

## Remote I/O

### Remote I/O IS1 CPU and power module for Zone 1

9440/22-01-21-C1243 Art. No. 162211



- Suitable for Ex i Profibus DP V0/V1 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 PROFIBUS DP or Modbus RTU 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;<br>Class I, Zone 1, Group IIC<br>AIS Class I,II,III, Div. 1, Groups A,B,C,D,E,F,G;<br>Class I, Zone 1, [AEx ia, ib]/[Ex ia, ib] IIC<br>T4 at Ta = 65 °C<br>See Doc. 9440 6 031 001 1 |
| cCSA certificate               | 1519624                                                                                                                                                                                                                   |
| Marking cCSA                   | Class I, Zone 1, Ex e d ib [ia/ib] IIC T4<br>Class I,II,III, Div. 1, Groups A,B,C,D,E,F,G;<br>T4 at Ta = 65 °C<br>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                                                                                                                                                                      |

### Safety Data

|                                                     |                                                                                               |
|-----------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Max. output voltage U <sub>out</sub>                | 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<br>Europe (ATEX) PTB 04 ATEX 2089 II 2 G Ex ib IIC T4 |

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## Safety Data

|                                |              |
|--------------------------------|--------------|
| 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<br>Profibus DP V1<br>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<br>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 kbit/s<br>1000 m at 187.5 kbit/s<br>400 m at 500 kbit/s<br>200 m at 1.5 Mbit/s |
| Transfer length/rate FO RS485              | Approx. 2000 m at 1.5 Mbit/s                                                                          |
| Transmission length/rate service bus RS485 | 1200 m at 9.6 kbit/s                                                                                  |
| 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. 40 16-bit words/ms<br>(Cycl., net at 1.5 Mbit/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                           | 120 V / 230 V AC                                       |
| Auxiliary power voltage range             | 90 ... 253 V AC                                        |
| Auxiliary power frequency                 | 45 – 66 Hz                                             |
| Mains frequency                           | 50/60 Hz                                               |
| Polarity reversal protection              | Not applicable                                         |
| Undervoltage monitoring                   | Yes                                                    |
| Current consumption (without I/O modules) | Approx. 25 mA at 230 V AC<br>Approx. 48 mA at 120 V AC |
| Current consumption (8 I/O modules)       | Approx. 0.4 A at 230 V AC<br>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                                                    |

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### 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<br>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"><li>- Load or read back configuration data and parameters in IS1 field stations</li><li>- Read inputs</li><li>- Read and write outputs</li><li>- Transmit diagnostics data (e.g. configuration error, hardware error, signal error)</li><li>- Transmit HART commands from/to 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 from Emerson Process Management</li><li>- PDM from Siemens</li><li>- PRM and Fieldmate from Yokogawa</li><li>- FieldCare from Endress+Hauser</li><li>- FDM from Honeywell</li><li>- etc.</li></ul>                         |

### Diagnostics

|                 |                |
|-----------------|----------------|
| LED group error | "ERR" LED, red |
|-----------------|----------------|

### 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)<br>15 g (3 shocks per axis and direction)                                                                                 |
| Vibration (sinusoidal)        | (IEC EN 60068-2-6)<br>Frequency range 2 to 13.2 Hz Amplitude 1 mm (peak value)<br>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 <sup>2</sup><br>9490/13-12 socket Unconnected cable end, 5 m, 1 mm <sup>2</sup> per core<br>9490/12-12 socket Conduit |
| Degree of protection (IP) (IEC 60529) | IP20 connections<br>IP30 modules                                                                                                                            |
| Module enclosure                      | Polyamide 6GF                                                                                                                                               |
| Fire resistance (UL 94)               | HB                                                                                                                                                          |

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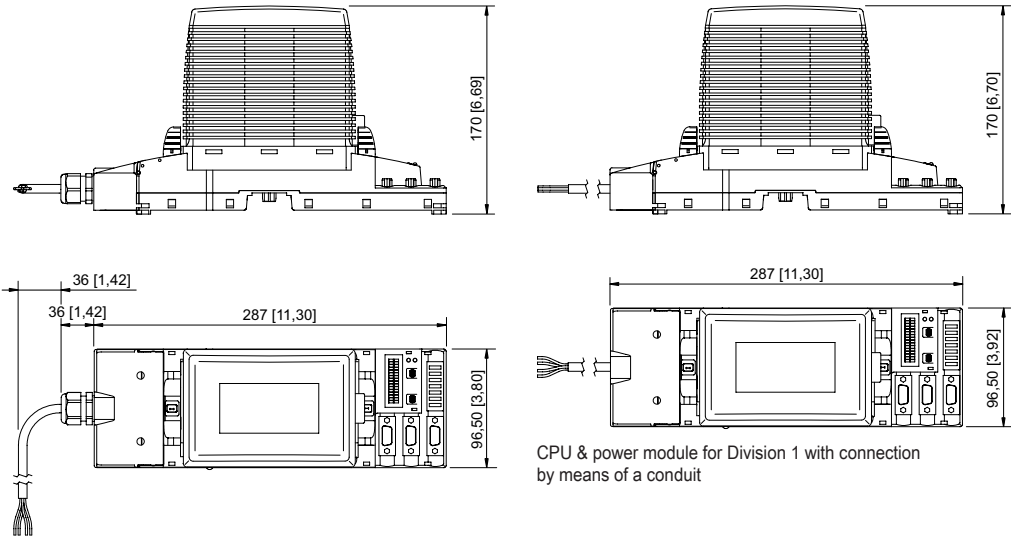
Mechanical Data

|                          |                   |
|--------------------------|-------------------|
| Pollutant class          | Corresponds to G3 |
| Width                    | 96.5 mm           |
| Width, inches            | 3.78 in           |
| Depth                    | 170 mm            |
| Length                   | 253 mm            |
| Length in inches         | 9.96 in           |
| Mounting depth in inches | 6.69 in           |
| Weight                   | 2.96 kg           |
| Weight                   | 6.53 lb           |

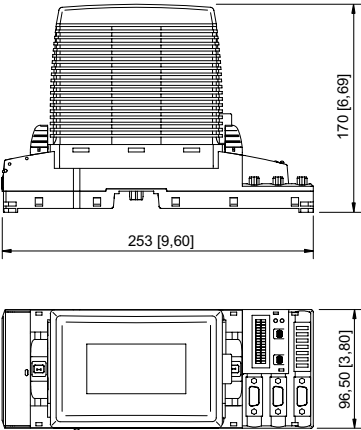
Mounting / Installation

|                      |                                     |
|----------------------|-------------------------------------|
| Mounting type        | on NS 35/15 DIN rail (DIN EN 60715) |
| Mounting orientation | Horizontal<br>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

## Remote I/O

### Remote I/O IS1 CPU and power module for Zone 1

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STAHL

#### 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 kbit/s to 1.5 Mbit/s 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 kbit/s to 1.5 Mbit/s 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

### 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 kbit/s to 1.5 Mbit/s)  
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](http://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

Remote I/O



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| Set of screws |                                                                                                   | Art. No. |
|---------------|---------------------------------------------------------------------------------------------------|----------|
|               | Set of M5 x 14 screws (self-tapping) for 9490 vibration brackets<br>Number of screws in a 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.