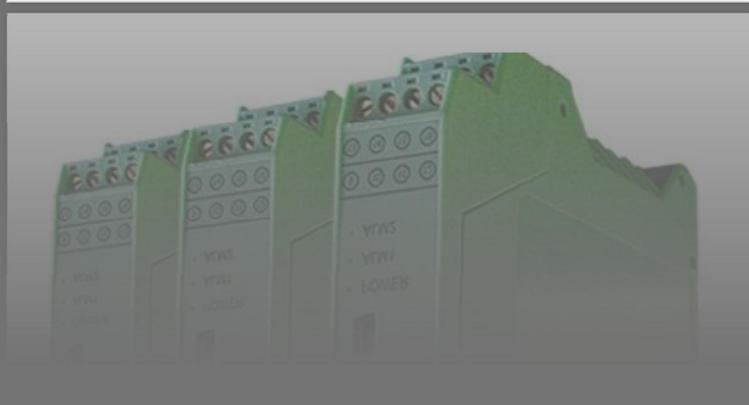


SPI

Smart Programmable Isolator User Manual



ABUS TECHNOLOGIES INC.

WARNING

- ❖ This manual should be passed on to the end user.
- ❖ The contents of this manual are subject to change without prior notice.
- ❖ All rights reserved.
- ❖ ABUS gives no warranty of any kind with regard to this manual, including, but not limited to, fitness for a particular purpose.
- ❖ If any question arises or errors are found, or if any information is missing from this manual, please inform your supplier or inform at info@abustek.com.
- ❖ The specifications mentioned in this manual are limited to those for the standard type under the specified model number break-down and do not necessarily apply for customized instruments.
- ❖ Please note that changes in the specifications, construction, or component parts of the instrument may not immediately be reflected in this manual at the time of change.
- ❖ If the customer or any third party is harmed by the use of this product, ABUS assumes no responsibility for any such harm owing to any defects in the product which were not predictable, or for any indirect damages.

Although Warning hazards are related to personal injury, and Caution hazards are associated with equipment or property damage, it must be understood that operation of damaged equipment could, under certain operational conditions, result in degraded process system performance leading to personal injury or death. Therefore, comply fully with all Warning and Caution notices.

Information in this manual is intended only to assist our customers in the efficient operation of our equipment. Use of this manual for any other purpose is specifically prohibited and its contents are not to be reproduced in full or part without prior approval of Technical Communications Department, ABUS Technologies

HEALTH AND SAFETY

To ensure that our products are safe and without risk to health, the following points must be noted:

1. The relevant sections of these instructions must be read carefully before proceeding.
2. Warning labels on containers and packages must be observed.
3. Installation, operation, maintenance and servicing must only be carried out by suitably trained personnel and in accordance with the information given. Any deviation from these instructions will transfer the complete liability to the user.
4. Normal safety precautions must be taken to avoid the possibility of an accident occurring when operating in conditions of high pressure and/or temperature.
5. Chemicals must be stored away from heat, protected from temperature extremes and powders kept dry. Normal safe handling procedures must be used.
6. When disposing of chemicals ensure that no two chemicals are mixed.

Safety advice concerning the use of the equipment described in this manual or any relevant hazard data sheets (where applicable) may be obtained from the Company address on the back cover, together with servicing and spares information.

CATALOGUE

Contents	Page No.
1. Introduction	4
2. Presentation	4
1. Features	4
2. Technical Parameters	5
3. Dimensions	5
4. Ordering Details	6
5. Connections	6
6. Installation	8
7. Configuration	8
Programming Instruction	8
8. Operation	8
9. Maintenance	9
1. Calibration of Instrument	9
2. Operation Environment	9
3. Troubleshooting	9
10. Safety Precautions	10
11. Warranty	10

1. INTRODUCTION

The Smart Isolator being programmable through Handheld communicator Model 1001 can be fit into major of industrial applications operating with different signals. It can be ordered to accept up to 2 inputs and provide up to 3 outputs. The input signals can be non-linear input such as resistance temperature detector, thermocouple or linear current or voltage. Signal of one-way, two-way or three-way current or voltage, isolated by transmitting output provides good electric isolation between input, output and power. It can be used as a temperature transmitter, convertor, signal isolator or signal conditioner according to the application.

2. PRESENTATION

2.1 Features

This product uses a special chip. It has many advanced performances which traditional analogue isolator and many digital isolators don't possess. This chip provides restrict and process from software to high/ low-frequency interference signal in input signals. Even in high-power frequency conversion system it can keep reliable performance. With the help of strong function of this chip instrument can carry on digitalized automatic/ manual regulation to signal without the help of outside zero and full-scale potentiometer. Meanwhile it can go on automatic compensation to input signals.

This series of products can also use integrated communication protocol, with the help of the connection of communicational methods, observing input and output values on line. The integrated smart isolator using an special chip, besides universal functions, can support the logical process to signal and set alarm output to condition.

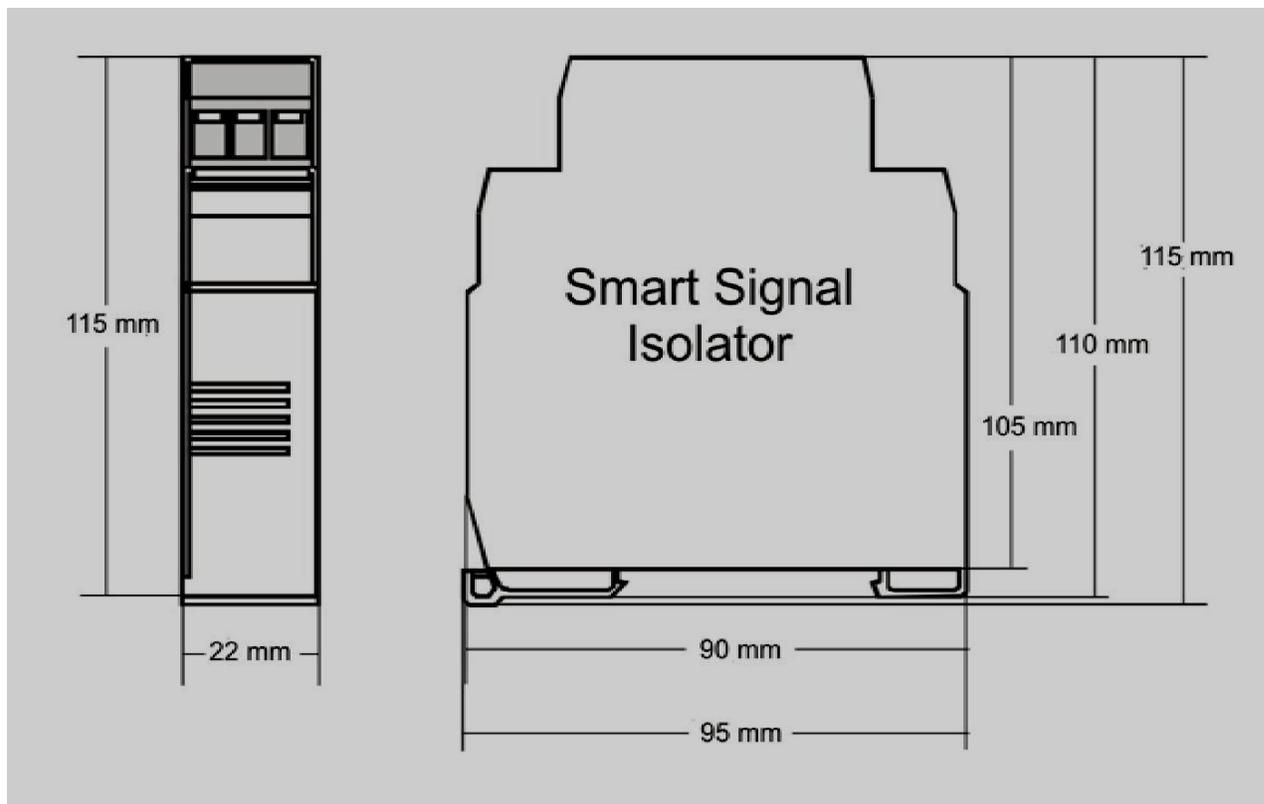
Unique and strong functions of software of the chip and excellent electric performance of hardware of isolator itself provide firm assurance for stability and reliability of products. And it makes overall performances of products lead of international advanced standard.

Series of instruments can be used with unit group instruments and DCS, PLC, etc. They are widely used in all kinds of industries such as oil, chemical, petro-chemical, power, food, steel, pharmaceutical industries etc...

2.2 Technical Parameters

System Accuracy Class:	$\pm 0.25 \% \times \text{F.S.}$
Temperature Drift:	$\leq 0.0015 \% \text{ F.S. } ^\circ\text{C}$
Operation Temperature:	Industry-class standard $-10 \sim 55^\circ\text{C}$
Input Impedance:	<i>Current:</i> $\leq 250 \Omega$; <i>Voltage:</i> $\geq 500 \text{ K}\Omega$
Current Outputs the Load Impedance Allowing Outside Connection:	At $4 \sim 20\text{mA}$ output: $\geq 750 \Omega$; At $0 \sim 10\text{mA}$ output: $\geq 1.5 \text{ K}\Omega$; If load is needed, please enclose additional illustration.
Inside Load at Outputting Voltage:	$\leq 1 \Omega$
Input/ Output/ Power/ Communication/ Insulation Strength between Two-Way:	$\geq 1500 \text{ V AC.}$
Ambient Temperature for Storage and Transportation:	$-40 \sim +80^\circ\text{C.}$
Power Supply:	<i>AC:</i> $85\text{V} \sim 260\text{V}$ <i>DC:</i> $18\text{V} \sim 36\text{V}$ (opposing protection)
Figure & Size:	<i>Width x Height x Depth:</i> $22.5 \times 100 \times 115\text{mm}$
Net Weight:	$130\text{g} \pm 10\text{g.}$

3. DIMENSIONS



4. ORDERING DETAILS

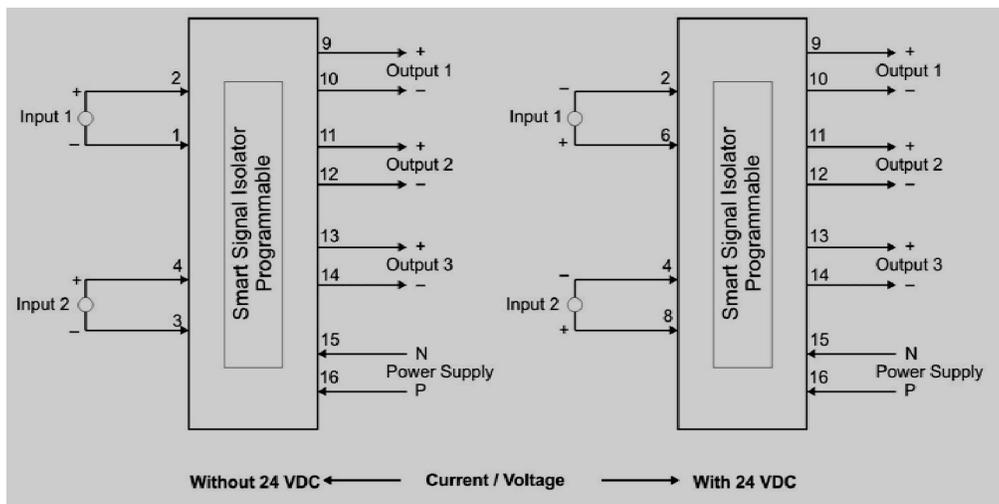
TYPE				DESCRIPTION
Product	SPI			Smart Programmable Isolator
Channel		S	Single Input	1 Input
		D	Double Input	2 Input
Input Type		L		Linear Signal such as, 4~20mA, 0~10V
		T		Thermocouple or RTD
First Output			B1	4 – 20 mA
			B2	1 – 5 V
			B3	0 – 10 mA
			B4	0 – 5 V
Second Output			C1	4 – 20 mA
			C2	1 – 5 V
			C3	0 – 10 mA
			C4	0 – 5 V
Third Output			D1	4 – 20 mA
			D2	1 – 5 V
			D3	0 – 10 mA
			D4	0 – 5 V
			N	None
Power Supply			D	24 VDC
			A	220 VAC

Example: SPI > S > L > B1 > C1 > N > A

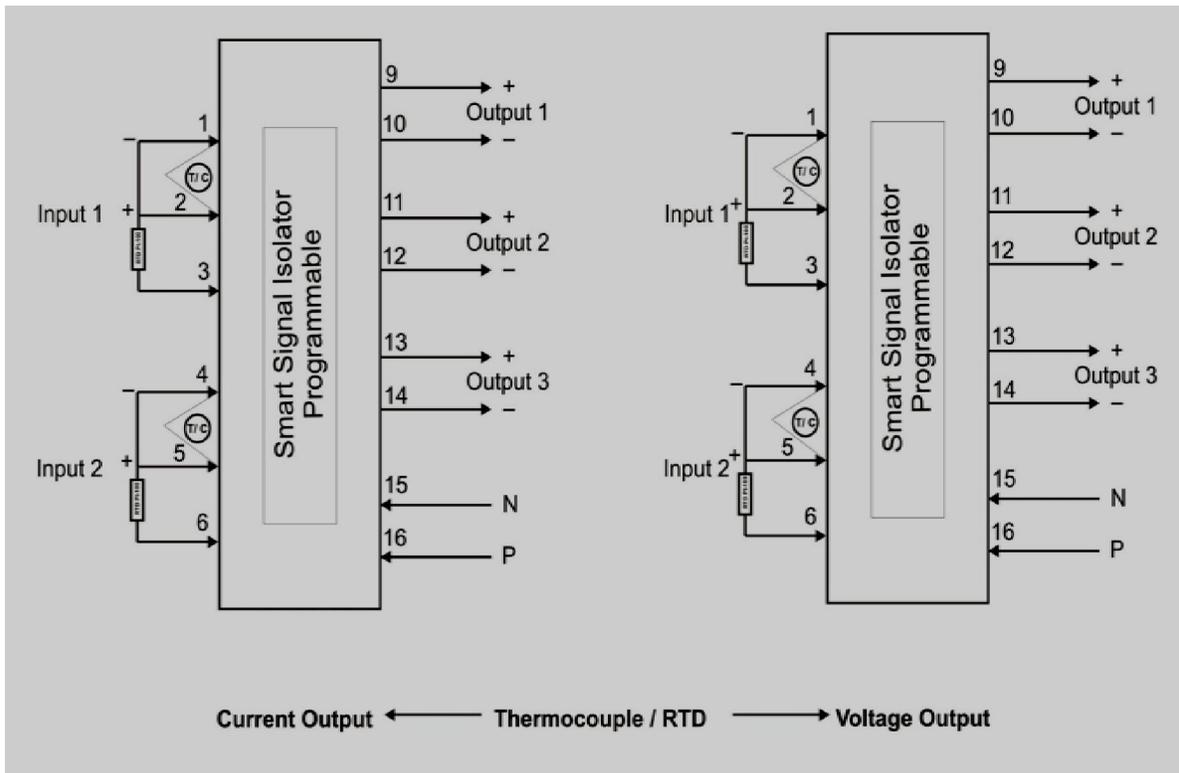
Illustration:

1. Single circuit input at most correspondingly has four output;
2. Types of input and output signals can be selected;
3. Frequency signals can be input and output.

5. CONNECTIONS



Connection Diagram: Current & Voltage



Connection Diagram: Thermocouple & RTD

Illustration of Instruments Wiring:

1. **First Way Input:** EXT1 (-), EXT2 (+)
2. **Second Way Input:** EXT3 (-), EXT4 (+)
3. **First Way Output:** EXT10 (-), EXT9 (+)
4. **Second Way Output:** EXT12 (-), EXT11 (+)
5. **Third Way Output:** EXT14 (-), EXT13 (+)
6. **Power (220V AC or 24VDC):** EXT15 (-), EXT ** (+).

Remarks: If smart signal transmitter directly connects with two-wire system transmitter, then press first way input.

6. INSTALLATION

First Input: EXT2 (-), EXT6 (+24) to connect wire. At this time smart signal processor doesn't have the function of protecting of protecting outside short circuit.

Second Input: EXT4 (-), EXT8 (+24V) to connect wire. At this time smart signal processor doesn't have the function of protecting outside short circuit.

Mounting Way: Please use guide-way type mounting. At mounting make sure the card position is stable and firm. In order to make instruments have good heat dissipation please vertically installs and reserve draught room as possible as you can.

7. CONFIGURATION

Programming Instructions

1. **Five-core Communication Interface:** For communication connection through private data wire Handheld Communicator Model-1001.
2. **Indicating Light:** Power: indicating light (continuously lighted) in power condition indicating light (communicating, fast flickering) in communication condition indicating light (trouble, slow flickering) in trouble condition.

ALM1: At satisfying alarm conditions, indicating light lights for long time

ALM2: At satisfying alarm conditions, indicating light lights for long time

Under trouble of input/ output signal, indicating light flickers.

8. OPERATION

For best results, you may use the shielded signal cable to avoid power spikes. Check all the wires before operating the instrument. Series of instruments can be used with instrument for isolation and distribution of signal regarding to your application may be for recording, controlling through DCS, PLC, etc. They are widely used in all kinds

of industries such as oil, chemical, petro-chemical, power, food, steel, pharmaceutical industries etc.

S.NO.	FUNCTION	DESCRIPTION
1	Alarms	For indication only.
2	Alarms	For indication only
3	Calibration	Through Model-1001

9. MAINTENANCE

9.1 Calibration of Instruments

The operation can be realized through ABUS-1001 Operator. The set parameters use the same calibration way as that of 585 and support automatic calibration.

9.2 Operation Environment

At mounting position strong vibration or strong electromagnetic impact from signal terminal, power terminal, power terminal and room is not allowed. In operation environment, poisonous or harmful matters which will corrode metals and plastics are not allowed to exist. Please keep the operation environment dry for the precise output.

9.3 Troubleshooting

There are two kinds of trouble in input signals: input trouble (open circuit, short circuit) and beyond span trouble.

Output ways at input trouble: Instruments can select beyond-span gain output and general output.

➤ Gain Output

At the condition of beyond upper limit, output signal has a gain exceeding 5% of normal output value;

At the condition of beyond lower limit, output signal has an output lower than 5% of lower limit; if lower limit is zero (i.e.0 ~ 5 V) then output is 0 V.

➤ General Output

At the condition of beyond upper limit, output maximum value or setting value;

At the condition of beyond lower limit, output minimum value or setting value;

At the condition of trouble, keep output value or setting value before output trouble;

Under trouble of input signal, trouble light of instrument flickers to indicate signal trouble.

10. SAFETY PRECAUTIONS

1. The unit should be powered for 15 minutes before use.
2. Use in ambient temperature of 0-60°C.
3. Avoid vibrations, shock, excessive dust, corrosive chemical materials or gaseous environment.
4. Input wire should not be too long. If measured signal have to be far away from the unit, please use 2-core shielded cable.
5. Use this instrument in the scope of its specifications, otherwise fire or malfunctions may result.
6. Contact of the instrument, with organic solvents or oils should be avoided.
7. Do not turn on the power supply until all of the wiring is completed. Otherwise electrical shock, fire or malfunction may result.
8. Do not disassemble, repair or modify the instrument.
9. All connections should be tightened properly.
10. Power supply should be constant, should not be fluctuating.

11. WARRANTY

ABUS provides the original purchaser of this instrument a one (1) year warranty against defects in material and workmanship under the following terms:

- The one year warranty begins on the day of shipment as stated on the sales bill.
- During the warranty period all costs of material and labor will be free of charge provided that the instrument does not show any evidence of misuse.
- For maintenance, return the instrument with a copy of the sales bill to our factory.
- All transportation and insurance costs should be covered by the owner of the equipment.
- Should any sign of electrical or mechanical shock, abuse, bad handling or misuse be evident the warranty voids and maintenance costs will be charged.

ABUS TECHNOLOGIES INC.

www.abustek.com, E-Mail: info@abustek.com