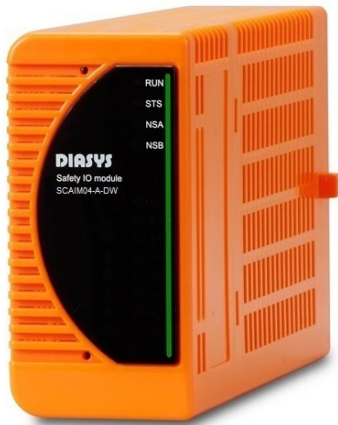


SCAIM04-A-DW Safety AI-TC module

Safety I/O , Thermocouple input 7 ch + Cold junction compensation input 1 ch

■ Summary



- * Number of input channels : 7 ch /Thermocouple input (Channel individual insulation)
1 ch /Cold junction compensation input (Channel individual insulation)
- * Thermocouple type : T/J/K/E
Switch : 2
- * User interface : (Front panel upper side : for H/W reset, lower side : unused)
- * Module ambient temperature : -5 to 60°C
- * RTD type : Pt100 Ω
- * In compliance with Functional Safety Standard IEC61508

SCAIM04-A-DW Safety AI-TC module

Safety I/O , Thermocouple input 7 ch + Cold junction compensation input 1 ch

Specifications

ITEM		SPECIFICATION								
Input	Number of channels	7 ch / Thermocouple input (Channel individual insulation) 1 ch / Cold junction compensation input (Channel individual insulation)								
	Range	TC -14 to 80 mV (Full Scale)								
		Cold junction compensation input range	<table border="0"> <tr> <td>T: -200 to 400°C</td> <td>-5.603 to 20.872 mV</td> </tr> <tr> <td>J: -200 to 1200°C</td> <td>-7.890 to 69.553 mV</td> </tr> <tr> <td>E: -200 to 1000°C</td> <td>-8.825 to 76.373 mV</td> </tr> <tr> <td>K: -200 to 1372°C</td> <td>-5.891 to 54.886 mV</td> </tr> </table>	T: -200 to 400°C	-5.603 to 20.872 mV	J: -200 to 1200°C	-7.890 to 69.553 mV	E: -200 to 1000°C	-8.825 to 76.373 mV	K: -200 to 1372°C
	T: -200 to 400°C	-5.603 to 20.872 mV								
J: -200 to 1200°C	-7.890 to 69.553 mV									
E: -200 to 1000°C	-8.825 to 76.373 mV									
K: -200 to 1372°C	-5.891 to 54.886 mV									
Signal filter	PT100: -10 to 100°C 96.09 to 138.51 Ω (Full Scale)									
Safe state	Communication cutoff									
Absolute accuracy	0.1% FS @ 25°C									
Temperature drift	Less than ±100 ppm/°C (relative to full-scale) (@ -5°C to 60°C)									
CMRR(Common mode rejection ratio)	100 dB or more attenuation									
NMRR(Normal mode rejection ratio)	About 30 dB attenuation (In the case of first-order lag filter initial setting value 100 ms)									
Data refresh cycle	1 msec									
Data format	0.1°C step for input range									
AD conversion type	∑Δ, Successive approximation register(SAR)									
Input filter	Software filter 0 to 65535 msec (All channel set together by 1 msec step)									
Isolation voltage	AC 500 V Internal circuit(CPU/FPGA) - I/O terminal DC 200 V I/O terminal - PE DC 200 V Between I/O channels									
User interface	Switch 2 (Front panel upper side: for H/W reset, lower side : unused)									
Self diagnosis	<ul style="list-style-type: none"> Redundant I/O circuit comparison check Redundant CPU comparison check Quadruplexed A/D converter comparison check ADC stuck check CRC check Diverse calculation check Data format check I/O signal range check Watchdog timer Communication timeout check Redundant voltage monitor Clock abnormal check Functional check of the abnormal communication signal TPFS(Temporal Programming Flow Supervision): Loss-of-function check for system timers LPFS(Logical Programming Flow Supervision): Loss-of-function check for logical programming flow Open-wire/short-circuit check (Detected as under-range) 									
Protection	Electrical	Overvoltage protection Overcurrent protection Double-insulated								
	Safety Function	Accuracy for safety function : 1.0% FS @ -5°C to 60°C Abnormal communication signal cutoff								
Indicators	4 indicators: Power / Status / Network status A / Network status B									
Current consumption	156 mA									
Weight	Less than 300 g									
Size	152.5 mm (D) x 94 mm (H) x 46 mm (W) (Protrusions excluded)									
Certification body	TUV SUD									
Safety integrity level (IEC61508-1)	SIL3									
EMC Zone (IEC61131-2)	B (Dedicated power distribution, rated voltage: 300 V or less)									
Overvoltage category (IEC60664-1)	II (Energy-consuming equipment to be supplied from the fixed installation)									
IEC protection class (IEC60204-1)	II (Double insulated)									
Isolation method	Independent isolated channels									
Hot-swapping	Supported *However, depending on the field circuit and the application program									
Resolution	16 bit *Two types of AD converters are duplexed.									
Rated voltage	DC 24 V -15% +20% (The voltage supplied from the backplane)									
Environmental conditions	Module ambient temperature	(Operation) -5 to +60°C (Storage) -25 to +85°C								
	Module ambient humidity	(Operating / Storage) 0 to 95% RH (No condensation)								
Vibration	3.5 mm at 5 Hz to 8.4 Hz, 1 G at 8.4 Hz to 150 Hz									
Shock	15 G 11 ms									

*About compliant module type

For compliant modules of this product, please refer to "Compliant backplane list (CGS-S9901-E-XX)".

For compliant modules of this product, please refer to "Compliant accessory connector list (CGS-S9902-E-XX)".

SCAIM04-A-DW Safety AI-TC module

Safety I/O , Thermocouple input 7 ch + Cold junction compensation input 1 ch

■ Supported standards/Supported directives

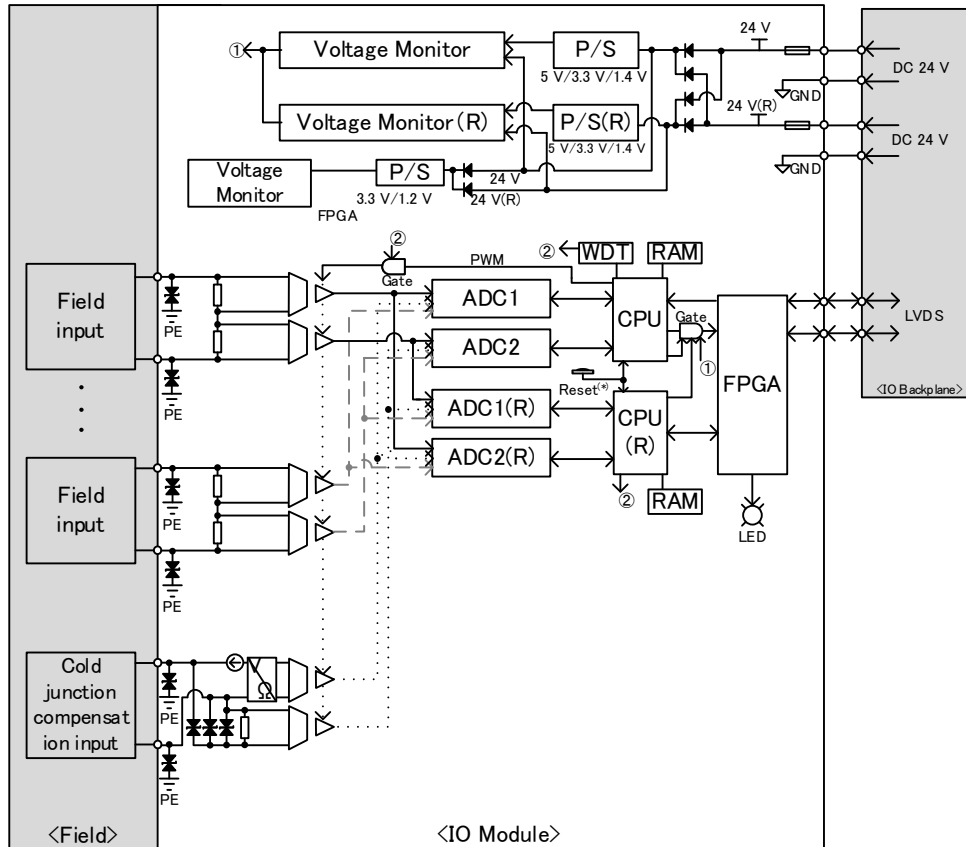
Certified standard	Year	Title
IEC61508	2010	Functional safety of electrical/electronic/programmable electronic safety-related systems
IEC61131-2	2007	Programmable controllers - Part 2: Equipment requirements and tests
IEC61131-6	2012	Programmable controllers - Part 6: Functional safety
IEC62061	2005	Safety of machinery-Functional safety of safety-related electrical, electronic and programmable electronic control systems
IEC61511-1	2004	Functional safety - Safety instrumented systems for the process industry sector - Part 1: Framework, definitions, system, hardware and software requirements,
EN50156-1	2004	Electrical equipment for furnaces and ancillary equipment - Part 1 : Requirements for application design and installation
ISO 13849-1	2008	Safety of machinery – Safety-related parts of control systems-Part 1:General principles for design
EN 54-2	2007	Fire detection and fire alarm systems Part 2: Control and indicating equipment

Supported directive	Year	Title
RoHS	2011	DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 January 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment
Low Voltage	2006	DIRECTIVE 2006/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 12 December 2006 on the harmonisation of the laws of Member States relating to Electrical Equipment designed for use within certain voltage limits
EMC	2004	DIRECTIVE 2004/108/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC
Machinery	2006	DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 May 2006 on machinery, and amending Directive 95/16/EC




SCAIM04-A-DW Safety AI-TC module

Safety I/O , Thermocouple input 7 ch + Cold junction compensation input 1 ch

Block diagram



(*) Indicates the H/W reset switch on the upper side of the front panel.

(R)	:	Redundant
P/S	:	Power Supply
LVDS	:	Low Voltage Differential Signaling
FPGA	:	Field Programmable Gate Array
CPU	:	Central Processing Unit
RAM	:	Random Access Memory
WDT	:	Watch Dog Timer
ADC	:	Analog Digital Converter
PWM	:	Pulse Width Modulation
Gate	:	Buffer Gate
LED	:	Light Emitting Diode
GND	:	Ground
PE	:	Protective Earth
FS	:	Full Scale
BP	:	Backplane
	:	Resistor
	:	Fuse
	:	Zener diode

When using, please read the instruction manual attached to the product carefully and use it properly.

This catalog may not be distributed or reproduced in whole or in part without permission.

Please be aware that due to product improvements and modifications, the product description in this catalog may differ in certain respects from the actual product.

DIASYS Netmation/DIASYS Netmation4S is a registered trademark of Mitsubishi Heavy Industries, Ltd.

The service names and product names of other companies described in this catalog are the trademarks or registered trademarks of each company.