

16 Digital inputs

Features

- MODBUS RTU SLAVE
- 15 Configurable Address
- 24 V DC Power



Ordering Information



Range of master controllers

DEVICE P/N	GSM/LTE	WiFi	Antenna
SC-PL-I4-A4-Q8	No	Yes	Internal
SC-PL-I4-A4-Q8-E	No	Yes	External WiFi
SC-PL-I4-A4-Q8-L	Yes	Yes	External GSM

Range of expansion modules

DEVICE P/N	I/O
SC-EX-M-D16	16 x Digital Input
SC-EX-M-Q16	16 x Transistor Output
SC-EX-M-V8	8 x Analog Input 0 - 10V
SC-EX-M-I8	8 x Analog Input 4 - 20mA
SC-EX-M-QV4	4 x Analog Output 0 - 10V
SC-EX-M-QM4	4 x Analog Output 4 - 20mA
SC-EX-M-TC4	4 x K type thermocouple

Main

Range of product	Smart Controller	
Product type	I/O Expansion	
Rated supply voltage	24 V DC	0.04A
Communication	MODBUS RTU over RS-485	

Complementary

Power consumption in W	10.2W
Local signalling	1 LED green for PWR 1 LED green for STATUS (Programmable)
Electrical connection	Screw terminal block for connections (pitch 5.08 mm)
Mounting support	Wall mounting Panel Mounting
Height	130 mm
Depth	27 mm
Width	150 mm
Enclosure Material	ABS UL-94-HB
Product weight	0.43 Kg

Environment

Resistance to electrostatic discharge	4kV on contact	8kV on air
Resistance to electromagnetic fields	10 V/m (80 MHz 1GHz) 3 V/m (1.4 MHz 2 GHz) 1 V/m (2 MHz 3 GHz)	
Immunity to microbreaks	10 ms	
Relative humidity	10....95% without condensation in operation	
IP degree of protection	IP54	
Operating altitude	0...2000m	
Storage altitude	0...3000m	
Shock resistance	15 gn for 11 ms	

Modbus Address Setup

DIGITAL INPUT
SINK/SOURCE
SELECTOR

ON

OFF

ADDRESS
SWITCH

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
																		GND	V+	A	B		

RS-485

SWITCH CONFIGURATION	ADDRESS
ON OFF	1
ON OFF	2
ON OFF	3
ON OFF	4
ON OFF	5
ON OFF	6
ON OFF	7
ON OFF	8

SWITCH CONFIGURATION	ADDRESS
ON OFF	9
ON OFF	10
ON OFF	11
ON OFF	12
ON OFF	13
ON OFF	14
ON OFF	15

DIGITAL INPUT
SINK/SOURCE
SELECTOR

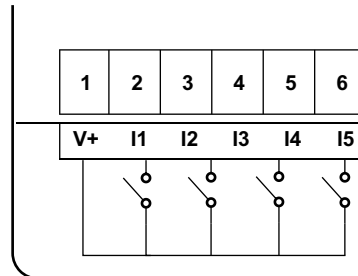
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
V+	I1	I2	I3	I4	I5	I6	I7	I8	I9	I10	I11	I12	I13	I14	I15	I16	GND		GND	V+	A	B	

DIGITAL INPUTS RS-485

PIN	NAME	DESCRIPTION
1	V+	12V + OUTPUT Max.10mA
2	I1	Digital Input 1
3	I2	Digital Input 2
4	I3	Digital Input 3
5	I4	Digital Input 4
6	I5	Digital Input 5
7	I6	Digital Input 6
8	I7	Digital Input 7
9	I8	Digital Input 8
10	I9	Digital Input 9
11	I10	Digital Input 10
12	I11	Digital Input 11
13	I12	Digital Input 12
14	I13	Digital Input 13
15	I14	Digital Input 14
16	I15	Digital Input 15
17	I16	Digital Input 16
18	GND	GROUND
19	--	Not Connected
20	--	Not Connected
21	GND	GROUND
22	V+	24V+ for Digital Input
23	A	RS-485 A
24	B	RS-485 B

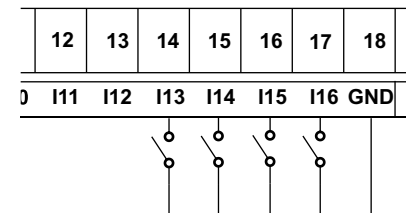
Digital Input Wiring Diagram | Source Inputs

DIGITAL INPUT
SINK/SOURCE
SELECTOR



Digital Input Wiring Diagram | Sink Inputs

DIGITAL INPUT
SINK/SOURCE
SELECTOR

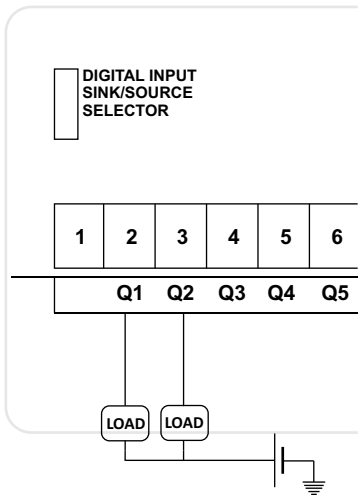


Discrete input number	16 Digital Inputs
Discrete logic input	Sink or source
Discrete input voltage	24 V
Discrete input voltage type	DC
Voltage state 1 guaranteed	$\geq 18V$ for input
Voltage state 0 guaranteed	$\leq 6V$ for input
Discrete input current	5 mA for input
Input impedance	4.7k Ohm for input

***Refer product user guide for MODBUS Address information**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	GND		GND	V+	A	B		
TRANSISTOR OUTPUTS																RS-485							

PIN	NAME	DESCRIPTION
1	--	--
2	Q1	Transistor Output 1
3	Q2	Transistor Output 2
4	Q3	Transistor Output 3
5	Q4	Transistor Output 4
6	Q5	Transistor Output 5
7	Q6	Transistor Output 6
8	Q7	Transistor Output 7
9	Q8	Transistor Output 8
10	Q9	Transistor Output 9
11	Q10	Transistor Output 10
12	Q11	Transistor Output 11
13	Q12	Transistor Output 12
14	Q13	Transistor Output 13
15	Q14	Transistor Output 14
16	Q15	Transistor Output 15
17	Q16	Transistor Output 16
18	GND	GROUND
19	--	Not Connected
20	--	Not Connected
21	GND	GROUND
22	V+	24V+ for Digital Input
23	A	RS-485 A
24	B	RS-485 B

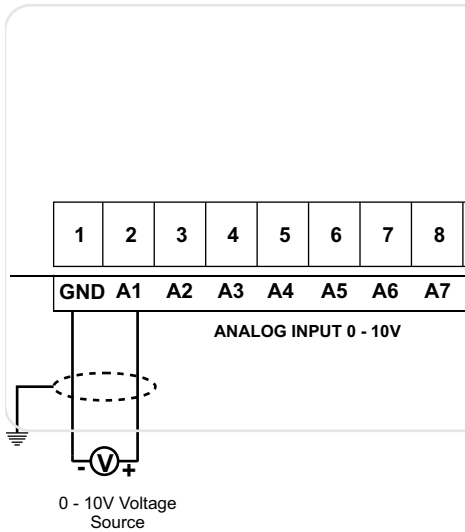


Type	Open Collector NPN
Maximum Voltage	24V DC
Max. current drive	25 mA @ 12V DC
Max. Power dissipation	310mW

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
GND	A1	A2	A3	A4	A5	A6	A7	A8												GND	V+	A	B
ANALOG INPUT 0 - 10V											RS-485												

PIN	NAME	DESCRIPTION
1	GND	GROUND
2	A1	Analog Input 1
3	A2	Analog Input 2
4	A3	Analog Input 3
5	A4	Analog Input 4
6	A5	Analog Input 5
7	A6	Analog Input 6
8	A7	Analog Input 7
9	A8	Analog Input 8
10	—	—
11	—	—
12	—	—
13	—	—
14	—	—
15	—	—
16	—	—
17	—	—
18	—	GROUND
19	—	Not Connected
20	—	Not Connected
21	GND	GROUND
22	V+	24V+ for Digital Input
23	A	RS-485 A
24	B	RS-485 B

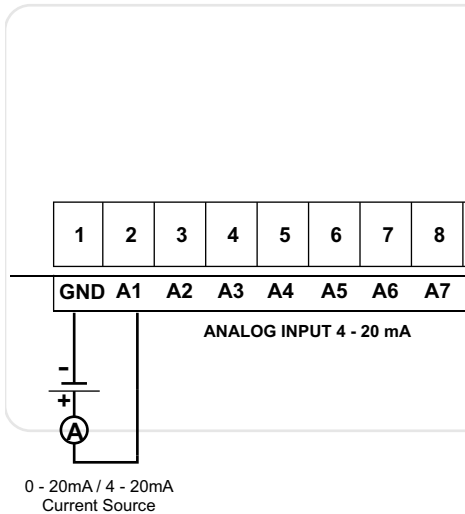


Type	0 - 10 V DC
Resolution	16 bit
Input Impedance	3.3 kOhm

***Refer product user guide for MODBUS Address information**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
GND	A1	A2	A3	A4	A5	A6	A7	A8												GND	V+	A	B
ANALOG INPUT 4 - 20 mA											RS-485												

PIN	NAME	DESCRIPTION
1	GND	GROUND
2	A1	Analog Input 1
3	A2	Analog Input 2
4	A3	Analog Input 3
5	A4	Analog Input 4
6	A5	Analog Input 5
7	A6	Analog Input 6
8	A7	Analog Input 7
9	A8	Analog Input 8
10	—	—
11	—	—
12	—	—
13	—	—
14	—	—
15	—	—
16	—	—
17	—	—
18	—	GROUND
19	—	Not Connected
20	—	Not Connected
21	GND	GROUND
22	V+	24V+ for Digital Input
23	A	RS-485 A
24	B	RS-485 B

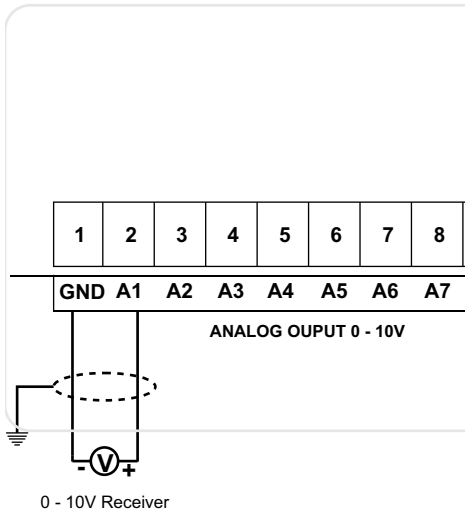


Type	0 - 10 V DC
Resolution	16 bit
Input Impedance	10 Ohm

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
GND	A1	A2	A3	A4	A5	A6	A7	A8												GND	V+	A	B
ANALOG OUTPUT 0 - 10V											RS-485												

PIN	NAME	DESCRIPTION
1	GND	GROUND
2	A1	Analog Output 1
3	A2	Analog Output 2
4	A3	Analog Output 3
5	A4	Analog Output 4
6	–	–
7	–	–
8	–	–
9	–	–
10	–	–
11	–	–
12	–	–
13	–	–
14	–	–
15	–	–
16	–	–
17	–	–
18	–	–
19	–	–
20	–	–
21	GND	GROUND
22	V+	24V+ for Digital Input
23	A	RS-485 A
24	B	RS-485 B

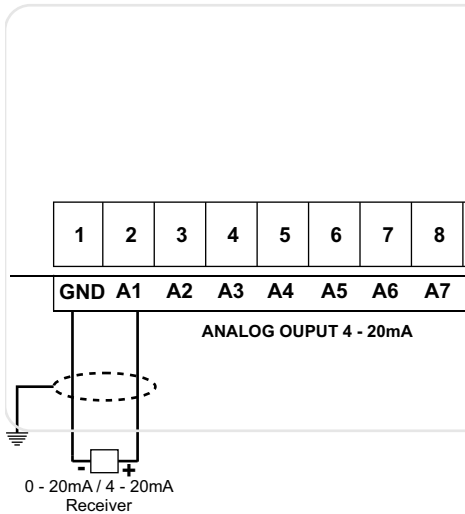


Type	0 - 10 V DC
Resolution	10 bit
Input Impedance	3.3 kOhm

***Refer product user guide for MODBUS Address information**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
GND	A1	A2	A3	A4	A5	A6	A7	A8												GND	V+	A	B
ANALOG OUTPUT 4 - 20mA											RS-485												

PIN	NAME	DESCRIPTION
1	GND	GROUND
2	A1	Analog Output 1
3	A2	Analog Output 2
4	A3	Analog Output 3
5	A4	Analog Output 4
6	—	—
7	—	—
8	—	—
9	—	—
10	—	—
11	—	—
12	—	—
13	—	—
14	—	—
15	—	—
16	—	—
17	—	—
18	—	—
19	—	—
20	—	—
21	GND	GROUND
22	V+	24V+ for Digital Input
23	A	RS-485 A
24	B	RS-485 B



Type	4 - 20 mA
Resolution	10 bit
Input Impedance	3.3 kOhm

***Refer product user guide for MODBUS Address information**

Product data sheet

Connections & Schematics

SMART CONTROLLER

SC-EX-M-D16



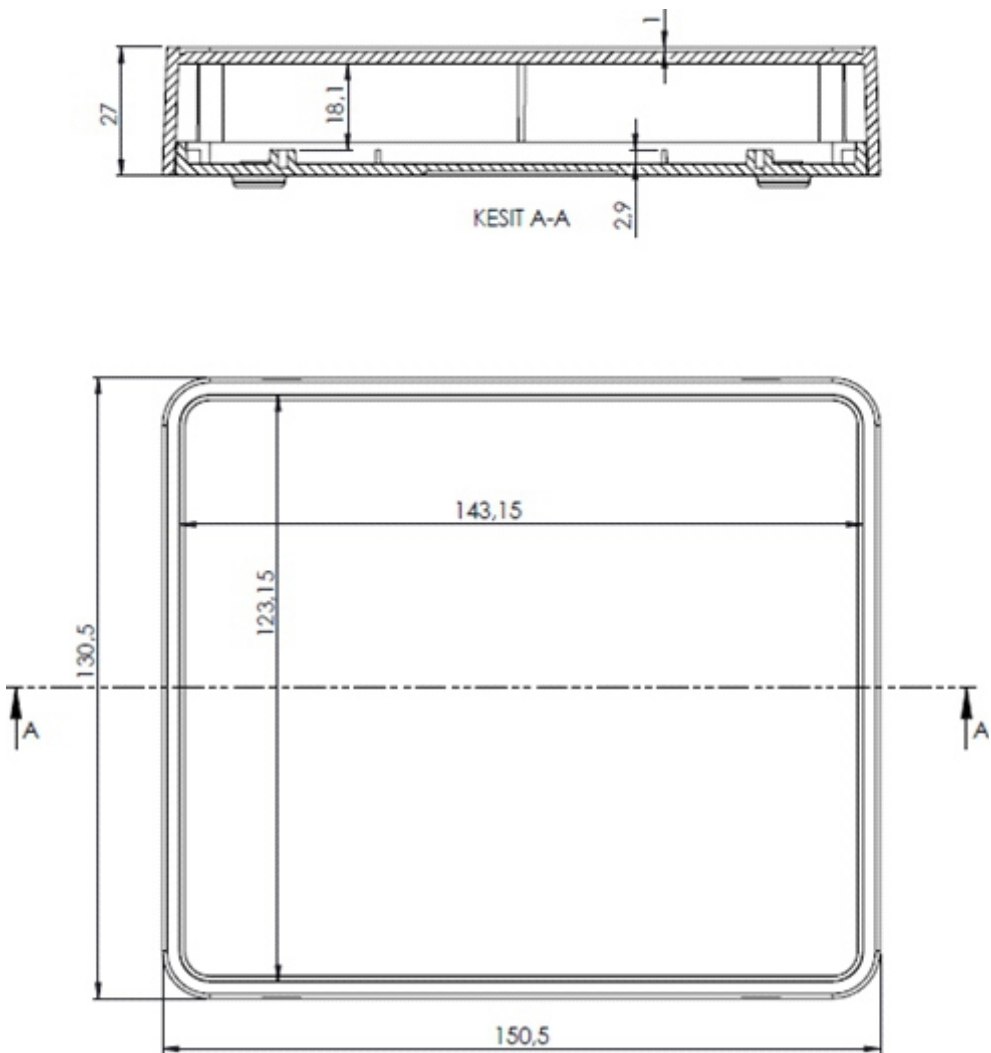
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
T1+	T1-	T2+	T2-	T3+	T3-	T4+	T4-													GND	V+	A	B
Thermocouple Inputs												RS-485											

PIN	NAME	DESCRIPTION
1	T1+	Thermocouple 1 +
2	T1-	Thermocouple 1 -
3	T2+	Thermocouple 2 +
4	T2-	Thermocouple 2 -
5	T3+	Thermocouple3 +
6	T3-	Thermocouple 3 -
7	T4+	Thermocouple 4 +
8	T4-	Thermocouple 4 -
9	—	—
10	—	—
11	—	—
12	—	—
13	—	—
14	—	—
15	—	—
16	—	—
17	—	—
18	—	—
19	—	—
20	—	—
21	GND	GROUND
22	V+	24V+ for Digital Input
23	A	RS-485 A
24	B	RS-485 B

Type	K - type Thermocouple
Resolution	14 bit
Cold Junction Compensation	YES

***Refer product user guide for MODBUS Address information**

Dimensions





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Document Revisions

Version	Changes	Date
1.0	Initial release	15/08/2021