# 4 Door Cabinet 1000522


**Power Supply: CN 10**

24 Vac/dc (+/- 10%) 50/60 Hz
Max power consumption: 23 VA

**Analog Input: CN 5**

AIL 1 : Cold Rail Temp
AIL 2 : Refrigerate Temp
AIL 3 : Warm Refrig. Temp

**Digital Input: CN 3 & CN 4**

DIL 1 : Door Sensor 01
DIL 2 : Door Sensor 02
DIL 3 : Door Sensor 03
DIL 4 : Door Sensor 04

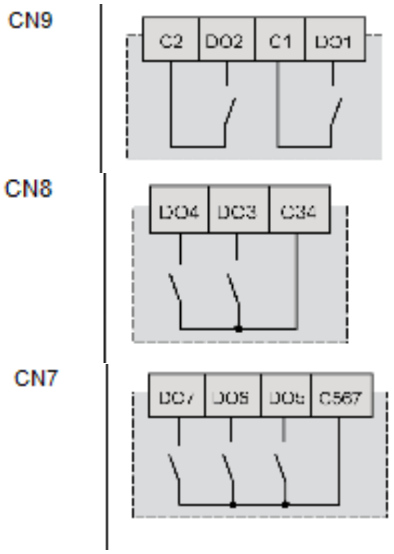
**Digital Output: CN 9 & CN 8 & CN 7**

DOL 1 : Cold Solenoid
DOL 2 : Refrigerate Solenoid
DOL 3 : -------
DOL 4 : Heater
DOL 5 : WRefrigerate Solenoid
DOL 6 : -------
DOL 7 : Buzzer Out
DOL 8 : Compressor Out

# 4 Door Cabinet 1000522

**CN 9 Terminal Digital Output**

**CN 8 Terminal Digital Output**



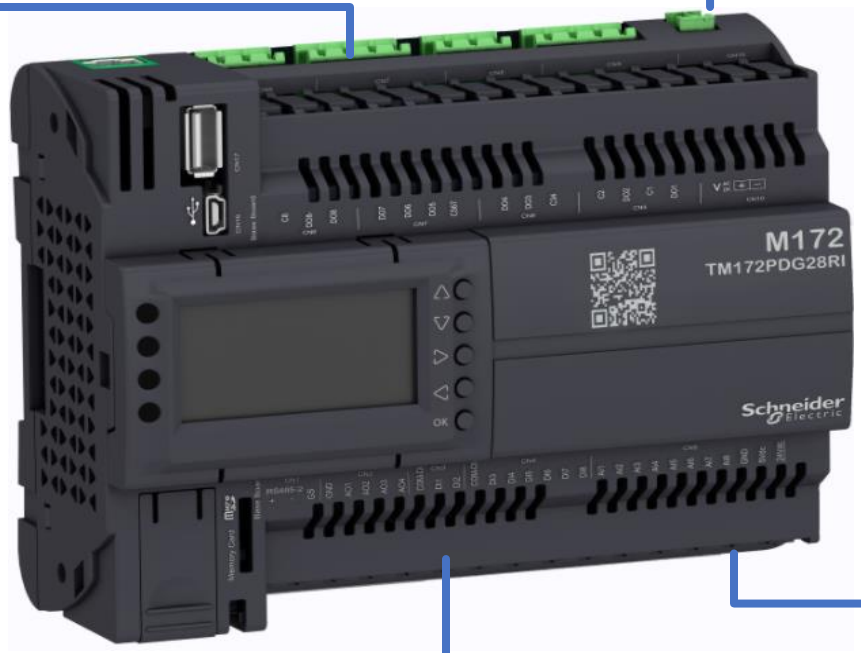

**CN 7 Terminal Digital Output**

Power supply wiring diagram:

| 24 Vac | 24 Vdc |
|---|---|
| ~ 24 V (1) | ⎓ 24 V (1) |

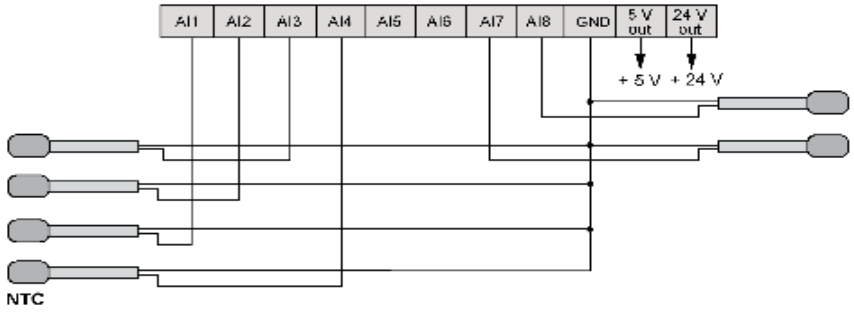
(1) Type T fuse 2 A.

**CN 10 Terminal Power Supply**



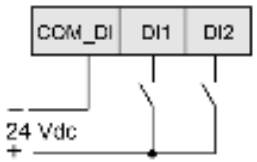

**CN 5 Terminal Analog Input**

TM172•••28•• / TM172•••42•• CN5 NTC input connection:

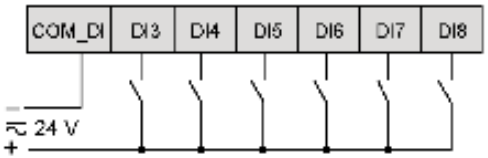



***USE External Power Supply for Digital Input**

**CN 3 Terminal Digital Input Fast**




**CN 4 Terminal Digital Input Regular**

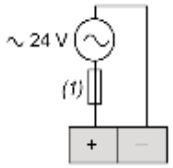
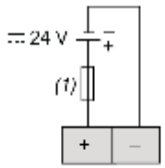


## Power Supply

### Controllers and Expansion Modules Power Supply

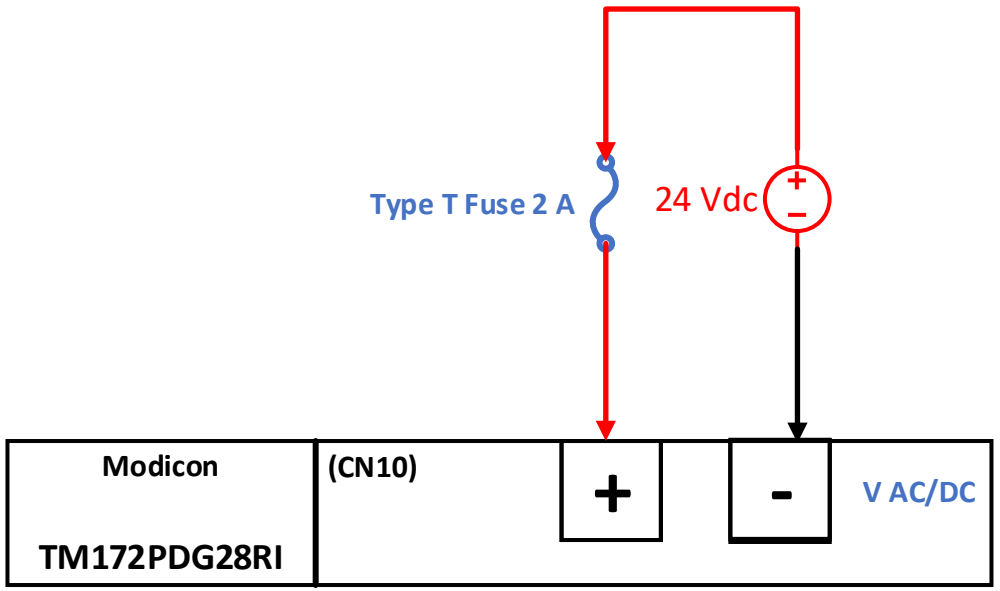
| References | Power supply characteristics | | Maximum power consumption |
|---|---|---|---|
| TM172P•G07R controller | Isolated | 24 Vac (+/- 10 %) - 50/60 Hz | 20 VA |
| | | 20...38 Vdc | 10 W |
| TM172P•G18• / TM172O•M18R controllers | | 24 Vac (+/- 10 %) - 50/60 Hz | 21 VA |
| | | 20...38 Vdc | 11 W |
| TM172P••28•I / TM172O••28R controllers | | 24 Vac (+/- 10 %) - 50/60 Hz | 23 VA |
| | | 20...38 Vdc | 12 W |
| TM172P••42•I / TM172O••42R controllers | | 24 Vac (+/- 10 %) - 50/60 Hz | 25 VA |
| | | 20...38 Vdc | 14 W |
| TM172P••28• / TM172P••42• controllers | Non-isolated | 24 Vac (+/- 10 %) - 50/60 Hz | 35 VA |
| | | 20...38 Vdc | 15 W |
| TM172E12R expansion module | | 24 Vac (+/- 10 %) - 50/60 Hz | 20 VA |
| | | 20...38 Vdc | 10 W |
| TM172E28R expansion module | | 24 Vac (+/- 10 %) - 50/60 Hz | 24 VA |
| | | 20...38 Vdc | 15 W |

Power supply wiring diagram:

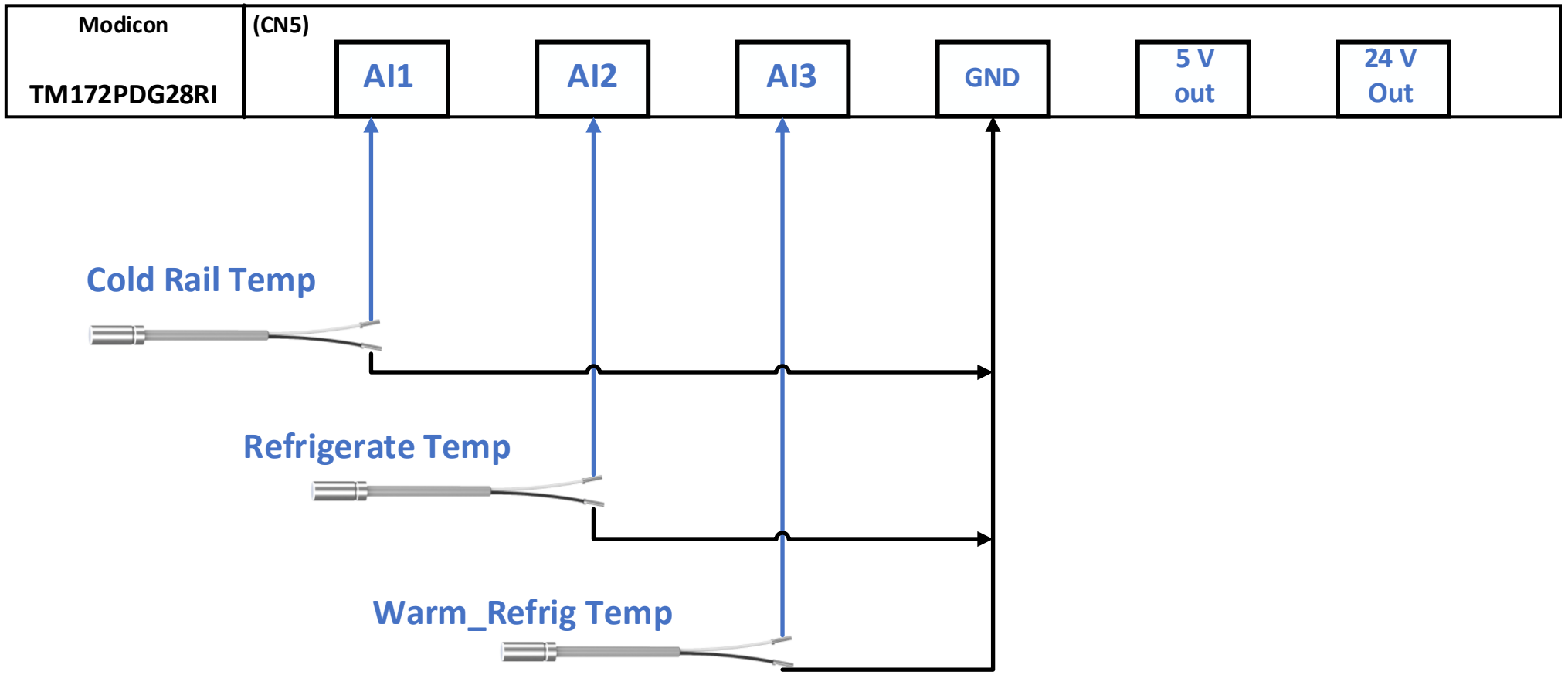
| 24 Vac | 24 Vdc |
|---|---|
|   |   |
| **(1)** Type T fuse 2 A. | |

| Pitch of the terminal block | Cabling length |
|---|---|
| 3.50 mm (0.14 in.) | 10 m (32.8 ft) |

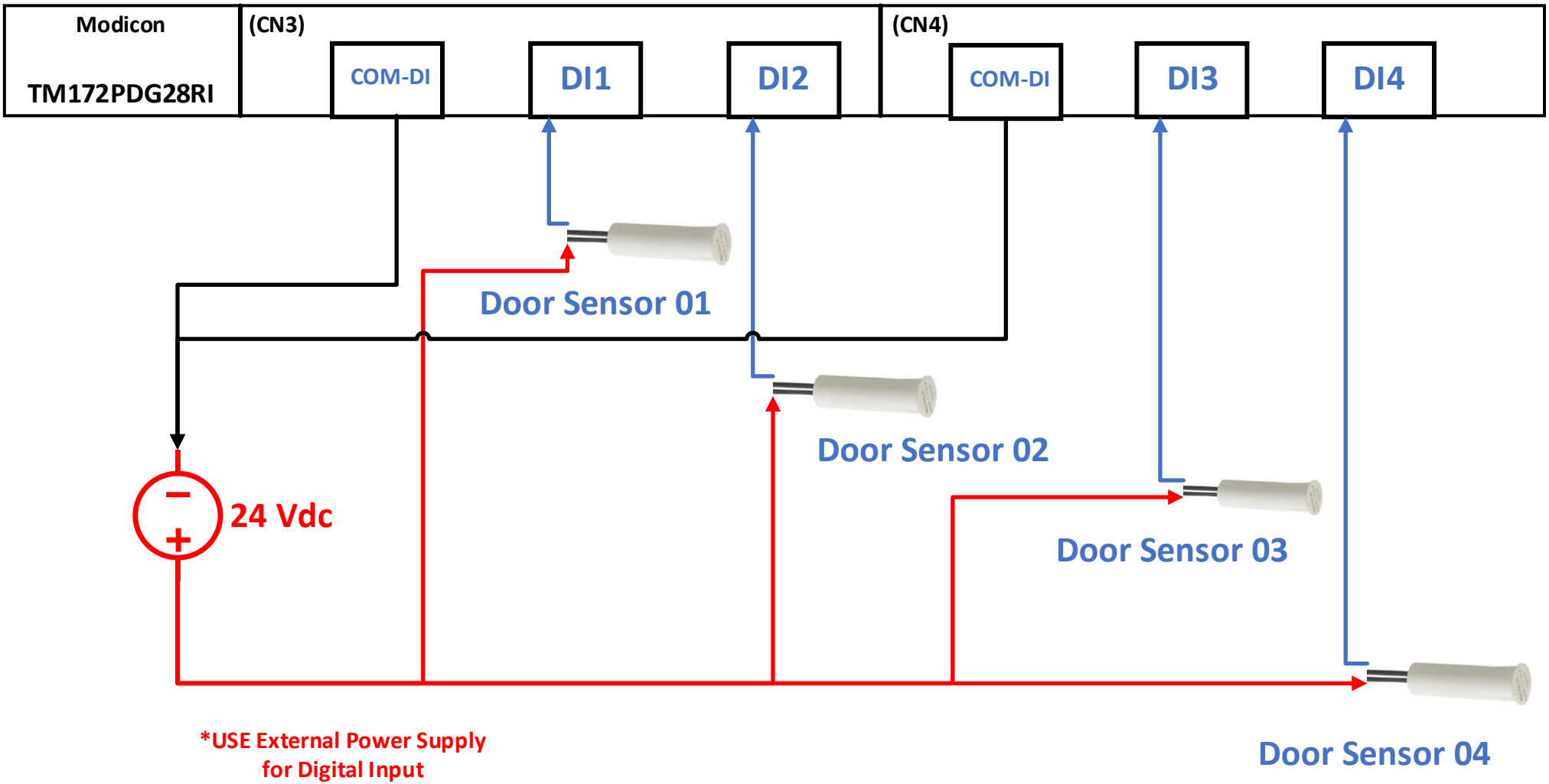
***Refer to Hardware Guide**



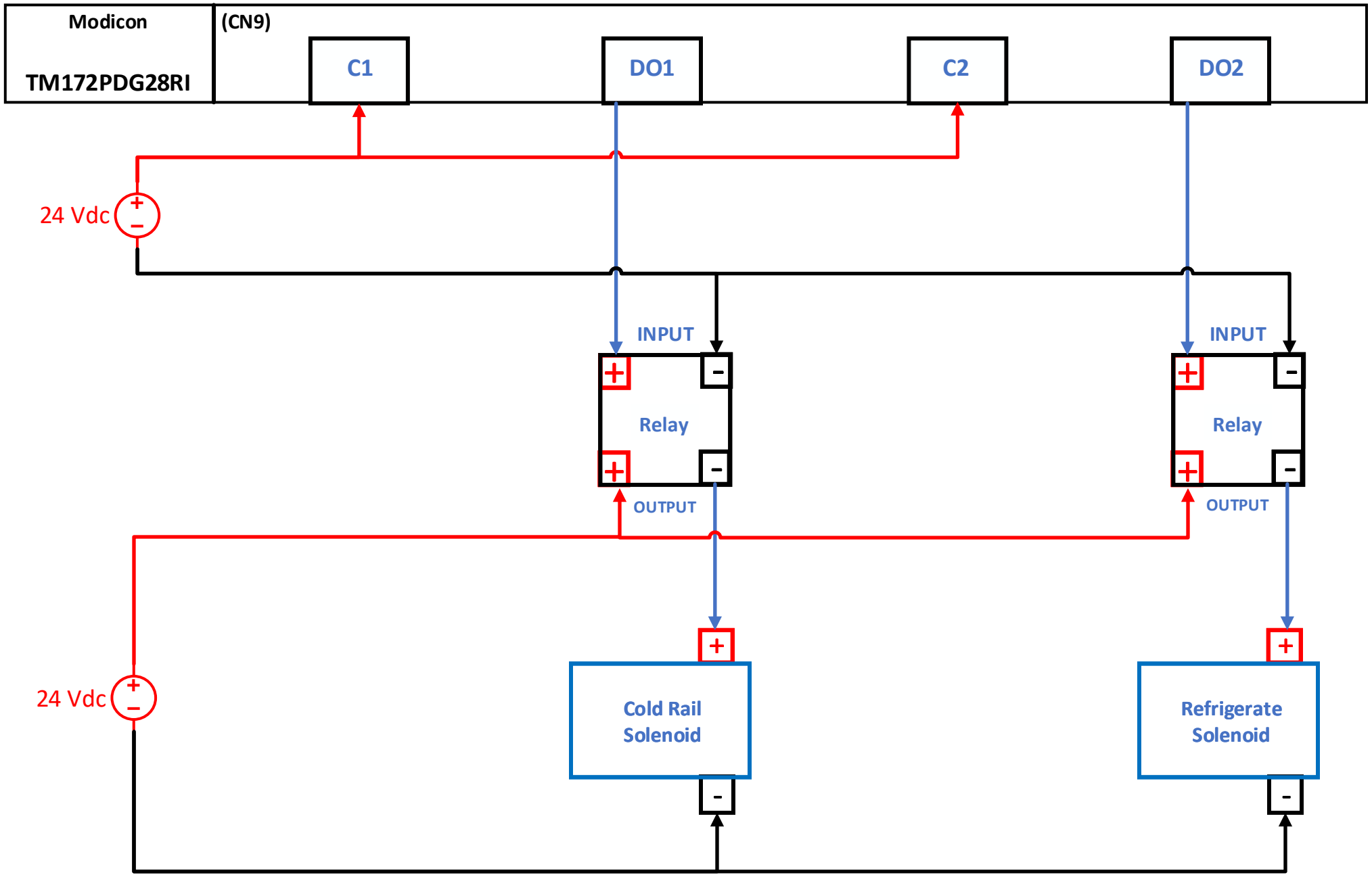
# Analog Input



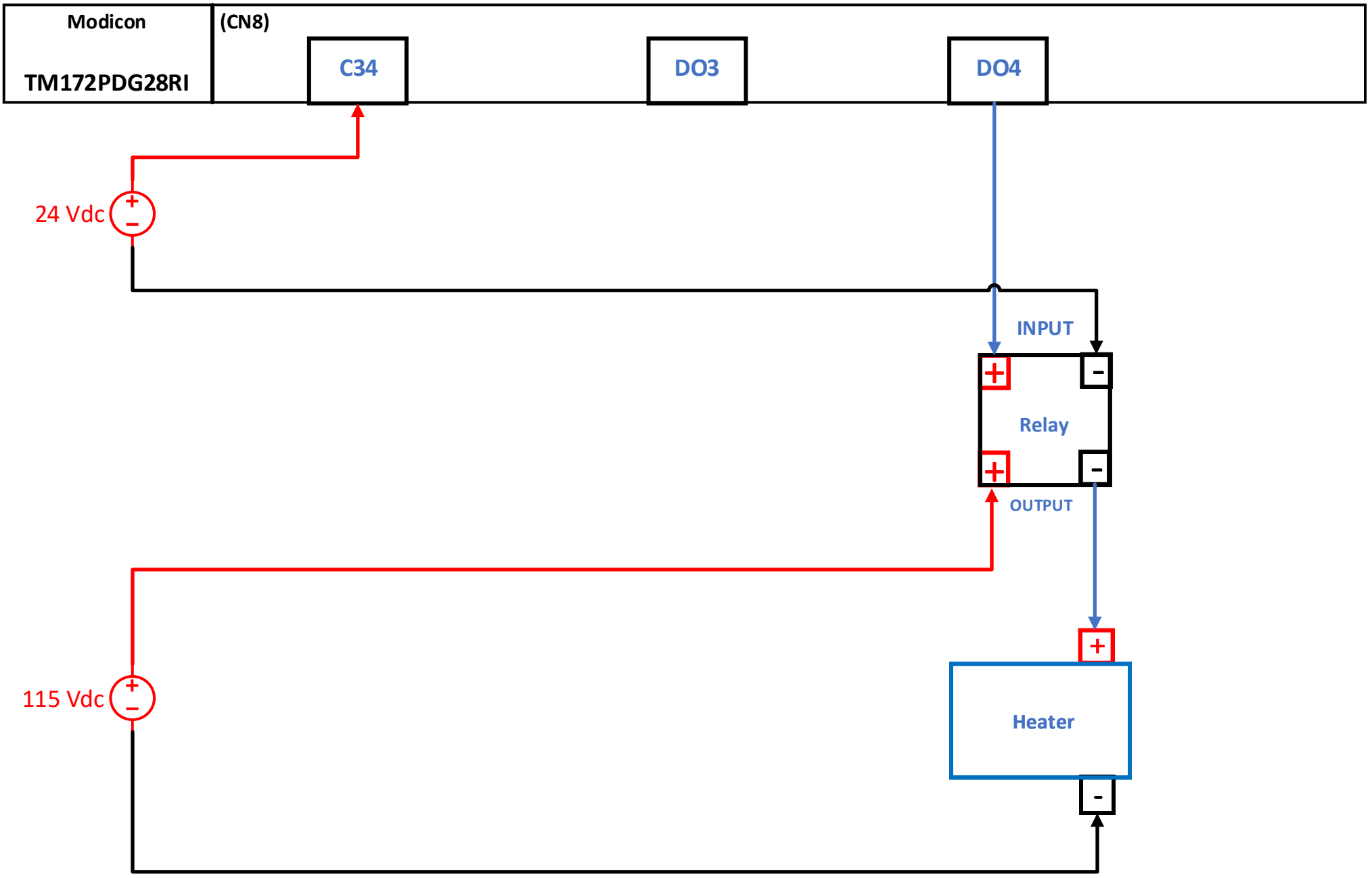
# Digital Input



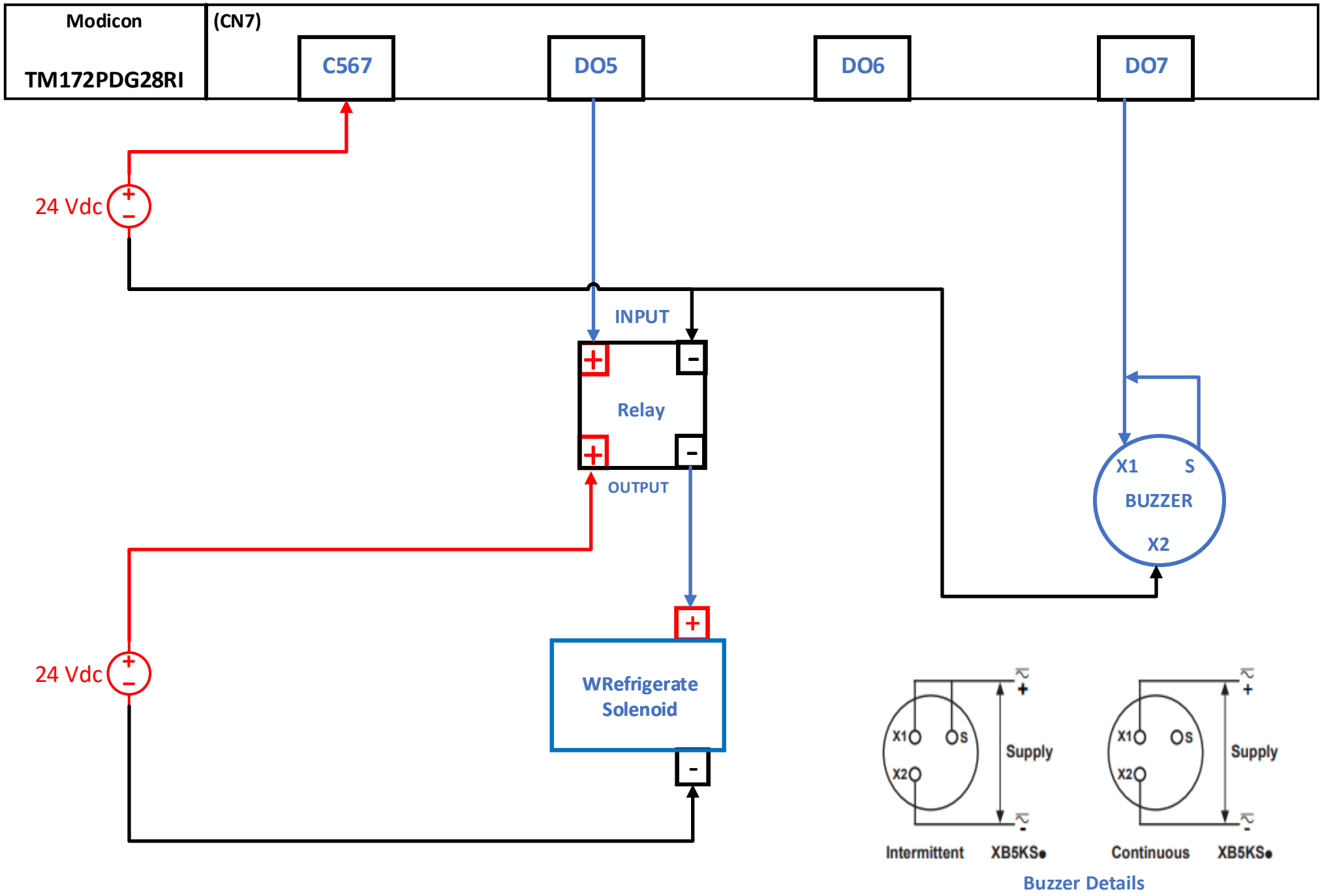
# Digital Output



# Digital Output

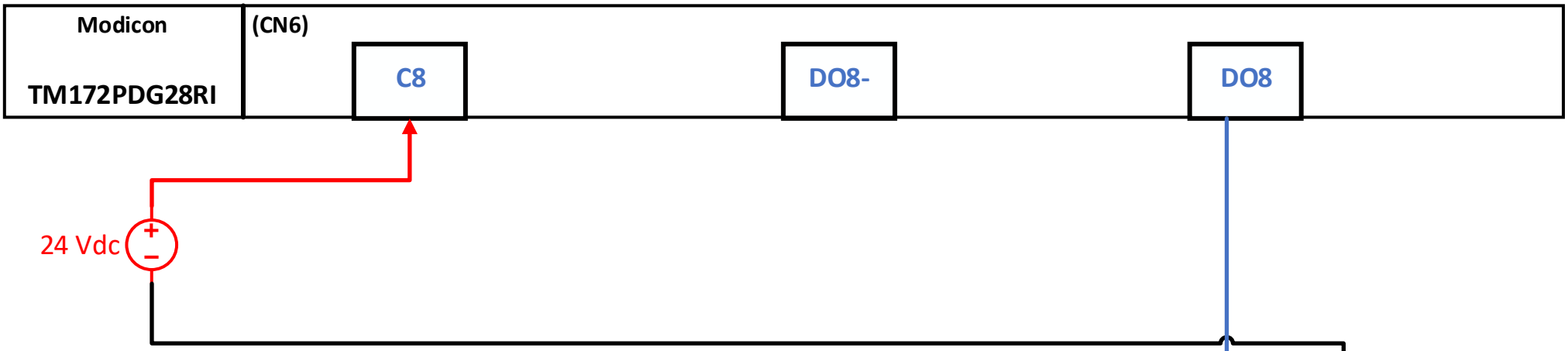


# Digital Output



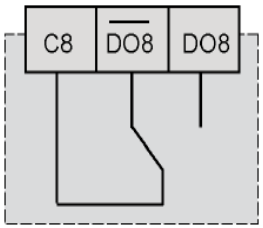

Buzzer Details

# Digital Output

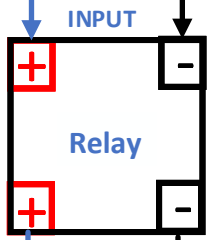



TM172•••28••
TM172•••42••

CN6



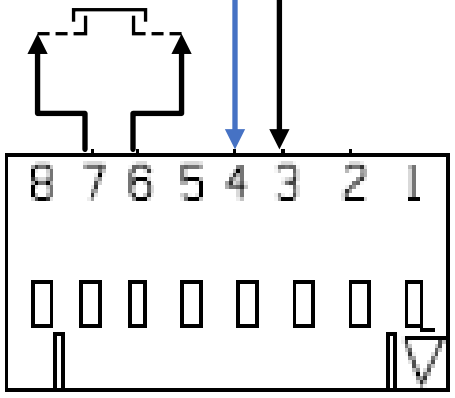

| | |
|---|---|
| C8 | Common for output relay 8<br>Maximum current: 3 A(1)(2) |
| DO8 | Output relay 8 - Normally open |
| DO8- | Output relay 8 - Normally closed |




Pin 4

Pin 3

Jumper




Compressor ON/OFF output

| JP5 | CONTROL INTERFACE |
|---|---|
| PIN # | FUNCTION |
| 1 | NC |
| 2 | GROUND |
| 3 | POWER ON/OFF INPUT, SWITCHED POWER (CONNECT TO ON/OFF SWITCH) |
| 4 | MOTOR POWER (100K IMPEDANCE) (CONNECT TO ON/OFF SWITCH) |
| 5 | TACHOMETER, OUTPUT 0-5V PULSE, FREQUENCY INDICATES MOTOR SPEED, RPM = 2.5 * Hz |
| 6 | +5V OUTPUT, USED IN CONJUNCTION WITH PIN #7 FOR SPEED CONTROL |
| 7 | SPEED CONTROL, INPUT 0-5V |
| 8 | FAULT, OUTPUT 0-5V, 0V = NO FAULT, 5V = FAULT |

Compressor JP5 Pin details

## NTC Analog Input

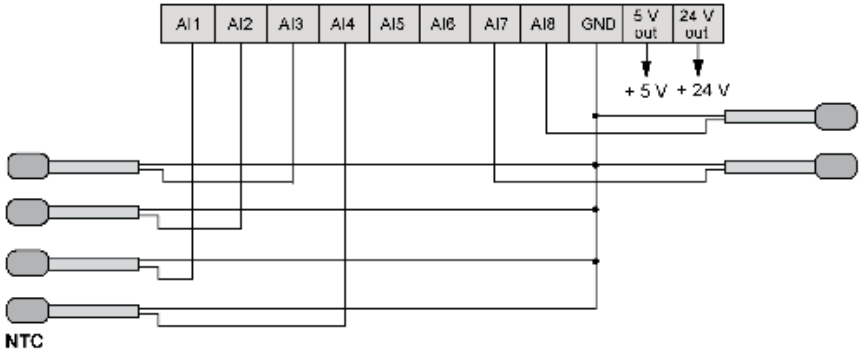
### Characteristics

Using the parameter `Cfg_Aix`, an analog input AIx can be configured to acquire a signal by a physical resource (probe, digital input, voltage/current signal) as specified in the following table:

| Cfg_Aix | Description | Accuracy Range | Accuracy | Resolution | Input Impedance |
|---|---|---|---|---|---|
| 0 | NTC (NK103)<br>10 kΩ at 25 °C<br>BETA value 3977 | -40…+137 °C (-40…+278.6 °F) | | | |
| | | -40…+110 °C (-40…+230 °F) | +/-1 °C (+/-1.8 °F) | 0.1 °C (0.18 °F) | 10 kΩ |
| | | +110… +137 °C (+230… +278.6 °F) | +/-1.9 °C (+/-3.42 °F) | | |
| 2 | NTC (103AT-2)<br>10 kΩ at 25 °C<br>BETA value 3435 | -50…+110 °C (-58…+230 °F) | +/-1 °C (+/-1.8 °F) | 0.1 °C (0.18 °F) | 10 kΩ |
| 7 | hΩ (NTC) | 0…150 kΩ | | | |
| | TM172P••07• TM172•••18• | 0…75 kΩ | +/-0.85 kΩ | 0.1 kΩ | 10 kΩ |
| | | 75…150 kΩ | +/-2.4 kΩ | | |
| | TM172•••28•• TM172•••42•• | 0…150 kΩ | +/-0.85 kΩ | | |
| | TM172E••R | 0…70 kΩ | +/-1 kΩ | | |
| | | 70…120 kΩ | +/-2.5 kΩ | | |
| | | 120…150 kΩ | +/-6 kΩ | | |

### Wiring Diagram Example

TM172•••28•• / TM172•••42•• CN5 NTC input connection:




| Pitch of the terminal block | Cabling length |
|---|---|
| 3.50 mm (0.14 in) | 10 m (32.808 ft) |

For more information about the wiring, refer to wiring best practices.

# Fast Digital Inputs

## Overview

If fast digital inputs are used as regular digital inputs, refer to regular digital inputs wiring diagram.

## Characteristics

The table indicates the digital inputs characteristics:

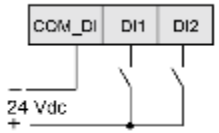
| Characteristic | Value | |
|---|---|---|
| | Used as fast input | Used as regular input |
| Type | Digital input | |
| Power draw (maximum) | 5 mA | |
| Working voltage | +0…38 Vdc | +0…38 Vdc<br>0…24 Vac +/-10 % 50/60 Hz |
| Pulse detection minimum length | Positive pulse 0.15 ms | Positive or negative pulse:<br>o TM172P••07• / TM172•••18•: 40 ms<br>o TM172•••28•• / TM172•••42••: 20 ms<br>o TM172E28R: 40 ms |
| Maximum frequency measurement | 2 kHz | - |
| Logic type | Digital inputs work in positive logic | Digital inputs work in positive or negative logic |
| Level 1 | +20…38 Vdc | +20…38 Vdc<br>24 Vac +/-10 % 50/60 Hz |
| Level 0 | +0…4 Vdc | +0…4 Vdc<br>0…3 Vac 50/60 Hz |

Logic type description

| Logic type | Active state |
|---|---|
| Positive logic | Output supplies current (source output)<br>Current flows to the input (sink input) |
| Negative logic | Output draws current (sink output)<br>Current flows from the input (source input) |

## Wiring Diagram Example

TM172•••07• / TM172•••18• / TM172•••28•• / TM172•••42•• (CN3) fast digital input:




| Pitch of the terminal block | Cabling length |
|---|---|
| 3.50 mm (0.14 in) | 10 m (32.808 ft) |

For more information about the wiring, refer to Best wiring practices.

## Related Devices and Connectors

The table indicates the related devices and connectors

| Related Device | Connector | | Label | Description |
|---|---|---|---|---|
| TM172•••07•<br>TM172•••18•<br>TM172•••28••<br>TM172•••42•• | CN3 | COM_DI DI1 DI2 | COM-DI | Common for digital inputs 1…2 |
| | | | DI1…DI2 | Regular digital inputs 1…2 |
| TM172E••R | CN2 | | | |

## Regular Digital Inputs

### Characteristics

The table indicates the digital inputs characteristics:

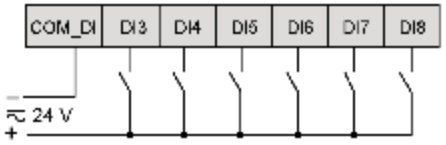
| Characteristic | Value |
|---|---|
| Type | Digital input |
| Power draw (maximum) | 5 mA |
| Working voltage | +0…38 Vdc<br>0…24 Vac +/-10 % 50/60 Hz |
| Pulse detection minimum length | o TM172•••28••/TM172•••42•• positive or negative pulse<br>o DI3…DI4: 20 ms<br>o DI5…DI8: 40 ms<br>o TM172•••42•• positive or negative pulse<br>o DI9…DI12: 40 ms<br>o TM172E28R positive pulse<br>o DI3…DI6: 40 ms |
| Logic type | Digital inputs work in positive logic<br>o TM172•••28••/TM172•••42••: Digital inputs work in positive or negative logic<br>o TM172E28R: Digital inputs work in positive logic |
| Level 1 | +20…38 Vdc<br>24 Vac +/-10 % 50/60 Hz |
| Level 0 | +0…4 Vdc<br>0…3 Vac 50/60 Hz |

Logic type description

| Logic type | Active state |
|---|---|
| Positive logic | Output supplies current (source output)<br>Current flows to the input (sink input) |
| Negative logic | Output draws current (sink output)<br>Current flows from the input (source input) |

### Wiring Diagram Example

TM172•••28•• / TM172•••42•• (CN4) regular digital input:




| Pitch of the terminal block | Cabling length |
|---|---|
| 3.50 mm (0.14 in) | 10 m (32.808 ft) |

For more information about the wiring, refer to Best wiring practices.

### Related Devices and Connectors

The table indicates the related devices and connectors

| Related Device | Connector | Label | Description |
|---|---|---|---|
| TM172•••28••<br>TM172•••42•• | CN4<br>COM_DI DI3 DI4 DI5 DI6 DI7 DI8 | COM-DI | Common for digital inputs 3…8 |
| | | DI3…DI8 | Regular digital inputs 3…8 |
| TM172•••42•• | CN12<br>COM_DI DI9 DI10 DI11 DI12 | COM-DI | Common for digital inputs 9…12 |
| | | DI9…DI12 | Regular digital inputs 9…12 |
| TM172E28R | CN8<br>COM_DI DI3 DI4 DI5 DI6 | COM-DI | Common for digital inputs 3…6 |
| | | DI3…DI6 | Regular digital inputs 3…6 |

# High voltage Relay SPST Digital Output

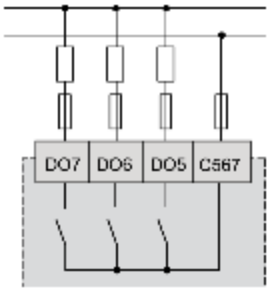
## Characteristics

The table indicates the digital outputs characteristics:

| Characteristic | Value |
|---|---|
| Maximum voltage | 250 Vac |
| Maximum current | 3 A resistive load, 2 FLA / 12 LRA |
| Minimum switching capacity | 100 mA / 5 Vdc |
| Electrical durability conforming to UL60730 | 100 000 cycles, 3 A at 250 Vac |

## Wiring Diagram Example

TM172•••28•• (CN7) SPST relay output:

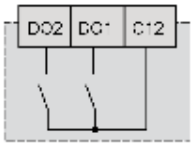
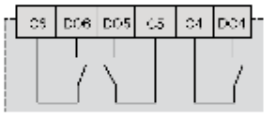
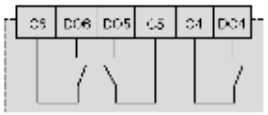
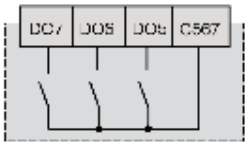
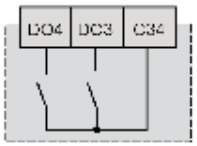
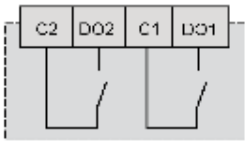



| Pitch of the terminal block |
|---|
| 5.00 mm (0.197 in) |

For more information about the wiring, refer to Best wiring practices.

## Related Devices and Connectors

The table indicates the related devices and connectors

| Related Device | Connector | | Label | Description |
|---|---|---|---|---|
| TM172•••07•<br>TM172•••18• | CN9 |  | C12 | Common for output relays 1…2<br>Maximum current: 6 A |
| | | | DO1…DO2 | Output relays 1…2 |
| TM172•••18R | CN15 |  | C4 | Common for output relay 4<br>Maximum current: 3 A |
| | | | C5 | Common for output relay 5<br>Maximum current: 3 A |
| | | | C6 | Common for output relay 6<br>Maximum current: 3 A |
| | | | DO4…DO6 | Output relays 4…6 |
| TM172•••18S | CN15 |  | C6 | Common for output relay 6<br>Maximum current: 3 A |
| | | | DO6 | Output relay 6<br>**NOTE:** DO4 and DO5 are SSR outputs. |
| TM172•••28••<br>TM172•••42•• | CN7 |  | C567 | Common for output relays 5…7<br>Maximum current: 9 A |
| | | | DO5…DO7 | Output relays 5…7 |
| | CN8 |  | C34 | Common for output relays 3…4<br>Maximum current: 6 A |
| | | | DO3…DO4 | Output relays 3…4 |
| TM172•••28R•<br>TM172•••42R• | CN9 |  | C1 | Common for output relay 1<br>Maximum current: 3 A |
| | | | C2 | Common for output relay 2<br>Maximum current: 3 A |
| | | | DO1…DO2 | Output relays 1…2 |