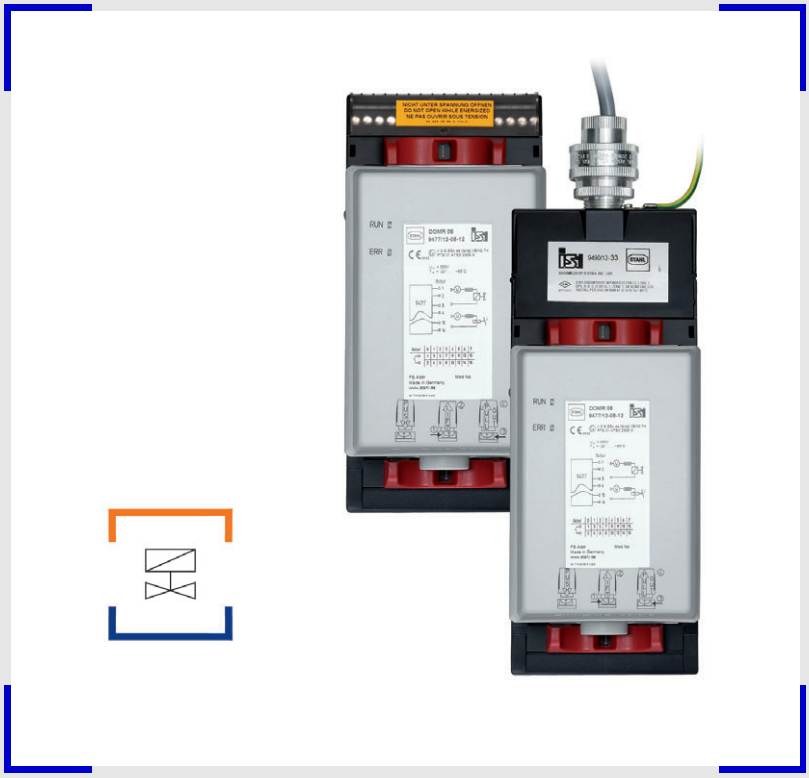
Digital Output Module Relay and Socket for Zone 1 / Div. 1

Series 9477/12, 9490



12771E00

- 6 or 8 channels: volt-free relay contact, normally open
- High switching capacity, up to 100 VA
- Galvanic isolation 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)

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

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 CPU & Power Modules	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	PTB 06.0001X Ex de [ia/ib] IIC/IIB T4
Europe (ATEX)	
Gas	PTB 01 ATEX 2205 X Ⓔx II 2 G Ex d e [ia, ib] IIC T4
USA (NEC)	
Gas	3007532 (FM) 9477/12-0.-12 & 9490/12-3.: XP-IS/I/1/ABCD/T4 Ta = 65 °C, XP-IS/I/1/IIC/T4 Ta = 65 °C, IS/I/1/[AEx ia,ib] IIC
Russia (GOST-R)	
Gas	2Exde[ib/ia]IIC/IIBT4
Certificates and approvals	
Certificates	IECEx, ATEX, Brazil (INMETRO), Canada (CSA), Kazakhstan (GOST-K), Russia (GOST-R), Serbia (IZP), USA (FM), Belarus (GOST-B)
Other approvals	ship approval (ABS, BV, ClassNK, DNV, GL, LR)
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

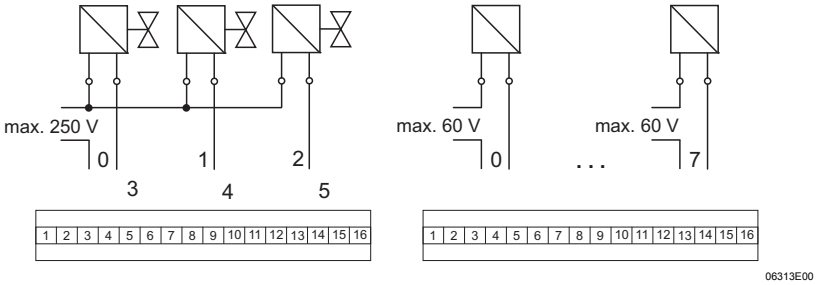
Electrical data						
Version	**9477/12-08-12 (60 V)**		**9477/12-06-12 (250 V)**			
Ex outputs						
Maximum switching voltage	60 V AC	30 V DC	250 V AC	30 V DC	110V DC	220 V DC
Maximum switching current	2 A	2 A	2 A	2 A	0.3 A	0.12 A
Maximum switching capacity	100 VA	60 W	100 VA	60 W	33 W	26 W
Number 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			

Technical data

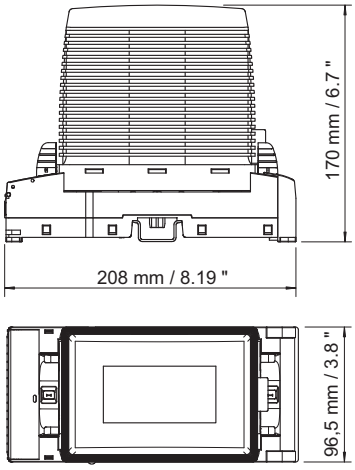
Electrical data

Version	**9477/12-08-12 (60 V)**		**9477/12-06-12 (250 V)**	
Ex outputs				
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	
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 • Internal redundant bus faults • No response • Module does not correspond to configuration • Hardware fault		• Internal primary bus faults • Internal redundant bus faults • No response • Module does not correspond to configuration • 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	

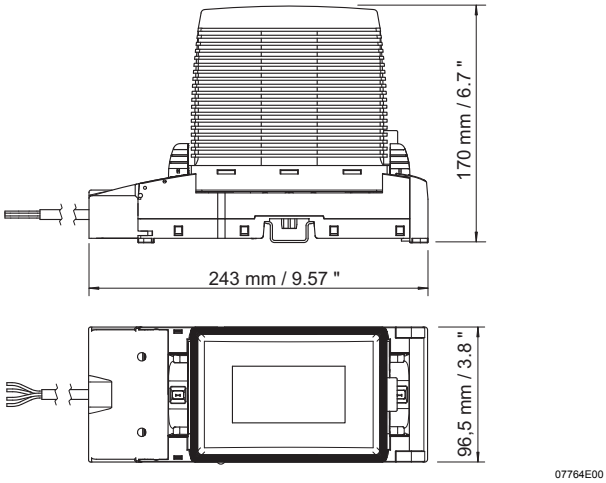
Technical data

Electrical data	
Electrical connection	
Ex e terminals / conduit	2.5 mm² / 14 AWG
Connection diagram	
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 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: 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. • 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



Digital output module relay for Zone 1



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.