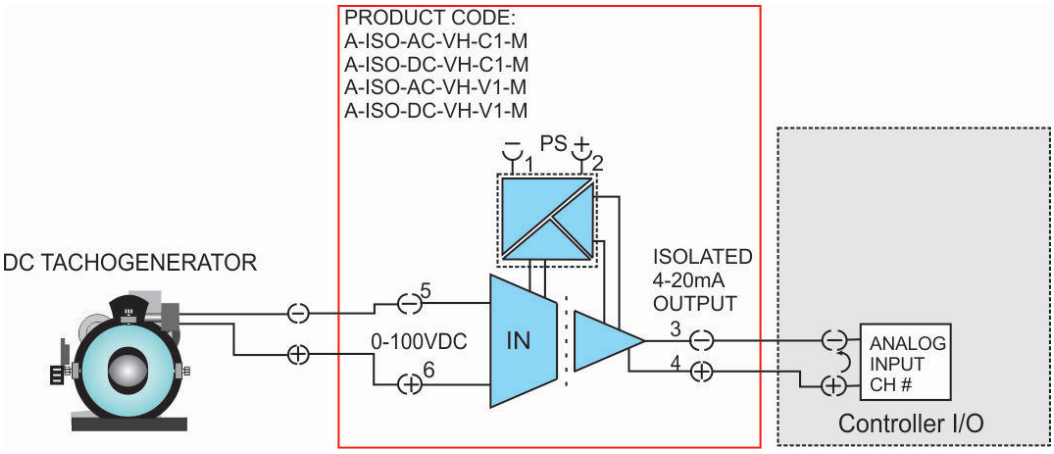
Many Devices use DC Tacho-Generators for Speed Measurement. These DC Tacho Generators typically generate 0-100VDC Voltage. DC High Voltage Isolator or DC High Voltage to Current Converter is a perfect tool for taking these devices in control loop.

Product Code: A-ISO-DC-V1-C1-S, A-ISO-AC-V1-C1-S:
Isolating DC Signal Converter (V To I) Voltage To Current:

Typical application where 0-10 VDC Input from any is filtered, isolated and converted to 4-20mA DC Current. The application diagram shows a typical scenario where a VFD has 0-10 VDC output for motor speed output and this has to be connected to a PLC / DCS having a 4-20mA analog input card. V to I converter is a perfect solution for this situation. Where intended signal is acquired without any change or deformation.

Product Code: A-ISO-DC-VH-C1-M, A-ISO-AC-VH-C1-M:
High Voltage to Current Isolating DC Signal Converters

High DC Voltage Isolator can be used directly with DC Tacho Generator whose DC Voltage Signal which is typically 0-100VDC can be connected to the Isolator Input and a 4-20mA Output can be used for Control Application.

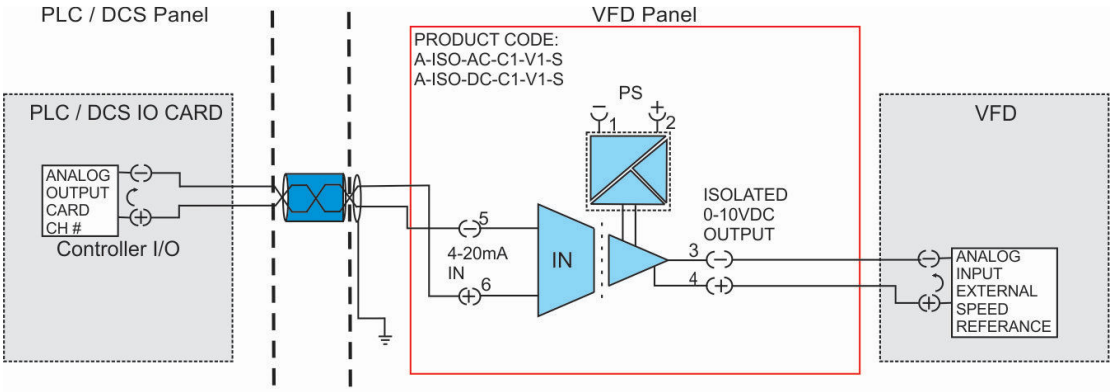


Product Code: A-ISO-DC-C1-V1-S, A-ISO-AC-C1-V1-S:
Current to Voltage (I to V) Isolating DC Signal Converter

Application: Speed Control of a VFD Drive used to Drive a Mill / Pump / any other Motor Driven Equipment.

VFD has Analog Input Card which accepts Voltage signal of 0-10VDC as External Speed Reference. This is a Perfect application for Current to Voltage Isolating DC Signal Converter.

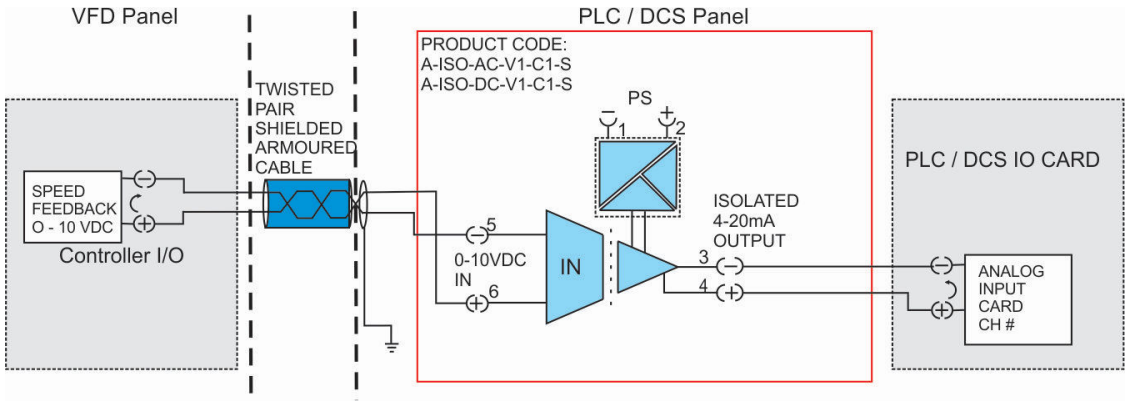
4-20mA DC Current from the PLC Analog Output Card will be filtered, isolated and converted to 0-10 VDC Signal. The V to I Converter can be installed either in the Controller Panel or in the VFD Panel as shown below.



Speed Feedback is available as 0-10VDC in this VFD and this Signal has to be taken in the PLC to complete the Feedback Loop.

A Suitable Application to use Isolating V to I Converter.

Product Code: A-ISO-DC-V1-C1-S, A-ISO-AC-V1-C1-S:
Isolating DC Signal Converter (V To I) Voltage To Current:



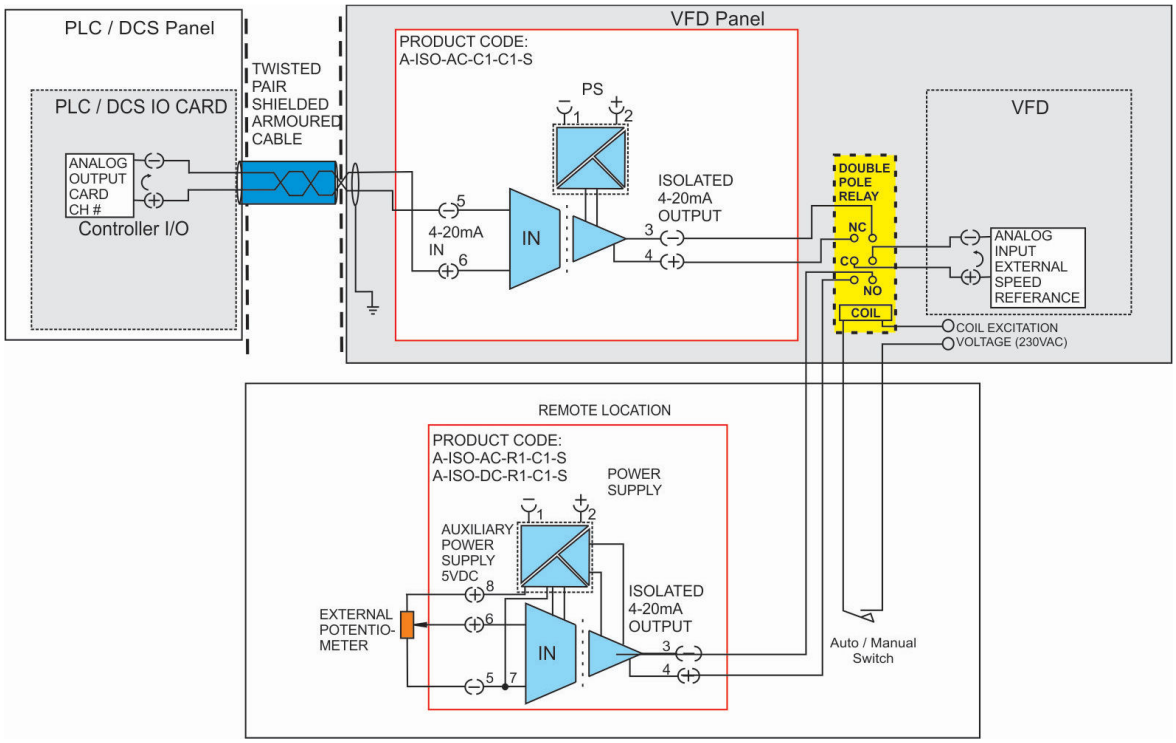
Product Code: A-ISO-DC-R1-C1-S, A-ISO-AC-R1-C1-S:
Resistance to Current Isolating DC Signal Converters
Application: Speed Control of a VFD Drive From a Remote Location as a Manual Override.

VFD has Analog Input Card which accepts Voltage signal of 4-20 mA as External Speed Reference. This Input is already used by PLC / DCS for Automatic Speed Variation. However we also have to provide a Manual Over-Ride for this in case of Emergency Operations. Keeping a Potentiometer on Extended wires is ruled out as Drive is used for a Critical Operation.

Resistance to Current Isolating DC Signal Converter is designed just for such an application.

A Double Pole Double Relay is fixed in the VFD Panel for Switching the External Speed Reference from PLC to Manual Potentiometer. A Switch is fixed in the Remote Control Panel to change the Relay Position.

A safe way to have Remote Control while Isolating the system from any Electrical Interference.

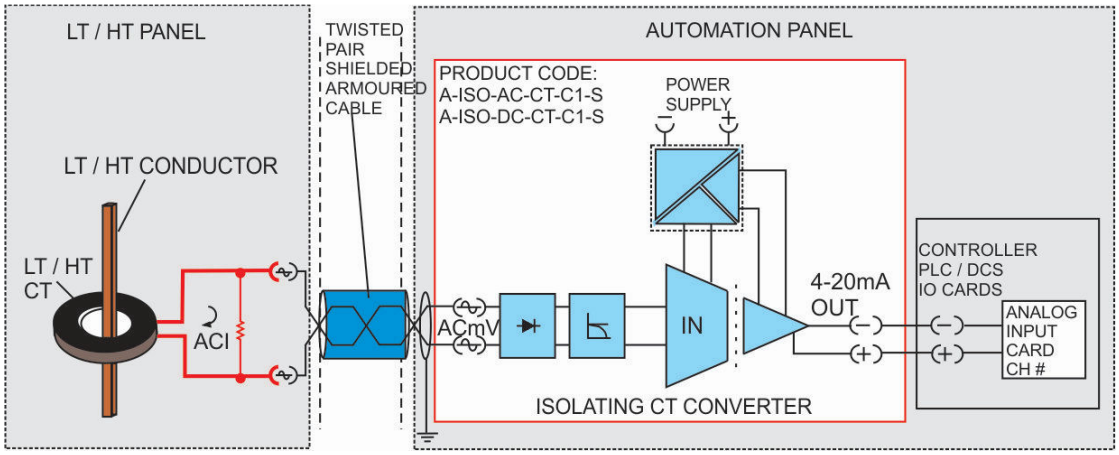


Application Notes - Isolating CT Converters:

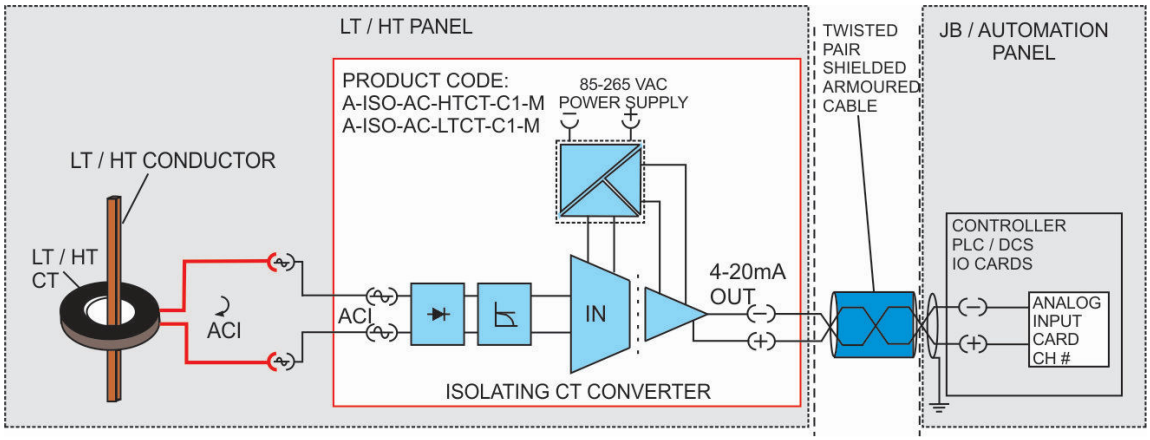
Product Code: A-ISO-DC-CT-C1-S, A-ISO-AC-CT-C1-S, A-ISO-DC-HTCT-C1-M, A-ISO-AC-HTCT-C1-M, A-ISO-DC-LTCT-C1-M, A-ISO-AC-LTCT-C1-M:
Isolating CT Converter (CT Shunt Resistance Is External), Isolating HT CT Converter, Isolating LT CT Converter

High Load Currents can be Sensed with the help of Current Transformer (CT). Secondary Current Output of 0-5A / 0-1A is Generated when High Current Passes through a Conductor in which the CT is fixed.

A-ISO-DC-CT-C1-S Isolating CT Converter is designed to be installed in the Automation Panel where high current isn't desirable. So a Shunt Resistor is Fixed on the CT itself and the Signal is taken as AC mV Input to the Controller or Automation Panel where the Isolating CT Converter is fixed. Isolating CT Converter very precisely converts this Signal to Isolated 4-20mA Signal. This Current Signal is then given to the Controller.



A-ISO-DC-HTCT-C1-M, A-ISO-AC-HTCT-C1-M, A-ISO-DC-LTCT-C1-M, A-ISO-AC-LTCT-C1-M: Isolating HT and LT CT Converters are designed to be installed in the Motor Control Panel or LT / HT Panel itself. If you select the AC Powered Model, then Power can be taken from the Panel itself. The CT Secondary Winding can be connected directly to the **Isolating HT or LT CT Converter.** Rest of the working remains same Isolating CT Converter explained earlier. The Isolated Current Output can be given to the Controller by Field Cables as shown in the diagram.



Application Notes – AC Voltage and Frequency Converters:

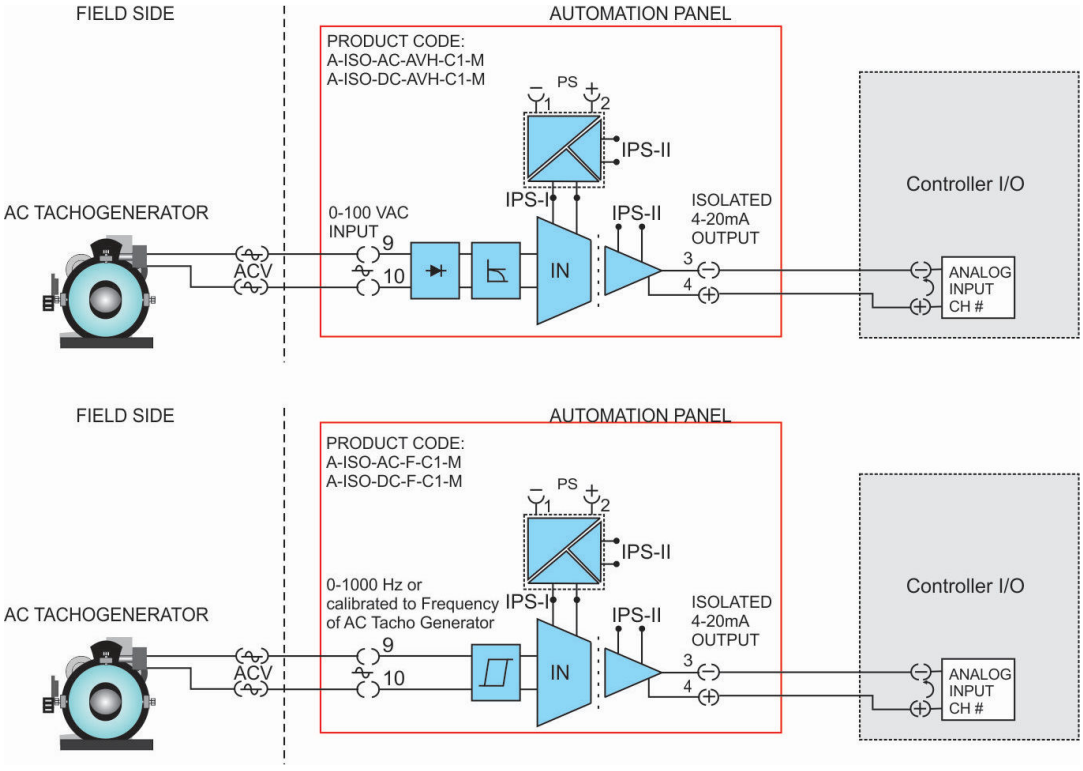
Product Code: A-ISO-DC-AV-C1-S, A-ISO-AC-AV-C1-S, A-ISO-DC-AVH-C1-M, A-ISO-AC-AVH-C1-M, A-ISO-DC-AMV-C1-M, A-ISO-AC-AMV-C1-M, A-ISO-AC-F-C1-M, A-ISO-DC-F-C1-M :

AC Voltage to Current Isolating Converter, AC milli-Volt to Current / Standard DC Voltage Isolating Converter, AC High Voltage to Current / Standard DC Voltage Isolating Converter, Frequency to Current / Voltage Isolating Converter

Isolating AC Signal Converters cover vast range of AC Signals to Standard Current or Voltage Converters in various Input Options from millivolt to High AC Voltages and Frequencies. We have specific Models for each requirement.

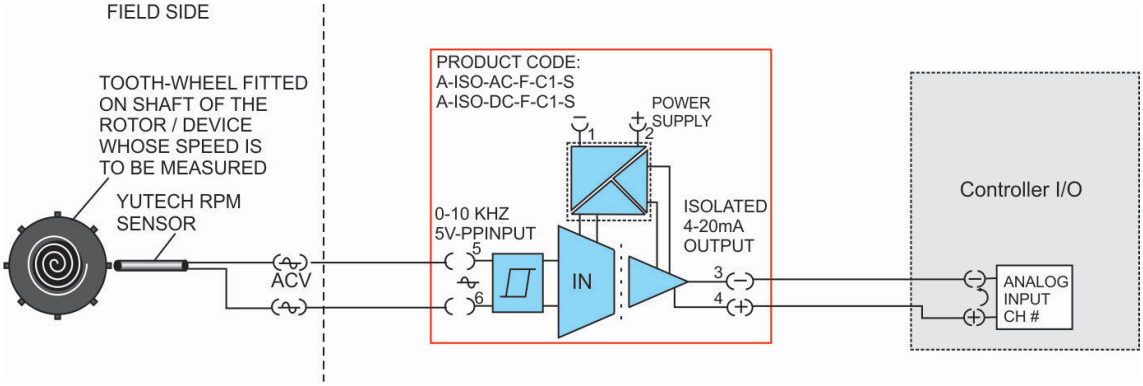
A-ISO-AC-AVH-C1-M Isolating AC High Voltage to Current Converter is designed to be installed in the Field Junction Box or Field Panel as taking High Voltages in Automation Panels isn't desirable. Isolated 4-20mA Output from this Converter can be given to Automation panel.

Application: Sensing Speed of Motor using AC Tacho Generator.
This application can be addressed by using either **A-ISO-AC-AVH-C1-M Isolating AC High Voltage to Current Converter** or **A-ISO-AC-F-C1-M Frequency to Current / Voltage Isolating Converter.**



Product Code A-ISO-AC-F-C1-M , A-ISO-DC-F-C1-M: Frequency to Current / Voltage Isolating Converter:

Another application for F to I Isolating Converter is Speed Measurement using Electro-Magnetic Speed Probe or Proximity Sensor. Example of this is illustrated below:



YUTECH Process Indicator can be used to locally display the Speed. And YUTECH Speed Probe or RPM Sensor can be used for excellent results.

Prduct Code: A-AC-U-C1-LD05-PM48

ISOLATING INDICATOR DISPLAY CUM TRANSMITTER SPORTS UNIVERSAL AND FREQUENCY INPUT

Prduct Code: ASD-DC-RPMS-10

RPM SENSOR

Note:

1. **Please read the datasheets for Product Codes and Product Specifications.**
2. **Isolation Products with additional loops or specifications can be custom made on request.**
3. **Please visit us at www.yutech.in**
4. **Please send your enquiries to sale@yutech.in; instruments@yutechglobal.com**
5. **General Company information can be sought from info@yutech.in;**