

Remote I/O

Remote I/O IS1 CPU and power module

For Zone 1

9440/22-01-11-C1202 Art. No. 162221



- Suitable for Modbus RTU HART
- Supports system redundancy and optical rings
- CPM in Zone 1 can be replaced without having to disconnect the power supply (i.e. 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

MY R. STAHL 9440A



Modbus RTU



Series 9440/22 CPU & power modules (CPM) for Zone 1 are used to supply up to 8 IS1+ I/O modules and field circuits with intrinsically safe power. Intrinsically safe RS485-IS with Modbus RTU HART is used for communicating with the automation system. The CPMs support system redundancy and optical rings and can be replaced during operation (i.e. hot-swapped) in Zone 1/Div. 1. A DTM and process bus or ServiceBus 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), China (NEPSI), IECEX (DEK), Korea (KTL), USA (FM)
Ship approval	ABS, BVIS, EU RO MR (DNV), KR, LR
Installation	Zone 1/Division 1
Further information	See relevant certificates and operating instructions

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Safety Data

Max. output voltage U_{out}	26.2 V for supplying the I/O modules with power
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 μ F
Max. inductance L_o for IIC	1.9 mH

Electrical Data

Protocols	Modbus RTU
Redundancy	Full redundancy
Fieldbus RS485 connection	Sub-D socket, 9-pole
ServiceBus RS485 connection	Sub-D socket, 9-pole
RS485 interface	RS 485-IS
Transmission speed RS-485	9.6 to 38.4 kbps
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 (end-of-line resistor in the Sub-D plug, see accessories)
Transmission distance/rate note	For further information, see the operating instructions
RS485 data transmission	Approx. 1000 16-bit register/s (At 38.4 kbit/s)
Internal signal delay max. (8 I/O modules)	7 ms for digital modules, 10 ms for analogue modules
Power supply for the I/O modules	Via the BusRail (redundant)
BusRail voltage range	22.5 to 26.2 V DC
Max. BusRail current	2 A
BusRail undervoltage monitoring	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
Power dissipation (without I/O modules)	6 W
Power dissipation (per I/O module)	1.4 W

Galvanic Isolation

Auxiliary power/system components	1500 V AC
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Galvanic Isolation

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

Diagnostics

LED group error	"ERR" LED, red
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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 to 13.2 Hz Amplitude 1 mm (peak value) Frequency range 13.2 to 100 Hz Acceleration amplitude 0.7 g
Electromagnetic compatibility	Tested to the following standards and regulations: EN 61326- 1 (1998) IEC 1000-4-1 to 1000-4-1-6, NAMUR NE 21

Mechanical Data

Connection auxiliary power	9490/11-12 socket Ex e terminals 4 mm ² 9490/13-12 socket Unconnected cable end, 5 m, 1 mm ² per core 9490/12-12 socket Conduit
Degree of protection (IP) (IEC 60529)	IP20 connections IP30 modules
Module enclosure	Polyamide 6GF
Fire resistance (UL 94)	HB
Pollutant class	Corresponds to G3

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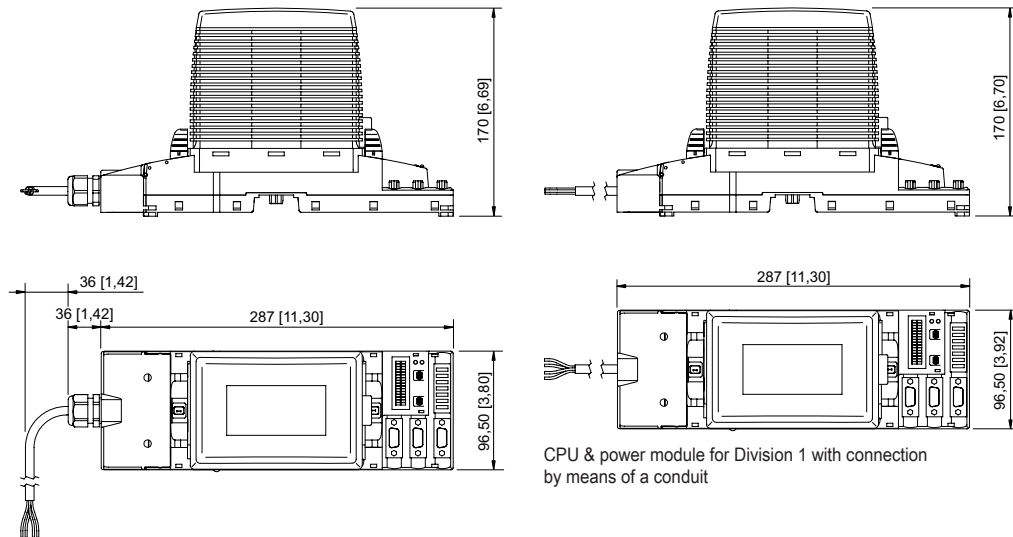
Mechanical Data

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	2.96 kg
Weight	6.53 lb

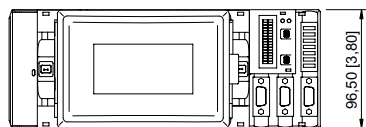
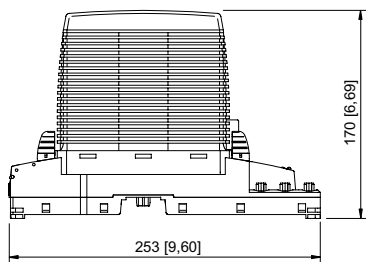
Mounting / Installation

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 an unconnected cable end



CPU & power module for Zone 1 with connection by means of Ex e terminals

Accessories

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For Zone 1

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RS485 media converter

Art. No.



Media converter for installation in Zone 1.
For fieldbuses (PROFIBUS DP, Modbus RTU) using optical intrinsically safe "Ex op is" fibre optic in Zone 1.
Compatible with Series 9786 devices.
Point-to-point, linear structure or optical ring.
With diagnostics function including error signalling.
Simple parameterisation using a rotary switch.
Data rates from 9.6 kbps to 1.5 Mbps possible.
For further information, see the data sheet for the Series 9786 media converter.

308562



Media converter for installation in Zone 2.
For fieldbuses (PROFIBUS DP, Modbus RTU) using optical intrinsically safe "Ex op is" fibre optic in Zone 1.
Compatible with Series 9786 devices.
Point-to-point, linear structure or optical ring.
With diagnostics function including error signalling.
Simple parameterisation using a rotary switch.
Data rates from 9.6 kbps to 1.5 Mbps possible.
For further information, see the data sheet for the Series 9786 media converter.

308563

Series 9490/11 – socket for CPU & 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 & power module

Art. No.



Zone 1, connection by means of an unconnected cable end,
24 V DC, 120/230 V AC

162711

Series 9490/12 – socket for CPU & power module

Art. No.



Division 1, connection by means of a conduit,
24 V DC, 120/230 V AC

162715

Sub-D plug, RS-485 IS, angled

Art. No.



9-pin for connecting fieldbus or ServiceBus to CPU & power module Series 9440/22,
9185 fieldbus isolating repeater and 9786/12-11 media converter.
The end-of-line resistor is installed and switchable.
For RS 485 IS (according to Profibus standard).
Ambient temperature: -40 °C to +70 °C

162693

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Fieldbus isolating repeater Series 9185/11

Art. No.



Equipment for installation in safe areas or Zone 2/Div. 2
For fieldbuses with RS485-IS interface – Zone 1/Class I, II, III Division 1 and Class I, II, III Zone 1
Suitable for PROFIBUS DP, Modbus, R. STAHL ServiceBus
RS 232, RS 422, RS 485 interface with the automation system
Transmission rate automatically set with PROFIBUS DP
Adjustable transmission rate (1.2 kbps to 1.5 Mbps)
24 V AC/DC auxiliary power
For further information, see the Series 9185/11 data sheet

227598

DTM IS1+ devices for PROFIBUS DP and Ethernet

Art. No.



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

IS1 DTM devices Series 9499/DTM

Art. No.



- Parameterisation and configuration of the IS1+ system
- Communication with HART-capable field devices
- Supports 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.



Simple integration of IS1+ systems in SIEMENS PCS7 (V9 SP2 to V9.1 SP2):
- PROFIBUS DP with CPM 9440 from GSD 3.12; CPU 9442 from GSD 5.14
- PROFINET with CPU 9441 from GSDML-V2.3-Stahl-RIO-20140206; CPU 9442 from GSDML-V2.34-Stahl-RIO9442-20200427
Further information and ordering only available from Siemens: www.siemens.com/mvdi

Vibration bracket set

Art. No.



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

271918



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

271917

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Set of screws	Art. No.
Set of M5 x 14 screws (self-tapping) for 9490 vibration brackets Number of screws in a set: 25	275516

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