

GB

MIO2 module for EXact control system

(Modbus Input Output)



Original instructions



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1. Product information

1.1 How the MIO2 module works

RH/RLQ/CO₂/PIR/ TIMERBUTTON3

Fan speed can be overridden by connecting one or more MIO2 modules to a VEX unit, as shown below:

Sensor	Location	Fan speed is overridden if
RH sensor	Fitted in room	the relative air humidity (%RH) in the room exceeds the preset start limit
RLQ air quality sensor	Fitted in room	the relative air quality (%) in the room exceeds the preset start limit
CO ₂ sensor	Fitted in the room or extract air duct	The CO ₂ concentration in the room/extract air duct exceeds the preset start limit
PIR Motion sensor	Fitted in room	a person is detected in the room (the fan speed is overridden to comfort level)
TIMERBUTTON3	Fitted in room	the "TIMERBUTTON3" is pressed. The indoor climate level changes to "Comfort". The switch can be inserted instead of the PIR or inserted parallel to the PIR

AUX1/AUX2 - externally controlled operation

Function	Control of ...
AUX1	extract air fan via an external 0–10 V signal*
AUX2	supply air fan via an external 0–10 V signal*

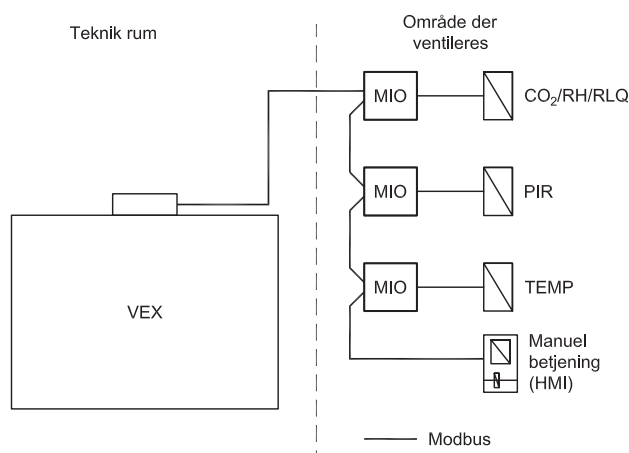
* Adjustable, see EXact2 basic instructions, section 6.4.

Temperature sensor

Sensor	Location	Function
TSROOME/TSDUCTE Temperature sensor	Fitted in the room or supply air duct	Temperature regulation uses this sensor instead of the temperature sensor in the VEX unit.

MIO2 modules

A maximum of one sensor/device per MIO2 module is connected. However, up to four motion sensors can be connected to a MIO2 module.



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1.2 Positioning individual sensors

Sensor	Optimum positioning	Avoid
RH sensor	Position on wall in an area where the air is the same as in the rest of the room	<ul style="list-style-type: none"> • areas with draughts • areas with static air • areas by doors, windows and sources of heat
RLQ air quality sensor	Position on the wall, 1.8-2.2 m above floor level, in an area where the air is the same as in the rest of the room	<ul style="list-style-type: none"> • areas with draughts • areas with static air • areas by doors, windows and sources of heat
CO ₂ Carbon dioxide sensor	Wall-mounted sensor: Position on the wall, 1.8-2.2 m above floor level, in an area where the air is the same as in the rest of the room	<ul style="list-style-type: none"> • areas with draughts • areas with static air • areas by doors, windows and sources of heat
	Duct-mounted sensor: Position in the extract air duct, in an air line that is the same as the air in the room	
PIR Motion sensor	Position 2-2.5 m above floor level in the area of the room to be monitored. The PIR sensor covers a horizontal angle of approx. 90°	<ul style="list-style-type: none"> • areas with direct sunlight • areas close to sources of heat
TIMERBUTTON3	Place suitably for operation, e.g. at entrance to the room	<ul style="list-style-type: none"> • that it can be activated unintentionally
TSROOME/TSDUCTE Temperature Sensor	Wall-mounted sensor: Position on wall in an area where the air is the same as in the rest of the room	<ul style="list-style-type: none"> • areas with draughts • areas with static air • areas by doors, windows and sources of heat
	Duct-mounted sensor: Position in the extract air duct, in an air line that is the same as the air in the room	

1.3 Design of the MIO2 Module

Connector

The MIO2 module has a number of styles that allow sensors/devices to be connected.

NB:

It is important that a sensor is connected to the correct connector and that a jumper in CN12 is correctly fitted in relation to the chosen sensor. The following section shows how each sensor is connected. The LED in the middle of the MIO2 circuit board flashes green when the module is in operation.

Individual sensor connections

Connecting sensors etc.:

Table A - Sensor connection to MIO2

Sensor	Connect connector no.	Jumper in CN12
MIO2 module (bus connection)	CN7, CN15	
RH humidity sensor	CN15 and CN11	1 => 3
RLQ sensor	CN15 and CN11	1 => 3
CO ₂ sensor	CN15 and CN11	2 => 3
PIR sensor	CN15, CN11, CN6	4 => 6
TIMERBUTTON3	CN15, CN11, CN6	4 => 6 or 3 => 1 and 3 => 2
TSROOME/TSDUCTE temperature sensor	CN6	5 => 6
AUX1	CN4, C11, CN13	2 => 3
AUX2	CN4, CN11, CN13	1 => 3

Table B - Jumper programming of TIMERBUTTON3

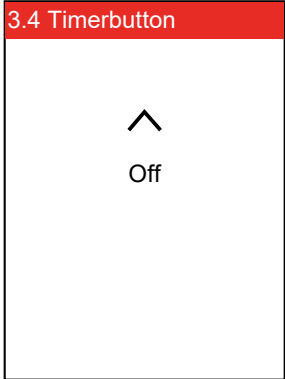
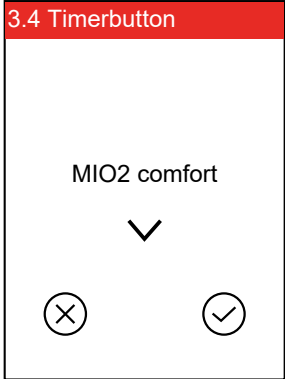
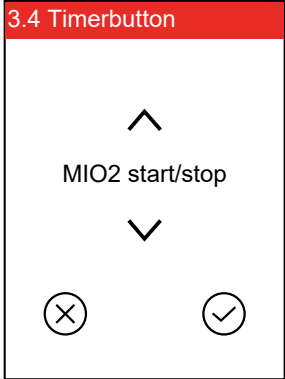
Configuration	Time	Jumper in CN6		
Normal function		1-3 (RD)	2-3 (VT)	3-4 (BK)
	30m			
	1h	X		
	1.5h		X	
	2h	X	X	
Test function	3s			X
	6s	X		X
	12s		X	X
	24s	X	X	X

See diagram in section 2.6 for further info.

1.4 Activating TIMERBUTTON3

Activating TIMERBUTTON3 functionality through the HMI2

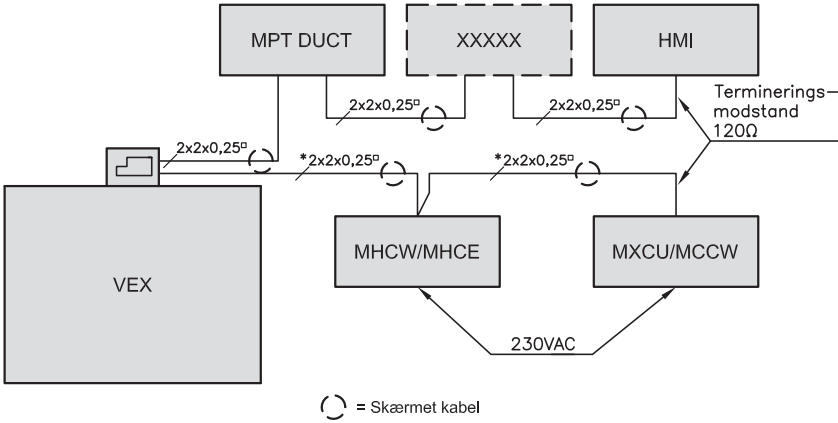
- To enable the TIMERBUTTON3 functionality, please follow the steps below:
1. **Navigate to Section 3.4 in the HMI2:** Begin by accessing section 3.4 in the HMI2 interface.
 2. **Select the Timerbutton:** Scroll to the bottom of the screen and click on the Timerbutton option.

<p>Default Setting:</p> <ul style="list-style-type: none">• By default, the Timerbutton is set to "Off," meaning that the functionality is not active within the system.	
<p>Activate Comfort Mode:</p> <ul style="list-style-type: none">• When you select "MIO2 Comfort," the Timerbutton will automatically switch the ventilation system to Comfort Mode upon activation.• The system will remain in Comfort Mode for the duration set by the Timerbutton. Available timer settings include 30 minutes, 1 hour, 1.5 hours, or 2 hours.• The duration can be programmed as shown in chapter 1.3.	
<p>Activate start/stop:</p> <ul style="list-style-type: none">• When you select "start/stop," the Timerbutton will automatically switch the ventilation system on or off upon activation. This means the ventilation system can be controlled externally with the Timerbutton.	

1.5 Connecting the MIO2 module to the bus

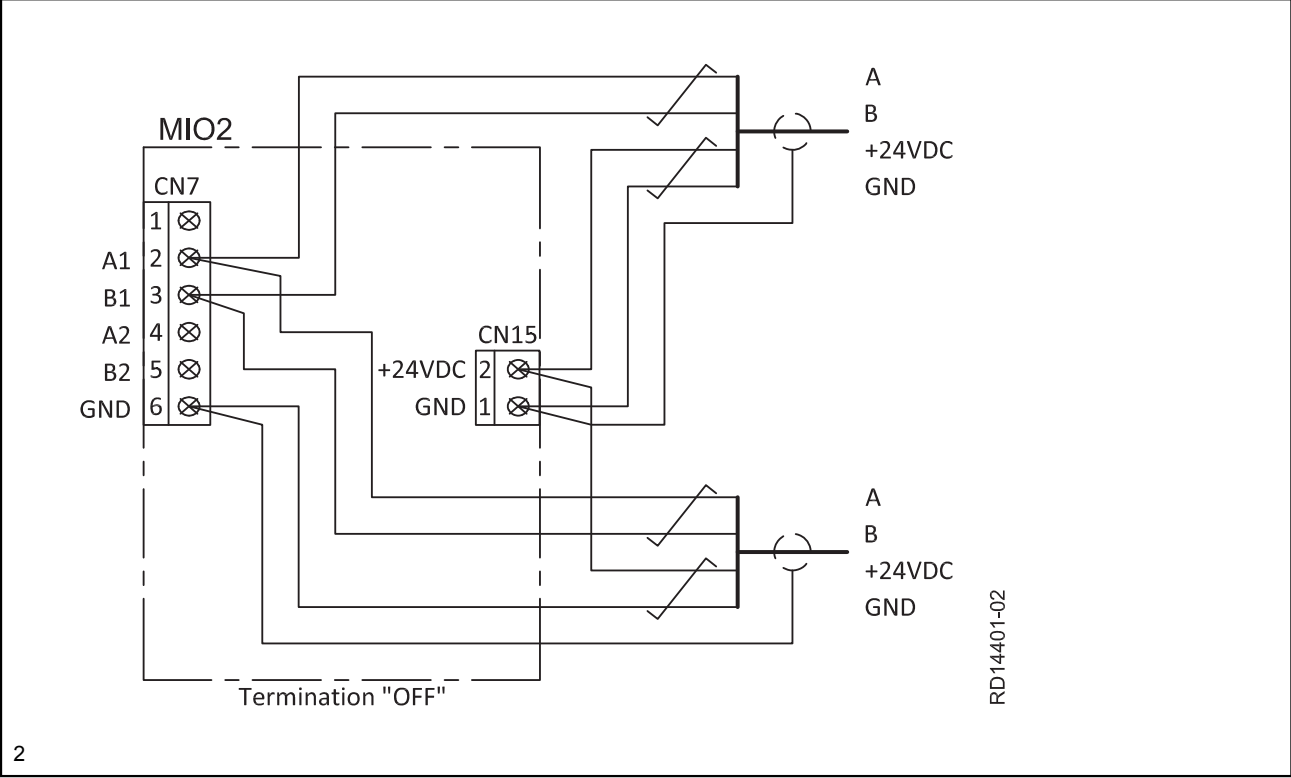
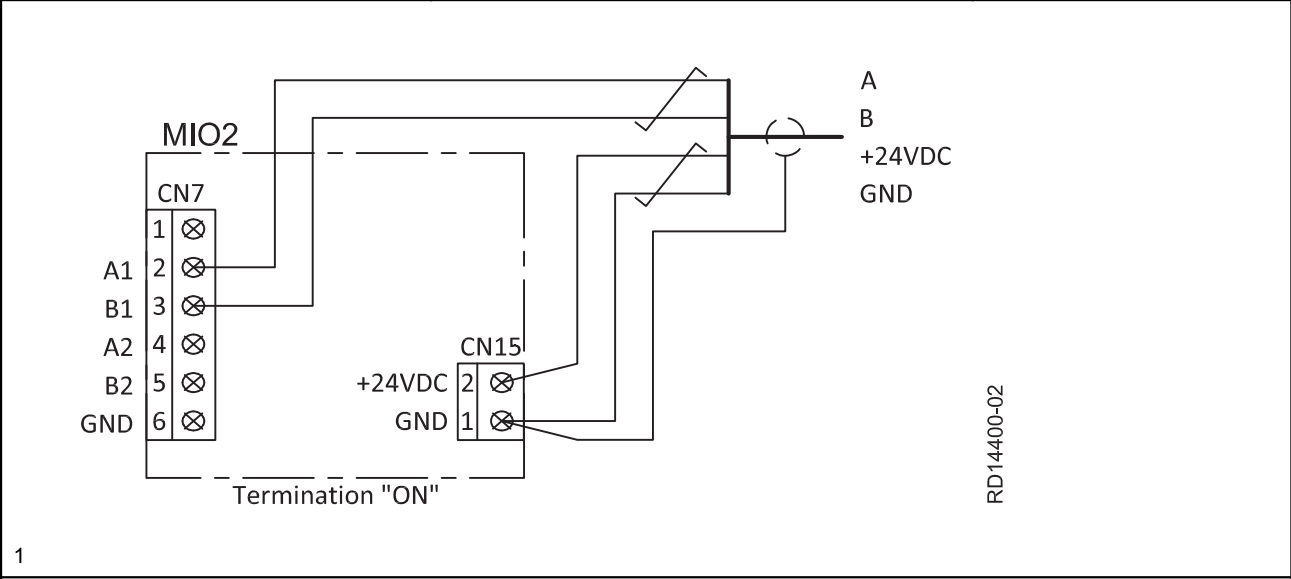
Modbus, termination

It is necessary to terminate the first and last devices on the bus with a 120 Ω resistor, see below



The VEX is supplied with two resistors, which are located in the drawing pocket in the door.

If...	Then...	See diagram no.
The MIO2 module is the first or last device on the bus	CN7 must be terminated with a 120 Ω resistor	1
The MIO2 module is neither the first nor last device on the bus	it must be daisy-chained to the next device. (in this case, another MIO module)	2



2. Connecting to the MIO2 module

NB:

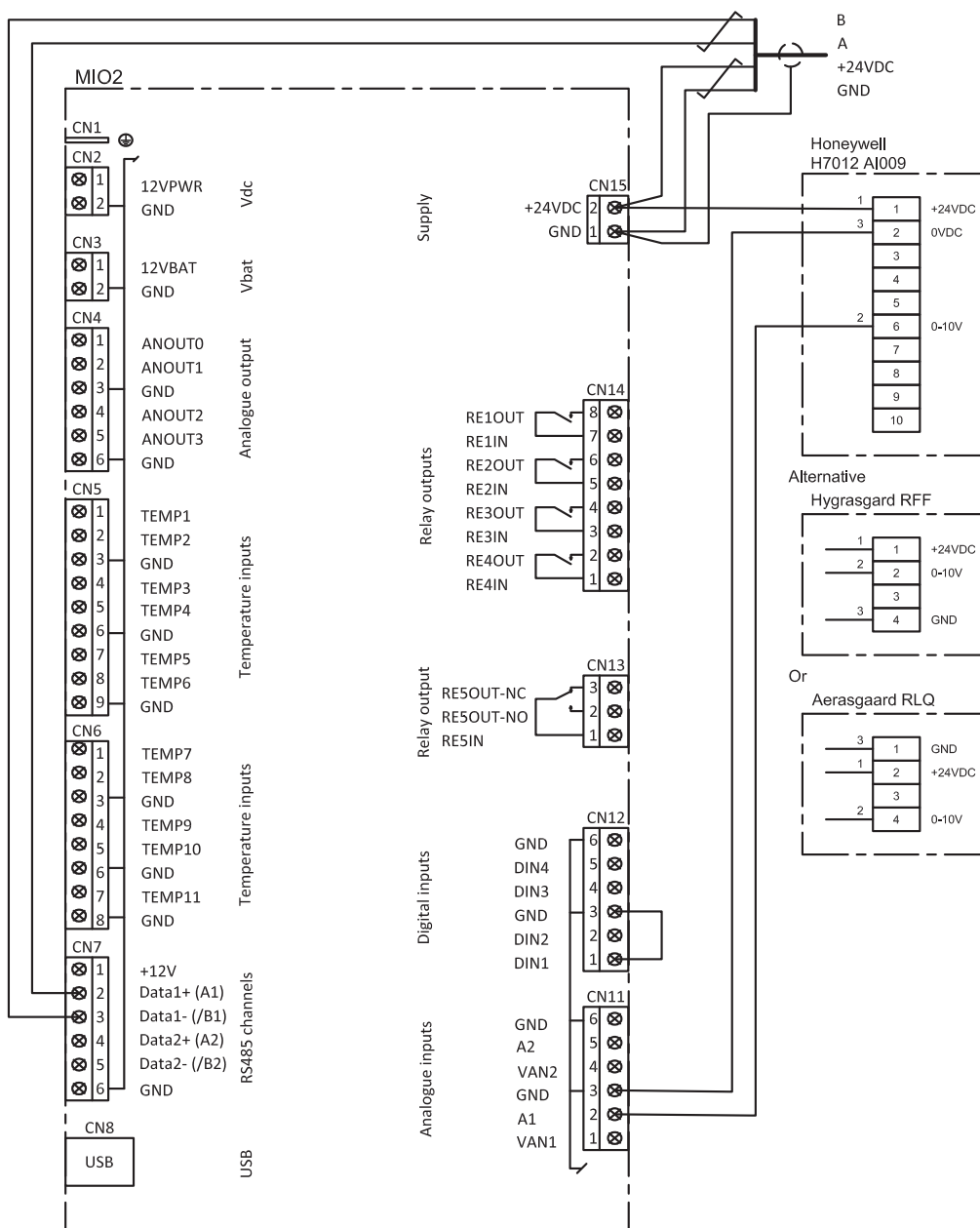


The Modbus connectors must not be connected or removed while there is voltage on the sensors/units. Both Modbus units must be switched off before making changes, otherwise the units/sensors may be damaged.

2.1 RH humidity sensor/RLQ air quality sensor

How to connect RH/RLQ

- Connect the RH humidity sensor or RLQ air quality sensor to the MIO2 module as shown below.
- Connect the jumper in CN12 as shown below.

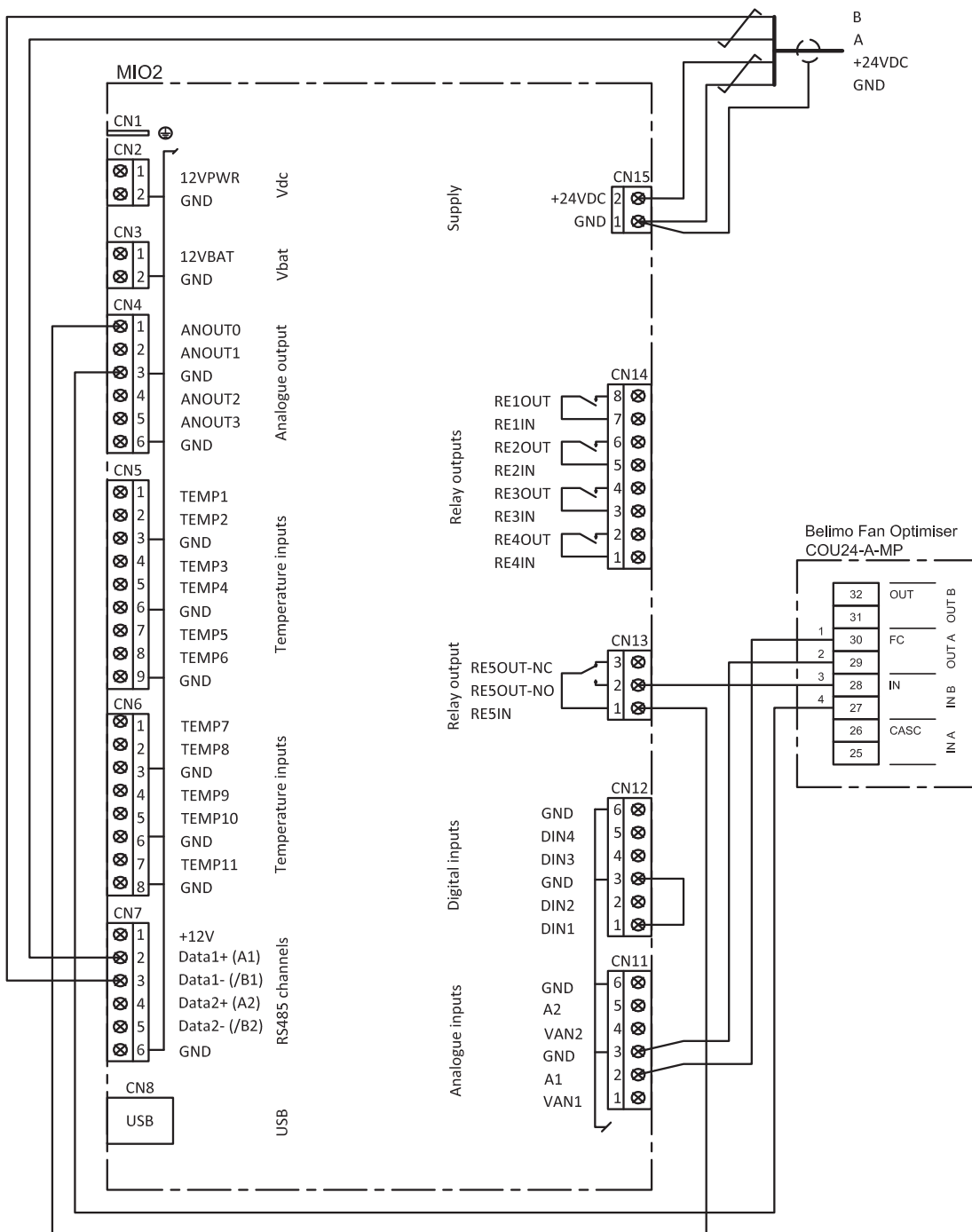


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2.2 AUX2

How to connect AUX2

- Connect the Belimo Fan Optimiser or similar external control as shown below.
- Connect the jumper in CN12 as shown below.



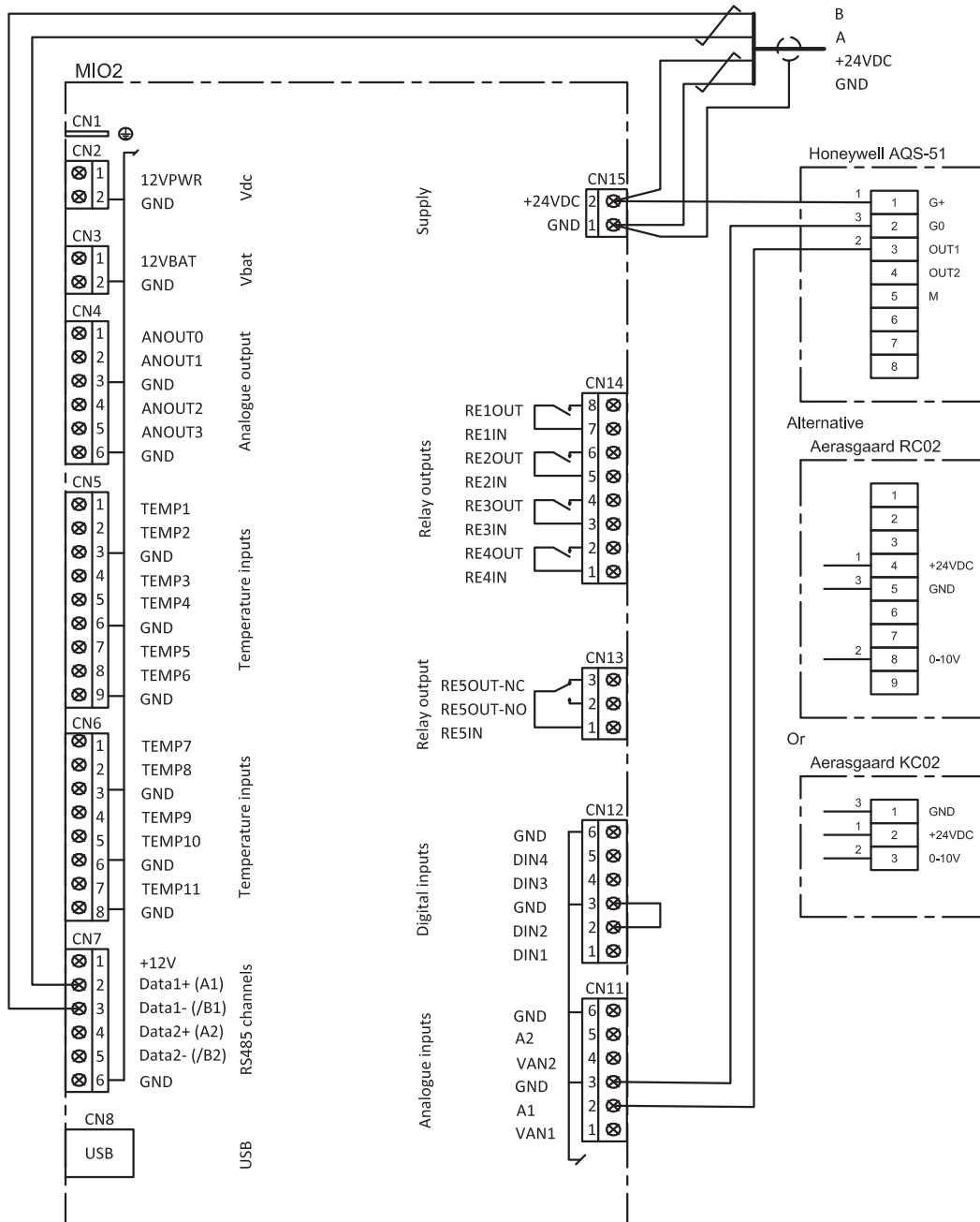
RD14393-01

NB: Belimo Fan Optimiser is an example of a solution.

2.3 CO₂ sensor

How to connect CO₂ sensor

- Connect the CO₂ sensor to the MIO2 module as shown below.
- Connect the jumper in CN12 as shown below.

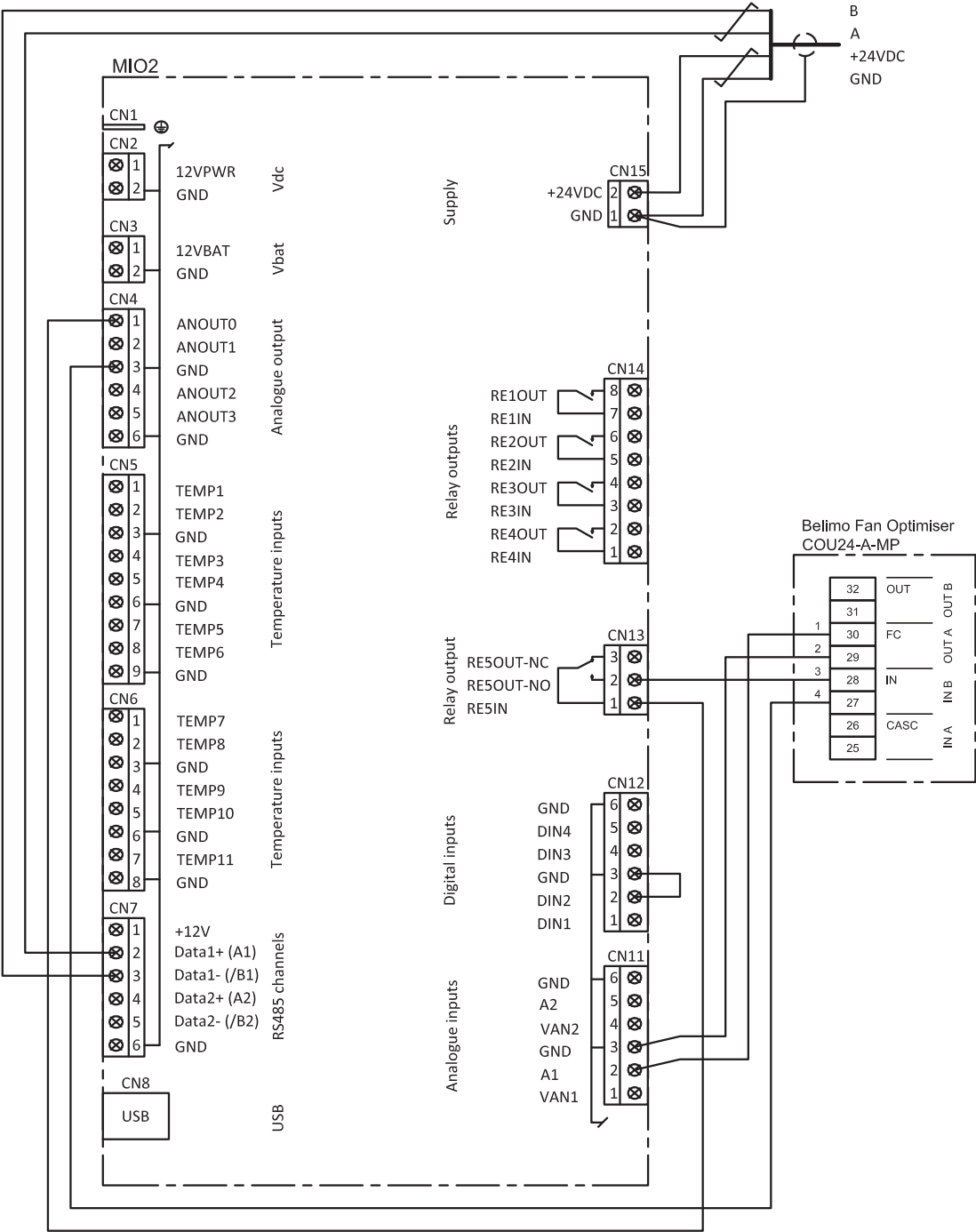


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2.4 AUX1

How to connect AUX1

- Connect the Belimo Fan Optimiser or similar external control as shown below.
- Connect the jumper in CN12 as shown below.

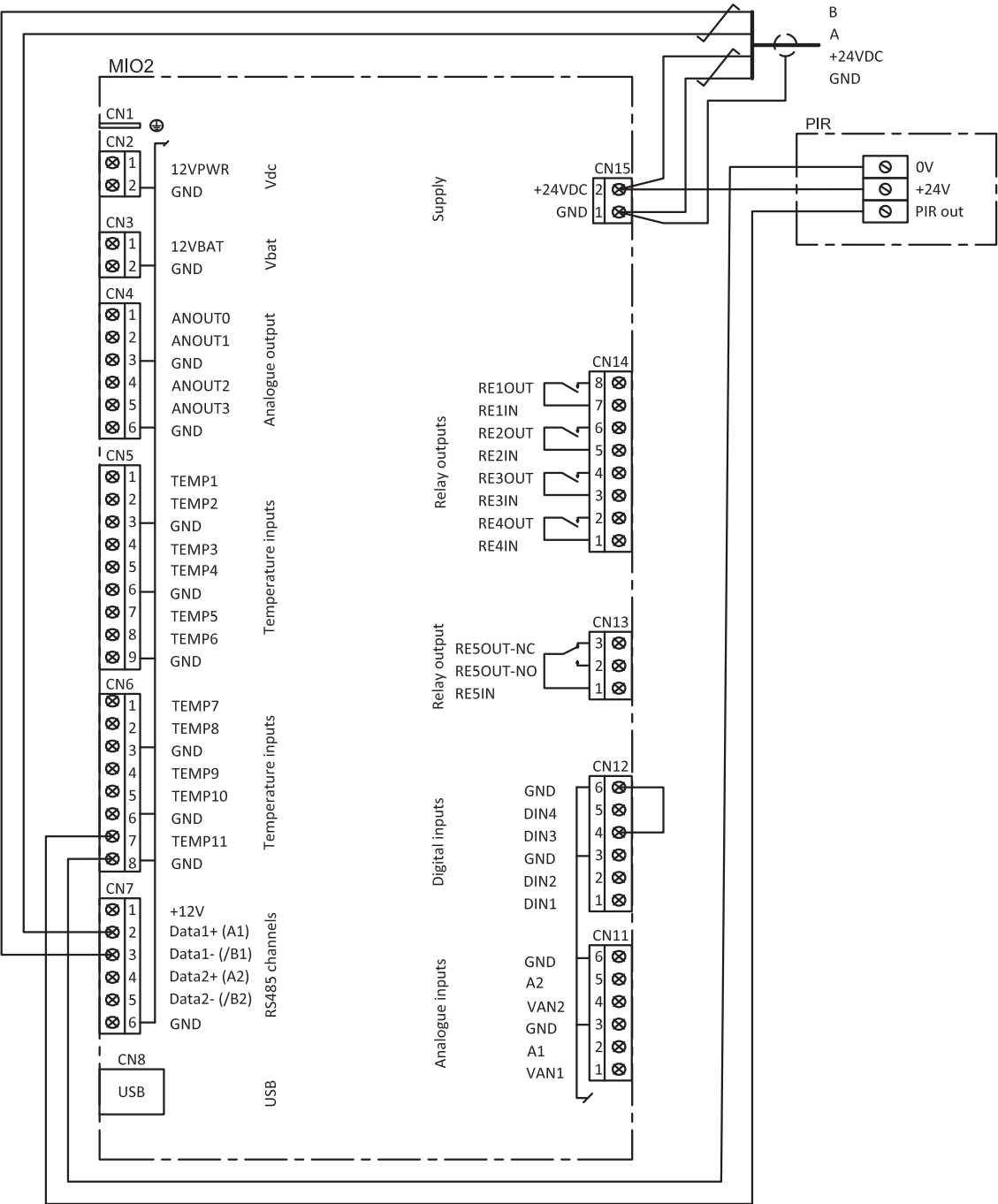


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Note: Belimo Fan Optimiser is an example of a solution.

2.5 PIR (motion sensor)

How to connect the PIR



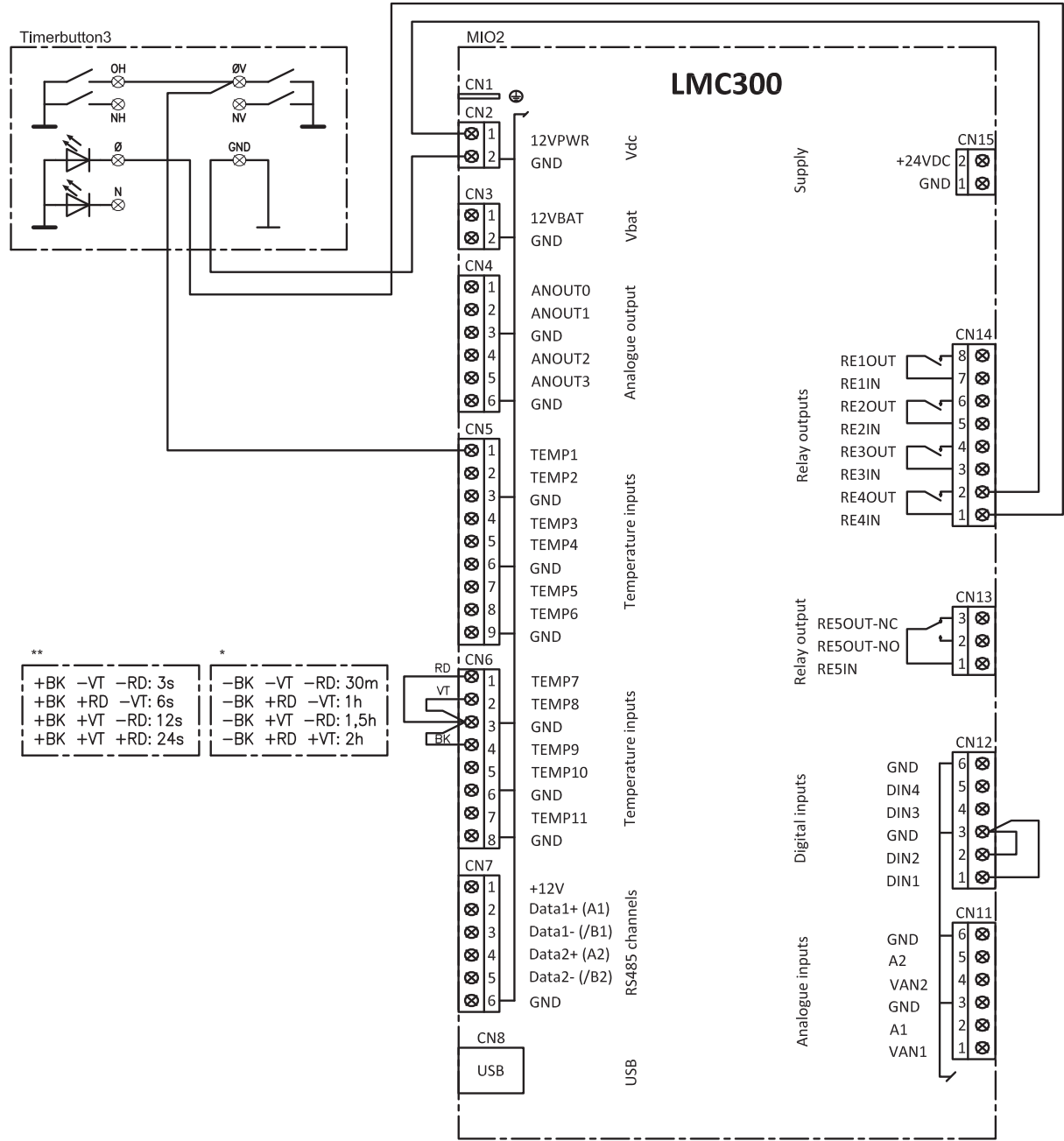
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NB PIR

If	Then
multiple PIR sensors or switched must be connected to the same MIO2 module	the relay contacts in the PIR sensors/switches must be connected in parallel. A maximum of 4 sensors/switches are connected to one MIO2 module
TIMERBUTTON3 must be used to override the VEX to comfort level	the switch can be: - inserted instead of the PIR sensor or – inserted parallel over the PIR sensor

2.6 TIMERBUTTON3

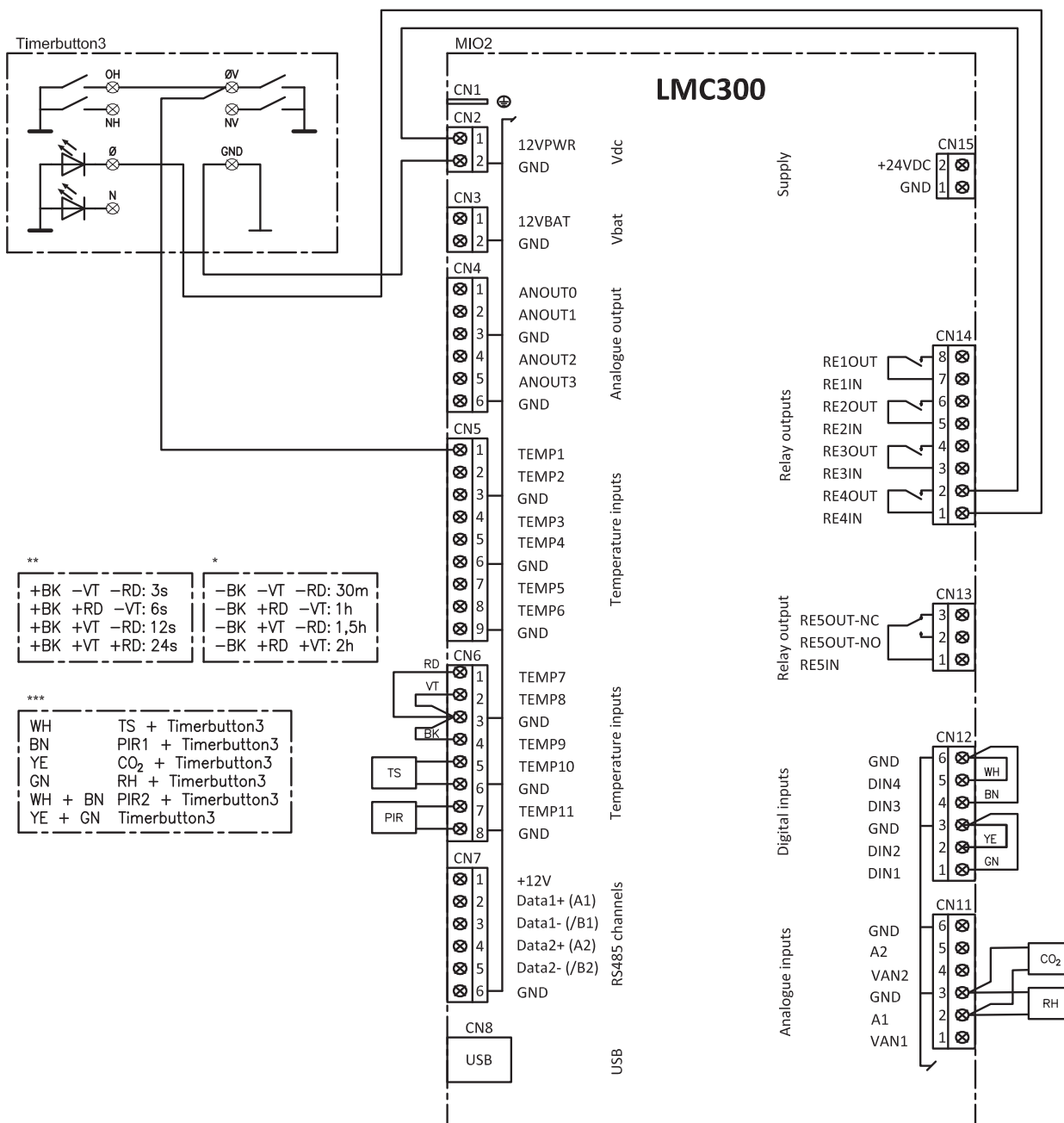
How to connect
TIMERBUTTON3



*: Normal function
**: Test function

2.7 TIMERBUTTON3 combined with other sensor

How to connect TIMERBUTTON3 to other sensor



*: Normal function

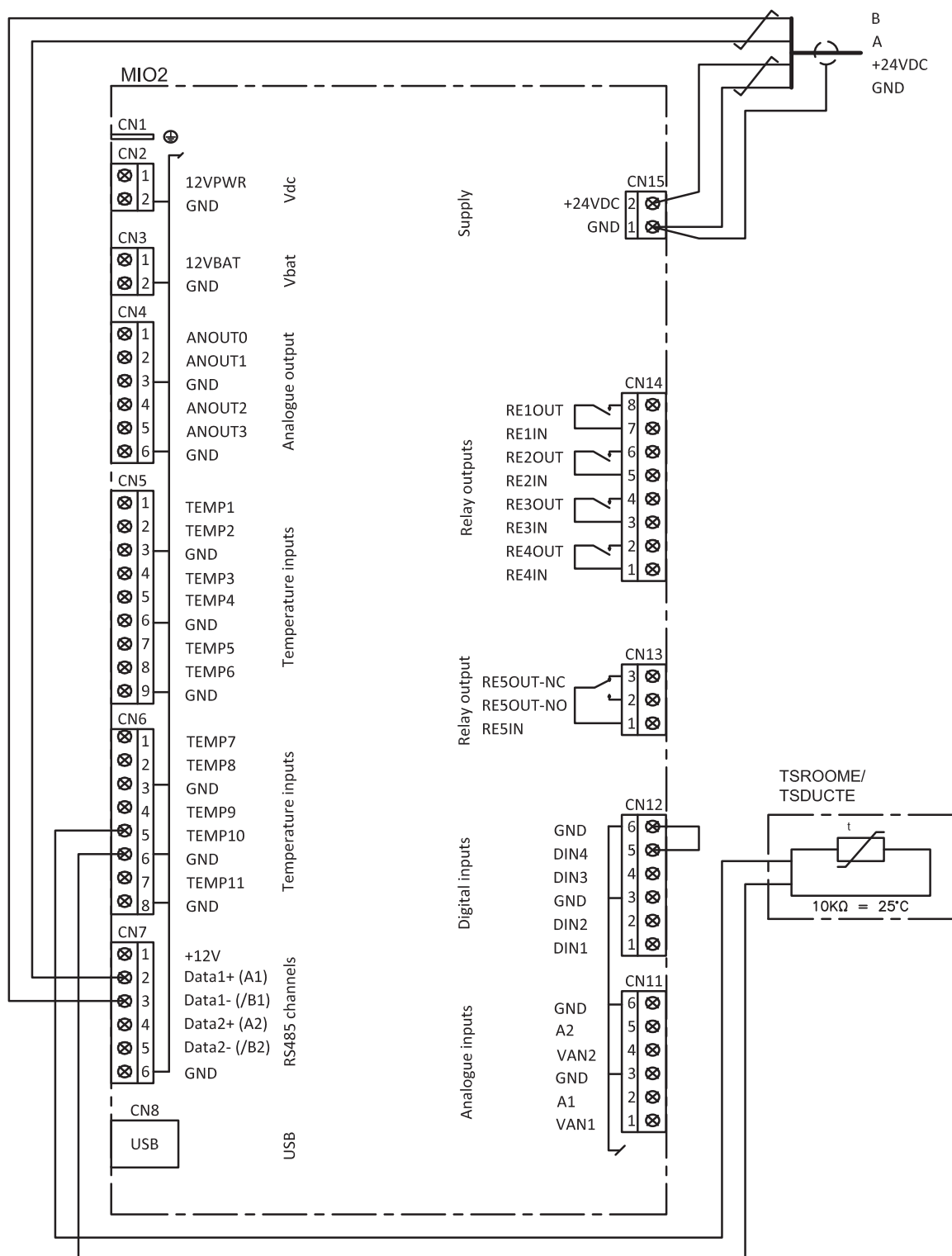
**: Test function

***: Jumper programming to another sensor connected to the MIO2 module.

2.8 TSROOME/TSDUCTE, temperature sensor

TSROOME/ TSDUCTE, tempera- ture sensor

- Connect the TSROOME/TSDUCTE temperature sensor to the MIO2 module as shown below.
- Connect the jumper in CN12 as shown below.



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3. Activation and settings of sensors

3.1 Activation and settings of sensors

Detection

Once the desired sensor(s) has/have been installed, they are automatically detected by the EXact control system.

Activation of sensor

Activate the desired sensor(s) by:

- the VEX unit remote control (HMI) or
- a connected PC

See the instructions "EXact control system basic instructions" & "EXact control system Menu guide"

Setting the individual sensors

The table below shows the setting options for the individual sensor, and reference to the menu no. in the EXact control system.

Sensor	Configuration	EXact menu no.	NB:
RH sensor	Set start and max. limit	3.1.2	Indication: 0 – 100% relative air humidity
RLQ air quality sensor	Set start and max. limit	3.1.2	Indication: 0 – 100 air quality
Carbon dioxide sensor	Set start and max. limit	3.3	Indication: 0 - 2000 ppm.
PIR sensor	Set start and max. limit	3.3	The PIR sensor automatically disconnects after 10 minutes if it has not registered a person in the room during that time.
TSROOME/ TSDUCTE Temperature sensor	The MIO2 module with temperature sensor is automatically detected by EXact	3.3	NTC 10 k Ω @ 25°C
TIMERBUT- TON3	See table B (1.3)	3.3	The override of the VEX can be stopped by pressing the timer again. When the timer function is active, the LED lights up green.
AUX	Setting of control signal	3.1.1.4	Requires that airflow control method 8 is selected



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