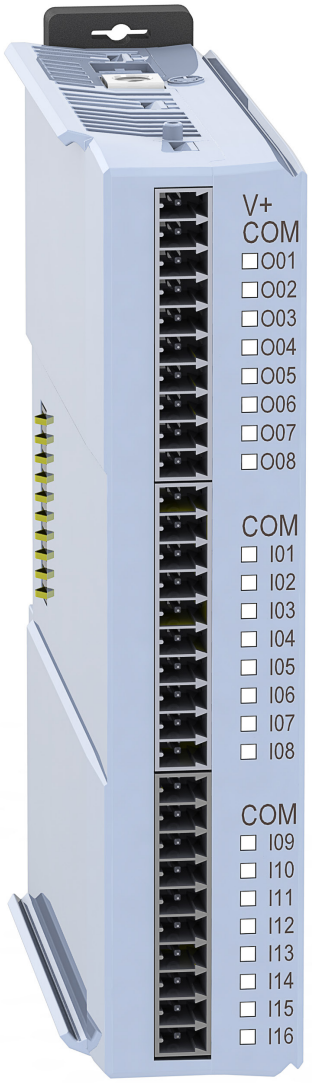
RUW100/PLC Expansion Modules

MOD1...MOD8

User Manual



User Manual

Series: MOD1...MOD8

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Summary of the Revisions

The information below describes the revisions made to this manual.

Version	Revision	Description
-	R00	First edition
-	R01	Changes in the figures and tables
-	R02	General review
-	R03	Changes in the Section 5.2 EXPANSION LIMITS on page 5-1
-	R04	Inclusion of MOD08

1 SAFETY INSTRUCTIONS

This manual contains information necessary for the correct use of the MODx expansion module.

It was developed to be used by people with proper technical training or qualification to operate this kind of equipment.

This manual describes all the functions of the MODx expansion modules, but it is not intended to explain every possible application. WEG will not take any liabilities for applications not described in this manual.

This product is neither intended for applications whose purpose is to ensure physical integrity and/or life of people, nor for any other application in which a fault of the accessory may create a situation of risk to the physical integrity and/or life of people. The designer who uses the MODx must provide ways to ensure the safety of the installation even in case of a failure of the remote unit.

1.1 SAFETY WARNINGS IN THE MANUAL

The following safety warnings are used in this manual:

DANGER!
The procedures recommended in this warning aim at protecting the user against death, serious injuries and considerable material damages.

ATTENTION!
The procedures recommended in this warning aim at preventing material damages.

NOTE!
The text aims at providing important information for the full understanding and proper operation of the product.

1.2 SAFETY WARNINGS ON THE PRODUCT

The following symbols are attached to the product as safety warnings:

Mandatory connection to the protective earth (PE).

1

1.3 PRELIMINARY RECOMMENDATIONS

DANGER!
Only qualified personnel, familiar with the MODx expansion modules and related equipment, must plan or perform the installation, operation and maintenance of this device. Such personnel must follow the safety instructions described in this manual and/or defined by local standards.
Failure to comply with the safety instructions may cause risk of death and/or equipment damage.

NOTE!
For the purposes of this manual, qualified personnel are those trained in order to be able to:
1. Install, ground, power up and operate the RUW100/PLC with the different expansion modules in accordance with this manual and the legal safety procedures in force.
2. Use the protective equipment in accordance with the relevant standards.
3. Give first aid.

ATTENTION!
Electronic boards have components sensitive to electrostatic discharges. Do not touch directly the component parts or connectors. If necessary, first touch the grounded metallic frame or use a proper grounding strap.

NOTE!
Read the user manual thoroughly before installing or operating any expansion module for the RUW100/PLC.

2 GENERAL INFORMATION

2.1 ABOUT THE MANUAL

This manual contains information on how to install and start up the MODx expansion modules and their main technical characteristics.

For information on parameter setting, other functions, accessories and operating conditions, refer to the following manuals:

- Parameter manual.
- CANopen communication manual.
- Modbus communication manual.
- Help online included in the WPS/CODESYS.
- Accessory manual.

All manuals are available for download on the WEG website - **www.weg.net**.

2.2 TERMS AND DEFINITIONS USED IN THE MANUAL

A: amps.

°C: degree Celsius.

DC: direct current.

mA: milliamp = 0.001 amp.

V: volts.

Vdc: volts direct current.

I/Os: inputs/outputs.

2.3 ABOUT MODULES

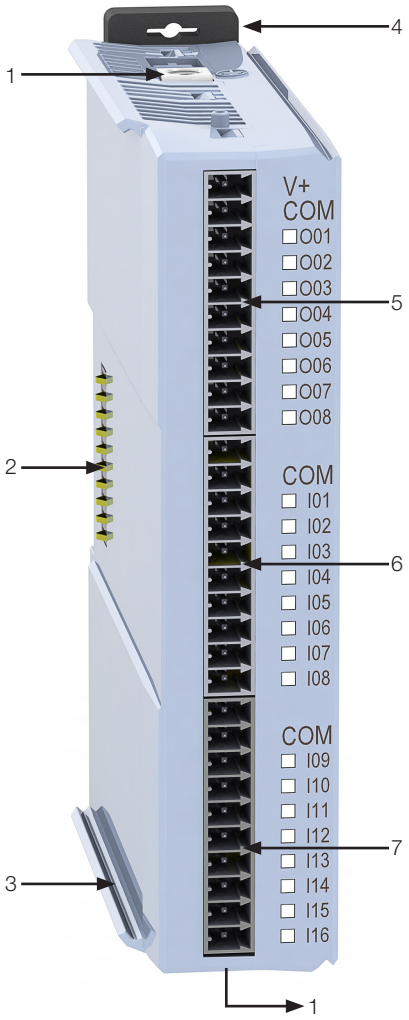

Figure 2.1: *Generic module*

Table 2.1: *Generic module*

1	Ground connection
2	Bus for communication with the RUW100/PLC or another accessory
3	Rail for mounting with the RUW100/PLC or another accessory
4	Latch/bracket for mounting on 35 mm DIN rail or panel
5	Connector pins 1 to 10 - Functionalities vary according to the model
6	Connector pins 11 to 20 - Functionalities vary according to the model
7	Connector pins 21 to 30 - Functionalities vary according to the model (when applicable)

Obs: Some modules do not have connector 7 due to the difference in their functionality.

2.4 MODELS

2.4.1 MOD1.yz

- MOD1.00 - 24DIs: model with 24 digital inputs.
- MOD1.10 - 24DOs: model with 24 digital outputs.
- MOD1.20 - 16DO/8DI: model with 16 digital outputs and 8 digital inputs.
- MOD1.30 - 08DO/16DI: model with 8 digital outputs and 16 digital inputs.

All digital inputs are bidirectional, isolated and must be activated by a 24 V power supply.

All digital outputs are isolated, protected and PNP type (they activate the load connected to the common or V- of the power supply), voltage level of 24 Vdc, and they can supply a maximum current of 500 mA each.

2.4.2 MOD2.yz

- MOD2.00 - 7AIs: model with 7 analog voltage or current inputs.

For analog inputs configured in voltage measurement mode, it is possible to measure voltages between 0 and 10 V.

For inputs configured in current measurement mode, it is possible to measure currents in the range 0…20 mA, with configuration for sensors from 4mA to 20mA.

2.4.3 MOD3.yz

- MOD3.00 - 8 AOs (V) / 4 AOs (I): model with 8 analog outputs. 4 of them in voltage and current and 4 only in voltage.

Voltage outputs can generate voltages from 0 to 10 V. Current outputs can provide currents between 0 and 20 mA for a maximum load of 500 Ω.

2.4.4 MOD4.yz

- MOD4.00 - 7 TH: model with 7 inputs for type J, type K and type T thermocouples.

2.4.5 MOD5.yz

- MOD5.00 - 4 PT100 / 4 PT1000: model with input for up to 4 temperature sensors of PT100 or PT1000 type.

It is possible to connect to the MOD5.00 PT100/PT1000 sensors with 2 and 3 wires.

2.4.6 MOD6.yz

- MOD6.00 - 2 SG: model with input for up to two load cells.

It is possible to connect to the MOD6.00 4 and 6-wire load cells.

2.4.7 MOD7.yz

- MOD7.yz - 6 RE: model with 6 relay outputs.

All relay outputs are isolated and designed to work with maximum currents of 8 A and voltages up to 250 V.

2.4.8 MOD8.yz

- MOD8.00 - SCW: model capable of intelligently controlling up to four starter sets.

This expansion has eight DOs and twelve DIs grouped into four sets (P1...P4) that are used to control contactors with error checking and alarm generation in case of failures when activating/deactivating any contactor of the starter set.

2.5 RECEIVING AND STORAGE

The modules supplied are packed in a cardboard box. At the receipt of the product, check if:

- The nameplate of the module corresponds to the model purchased.
- Damages during transportation.
- If any problem is detected, report it to the Carrier immediately.

If the module is not installed soon, store it in a clean and dry location (temperature between -25 ºC and 60 ºC) (-13 ºF and 140 ºF) with a cover to prevent dust from entering the remote unit.

2.6 PACKAGE CONTENT

- MODx - Expansion module according to the model purchased.
- Installation, configuration and operation quick guide.
- Grounding plates and screws.

3 MECHANICAL INSTALLATION

The directions and suggestions must be observed to ensure the safety of people and the proper operation of the equipment.

The installation procedure described below is the same for all modules.

3.1 CONNECTION OF THE ACCESSORIES

To connect the MODx expansion module to an RUW100/PLC or another MODx, proceed as follows:

1. Remove the communication bus closure.

2. Insert the module into the RUW100/PLC (or other accessory) in the direction indicated by 2.

3. Reinstall the communication bus closure.

4. Accessory connected.

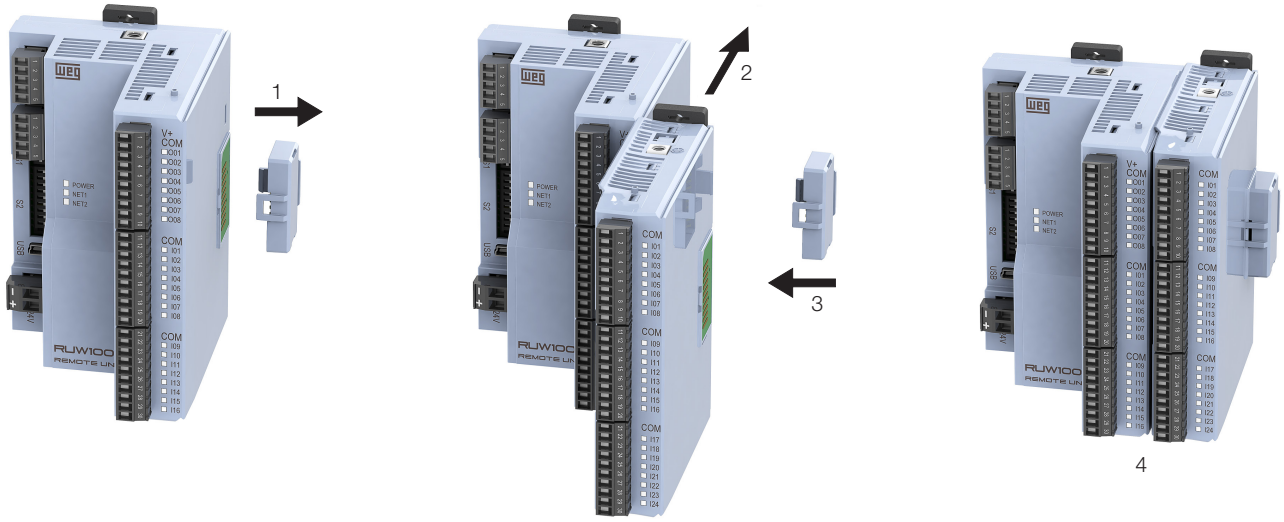

Figure 3.1: *Connection of the accessories*

Connecting the closure of the RUW100/PLC communication busbar is essential for the product operation.

3.2 DIN RAIL MOUNTING

The modules can be installed on a 35 mm DIN rail as shown in Figure 3.2 on page 3-2. In order to do so, proceed as follows:

1. Move away the upper and lower latches.

2. Add the closure to the MODx.

3. Add the accessory to the RUW100/PLC (or another accessory).

4. Close the upper and lower latches again.

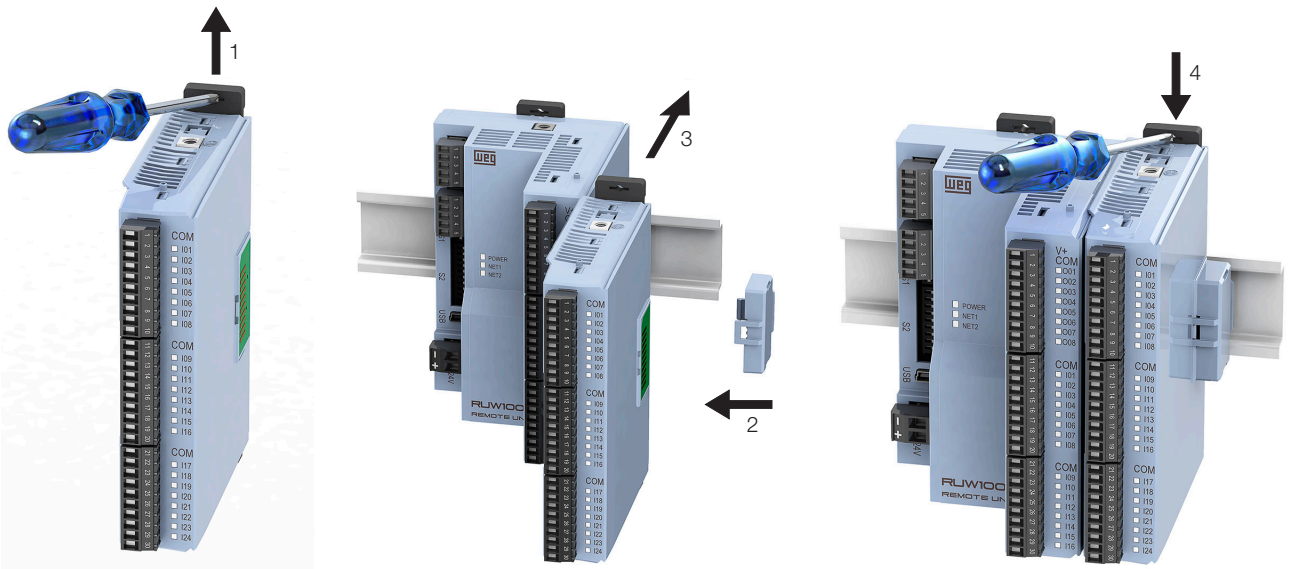

Figure 3.2: *Mechanical mounting on DIN rail*

3.3 MOUNTING WITH SCREWS

In addition to the DIN rail, the modules can also be fixed using M3 screws directly on the panel, as shown in Figure 3.3 on page 3-3, following the procedure below:

1. Move away the upper and lower latches.

2. Add the closure to the MOD1.

3. Add the accessory to the RUW100/PLC (or another accessory).

4. Fasten the accessory to the panel using the M3 screw on the top and bottom latches.

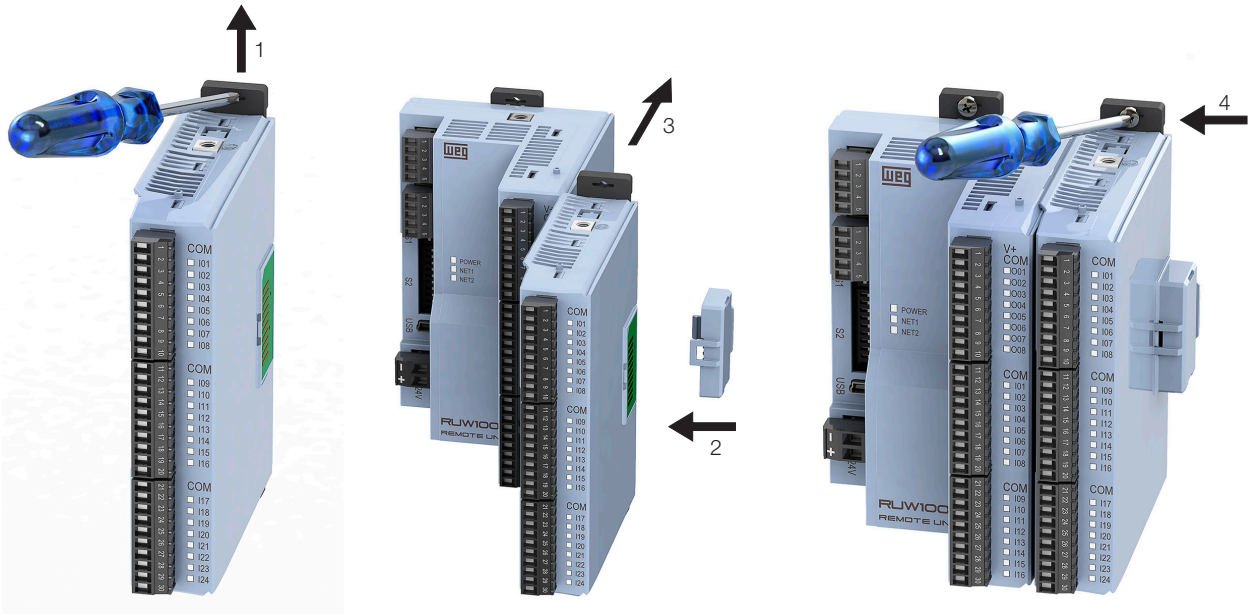

Figure 3.3: *Mechanical fixing directly to the panel*

3.4 ACCESSORY DIMENSIONS

All modules have the same dimensions.

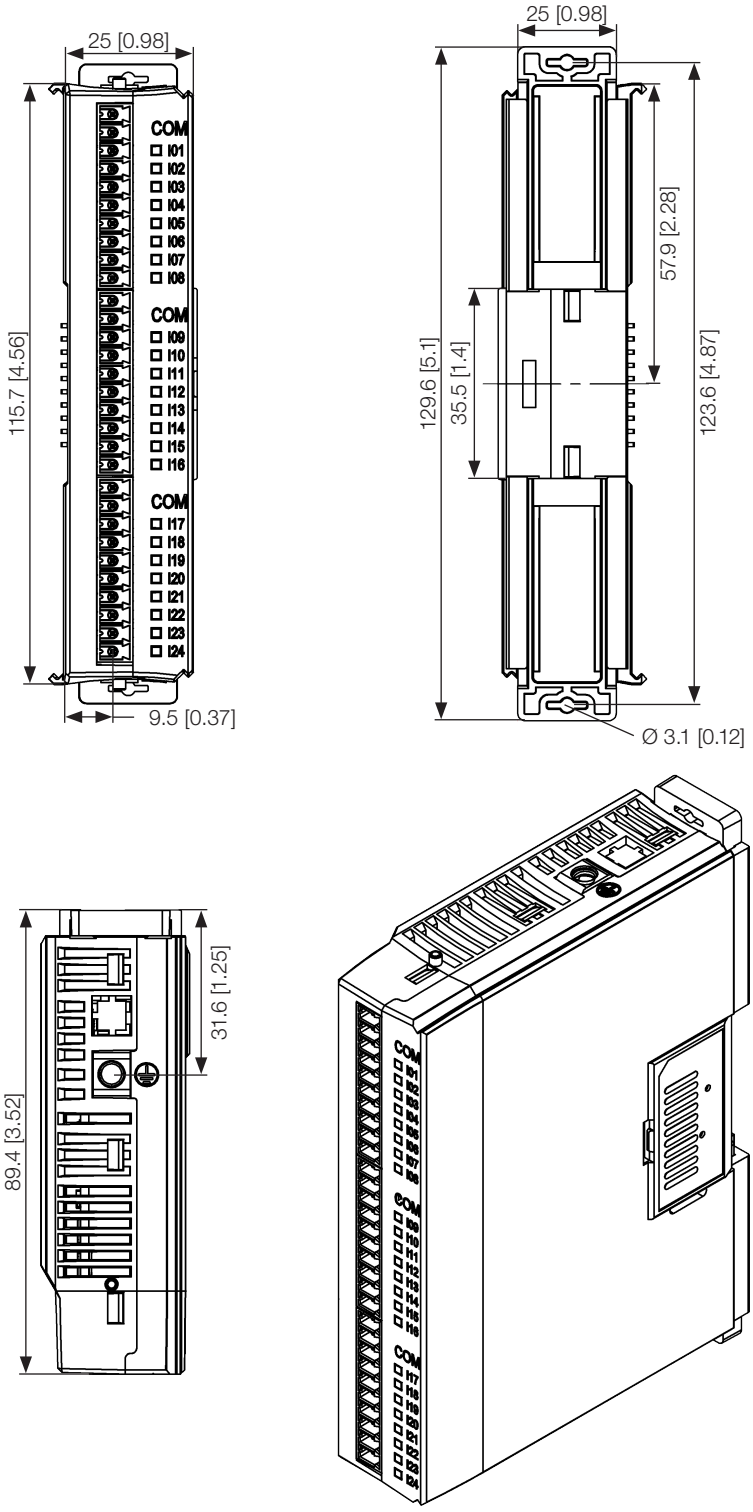

Figure 3.4: *Accessory dimensions in mm [in]*

4 LEDS

4.1 DIGITAL OUTPUT LED

LEDs O01 to O24 represent outputs DO1 to DO24, respectively.

In the MOD1, the LEDs of the digital outputs light RED whenever the digital output is active, Figure 5.2 on page 5-5.

4.2 DIGITAL INPUT LED

LEDs I01 to I24 represent inputs DI1 to DI24, respectively.

The LEDs of the digital inputs are bicolor. They light RED if the digital input is activated through the positive of the power supply, and the negative connected to the common of the inputs (PNP). They light GREEN if the positive of the power supply is connected to the common of the inputs, and the negative of the power supply connected to the respective input (NPN), Figure 5.1 on page 5-3.

4.3 RELAY OUTPUT LED

LEDs RL1 to RL6 of MOD7.00 represent, respectively, relays RL1 to RL6.

With the relays disabled, that is, with the NC contact closed and the NO contact open, the LEDs are off. When a relay is enabled, that is, the NC contact opens and the NO contact closes, the LED representing this relay will light GREEN; see Figure 5.1 on page 5-3.

4.4 STARTER MANAGER LEDS (MOD8.YZ – SCW)

The starter manager LEDs behave differently in each operating mode (starter or transparent).

In the Starter mode:

Starter Status	Color
Open contactor	Off
Direct on-line starter	Green
Reverse start	Orange
Error	Flashing red

In the Transparent mode:

DO Status	Color
Both Off	Off
Only first DO of the starter On	Green
Only second DO of the starter On	Orange
Both DOs of the starter On	Flashing orange

5 ELECTRICAL INSTALLATION

The expansion boards are incorporated to the RUW100/PLC in a simple and fast way, using the "Plug and Play" concept by the user. When the RUW100/PLC is powered up, the electronic circuit identifies the number of connected expansions, the model and the firmware version of each one. They also receive an address according to the position of each one, so that it is possible to access them through the communication bus.

ATTENTION!
Accessories must be installed or removed with the RUW100/PLC de-energized to avoid burning components and also to allow them to be identified.

5.1 GROUNDING

Use the screws indicated in Figure 2.1 on page 2-2 to ground the product. The screws are connected internally; however, the connection of both ensures better grounding.

5.2 EXPANSION LIMITS

The accessory limit depends on the product to which the expansions are connected (RUW100 or PLCs).

An error will be generated in the programming software if this limit is exceeded.

Refer to the user manual of each product for the limits of each model and other information.

5.3 MOD1.YZ - DIGITAL INPUTS / OUTPUTS

5.3.1 MOD1.00 - 24DIS

5.3.1.1 Digital Inputs

The MOD1.00 has 24 isolated digital inputs that must be excited by an external 24 Vdc source. The inputs are bidirectional, which means the input common can be connected to either the negative or the Vdc of the power supply.

Three common pins are available, one for DI1 to DI8, another for DI9 to DI16 and another for DI17 to DI24, thus allowing a group to be connected to V+ and the other to the GND. This feature gives more flexibility to the project, since it allows both PNP and NPN contacts of a device to be connected to the MOD1.00 inputs.

The input activation levels are 10 to 28.8 Vdc for high level and below 3 Vdc for low level.

The example of Figure 5.1 on page 5-3 shows inputs DI1, DI3, DI5, DI9 DI11 and DI13 activated by +24 V from the power supply (PNP), and inputs DI17, DI21 and DI24 activated by the negative of the power supply (NPN). Table 5.1 on page 5-3 contains the name and function of each of the pins of the Digital Input connectors.

For those connectors, use AWG 30-16 cables.

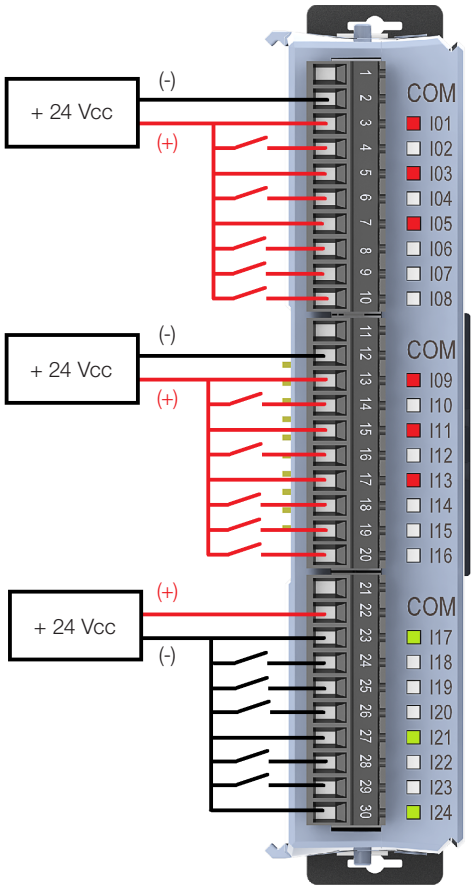

Figure 5.1: *MOD1.00*

Table 5.1: *MOD1.00*

Pin	Name	Function
1	NC	Not connected
2	COM	Common DI1 to DI8
3	DI1	Digital input 1
4	DI2	Digital input 2
5	DI3	Digital input 3
6	DI4	Digital input 4
7	DI5	Digital input 5
8	DI6	Digital input 6
9	DI7	Digital input 7
10	DI8	Digital input 8
11	NC	Not connected
12	COM	Common DI9 to DI16
13	DI19	Digital input 9
14	DI10	Digital input 10
15	DI11	Digital input 11
16	DI12	Digital input 12
17	DI13	Digital input 13
18	DI14	Digital input 14
19	DI15	Digital input 15
20	DI16	Digital input 16
21	NC	Not connected
22	COM	Common DI17 to DI24
23	DI17	Digital input 17
24	DI18	Digital input 18
25	DI19	Digital input 19
26	DI20	Digital input 20
27	DI21	Digital input 21
28	DI22	Digital input 22
29	DI23	Digital input 23
30	DI24	Digital input 24

5.3.2 MOD1.10 - 24DOS

5.3.2.1 Digital Outputs

MOD1.10 has 24 own isolated and protected digital outputs. The digital output circuit must be powered externally by a 24 Vdc power supply connected to the V+ (pins 1, 11 and 21) and COM (pins 2, 12 and 22) of the I/O connectors, as shown in Figure 5.2 on page 5-5.

The outputs are PNP (activate the load connected to the negative of the power supply) and can supply a current of up to 500 mA each.

Table 5.2 on page 5-5 displays the name and function of each of the Digital Output connector pins.

For that connector, use AWG 30-16 cables.

In the example below, outputs DO1, DO3, DO5, DO9, DO11, DO13, DO17, DO19 and DO21 are activated.

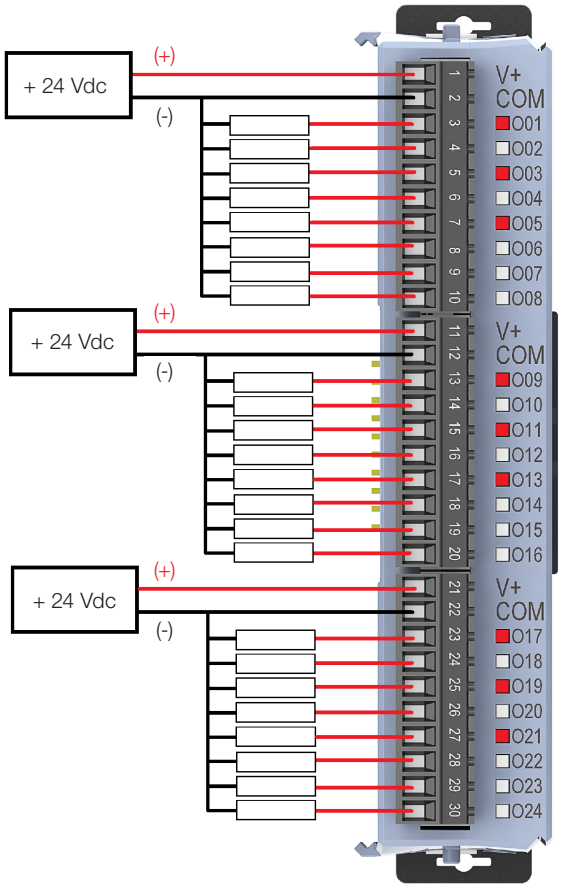

Figure 5.2: *MOD1.10*

Table 5.2: *MOD1.10*

Pin	Name	Function
1	V+	Positive of DO1 to DO8 power supply
2	COM	Common of DO1 to DO8 power supply
3	DO1	Digital output 1
4	DO2	Digital output 2
5	DO3	Digital output 3
6	DO4	Digital output 4
7	DO5	Digital output 5
8	DO6	Digital output 6
9	DO7	Digital output 7
10	DO8	Digital output 8
11	V+	Positive of DO9 to DO16 power supply
12	COM	Common of DO9 to DO16 power supply
13	DO9	Digital output 9
14	DO10	Digital output 10
15	DO11	Digital output 11
16	DO12	Digital output 12
17	DO13	Digital output 13
18	DO14	Digital output 14
19	DO15	Digital output 15
20	DO16	Digital output 16
11	V+	Positive of DO17 to DO24 power supply
12	COM	Common of DO17 to DO24 power supply
13	DO17	Digital output 17
14	DO18	Digital output 18
15	DO19	Digital output 19
16	DO20	Digital output 20
17	DO21	Digital output 21
18	DO22	Digital output 22
19	DO23	Digital output 23
20	DO24	Digital output 24

5.3.3 MOD1.20 - 16DO/8DI

5.3.3.1 Digital Outputs

The MOD1.20 has 16 own isolated and protected digital outputs. The digital output circuit must be powered externally by a 24 Vdc power supply connected to the V+ (pins 1 and 11) and COM (pins 2 and 12) of the I/O connectors, as shown in Figure 5.3 on page 5-7.

The outputs are PNP (activate the load connected to the negative of the power supply) and can supply a current of up to 500 mA each. The description of each pin can be found on Table 5.3 on page 5-7.

In the example of Figure 5.3 on page 5-7, outputs DO1, DO3, DO5, DO9, DO11 and DO12 are activated.

5.3.3.2 Digital Inputs

The MOD1.20 has 8 isolated digital inputs that must be excited by an external 24 Vdc power supply. The inputs are bidirectional, which means the input common can be connected to either the negative or the Vdc of the power supply (PNP or NPN).

The input activation levels are 10 to 28.8 Vdc for high level and below 3 Vdc for low level.

Table 5.3 on page 5-7 contains the name and function of each of the pins for the Digital Input and Output connectors.

For those connectors, use AWG 30-16 cables.

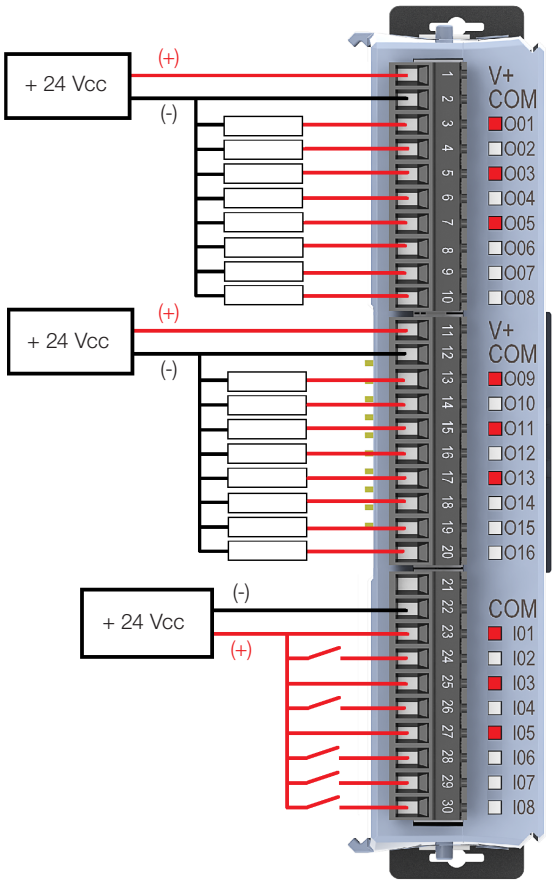

Figure 5.3: *MOD1.20*

Table 5.3: *MOD1.20*

Pin	Name	Function
1	V+	Positive of DO1 to DO8 power supply
2	COM	Common of DO1 to DO8 power supply
3	DO1	Digital output 1
4	DO2	Digital output 2
5	DO3	Digital output 3
6	DO4	Digital output 4
7	DO5	Digital output 5
8	DO6	Digital output 6
9	DO7	Digital output 7
10	DO8	Digital output 8
11	V+	Positive of DO9 to DO16 power supply
12	COM	Common of DO9 to DO16 power supply
13	DO9	Digital output 9
14	DO10	Digital output 10
15	DO11	Digital output 11
16	DO12	Digital output 12
17	DO13	Digital output 13
18	DO14	Digital output 14
19	DO15	Digital output 15
20	DO16	Digital output 16
21	NC	Not connected
22	COM	Common DI17 to DI24
23	DI17	Digital input 17
24	DI18	Digital input 18
25	DI19	Digital input 19
26	DI20	Digital input 20
27	DI21	Digital input 21
28	DI22	Digital input 22
29	DI23	Digital input 23
30	DI24	Digital input 24

5.3.4 MOD1.30 - 8DO/16DI

5.3.4.1 Digital Outputs

The MOD1.30 has 16 own isolated and protected digital outputs. The digital output circuit must be powered externally by a 24 Vdc power supply connected to the V+ (pin 1) and COM (pin 2) of the digital output connectors, as shown in Figure 5.4 on page 5-9.

The outputs are PNP (activate the load connected to the negative of the power supply) and can supply a current of up to 500 mA each. The description of each pin can be found on Table 5.4 on page 5-9.

In the example of Figure 5.4 on page 5-9, outputs DO1, DO3 and DO5 are activated.

5.3.4.2 Digital Inputs

The MOD1.30 has 16 isolated digital inputs that must be excited by an external 24 Vdc source. The inputs are bidirectional, which means the input common can be connected to either the negative or the Vdc of the power supply.

Two common pins are available, one for DI9 to DI16, and the other for DI17 to DI24, thus allowing a group to be connected to V+ and the other to the GND. This feature gives more flexibility to the project, since it allows both PNP and NPN contacts of a device to be connected to the MOD1.30 inputs.

The input activation levels are 10 to 28.8 Vdc for high level and below 3 Vdc for low level.

Table 5.4 on page 5-9 contains the name and function of each of the pins for the Digital Input and Output connectors.

For those connectors, use AWG 30-16 cables.

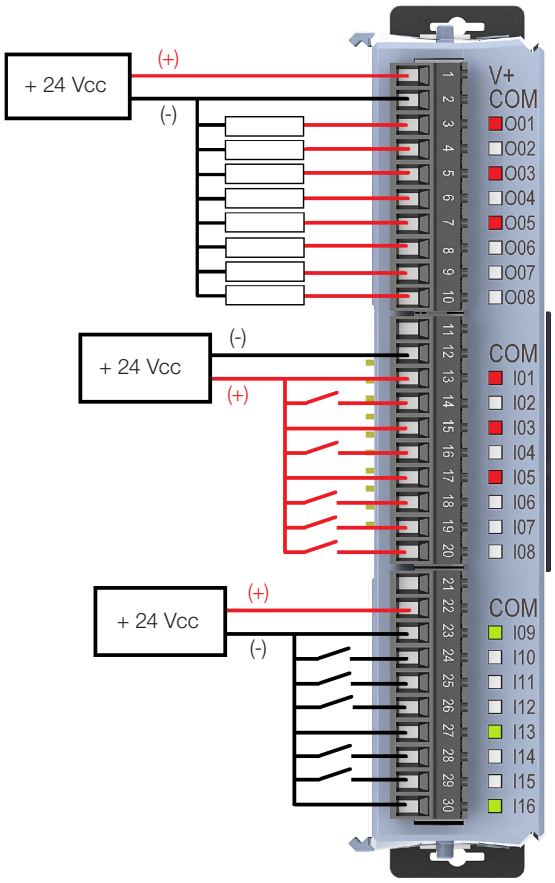

Figure 5.4: *MOD1.30*

Table 5.4: *MOD1.30*

Pin	Name	Function
1	V+	Positive of DO1 to DO8 power supply
2	COM	Common of DO1 to DO8 power supply
3	DO1	Digital output 1
4	DO2	Digital output 2
5	DO3	Digital output 3
6	DO4	Digital output 4
7	DO5	Digital output 5
8	DO6	Digital output 6
9	DO7	Digital output 7
10	DO8	Digital output 8
11	NC	Not connected
12	COM	Common DI9 to DI16
13	DI19	Digital input 9
14	DI10	Digital input 10
15	DI11	Digital input 11
16	DI12	Digital input 12
17	DI13	Digital input 13
18	DI14	Digital input 14
19	DI15	Digital input 15
20	DI16	Digital input 16
21	NC	Not connected
22	COM	Common DI17 to DI24
23	DI17	Digital input 17
24	DI18	Digital input 18
25	DI19	Digital input 19
26	DI20	Digital input 20
27	DI21	Digital input 21
28	DI22	Digital input 22
29	DI23	Digital input 23
30	DI24	Digital input 24

5.4 MOD2.00 - 7 AIS

5.4.1 Analog Inputs

MOD2.00 has 7 differential analog inputs that can be used to measure voltage (0 - 10 V) or current (0 - 20 mA / 4 - 20 mA).

Table 5.5 on page 5-11 contains the name and function of each of the pins of the Analog Input connectors.

For current reading, it is necessary to short-circuit pins 2/3(AI1), 5/6(AI2), 8/9(AI3), 12/13(AI4), 15/16(AI5), 18/19(AI6) or 22/23(AI7).

Figure 5.5 on page 5-11 shows some connection examples for Analog Inputs. For this example, AI1 and AI3 are connected for voltage reading and AI4, AI6 and AI7 for current reading.

For this connection, use AWG 30-16 cables.

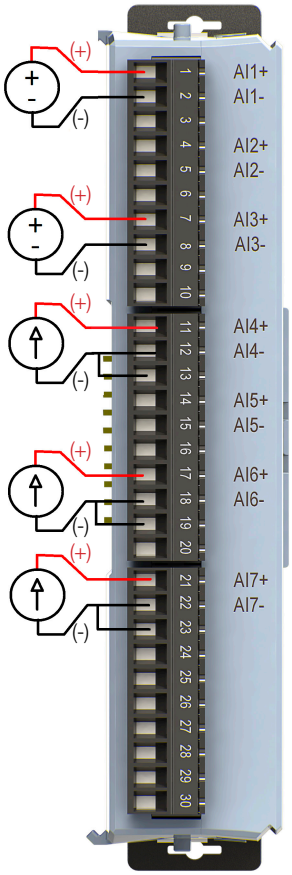

Figure 5.5: MOD2.00

Table 5.5: MOD2.00

Pin	Name	Function
1	AI1(+)	Analog input (+)
2	AI1(-)	Analog input (-)
3		Current measurement channel 1
4	AI2(+)	Analog input (+)
5	AI2(-)	Analog input (-)
6		Current measurement channel 2
7	AI3(+)	Analog input (+)
8	AI3(-)	Analog input (-)
9		Current measurement channel 3
10		Not connected
11	AI4(+)	Analog input (+)
12	AI4(-)	Analog input (-)
13		Current measurement channel 4
14	AI5(+)	Analog input (+)
15	AI5(-)	Analog input (-)
16		Current measurement channel 5
17	AI6(+)	Analog input (+)
18	AI6(-)	Analog input (-)
19		Current measurement channel 6
20		Not connected
21	AI7(+)	Analog input (+)
22	AI7(-)	Analog input (-)
23		Current measurement channel 7
24		Not connected
25		Not connected
26		Not connected
27		Not connected
28		Not connected
29		Not connected
30		Not connected

5.5 MOD3.00 - 8 AO (V)/4 AO (I)

5.5.1 MOD3.00 - Analog Outputs

MOD3.00 has eight analog outputs, four of which can be connected to voltage or current (AO1...AO4) and 4 to voltage only (AO5...AO8).

5.5.1.1 Voltage Analog Outputs

MOD3.00 has 8 voltage analog outputs that can generate an output voltage from 0 to 10 V.

5.5.1.2 Current Analog Outputs

MOD3.00 has four current analog outputs, which can provide a current of up to 20 mA for a maximum load of 500 Ω.

Table 5.6 on page 5-13 contains the name and function of all MOD3.00 pins.

Figure 5.6 on page 5-13 shows a connection example for both voltage and current analog outputs.

For this connection, use AWG 30-16 cables.

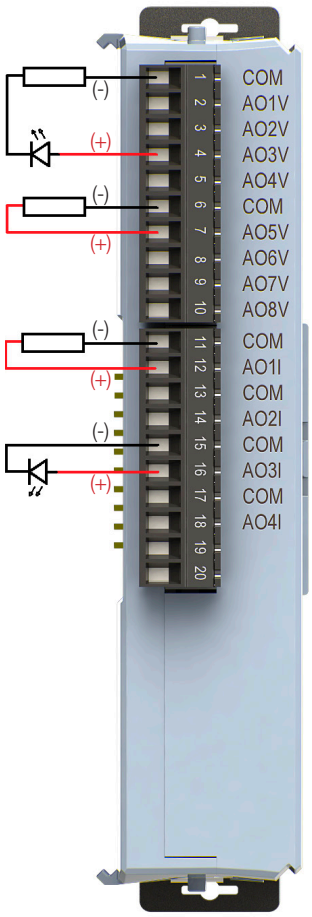

Figure 5.6: *MOD3.00*

Table 5.6: *MOD3.00*

Pin	Name	Function
1	COMM	Common
2	AO1(V)	Voltage analog output 1
3	AO2(V)	Voltage analog output 2
4	AO3(V)	Voltage analog output 3
5	AO4(V)	Voltage analog output 4
6	COMM	Common
7	AO5(V)	Voltage analog output 5
8	AO6(V)	Voltage analog output 6
9	AO7(V)	Voltage analog output 7
10	AO8(V)	Voltage analog output 8
11	COMM	Common
12	AO1(I)	Current analog output 1
13	COMM	Common
14	AO2(I)	Current analog output 2
15	COMM	Common
16	AO3(I)	Current analog output 3
17	COMM	Common
18	AO4(I)	Current analog output 4
19	NC	Not connected
20	NC	Not connected

5.6 MOD4.00 - 7 THERMOCOUPLES

5.6.1 Thermocouple Input

MOD4.00 has 7 inputs for J type, K type and T type thermocouples.

To connect the thermocouples to MOD4.00, just follow the example shown in Figure 5.7 on page 5-15.

Table 5.7 on page 5-15 shows the name and function of each of the thermocouple connector pins.

For this connection, use AWG 30-16 cables.

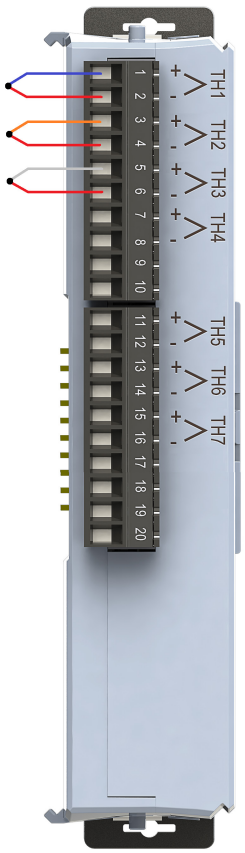

Figure 5.7: MOD4.00

Table 5.7: MOD4.00

Pin	Name	Function
1	TH1+	Thermocouple positive terminal 1
2	TH1-	Thermocouple negative terminal 1
3	TH2+	Thermocouple positive terminal 2
4	TH2-	Thermocouple negative terminal 2
5	TH3+	Thermocouple positive terminal 3
6	TH3-	Thermocouple negative terminal 3
7	TH4+	Thermocouple positive terminal 4
8	TH4-	Thermocouple negative terminal 4
9	Not connected	
10	Not connected	
11	TH5+	Thermocouple positive terminal 5
12	TH5-	Thermocouple negative terminal 5
13	TH6+	Thermocouple positive terminal 6
14	TH6-	Thermocouple negative terminal 6
15	TH7+	Thermocouple positive terminal 7
16	TH7-	Thermocouple negative terminal 7
17	Not connected	
18	Not connected	
19	Not connected	
20	Not connected	

5.7 MOD5.00 - 4 PT100/PT1000

5.7.1 PT100/PT1000 INPUT

MOD5.00 allows reading up to 4 RTDs (Resistance Temperature Detectors) PT100 or PT1000 type.

Figure 5.8 on page 5-17 shows how to connect three and two-wire RTDs.

Obs: It is possible to invert the RTDx RL and RTDx cables in the three-wire connection without problems if they bear no identification.

Table 5.8 on page 5-17 contains the name and function of all MOD5.00 pins.

For this connection, use AWG 30-16 cables.

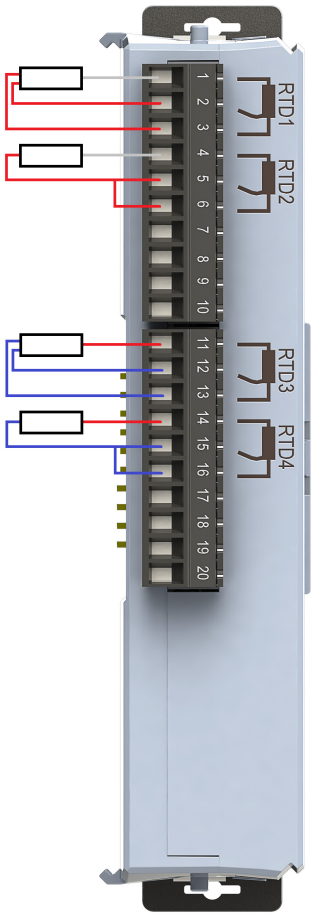

Figure 5.8: MOD5.00

Table 5.8: MOD5.00

Pin	Name	Function
1	RTD1 (-)	Input for RTD1 (-)
2	RTD1 RL	Compensation cable input RTD1
3	RTD1 (+)	Input for RTD1 (+)
4	RTD2 (-)	Input for RTD2 (-)
5	RTD2 RL	Compensation cable input RTD2
6	RTD2 (+)	Input for RTD2 (+)
7		Not connected
8		Not connected
9		Not connected
10		Not connected
11	RTD3 (-)	Input for RTD3 (-)
12	RTD3 RL	Compensation cable input RTD3
13	RTD3 (+)	Input for RTD3 (+)
14	RTD4 (-)	Input for RTD4 (-)
15	RTD4 RL	Compensation cable input RTD4
16	RTD4 (+)	Input for RTD4 (+)
17		Not connected
18		Not connected
19		Not connected
20		Not connected

5.8 MOD6.00 - 2 SG 5 V

5.8.1 Load Cell Input

MOD6.00 has two load cell inputs, where six-wire and four-wire connections are possible. Figure 5.9 on page 5-19 shows how to connect six-wire and four-wire load cells.

Table 5.9 on page 5-19 contains the name and function of all MOD6.00 pins.

For this connection, use AWG 30-16 cables.

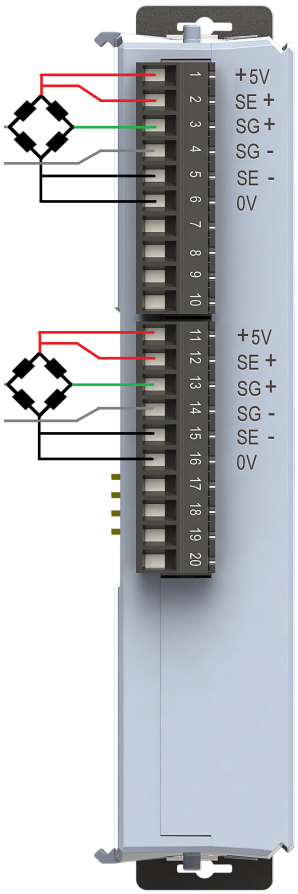

Figure 5.9: *MOD6.00*

Table 5.9: *MOD6.00*

Pin	Name	Function
1	+5 V	Positive of +5 V power supply (+EXC)
2	SE+	Compensation input (+SEN)
3	SG +	Positive signal input (IN+)
4	SG -	Negative signal input (IN-)
5	SE-	Compensation input (-SEN)
6	0 V	Negative of 0 V power supply (+EXC)
7	Not connected	
8	Not connected	
9	Not connected	
10	Not connected	
11	+5 V	Positive of +5 V power supply (+EXC)
12	SE+	Compensation input (+SEN)
13	SG +	Positive signal input (IN+)
14	SG -	Negative signal input (IN-)
15	SE-	Compensation input (-SEN)
16	0 V	Negative of 0 V power supply (+EXC)
17	Not connected	
18	Not connected	
19	Not connected	
20	Not connected	

5.9 MOD7.00 - 6 RE

5.9.1 Relay Outputs

MOD7.00 has six relay outputs with 1 NO contact, 1 NC contact and 1 common contact each, as shown in Figure 5.10 on page 5-20.

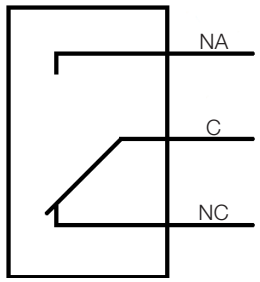

Figure 5.10: *Relay Contacts*

All relay outputs are isolated, so the common contacts between the relays are not connected.

Figure 5.11 on page 5-21 shows some examples on how to connect relays to loads.

Table 5.10 on page 5-21 contains the name and function of all MOD7.00 pins.

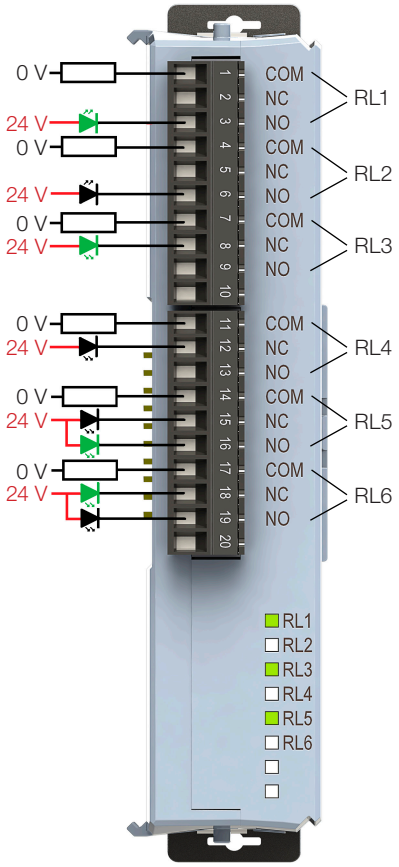

Figure 5.11: *MOD7.00*

Table 5.10: *MOD7.00*

Pin	Name	Function
1	COMM 1	Common contact relay K1
2	NC 1	Normally closed contact relay K1
3	NO 1	Normally open contact relay k1
4	COMM 2	Common contact relay K2
5	NC 2	Normally closed contact relay K2
6	NO 2	Normally open contact relay k2
7	COMM 3	Common contact relay K3
8	NC 3	Normally closed contact relay K3
9	NO 3	Normally open contact relay k3
10		Not connected
11	COMM 4	Common contact relay K4
12	NC 4	Normally closed contact relay K4
13	NO 4	Normally open contact relay k4
14	COMM 5	Common contact relay K5
15	NC 5	Normally closed contact relay K5
16	NO 5	Normally open contact relay k5
17	COMM 6	Common contact relay K6
18	NC 6	Normally closed contact relay K6
19	NO 6	Normally open contact relay k6
20		Not connected

5.10 MOD8.00 - SCW

5.10.1 MOD8.00 - Starter Manager

The MOD8.00 has eight digital outputs and twelve digital inputs grouped into four groups to control up to four starter sets.

The digital outputs (which activate the contactors) must be excited by an external 24 Vdc power supply. The digital inputs can be powered by another 24 Vdc power supply if necessary.

The power supply of the digital outputs, which by default is used to activate the starter contactors, is produced by applying 24 Vdc to pin 2 of connector XC1, having as reference pin 3 of the same connector.

The power supply of the digital inputs, which by default is used to power the contacts present in the starter set for feedback to the control system, is produced by applying 24 Vdc to pin 1 of the XC1 connector, having as reference pin 3 of the same connector.

Figure 5.12 on page 5-22 shows a connection example of this connector:

Table 5.11: *Function of XC1 connector pins*

Pin	Name	Function
1	V+	24 Vdc - Control system power supply
2	V+A	24 Vdc - Digital output power supply
3	COM	0 Vdc - Power supply reference

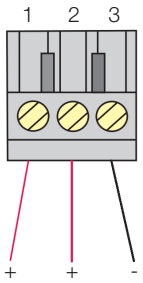

Figure 5.12: *Default connection of XC1 connector*

The order of the internal contacts of the Ethernet connectors (P1...P4) can be seen in Figure 5.13 on page 5-22. Table 5.12 on page 5-23 shows the function of each internal contact of the Ethernet connectors (P1...P4).

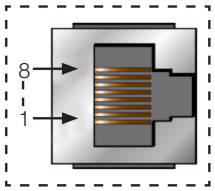

Figure 5.13: *Order of the Ethernet connector contacts*

Table 5.12: Function of the Ethernet connector pins

Pin	Name	Signal	Description
1	Input 1	Direction status 1	Input active if the power contacts of output 1 contactor (direction 1) are closed
2	Input 2	Direction status 2	Input active if the power contacts of output 2 contactor (direction 2) are closed
3	Input 3	Motor protector status	Input active if the power contacts of the motor protector are closed
4	0 Vdc	-	-
5	Output 1	Direction control 1	Moves the forward motor control
6	Output 2	Direction control 2	Moves the reverse motor control
7	24 Vdc	Common for sensors	Power supply for Status signals (pins 1, 2 and 3)
8	0 Vdc	-	

ATTENTION!
In the "transparent" mode, the maximum current per digital output must not exceed 250 mA.

Figure 5.14 on page 5-23 shows an example of connecting four different types of starters to the MOD8-SCW plugged into a RUW100.

Note: Always use cables with RJ45 connectors supplied by WEG.

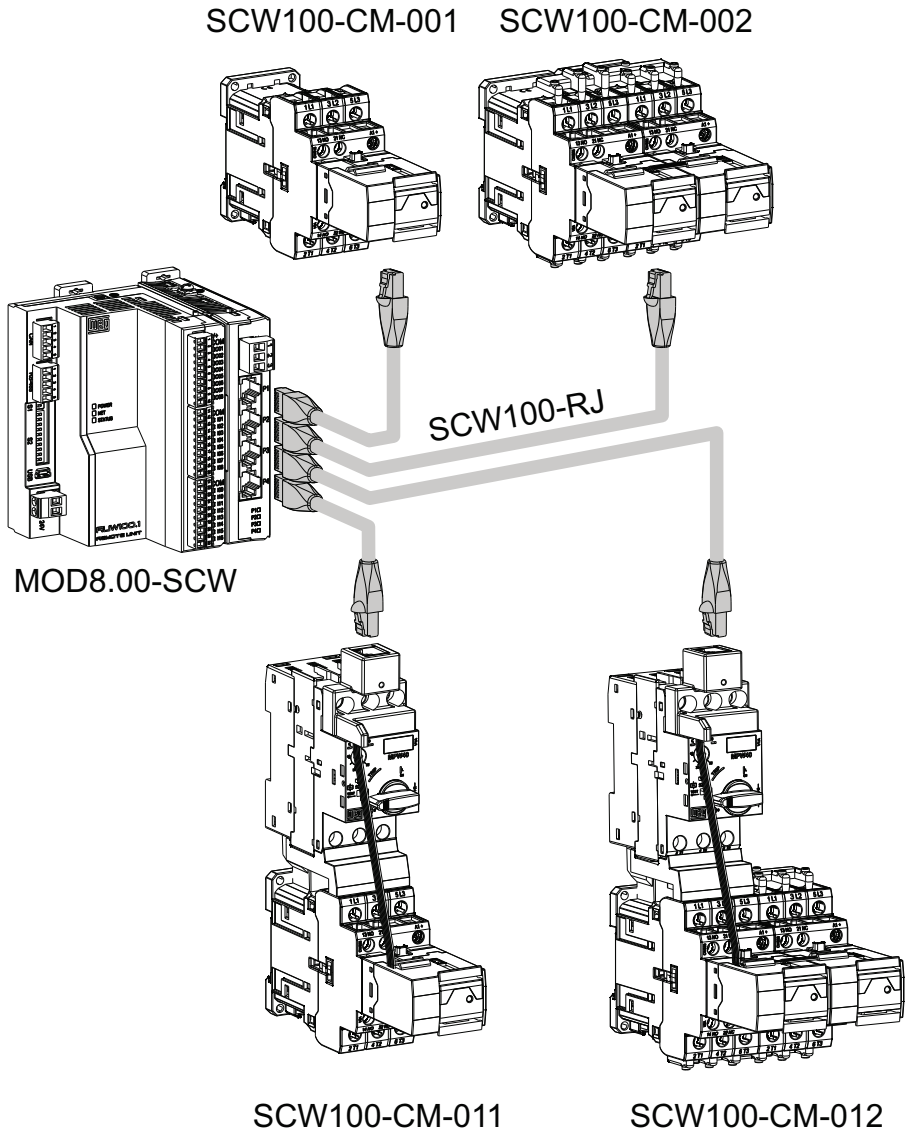

Figure 5.14: Connection example

6 TECHNICAL DATA

Operating Temperature:

- 0 °C to 45 °C (32 °F to 113 °F).
- Air relative humidity: 5 % to 90 % non-condensing.

Degree of Protection:

- IP20.

Pollution Degree:

- 2 (according to EN50178 and UL508C), with non-conductive pollution.

Altitude:

- 1000 m (3,300 ft). Above 1000 m to 4000 m (3,300 ft to 13,200 ft), the output current must be derated by 1 % for every 100 m (328 ft) above 1000 m (3,300 ft).
- Environment with pollution degree 2 (as per EN50178 and UL508C.

Digital Outputs:

- PNP outputs.
- Recommended voltage V+: 24 V.
- Maximum voltage V+: 28.8 V.
- Maximum current of each output: 500 mA.

Digital Inputs:

- Bidirectional inputs.
- Maximum input voltage: 28.8 V.
- High level: Vin ≥ 10 V.
- Low level: Vin ≤ 3 V.
- Consumption at 24 V: 10 mA.
- Insulation voltage: 500 V.

Analog Inputs:

- Voltage and current inputs.
- Input voltage range: 0 to 10 V differential.
- Common mode voltage limits: -10 to 10 V.
- Input current range: 0 to 20 mA.
- Resolution: 24 Bits.

Voltage Analog Outputs:

- Voltage limit: 0 - 10 V.
- Maximum output current: 10 mA.
- Resolution: 12 Bits.

Current Analog Outputs:

- Maximum output current: 20 mA.
- Maximum load: 500 Ω.
- Resolution: 12 Bits.

Thermocouple Inputs:

- Supported types: J, K and T.

RTD Inputs:

- Supported types: PT100 and PT1000 with two or three wires.
- A three-wire model is required to execute wire resistance compensation.

Load Cell Input:

- Supported types: four or six wires.

Relay Output:

- Isolated outputs.
- Maximum load for switching: 7 A - 250 VAC, resistive load.
  5 A - 30 VDC, resistive load.