

# INSTRUCTION MANUAL

5 A Relay Output Module  
DIN-Rail and Termination Board  
Models D5099S-108 and D5099D-108



### General Description:

The single and dual channel D5099S-108 and D5099D-108 Relay Output modules provides; for each channel, an SPDT (Single Pole Double Throw) contact isolated from the input. Compatibility with specific DO cards with pulse testing needs to be verified.

Mounting on DIN-Rail or customized Termination Boards, in Safe Area.

## Technical Data

**Input:** 24 Vdc nom (20.4 to 28.8 Vdc), reverse polarity protected. Relay coils are internally protected with suppressor diodes.

**Current consumption @ 24 V:** 10 mA typical, for each channel.

**Power dissipation @ 24 V:** 0.24 W typical, for each channel.

**Isolation (Test Voltage):** Output/Input 1.5 KV.

**Output:** 1 voltage free SPDT relay Out 1: NO contact at terminals 7-8 and NC contact at terminals 7-11.

1 voltage free SPDT relay Out 2 (only for D5099D-108): NO contact at terminals 9-10 and NC contact at terminals 9-12.

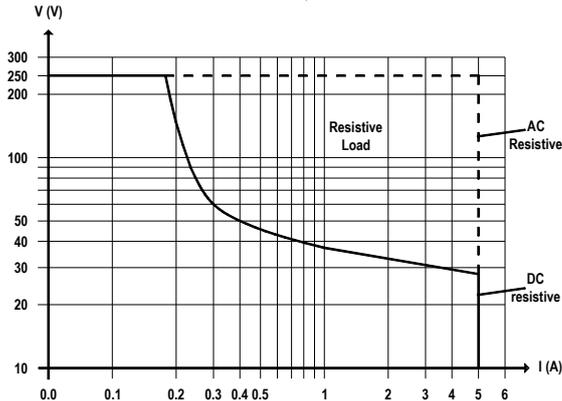
Terminals 7-8 (Out 1 NO contact) and 9-10 (Out 2 NO contact) are open when relay is de-energized, closed in energized relay condition.

Terminals 7-11 (Out 1 NC contact) and 9-12 (Out 2 NC contact) are closed when relay is de-energized, open in energized relay condition.

**Contact material:** Ag Alloy (Cd free), gold plated.

**Contact rating:** 5 A 250 Vac 1250 VA, 5 A 250 Vdc 140 W (resistive load). Min. switching current 1 mA.

**Contact inrush current:** 6 A at 24 Vdc, 250 Vac.



### DC and AC Load breaking capacity:

**Mechanical / Electrical life:**  $5 * 10^6 / 3 * 10^4$  operation, typical.

**Operate / Release time:** 6 ms / 12 ms typical, including contact bounce time.

**Frequency response:** 10 Hz maximum.



### Compatibility:

CE mark compliant, conforms to Directives:

2014/30/EU EMC, 2014/35/EU LVD, 2011/65/EU RoHS.

### Environmental conditions:

**Operating:** temperature limits - 40 to + 70 °C, relative humidity 95 %, up to 55 °C.

**Max altitude:** 2000 m a.s.l.

**Storage:** temperature limits - 45 to + 80 °C.

**Mounting:** on EN/IEC60715 TH 35 DIN-Rail or on customized Termination Board.

**Weight:** about 150 g D5099D-108, about 110 g D5099S-108.

**Connection:** by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm<sup>2</sup>.

**Location:** installation in Safe Area.

**Protection class:** IP 20.

**Dimensions:** Width 12.5 mm, Depth 123 mm, Height 120 mm.

## Ordering information

Model:	D5099	-108
1 channel	S	
2 channels	D	

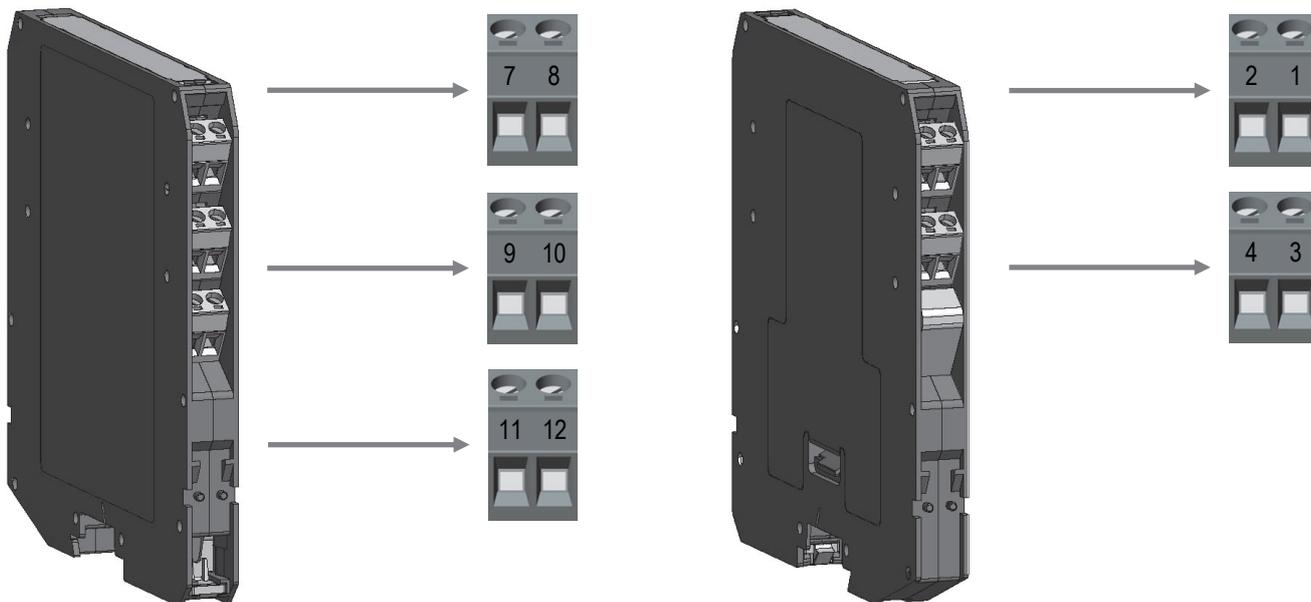
DIN-Rail accessories: Cover and fix MCHP196  
Terminal block male MOR017      Terminal block female MOR022

## Front Panel and Features



- 6 A inrush current at 24 Vdc / 250 Vac.
- Input/Output isolation.
- EMC Compatibility to EN61000-6-2, EN61000-6-4, EN61326-1, EN61326-3-1 for safety systems.
- Simplified installation using standard DIN-Rail and plug-in terminal blocks or customized Termination Boards.

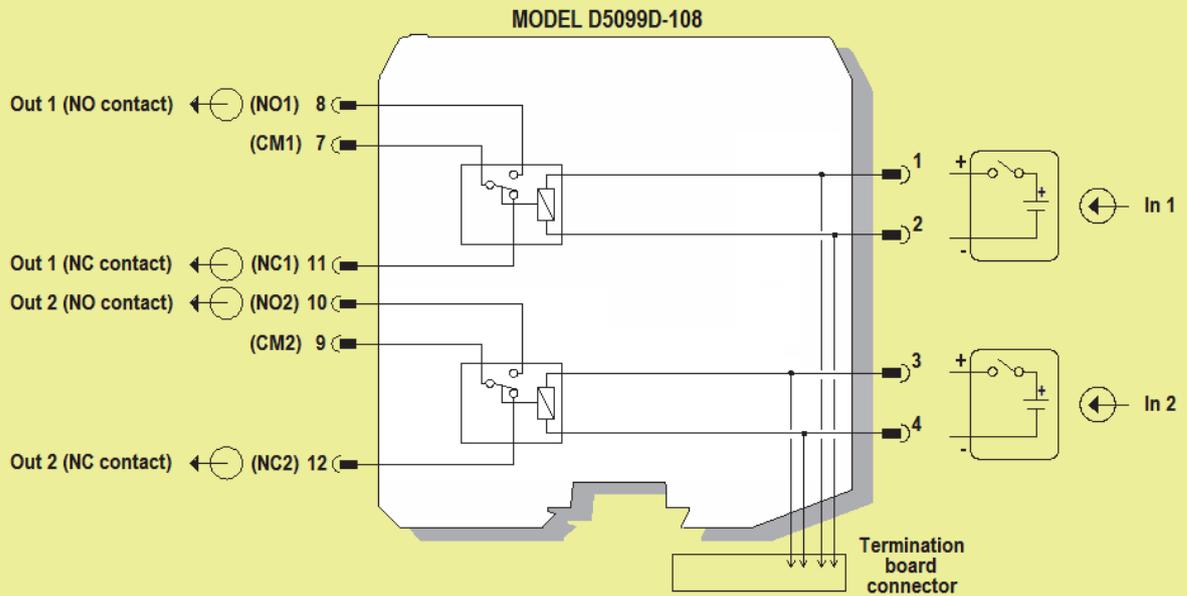
## Terminal block connections



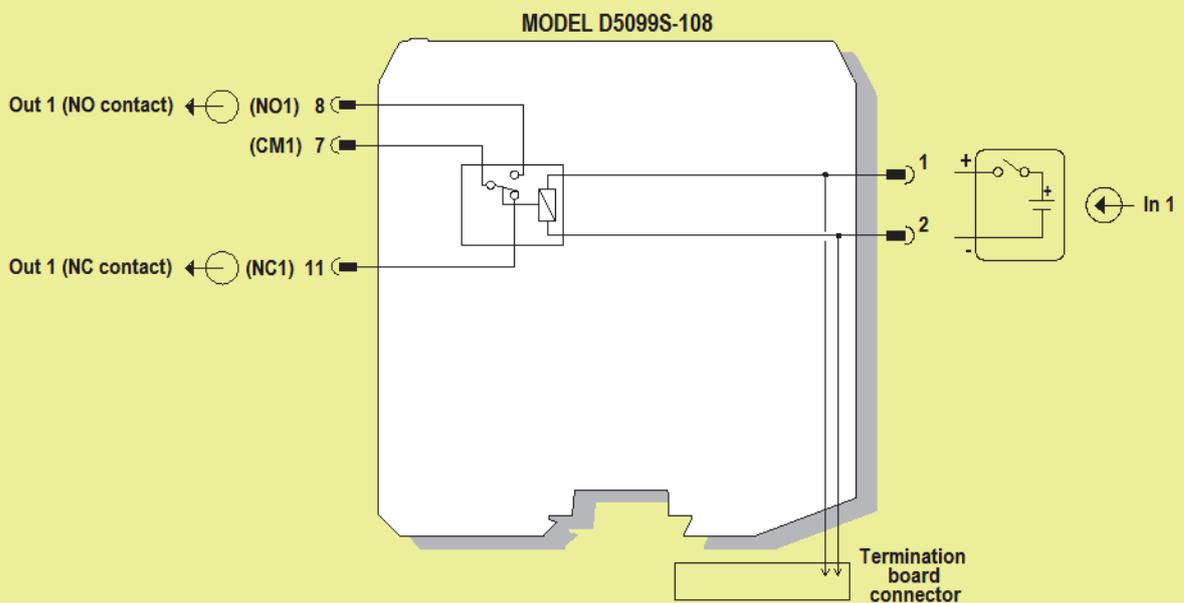
### SAFE AREA

<b>7</b>	CM1 Common pole of normally open and closed contacts (Output 1)	<b>1</b>	+ Input 1
<b>8</b>	NO1 pole of normally open contact (Output 1)	<b>2</b>	- Input 1
<b>9</b>	CM2 Common pole of normally open and closed contacts (Output 2)	<b>3</b>	+ Input 2
<b>10</b>	NO2 pole of normally open contact (Output 2)	<b>4</b>	- Input 2
<b>11</b>	NC1 pole of normally closed contact (Output 1)		
<b>12</b>	NC2 pole of normally closed contact (Output 2)		

SAFE AREA



Relay contacts shown in de-energized position.  
Terminals 7-8 and 9-10 are open; terminals 7-11 and 9-12 are closed.



Relay contacts shown in de-energized position.  
Terminals 7-8 are open; terminals 7-11 are closed.

To prevent relay contacts from damaging, connect an external protection (fuse or similar),  
chosen according to the relay breaking capacity diagram.

## Warning

D5099-108 series are electrical apparatus installed into standard EN/IEC60715 TH 35 DIN-Rail or customized Termination Boards located in Safe Area within the specified operating temperature limits Tamb -40 to +70 °C.

D5099-108 series must be installed, operated and maintained only by qualified personnel, in accordance to the relevant national/international installation standards, following the established installation rules.

**Warning: de-energize main power source (turn off power supply voltage) and disconnect plug-in terminal blocks before opening the enclosure to avoid electrical shock when connected to live hazardous potential.**

Failure to properly installation or use of the equipment may risk to damage the unit or severe personal injury.

The unit cannot be repaired by the end user and must be returned to the manufacturer or his authorized representative. Any unauthorized modification must be avoided.

## Operation

The D5099S-108 single and D5099D-108 double Relay Output modules are suitable for the switching of circuits, providing isolation between the inputs and output contacts.

D5099-108 series provides, for each channel, a NO contact for normally energized load and a NC contact for normally de-energized load.

For each channel, a "RELAY CHANNEL STATUS" yellow led lights when channel input is powered, showing that relay is energized.

## Installation

D5099-108 series are relay output modules housed in a plastic enclosure suitable for installation on EN/IEC60715 TH 35 DIN-Rail on customized Termination Board.

D5099-108 series can be mounted with any orientation over the entire ambient temperature range.

Electrical connections are accommodated by polarized plug-in removable screw terminal blocks which can be plugged in/out into a powered unit without suffering or causing any damage. Connect only one individual conductor per each clamping point, use conductors up to 2.5 mm<sup>2</sup> (13 AWG) and a torque value of 0.5-0.6 Nm. Use only cables that are suitable for a temperature of at least 85°C. The wiring cables have to be proportionate in base to the current and the length of the cable. On the section "Function Diagram" and enclosure side a block diagram identifies all connections.

Installation and wiring must be in accordance to the relevant national/international installation standards, make sure that conductors are well isolated from each other and do not produce any unintentional connection.

Connect load relay contacts checking the load rating to be within the contact maximum rating (5 A 250 Vac 1250 VA, 5 A 250 Vdc 140 W resistive load).

**To prevent relay contacts from damaging, connect an external protection (fuse or similar), chosen according to the relay breaking capacity diagram from installation instructions.**

The enclosure provides, according to EN60529, an IP20 minimum degree of protection (or similar to NEMA Standard 250 type 1). The unit shall be installed in an area of no more than pollution degree 2 according to EN/IEC60664-1. The end user is responsible to ensure that the operating temperature of the module is not exceeded in the end use application.

Units must be protected against dirt, dust, extreme mechanical (e.g. vibration, impact and shock) and thermal stress, and casual contacts. If enclosure needs to be cleaned use only a cloth lightly moistened by a mixture of detergent in water.

Any penetration of cleaning liquid must be avoided to prevent damage to the unit.

Any unauthorized modification must be avoided.

All circuits connected to D5099-108 series must comply with the overvoltage category II (or better) according to EN/IEC60664-1.

**Warning: de-energize main power source (turn off power supply voltage) and disconnect plug-in terminal blocks before opening the enclosure to avoid electrical shock when connected to live hazardous potential.**

## Start-up

Before powering the unit check that all wires are properly connected, particularly input and output wires. Check conductors for exposed wires that could touch each other causing dangerous unwanted shorts.

For each channel, enabling input, the "RELAY CHANNEL STATUS" yellow led must be lit and Out circuit with NO contact must be energized, while Out circuit with NC contact must be de-energized. Indeed, disabling input, the "RELAY CHANNEL STATUS" yellow led must be turned off and Out circuit with NO contact must be de-energized, while Out circuit with NC contact must be energized.