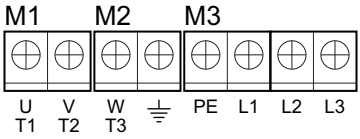
4. Inputs and outputs

4.1 Three-phase power supply and power output for motor(s)

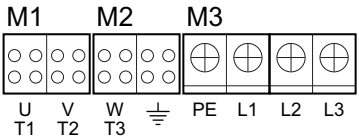
4.1.1 Power supply terminal board

Three-phase power supply and output to fan groups with total absorption within the adopted RGM model limits.

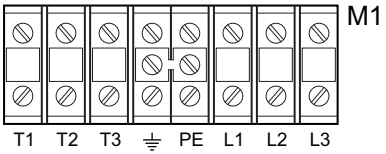
Terminal board RGM312 single output



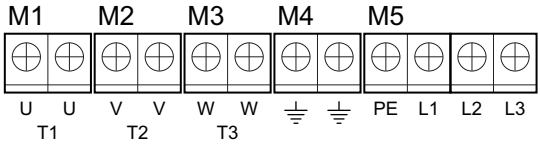
Terminal board RGM312 output x 4



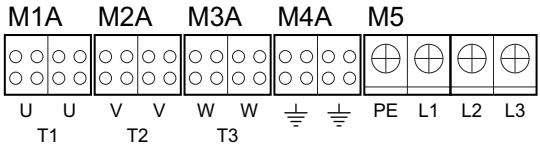
Terminal board RGM340, RGM360 single output



Terminal board RGM320, RGM328 double output



Terminal board RGM320, RGM328 output x 8



4.1.2 Terminal description

Terminal	Description
U/T1	Phase output 1 **(*)**
V/T2	Phase output 2 **(*)**
W/T3	Phase output 3 **(*)**
⏚	Auxiliary grounding to be used for the load, internally connected to PE.
PE	Protection circuit breaker connection terminal **(**)**.
L1	Phase input 1
L2	Phase input 2
L3	Phase input 3

***Note**(*): double three-phase output on models RGM320 and RGM328.*

***Note** (**): the device can be installed in TT voltage distribution systems (i.e. domestic users in Italy), IT (to ensure maximum operating continuity) and TN (users with their own transformer cabin). Each of these systems provides different ways to ground the power source and the metal system masses.*

4.1.3 Power supply wiring diagram

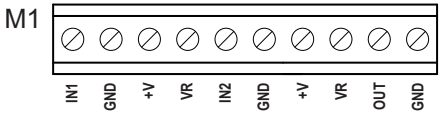
See "Power supply wiring" on page 25.

4.2 Analog inputs and outputs

4.2.1 Terminal board M1

Analog inputs for reading NTC current/voltage/resistance signals from sensors and transducers. Voltage outputs to power potentiometers, sensors and transducers. Analog output to regulate external unit operations (i.e.: spray).

***Note**: MEI-4 module is available to expand inputs. Contact SELPRO customer service.*



Terminal		Description	Specifications
1	**IN1**	Analog Input 1.	V dc/m A/kΩ
2	**GND**	Grounding.	-
3	**+V**	Non-stabilized power voltage output for transducers.	22 V dc 10–20% Max 40 mA
4	**VR**	Stabilized voltage output for raziometric sensors and potentiometers. Switching between 5 V and 10 V is automatic according to the set configuration.	5–10 V dc Max 10 mA
5	**IN2**	Analog Input 2.	V dc/mA/kΩ
6	**GND**	Grounding.	-
7	**V**	Non-stabilized power voltage output for transducers.	22 V dc 10–20% Max 40 mA
8	**VR**	Stabilized voltage output for raziometric sensors and potentiometers. Switching between 5 V and 10 V is automatic according to the set configuration.	5-10 V Max 10 mA
9	**OUT**	Analog output used to control external units.**(*)**	0-10 V Max 20 mA
10	**GND**	Grounding.	-

***NOTICE**: the same type of sensors must be connected to inputs **IN1** and **IN2**.*

***Note**: outputs **V+** and **VR** are protected against short-circuit to **IN1**, **IN2** and **GND**.*

***Note**(*): default setting for spray unit regulation, with dedicated and adjustable setpoint and proportional band. For applications where only the spray unit on and off control is required, use the relay output (terminal board M3) as an alternative.*

4.2.2 Analog inputs IN1 and IN2

Signals can be received from different types of transducers, sensors and controllers. The number of inputs and the prevalent input selection mode are automatically set when one of the configurations is loaded. The input that is not used for control remains visible on the display and RS485 Modbus port.

Note**: for special applications, it can be set from menu **conF** > parameters **C0** and **C1

4.2.3 Wiring diagrams

See "Connecting analog inputs in Slave mode" on page 25"Analog input connections in Master mode" on page 26 and "OUT analog output connections" on page 28.

4.2.4 OUT analog output control limits

The configurable **OUT** analog output can be used to control:

- up to ten Slave units through a 0-10 V dc control signal
- up to ten spray units through a 1–10 V dc control signal with dedicated and adjustable setpoint and proportional band
- up to ten external units through a 0–10/10–0 V dc control signal with dedicated and adjustable setpoint and proportional band

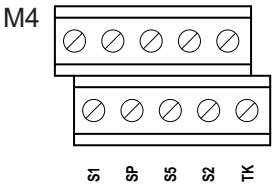
***Note**: it can be set from menu **conF** > parameter **C7**.*

4.3 On/Off inputs

4.3.1 Terminal board M4

Terminal board with On/Off inputs for remote commands or for reading overheat protections. Contact activity is indicated by On/Off input LEDs.

***Note**: these contacts activate some of the parameters in the default settings. They may vary for special customer needs. Refer to the project documentation.*



Contact	Terminal	Function
S1	**1, 2**	The function of this input depends on the value of the base parameter **icE** If **icE** = 0, it selects the direct/reverse mode: ■ closed: reverse regulation mode ■ open: direct regulation mode If **icE** > 0, it manages the motor heating function (antifreeze): ■ closed: antifreeze function on ■ open: antifreeze function off
SP	**3, 4**	Selects the set setpoint (base parameters **S1** or **S2**) ■ closed: setpoint 2 on ■ open: setpoint 1 on
S5	**5, 6**	Activates/deactivates the % RPM night limit (**Lh** base parameter) ■ closed: limit active ■ open: limit not active

Contact	Terminal	Function
S2	**7, 8**	Enables/disables the controller operation. ■ closed: turns off regulation, power output to zero and OUT analog output to zero (only with **C7**= 2, 3) ■ open: turns on regulation: the unit runs according to settings and inputs. ***NOTICE**: always use this input if the room temperature is below -10 °C. DO NOT use this input to replace the switch for individual fans or to replace the main power switch.*
TK	**9, 10**	Normally closed contact to connect motor overload protections. ■ closed: no alarm, consent to regulation ■ open: alarm, no consent to regulation ***NOTICE**: the overload protection of one or more motors or an alarm coming from an electrical cabinet can be connected to the TK input but must be normally closed logic.* ***Note**: with switch 3 = On (DIP switch SW1) the alarm is only readable by Modbus, the regulation consent remains and the relay remains energized.*

4.3.2 Forcing in the presence of Modbus connection

In the presence of a Modbus card, some of these inputs can be forced by supervisor. See "Modbus card (PB1073C) - optional" on page 21

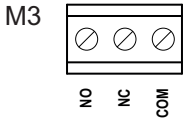
4.3.3 On/Off input wiring diagram

See "On/Off inputs connection" on page 28.

4.4 Relay output

4.4.1 Terminal board M3

The two-logic relay terminal board can be used to control alarm devices (i.e. sirens) or to control external drives as an alternative to the **OUT** analog output.



Terminal		Description
1	**NO**	Normally open output (**NO**+**COM**).
2	**NC**	Normally closed output (**NC**+**COM**).
3	**COM**	Shared.

Note**: it can be set from menu **conF** > parameter **C6

4.4.2 Alarm signal settings

Alarms can be managed differently, for example, if a controller error occurs during regulation.

***Note**: if switch 3 = On (DIP switch SW1) in case of alarm the relay remains energized.*

4.4.3 Configuration for communicating operative statuses and malfunctions

It is possible to manage the operative (for example, if the regulator is in alarm) and fault (for example, insufficient power) states in different ways by setting DIP switch SW1 switches 5 and 6, see "Presentation" on page 13.

4.4.4 Relay wiring diagram

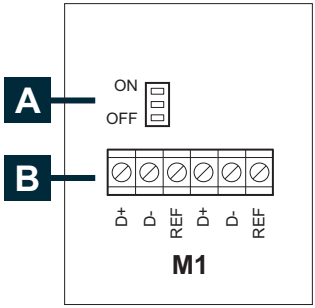
See "Relay output connection" on page 31.

4.5 Modbus card (PB1073C) - optional

4.5.1 Modbus RTU Architecture

The optional card with isolated transceiver for RS485 allows you to use the Modbus protocol to create a line of controllers connected to Clima-Sinergy or a third party supervisor.

4.5.2 Modbus card description



Part	Description
A	Serial Line termination jumper ■ **ON** (1-2): 120 Ω line termination on ■ **OFF** (2-3): 120 Ω line termination off
B	Modbus connections **(*)** ■ **D+**: non inverting RS485 ■ **D-**: inverting RS485 ■ **REF**: isolated transceiver reference grounding

***Note** (*): terminals with the same code are electrically connected.*

4.5.3 Forcing from a supervisor

The following can be forced from a supervisor:

- fan speed, via **UVW** power output.
- the **OUT** analog output.
- the commands on the On/Off inputs **S1**, **SP**, **S5**, and **S2**.

With switch 4 = Off (DIP switch SW1) the forcing automatically terminates after 10 minutes. The lit LED indicates the presence of one or more non-standard Modbus forcing.

***Note**: forcing can be canceled by a subsequent Modbus command or by turning off the controller or resetting it.*

4.5.4 Interrogation frequency from supervisor

***NOTICE**: to avoid malfunctions, limit the interrogation frequency to 1 Hz (one interrogation per second).*