
 SMR1P1-00-01-21-00_1 SMR1P1-00-03-21-00_1	 SMR1P1-00-20-21-00_1 SMR1P1-00-21-21-00_1	<p>General Specifications :</p> <ul style="list-style-type: none"> * Modules have 2 or 4 input channels according to module type * Analog input types (each analog input can be set in different type individually) : <ul style="list-style-type: none"> - Cu-50, PT100, PT1000, PTC, NTC, mV or - V, mA * ON/OFF control, PID control, AutoTune, SelfTune * 4 pieces NO Relay Output * Modbus RTU communication protocol with RS485 * USB – Device (For device configuration) * Modular connection (up to 16 modules including itself) * Led indicators: <ul style="list-style-type: none"> - Power Supply, USB, RS-485 - Analog Input error led indicators - Active Output led indicators
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Technical Specifications

Module Type	SMR1P1-00-01-21-00	SMR1P1-00-03-21-00	SMR1P1-00-20-21-00	SMR1P1-00-21-21-00
Supply Voltage	24 VDC ±%20 (19,2 VDC - 28,8 VDC)			
Power Consumption	1.5W			
Communication	RS-485 Modbus RTU			
USB Device	Mini USB, USB 2.0			
Analog Inputs				
Number of Inputs	4	2	4	2
Input Sensor Type	Cu-50, PT-100, PT-1000, PTC, NTC, mV		V, mA	
Measurement Range / Resolution	Cu-50 -200 +200 °C / 0.1 °C -328 +392 °F / 0.1 °F PT-100 -200 ... +650 °C / 0.1 °C -328 ... +1202 °F / 0.1 °F PT-1000 -200 ... +650 °C / 0.1 °C -328 ... +1202 °F / 0.1 °F PTC -50 +150 °C / 0.1 °C -58 +302 °F / 0.1 °F NTC -50 +100 °C / 0.1 °C -58 +212 °F / 0.1 °F mV 0 +50 mV / 10 μV	V 0 +2V / 1 mV 0 +5V / 1 mV 0 +10V / 1 mV 2 +10V / 1 mV mA 0 +20mA / 1 μA 4 +20mA / 1 μA		
ADC resolution	15 bit			
Input Impedance	Voltage type inputs > 48 KΩ mA type inputs > 47 Ω Other type inputs ~ 15,4 MΩ			
Overall accuracy	% 0.2 (full scale)			
Response time	160 msec / channel			
Average function	The arithmetic average of the last read measurements according to the specified average number of samples			
Fault detections	1- short circuit, 2- sensor break, 3- over range			
Relay Outputs				
Number Of Relay	4 x NO			
Relay Current	1,5 A @ 250VAC (single relay), 6 A @ 250VAC (total COM current)			
Response Time	0 => 1 ~10 msec, 1 => 0 ~5 msec			
Led Indicators				
Power	Always ON if the power input is in working limits, flashes 0.1s when undervoltage detected Flashes 0.5s if the communication between Master and Slave module didn't start Flashes 1s if the communication between Master and Slave module broken			

	Flashes 0.2s ON / 2s OFF if the device in Software Boot Mode
USB	Always ON if the USB cable plugged, flashes during data transfer
RS485	Flashes during Modbus data transfer
Analog Input	Always OFF in normal operation Always ON in case of fault detection (Sensor Break, Short Circuit, Over Range) Flashes during PID auto-tune or self-tune process ongoing
Relay Output	ON when output active, OFF otherwise
Operation / Storage Environment	
Operation Temp.	-10°...+60° C
Storage Temp.	-20°...+70° C
Isolation	* There is no isolation between Analog Inputs * There is no isolation between Power, RS485 and USB * 500 VAC between Power Input and Analog Inputs * 2000 VAC between Power Input and Relay Outputs

Modbus Parameters Addresses

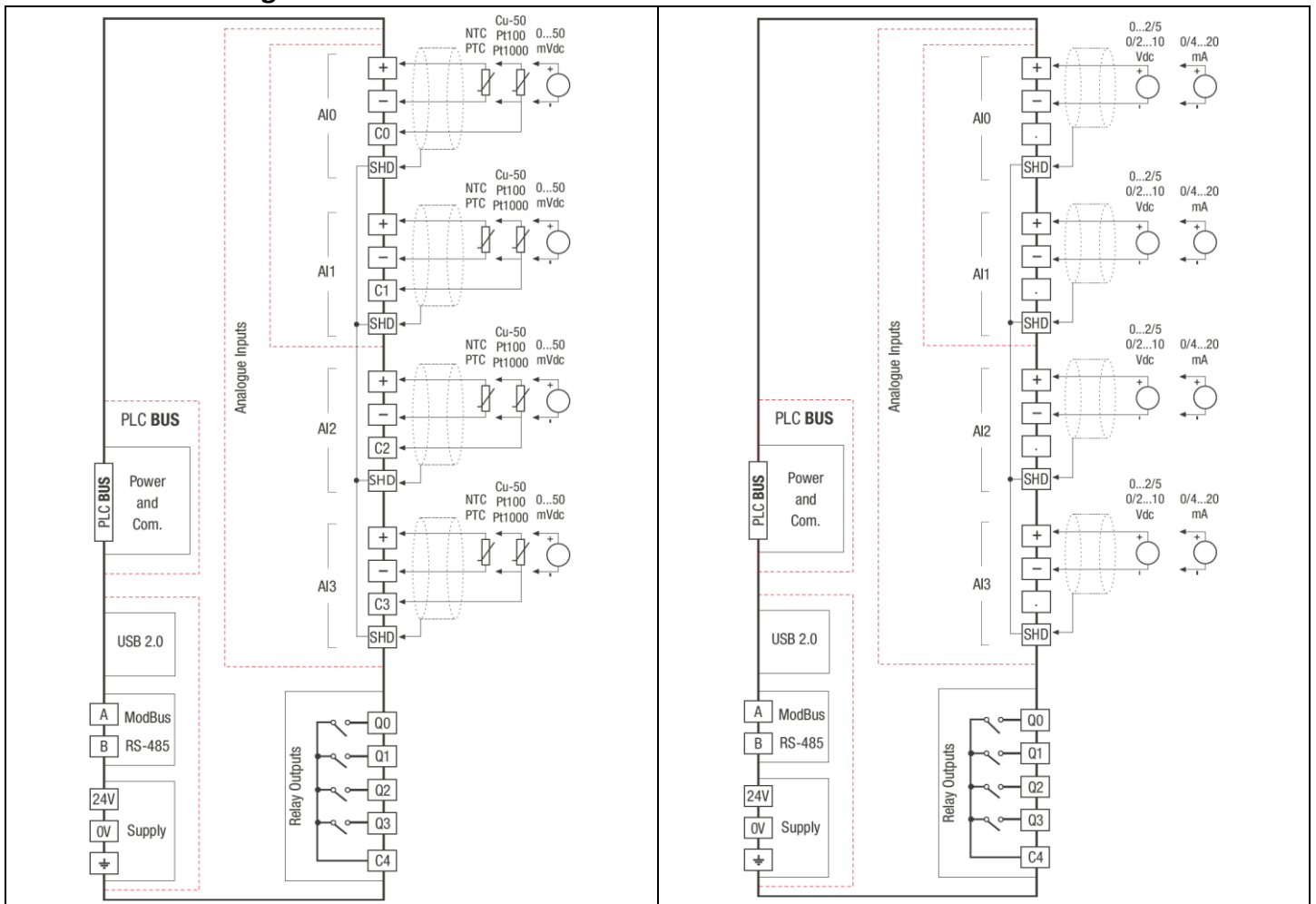
Address	R/W	Parameter Name	Definition	Default
Modbus Parameters				
40001	R/W	ID	Modbus ID can be set between 1 – 255	1
40002	R/W	Baud Rate (kbps)	0- 1200 3- 9600 6- 57600 1- 2400 4- 19200 7- 115200 2- 4800 5- 38400	6
40003	R/W	Stop Bit	0- 1 Bit 1- 2 Bit	0
40004	R/W	Parity	0- None 1- Even 2- Odd	0
Device Parameters				
40005	R	Reserved	In case of Master Mode, shows number of connected Slave Modules	-
40006	R	Type/Bus Order	b15-b8 : module types according to code : SMR1P1-00-01-21-00_1 = 0xA7 SMR1P1-00-03-21-00_1 = 0xA5 SMR1P1-00-20-21-00_1 = 0xA8 SMR1P1-00-21-21-00_1 = 0xA6 b7-b0 : module bus order : 0- Master module N- N'th Slave module in the bus (max. 15) 17- Single module (No other device on bus)	-
40007	R	Version	HW and SW versions displayed on a bitwise basis b15-b12 : Hardware Version b11-b6 : Software Major Version b5-b0 : Software Minor Version	-
40008	R/W	Error Status ²	Error status displayed on a bitwise basis b0 : Low Power Supply Voltage Level b1 : Analog Input could not read b2 : RS485 communication timeout error ¹ b8 : Error in slave module number ¹ b9 : Error in slave module type ¹ b10 : Error in communication between slave modules ¹ b15-b12 : The number of the Slave module in which the error was detected <i>Note-1 : Error bits are only valid for Master Module.</i> <i>Note-2 : In case of communication timeout error arises in Master Module, communication between slave modules interrupted. By writing 3083 to the relevant address, the error bit cleared and the communication started again.</i>	-

40009	R/W	Timeout Duration	Defined for Master Module Definition Range : (0 – 60sec)	3
Analog Input Parameters				
40011	R/W	Temperature Display Unit	Applies to all Analog Input sensor types except type V or mA. 0- Celcius (°C) 1- Fahrenheit (°F)	0
40012	R/W	AI0 Sensor Type	SMR1P1-00-01-21-00_1 SMR1P1-00-20-21-00_1 SMR1P1-00-03-21-00_1 SMR1P1-00-21-21-00_1 for above module types: for above module types:	0
40013		AI1 Sensor Type	0- Cu-50 0- 0-2V	
40014		AI2 Sensor Type	1- PT100 1- 0-5V 2- PT1000 2- 0-10V	
40015		AI3 Sensor Type	3- PTC 3- 2-10V 4- NTC 4- 0-20mA 5- mV 5- 4-20mA	
40016	R/W	AI0 Sensor Offset Value	Depending on the sensor type, values up to ± %10 of measuring range can be entered. For dotted types, the value must be entered as x10	0
40017		AI1 Sensor Offset Value		
40018		AI2 Sensor Offset Value		
40019		AI3 Sensor Offset Value		
40020	R/W	AI0 Average Sample Number	Number of last sample readings in Analog Input for average input value calculation. Value can be set between (1 – 20)	4
40021		AI1 Average Sample Number		
40022		AI2 Average Sample Number		
40023		AI3 Average Sample Number		
40024	R	AI0 Average Value	Average analog input value	-
40025		AI1 Average Value		
40026		AI2 Average Value		
40027		AI3 Average Value		
40028	R	AI0 Present Value	Present analog input value	-
40029		AI1 Present Value		
40030		AI2 Present Value		
40031		AI3 Present Value		
40032	R	AI0 Errors	Stores error status in the relevant input in bitwise form b0 : Sensor Break, Value : 32767 b1 : Short Circuit, Value: 32766 b2 : Over Sample, Value: 32765	-
40033		AI1 Errors		
40034		AI2 Errors		
40035		AI3 Errors		
Relay Output Parameters				
40129	R/W	Relay Outputs	Relay Output Status in bitwise notation 0 : OFF, 1 : ON b3-b0 : Q3 - Q0	0

Address				ON-OFF / PID Control Parameters		
AI0	AI1	AI2	AI3	R/W	ParameterName	Definition
40041	40063	40085	40107	R/W	Control Type	0- Passive (In case of this situation, related relay can be controlled manually) 1- PID Mode Active 2- ON-OFF Mode Active 3- PWM Mode Active
40042	40064	40086	40108	R/W	Set Value	Can be set between (MinScale – MaxScale) values. For dotted type, value can be set as x10
40043	40065	40087	40109	R/W	Set Offset	Can be set between (-MaxScale/2 – MaxScale/2) values. For dotted type, value can be set as x10
40044	40066	40088	40110	R/W	Hysteresis	Used in ON-OFF mode, can be set between (0 – (MaxScale – MinScale)/2) values. For dotted type, value can be set as x10

40045	40067	40089	40111	R/W	Minimum Scale	Can be set between (MinMeasRange – MaxScale) values. For dotted type, value can be set as x10	Min Meas. Range
40046	40068	40090	40112	R/W	Maximum Scale	Can be set between (MinScale – MaxMeasRange) values. For dotted type, value can be set as x10	Max Meas. Range
40047	40069	40091	40113	R/W	Heating Proportio.	Can take values between (0 – 1000)	100
40048	40070	40092	40114	R/W	Heating Integral	Can take values between (0 – 3600)	100
40049	40071	40093	40115	R/W	Heating Derivative	Can take values between (0 – 1000)	250
40050	40072	40094	40116	R/W	Cooling Proportio.	Can take values between (0 – 1000)	100
40051	40073	40095	40117	R/W	Cooling Integral	Can take values between (0 – 3600)	100
40052	40074	40096	40118	R/W	Cooling Derivative	Can take values between (0 – 9999)	250
40053	40075	40097	40119	R/W	Output period	Can take values between (1 – 150s)	1
40054	40076	40098	40120	R/W	Heating/Cooling	0- Heating 1- Cooling	0
40055	40077	40099	40121	R/W	Configuration	b0 : PID 0- Stop / 1- Run b1 : Auto Tune 0- Off / 1- On b2 : Self Tune 0- Off / 1- On	0 0 0
40056	40078	40100	40122	R/W	PID Instant Output Value %	Shows PID % output. In case of PWM selected as Control Type, this value used as % output value.	-
40057	40079	40101	40123	R/W	Errors	Shows Relevant Errors	-

Installation & Wiring



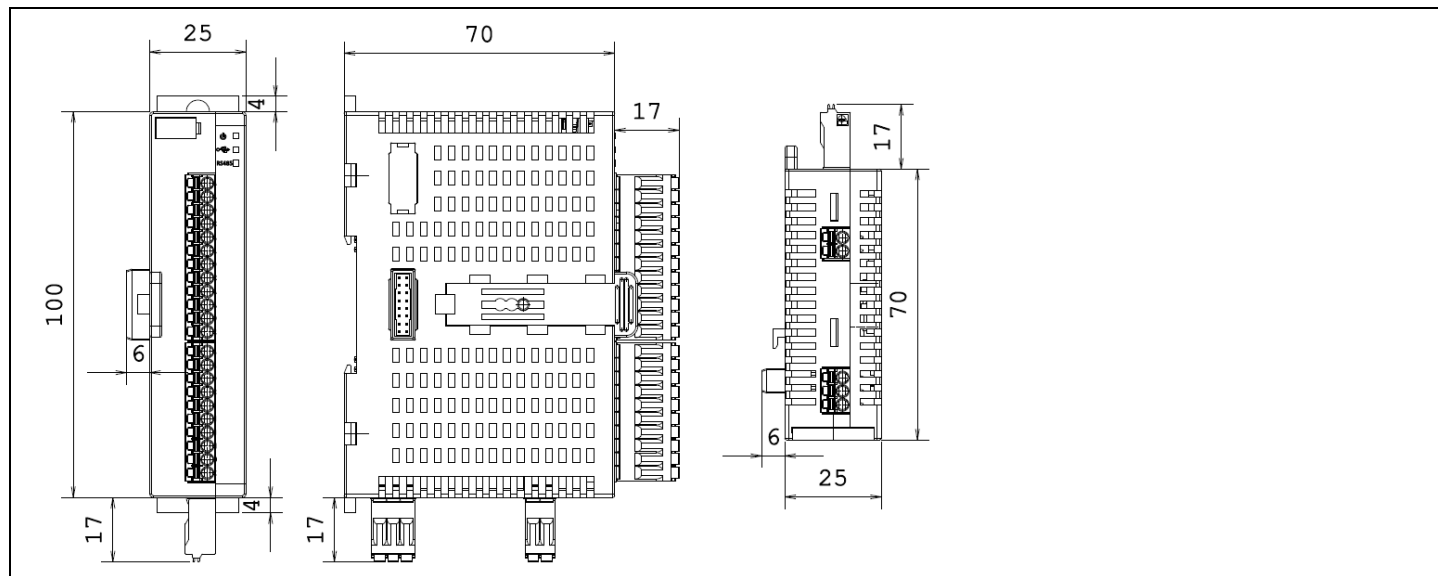
* Do not connect AC Power to any I/O terminal, otherwise serious damage may occur in module. Please check all wiring prior to energizing device. In order to prevent electromagnetic interference, be sure the grounding made corrected. Connect ground terminal in the power input connector to the overall system ground. Don't touch any terminals after energizing the device, in case of need to touch any terminal, de-energize the device before connection.

* For analog input connections; use original cable of sensors. In order to avoid noise interference, keep sensor cables away from power cables. 3-wire RTD sensor provides line resistance compensation. 2-wire RTD sensor has no line

resistance compensation. In order not to be affected from electromagnetic interference, sensor shield cables must be connected to SHD pins and SHD pin must be grounded to system earth.

* For RS485 communication connection; Connect the termination resistor (120R) between A&B terminal of the master module (located at the far left of the extension module group). In case of more than one extension module group, connect it between the A&B terminals of the master module (located at the far left of the extension module group) of the group at the end of the communication line. Use shielded and twisted-pair communication cable. Ground the shield connection of the cable to power input earth terminal.



Dimensions



Product Order Codes

Extension Modules with Analog Inputs	Digital Input	Analog Input	Digital Output	Analog Output	USB	RS 485
SMR1P1-00-01-21-00_1	-	4 x PT100/PT1000/PTC/NTC/mV	4 x Relay	-	+	+
SMR1P1-00-03-21-00_1	-	2 x PT100/PT1000/PTC/NTC/mV	4 x Relay	-	+	+
SMR1P1-00-20-21-00_1	-	4 x V/mA	4 x Relay	-	+	+
SMR1P1-00-21-21-00_1	-	2x V/mA	4 x Relay	-	+	+

Semi Universal Analog Input & Transistor Output Extension Modules

		<p>General Specifications :</p> <ul style="list-style-type: none"> * Modules have 2 or 4 input channels according to module type * Analog input types (each analog input can be set in different type individually) : <ul style="list-style-type: none"> - Cu-50, PT100, PT1000, PTC, NTC, mV or - V, mA * ON/OFF control, PID control, AutoTune, SelfTune * 4 pieces Transistor Output (Active High) * Modbus RTU communication protocol with RS485 * USB – Device (For device configuration) * Modular connection (up to 16 modules including itself) * Led indicators: <ul style="list-style-type: none"> - Power Supply, USB, RS-485 - Analog Input error led indicators - Active Output led indicators
<p>SMR1P1-00-01-04-00_1 SMR1P1-00-03-04-00_1</p>	<p>SMR1P1-00-20-04-00_1 SMR1P1-00-21-04-00_1</p>	

Technical Specifications

Module Type	SMR1P1-00-01-04-00	SMR1P1-00-03-04-00	SMR1P1-00-20-04-00	SMR1P1-00-21-04-00	
Supply Voltage	24 VDC ±%20 (19,2 VDC - 28,8 VDC)				
Power Consumption	1W				
Communication	RS-485 Modbus RTU				
USB Device	Mini USB, USB 2.0				
Analog Inputs					
Number of Inputs	4	2	4	2	
Input Sensor Type	Cu-50, PT-100, PT-1000, PTC, NTC, mV		V, mA		
Measurement Range / Resolution	Cu-50	-200 +200 °C / 0.1 °C -328 +392 °F / 0.1 °F	V	0 +2V / 1 mV 0 +5V / 1 mV	
	PT-100	-200 ... +650 °C / 0.1 °C -328 ... +1202 °F / 0.1 °F		0 +10V / 1 mV 2 +10V / 1 mV	
	PT-1000	-200 ... +650 °C / 0.1 °C -328 ... +1202 °F / 0.1 °F	mA	0 +20mA / 1 µA 4 +20mA / 1 µA	
	PTC	-50 +150 °C / 0.1 °C -58 +302 °F / 0.1 °F			
	NTC	-50 +100 °C / 0.1 °C -58 +212 °F / 0.1 °F			
	mV	0 +50 mV / 10 µV			
	ADC resolution	15 bit			
	Input Impedance	Voltage type inputs > 48 KΩ mA type inputs > 47 Ω Other type inputs ~ 15,4 MΩ			
Overall accuracy	% 0.2 (full scale)				
Response time	160 msec / channel				
Average function	The arithmetic average of the last read measurements according to the specified average number of samples				
Fault detections	1- short circuit, 2- sensor break, 3- over range				
Digital Outputs					
Number of Outputs	4 x Active High				
Output Current	0,3 A (one output), 1.2 A (total COM current)				
Transistor Power	External 24VDC supply must be connected				
Response Time	~170 µsn				
Protection	Short circuit protection				
Led Indicators					
Power	Always ON if the power input is in working limits, flashes 0.1s when undervoltage detected				

	Flashes 0.5s if the communication between Master and Slave module didn't start Flashes 1s if the communication between Master and Slave module broken Flashes 0.2s ON / 2s OFF if the device in Software Boot Mode
USB	Always ON if the USB cable plugged, flashes during data transfer
RS485	Flashes during Modbus data transfer
Analog Input	Always OFF in normal operation Always ON in case of fault detection (Sensor Break, Short Circuit, Over Range) Flashes during PID auto-tune or self-tune process ongoing
Transistor Output	ON when output active, OFF otherwise
Operation / Storage Environment	
Operation Temp.	-10°...+60° C
Storage Temp.	-20°...+70° C
Isolation	* There is no isolation between Analog Inputs * There is no isolation between Power, RS485 and USB * 500 VAC between Power Input and Analog Inputs * 1000 VAC between Power Input and Digital Outputs

Modbus Parameters Addresses

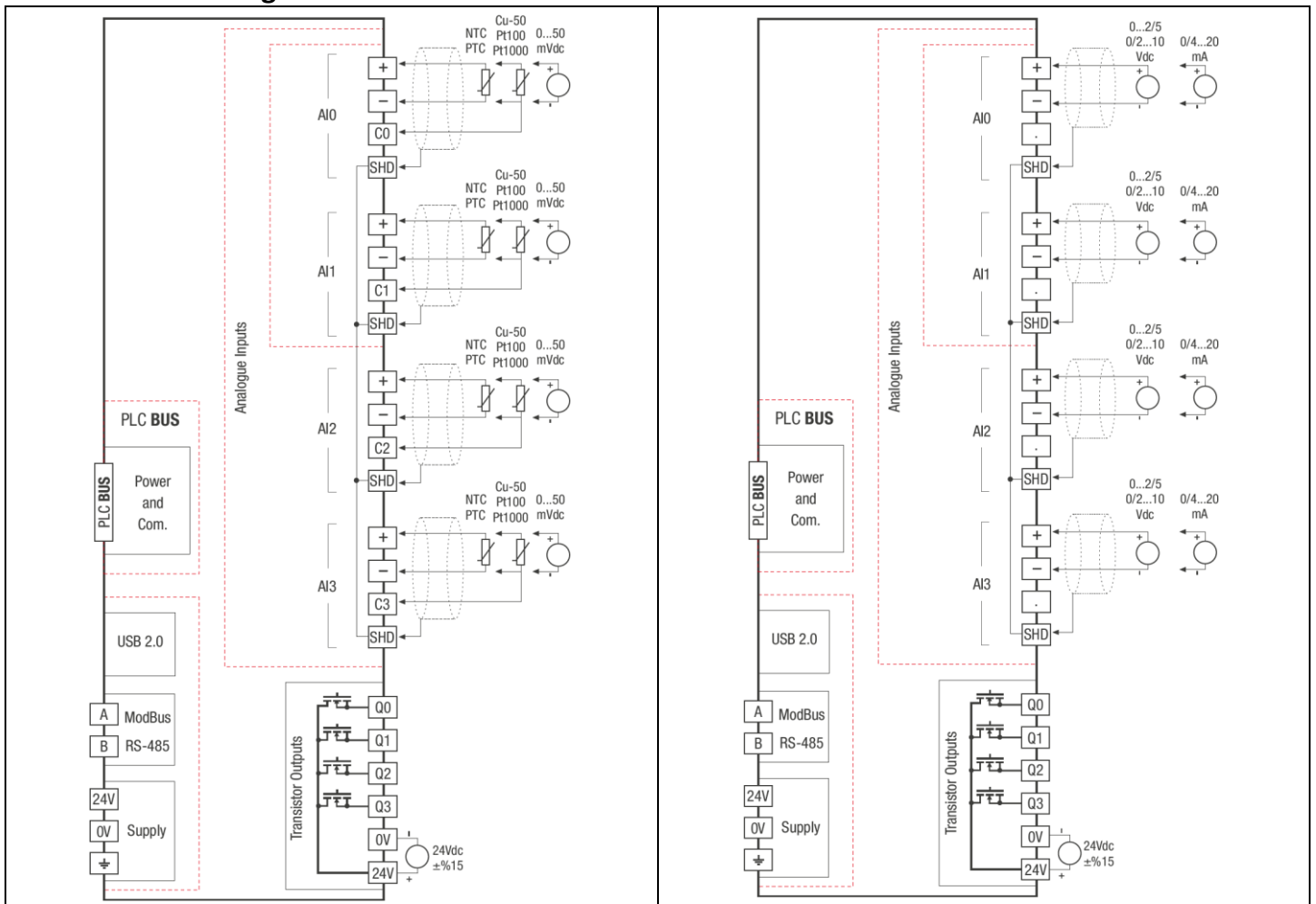
Address	R/W	Parameter Name	Definition	Default
Modbus Parameters				
40001	R/W	ID	Modbus ID can be set between 1 – 255	1
40002	R/W	Baud Rate (kbps)	0- 1200 3- 9600 6- 57600 1- 2400 4- 19200 7- 115200 2- 4800 5- 38400	6
40003	R/W	Stop Bit	0- 1 Bit 1- 2 Bit	0
40004	R/W	Parity	0- None 1- Even 2- Odd	0
Device Parameters				
40005	R	Reserved	In case of Master Mode, shows number of connected Slave Modules	-
40006	R	Type/Bus Order	b15-b8 : module types according to code : SMR1P1-00-01-04-00_1 = 0xAC SMR1P1-00-03-04-00_1 = 0xA9 SMR1P1-00-20-04-00_1 = 0xAD SMR1P1-00-21-04-00_1 = 0xAA b7-b0 : module bus order : 0- Master module N- N'th Slave module in the bus (max. 15) 17- Single module (No other device on bus)	-
40007	R	Version	HW and SW versions displayed on a bitwise basis b15-b12 : Hardware Version b11-b6 : Software Major Version b5-b0 : Software Minor Version	-
40008	R/W	Error Status ²	Error status displayed on a bitwise basis b0 : Low Power Supply Voltage Level b1 : Analog Input could not read b2 : RS485 communication timeout error ¹ b8 : Error in slave module number ¹ b9 : Error in slave module type ¹ b10 : Error in communication between slave modules ¹ b15-b12 : The number of the Slave module in which the error was detected <i>Note-1 : Error bits are only valid for Master Module.</i> <i>Note-2 : In case of communication timeout error arises in Master Module, communication between slave modules interrupted. By writing 3083 to the relevant address, the error bit cleared and the communication started again.</i>	-

40009	R/W	Timeout Duration	Defined for Master Module Definition Range : (0 – 60sec)	3
Analog Input Parameters				
40011	R/W	Temperature Display Unit	Applies to all Analog Input sensor types except type V or mA 0- Celcius (°C) 1- Fahrenheit (°F)	0
40012	R/W	AI0 Sensor Type	SMR1P1-00-01-21-00_1 SMR1P1-00-20-21-00_1 SMR1P1-00-03-21-00_1 SMR1P1-00-21-21-00_1 for above module types: for above module types:	0
40013		AI1 Sensor Type	0- Cu-50 0- 0-2V	
40014		AI2 Sensor Type	1- PT100 1- 0-5V 2- PT1000 2- 0-10V	
40015		AI3 Sensor Type	3- PTC 3- 2-10V 4- NTC 4- 0-20mA 5- mV 5- 4-20mA	
40016	R/W	AI0 Sensor Offset Value	Depending on the sensor type, values up to ± %10 of measuring range can be entered. For dotted types, the value must be entered as x10	0
40017		AI1 Sensor Offset Value		
40018		AI2 Sensor Offset Value		
40019		AI3 Sensor Offset Value		
40020	R/W	AI0 Average Sample Number	Number of last sample readings in Analog Input for average input value calculation. Value can be set between (1 – 20)	4
40021		AI1 Average Sample Number		
40022		AI2 Average Sample Number		
40023		AI3 Average Sample Number		
40024	R	AI0 Average Value	Average analog input value	-
40025		AI1 Average Value		
40026		AI2 Average Value		
40027		AI3 Average Value		
40028	R	AI0 Present Value	Present analog input value	-
40029		AI1 Present Value		
40030		AI2 Present Value		
40031		AI3 Present Value		
40032	R	AI0 Errors	Stores error status in the relevant input in bitwise form b0 : Sensor Break, Value : 32767 b1 : Short Circuit, Value: 32766 b2 : Over Sample, Value: 32765	-
40033		AI1 Errors		
40034		AI2 Errors		
40035		AI3 Errors		
Digital Output Parameters				
40129	R/W	Digital Outputs	Digital Output Status in bitwise notation 0 : OFF, 1 : ON b3-b0 : Q3 - Q0	0

Address				ON-OFF / PID Control Parameters		
AI0	AI1	AI2	AI3	R/W	ParameterName	Definition
40041	40063	40085	40107	R/W	Control Type	0- Passive (In case of this situation, related relay can be controlled manually) 1- PID Mode Active 2- ON-OFF Mode Active 3- PWM Mode Active
40042	40064	40086	40108	R/W	Set Value	Can be set between (MinScale – MaxScale) values. For dotted type, value can be set as x10
40043	40065	40087	40109	R/W	Set Offset	Can be set between (-MaxScale/2 – MaxScale/2) values. For dotted type, value can be set as x10
40044	40066	40088	40110	R/W	Hysteresis	Used in ON-OFF mode, can be set between (0 – (MaxScale – MinScale)/2) values. For dotted type, value can be set as x10

40045	40067	40089	40111	R/W	Minimum Scale	Can be set between (MinMeasRange – MaxScale) values. For dotted type, value can be set as x10	Min Meas. Range
40046	40068	40090	40112	R/W	Maximum Scale	Can be set between (MinScale – MaxMeasRange) values. For dotted type, value can be set as x10	Max Meas. Range
40047	40069	40091	40113	R/W	Heating Proportio.	Can take values between (0 – 1000)	100
40048	40070	40092	40114	R/W	Heating Integral	Can take values between (0 – 3600)	100
40049	40071	40093	40115	R/W	Heating Derivative	Can take values between (0 – 1000)	250
40050	40072	40094	40116	R/W	Cooling Proportio.	Can take values between (0 – 1000)	100
40051	40073	40095	40117	R/W	Cooling Integral	Can take values between (0 – 3600)	100
40052	40074	40096	40118	R/W	Cooling Derivative	Can take values between (0 – 9999)	250
40053	40075	40097	40119	R/W	Output period	Can take values between (1 – 150s)	1
40054	40076	40098	40120	R/W	Heating/Cooling	0- Heating 1- Cooling	0
40055	40077	40099	40121	R/W	Configuration	b0 : PID 0- Stop / 1- Run b1 : Auto Tune 0- Off / 1- On b2 : Self Tune 0- Off / 1- On	0 0 0
40056	40078	40100	40122	R/W	PID Instant Output Value %	Shows PID % output. In case of PWM selected as Control Type, this value used as % output value.	-
40057	40079	40101	40123	R/W	Errors	Shows Relevant Errors	-

Installation & Wiring



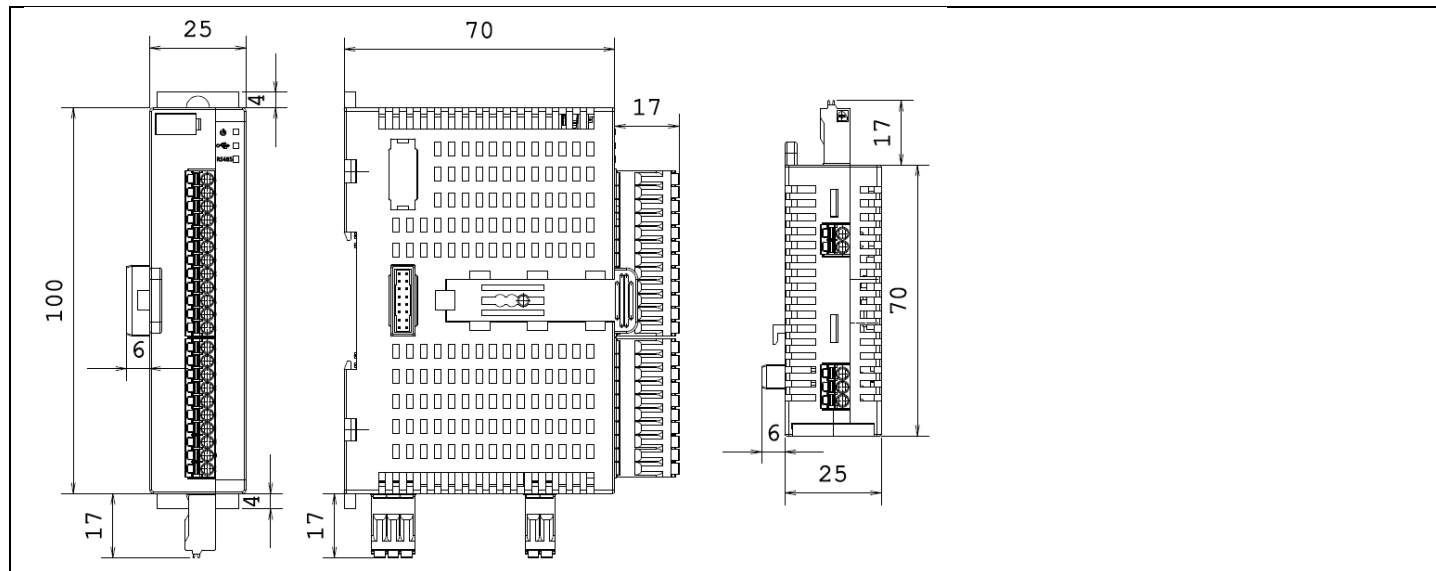
* Do not connect AC Power to any I/O terminal, otherwise serious damage may occur in module. Please check all wiring prior to energizing device. In order to prevent electromagnetic interference, be sure the grounding made corrected. Connect ground terminal in the power input connector to the overall system ground. Don't touch any terminals after energizing the device, in case of need to touch any terminal, de-energize the device before connection.

* For analog input connections; use original cable of sensors. In order to avoid noise interference, keep sensor cables away from power cables. 3-wire RTD sensor provides line resistance compensation. 2-wire RTD sensor has no line

resistance compensation. In order not to be affected from electromagnetic interference, sensor shield cables must be connected to SHD pins and SHD pin must be grounded to system earth.

* For RS485 communication connection; Connect the termination resistor (120R) between A&B terminal of the master module (located at the far left of the extension module group). In case of more than one extension module group, connect it between the A&B terminals of the master module (located at the far left of the extension module group) of the group at the end of the communication line. Use shielded and twisted-pair communication cable. Ground the shield connection of the cable to power input earth terminal.



Dimensions



Product Order Codes

Extension Modules with Analog Inputs	Digital Input	Analog Input	Digital Output	Analog Output	USB	RS 485
SMR1P1-00-01-04-00_1	-	4 x PT100/PT1000/PTC/NTC/mV	4 x Transistor	-	+	+
SMR1P1-00-03-04-00_1	-	2 x PT100/PT1000/PTC/NTC/mV	4 x Transistor	-	+	+
SMR1P1-00-20-04-00_1	-	4 x V/mA	4 x Transistor	-	+	+
SMR1P1-00-21-04-00_1	-	2 x V/mA	4 x Transistor	-	+	+

Thermocouple Input & Transistor Output Extension Modules

		<p>General Specifications :</p> <ul style="list-style-type: none"> * Modules have 2 or 4 input channels according to module type * Analog input types (each analog input can be set in different type individually) : <ul style="list-style-type: none"> - TC (L, J, K, R, S, T, B, E, N, C) * ON/OFF control, PID control, AutoTune, SelfTune * 4 pieces Transistor Output (Active High) * Modbus RTU communication protocol with RS485 * USB – Device (For device configuration) * Modular connection (up to 16 modules including itself) * Led indicators: <ul style="list-style-type: none"> - Power Supply, USB, RS-485 - Analog Input error led indicators - Active Output led indicators
SMR1P1-00-10-04-00_1	SMR1P1-00-12-04-00_1	

Technical Specifications

Module Type	SMR1P1-00-10-04-00	SMR1P1-00-12-04-00
Supply Voltage	24 VDC ±%20 (19,2 VDC - 28,8 VDC)	
Power Consumption	1.5W	
Communication	RS-485 Modbus RTU	
USB Device	Mini USB, USB 2.0	
Analog Inputs		
Number of Inputs	4	2
Measurement Range / Resolution	TC (L)*1 -150 +800 °C / 0.1 °C TC (J) -200 +900 °C / 0.1 °C TC (K) -200 +1300 °C / 0.1 °C TC (R) 0 +1700 °C / 0.1 °C TC (S) 0 +1700 °C / 0.1 °C TC (T) -200 +400 °C / 0.1 °C TC (B) 44 +1800 °C / 0.1 °C TC (E) -150 +700 °C / 0.1 °C TC (N) -200 +1300 °C / 0.1 °C TC (C) 0 +2300 °C / 0.1 °C <i>Note-1 : TC (L) is a GOST R 8.585-2001 type sensor</i>	-238 +1472 °F / 0.1 °F -328 +1652 °F / 0.1 °F -328 +2372 °F / 0.1 °F 32 +3092 °F / 0.1 °F 32 +3092 °F / 0.1 °F -328 +752 °F / 0.1 °F 111 +3272 °F / 0.1 °F -238 +1292 °F / 0.1 °F -328 +2372 °F / 0.1 °F 32 +4172 °F / 0.1 °F
ADC resolution	15 bit	
Input Impedance	~ 15,4 MΩ	
Overall accuracy	% 0.2 (full scale)	
Response time	160 msec / channel	
Average function	The arithmetic average of the last read measurements according to the specified average number of samples	
Fault detections	1- short circuit, 2- sensor break, 3- over range	
Digital Outputs		
Number of Outputs	4 x Active High	
Output Current	0,3 A (one output), 1.2 A (total COM current)	
Transistor Power	External 24VDC supply must be connected	
Response Time	~170 μsn	
Protection	Short circuit protection	
Led Indicators		
Power	Always ON if the power input is in working limits, flashes 0.1s when undervoltage detected Flashes 0.5s if the communication between Master and Slave module didn't start Flashes 1s if the communication between Master and Slave module broken Flashes 0.2s ON / 2s OFF if the device in Software Boot Mode	
USB	Always ON if the USB cable plugged, flashes during data transfer	
RS485	Flashes during Modbus data transfer	

Analog Input	Always OFF in normal operation Always ON in case of fault detection (Sensor Break, Short Circuit, Over Range) Flashes during PID auto-tune or self-tune process ongoing
Transistor Output	ON when output active, OFF otherwise
Operation / Storage Environment	
Operation Temp.	-10°...+60° C
Storage Temp.	-20°...+70° C
Isolation	* 400 VAC between Analog Inputs * There is no isolation between Power, RS485 and USB * 500 VAC between Power Input and Analog Inputs * 1000 VAC between Power Input and Digital Outputs

Modbus Parameters Addresses

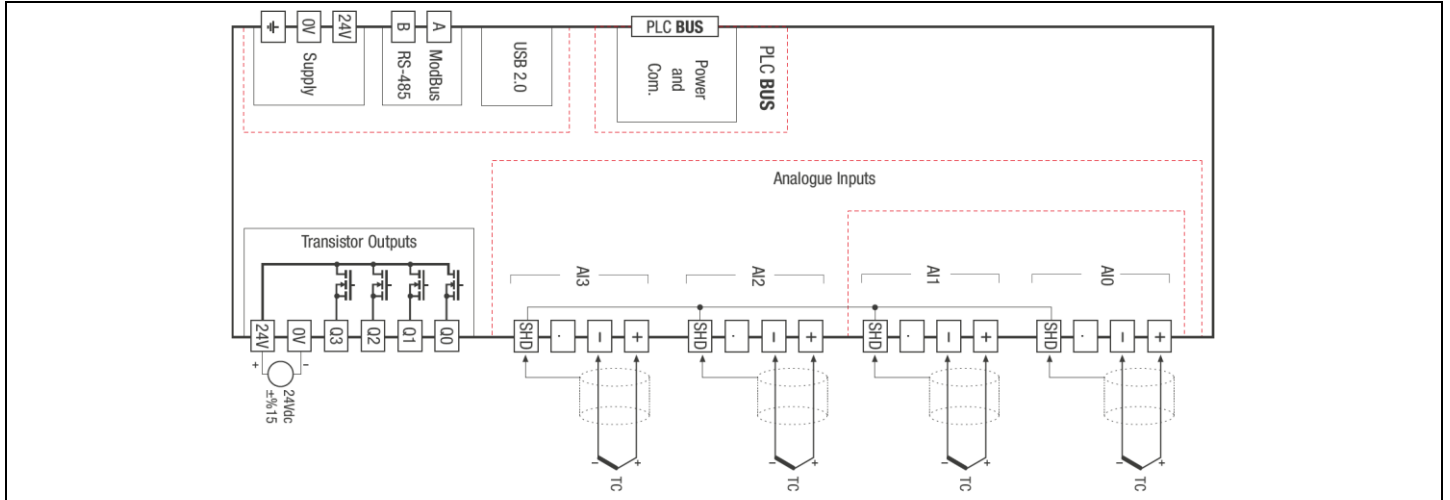
Address	R/W	Parameter Name	Definition	Default
Modbus Parameters				
40001	R/W	ID	Modbus ID can be set between 1 – 255	1
40002	R/W	Baud Rate (kbps)	0- 1200 3- 9600 6- 57600 1- 2400 4- 19200 7- 115200 2- 4800 5- 38400	6
40003	R/W	Stop Bit	0- 1 Bit 1- 2 Bit	0
40004	R/W	Parity	0- None 1- Even 2- Odd	0
Device Parameters				
40005	R	Reserved	In case of Master Mode, shows number of connected Slave Modules	-
40006	R	Type/Bus Order	b15-b8 : module types according to code : SMR1P1-00-10-04-00_1 = 0xAE SMR1P1-00-12-04-00_1 = 0xAB b7-b0 : module bus order : 0- Master module N- N'th Slave module in the bus (max. 15) 17- Single module (No other device on bus)	-
40007	R	Version	HW and SW versions displayed on a bitwise basis b15-b12 : Hardware Version b11-b6 : Software Major Version b5-b0 : Software Minor Version	-
40008	R/W	Error Status ²	Error status displayed on a bitwise basis b0 : Low Power Supply Voltage Level b1 : Analog Input could not read b2 : RS485 communication timeout error ¹ b8 : Error in slave module number ¹ b9 : Error in slave module type ¹ b10 : Error in communication between slave modules ¹ b15-b12 : The number of the Slave module in which the error was detected <i>Note-1 : Error bits are only valid for Master Module.</i> <i>Note-2 : In case of communication timeout error arises in Master Module, communication between slave modules interrupted. By writing 3083 to the relevant address, the error bit cleared and the communication started again.</i>	-
40009	R/W	Timeout Duration	Defined for Master Module Definition Range : (0 – 60sec)	3
Analog Input Parameters				
40011	R/W	Temperature Display Unit	Applies to all Analog Input sensor types except type V or mA. 0- Celcius (°C) 1- Fahrenheit (°F)	0

40012	R/W	AI0 Termokupl Tipi	Termokupl tip seçimi : 0- L 3- R 6- B 9- C 1- J 4- S 7- E 2- K 5- T 8- N	0
40013		AI1 Termokupl Tipi		
40014		AI2 Termokupl Tipi		
40015		AI3 Termokupl Tipi		
40016	R/W	AI0 Sensor Offset Value	Depending on the sensor type, values up to $\pm 10\%$ of measuring range can be entered. For dotted types, the value must be entered as x10	0
40017		AI1 Sensor Offset Value		
40018		AI2 Sensor Offset Value		
40019		AI3 Sensor Offset Value		
40020	R/W	AI0 Average Sample Number	Number of last sample readings in Analog Input for average input value calculation. Value can be set between (1 – 20)	4
40021		AI1 Average Sample Number		
40022		AI2 Average Sample Number		
40023		AI3 Average Sample Number		
40024	R	AI0 Average Value	Average analog input value	-
40025		AI1 Average Value		
40026		AI2 Average Value		
40027		AI3 Average Value		
40028	R	AI0 Present Value	Present analog input value	-
40029		AI1 Present Value		
40030		AI2 Present Value		
40031		AI3 Present Value		
40032	R	AI0 Errors	Stores error status in the relevant input in bitwise form b0 : Sensor Break, Value : 32767 b1 : Short Circuit, Value: 32766 b2 : Over Sample, Value: 32765	-
40033		AI1 Errors		
40034		AI2 Errors		
40035		AI3 Errors		
40036	R	Ambient Temperature	Ambient Temperature of the module	-
Digital Output Parameters				
40129	R/W	Digital Outputs	Digital Output Status in bitwise notation b3-b0 : Q3 - Q0 (0 : OFF, 1 : ON)	0

Address				ON-OFF / PID Control Parameters			
AI0	AI1	AI2	AI3	R/W	ParameterName	Definition	
40041	40063	40085	40107	R/W	Control Type	0- Passive (In case of this situation, related relay can be controlled manually) 1- PID Mode Active 2- ON-OFF Mode Active 3- PWM Mode Active	0
40042	40064	40086	40108	R/W	Set Value	Can be set between (MinScale – MaxScale) values. For dotted type, value can be set as x10	0
40043	40065	40087	40109	R/W	Set Offset	Can be set between (-MaxScale/2 – MaxScale/2) values. For dotted type, value can be set as x10	0
40044	40066	40088	40110	R/W	Hysteresis	Used in ON-OFF mode, can be set between (0 – (MaxScale – MinScale)/2) values. For dotted type, value can be set as x10	0
40045	40067	40089	40111	R/W	Minimum Scale	Can be set between (MinMeasRange – MaxScale) values. For dotted type, value can be set as x10	Min Meas. Range
40046	40068	40090	40112	R/W	Maximum Scale	Can be set between (MinScale – MaxMeasRange) values. For dotted type, value can be set as x10	Max Meas. Range
40047	40069	40091	40113	R/W	Heating Proportio.	Can take values between (0 – 1000)	100
40048	40070	40092	40114	R/W	Heating Integral	Can take values between (0 – 3600)	100
40049	40071	40093	40115	R/W	Heating Derivative	Can take values between (0 – 1000)	250
40050	40072	40094	40116	R/W	Cooling Proportio.	Can take values between (0 – 1000)	100
40051	40073	40095	40117	R/W	Cooling Integral	Can take values between (0 – 3600)	100
40052	40074	40096	40118	R/W	Cooling Derivative	Can take values between (0 – 9999)	250
40053	40075	40097	40119	R/W	Output period	Can take values between (1 – 150s)	1

40054	40076	40098	40120	R/W	Heating/Cooling	0- Heating 1- Cooling	0
40055	40077	40099	40121	R/W	Configuration	b0 : PID 0- Stop / 1- Run b1 : Auto Tune 0- Off / 1- On b2 : Self Tune 0- Off / 1- On	0 0 0
40056	40078	40100	40122	R/W	PID Instant Output Value %	Shows PID % output. In case of PWM selected as Control Type, this value used as % output value.	-
40057	40079	40101	40123	R/W	Errors	Shows Relevant Errors	-

Installation & Wiring

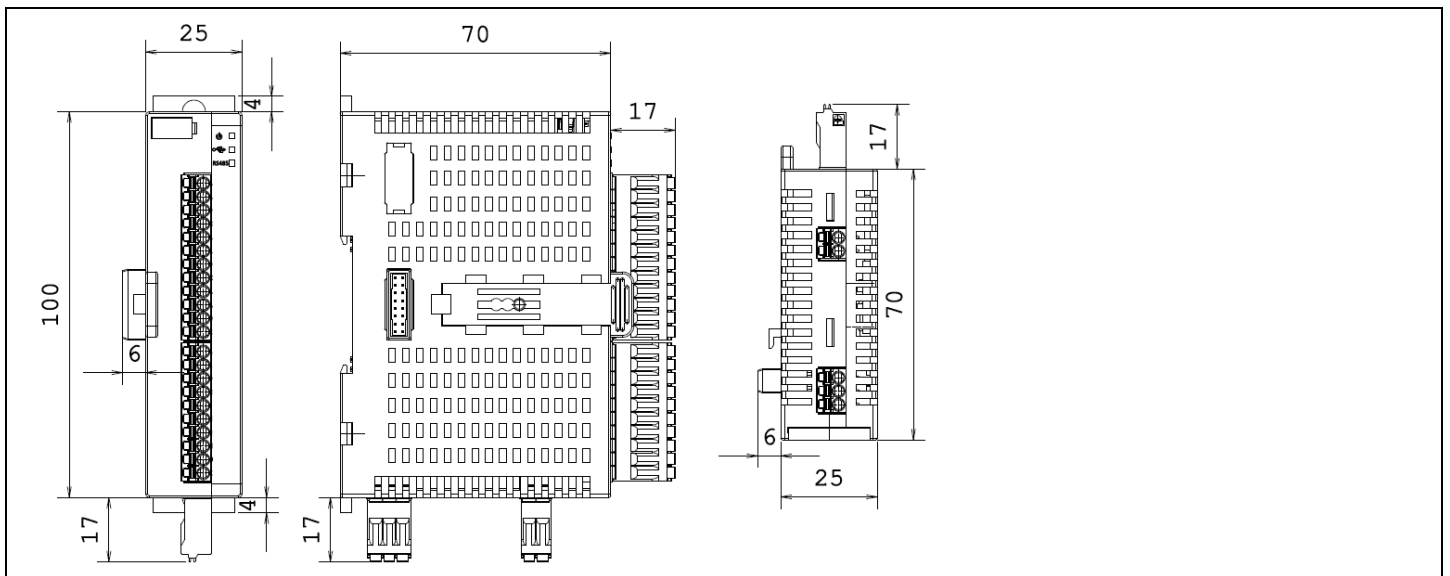


* Do not connect AC Power to any I/O terminal, otherwise serious damage may occur in module. Please check all wiring prior to energizing device. In order to prevent electromagnetic interference, be sure the grounding made corrected. Connect ground terminal in the power input connector to the overall system ground. Don't touch any terminals after energizing the device, in case of need to touch any terminal, de-energize the device before connection.

* For analog input connections; use original cable of sensors. In order to avoid noise interference, keep sensor cables away from power cables. In order not to be affected from electromagnetic interference, sensor shield cables must be connected to SHD pins and SHD pin must be grounded to system earth.

* For RS485 communication connection; Connect the termination resistor (120R) between A&B terminal of the master module (located at the far left of the extension module group). In case of more than one extension module group, connect it between the A&B terminals of the master module (located at the far left of the extension module group) of the group at the end of the communication line. Use shielded and twisted-pair communication cable. Ground the shield connection of the cable to power input earth terminal.


Dimensions



Product Order Codes

Extension Modules with Analog Inputs	Digital Input	Analog Input	Digital Output	Analog Output	USB	RS 485
SMR1P1-00-10-04-00_1	-	4 x TC	4 x Transistor	-	+	+
SMR1P1-00-12-04-00_1	-	2 x TC	4 x Transistor	-	+	+

Universal Analog Input, Analog Output & Transistor Output Extension Modules

 <p>SMR1P1-00-30-07-02_1 SMR1P1-00-30-04-00_1</p>	<p>General Specifications :</p> <ul style="list-style-type: none"> * 1 piece universal analog input * Analog input types : Cu-50, PT100, PT1000, PTC, NTC, mV, Thermocouple (L, J, K, R, S, T, B, E, N, C,), V, mA * ON/OFF control, PID control, AutoTune, SelfTune * According to module type; 4 or 1 digital output (Active High) * According to module type; 0 or 1 analog output (V/mA) * Modbus RTU communication protocol with RS485 * USB – Device (For device configuration) * Modular connection (up to 16 modules including itself) * Led indicators: <ul style="list-style-type: none"> - Power Supply, USB, RS-485 - Analog Input error led indicators - Active Output led indicators
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Technical Specifications

Module Type	SMR1P1-00-30-07-02	SMR1P1-00-30-04-00
Supply Voltage	24 VDC ±%20 (19,2 VDC - 28,8 VDC)	
Power Consumption	1.5W	
Communication	RS-485 Modbus RTU	
USB Device	Mini USB, USB 2.0	
Analog Inputs		
Number of Inputs	1	
Input Sensor Type	TC / Cu-50 / PT-100 / PT-1000 / PTC / NTC / mV / V / mA	
Measurement Range / Resolution	TC (L) ^{*1}	-200 ... +800 °C / 0.1 °C -328 ... +1472 °F / 0.1 °F
	TC (J)	-200 ... +900 °C / 0.1 °C -328 ... +1652 °F / 0.1 °F
	TC (K)	-200 ... +1300 °C / 0.1 °C -328 ... +2372 °F / 0.1 °F
	TC (R)	0 +1700 °C / 0.1 °C 32 +3092 °F / 0.1 °F
	TC (S)	0 +1700 °C / 0.1 °C 32 +3092 °F / 0.1 °F
	TC (T)	-200 ... +400 °C / 0.1 °C -328 ... +752 °F / 0.1 °F
	TC (B)	44 +1800 °C / 0.1 °C 110 +3272 °F / 0.1 °F
	TC (E)	-150 ... +700 °C / 0.1 °C -238 ... +1292 °F / 0.1 °F
	TC (N)	-200 ... +1300 °C / 0.1 °C -328 ... +2372 °F / 0.1 °F
	TC (C)	0 +2300 °C / 0.1 °C 32 +4172 °F / 0.1 °F
	Cu-50	-200 ... +200 °C / 0.1 °C -328 ... +392 °F / 0.1 °F
	PT-100	-200 ... +650 °C / 0.1 °C -328 ... +1202 °F / 0.1 °F
	PT-1000	-200 ... +650 °C / 0.1 °C -328 ... +1202 °F / 0.1 °F
	PTC	-50 +150 °C / 0.1 °C -58 +302 °F / 0.1 °F
	NTC	-50 +100 °C / 0.1 °C -58 +212 °F / 0.1 °F
	mV	0 +50 mV / 10 μV
	V	0 +2V / 1 mV 0 +5V / 1 mV 0 +10V / 1 mV 2 +10V / 1 mV
	mA	0 +20mA / 1 μA 4 +20mA / 1 μA
<i>Note-1 : TC (L) is a GOST R 8.585-2001 type sensor</i>		
ADC resolution	15 bit	
Input Impedance	Voltage type inputs > 48 KΩ mA type inputs > 47 Ω Other type inputs ~ 15,4 MΩ	
Overall accuracy	% 0.2 (full scale)	
Response time	160 msec / channel	

Average function	The arithmetic average of the last read measurements according to the specified average number of samples	
Fault detections	1- short circuit, 2- sensor break, 3- over range	
Analog Output		
Number of Outputs	1 x V / mA	-
Output range	0-10V or 0-20mA (only one tpe can be selected in the same time)	
Overall accuracy	% 0.5 (in the full scale measurement range)	
Response time	~200 msec	
Digital Outputs		
Number of Outputs	1 x Active High	4 x Active High
Output Current	0,3 A (one output), 1.2 A (total COM current)	
Transistor Power	External 24VDC supply must be connected	
Response Time	~170 μ sn	
Protection	Short circuit protection	
Led Indicators		
Power	Always ON if the power input is in working limits, flashes 0.1s when undervoltage detected Flashes 0.5s if the communication between Master and Slave module didn't start Flashes 1s if the communication between Master and Slave module broken Flashes 0.2s ON / 2s OFF if the device in Software Boot Mode	
USB	Always ON if the USB cable plugged, flashes during data transfer	
RS485	Flashes during Modbus data transfer	
Analog Input	Always OFF in normal operation Always ON in case of fault detection (Sensor Break, Short Circuit, Over Range) Flashes during PID auto-tune or self-tune process ongoing	
Transistor Output	ON when output active, OFF otherwise	
Analog Output	ON when output active, OFF otherwise	
Operation / Storage Environment		
Operation Temp.	-10°...+60° C	
Storage Temp.	-20°...+70° C	
Isolation	<ul style="list-style-type: none"> * There is no isolation between Power, RS485 and USB * 500 VAC between Analog Input and Power Input * 1000 VAC between Digital Outputs and Power Input * 500 VAC between Analog Output and Power Input 	

Modbus Parameters Addresses

Address	R/W	Parameter Name	Definition	Default
Modbus Parameters				
40001	R/W	ID	Modbus ID can be set between 1 – 255	1
40002	R/W	Baud Rate (kbps)	0- 1200 3- 9600 6- 57600 1- 2400 4- 19200 7- 115200 2- 4800 5- 38400	6
40003	R/W	Stop Bit	0- 1 Bit 1- 2 Bit	0
40004	R/W	Parity	0- None 1- Even 2- Odd	0
Device Parameters				
40005	R	Reserved	In case of Master Mode, shows number of connected Slave Modules	-
40006	R	Type/Bus Order	b15-b8 : module types according to code : SMR1P1-00-30-07-02_1 = 0xAF SMR1P1-00-30-04-00_1 = 0xB0 b7-b0 : module bus order : 0- Master module N- N'th Slave module in the bus (max. 15) 17- Single module (No other device on bus)	-

40007	R	Version	HW and SW versions displayed on a bitwise basis b15-b12 : Hardware Version b11-b6 : Software Major Version b5-b0 : Software Minor Version	-
40008	R/W	Error Status ²	Error status displayed on a bitwise basis b0 : Low Power Supply Voltage Level b1 : Analog Input could not read b2 : RS485 communication timeout error ¹ b8 : Error in slave module number ¹ b9 : Error in slave module type ¹ b10 : Error in communication between slave modules ¹ b15-b12 : The number of the Slave module in which the error was detected <i>Note-1 : Error bits are only valid for Master Module.</i> <i>Note-2 : In case of communication timeout error arises in Master Module, communication between slave modules interrupted. By writing 3083 to the relevant address, the error bit cleared and the communication started again.</i>	-
40009	R/W	Timeout Duration	Defined for Master Module Definition Range : (0 – 60sec)	3
Analog Input Parameters				
40011	R/W	Temperature Display Unit	Applies to all Analog Input sensor types except type V or mA. 0- Celcius (°C) 1- Fahrenheit (°F)	0
40012	R/W	AIO Sensor Type	Sensor type selection : 0- TC-L 6- TC-B 12- PT1000 18- 0-10V 1- TC-J 7- TC-E 13- PTC 19- 2-10V 2- TC-K 8- TC-N 14- NTC 20- 0-20mA 3- TC-R 9- TC-C 15- mV 21- 4-20mA 4- TC-S 10- Cu-50 16- 0-2V 5- TC-T 11- PT100 17- 0-5V	0
40014	R/W	AIO Sensor Offset Value	Depending on the sensor type, values up to ± %10of measuring range can be entered. For dotted types, the value must be entered as x10	0
40015	R/W	AIO Average Sample Number	Number of last sample readings in Analog Input for average input value calculation. Value can be set between (1 – 20)	4
40016	R	AIO Average Value	Average analog input value	-
40017	R	AIO Present Value	Present analog input value	-
40018	R	AIO Errors	Stores error status in the relevant input in bitwise form b0 : Sensor Break, Value : 32767 b1 : Short Circuit, Value: 32766 b2 : Over Sample, Value: 32765	-
40019	R	Ambient Temperature	Ambient Temperature of the module	-
ON-OFF / PID Kontrol Parametreleri				
40041	R/W	Control Type	0- Passive (In case of this situation, related relay can be controlled manually) 1- PID Mode Active 2- ON-OFF Mode Active 3- PWM Mode Active	0
40042	R/W	Set Value	Can be set between (MinScale – MaxScale) values. For dotted type, value can be set as x10	0
40043	R/W	Set Offset	Can be set between (-MaxScale/2 – MaxScale/2) values. For dotted type, value can be set as x10	0

40044	R/W	Hysteresis	Used in ON-OFF mode, can be set between (0 – (MaxScale – MinScale)/2) values. For dotted type, value can be set as x10	0
40045	R/W	Minimum Scale	Can be set between (MinMeasRange – MaxScale) values. For dotted type, value can be set as x10	Min Meas. Range
40046	R/W	Maximum Scale	Can be set between (MinScale – MaxMeasRange) values. For dotted type, value can be set as x10	Max Meas. Range
40047	R/W	Heating Proportio.	Can take values between (0 – 1000)	100
40048	R/W	Heating Integral	Can take values between (0 – 3600)	100
40049	R/W	Heating Derivative	Can take values between (0 – 1000)	250
40050	R/W	Cooling Proportio.	Can take values between (0 – 1000)	100
40051	R/W	Cooling Integral	Can take values between (0 – 3600)	100
40052	R/W	Cooling Derivative	Can take values between (0 – 9999)	250
40053	R/W	Output period	Can take values between (1 – 150s)	1
40054	R/W	Heating/Cooling	0- Heating 1- Cooling	0
40055	R/W	Configuration	b0 : PID 0- Stop / 1- Run b1 : Auto Tune 0- Off / 1- On b2 : Self Tune 0- Off / 1- On	0 0 0
40056	R/W	PID Instant Output Value %	Shows PID % output. In case of PWM selected as Control Type, this value used as % output value.	-
40057	R/W	Errors	Shows Relevant Errors	-
Digital Output Parameters				
40063	R/W	Digital Outputs	Digital Output Status in bitwise notation b3-b0 : Q3 - Q0 (0 : OFF, 1 : ON)	0
Analog Output Parameters				
40064	R/W	Analog Output Configuration	b0 : type selection (0- V / 1- mA) b2-b1 : source selection (00- value written in register 40065 used / 01- analog input value scaled with 40066 and 40067 used / 10- PID instantaneous % output value in 40056 is used)	0 00
40065	R/W	Analog Output	<i>Look at Analog Output Application Examples</i>	0
40066	R/W	Minimum Scale Value for Input	Can be set between (MinMeasRange -MaxInputScale)	Min Meas. Range
40067	R/W	Maximum Scale Value for Input	Can be set between (MinInputScale -MaxMeasRange)	Max Meas. Range
40068	R/W	Minimum Scale Value for Output	Can be set between (MinOutputRange – MaxOutputScale)	Min Output Range
40069	R/W	Maximum Scale Value for Output	Can be set between (MinOutputScale – MaxOutputRange)	Max Output Range

Analog Output Application Example – 1

To create analog output in the range (0-10V) by writing to the 40065 modbus address;

- 40064.b0 = 0 (V is selected as analog output type)
- 40064.b2-b1 = 00 (value written in 40064 used as analog output source)
- 40068 = 0 (default minimum analog scale (0V/0mV))
- 40069 = 10000 (default maximum analog scale (10V/10000mV))

Thus, when 0 written to address 40065 analog voltage 0V, when 10000 written to address 40065 analog voltage 10000mV (10V), when a value between 0 and 10000 written analog output is calculated and created linearly between 0 and 10V.

Analog Output Application Example – 2

To convert analog input in the range (2-5V) to analog output in the range (4-20mA);

- 40012 = 18 (0-10V selected as analog sensor type)
- 40064.b0 = 1 (mA type selected as output sensor type)
- 40064.b2-b1 = 01 (uses analog input value scaled with 40066 and 40067 as analog output source)
- 40066 = 2000 (Minimum analog input scale value set to 2V / 2000mV)
- 40067 = 5000 (Maximum analog input scale value set to 5V / 5000mV)
- 40068 = 4000 (Minimum analog output scale value set to 4mA / 4000µA)
- 40069 = 20000 (Maximum analog output scale value set to 20mA / 20000µA)

Thus, when the analog input is 2V or below, the analog output set to 4mA, when the analog input is 5V or above, the analog output set to 20mA. When the analog input is between 2V and 5V, the analog output set to linearly calculated value between 4mA and 20mA.

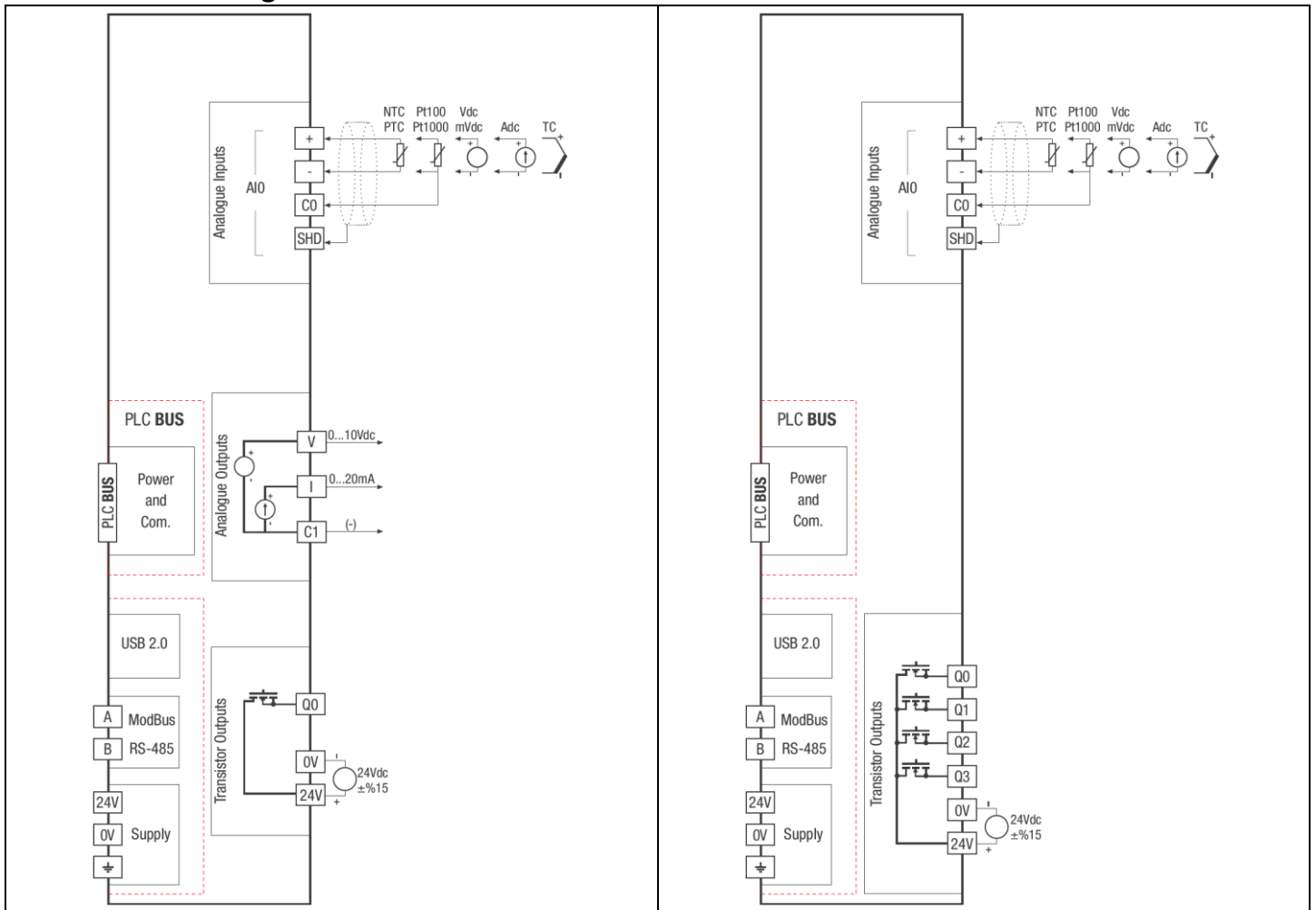
Analog Output Application Example – 3

To convert the PID output of PT-100 sensor input to (0-2V) analog output;

- 40012 = 11 (select PT-100 [-200.0 - 650°C] as the analog input type)
- 40064.b0 = 0 (select V as the analog output type)
- 40064.b2-b1 = 10 (use the PID instantaneous % output value from 40056 as the analog output source)
- 40068 = 0 (set the analog output minimum scale value to 0V/0mV)
- 40069 = 2000 (set the analog output maximum scale value to 2V/2000mV)

Thus, 0V analog output set for 0% PID output, 2V analog output set for 100% PID output, and between 0% to 100% PID output, analog output calculated and set linearly between 0V and 2V.

Installation & Wiring

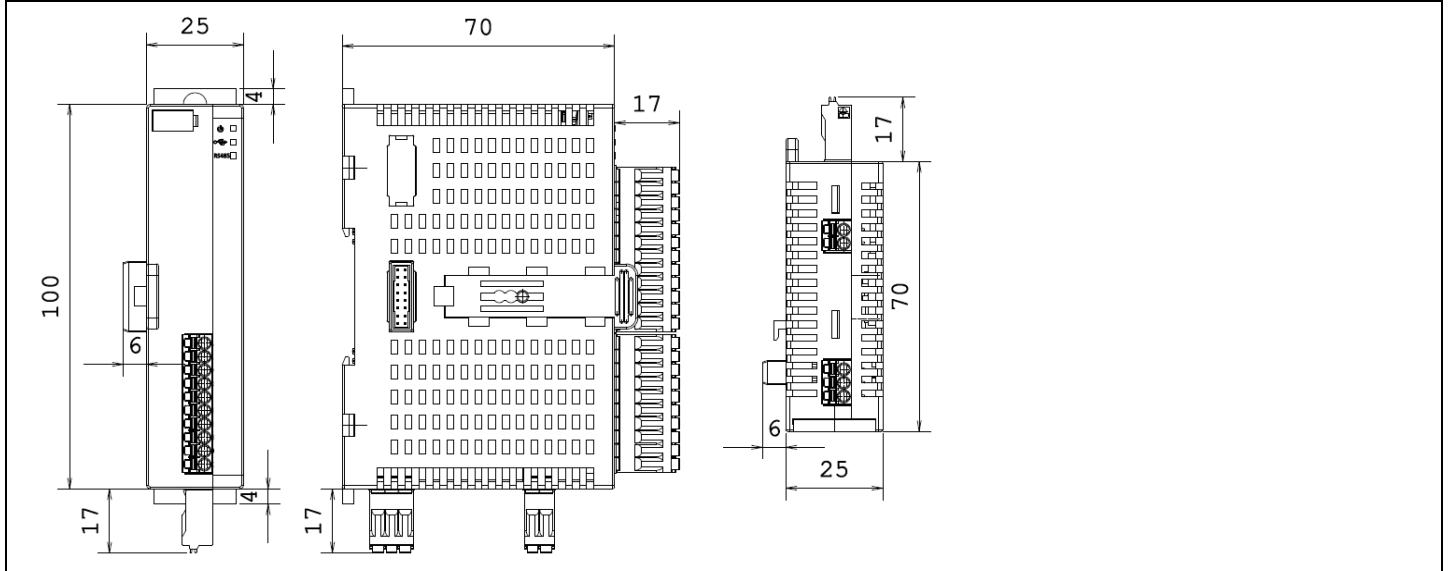


* Do not connect AC Power to any I/O terminal, otherwise serious damage may occur in module. Please check all wiring prior to energizing device. In order to prevent electromagnetic interference, be sure the grounding made corrected. Connect ground terminal in the power input connector to the overall system ground. Don't touch any terminals after energizing the device, in case of need to touch any terminal, de-energize the device before connection.

* For analog input connections; use original cable of sensors. In order to avoid noise interference, keep sensor cables away from power cables. 3-wire RTD sensor provides line resistance compensation. 2-wire RTD sensor has no line resistance compensation. In order not to be affected from electromagnetic interference, sensor shield cables must be connected to SHD pins and SHD pin must be grounded to system earth.

* For RS485 communication connection; Connect the termination resistor (120R) between A&B terminal of the master module (located at the far left of the extension module group). In case of more than one extension module group, connect it between the A&B terminals of the master module (located at the far left of the extension module group) of the group at the end of the communication line. Use shielded and twisted-pair communication cable. Ground the shield connection of the cable to power input earth terminal.


Dimensions



Product Order Codes

Extension Modules with Analog Inputs	Digital Input	Analog Input	Digital Output	Analog Output	USB	RS 485
SMR1P1-00-30-07-02_1	-	1 x TC/PT100/PT1000/PTC/NTC/mV/V/mA	1 x Transistor	1 x V/mA	+	+
SMR1P1-00-30-04-00_1	-	1 x TC/PT100/PT1000/PTC/NTC/mV/V/mA	4 x Transistor	-	+	+

Extension Modules with Digital Input, Relay or Transistor Output

 <p>SMR1P1-03-00-20-00_1 SMR1P1-03-00-02-00_1</p>	<p>General Specifications :</p> <ul style="list-style-type: none"> * 8 Digital Input (NPN / PNP) * According to module type; 8 Relay Output (NO) / 8 Digital Output (Active High) * Modbus RTU communication protocol with RS485 * USB – Device (For device configuration) * Modular connection (up to 16 modules including itself) * Led indicators: <ul style="list-style-type: none"> - Power Supply, USB, RS-485 - Active Digital Input led indicators - Active Output led indicators
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Technical Specifications

Module Type	SMR1P1-03-00-20-00	SMR1P1-03-00-02-00
Supply Voltage	24 VDC ($\pm 20\%$)(19,2 VDC - 28,8 VDC)	
Power Consumption	2W	1.5W
Communication	RS-485 Modbus RTU	
USB Device	Mini USB, USB 2.0	
Digital Inputs		
Number of Inputs	8	
Type	NPN / PNP	
Nominal Input Voltage	24 VDC	
Active Level	Low Level < 7 VDC, High Level > 10 VDC	
Input Resistance	> 5,9 k Ω	
Maximum Current	6 mA	
Response Time	20 μ sn	
Detection Speed	Filter option between 1-500 msec	
Relay Outputs		
Number Of Relay	8 x NO	-
Relay Current	1,5 A @ 250VAC (single relay) 6 A @ 250VAC (total COM current)	
Relay Groups	C1 – Q0, Q1, Q2, Q3 C2 – Q4, Q5, Q6, Q7	
Response Time	0 => 1 ~10 msec, 1 => 0 ~5 msec	
Digital Outputs		
Number of Outputs	-	8 x Active high
Output Current	0,3 A (one output), 2,4 A (total COM current)	
Transistor Power	External 24VDC supply must be connected	
Response Time	~170 μ sn	
Protection	Short circuit protection	
Led Indicators		
Power	Always ON if the power input is in working limits, flashes 0.1s when undervoltage detected Flashes 0.5s if the communication between Master and Slave module didn't start Flashes 1s if the communication between Master and Slave module broken Flashes 0.2s ON / 2s OFF if the device in Software Boot Mode	
USB	Always ON if the USB cable plugged, flashes during data transfer	
RS485	Flashes during Modbus data transfer	
Digital Input	ON when input active, OFF otherwise	
Relay / Transistor Output	ON when output active, OFF otherwise	

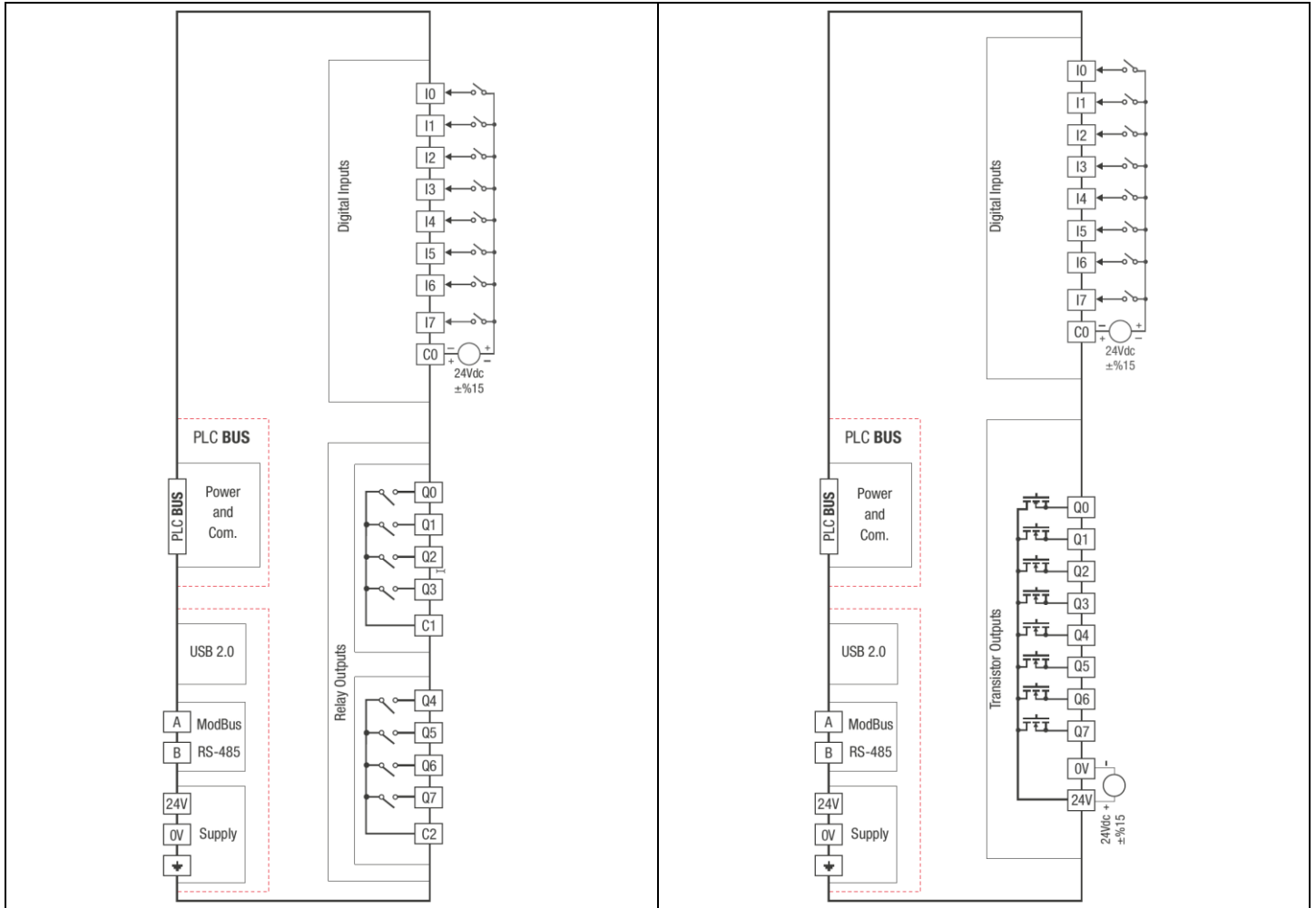
Operation / Storage Environment	
Operation Temp.	-10°...+60° C
Storage Temp.	-20°...+70° C
Isolation	* There is no isolation between Power, RS485 and USB * 1000 VAC between Power Input and Digital Inputs * 1000 VAC between Power Input and Digital Outputs * 2000 VAC between Power Input and Relay Outputs

Modbus Parameters Addresses

Address	R/W	Parameter Name	Definition	Default
Modbus Parameters				
40001	R/W	ID	Modbus ID can be set between 1 – 255	1
40002	R/W	Baud Rate (kbps)	0- 1200 3- 9600 6- 57600 1- 2400 4- 19200 7- 115200 2- 4800 5- 38400	6
40003	R/W	Stop Bit	0- 1 Bit 1- 2 Bit	0
40004	R/W	Parity	0- None 1- Even 2- Odd	0
Device Parameters				
40005	R	Reserved	In case of Master Mode, shows number of connected Slave Modules	-
40006	R	Type/Bus Order	b15-b8 : module types according to code : SMR1P1-03-00-20-00_1 = 0xA0 SMR1P1-03-00-02-00_1 = 0xA1 b7-b0 : module bus order : 0- Master module N- N'th Slave module in the bus (max. 15) 17- Single module (No other device on bus)	-
40007	R	Version	HW and SW versions displayed on a bitwise basis b15-b12 : Hardware Version b11-b6 : Software Major Version b5-b0 : Software Minor Version	-
40008	R/W	Error Status ²	Error status displayed on a bitwise basis b0 : Low Power Supply Voltage Level b1 : Analog Input could not read b2 : RS485 communication timeout error ¹ b8 : Error in slave module number ¹ b9 : Error in slave module type ¹ b10 : Error in communication between slave modules ¹ b15-b12 : The number of the Slave module in which the error was detected <i>Note-1 : Error bits are only valid for Master Module.</i> <i>Note-2 : In case of communication timeout error arises in Master Module, communication between slave modules interrupted. By writing 3083 to the relevant address, the error bit cleared and the communication started again.</i>	-
40009	R/W	Timeout Duration	Defined for Master Module. Range : (0 – 60sec)	3
Digital Input Parameters				
40011	R	Digital Inputs	Digital Inputs Status in bitwise notation. b7-b0 : I7 - I0 (0 : OFF, 1 : ON)	-
40012	R/W	I0 Filter Time	Value Range : (1 – 500ms)	50
40013		I1 Filter Time		
40014		I2 Filter Time		
40015		I3 Filter Time		
40016		I4 Filter Time		
40017		I5 Filter Time		
40018	I6 Filter Time			

40019		I7 Filter Time		
Digital Output Parameters				
40020	R/W	Digital Outputs	Digital Output Status in bitwise notation b7-b0 : Q3 - Q0 (0 : OFF, 1 : ON)	0

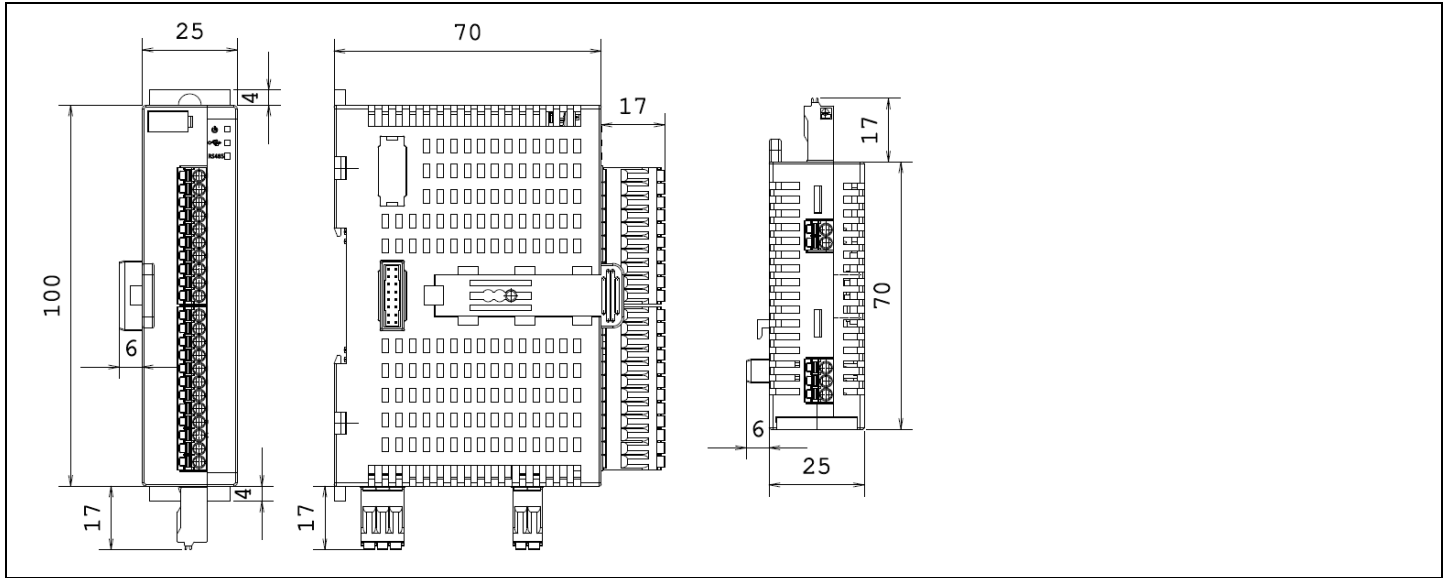
Installation & Wiring



* Do not connect AC Power to any I/O terminal, otherwise serious damage may occur in module. Please check all wiring prior to energizing device. In order to prevent electromagnetic interference, be sure the grounding made corrected. Connect ground terminal in the power input connector to the overall system ground. Don't touch any terminals after energizing the device, in case of need to touch any terminal, de-energize the device before connection.

* For RS485 communication connection; Connect the termination resistor (120R) between A&B terminal of the master module (located at the far left of the extension module group). In case of more than one extension module group, connect it between the A&B terminals of the master module (located at the far left of the extension module group) of the group at the end of the communication line. Use shielded and twisted-pair communication cable. Ground the shield connection of the cable to power input earth terminal.

Dimensions



Product Order Codes

Extension Modules with Digital Inputs / Outputs	Digital Input	Analog Input	Digital Output	Analog Output	USB	RS485
SMR1P1-03-00-20-00_1	8 x NPN / PNP	-	8 x Relay	-	+	+
SMR1P1-03-00-02-00_1	8 x NPN / PNP	-	8 x Transistor	-	+	+

Extension Modules with Digital Input



SMR1P1-01-00-00-00_1

General Specifications :

- * 16 Digital Input (NPN / PNP)
- * Modbus RTU communication protocol with RS485
- * USB – Device (For device configuration)
- * Modular connection (up to 16 modules including itself)
- * Led indicators:
 - Power Supply, USB, RS-485
 - Active Digital Input led indicators

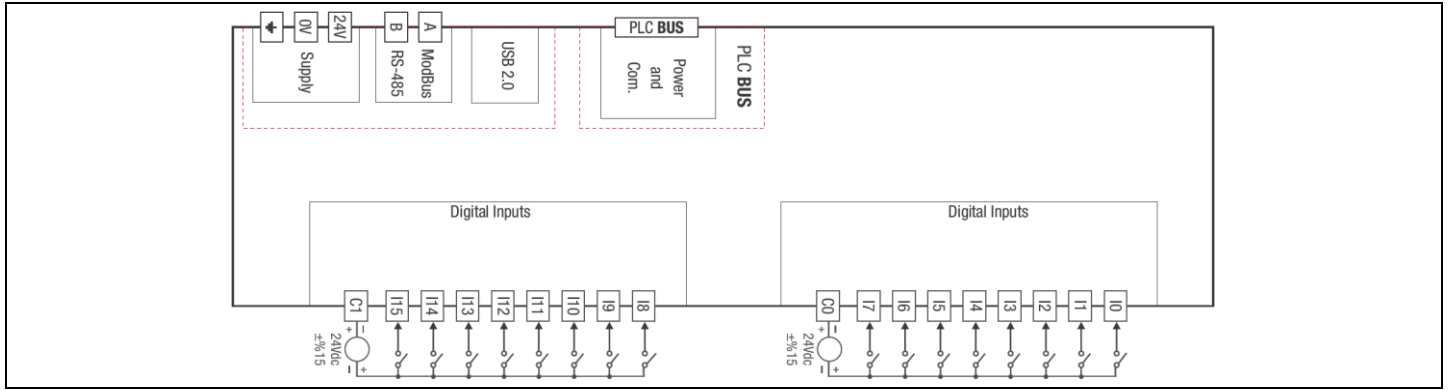
Technical Specifications

Module Type	SMR1P1-01-00-00-00
Supply Voltage	24 VDC \pm 20% (19,2 VDC - 28,8 VDC)
Power Consumption	1W
Communication	RS-485 Modbus RTU
USB Device	Mini USB, USB 2.0
Digital Inputs	
Number of Inputs	16
Type	NPN / PNP
Nominal Input Voltage	24 VDC
Active Level	Low Level < 7 VDC, High Level > 10 VDC
Input Resistance	> 5,9 k Ω
Maximum Current	6 mA
Response Time	20 μ sn
Detection Speed	Filter option between 1-500 msec
Led Indicators	
Power	Always ON if the power input is in working limits, flashes 0.1s when undervoltage detected Flashes 0.5s if the communication between Master and Slave module didn't start Flashes 1s if the communication between Master and Slave module broken Flashes 0.2s ON / 2s OFF if the device in Software Boot Mode
USB	Always ON if the USB cable plugged, flashes during data transfer
RS485	Flashes during Modbus data transfer
Digital Input	ON when input active, OFF otherwise
Çevresel Özellikler	
Operation Temp.	-10°...+60° C
Storage Temp.	-20°...+70° C
Isolation	* There is no isolation between Power, RS485 and USB * 1000 VAC between Digital Inputs and Power Input

Modbus Parameters Addresses

Address	R/W	Parameter Name	Definition	Default
Modbus Parameters				
40001	R/W	ID	Modbus ID can be set between 1 – 255	1
40002	R/W	Baud Rate (kbps)	0- 1200 3- 9600 6- 57600 1- 2400 4- 19200 7- 115200 2- 4800 5- 38400	6
40003	R/W	Stop Bit	0- 1 Bit 1- 2 Bit	0
40004	R/W	Parity	0- None 1- Even 2- Odd	0
Device Parameters				
40005	R	Reserved	In case of Master Mode, shows number of connected Slave Modules	-
40006	R	Type/Bus Order	b15-b8 : module types according to code : SMR1P1-01-00-00-00_1 = 0xA2 b7-b0 : module bus order : 0- Master module N- N'th Slave module in the bus (max. 15) 17- Single module (No other device on bus)	-
40007	R	Version	HW and SW versions displayed on a bitwise basis b15-b12 : Hardware Version b11-b6 : Software Major Version b5-b0 : Software Minor Version	-
40008	R/W	Error Status ²	Error status displayed on a bitwise basis b0 : Low Power Supply Voltage Level b1 : Analog Input could not read b2 : RS485 communication timeout error ¹ b8 : Error in slave module number ¹ b9 : Error in slave module type ¹ b10 : Error in communication between slave modules ¹ b15-b12 : The number of the Slave module in which the error was detected <i>Note-1 : Error bits are only valid for Master Module.</i> <i>Note-2 : In case of communication timeout error arises in Master Module, communication between slave modules interrupted. By writing 3083 to the relevant address, the error bit cleared and the communication started again.</i>	-
40009	R/W	Timeout Duration	Defined for Master Module. Range : (0 – 60sec)	3
Digital Input Parameters				
40011	R	Digital Inputs	Digital Inputs Status in bitwise notation. b15-b0 : I15 - I0 (0 : OFF, 1 : ON)	-
40012	R/W	I0 Filter Time	Value Range : (1 – 500ms)	50
40013		I1 Filter Time		
40014		I2 Filter Time		
40015		I3 Filter Time		
40016		I4 Filter Time		
40017		I5 Filter Time		
40018		I6 Filter Time		
40019		I7 Filter Time		
40020		I8 Filter Time		
40021		I9 Filter Time		
40022		I10 Filter Time		
40023		I11 Filter Time		
40024		I12 Filter Time		
40025		I13 Filter Time		
40026		I14 Filter Time		
40027	I15 Filter Time			

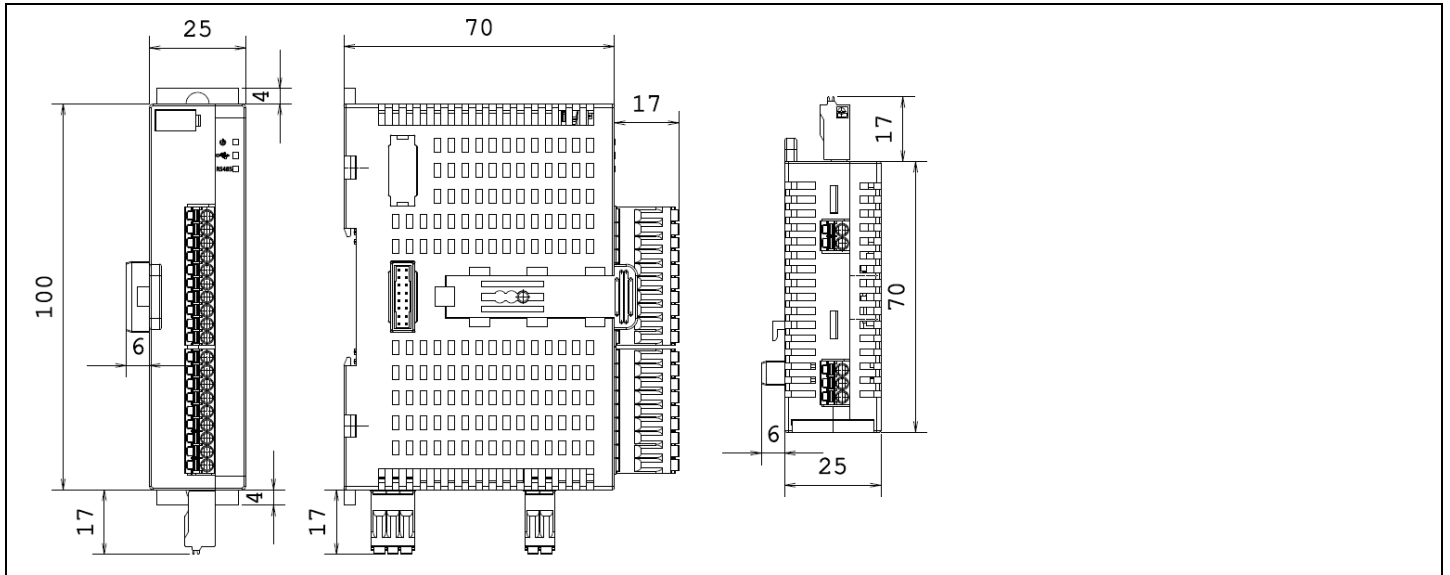
Installation & Wiring



* Do not connect AC Power to any I/O terminal, otherwise serious damage may occur in module. Please check all wiring prior to energizing device. In order to prevent electromagnetic interference, be sure the grounding made corrected. Connect ground terminal in the power input connector to the overall system ground. Don't touch any terminals after energizing the device, in case of need to touch any terminal, de-energize the device before connection.

* For RS485 communication connection; Connect the termination resistor (120R) between A&B terminal of the master module (located at the far left of the extension module group). In case of more than one extension module group, connect it between the A&B terminals of the master module (located at the far left of the extension module group) of the group at the end of the communication line. Use shielded and twisted-pair communication cable. Ground the shield connection of the cable to power input earth terminal.


Dimensions



Product Order Codes

Extension Modules with Digital Inputs	Digital Input	Analog Input	Digital Output	Analog Output	USB	RS485
SMR1P1-01-00-00-00_1	16 x NPN / PNP	-	-	-	+	+

Extension Modules with Relay or Transistor Output

 <p>SMR1P1-00-00-22-00_1 SMR1P1-00-00-01-00_1</p>	<p>General Specifications :</p> <ul style="list-style-type: none"> * According to module type; 14 Relay Output (NO) / 15 Digital Output (Active High) * Modbus RTU communication protocol with RS485 * USB – Device (For device configuration) * Modular connection (up to 16 modules including itself) * Led indicators: <ul style="list-style-type: none"> - Power Supply, USB, RS-485 - Active Output led indicators
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Technical Specifications

Module Type	SMR1P1-00-00-22-00	SMR1P1-00-00-01-00
Supply Voltage	24 VDC ±%20 (19,2 VDC - 28,8 VDC)	
Power Consumption	2.5W	2W
Communication	RS-485 Modbus RTU	
USB Device	Mini USB, USB 2.0	
Relay Outputs		
Number Of Relay	14 x NO	-
Relay Current	1,5 A @ 250VAC (single relay) 6 A @ 250VAC (total COM current)	
Relay Groups	C0 – Q0, Q1, Q2 C1 – Q3, Q4, Q5, Q6 C2 – Q7, Q8, Q9 C3 – Q10, Q11, Q12, Q13	
Response Time	0 => 1 ~10 msec, 1 => 0 ~5 msec	
Digital Outputs		
Number of Outputs	-	15 x Active High
Output Current	0,3 A (one output), 2,4 A (total COM current)	
Transistor Power	External 24VDC supply must be connected	
Response Time	~170 μsn	
Protection	Short circuit protection	
Led Indicators		
Power	Always ON if the power input is in working limits, flashes 0.1s when undervoltage detected Flashes 0.5s if the communication between Master and Slave module didn't start Flashes 1s if the communication between Master and Slave module broken Flashes 0.2s ON / 2s OFF if the device in Software Boot Mode	
USB	Always ON if the USB cable plugged, flashes during data transfer	
RS485	Flashes during Modbus data transfer	
Relay / Transistor Output	ON when output active, OFF otherwise	
Operation / Storage Environment		
Operation Temp.	-10°...+60° C	
Storage Temp.	-20°...+70° C	
Isolation	<ul style="list-style-type: none"> * There is no isolation between Power, RS485 and USB * 1000 VAC between Power Input and Digital Outputs * 2000 VAC between Power Input and Relay Outputs 	

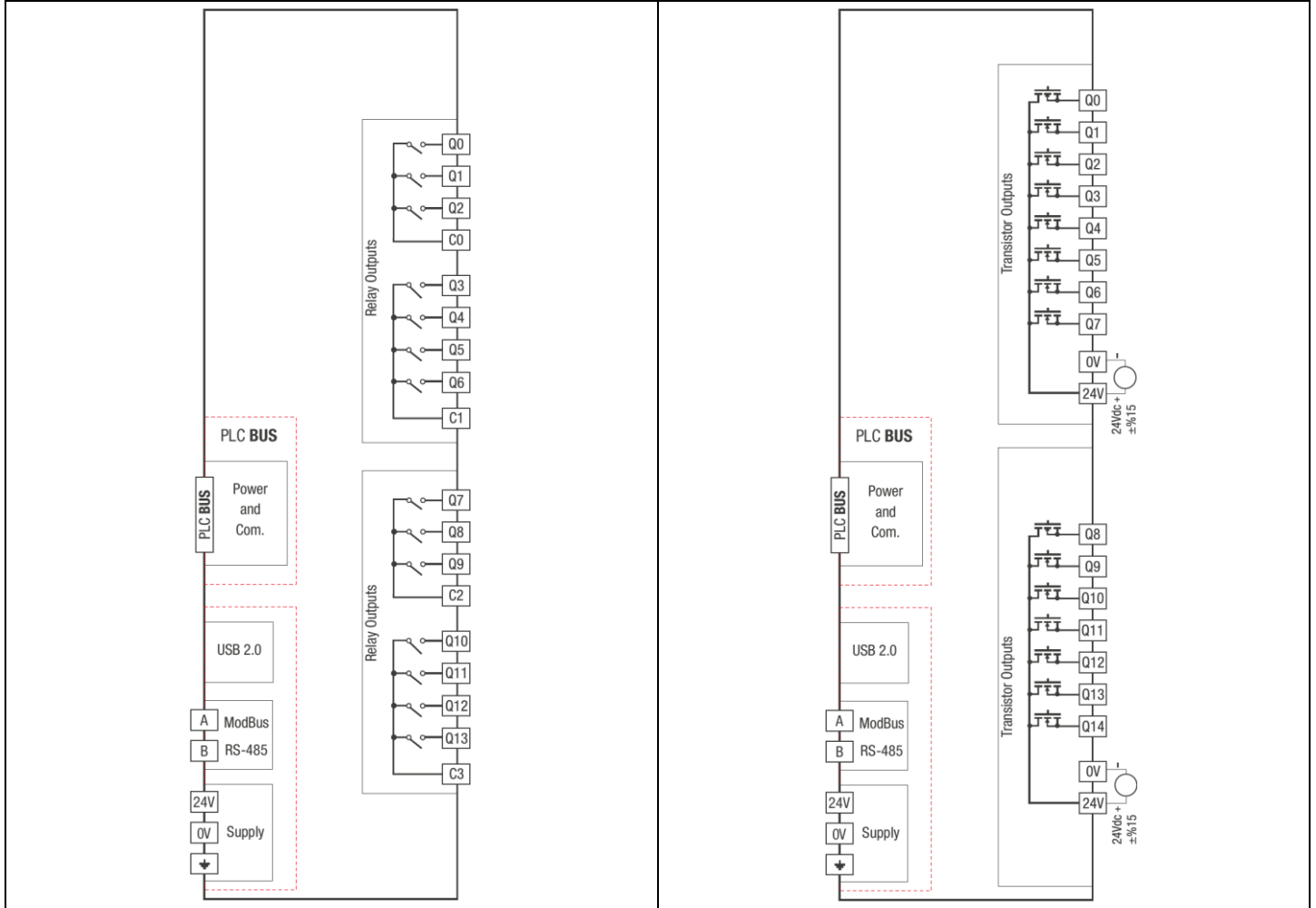
Modbus Parameters Addresses

Address	R/W	Parameter Name	Definition	Default
Modbus Parameters				
40001	R/W	ID	Modbus ID can be set between 1 – 255	1
40002	R/W	Baud Rate (kbps)	0- 1200 3- 9600 6- 57600 1- 2400 4- 19200 7- 115200 2- 4800 5- 38400	6
40003	R/W	Stop Bit	0- 1 Bit 1- 2 Bit	0
40004	R/W	Parity	0- None 1- Even 2- Odd	0
Device Parameters				
40005	R	Reserved	In case of Master Mode, shows number of connected Slave Modules	-
40006	R	Type/Bus Order	b15-b8 : module types according to code : SMR1P1-00-00-22-00_1 = 0xA3 SMR1P1-00-00-01-00_1 = 0xA4 b7-b0 : module bus order : 0- Master module N- N'th Slave module in the bus (max. 15) 17- Single module (No other device on bus)	-
40007	R	Version	HW and SW versions displayed on a bitwise basis b15-b12 : Hardware Version b11-b6 : Software Major Version b5-b0 : Software Minor Version	-
40008	R/W	Error Status ²	Error status displayed on a bitwise basis b0 : Low Power Supply Voltage Level b1 : Analog Input could not read b2 : RS485 communication timeout error ¹ b8 : Error in slave module number ¹ b9 : Error in slave module type ¹ b10 : Error in communication between slave modules ¹ b15-b12 : The number of the Slave module in which the error was detected <i>Note-1 : Error bits are only valid for Master Module.</i> <i>Note-2 : In case of communication timeout error arises in Master Module, communication between slave modules interrupted. By writing 3083 to the relevant address, the error bit cleared and the communication started again.</i>	-
40009	R/W	Timeout Duration	Defined for Master Module Definition Range : (0 – 60sec)	3
Digital Output Parameters				
40020	R/W	Digital Outputs	Digital Output Status in bitwise notation 0 : OFF, 1 : ON b13-b0 : Q13 - Q0 (for Relay Outputs) b14-b0 : Q14 - Q0 (for Transistor Outputs)	0 0

Product Order Codes

Extension Modules with Digital Outputs	Digital Input	Analog Input	Digital Output	Analog Output	USB	RS485
SMR1P1-00-00-22-00_1	-	-	14 x Relay	-	+	+
SMR1P1-00-00-01-00_1	-	-	15 x Transistor	-	+	+

Installation & Wiring



* Do not connect AC Power to any I/O terminal, otherwise serious damage may occur in module. Please check all wiring prior to energizing device. In order to prevent electromagnetic interference, be sure the grounding made corrected. Connect ground terminal in the power input connector to the overall system ground. Don't touch any terminals after energizing the device, in case of need to touch any terminal, de-energize the device before connection.

* For RS485 communication connection; Connect the termination resistor (120R) between A&B terminal of the master module (located at the far left of the extension module group). In case of more than one extension module group, connect it between the A&B terminals of the master module (located at the far left of the extension module group) of the group at the end of the communication line. Use shielded and twisted-pair communication cable. Ground the shield connection of the cable to power input earth terminal.

Dimensions

