Digital Output Module 4-Channel Version for Zone 1
Series 9475/32-04-.2

15236E00

> 4-channel digital output
> Intrinsically safe outputs Ex ia
> For Ex i solenoid valves and display elements
> Additional Ex i control input for "Plant STOP" (acc. IEC61508 up to SIL2)
> Line fault monitoring and LED display per channel
> LED display for output signal per channel
> Diagnostics based on NE107
> Module can be replaced in the hazardous area under power (hot swap)

The Digital Output Module is used for connecting of up to 4 intrinsically safe solenoid valves, indication or signal elements to the IS1 Remote I/O system. The additional Ex i control input "Plant STOP" is used for safe switching off all outputs. All channels are individually monitored for wire breakage and short-circuit. The Ex i outputs are short-circuit proof, galvanically connected to each and galvanically separated from the system.

Compatible spare for IS1 I/O modules:
Series 9475/12-04-11, 9475/12-04-21, 9475/22-04-21

	ATEX / IECEx							NEC 505 Class I							NEC 500					
																Class I		Class II		Class III	
Zone	0	1	2	20	21	22	Zone	0	1	2	20	21	22	Division	1	2	1	2	1	2
Ex interface	x	x	x	x	x	x	Ex interface	x	x	x	x	x	x	Ex interface	x	x	x	x	x	x
Installation in		x	x		x	x	Installation in		x	x		x	x	Installation in	x	x	x	x	x	x

WebCode   9475E

A4

www.stahl.de

Explosion Protection

Global (IECEx)

Gas and dust	IECEx DEK 12.0070X
	Ex ia [ia Ga] IIC T4 Gb
	[Ex ia Da] IIIC

Europe (ATEX)

Gas and dust	DEKRA 12 ATEX0232X
	⟨Ex⟩ II 2 (1) G Ex ia [ia Ga] IIC T4 Gb
	⟨Ex⟩ II (1) D [Ex ia Da] IIIC

Certifications and certificates

Certificates	ATEX, IECEx, Brazil (INMETRO), India (PESO), Canada (cFM), Kazakhstan (TR), Russia (TR), Serbia (SRPS), USA (FM), Belarus (TR)
Ship approval	ABS, CCS, ClassNK, DNVGL, LR, RINA, RS

Further parameters

Installation	in Zone 1, Zone 2, Zone 21, Zone 22 and in the safe area
Further information	see respective certificate and operating instructions

Safety data

Design : 9475/32-04-12

Max. voltage U_o : 19.7 V

Output ia

Max. current I_o : 142 mA

Max. power P_o : 698 mW

Max. connectable inductance L_o/ capacity C_o

IIC

L_o [mH]	1.3	1.1	0.5	0.2	0.1	0.05	
C_o [nF]	99	109	119	149	189	220	

IIB / IIIC

L_o [mH]	7.5	5.0	2.0	0.5	0.2	0.1	0.05
C_o [nF]	669	879	889	889	989	1189	1439

Output ib

Max. current I_o : 53.8 mA

Max. power P_o : 617 mW

Max. connectable inductance L_o/ capacity C_o

IIC

L_o [mH]	3.1	2.0	0.6	0.5	0.2	0.1	0.05
C_o [nF]	109	109	119	119	149	189	220

IIB / IIIC

L_o [mH]	27	20	10	5.0	0.2	0.1	0.05
C_o [nF]	499	609	869	899	1089	1189	1439

Max. internal capacity C_i : 11 nF (in the above tables, C_i is subtracted from C_o)

Max. internal inductance L_i : negligible

Explosion Protection

Safety data

Design	9475/32-04-22							
Max. voltage U_o	25.7 V							
Output ia								
Max. current I_o	110 mA							
Max. power P_o	708 mW							
Max. connectable inductance L_o/ capacity C_o								

Output ia — Max. connectable inductance L_o/capacity C_o

IIC	L_o [mH]	1.45	0.75	0.5	0.37	0.25	0.1	0.05
	C_o [nF]	--	56	67	76	93	95	95
IIB / IIIC	L_o [mH]	10	5	2.0	1.0	0.5	0.2	0.1
	C_o [nF]	323	323	333	393	473	633	783

Output ib								
Max. current I_o	49.5 mA							
Max. power P_o	648 mW							
Max. connectable inductance L_o/ capacity C_o								

Output ib — Max. connectable inductance L_o/capacity C_o

IIC	L_o [mH]	1.5	1.0	0.86	0.5	0.37	0.2	0.1
	C_o [nF]	43	51	55	69	760	93	95
IIB / IIIC	L_o [mH]	24	20	2.0	1.0	0.5	0.2	0.1
	C_o [nF]	333	333	343	393	483	633	783

Max. internal capacity C_i	7.2 nF (in the above tables, C_i is subtracted from C_o)
Max. internal inductance L_i	negligible
Ex i control input "Pant STOP"	

	X3 1, 2 (without galvanic separation, 9475/22 compatible)	X3 3, 4 (with galvanic separation, switchable in parallel)
Connection terminals		
Type of protection	Ex ia	Ex ia
Max. voltage U_o	5.1 V	--
Max. current I_o	0.44 mA	--
Max. power P_o	0.5 mW	--
Max. connectable inductance L_o/capacity C_o		

Max. connectable inductance L_o/capacity C_o

IIC	L_o [mH]	100	10	2	1	0.2	0.01	--
	C_o [µF]	2.195	2.595	3.295	3.695	5.495	15.995	
IIB / IIIC	L_o [mH]	100	10	2	1	0.2	0.01	--
	C_o [µF]	9.995	12.995	16.995	19.995	31.995	159.995	

	X3 1, 2	X3 3, 4
Max. voltage U_i	--	30 V
Max. internal resistance R_i	--	4940 Ω
Max. internal capacity C_i	5.2 nF (in the above tables, C_i is subtracted from C_o)	negligible
Max. internal inductance L_i	negligible	negligible

Digital Output Module 4-Channel Version for Zone 1
Series 9475/32-04-.2

IS1+

Selection Table

Version	Open-circuit voltage	Max. output current	Internal resistance	Installation	Order number	Weight kg
Digital output module with "Plant STOP"	17.9 V	40 mA	170 Ω	Zone 1	**9475 / 32 - 04 - 12**	0.275
	23.6 V	40 mA	287 Ω	Zone 1	**9475 / 32 - 04 - 22**	0.275
Note	Please order terminal separately - see Accessories					

Technical Data

Electrical data

Design	9475/32-04-12	9475/32-04-22
Ex i outputs		
Number of channels	4	4
Open-circuit voltage	17.9 V	23.6 V
Output nominal current	40 mA	40 mA
Internal resistance	170 Ω	287 Ω
Rated operation		
U	11.3 V	12.3 V
I	40 mA	40 mA
Output characteristic	15285E00	15286E00
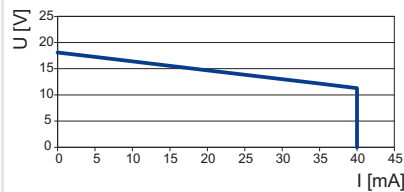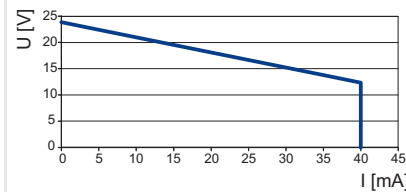
Ex i control input X3			
Function	"Plant STOP" to switch off all outputs		
Suitability	Switch-off up to SIL 2 (IEC61508)		
Connection terminals		X3 1, 2 (without galvanic separation, 9475/22 compatible)	X3 3, 4 (with galvanic separation, switchable in parallel)
	Supply voltage	3.3 V	--
	Internal resistance	20.5 kΩ	--
	Control voltage for all outputs		
	„OFF" („Plant STOP" activated)	> 2.2 V	< 1 V
	„Normal operation" („Plant STOP" deactivated)	< 0.7 V	> 6 V

Galvanic separation	
Test voltage	
acc. to standard	EN 60079-11
Between auxiliary power/system components	≥ 1500 V AC
Between two I/O modules	≥ 500 V AC
Between I/O channels/system components	≥ 500 V AC
Between I/O channels/ground (PA)	≥ 500 V AC
Between I/O channels/"Plant STOP" (X3 3, 4)	≥ 500 V AC
Between "Plant STOP" (X3 3, 4)/ earth (PA)	≥ 500 V AC
Electromagnetic compatibility	Tested to the following standards and regulations: EN 61326-1 (2006) IEC 61000-4-1 … 6, NAMUR NE 21

Technical Data

Electrical data

Electrical connection		
Power supply	BusRail Types 9494	
Ex i field signals	Pluggable, blue terminals, 16-pole, 2.5 mm^2, screw or spring type version with lock	
Ex i control input	Pluggable, blue terminal, 2-pole, 2.5 mm^2, screw type version with lock	
Auxiliary power		
Version	Intrinsically safe Ex ia via BusRail all outputs "OFF"	Intrinsically safe Ex ia via BusRail all outputs "OFF"
Behaviour during undervoltage		
Max. current consumption	210 mA	240 mA
Max. power consumption	5 W	5.8 W
Max. power dissipation	4 W	4.5 W

Device-specific data

Settings	
Module	
Diagnosis messages	ON / OFF
Signal	
Line fault monitoring	ON / ON without test current / OFF
Test current	0.2 ... 0.28 mA
Behaviour in case of error	ON / OFF / hold last value

Ambient conditions

Ambient temperature	-40 … +75 °C
Storage temperature	-40 … +80 °C
Maximum relative humidity	95 % (without condensation)
Semi-sinusoidal shock (IEC EN 60068-2-27)	15 g (3 shocks per axis and direction)
Sinusoidal vibration (IEC EN 60068-2-6)	1 g in the frequency range 10 ... 500 Hz 2 g in the frequency range 45 ... 100 Hz

Mechanical data

Degree of protection (IEC 60529)	IP20
Module enclosure	polyamide 6GF
Fire resistance (UL 94)	V2
Pollutant class	corresponds to G3
Dimensions	L = 128 mm, W = 96.5 mm, H = 67 mm

Indication

LED indication	
Module requires maintenance	LED "M/S", blue
Operating state	LED "RUN", green
Group error	LED "ERR", red
Channel error	LED red, for each channel
Channel status	LED yellow, for each channel
"Plant STOP"	LED yellow ("Plant STOP" active, all outputs are high-impedance)
Function indication	
Retrievable parameters	Manufacturer, Type, hardware revision, software revision, serial number
Error indication	
Module status and alarms	• Internal bus error primer / redundant • No response from IOM • Configuration does not correspond to the module • Hardware error • Excess temperature • Slot error • Module requires maintenance

Digital Output Module 4-Channel Version for Zone 1
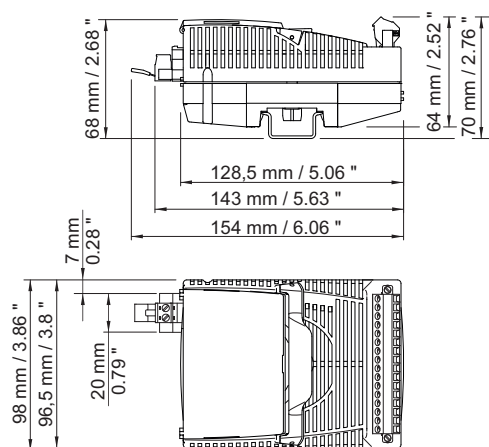## Series 9475/32-04-.2

Technical Data

Indication

Error indication	
Signal errors for each channel	
Signal status bit	"0" = output high-impedance / "1" = output is supplied
Wire breakage output	> 10 kΩ (with deactivated test current can be detected only if the output is switched on)
Short circuit output	< 30 Ω (response range 30 ... 60 Ω) (can be detected only if the output is switched on)

Mounting / Installation

Mounting orientation	horizontal or vertical (observe operating instructions)
Mounting type	on 35 mm DIN rail NS 35/15 (DIN EN 60715)

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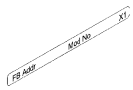

10989E00

Accessories and Spare Parts
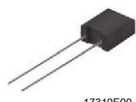
Designation	Figure	Description	Art. no.
Pluggable terminal	02079E00	2.5 mm² with lock, 16-pole, screw connector, blue, for connecting the field signals to I/O modules, for intrinsically safe field circuits Labelling: 1 ... 16 Attention: An additional terminal is necessary for I/O module Series 9470 and 9480. Designation: 17 ... 32	**162702**
	02077E00	2.5 mm² with lock, 16-pole, spring clamp connection, blue, for connecting the field signals to I/O modules, for intrinsically safe field circuits, incl. test jacks Labelling: 1 ... 16 Attention: An additional terminal is necessary for I/O module Series 9470 and 9480. Designation: 17 ... 32	**162695**
Electronic relay Model 9174/10-14-00		The electronic relay module 9174 is used to switch Ex e loads by using intrinsically safe control signals. input: Ex i output: 48 V / 2 A DC, Ex e	**212340**
Electronic relay Model 9174/10-15-00	04036E00	The electronic relay module 9174 is used to switch Ex e loads by using intrinsically safe control signals. input: Ex i output: 250 V / 1 A DC, Ex e	**212431**
LED indicating lamp Model 8010	11403E00	LED indicator lamp for intrinsically safe circuits 8010/3-02, Ex i	**237972**

Accessories and Spare Parts

Designation	Figure	Description	Art. no.
Labelling strips	05869E00	"FB Addr ... Mod No ..." for pluggable terminal, sheet with 26 strips	**162788**
DIN A4 sheet	09900E00	For label plate on I/O modules; 6 labels on each sheet; print-out using IS Wizard; packaging unit = 20 sheets	**162832**
Partition	15196E00	For mounting between intrinsically safe and non-intrinsically safe connections of the I/O modules, in order to adhere to the required 50 mm distance	**220101**
Warning sign	05872E00	"Clean modules only with a damp cloth."	**162796**
Resistor error message suppression	17310E00	The resistors are used to suppress error messages for unused I/O channels	
		Resistance value: 5K6 / 0.5 W Suitable for: AIM 9468; DIOM 9470; DIOM 9471; DIOM 9472; DOM 9475 single electrical equipment for intrinsically safe circuits according to EN 60079-11	**244911**

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.