

Selection Manual of SC Series IO Module

Content

[1 Overview 3](#_Toc30175)

[1.1 Production introduction 4](#_Toc46)

[1.2 Product Selection List 5](#_Toc28487)

[2 Production Introduction 6](#_Toc18781)

[C Series IO Module Selection Manual 7](#_Toc4267)

[2.1 Power Module 7](#_Toc5883)

[2.2 Digital Input Module 8](#_Toc6291)

[Technical Specifications 8](#_Toc6823)

[2.3 Digital Output Module 9](#_Toc29316)

[2.4 Analog Input Module 10](#_Toc14480)

[2.4.1 SC3228 (8-channel ±10V Analog Input Module) 10](#_Toc1457)

[2.4.2 SC3238 (8-channel 0..20mA Analog Input Module) 11](#_Toc26612)

[2.4.3 SC 3248 (8-channel 4…0mA Analog Input Module) 12](#_Toc11749)

[2.4.4 SC3274 (4-channel Thermocouple Temperature Acquisition Module) 13](#_Toc30926)

[2.5 Analog Output Module 14](#_Toc22799)

[2.5.1 SC4224 (4-channel ±10V Analog Output Module) 14](#_Toc28617)

[2.5.2 SC4234 (4-channel 0…0mA Analog Output Module) 15](#_Toc21975)

[2.5.3 SC4244 (4-channel 4..20mA Analog Output Module) 16](#_Toc29420)

[2.6 Special Module 17](#_Toc1054)

[2.6.1 Encoder Acquisition Module 17](#_Toc21670)

[2.6.2 SC9100 Placeholder Module 17](#_Toc24165)

|  |
| --- |
| **1 Overview** |



**Selection Manual of SC Series IO Module**

**1.1 Production introduction**

The SC series IO modules encompass a range of modules, including power supply, placeholder, digital input, digital output, analog input, and analog output. Each sub-series offers modules with various functionalities and specifications. These modules can be combined to create sophisticated automation solutions.

The SC series modules eliminate the need for additional couplers, offering the same signal types and quantities as existing products but with significantly reduced size. To custom signal distribution boards and prefabricated wiring harnesses enable ultra-compact installations and quick wiring, enhance electrical cabinet space utilization and wiring efficiency while preventing errors. Additionally, with extra prefabricated module frames, traditional DIN rail installation is possible, making them suitable for applications in logic control, bus data acquisition, distributed control, monitoring, industrial robotics, CNC machines, and more.

|  |  |
| --- | --- |
| **Product Features** | **Advantages** |
| Ultra-compact design | Enhanced electrical cabinet space utilization |
| Mechanical protection lock | Prevent module slippage and detachment |
| Mechanical coding | Avoid misinsertion |
| Custom signal distribution board and prefabricated wiring harness | Efficient wiring and installation process |
| Onboard relay capability | Save installation and wiring of extra components |
| Direct RJ45 communication connection | Save module and installation space |
| Available prefabricated module frames | Compatible with traditional DIN rail installation |

**1.2 Product Selection List**

|  |  |
| --- | --- |
| SINSEGYE Model | Specification Description |
| SC1116 | 16-channel digital input module, NPN type, 24VDC, filtering 3ms |
| SC1216 | 16-channel digital input module, PNP type, 24VDC, filtering 3ms |
| SC2116 | 16-channel digital output  module, NPN type, 24VDC, filtering 0.5A |
| SC2216 | 16-channel digital output module, PNP type, 24VDC, filtering 0.5A |
| SC3228 | 8-channel analog voltage input module, single input, ±10V, 16 bit |
| SC3238 | 8-channel analog current input module, 0mA-20mA, 16 bit |
| SC3248 | 8-channel analog current input module, 4mA-20mA, 16 bit |
| SC3258 | 8-channel analog voltage input module, differential input, 0-10V, 16 bit |
| SC4224 | 4-channel analog voltage output module, -10V-+10V, 16 bit |
| SC4234 | 4-channel analog current output module, 0-20mA, 16 bit |
| SC4244 | 4-channel analog current output module, 4-20mA, 16 bit |
| SC3284 | 4-channel thermocouple input module, 16 bit |
| SC3274 | 4-channel thermal resistor input module, 16 bit |
| SC9001 | Power supply module |
| SC9100 | Placeholder module |
| SC5032 | 2-channel 5V differential input counter module |

|  |
| --- |
| **2 Production Introduction** |



**Selection Manual of SC Series IO Module**

|  |
| --- |
|  |
| **2.1 Power Module** |
| **Technical Specifications**   |  |  | | --- | --- | | **Technical Specifications** | SC9001 | | Short circuit protection | Yes | | Input voltage | 24 VDC (-15 %/ +20 %) | | Input current | ＜1mA +load | | Rated output current | 3A | | Short circuit protection current | 4A | | Operating temperature | ﹣25 ℃～﹢60 ℃ | | Storage temperature | ﹣40 ℃～﹢85 ℃ | | Relative humidity | 95 %，No condensation | | External dimensions | ～12 x 62 x 55 mm | | Weight | ～28 g | | Installation | PCB (signal distribution board supports various needs such as rail and screw) | | Installation position | 35mm gap between upper and lower installation | | Position coding | 7&8 | | Protection class | IP20 | |

**2.2 Digital Input Module**

**Technical Specifications**

|  |  |  |
| --- | --- | --- |
| **Technical Specifications** | **SC1116** | **SC1216** |
| Number of input channels | 16 | |
| Input voltage | 24 V DC (-15 %/ +20 %) | |
| Input “0” voltage range | 18V～30V | -3V～+5V (EN61131-2, type 1/3) |
| Input “1” voltage range | 0V～7V | 11V～30V (EN 61131-2, type 3) |
| Input current | Typical Value 3mA | |
| Input filtering | 3ms | |
| Us power consumption | Typical Value 145mA | Typical Value 155mA |
| Electrical isolation withstand voltage | 500 V (Communication and Field Voltage) | |
| Operating temperature | ﹣25 ℃～﹢85 ℃ | |
| Storage temperature | ﹣40 ℃～﹢85 ℃ | |
| Relative humidity | 95 %，No condensation | |
| Dimensions | ～12 x 62 x 55 mm | |
| Weight | ～23 g | |
| Installation position | 35mm gap between upper and lower installation | |
| Position coding | 1 & 3 | |
| Protection class | IP20 | |



**Selection Manual of SC Series IO Module**

**2.3 Digital Output Module**

|  |  |  |
| --- | --- | --- |
| **Technical Specifications** | **SC2116** | **SC2216** |
| Number of output channels | 16 | |
| Supply voltage | 24 V DC (-15 %/ +20 %) | |
| Type of load | Resistor, Inductor, Lamp type | |
| Output current | Output current | |
| Reverse voltage protection | Have | |
| Switching duration | Ton: Typical value 15us; Toff: Typical value 300us | |
| Us power consumption | Typical value 145mA | Typical value 155mA |
| Current consumption by the load | ＜1mA +Load | Typical value 9mA +Load |
| Electrical isolation withstand voltage | 500 V (Communication and field voltage) | |
| Operating temperature | ﹣25 ℃～﹢85 ℃ | |
| Storage temperature | ﹣40 ℃～﹢85 ℃ | |
| Relative humidity | 95 %, No condensation | |
| Dimensions | ～12 x 62 x 55 mm |  |
| Weight | ～24 g | |
| Install | PCB (The signal distribution board supports various requirements, including rail and screw) | |
| Installation position | 35mm gap between upper and lower installation | |
| Position coding | 1 & 4 | |



**Selection Manual of SC Series IO Module**

**2.4 Analog Input Module**

**2.4.1 SC3228 (8-channel ±10V Analog Input Module)**

|  |  |
| --- | --- |
| **Technical Specifications** | **SC3228** |
| Number of input channels | 8(Single-ended two-wire configuration) |
| Supply voltage | 24 V DC (-15 %/ +20 %) |
| Signal voltage | -10V～﹢10V |
| Resolution | 16-bit |
| Input impedance | ～10MΩ |
| Input filter cutoff frequency | 10KHz |
| Conversion time | ～400μs |
| Measurement error | ＜0.1%(0～55℃，relative to full scale) |
| Distributed Clock (64bit) | Supports synchronized switching between SM and DC |
| Distributed clock accuracy | << 1μs |
| US power consumption | Typical value 165mA |
| Process mirror bit width | 16-bit |
| Galvanically isolated withstand voltage | 500 V (Communication with field voltage) |
| Operating temperature | ﹣25 ℃～﹢85 ℃ |
| Storage temperature | ﹣40 ℃～﹢85 ℃ |
| Relative humidity | 95 %，No condensation |
| Dimension | ～12 x 62 x 55 mm |
| Weight | ～25 g |
| Installation | PCB (The signal distribution board supports various requirements, including rail and screw mounting options) |
| Installation location | 35mm gap between upper and lower installation |
| Location code | 1 & 5 |
| Protection class | IP20 |



**Selection Manual of SC Series IO Module**

**2.4.2 SC3238 (8-channel 0..20mA Analog Input Module)**

|  |  |
| --- | --- |
| **Technical Specifications** | SC3238 |
| Number of input channels | 8(Single-ended two-wire configuration) |
| Supply voltage | 24 V DC (-15 %/ +20 %) |
| Signal current | 0mA ～20mA |
| Resolution | 16-bit |
| Input impedance | ～200Ω |
| Input filter cutoff frequency | 10KHz |
| Conversion time | ～400μs |
| Measurement error | ＜0.1% (0～55℃，relative to full scale) |
| Distributed clock (64bit) | Support synchronous switching between SM and DC |
| Distributed clock accuracy | << 1μs |
| Us power supply consumption | Typical value 165mA |
| Process mirror bit width | 16-bit |
| Galvanic isolation withstand voltage | 500 V (Communication with field voltage) |
| Operating temperature | ﹣25 ℃～﹢85 ℃ |
| Storage temperature | ﹣40 ℃～﹢85 ℃ |
| Relative humidity | 95 %，No condensation |
| Dimension | ～12 x 62 x 55 mm |
| Weight | ～25 g |
| Installation | PCB (The signal distribution board supports various requirements, including rail and screw) |
| Mounting position | 35mm gap between upper and lower installation |
| Location code | 1 & 5 |
| Protection class | IP20 |



**Selection Manual of SC Series IO Module**

**2.4.3 SC 3248 (8-channel 4…0mA Analog Input Module)**

|  |  |
| --- | --- |
| **Technical Specifications** | **SC3248** |
| Number of input channels | 8(Single-ended two-wire configuration) |
| Supply voltage | 24 V DC (-15 %/ +20 %) |
| Signal current | 4mA ～20mA |
| Resolution | 16 bits |
| Input impedance | ～200Ω |
| Input filter cutoff frequency | 10KHz |
| Conversion time | ～400μs |
| Measurement error | ＜0.1% (0～55℃，relative to full scale) |
| Distributed clock (64bit) | Support synchronous switching between SM and DC |
| Distributed clock accuracy | << 1μs |
| Us power supply consumption | Typical value 165mA |
| Process mirror bit width | 16 bit |
| Galvanic isolation withstand voltage | 500 V (Communication with field voltage) |
| Operating temperature | ﹣25 ℃～﹢85 ℃ |
| Storage temperature | ﹣40 ℃～﹢85 ℃ |
| Relative humidity | 95 %，No condensation |
| Dimension | ～12 x 62 x 55 mm |
| Weight | ～25 g |
| Installation | PCB (The signal distribution board supports various requirements, including rail and screw) |
| Mounting position | 35mm gap between upper and lower installation |
| Location code | 1 & 5 |
| Protection class | IP20 |



**Selection Manual of SC Series IO Module**

|  |
| --- |
|  |
| **2.4.4 SC3274 (4-channel Thermocouple Temperature Acquisition Module)** |
| |  |  | | --- | --- | | **Technical Specifications** | **SC3274** | | Number of input channels | 4(Three-wire system) | | Input filter cutoff frequency | Typical value 1 kHz | | Transducer type | PT100, PT1000,NI100 | | Conversion time | About 2ms~800ms | | Measuring current | Typical value 5mA(Depends on the load) | | Measuring range | -200℃…850℃ (Platinum sensor)  -60℃…250℃(Nickel sensor) | | Temperature range | Depends on range:  +850°C (platinum sensor).  -60°C...+250°C (nickel sensor) | | Resolution | 0.1Celsius per person | | Measurement error | < ±0.5°C for platinum sensors  < ±1.5°C (range with extended temperature)) | | Distributed clock (64bit) | - | | Us power supply consumption | Typical value 165mA | | Galvanic isolation withstand voltage | 500 V (Communication with field voltage) | | Operating temperature | ﹣25 ℃～﹢85 ℃ | | Storage temperature | ﹣40 ℃～﹢85 ℃ | | Relative humidity | 95 %, No condensation | | Overall dimension | ～12 x 62 x 55 mm | | Weight | ～25 g | | Installation | PCB (The signal distribution board supports various requirements, including rail and screw) | | Mounting position | 35mm gap between upper and lower installation | | Location code | 1 & 5 | | Protection class | IP20 | |



**Selection Manual of SC Series IO Module**

|  |
| --- |
| **2.5 Analog Output Module** |
|  |
| **2.5.1 SC4224 (4-channel ±10V Analog Output Module)** |
| |  |  | | --- | --- | | **Technical Specifications** | **SC4224** | | Number of output channels | 4(Single-ended two-wire configuration) | | Supply voltage | 24 V DC (-15 %/ +20 %) | | Signal voltage | -10V ～+10V | | Load | ＞2KΩ (Short circuit protection) | | Measurement error | ＜0.1% (0～55 ℃，relative to full scale) | | Resolution | 16 bit | | Conversion time | ～200μs | | Distributed clock (64bit) | Support synchronous switching between SM and DC | | Distributed clock accuracy | << 1μs | | Us power supply consumption | Typical value 165mA | | Up supply consumption | Typical value 26mA + load (＜5mA/channel) | | Galvanic isolation withstand voltage | 500 V (Communication with field voltage) | | Operating temperature | ﹣25 ℃～﹢85 ℃ | | Storage temperature | ﹣40 ℃～﹢85 ℃ | | Relative humidity | 95 %，No condensation | | Dimension | ～12 x 62 x 55 mm | | Weight | ～24 g | | Installation | PCB (The signal distribution board supports various requirements, including rail and screw) | | Mounting position | 35mm gap between upper and lower installation | | Location code | 1 & 7 | | Protection class | IP20 | |



**Selection Manual of SC Series IO Module**

|  |
| --- |
|  |
| **2.5.2 SC4234 (4-channel 0…0mA Analog Output Module)** |
| |  |  | | --- | --- | | **Technical Specifications** | **SC4234** | | Number of output channels | 4(Single-ended two-wire configuration) | | Supply voltage | 24 V DC (-15 %/ +20 %) | | Signal current | 0mA～20mA | | Load | ＜500Ω(Overload protection) | | Measurement error | ＜0.1%(0～55℃, relative to full scale) | | Resolution | 16 bit | | Conversion time | ～200μs | | Distributed clock (64bit) | Support synchronous switching between SM and DC | | Distributed clock accuracy | << 1μs | | Us power supply consumption | Typical value 165mA | | Up supply consumption | Typical value 17mA + load (＜13.5mA/channel) | | Galvanic isolation withstand voltage | 500 V(Communication with field voltage) | | Operating temperature | ﹣25 ℃～﹢85 ℃ | | Storage temperature | ﹣40 ℃～﹢85 ℃ | | Relative humidity | 95 %, No condensation | | Dimension | ～12 x 62 x 55 mm | | Weight | ～24 g | | Installation | PCB (The signal distribution board supports various requirements, including rail and screw) | | Mounting position | 35mm gap between upper and lower installation | | Location code | 1 & 7 | | Protection class | IP20 | |



**Selection Manual of SC Series IO Module**

|  |
| --- |
|  |
| **2.5.3 SC4244 (4-channel 4..20mA Analog Output Module)** |
| |  |  | | --- | --- | | **Technical Specifications** | **SC4244** | | Number of output channels | 4(Single-ended two-wire configuration) | | Supply voltage | 24 V DC (-15 %/ +20 %) | | Signal current | 4mA～20mA | | Load | ＜500Ω(Overload protection) | | Measurement error | ＜0.1%(0～55℃，relative to full scale) | | Resolution | 16 bit | | Conversion time | ～200μs | | Distributed clock (64bit) | Support synchronous switching between SM and DC | | Distributed clock accuracy | << 1μs | | Us power supply consumption | Typical value 165mA | | Up supply consumption | Typical value 29mA + load(＜11mA/channel) | | Galvanic isolation withstand voltage | 500 V(Communication with field voltage) | | Operating temperature | ﹣25 ℃～﹢85 ℃ | | Storage temperature | ﹣40 ℃～﹢85 ℃ | | Relative humidity | 95 %，No condensation | | Dimension | ～12 x 62 x 55 mm | | Weight | ～24 g | | Installation | PCB (The signal distribution board supports various requirements, including rail and screw) | | Mounting position | 35mm gap between upper and lower installation | | Location code | 1 & 7 | | Protection class | IP20 | |



**Selection Manual of SC Series IO Module**

|  |
| --- |
| **2.6 Special Module** |
| **2.6.1 Encoder Acquisition Module** |
| |  |  | | --- | --- | | **Technical Specifications** | **SC5032** | | Supply voltage | 24 V DC (-15 %/ +20 %) | | Encoder input type | Incremental Encoders(A/B) | | Number of input channels | 2 paths (EA+EB+EZ) | | Input type | Differential | | Signal voltage | 0～5 VDC | | Pulse counting multiplier | 4x/2x (default 4x) | | Pulse counting range | -2147483648 ～ +2147483648 | | Counting direction Reverse | Support | | Us power consumption | Typical value 165mA | | Isolation voltage | 500 V(Communication with field voltage) | | Operating temperature | ﹣25 ℃～﹢85 ℃ | | Storage temperature | ﹣40 ℃～﹢85 ℃ | | Relative humidity | 95 %，No condensation | | Dimension | ～12 x 62 x 55 mm | | Weight | ～25 g | | Installation | PCB (The signal distribution board supports various requirements, including rail and screw) | | Mounting position | 35mm gap between upper and lower installation | | Location code | 2 & 7 | | Protection class | IP20 | |
| **2.6.2 SC9100 Placeholder Module** |
|  |