

SCDIM01 Safety DI module

Safety I/O Digital inputs 8ch

■ Summary



- * Number of input channels : 8ch (Channel individual insulation)
- * Input load range : ON 2 to 5 K Ω
OFF 10 to 20 K Ω
Switch : 2
- * User interface : (Front panel upper side : for H/W reset,
lower side : unused)
- * Module ambient temperature : -5 to 60°C
- * In compliance with Functional Safety Standard IEC61508

SCDIM01 Safety DI module

Safety I/O Digital inputs 8ch

Specifications

ITEM		SPECIFICATION		
Input	Number of channels	8ch (Channel individual insulation)		
	Range	Less than 4mA		
	Delay	Less than 500 usec		
	Load resistance	Over range		Less than 2k Ω
		ON		2 to 5k Ω
		Undefined		5 to 10k Ω
OFF			10 to 20k Ω	
Under range		More than 20k Ω		
Safe state		Communication cutoff		
Data refresh cycle		1msec		
Data format		0, 1		
AD conversion type		ΣΔ, Successive approximation register(SAR)		
Input filter		Software filter 0 to 65535msec (All channel set together by 1msec step)		
Isolation voltage		AC500V Internal circuit(CPU/FPGA) - I/O terminal AC500V I/O terminal - PE DC200V Between I/O channels		
User interface		Switch 2 (Front panel upper side : for H/W reset, lower side : unused)		
Self diagnosis		Redundant I/O circuit comparison check Redundant CPU comparison check Quadruplexed A/D converter comparison check ADC stuck check CRC 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 : Detection as under-range short-circuit check : Detection as over-range		
Event input (EDI) function		Event input module : 8 Event input: set by software (EMS)		
Protection	Electrical	Overvoltage protection Overcurrent protection Double-insulated		
	Safety Function	Abnormal communication signal cutoff		
Indicators		4 indicators: Power / Status / Network status A / Network status B 8 indicators: IO status for each channel		
Current consumption		175mA		
Weight		Less than 300g		
Size		46mmW x 94mmH x 152.5mmD (Protrusions excluded)		
Certification body		TÜV SÜD		
Safety integrity level (IEC61508-1)		SIL3		
EMC Zone (IEC61131-2)		B (Dedicated power distribution, rated voltage: 300V 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		Channel individual insulation		
Hot-swapping		Supported * However, depending on the field circuit and the application program		
Resolution		16bit *Two types of AD converters are duplexed.		
Rated voltage		DC24V -15% to +20% (The voltage supplied from the backplane)		
Environmental conditions	Module ambient temperature	(Operation) -5 to +60°C	(Storage) -40 to +85°C	
	Module ambient humidity	10 to 95% RH (Non-condensing)		
Vibration		3.5mm at 5 to 8.4Hz, 1G at 8.4 to 150Hz		
Shock		15G 11ms		

*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)".

SCDIM01 Safety DI module

Safety I/O Digital inputs 8ch

■ Supported standards/Supported directives

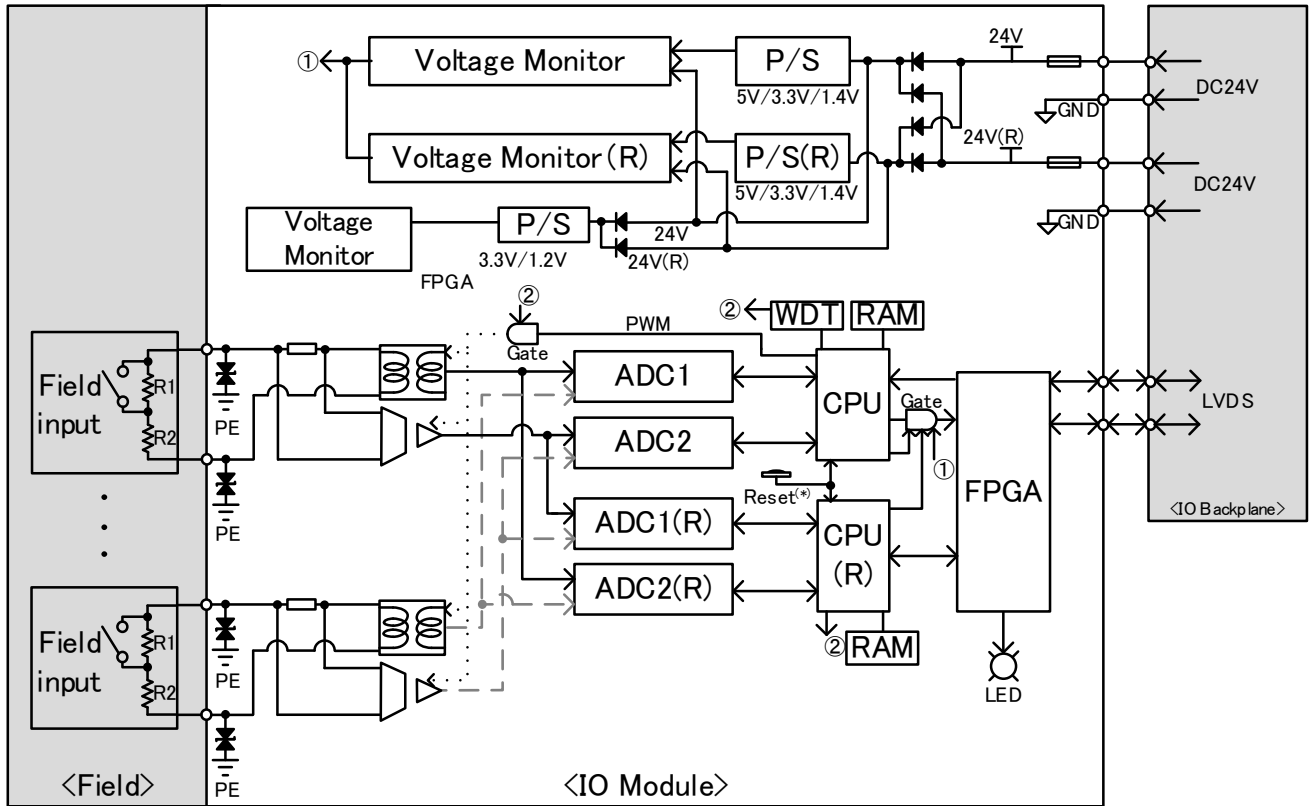
Certified standard	Year	Title
IEC61508	2010	Functional safety of electrical/electronic/programmable electronic safety-related systems
IEC61131-2	2007	Programmable controllers - Part 2: Equipment requirements and tests
IEC61131-6	2012	Programmable controllers - Part6: Functional safety
IEC62061	2005	Safety 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 - Part1: 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-Part1:General principles for design
EN 54-2	2007	Fire detection and fire alarm systems Part2: 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 2003 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

SCDIM01 Safety DI module

Safety I/O Digital inputs 8ch

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
- F.S. : Full Scale
- BP : Backplane
- : Resistor
- : Fuse
- ⚡ : Zener diode
- ⊗ : Transformer

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