

Remote I/O

Remote I/O IS1 CPU and power module

For Zone 1

9440/22-01-21-C1202 Art. No. 162214



- Suitable for Modbus RTU HART
- 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 Modbus RTU HART 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
Certificate FMus	FM17US0332X
Certificate cFM	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
Certificate cCSA	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
EAC certificate	TS RU S-DE.GB04.B.00448
EAC certificate valid until	2020-07-01
EAC gas explosion protection	⊕ 1 Ex d [ia Ga] [ib] IIC T4 Gb X

Explosion Protection

Certificates	ATEX (DEK), Brazil (ULB), Canada (FM), EAC (STV), IECEx (DEK), Korea (KTL), USA (FM)
Ship approval	EU RO MR
Notes	CCC certificate available from 2021 onward
Installation	Zone 1 / Division 1
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. capacity C_o for IIC	1000 μ F
Max. inductance L_o for IIC	1.9 mH

Electrical Data

Protocols	Modbus RTU
Redundancy	full redundancy
Connection Fieldbus RS485	Sub-D socket 9-pole
Connection ServiceBus RS485	Sub-D socket 9-pole
Interface RS485	RS 485-IS
Transmission speed RS-485	9,6 ... 38,4 kbps
Address setting RS485	0 – 127
Transmission distance/rate for copper RS485	1200 m at 9.6...93,75 kbit/s 1000 m at 187.5 kbit/s 400 m at 500 kbit/s 200 m at 1.5 Mbit/s
Transmission distance/rate FO RS485	approx. 2000 m at 1,5 Mbit/s
Transmission distance/rate Service-BusRS485	1200 m at 9.6 kbit/s
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.
Data transmission RS485	approx. 1000 16-bit-registers/s (at 38.4 kbit/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	120 V / 230 V AC
Auxiliary power voltage range	90 ... 253 V AC
frequency auxiliary power	45 – 66 Hz
Mains frequency	50/60 Hz

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Auxiliary Power

Polarity reversal protection	not applicable
Undervoltage monitoring	Yes
Current consumption (without I/O modules)	Approx. 25 mA at 230 V AC Approx. 48 mA at 120 V AC
Current consumption (with 8 I/O modules)	Approx. 0.4 A at 230 V AC Approx. 0.8 A at 120 V AC
Power dissipation (without I/O modules)	8.4 W
Power dissipation (per I/O module)	1 W

Galvanic Isolation

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

Device Specific Data

Software	IS1 devices DTM IS Wizard
LED operating conditions	"RUN" LED, green
LED group error	"ERR" LED, red
LCD display	2 x16 characters
LCD Display	2 x16 characters
LCD settings	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	- Load or read back configuration data and parameters in the IS1 field stations - Read inputs - Read and write outputs - Transfer diagnostic (e.g. config. error, hardware error, signal error) - Transfer HART commands to/from HART field devices.
Diagnostic/parameterisation connectable software packages	- IS Wizard (via R. STAHL ServiceBus) - R. STAHL DTM - AMS by Emerson Process Management - PDM by Siemens - PRM and Fieldmate by Yokogawa - FieldCare by Endress + Hauser - FDM by Honeywell - etc.

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

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Ambient Conditions

Electromagnetic compatibility	Tested to the following standards and regulations: EN 61326-1 (1998) IEC 1000-4-1...6, NAMUR NE 21
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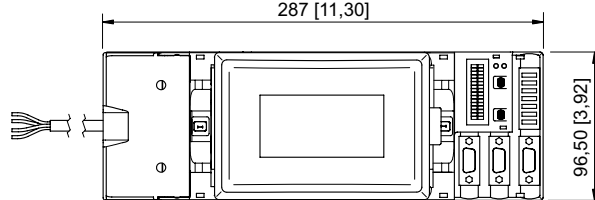
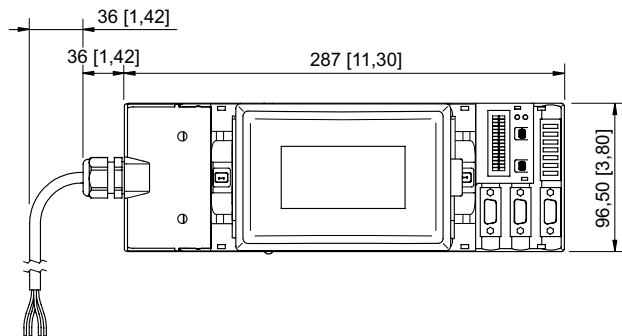
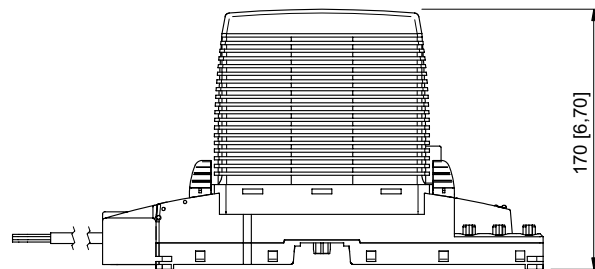
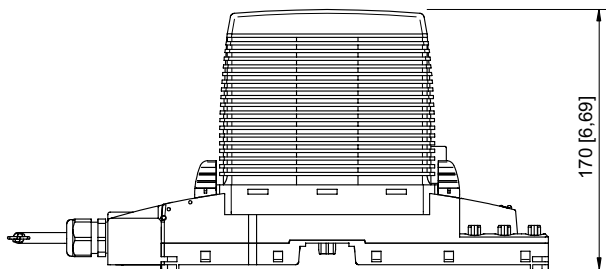
Mechanical Data

Connection auxiliary power	Base 9490/11-12 Ex e terminals 4 mm ² Base 9490/13-12 unconnected cable end, 5 m, 1 mm ² per core Base 9490/12-12 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
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 DIN rail NS 35/15 (DIN EN 60715)
Mounting position	Horizontal Vertical

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



CPU & Power Module for Division 1 with connection by means of a conduit

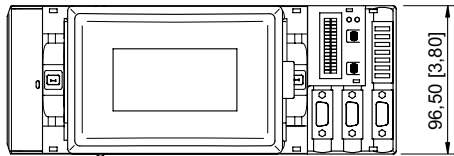
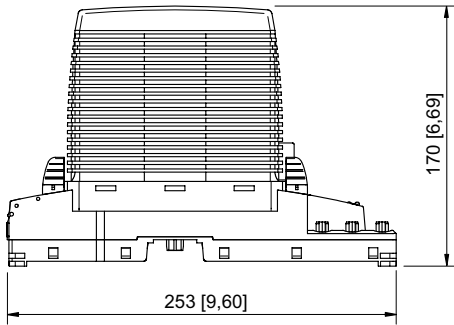
CPU & Power Module for Zone 1 with connection by means of a pig tail

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

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Accessories

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 socket

Art. No.



9-pin for connection of the fieldbus or ServiceBus to the CPU & power module Series 9440/22 and fieldbus-isolating repeater 9185.
Integrated terminator can be switched on or off.
For RS 485 IS to PNO standard.

162693

Optical Fieldbus Isolating Repeater, Zone 2 / Div. 2

Art. No.



Isolating repeater for installation in Zone 2 / Div. 2
For fieldbus via fibre optic intrinsically safe cables "ex op is" into Zone 1 / Div. 1
Optical ring possible
Extensive diagnostic function and fault-contact
Suitable for Profibus DP up to 1.5 MBit/s
Further versions and information see data sheet of Series 9186 optical fieldbus-isolating repeater

160624

Optical fieldbus isolating repeater, Zone 2 / Div. 2

Art. No.



Isolating repeater for installation in Zone 2 / Div. 2
For fieldbus via fibre optic intrinsically safe cables „ex op is“ into Zone 1 / Div. 1
Point-to-point or line structure
Extensive diagnostic function and fault-contact
Suitable for Profibus DP up to 1.5 MBit/s
Further versions and information see data sheet of Series 9186 optical fieldbus-isolating repeater

160625

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.

2021-01-26

R. STAHL Schaltgeräte GmbH | Am Bahnhof 30 | 74638 WALDENBURG

6/7

V 0.93 EN

Parameterization and configuration of the IS1+ system
Communicating with HART-compatible field devices



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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.