

09729E00

Digital Output Module 8-Channel Version Series 9475/.2-08-.. from Rev. F

- 8 channels for Ex i / I.S. solenoid valves, piezo and booster valves
- Intrinsically safe outputs Ex ia IIC
- Additional input for "Outputs OFF" available (acc. to IEC 61508 up to SIL 2)
- Galvanic isolation between outputs and system
- Open-circuit and short-circuit monitoring for each field circuit
- Functions with adjustable parameters
- Module can be replaced in operation (hot swap)

Zone	0	1	2	20	21	22
Class	I			II / III		
Zone	0	1	2	20	21	22
Ex interface	X	X	X	X	X	X
Installation in		X	X		X ^{*)}	X ^{*)}

Class	I		II / III	
Division	1	2	1	2
Ex interface	X	X	X	X
Installation in	X	X	X ^{*)}	X ^{*)}

^{*)} suitable enclosure necessary

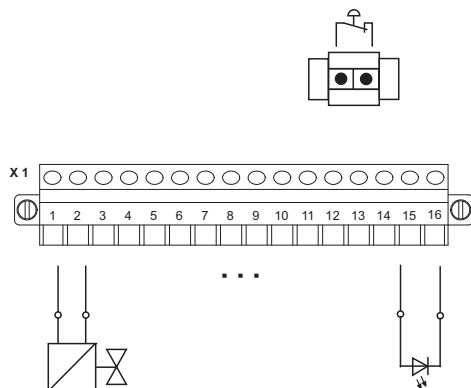


The Digital Output Modules are used for the operation of up to 8 intrinsically safe solenoid valves or indicators. The outputs are short-circuit proof.

All channels are individually monitored for open-circuit and short-circuit. Open-circuit monitoring is also active when the output is de-energized.

The interface of the Digital Output Module with the internal data bus of the BusRail is designed with redundancy.

Modules 9475/22-08-.1 are equipped with an additional Ex i / I.S. digital input for disconnecting all outputs of a module simultaneously ("Outputs OFF") acc. to SIL 2 / IEC 61508.



06306E00

Selection Table						
Version	Channels	Safety data Ex ia IIC		Digital input (Outputs OFF)	Order number	Weight kg / lbs
		Max. voltage U_o / V_{oc}	Max. current I_o / I_{sc}			
Digital Output Module	8	11.5 V	75 mA	no	9475/12-08-41	0.275 / 0.606
		19.9 V	145 mA	no	9475/12-08-51	0.275 / 0.606
		26.2 V	107 mA	no	9475/12-08-61	0.275 / 0.606
		19.9 V	145 mA	yes	9475/22-08-51	0.275 / 0.606
		26.2 V	107 mA	yes	9475/22-08-61	0.275 / 0.606

Explosion Protection								
Certificates	IECEx PTB 06.0001X Europe (ATEX) PTB 99 ATEX 2220 USA (NEC) 3007532 (FM) Russia (GOST-R) 04.B00806 (CTB) Other countries Canada (CSA), Brazil (INMETRO), Belarus (Promatomnadzor)							
Marking	IECEx Ex ib [ia] IIC/IIB T4 Europe (ATEX) $\text{Ex II 2 (1) G EEx ib [ia] IIC / IIB T4}$ $\text{Ex II (1/2) D [Ex iaD/ibD]}$ USA (NEC) IS/I/1/ABCD/T4 Ta = 65 °C, IS/II/1/IIC/T4 Ta = 65 °C, AIS/I,II,III/1/ABCDEFGH, [AEx ia] IIC, NI/II/2/ABCD/T4 Ta = 65 °C, NI/II/2/IIC/T4 Ta = 65 °C, AIS/I,II,III/1/ABCDEFGH, [AEx ia] IIC Russia (GOST-R) 1Exib[ia]IIC/IIBT4							
Other certificates	Marine (DNV, ABS)							
Safety data for digital outputs (ATEX)								
Ex ib	Type	U_o / V_{oc} [V]	I_o / I_{sc} [mA]	P_o [mW]	L_o / L_a [mH]		C_o / C_a [nF]	
					IIC	IIB	IIC	IIB
	9475/12-08-41	11.5	50	216	2	2	610	3600
	9475/12-08-51	19.9	38	558	1	1	110	860
	9475/22-08-51							
	9475/12-08-61	26.2	30	565	0.5	0.5	79	490
	9475/22-08-61							
Ex ia	The effective internal capacitances and inductances are negligible.							
	Type	U_o / V_{oc} [V]	I_o / I_{sc} [mA]	P_o [mW]	L_o / L_a [mH]		C_o / C_a [nF]	
					IIC	IIB	IIC	IIB
	9475/12-08-41	11.5	75	216	6.70	25	1640	11200
	9475/12-08-51	19.9	145	719	1.44	7.47	223	1420
	9475/22-08-51							
	9475/12-08-61	26.2	107	697	1.57	9.75	97	750
	9475/22-08-61							
Safety data for digital input (ATEX)								
Ex ia	for disconnecting all outputs ("Plant-STOP")							
	Only type	U_o / V_{oc} [V]	I_o / I_{sc} [mA]	P_o [mW]	L_o / L_a [mH]		C_o / C_a [nF]	
					IIC	IIB	IIC	IIB
	9475/22-08-51	6.6	67	110	8.24	31.4	22	500
	9475/22-08-61							
Further information	The effective internal capacitances and inductances are negligible. see respective certificate							



Explosion Protection

Functional safety (IEC 61508)

Digital input	"Plant-STOP"		
Test report	Exida FMEDA Stahl 03/05-19R001		
Max. SIL	2		
Safe state	All outputs "OFF"		
Safe Failure Fraction SFF	85.8 % (type A)		
MTBF (to SN 29500)	38 years (at 40 °C / 104 °F)		
PFD _{AVG} at T _[Proof]	T _[Proof] 1 year	5 years	10 years
	PFD _{AVG} 1.53 x 10 ⁻⁴	7.67 x 10 ⁻⁴	1.53 x 10 ⁻³

Further information see test report

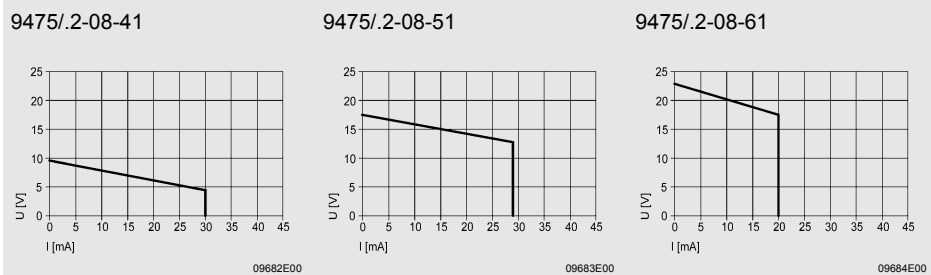
Technical Data

Ex i / I.S. outputs

Type	No-load voltage [V]	U [V]	I [mA]	R _i [Ω]
9475/12-08-41	9.8	4.3	30	182
9475/12-08-51	17.4	12.7	29	163
9475/22-08-51				
9475/12-08-61	23.1	17.4	20	287
9475/22-08-61				

Number of channels 8

Output characteristics



Digital input; Ex i / I.S.

Function Deactivate all outputs ("Plant-STOP"), only types 9475/22-08-51, 9475/22-08-61

Supply voltage 5 V

Internal resistance 1.6 kΩ

Max. voltage for outputs in normal operation 1 V

Min. voltage for disconnecting all outputs ("Plant-STOP") 3.5 V

Galvanic isolation

between power supply and system components 1500 V AC

between two input / output modules 500 V AC

between inputs/outputs and system components 500 V AC

The outputs and the input "Plant-STOP" of an I/O module have a common negative conductor.

Settings


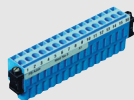


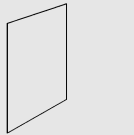

Open-circuit and short-circuit monitoring ON, ON without testing current, OFF

Safety position (output during communication faults) OFF, ON, hold last value



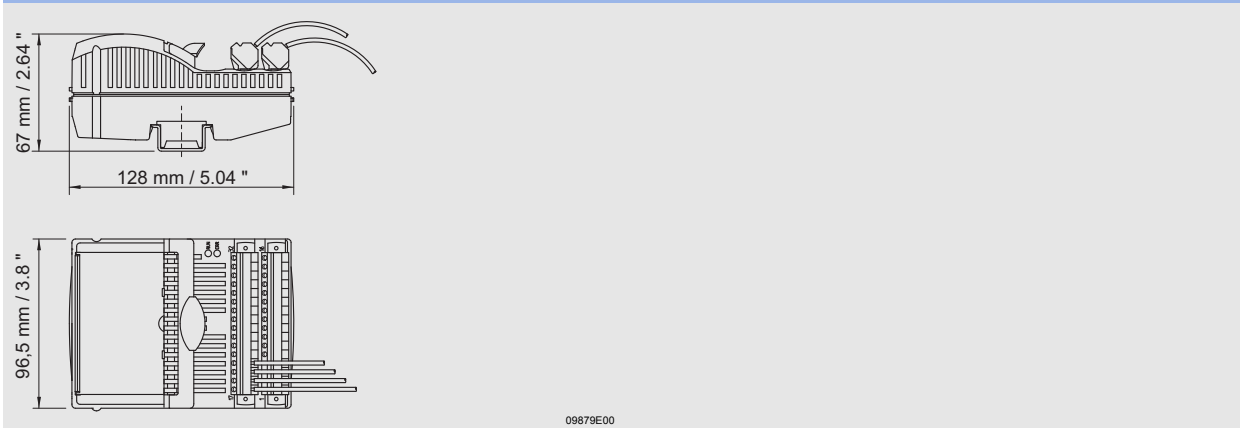


Technical Data									
Diagnostics									
Retrievable parameters	Manufacturer, type, version, serial number								
Module faults	<ul style="list-style-type: none"> • Internal primary bus faults • Internal redundant bus faults • No response • Module does not correspond to configuration • Hardware fault • Hardware disconnection of outputs (by "Outputs OFF") 								
Signal fault									
Open circuit	<table border="1"> <thead> <tr> <th>9475/...-41</th> <th>9475/...-51</th> <th>9475/...-61</th> </tr> </thead> <tbody> <tr> <td>> 10 kΩ</td> <td>> 12 kΩ</td> <td>> 13 kΩ</td> </tr> </tbody> </table>	9475/...-41	9475/...-51	9475/...-61	> 10 kΩ	> 12 kΩ	> 13 kΩ		
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> 10 kΩ	> 12 kΩ	> 13 kΩ							
Short circuit	< 95 Ω								
Terminal voltage for non-linear loads	> 4 V								
Power supply									
Behaviour with undervoltage	All outputs are switched "OFF"								
Typical power input	<table border="1"> <thead> <tr> <th>Type</th> <th>All outputs short-circuited</th> </tr> </thead> <tbody> <tr> <td>9475/12-08-41</td> <td>5.3 W</td> </tr> <tr> <td>9475/12-08-51, 9475/22-08-51</td> <td>6.2 W</td> </tr> <tr> <td>9475/12-08-61, 9475/22-08-61</td> <td>6.4 W</td> </tr> </tbody> </table>	Type	All outputs short-circuited	9475/12-08-41	5.3 W	9475/12-08-51, 9475/22-08-51	6.2 W	9475/12-08-61, 9475/22-08-61	6.4 W
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Mechanical data									
Module enclosure	Polyamide 6GF								
Fire protection class (UL 94)	V2								
Degree of protection (IEC 60529)									
Modules	IP30								
Connections	IP20								
Electrical connection									
Ex i / I.S. field signals	Plug-in terminals 16-pole with catch, 2.5 mm ² / up to 14 AWG, screw or spring type								
Operator interface									
Operation	LED green "RUN"								
Fault	LED red "ERR"								
Installation conditions									
Mounting type	on 35 mm DIN rail NS 35/15								
Installation position	horizontal and vertical								
Ambient conditions									
Ambient temperature	- 20 ... + 65 °C / - 4 ... + 149 °F								
Storage temperature	- 40 ... + 70 °C / - 40 ... + 158 °F								
Maximum relative humidity	95 % (no condensation)								
Vibration, sinusoidal (IEC EN 60068-2-6)	1 g in frequency range between 10 ... 500 Hz 2 g in frequency range 45 ... 100 Hz								
Shock, semi-sinusoidal (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								
Note	You will find a list of compatible Ex i / I.S. solenoid valves, indicating lamps, etc. on our homepage www.stahl.de .								

Accessories and Spare Parts			
Designation	Illustration	Description	Order number
Plug-in terminal		2.5 mm ² / 14 AWG with catch, 16-pole, screw connection, blue, for connecting the field signals to I/O modules, for intrinsically safe field circuits Designation: 1 ... 16 Attention: An additional terminal is necessary for I/O module Series 9470 and 9480. Designation: 17 ... 32	162702
		2.5 mm ² / 14 AWG with catch, 16-pole, spring connection, blue, for connecting the field signals to I/O modules, for intrinsically safe field circuits including test jacks Designation: 1 ... 16 Attention: An additional terminal is necessary for I/O module Series 9470 and 9480. Designation: 17 ... 32	162695
Labelling strips		„FB No ... Mod No ...“ for plug-in terminals, sheet with 26 labels	162788
Warning sign		„Only clean modules with damp cloths“	162796
DIN A4 sheet		For I/O module labels; 6 labels each sheet; print out with IS Wizard software; packaging unit = 20 sheets	162832
Partition		For assembly between intrinsically safe and non-intrinsically safe connectors of the I/O modules, in order to adhere to the required 50 mm / 2 in distance	162740



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



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.