

Signal Isolator – 9000C



**masibus**  
Masibus Automation and Instrumentation  
Pvt. Ltd.

INTRODUCTION

9000C Series are compact yet rugged 4 and 2 wire Signal isolators designed for conditioning and safe guarding custom-built wide range of voltage and current field signals. Field Signal is then isolated and converted to standard instrumentation signals, acceptable to commercially off the shelf (COTS) automation products.

The Aux Powered Model is Equipped with Advanced Extended Power Supply with Supply Range of 20V to 265V AC or DC. 9000C model is further enhanced with Switch selectable I/O configuration for I/O ranges i.e. 0/4-20mA, 0/1-5V and 0-10V. This feature allows user to have freedom to change 0/4-20mA, 0/1-5V and 0-10V I/O types only, using switch available on side of device and with minor tuning using front accessible trim-pots, depending upon field requirements.

9000C (Aux Powered Model) is equipped with Built in transmitter power supply (TPS) that can drive 2 Wire transmitters in case of 4-20mA DC input signal.  
9000C Series isolators act as signal distributor when used with more number of outputs.

9000C Offers excellent accuracy and stability delivering reliable operation in hostile environments with full 3 port isolation between input, output and power supply.  
9000C Series are flexible for DIN rail mounting and easily installable. Its compact design consumes less space and hence reduces cost of overall installation.

With 9000C 'L' Loop Powered Version, overall wiring can be reduced availing same performance and overall System power consumption can be reduced.

9000C with HART Pass through (Aux Powered Model) is dedicated Signal Isolator, for 2-wire HART Programmable devices, with HART Pass capability and all enhanced features of 9000C Series. This model can also provide an additional Output of Current for Non HART compatible devices.

FEATURES

- Available in Aux Powered (AP) and Loop Powered (LP) options
- Extended Universal Power Supply Range: 20V to 265V DC or AC along with Safe and Sufficient Power For Field 2 Wire Transmitter (Aux Powered Model)
- Switch Selectable Input/Output option (Aux Powered Model)
- Rugged & accurate 4 wire and 2 wire isolator
- Up to 2 outputs with Short Circuit Protection (Aux Powered Model)
- Wide zero & span adjustment limits
- 1.5KV AC Isolation between I/P, O/P and Supply
- High CMRR and NMRR
- High output Load Driving Capability
- Lowest Long term Drift

APPLICATION

- Field interface device
- Transmitter Power Supply
- Signal Repeater
- Signal Converter
- Factory automation
- Impedance matching of transmitters and receiver instruments

SPECIFICATION

INPUT	
Input Type	Voltage/Current
Input Range	'L' Version: 4-20mA 'S' Version: 4-20mA (Standard) 'M' Version: 0/4 to 20mA , 0/1 to 5V , 0 to 10V (DIP switch selection) 'H' Version: 4-20mA, HART Pass
Input Impedance	Current Input: ≤100 Ω (Loop Powered) : ≤10 Ω (Aux Powered) Voltage Input: ≥1 MΩ
CMRR	>100 dB
NMRR	>70 dB
Temp-co	≤100ppm/°C

OUTPUT	
Output Type	Voltage/Current
Loop Powered	'L' Version: 4-20mA
Aux Powered	'S' Version: 4-20mA (Standard) 'M' Version: 0/4 to 20mA , 0/1 to 5V , 0 to 10V (DIP switch selection) 'H' Version: 4-20mA, HART Pass on o/p-1, 4-20mA, Standard on o/p-2
Response Time	≤50 ms
Accuracy	± 0.1% of FS
Output Load (Loop Powered)	R <sub>Load</sub> = [(Loop Supply Voltage – 10)/0.021]Ω mA: ≤750Ω@20mA (SOP),≤550Ω@20mA (DOP) V: Load Current ≤ 5 mA (e.g. for 0-5V: 5V/5mA ≥ 1 KΩ)
Output Load (Aux Powered)	
Output Loop status LED	Green (Aux Powered, 'S' version only)
TPS Output (Aux Powered)	≈22VDC (±10%) @20mA

POWER SUPPLY	
Supply (Loop Powered)	10 to 36VDC with reverse polarity protection
Supply (Aux Powered)	20-265V DC/AC (50-60Hz)
Power Consumption (Aux Powered)	≤3W
Power ON status LED	Red (Aux Powered only)

ISOLATION

Loop Power Model	Input to Output: Galvanic Isolation of 1.5KVAC for 1 minute
Aux Powered Model	Power to Input and Output : <ul style="list-style-type: none"><li>• Reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 3KVAC (For CE marked 9000C SOP 'S' and 'M' Model)</li><li>• Galvanic Isolation of 3KVAC for 1 minute (For CE marked and Non-CE Model)</li></ul> Input to Output : <ul style="list-style-type: none"><li>• Functional insulation according to IEC/EN 61010-1, rated insulation voltage 1.5KVAC (For CE marked 9000C SOP 'S' and 'M' Model)</li><li>• Galvanic Isolation of 1.5KVAC for 1 minute (For CE marked and Non-CE Model)</li></ul> Output to Output : <ul style="list-style-type: none"><li>• Galvanic Isolation of 1.5KVAC for 1 minute (For Non-CE Model)</li></ul>

PHYSICAL

Mounting	35 mm DIN Rail
Dimensions in mm	12.5(W)x100.2(H)x115.2(D) mm (For SOP Aux and Loop Powered Model) 17.5(W)x100.2(H)x115.2(D) mm (For DOP and HART Pass SOP/DOP)
Enclosure Material	PA66
Weight	100 gms. Approx for SOP (Aux and Loop Powered) 130 gms. Approx for DOP

ENVIRONMENTAL

Operating temperature	0 to 55 °C
Storage temperature	-20 to 85 °C
Humidity	30% to 95% RH(Non-condensing)

TERMINAL DETAIL

Terminal Block	UL,CSA standard & CE certified
Terminal Cable Size	2.5mm²

DIRECTIVE CONFORMITY (Applicable only for CE Marked 9000C SOP Aux Powered 'S' and 'M' Model.)	
Electromagnetic compatibility Directive 2014/30/EU	IEC 61326-1:2012
Low voltage Directive 2014/35/EU	IEC 61010-1:2010


NOTICE

The contents of this manual are subject to change without notice as a result of continual improvements to the instrument’s performance and functions.

Every effort has been made to ensure accuracy in the preparation of this manual. Should any errors or omissions come to your attention, however, please inform Masibus Sales office or sales representative. Under no circumstances may the contents of this manual, in part or in whole, be transcribed or copied without our permission

SAFETY/WARNING PRECAUTIONS

ESD precautions: Before Installing or Operating the Instrument, always make sure to discharge the static electricity that might be available on your body to prevent any damages to Instrument.



**Caution: Never carry out work when the Power is turned ON, this is dangerous. This indicates a danger that may result in minor or moderate injury or only a physical damage if not avoided.**

Wiring must be carried out by personnel, who have basic electrical knowledge and practical experience. To minimize the possibility of fire or shock hazards, do not expose this instrument to rain or excessive moisture.

Do not use this instrument in areas under hazardous conditions such as excessive shock, vibration, dirt, moisture, corrosive gases or oil. The ambient temperature of the areas should not exceed the maximum rating specified.  
Instruments suspected of being faulty must be disconnected and removed first and it is recommended to send Instrument to Masibus Customer Support Division for testing and repair.

Before start-up, it is particularly important to ensure:

- Terminal wiring: check that all cables are connected correctly and are according to the connection diagram.
- All wiring must confirm to appropriate standards of good practice and local codes and regulations. Wiring must be suitable for voltage, current and temperature rating of the system. Beware not to over-tighten the terminal screws.
- Unused terminals should not be used as jumper points as they may be internally connected, which may cause damage to the unit.

After installation the terminal area must be covered to provide sufficient protection against unauthorized Access to live parts. This is ensured by installing the device in the control Cabinet or distributor box.

WARRANTY

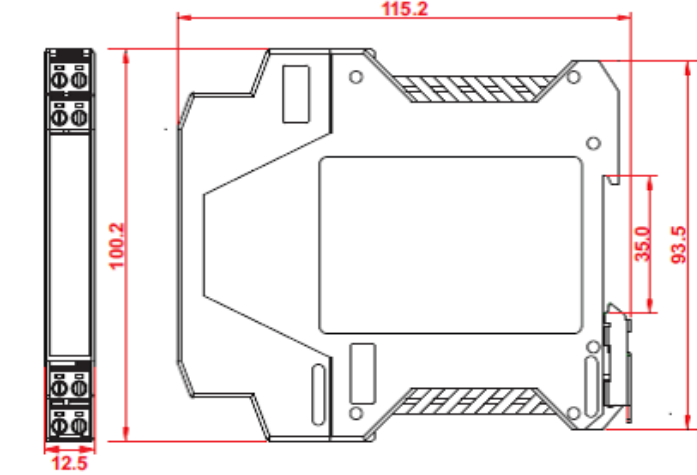
Warranty does not apply to defects resulting from action of the user such as misuse, improper wiring, operation outside of specification, improper maintenance or repair, or unauthorized modification.

Masibus is not liable for special, indirect or consequential damages or for loss of profit or for expenses sustained as a result of a device malfunction, incorrect application or adjustment.

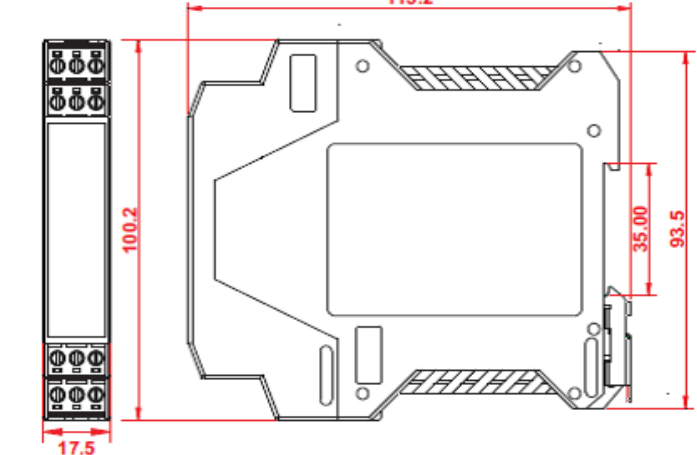
Masibus total liability is limited to repair or replacement of the product. The warranty set forth above is inclusive and no other warranty, whether written or oral, is expressed or implied.

OVERALL DIMENSIONS (In mm)

9000C SOP (Loop Powered and Aux Powered)

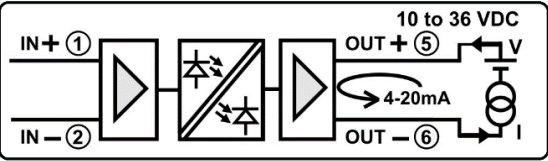


9000C DOP, HART Pass SOP and HART Pass DOP (Aux Powered)

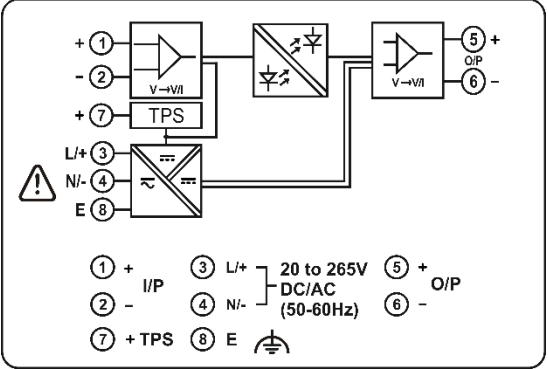


CONNECTION DETAILS

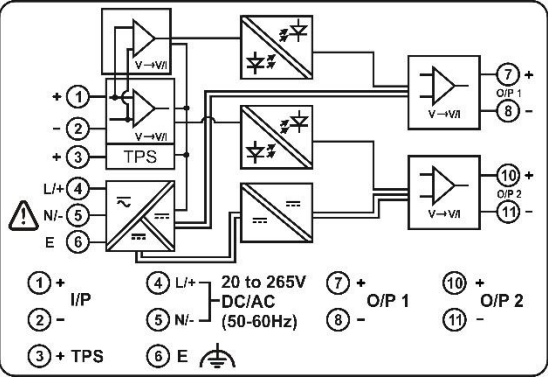
Block Diagram and Connection Details of Loop Powered Device



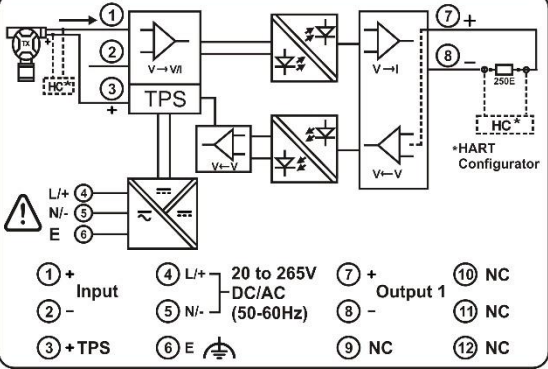
Block Diagram and Connection Details of SOP (Aux Powered)



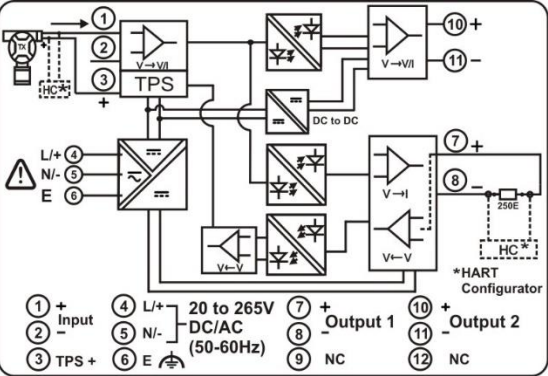
Block Diagram and Connection Details of DOP (Aux Powered)



Block Diagram Connection Details SOP HART Pass Suitable for 2 wire transmitter only (Aux Powered)



Block Diagram and connection details of DOP HART Pass Suitable for 2 wire transmitter only (Aux Powered).



SWITCH SELECTION DETAILS for 'M' Model SOP/DOP

SWITCH	4-20mA	0 -20mA	1-5V	0-5V	0-10V
OUTPUT	1				
	2				
	3				
	4				
	5				
	6				
INPUT	1				
	2				
	3				
	4				
	5				
	6				

Switch Selection Table for Different type of Input/Output

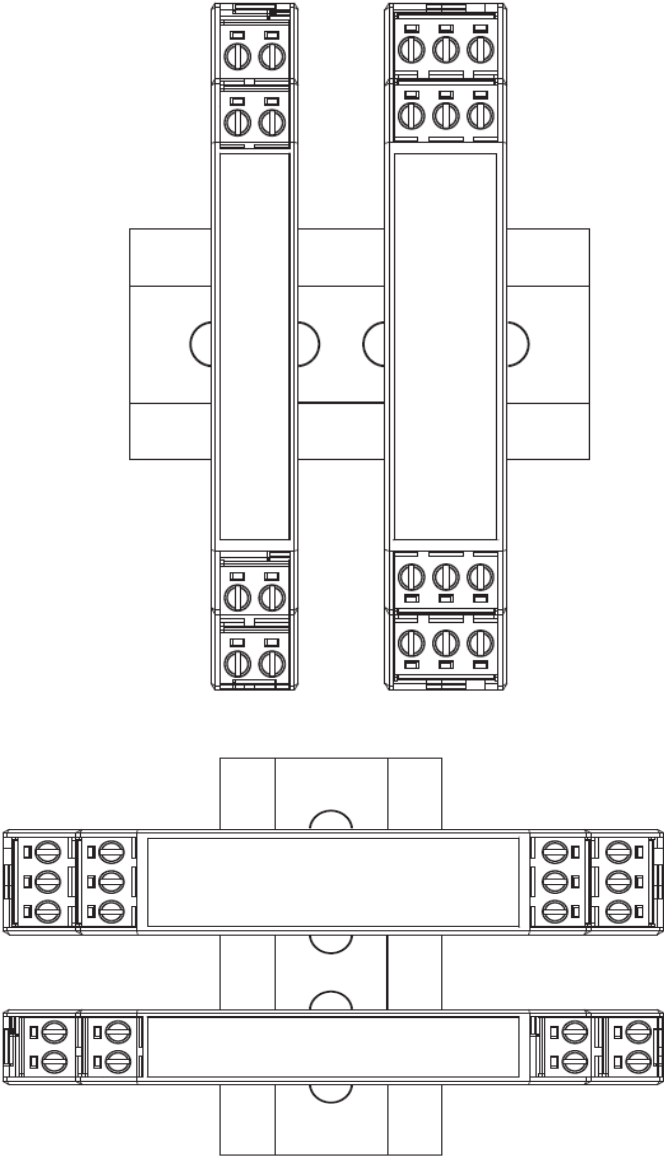
INSTALLATION

Din Rail Mounting:

The unit can be snapped onto all DIN rails (35mm) According to EN60715. The device must be mounted horizontally (Output terminal blocks facing upwards). The housing is mounted on the DIN rail by swivelling it into place. Adequate Air circulation must be considered between each Aux Powered devices to maintain their Operating temperature ranges, by keeping some space between each devices.

Removal:


Release the snap-on catch using a screwdriver and then detach the module from the bottom edge of the DIN Rail.



TROUBLE SHOOTING

- Unit Not Turning ON?

If Red LED at the front side is not turned "ON", the device is not getting sufficient supply or the connections are not as per terminal details.



**One must take care while dealing with Power wirings because it may create electrical shock**

- Output not matching with expected value?

Make sure the load on output of device is as per specification criteria.  
Make sure the output Signal is really incorrect with respect to input signal before attempting any re-calibration.

- Unstable Reading?

Check for loose connections.  
First verify that all conventional instrumentation norms have been followed for wiring.  
Keep Electromagnetic noise away from signal isolator.

ORDERING CODE

Aux Powered Model						
Model	Input Type		No of O/P		O/P Type	CE Compliance
9000C	S	X	X		X	X
		C	4-20mA	1	One	1
				2	Two	1
						Y

Model	Input Type		No of O/P		O/P Type-1	O/P Type-2	CE Compliance	
9000C	M	X	X		X	X	X	X
		C	4-20mA	1	One	1	4-20mA	0
		D	0-20mA	2	Two	2	0-20mA	1
		E	1-5VDC			3	1-5VDC	2
		F	0-5VDC			4	0-5VDC	3
		G	0-10VDC			5	0-10VDC	4
								5
								5
								5
								5

Model	Input Type		No of O/P		O/P Type
9000C	H	X	X		X
		C	4-20mA	1	One
				2	Two

Loop Powered Model			
Model	Input Type		O/P Type
9000C	X		X
	C	4-20mA	1

\* CE Compliance is available in SOP (Single Output) Aux Powered Models only. It is not applicable for DOP (Dual Output), HART Pass and Loop Powered Models.

SERVICE

For All Service related matters, Contact Masibus at below address.

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