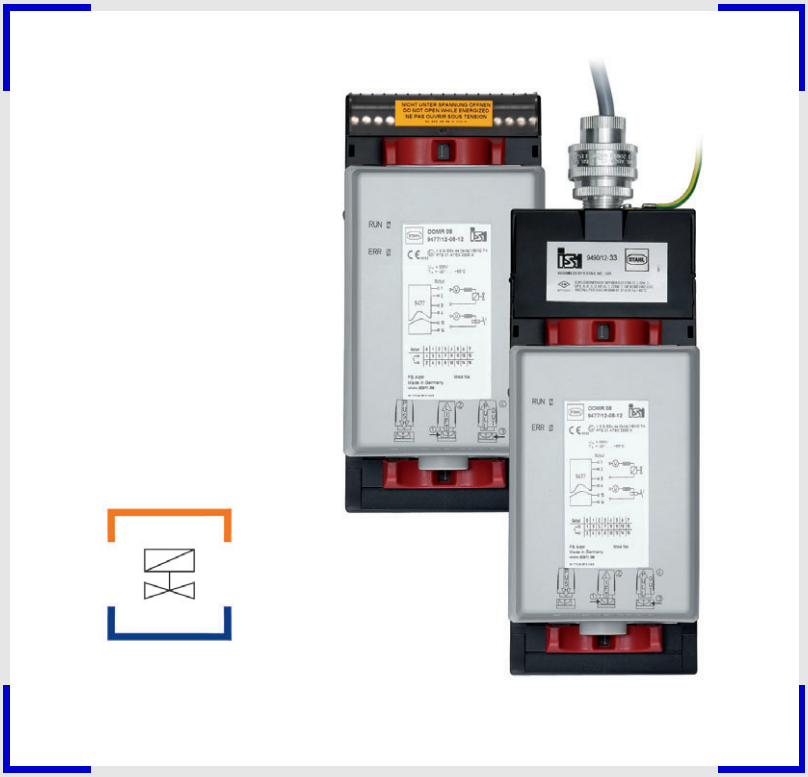
# Digital Output Module Relay and Socket for Zone 1 / Div. 1

Series 9477/12, 9490



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- > 6 or 8 channels: volt-free relay contact, normally open
- > High switching capacity, up to 100 VA
- > Galvanic separation between outputs and system
- > Connection of the field cables by means of Ex e terminals or conduit
- > Module can be replaced in operation (hot swap)

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The Digital Output Modules Relay are used for the operation of up to 6 or 8 non-intrinsically safe high energy solenoid valves. The outputs are designed as “normally open“ volt-free contacts. Solenoid valves are connected via Ex e terminals or a pre-wired sealed cable in rigid conduit . The modules can be installed on the same BusRail together with the other IO-modules.
The interface of the Digital Output Module with the internal data bus of the BusRail is designed with redundancy.

| | ATEX / IECEx | | | | | |
|---|---|---|---|---|---|---|
| Zone | 0 | 1 | 2 | 20 | 21 | 22 |
| Ex interface | | x | x | | | |
| Installation in | | x | x | | | |

| | Class I (NEC 505) | | | (NEC 506) | | |
|---|---|---|---|---|---|---|
| Zone | 0 | 1 | 2 | 20 | 21 | 22 |
| Ex interface | | x | x | | | |
| Installation in | | x | x | | | |

| | Class I | | Class II | | Class III | |
|---|---|---|---|---|---|---|
| Division | 1 | 2 | 1 | 2 | 1 | 2 |
| Ex interface | x | x | | | | |
| Installation in | x | x | | | | |

**WebCode 9477A**

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### Selection Table

| Version | Installation in | | Order number | Weight kg |
|---|---|---|---|---|
| Digital Output Module Relay | Zone 1 / Division 1 | 8 contacts, 60 V | **9477/12-08-12** | 2.570 |
| | | 6 contacts, 250 V | **9477/12-06-12** | 2.566 |
| Sockets for digital output modul relay | Zone 1, connection by means of Ex e terminals | for digital output module relay 9477/12-08-12 | **9490/11-33** | 0.560 |
| | | for digital output module relay 9477/12-06-12 | **9490/11-34** | 0.527 |
| | Division 1, connection via conduit*) | for digital output module relay 9477/12-08-12 | **9490/12-33** | 0.760 |
| | | for digital output module relay 9477/12-06-12 | **9490/12-34** | 0.760 |

*) For orders inside the USA, please use conduit hub 9491/00-13-70 as accessory

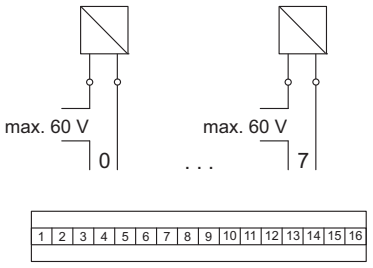
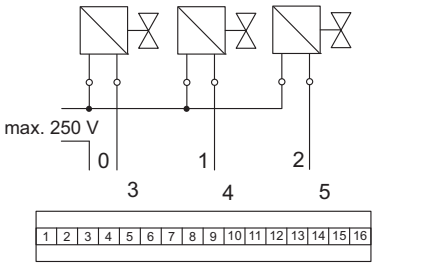
### Explosion Protection

| | |
|---|---|
| **Global (IECEx)** | |
| Gas | IECEx PTB 06.0001X<br>Ex d e [ia, ib] IIC T4 |
| **Europe (ATEX)** | |
| Gas | PTB 01 ATEX 2205 X<br>Ⓔx II 2 G Ex d e [ia, ib] IIC T4 |
| **Certifications and certificates** | |
| Certificates | IECEx, ATEX, Brazil (INMETRO), Canada (CSA), Kazakhstan (GOST K), Russia (GOST R), Serbia (SRPS), USA (FM), Belarus (operating authorisation) |
| Ship approval | ABS, BV, ClassNK, DNV, GL, LR, RS |
| **Safety data** | |
| Output terminal | Ex e II |
| Further information | see respective certifcate and operating instructions |
| **Further parameters** | |
| Installation in | Zone 1 / Division 1 |
| Further information | see respective certifcate and operating instructions |

### Technical Data

| Design | 9477/12-08-12 (60 V) | | 9477/12-06-12 (250 V) | | | |
|---|---|---|---|---|---|---|
| **Electrical data** | | | | | | |
| Ex outputs | | | | | | |
| Maximum switching voltage | 60 V AC | 30 V DC | 250 V AC | 30 V DC | 110V DC | 220 V DC |
| Maximum switching current | 2 A | 2 A | 2 A | 2 A | 0.3 A | 0.12 A |
| Maximum switching capacity | 100 VA | 60 W | 100 VA | 60 W | 33 W | 26 W |
| Number of channels | 8 | | 6 | | | |
| Contact | NO | | NO | | | |
| Minimum switching voltage | 5 V AC / DC | | 5 V AC / DC | | | |
| Minimum switching current | 2 mA | | 2 mA | | | |
| Service life | | | | | | |
| electrical | at max. 2 A | | at max. 2 A | | | |
| | AC 1 - load | ≥ 0.6 x $10^6$ switching cycles | AC 1 - load | ≥ 0.6 x $10^6$ switching cycles | | |
| | DC 1 - load (resistive load) | ≥ 100 x $10^3$ switching cycles | DC 1 - load (resistive load) | ≥ 100 x $10^3$ switching cycles | | |
| mechanical | | ≥ 10 x $10^6$ switching cycles | | ≥ 10 x $10^6$ switching cycles | | |
| Maximum contact load without damage to gold plating | at 24 V / 1.5 W | | at 24 V / 1.5 W | | | |
| Safe contact operation with damaged gold plating | from 12 V / 1.5 W | | from 12 V / 1.5 W | | | |
| Connections | 2.5 $mm^2$ / 14 AWG flexible | | 2.5 $mm^2$ / 14 AWG flexible | | | |

**Technical Data**

| Design | 9477/12-08-12 (60 V) | 9477/12-06-12 (250 V) |
|---|---|---|
| **Electrical data** | | |
| Galvanic separation | | |
| between power supply and system components | 1500 V AC | 1500 V AC |
| between two input / output modules | 500 V AC | 500 V AC |
| between outputs and system components | 375 V AC | 375 V AC |
| Outputs interconnected | 60 V AC | 250 V AC |
| Characteristic values | | |
| Maximum signal delay from internal bus to outputs | 10 ms | 10 ms |
| Settings | | |
| Safety position (output with communication error) | ON, OFF, hold last value | ON, OFF, hold last value |
| Diagnostics | | |
| Retrievable parameters | Manufacturer, type, version, serial number | Manufacturer, type, version, serial number |
| Module faults | • Internal primary bus faults<br>• Internal redundant bus faults<br>• No response<br>• Module does not correspond to configuration<br>• Hardware fault | • Internal primary bus faults<br>• Internal redundant bus faults<br>• No response<br>• Module does not correspond to configuration<br>• Hardware fault |
| Operator interface | | |
| Operation | LED green "RUN" | LED green "RUN" |
| Fault | LED red "ERR" | LED red "ERR" |
| Auxiliary power | | |
| Behaviour during undervoltage | Output = OFF | Output = OFF |
| Maximum power consumption | 4.8 W | 3.6 W |
| Maximum power dissipation | 4.8 W | 3.6 W |
| Electrical connection | | |
| Ex e terminals / conduit | 2.5 mm² / 14 AWG | 2.5 mm² / 14 AWG |
| Connection diagram |  |  |

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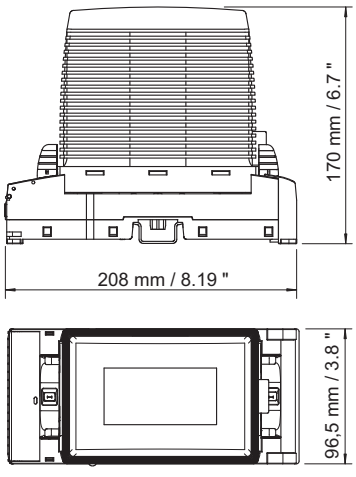
**Technical Data**

| | |
|---|---|
| **Ambient conditions** | |
| Ambient temperature | -20 ... +65 °C |
| Storage temperature | -20 ... +70 °C |
| Maximum relative humidity | 95 % (no condensation) |
| Sinusoidal vibration (IEC EN 60068-2-6) | 1 g in frequency range between 10 ... 500 Hz<br>2 g in frequency range 45 ... 100 Hz |
| Semi-sinusoidal shock (IEC EN 60068-2-27) | 15 g (3 shocks per axis and direction) |
| Electromagnetic compatibility | Tested according to the following standards and regulations:<br>EN 61326-1 (1998) IEC 1000-4-1...6, NAMUR NE 21 |
| **Mechanical data** | |
| Module enclosure | Polyamide 6GF |
| Fire resistance (UL 94) | HB |
| Degree of protection (IEC 60529) | |
| Modules | IP30 |
| Connections | IP20 |
| **Mounting / Installation** | |
| Installation conditions | |
| Mounting type | on 35 mm DIN rail NS 35/15 |
| Mounting orientation | horizontal and vertical |
| Engineering notes | • The module is intended for IS1 field stations and may only be installed in Zone 1 or Division 1. This requires installation in a suitable enclosure. The module is mounted to the BusRail of the IS1 system by means of base 9490/11-3. or 9490/12-3.<br>• Only non-intrinsically safe circuits may be connected to the Ex e connection terminals or the pre-wired cable of the module, provided that the maximum values of current, voltage and power (refer to technical data) are adhered to. The switching current of the contacts must be limited to the value given in the table (e.g. by fuse or current limitation). |

**Dimensional Drawings** (All Dimensions in mm / inches) - Subject to Alterations

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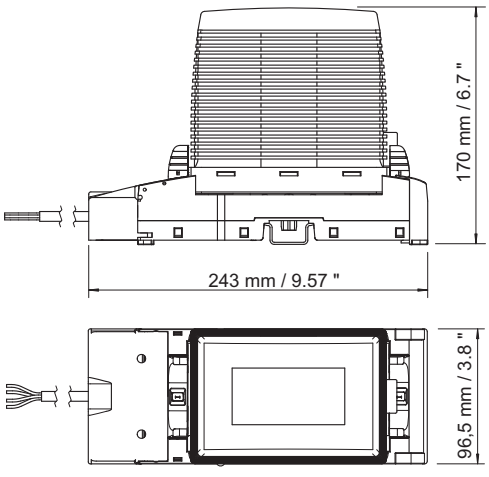
**Digital output module relay for Zone 1**

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**Digital output model relay with base for Division 1**

We reserve the right to make alterations to the technical data, dimensions, weights, designs and products available without notice. The illustrations cannot be considered binding.