



CPU & Power Module for Zone 2 / Div. 2 Series 9440/15

- Fieldbus interface / gateway and power supply in a single module
- Integrated power supply for up to 16 I/O modules
- Profibus DP V0 and V1 HART up to 1.5 MBit/s with option of redundancy
- Modbus RTU up to 38.4 KBit/s
- Additional ServiceBus interface for commissioning, fault diagnostics and HART communication
- LCD indicator for local display of diagnostic data, input and output values

Zone	0	1	2	20	21	22
Class	I			II / III		
Zone	0	1	2	20	21	22
Ex interface			X		X	X
Installation in			X		X ^{*)}	X ^{*)}

Class	I		II / III	
Division	1	2	1	2
Ex interface		X		X
Installation in		X		X ^{*)}

^{*)} suitable enclosure necessary



The CPU & Power Module contains a power supply unit for the supply to the I/O modules and field circuits. The power supply for the I/O modules is implemented using the BusRail. When using a redundant CPU & Power Module, the power supply to the I/O modules is internally decoupled with diodes. The power supply unit is fitted with undervoltage monitoring. The CPU fulfills the function of a gateway between the internal bus of an IS1 field station and the fieldbus which connects the field station single or redundant with the automation system. Communication with the I/O modules is implemented via the address and data lines on the BusRail. The interface of the CPU & Power Module with the internal data bus on the BusRail is designed with redundancy.

Selection Table

Version	Installation in	Fieldbus	Order number	Weight kg / lbs
CPU & Power Module	Zone 2 / Division 2	Profibus DP V0	9440 / 15-01-11	0.686 / 1.512
		Profibus DP V1 HART	9440 / 15-01-11-C1243	0.560 / 1.235
		Modbus RTU	9440 / 15-01-11-C1198	0.673 / 1.484

Explosion Protection

Certificates	
IECEX	PTB 06.0001X
Europe (ATEX)	PTB 99 ATEX 2222
USA (NEC)	3007532 (FM)
Russia (GOST-R)	04.B00806 (CTB)
Other countries	Canada (CSA), Brazil (INMETRO), Belarus (Promatomnadzor)
Marking	
IECEX	Ex d e [ia/ib] IIC/IIB T4, Ex nAC IIC T4
Europe (ATEX)	⊕ II (2) G [EEx [ib/ia]] IIC / IIB, ⊕ II 3 G EEx nA II T4
USA (NEC)	NI/1/2/ABCD/T4 Ta = 65 °C, NI/1/2/IIC/T4 Ta = 65 °C, ANI/1,II,III/2/ABCDFG, [ANI/1/2/IIC]
Russia (GOST-R)	2ExnA[ia/ib]IIC/IIBT4
Other certificates	Marine (DNV, ABS, GL)

Technical Data

Galvanic isolation	
between power supply and system components	1500 V AC
between Fieldbus/ ServiceBus interface and system components	1500 V AC
between two bus interfaces	500 V AC
Interfaces for fieldbus, redundant fieldbus and ServiceBus	
Interface	RS 485
Topology	Line
Maximum cable length	1200 m / 3940 ft (for greater lengths fibre optic technology is available), depending on transmission rate
Maximum transfer rate	
Fieldbus	1.5 MBit/s
ServiceBus	9.6 kBit/s
Line termination	Corresponding fieldbus standard
Address setting	0 ... 127



Technical Data

ServiceBus

Functions

- Load or read back configuration data and parameters in the IS1 field stations
- Read inputs
- Read and write outputs
- Transfer diagnostic data
- Transfer HART commands to/from HART field devices.

Connectable software packages

- ISpac Wizard
- Cornerstone by ASTEC
- AMS by Emerson
- PDM by Siemens
- PRM and Fieldmate by Yokogawa
- FieldCare by Endress + Hauser
- FDM by Honeywell
- any FDT frames

Modbus RTU

Transfer rate

9.6 kBit /s
19.2 kBit /s
38.4 kBit /s

Data transmission

approx. 1000 16-bit-registers / s (at 38.4 kBit / s)

Functions

Read, Write; see Modbus RTU coupling instructions

Profibus DP

Versions

Profibus DP V0, Profibus DP V1, Profibus DP V1 HART

Transfer rate

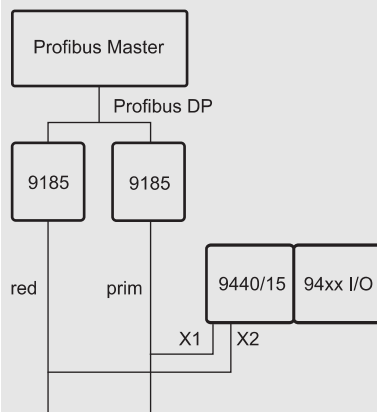
9.6 kBit / s ... 1.5 MBit / s

Data transmission (cyclic) net at 1.5 MBit/s

approx. 40 16-bit words / ms

Line redundancy

The CPU & Power Modules 9440/15.. are equipped with 2 fieldbus interfaces (X1, X2). A redundant fieldbus cable can be connected to these interfaces. 2 Fieldbus-Isolating Repeaters of type 9185 are required. Redundancy handling is controlled by IS1, therefore, each Profibus DP Master, without redundancy, can be used.



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Characteristic values

Maximum internal signal delay of the system; (without I/O module delay) for 8 I/O modules

for Digital Input or Digital Output Modules

7 ms

for Analogue Input or Analogue Output Modules

10 ms

MTBF acc. to MIL

14.4 years (at 40 °C / 104 °F)

Technical Data



Operator interface			
Operation	LED green "RUN"		
Fault	LED red "ERR"		
LCD indication	2 x 16 characters		
Operating keys	2 Keys		
Settings			
Type of memory		Profibus	Modbus RTU
	for fieldbus address	non-volatile	non-volatile
	for remaining parameters of the I/O modules and CPU & Power Module	volatile (non-volatile in the Profibus master)	non-volatile
Fieldbus	Bus address, fieldbus specific parameters		
Parameters for system setup (=configuration)	CPM red., slot and type of the I/O modules		
Diagnostics			
Retrievable parameters	Manufacturer, type, version, serial number		
Indications	at any time: Bus addresses, alarms / faults, information (type, revision, etc.) for field station, modules and signals, values of the inputs and outputs		
Fault			
CPU & Power Module	<ul style="list-style-type: none"> • Hardware fault • Configuration fault 		
I/O Modules	<ul style="list-style-type: none"> • Internal primary bus faults • Internal redundant bus faults • No response • Module does not correspond to configuration • Hardware fault 		
Further I/O module fault indications	see data sheets of the I/O modules		
Power supply for the I/O modules via the BusRail			
Voltage range	22.5 ... 26.2 V DC		
Maximum current	4 A		
Maximum number of the I/O modules	16		
Redundant supply of the I/O modules	yes		
Undervoltage monitoring	yes		



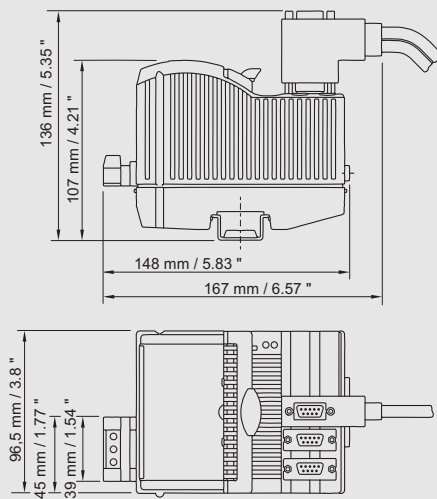
Technical Data

Power supply	
Nominal voltage	24 V DC
Voltage range	20 ... 35 V DC
Current consumption	0.3 A at 24 V (without I/O modules) approx. 2.5 A at 24 V (with 8 I/O modules) approx. 4.9 A at 24 V (with 16 I/O modules)
Power dissipation	
without I/O modules	8.4 W
per connected I/O module	approx. 1 W
Reverse polarity protection	yes
Defined behaviour at undervoltage	yes
Mechanical data	
Module enclosure	Polyamide 6GF
Fire protection class (UL 94)	V2
Degree of protection (IEC 60529)	
Modules	IP30
Connections	IP20
Electrical connection	
Fieldbus RS 485	Sub-D socket 9-pole
ServiceBus RS 485	Sub-D socket 9-pole
Power supply	Plug-in screw terminals to 4.0 mm ² / 12 AWG
Installation conditions	
Mounting type	on 35 mm DIN rail NS 35/15
Installation position	horizontal and vertical
Ambient conditions	
Ambient temperature	- 20 ... + 65 °C / - 4 ... + 149 °F
Storage temperature	- 40 ... + 70 °C / - 40 ... + 158 °F
Maximum relative humidity	95 % (no condensation)
Vibration, sinusoidal (IEC EN 60068-2-6)	1 g in frequency range between 10 ... 500 Hz 2 g in frequency range 45 ... 100 Hz
Shock, semi-sinusoidal (IEC EN 60068-2-27)	15 g (3 shocks per axis and direction)
Electromagnetic compatibility	Tested according to the following standards and regulations: EN 61 326-1 (1998) IEC 1000-4-1...6, NAMUR NE 21

Accessories and Spare Parts

Designation	Illustration	Description	Order number
Fieldbus-isolating repeater, up to 1.5 MBit/s, for application in safe areas (non-Ex) or Zone 2 / Div. 2	 09867E00	<ul style="list-style-type: none"> • Equipment for installation in safe areas or Zone 2 / Div. 2 • For fieldbuses with RS 485 interface • Suitable for Profibus DP, Modbus, R. STAHL ServiceBus • Interface to automation system RS 232, RS 422, RS 485 • Automatic setting of transfer rate for Profibus DP • Adjustable transfer rate (1.2 kBit/s to 1.5 MBit/s) • Power supply 24 V AC/DC • Further information see data sheet Series 9185/12 	9185/12-45-10s
Sub-D plug	 09868E00	<p>9-pole 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 (according to PNO standard)</p>	162693

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



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**CPU & Power Module for Zone 2 / Division 2
Series 9440/15**

We reserve the right to make alterations to the technical data, weights, dimensions, designs and products available without notice. The illustrations cannot be considered binding.

