

D5099

Relay Out Module for 5 A Loads
Models D5099S



INSTRUCTION MANUAL

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1. CHARACTERISTICS

General Description:

The single channel D5099S is a Relay Output module, which provides 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 customized Termination Boards, in Safe Area / Non Hazardous Location or in Zone 2 / Class I, Division 2.

2. TECHNICAL DATA

Input: 24 Vdc nom (21.6 to 27.6 Vdc). Relay coil are internally protected with suppressor diodes.

Current consumption @ 24 V: 10 mA typical.

Power dissipation @ 24 V: 0.24 W typical.

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

Output: 1 voltage free SPDT relay contact identified with outputs: Out 1 (NO contact) terminals 7-8 and Out 2 (NC contact) terminals 9-10.

Terminals 7-8 (Out 1) are open when relay is de-energized , closed in energized relay condition.

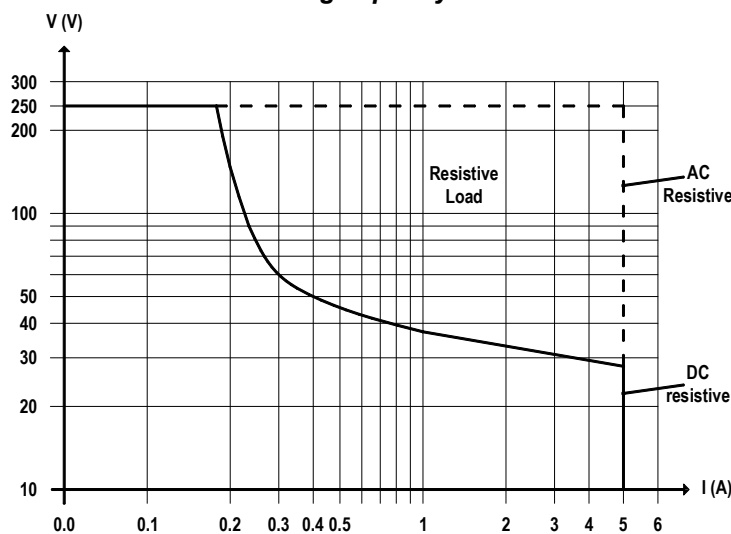
Terminals 9-10 are closed when relay is de-energized, open in energized relay condition.

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: 2014/34/EU ATEX, 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.

Safety Description:

ATEX: II 3G Ex ec nC IIC T4 Gc

IECEX: Ex ec nC IIC T4 Gc

UL: NI / I / 2 / ABCD / T4

C-UL: NI / I / 2 / ABCD / T4

EAC-EX: 2Ex ec nC IIC T4 Gc X

CCC: Ex ec nC IIC T4 Gc

Approvals:

BVS 18 ATEX E 079 X conforms to EN60079-0, EN60079-7, EN60079-15.

IECEX BVS 18.0066X conforms to IEC60079-0, IEC60079-7, IEC60079-15.

UL & C-UL E222308 conforms to UL 61010-1 and UL 121201 for UL and CAN/CSA C22.2 No.61010-1-12 and CSA C22.2 No. 213 for C-UL.

EAЭC RU C-IT.AA87.B.01516/25 conforms to GOST 31610.0, GOST 31610.7, GOST ,31610.15.

CCC n. 2024322310005795 conforms to GB/T 3836.1, GB/T 3836.3, GB/T 3836.8.

Mounting: on customized Termination Board.

Weight: about 110 g.

Connection: by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm².

Location: installation in Safe Area/Non Hazardous Locations or Zone 2, Group IIC T4 or Class I, Division 2, Group A,B,C,D, T4.

Protection class: IP 20.

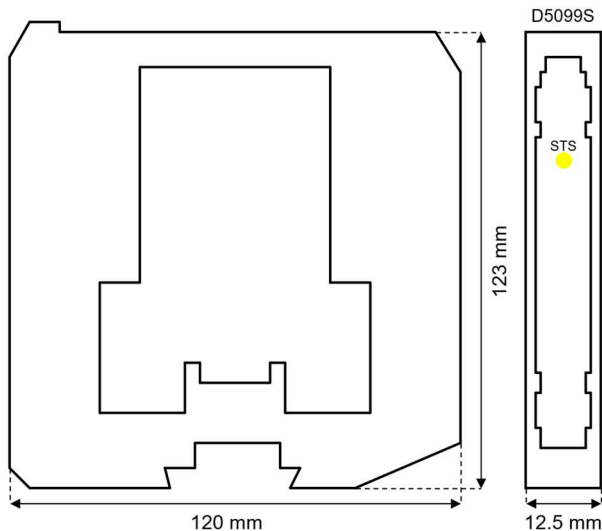
Dimensions: Width 12.5 mm, Depth 123 mm, Height 120 mm.

3. ORDERING INFORMATION

3.1 Ordering codes

D5099S: 1 channel

4. OVERALL DIMENSIONS



5. TERMINAL BLOCK CONNECTIONS

5.1 Field Side

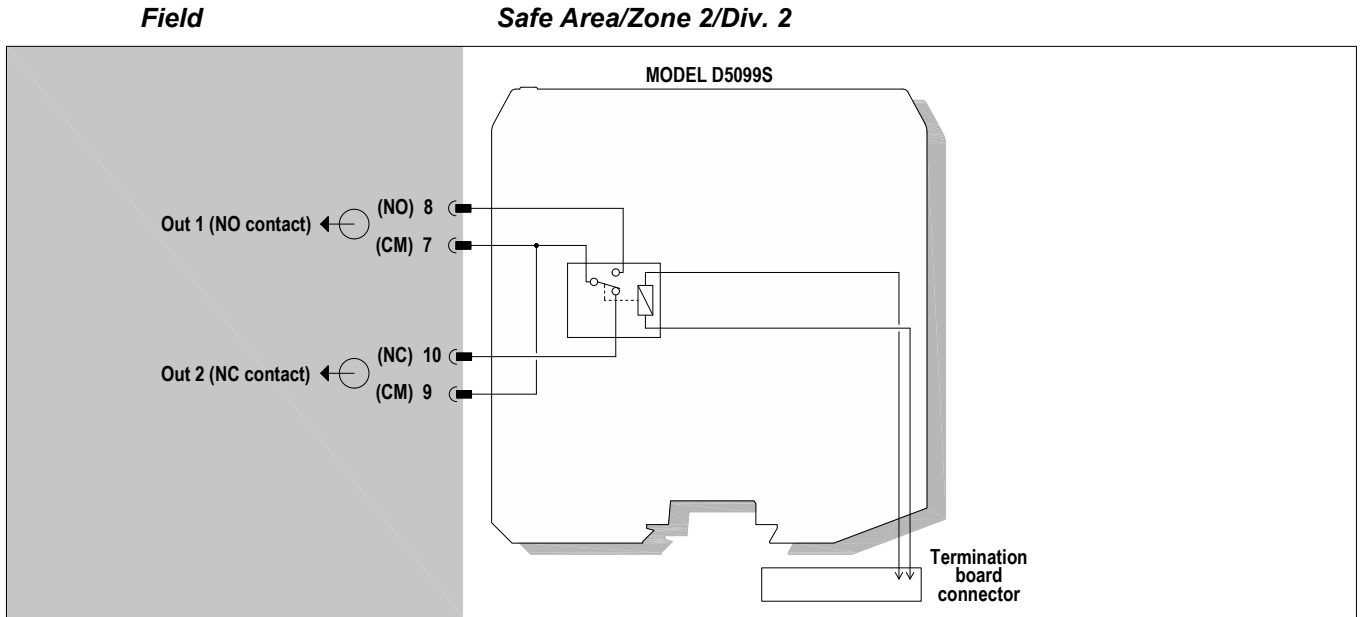
7: CM Common pole of normally open contact (Output 1)

8: NO pole of normally open contact (Output 1)

9: CM Common pole of normally closed contact (Output 2)

10: NC pole of normally closed contact (Output 2)

6. FUNCTION DIAGRAM



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

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

7. WARNING

D5099 series are electrical apparatus installed into customized Termination Boards located in Safe Area or Zone 2, Group IIC, Temperature T4 Hazardous Area within the specified operating temperature limits $T_{amb} -40$ to $+70^{\circ}\text{C}$.

D5099 series must be installed, operated and maintained only by qualified personnel, in accordance to the relevant national/international installation standards (e.g. EN/IEC60079-14 Electrical apparatus for explosive gas atmospheres - Part 14: Electrical installations in hazardous areas (other than mines)), following the established installation rules. De-energize power source (turn off power supply voltage) before plug or unplug the terminal blocks when installed in Hazardous Area or unless area is known to be nonhazardous.

Warning: substitution of components may impair suitability for Zone 2/Division 2. Avertissement: la substitution des composants peut nuire à l'aptitude à la Zone 2/Div. 2.

Explosion Hazard: to prevent ignition of flammable atmospheres, disconnect power before servicing or unless area is known to be nonhazardous. Danger d'Explosion: pour éviter l'inflammation d'atmosphères inflammables, débrancher l'alimentation avant l'entretien ou à moins que région est connue pour être non dangereuse.

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.

Avertissement: débrancher l'alimentation (couper la tension d'alimentation) et les blocs de jonction enfichables avant d'ouvrir le boîtier pour éviter les chocs électriques lorsqu'ils sont connectés à un potentiel dangereux.

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.

8. OPERATION

D5099 series relay module is suitable for the switching of circuits, providing isolation between the input and output contacts. D5099 series provides a NO contacts for normally energized load and a NC contact for normally de-energized load.

A "RELAY STATUS" yellow led lights when input is powered, showing that relay is energized.

9. INSTALLATION

D5099 series are relay output module housed in a plastic enclosure suitable for installation on customized Termination Board. D5099 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 (**for Zone 2 installations check the area to be nonhazardous before servicing**). Connect only one individual conductor per each clamping point, use conductors up to 2.5 mm² (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 (e.g. EN/IEC60079-14 Electrical apparatus for explosive gas atmospheres - Part 14: Electrical installations in hazardous areas (other than mines)), 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. When installed in EU Zone 2, the unit shall be mounted in a certified Ex enclosure that provides a degree of protection not less than IP54 in accordance with EN/IEC60079-15. When installed in a Class I, Division 2 Hazardous Location, the unit shall be mounted in a supplemental enclosure that provides a degree of protection not less than IP54. The enclosure must have a door or cover accessible only by the use of a tool. 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.

Electrostatic Hazard: to avoid electrostatic hazard, the enclosure of D5099 series must be cleaned only with a damp or antistatic cloth.

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 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.

10. 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. Enabling input, the "RELAY STATUS" yellow led must be lit and Out 1 circuit must be energized, while Out 2 circuit must be de-energized. Indeed, disabling input, the "RELAY STATUS" yellow led must be turned off and Out 1 circuit must be de-energized, while Out 2 circuit must be energized.