

# Remote I/O

## Remote I/O IS1 CPU and power module

For Zone 1

9440/22-01-11-C1243 Art. No. 162218



- Suitable for Ex i V0/V1 HART PROFIBUS DP
- Supporting system redundancy and optical rings
- CPM in Zone 1 can be hot swapped
- Integration in plant asset management systems via Service-Bus and FDT/DTM
- Integrated Ex i power supply for up to 8 I/O modules

WebCode 9440A



Modbus RTU



9440/22 series CPU & power modules (CPM) for Zone 1 are used for the intrinsically safe supply of power to up to eight IS1+ I/O modules and to field circuits. Intrinsically safe RS485-IS with V0/V1 HART PROFIBUS DP is used for communicating with the automation system. These CPMs support system and optical rings and can be replaced while the system is in operation (i.e. hot swapped) in Zone 1/Division 1. A DTM and process bus or service bus are used for asset management integration.

## Technical Data

### Explosion Protection

Application range (zones)	1 2
Ex interface zone	0 1 2 21 22
IECEX gas certificate	IECEX KEM 08.0038X
IECEX gas explosion protection	Ex d [ia] [ib] IIC T4 Gb
ATEX gas certificate	KEMA 02 ATEX 1333 X
ATEX gas explosion protection	⊕ II 2 G Ex d [ia] [ib] IIC T4 Gb
FMus certificate	FM17US0332X
cFM certificate	FM16CA0134X
Marking cFMus	XP, Class I, Div. 1, Groups A,B,C,D; Class I, Zone 1, Group IIC AIS Class I,II,III, Div. 1, Groups A,B,C,D,E,F,G; Class I, Zone 1, [AEx ia, ib]/[Ex ia, ib] IIC T4 at Ta = 65 °C See Doc. 9440 6 031 001 1
cCSA certificate	1519624
Marking cCSA	Class I, Zone 1, Ex e d ib [ia/ib] IIC T4 Class I,II,III, Div. 1, Groups A,B,C,D,E,F,G; T4 at Ta = 65 °C See Doc. 94 006 01 31 2
Certificates	ATEX (DEK), Brazil (ULB), Canada (FM), IECEX (DEK), Korea (KTL), USA (FM)
Ship approval	ABS, BVIS, EU RO MR (DNV), KR, LR
Notes	CCC, UKCA certificate available from 2022 onward
Installation	Zone 1 / Division 1

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### Explosion Protection

Further information see respective certificate and operating instructions

### Safety Data

Max. output voltage $U_{out}$	26.2 V for power supply for the I/O modules
Connection to intrinsically safe RS-485-IS fieldbus	Global (IECEX) PTB 11.0027 Ex ib IIC T4 Europe (ATEX) PTB 04 ATEX 2089 Ex II 2 G Ex ib IIC T4
Max. voltage $U_o$ (RS485-IS)	3.7 V
Max. voltage $U_i$ (RS485-IS)	+/- 4.2 V
Max. current $I_o$ (RS485-IS)	134 mA
Max. power $P_o$ (RS485-IS)	124 mW
Max. capacitance $C_o$ for IIC	1000 $\mu$ F
Max. inductance $L_o$ for IIC	1.9 mH

### Electrical Data

Protocols	Profibus DP V0 Profibus DP V1 Profibus DP V1 HART
Redundancy	Full redundancy
Fieldbus RS485 connection	Sub-D socket, 9-pole
ServiceBus RS485 connection	Sub-D socket, 9-pole
RS485 interface	As per PROFIBUS specification RS 485-IS
Transmission speed RS-485	9.6 kbit/s to 1.5 Mbit/s
RS485 address setting	0 – 127
Copper RS485 transmission length/rate	1200 m at 9.6 to 93.75 kbps 1000 m at 187.5 kbps 400 m at 500 kbps 200 m at 1.5 Mbps
Transfer length/rate FO RS485	Approx. 2000 m at 1.5 Mbit/s
Transmission length/rate service bus RS485	1200 m at 9.6 kbps
Line termination	powered resistor (termination resistor is installed in the Sub-D plug, see accessories)
Transmission distance/rate note	For further information, see operating instructions.
RS485 data transmission	Approx. 40 16-bit words/ms (Cycl., net at 1.5 Mbit/s)
Internal signal delay max. (8 I/O modules)	7 ms for Digital modules, 10 ms for Analog modules
Power supply for the I/O modules	via the BusRail (redundant)
Voltage range BusRail	22.5 ... 26.2 V DC
Max. current BusRail	2 A
Undervoltage monitoring BusRail	yes

### Auxiliary Power

Nominal voltage	24 V DC
Auxiliary power voltage range	20 to 35 V DC
Polarity reversal protection	Yes
Undervoltage monitoring	Yes
Current consumption (without I/O modules)	0.21 A at 24 V DC
Current consumption (8 I/O modules)	Approx. 2.5 A at 24 V DC

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#### Auxiliary Power

Power dissipation (without I/O modules)	5 W
Power dissipation (per I/O module)	1.4 W

#### Galvanic Isolation

Auxiliary power/system components	1500 V AC
Bus interface/bus interface	500 V AC
Bus interface/system component	500 V AC

#### Device Specific Data

Software	IS1 device DTM IS Wizard
LED operating conditions	"RUN" LED, green
LED group error	"ERR" LED, red
LCD display	2 x 16 characters
LCD Display	2 x 16 characters
Settings on the LCD	Bus address
Indications	Bus addresses, alarms / faults, information (type, revision, etc.) for the levels: field station, modules and signals, values of the inputs and outputs
Diagnostic/parameterisation functions	<ul style="list-style-type: none"><li>- Load or read back configuration data and parameters in the IS1 field stations</li><li>- Read inputs</li><li>- Read and write outputs</li><li>- Transfer diagnostic (e.g. config. error, hardware error, signal error)</li><li>- Transfer HART commands to/from HART field devices.</li></ul>
Diagnostic/parameterisation connectable software packages	<ul style="list-style-type: none"><li>- IS Wizard (via R. STAHL ServiceBus)</li><li>- R. STAHL DTM</li><li>- AMS by Emerson Process Management</li><li>- PDM by Siemens</li><li>- PRM and Fieldmate by Yokogawa</li><li>- FieldCare by Endress + Hauser</li><li>- FDM by Honeywell</li><li>- etc.</li></ul>

#### Ambient Conditions

Ambient temperature	-20°C ... +65°C
Ambient temperature	-4°F ... +149°F
Storage temperature	-40°C ... +70°C
Storage temperature	-40°C ... +158°C
Max. operating altitude	< 2000 m
Max. relative humidity	95% (without condensation)
Shock (semi-sinusoidal)	(IEC EN 60068-2-27) 15 g (3 shocks per axis and direction)
Vibration (sinusoidal)	(IEC EN 60068-2-6) Frequency range 2 ... 13.2 Hz    Amplitude 1 mm (peak value) Frequency range 13.2 ... 100 Hz    Acceleration amplitude 0.7 g
Electromagnetic compatibility	Tested to the following standards and regulations: EN 61326-1 (1998) IEC 1000-4-1...6, NAMUR NE 21

#### Mechanical Data

Connection auxiliary power	Base 9490/11-12    Ex e terminals 4 mm <sup>2</sup> Base 9490/13-12    unconnected cable end, 5 m, 1 mm <sup>2</sup> per core Base 9490/12-12    Conduit
IP degree of protection (IEC 60529)	IP20 connections IP30 modules

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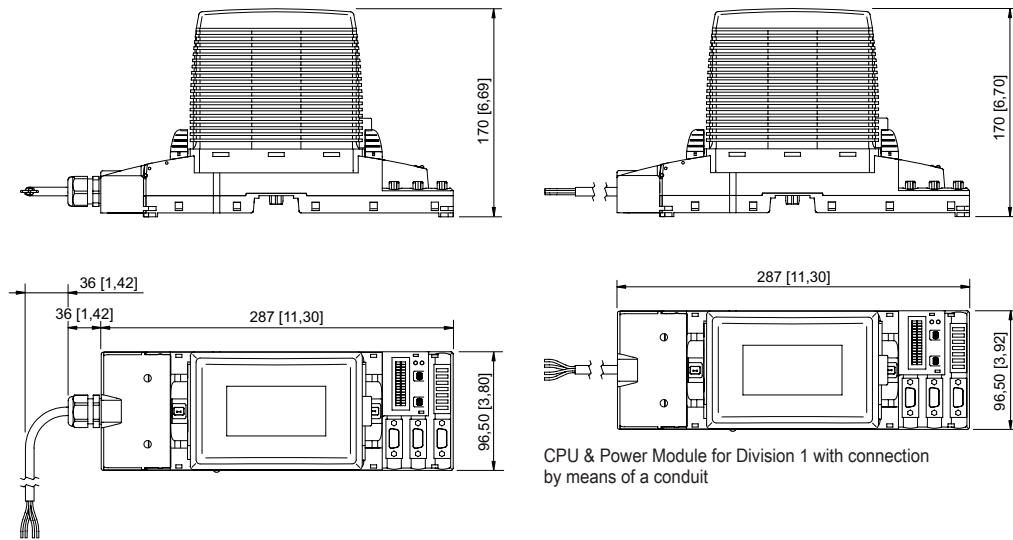
#### Mechanical Data

Module enclosure	Polyamide 6GF
Fire resistance (UL 94)	HB
Pollutant class	Corresponds to G3
Width	96.5 mm
Width, inches	3.78 in
Depth	170 mm
Length	253 mm
Length, inches	9.96 in
Mounting depth, inches	6.69 in
Weight	2.963 kg
Weight	6.53 lb

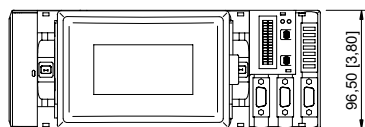
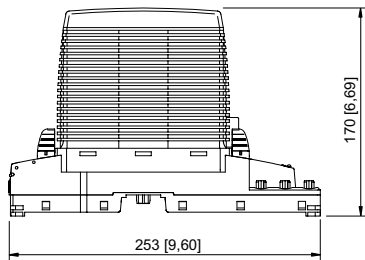
#### Mounting / Installation

Mounting type	on NS 35/15 DIN rail (DIN EN 60715)
Mounting orientation	Horizontal Vertical

#### Dimensional Drawings (All Dimensions in mm [inches]) – Subject to Alterations



CPU & Power Module for Zone 1 with connection by means of a pig tail



CPU & Power Module for Zone 1 with connection by means of Ex e terminals

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### Accessories

Media Converter		Art. No.
	Media converter for installation in Zone 1. For fieldbuses (Profibus DP, Modbus RTU) over fibre optic intrinsically safe cables "ex op is" in Zone 1. Compatible with devices from series 9786. Point-to-point, line structure or optical ring. With error-signalling diagnostic function. Simple parameterisation using a rotary switch. Data rates of 9.6 kbit/s - 1.5 Mbit/s possible. For further details see data sheet Series 9786 Media Converter.	308562
	Media converter for installation in Zone 2. For fieldbuses (Profibus DP, Modbus RTU) over fibre optic intrinsically safe cables "ex op is" in Zone 1. Compatible with devices from series 9786. Point-to-point, line structure or optical ring. With error-signalling diagnostic function. Simple parameterisation using a rotary switch. Data rates of 9.6 kbit/s - 1.5 Mbit/s possible. For further details see data sheet Series 9786 Media Converter.	308563
Series 9490/11 - Socket for CPU and Power Module		Art. No.
	Zone 1 connection by means of Ex e terminals, 24 V DC, 120 / 230 V AC	162707
Series 9490/13 - Socket for CPU and Power Module		Art. No.
	Zone 1, connection via pig tail, 24 V DC, 120 / 230 V AC	162711
Series 9490/12 - Socket for CPU and Power Module		Art. No.
	Division 1, connection via conduit, 24 V DC, 120 / 230 V AC	162715
Sub-D plug		Art. No.
	9-pole for connection of fieldbus or Servicebus to CPU & power module series 9440/22 and fieldbus isolating repeater 9185. The end-of-line resistor is installed and switchable. For RS-485 IS (according to Profibus standard).	162693

#### Fieldbus Isolating Repeater Series 9185/11

Art. No.



Equipment for installation in safe areas or Zone 2/Div. 2  
 For fieldbuses with RS-485-IS-interface - Zone 1 / Class I, II, III Division 1 and Class I, II, III Zone 1  
 Suitable for PROFIBUS DP, Modbus, R. STAHL service bus  
 RS-232, RS-422, RS-485 interface with the automation system  
 Transmission rate automatically set with PROFIBUS DP  
 Adjustable transmission rate (1.2 kBit/s to 1.5 MBit/s)  
 24 V AC/DC auxiliary power  
 For further information, see data sheet for 9185/11

227598

#### Device DTM IS1+ for PROFIBUS DP and Ethernet

Art. No.



Parameterization and configuration of the IS1+ system  
 Communicating with HART-compatible field devices  
 Supports all common FDT frame applications (e.g. FieldCare, PactWare™)  
 Condition Monitoring  
 Scan function for automatic topology generation  
 Download at r-stahl.com

#### Device DTM IS1 Series 9499

Art. No.



- Parametrisation and configuration of the IS1+ system
- Communication with HART-compatible field devices
- Support for all common FDT frame applications (e.g. FieldCare, PactWare™)
- Condition monitoring
- Scan function for automatic topology generation
- Download from r- stahl.com

9499/DTM-IS1-02 Com/Device/HART 30  
 Free-of-charge software licence for up to 30 HART devices

251237

9499/DTM-IS1-04 Com/Device/HART 300  
 Software licence for up to 300 HART devices

251239

9499/DTM-IS1-06 Com/Device/HART unlted.  
 Software licence for an unlimited number of HART devices

251240

#### IS1 PCS7 APL field device library

Art. No.



Easy integration of IS1+ systems into SIEMENS PCS7 V9 SP2:  
 - PROFIBUS DP with CPM 9440 starting with GSD 3.12; CPU 9442 starting with GSD 5.14  
 - PROFINET with CPU 9441 starting with GSDML-V2.3-Stahl-RIO-20140206; CPU 9442 starting with GSDML-V2.34-Stahl-RIO9442-20200427  
 Further information and order processing exclusively through company Siemens: [www.siemens.com/mvdi](http://www.siemens.com/mvdi)

#### Vibration bracket set

Art. No.



For installations with extreme vibrations (> 0.7 g and max. 4 g), the vibration brackets 9490 can be used as an additional measure and provide mechanical stability for the individual modules.  
 For mounting of: CPM 9440/22 for zone 1, redundant  
 Number of brackets in the set: 2  
 Screws (art. no. 275516) must be ordered separately

271918



For installations with extreme vibrations (> 0.7 g and max. 4 g), the vibration brackets 9490 can be used as an additional measure and provide mechanical stability for the individual modules.  
 For mounting of: CPM 9440/22 for zone 1, single  
 Number of brackets in the set: 2  
 Screws (art. no. 275516) must be ordered separately

271917

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Screw set	Art. No.
Screw set M5 x 14 (thread-forming) for vibration brackets 9490 Number of screws in the set: 25	275516

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.