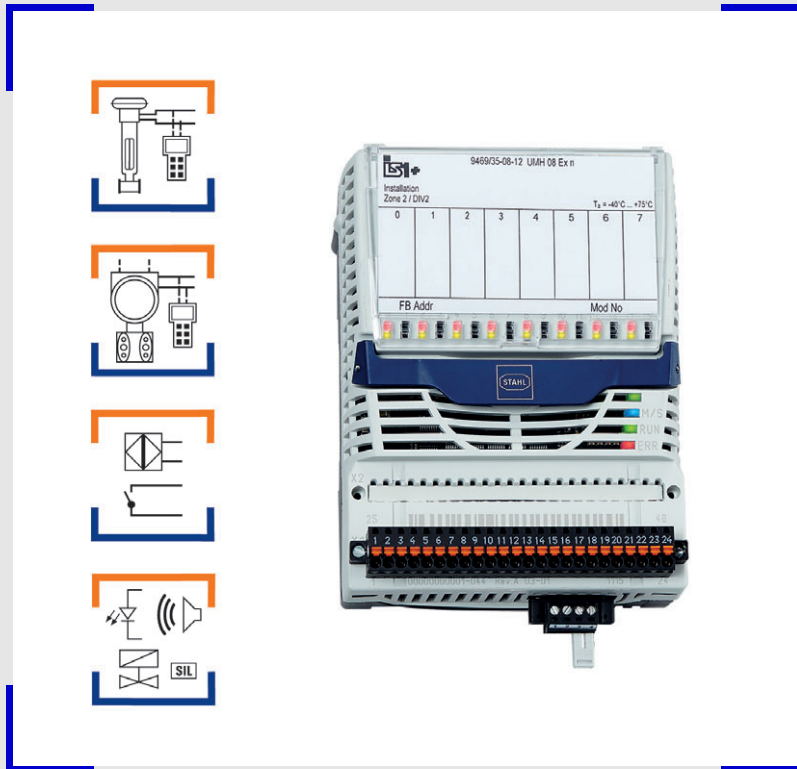


Ex n HART universal module, Zone 2 Series 9469/35



18499E00

- > 8 channels can be adjusted individually as inputs or outputs
- > Up to 8 channels can be used as analogue inputs or outputs in 0/4 to 20 mA 2-conductor technology, adjustable with and without HART
- > Up to 4 channels can be used universally as
 - analogue inputs in 3-/4-conductor technology, adjustable with and without HART
 - Binary inputs for 3-conductor PNP proximity switches
 - Contacts 24 V
 - Binary 24 V / 0.5 A outputs
- > Line fault monitoring
- > LED display for signal and errors for each channel
- > Additional control input for "System OFF" (in accordance with IEC61508 through SIL2, low demand)
- > Energized module can be replaced in hazardous areas (hot swap)

A4



The HART universal module connects up to 8 non-intrinsically safe signals to the IS1+ Remote I/O system. All 8 channels are individually configurable as inputs or outputs and can be used as analogue inputs for 2-conductor transmitters or as outputs for final control elements or indicating devices. Up to 4 channels can either be used as analogue or binary inputs/outputs. If configured as an analogue input, connecting 3-/4-conductor transmitters (including power unit) is also possible. If configured as a binary input, connecting a 3-conductor PNP proximity switches with a 24 V power supply is also possible (alternatively as a binary output for connecting solenoid valves (24 V / 0.5 A)).

Each analogue channel enables digital communication with the connected transmitters via the HART protocol. The power supply for 3-conductor proximity switches and solenoid valves comes from an external power supply via a separate terminal. This also contains the "System OFF" control input for safe shut-off of all channels. All inputs and outputs are monitored for short circuiting and line breakage and are short-circuit proof.

Function-compatible replacement for IS1 I/O modules: 9461/15 and 9466/15 series

	ATEX / IECEx					
Zone	0	1	2	20	21	22
For use in			x			x

WebCode 9469A

Ex n HART universal module, Zone 2

Series 9469/35



Selection Table

Version	Description	Installation	Order number	Weight kg
HART universal module	8 channels can be used as an analogue 2-conductor input/output with HART; of these, 4 channels can also be used as 3-/4-conductor HART inputs with a power supply, as 3-conductor PNP inputs with a power supply or as 24 V / 0.5 A binary outputs. With status LED channel and "System OFF".	Zone 2	9469/35-08-12	0.250
Note	Please order terminal separately - see Accessories			

Explosion Protection

Global (IECEX)

Gas	IECEX DEK 17.0044X Ex ec ic [ia Ga] IIC T4 Gc or Ex nA ic [ia Ga] IIC T4 Gc
-----	---

Europe (ATEX)

Gas	DEKRA 17ATEX0099 X ⊕ II 3 (1) G Ex ec ic [ia Ga] IIC T4 Gc or ⊕ II 3 (1) G Ex nA ic [ia Ga] IIC T4 Gc
-----	---

Certifications and certificates

Certificates	ATEX, IECEX
Ship approval	In progress

Further parameters

Installation	In Zone 2, Zone 22 and in the safe area (non-intrinsically safe field circuits)
Further information	see operating instructions and certificates

Technical Data

Electrical data

Module				
Number of channels	8			
Channels 0 to 7	Individually configurable as a 2-conductor analogue input/output (0/4 to 20 mA) with/without HART			
Channels 4 to 7	Adjustable parameters: 3-, 4-conductor analogue input (0/4 to 20 mA) with/without HART; 2-, 3-conductor PNP proximity switch; contact (24 V); binary output (24 V / 0.5 A)			
Analogue inputs/outputs for 2-conductor transmitter				
Number of channels	8 (channels 0 to 7)			
Supply voltage for 2-conductor transmitter	15.5 V (at 20 mA)			
Nominal signal range	Adjustable parameters: 0 to 20 mA / 4 to 20 mA			
Digital communication	HART protocol (up to Version 7.x, only at 4 to 20 mA)			
Min. signal	0 mA			
Max. signal				
For inputs	23.5 mA			
For outputs	Adjustable parameters: 22.8 mA (4 to 20 mA) / 23.5 mA (0 to 20 mA)			
Max. input resistance per channel	200 Ω			
Max. load resistance (output)	750 Ω at 20 mA 700 Ω at 21.8 mA			
Signal transmission	Filter time constant (adjustable parameters)	small	medium	large 50 Hz, 60 Hz
	Resolution in the range 4 to 20 mA	14.75 bit (with HART: 12.75 bit)	14.75 bit	14.75 bit
	Maximum delay from signal / internal bus	180 ms	255 ms	630 ms
Step response output (10 to 90%)	80 ms			
Signal errors for each channel				
Wire breakage	Adjustable parameters: 2.4 mA / 3.6 mA (4 to 20 mA)			
Short circuit	Adjustable parameters: 22.8 mA (4 to 20 mA) / 23.5 mA (0 to 20 mA)			
Measuring range	Exceeding / shortfall			

Ex n HART universal module, Zone 2

Series 9469/35



Technical Data

Analogue inputs for 3/4-conductor transmitters				
Number of channels	4 (channels 4 to 7)			
Supply voltage	Corresponds to the ext. supply voltage U_H (X0)			
Direct voltage for 4-conductor current input	0 to +32 V DC			
Nominal signal range	Adjustable parameters: 0 to 20 mA / 4 to 20 mA			
Digital communication	HART protocol (up to Version 7.x, only at 4 to 20 mA)			
Min. signal	0 mA			
Max. signal for inputs	23.5 mA			
Max. short-circuit current	< 30 mA			
Max. input resistance	200 Ω			
Signal transmission	Filter time constant (adjustable parameters)	small	medium	large 50 Hz, 60 Hz
	Resolution in the range 4 to 20 mA	14.75 bit (with HART: 12.75 bit)	14.75 bit	14.75 bit
	Maximum delay from signal / internal bus	180 ms	255 ms	630 ms
Signal errors for each channel				
Wire breakage	Adjustable parameters of 2.4 mA / 3.6 mA (4 to 20 mA)			
Short circuit	Adjustable parameters: 22.8 mA (4 to 20 mA) / 23.5 mA (0 to 20 mA)			
Measuring range	Exceeding / shortfall			
Binary inputs for 3-conductor PNP proximity switches and 24 V contacts				
Number of channels	4 (channels 4 to 7)			
Supply voltage	Corresponds to the ext. supply voltage U_H (X0)			
Min. ON input signal	> 60% supply voltage U_H			
Max. OFF input signal	< 55% supply voltage U_H			
Switching hysteresis	5% supply voltage U_H			
Internal resistance	11 k Ω			
Signal transmission	Filter time constant (adjustable parameters)	small	medium	large 50 Hz, 60 Hz
	Max. switching frequency	f < 2.7 Hz	f < 1.9 Hz	f < 0.7 Hz
	Minimum pulse duration	180 ms	255 ms	630 ms
Pulse extension	1.2 s (adjustable parameters, applies to all digital inputs)			
Signal	3-conductor PNP proximity switches with and without 47 k Ω resistors connected in parallel for line fault detection			
Signal errors for each channel				
Wire breakage	Input signal \leq 1.8 V			
Short circuit	To the earth			
Binary outputs				
Number of channels	4 (channels 4 to 7)			
Supply voltage	Corresponds to the ext. supply voltage $U_H - 0.7$ V (X0)			
Output current	30 mA to 0.5 A per channel (electronically limited)			
Max. switchable inductance	< 0.5 H per channel (ext. freewheeling diode parallel to the load recommended)			
Signal errors for each channel				
Wire breakage	< 30 mA			
Short circuit	< 20 Ω			
X0 external supply				
Supply voltage U_H	18 to 32 V DC (nominal voltage of 24 V)			
Max. current consumption	4 x 0.5 A (depends on the total current of the binary outputs)			

A4

Ex n HART universal module, Zone 2

Series 9469/35



Technical Data

X0 "Plant STOP" control input		
Function	"Plant STOP" for switching off all channels (DO and AO)	
Suitability	Disconnection up to SIL 2, low demand (IEC61508)	
Control input		X0 pin 3, 4
	"Normal operation" ("Plant STOP" deactivated)	Terminals bridged
	"OFF" ("Plant STOP" activated)	Interrupted
Galvanic separation		
Test voltage		
acc. to standard	EN 60079-11	
Between ext. supply voltage / system components (BusRail)	≥ 1500 V AC	
Between I/O channels / system components	≥ 1500 V AC	
Between I/O channels / ground (PA)	≥ 1500 V AC	
Electromagnetic compatibility	The inputs and outputs of an I/O module have a shared minus conductor. Tested to the following standards and regulations: EN 61326-1 (2006) IEC 61000-4-1 ... 6, NAMUR NE 21	
Electrical connection		
Ex n X1 field signals	1 pluggable, black terminal, 24-pin, 1.5 mm ² , push-in design with lock (must be ordered separately)	
	Single-wire connection	
	- rigid	0.08 to 1.5 mm ² (AWG 28 to 16)
	- flexible with core end sleeves (without plastic sleeve)	0.25 to 1.5 mm ²
	- flexible with core end sleeves (with plastic sleeve)	0.25 to 0.5 mm ²
	- stripping length	min. 10 mm
External supply and "Plant STOP" X0	Pluggable, black terminal, 4-pin, 1.5 mm ² , screw terminal design with lock (included)	
	Single-wire connection	
	- rigid	0.08 to 1.5 mm ² (AWG 28 to 16)
	- flexible with core end sleeves (without plastic sleeve)	0.25 to 1.5 mm ²
	- flexible with core end sleeves (with plastic sleeve)	0.25 to 0.5 mm ²
	- tightening torque	0.5 to 0.6 Nm
	- stripping length	min. 7 mm
Auxiliary power		
Version	Intrinsically safe Ex ia via BusRail	
Behaviour during undervoltage	All inputs/outputs "OFF"	
Max. current consumption	250 mA	
Max. power consumption	< 6 W	
Max. power dissipation	< 5.9 W	

Technical Data

Device-specific data

Settings							
Module							
Diagnostics message	ON / OFF						
Signal filter	small / medium / large 50 Hz / large 60 Hz						
Scan HART live list	ON / OFF						
Signal							
Signal type	2-, 3-, 4-conductor analogue input (0/4 to 20 mA); 2-conductor analogue output (0/4 to 20 mA); contact (24 V); 3-conductor PNP proximity switch; binary output (24 V / 0.5 A)						
Line fault monitoring	ON / OFF						
Behaviour in case of error							
Analogue signals / binary signals	-10%	0%	100%	AI status code AO 110%	AI status code AO 110%	Holding 0%	Hold 100%
	0	0	1	1	0	0	1
Cyclic transmission of HART variables	no / 4 HV / 8 HV						
Accuracy of measurement							
0/4 to 20 mA for inputs / outputs							
Filter time constant	small		medium		large 50 Hz, 60 Hz		
Maximum error of measurement	16 µA 0.08% at 0 to 20 mA 0.1% at 4 to 20 mA						
Ambient temperature influence	0.07% / 10 K						
Note	All values in % of the signal span at 23 °C						

Ambient conditions

Ambient temperature	-40 to +75 °C
Storage temperature	-40 to +80 °C
Maximum relative humidity	95 % (without condensation)
Maximum operating height	< 2000 m
Semi-sinusoidal shock (IEC EN 60068-2-27)	15 g (3 shocks per axis and direction)
Sinusoidal vibration (IEC EN 60068-2-6)	1 g in the frequency range 10 to 500 Hz 2 g in the frequency range 45 to 100 Hz

Mechanical data

Degree of protection (IEC 60529)	IP30
Module enclosure	polyamide 6GF
Fire resistance (UL 94)	V2
Pollutant class	corresponds to G3
Dimensions	L = 128 mm, W = 96.5 mm, H = 67 mm

Indication

LED indication	
Channel error	LED, red for each channel
Channel status	Yellow LED for each channel (only for digital signals)
"Plant STOP"	"24 V" LED, yellow
24 V external supply	"24 V" LED, green
Module requires maintenance	LED "M/S", blue
Operating state	LED "RUN", green
Group error	LED "ERR", red

Ex n HART universal module, Zone 2

Series 9469/35




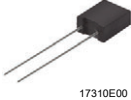
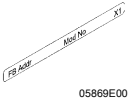
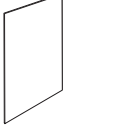


Technical Data

Function indication	
Retrievable parameters	Manufacturer, Type, hardware revision, software revision, serial number
Error indication	
Module status and alarms	<ul style="list-style-type: none"> • Internal bus error primer / redundant • No response from IOM • Configuration does not correspond to the module • Hardware error • Excess temperature • Slot error • Module requires maintenance
Signal errors for each channel	
Signal status bit	"1" = signal interfered; "0" = signal valid

Mounting / Installation

Mounting orientation	horizontal or vertical (observe operating instructions)
Mounting type	on 35 mm DIN rail NS 35/15 (DIN EN 60715)
Engineering notes	<ul style="list-style-type: none"> • The 94xx/x5 versions may only be installed in Zone 2 or in a safe area • Combined operation with Ex i modules (94xx/x2 and /x3) on a BusRail is permitted • In this case, maintain a distance of 50 mm between the terminals with intrinsically safe and those with non-intrinsically safe field circuits. Alternatively, install a partition.

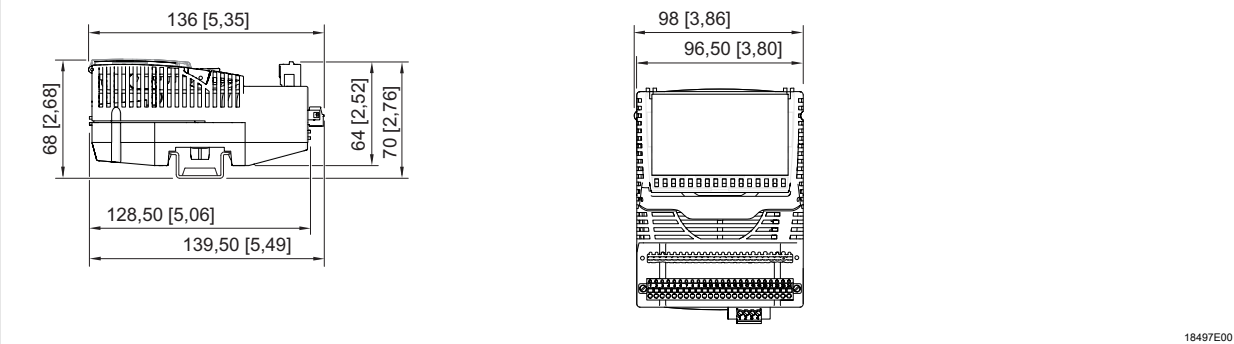
Accessories and Spare Parts

Designation	Figure	Description	Art. no.
Pluggable terminal	 17743E00	1.5 mm ² with lock, 24-pole, spring clamp connection, black, for connecting the field signals to I/O modules, for non-intrinsically safe field circuits Caution: only for 9471/35 and 9472/35 I/O modules Labelling: 1 ... 24	245090
Resistor error message suppression	 17310E00	The resistors are used to suppress error messages for unused I/O channels Resistance value: 5K6 / 0.5 W Suitable for: AIM 9468; DIOM 9470; DIOM 9471; DIOM 9472; DOM 9475 single electrical equipment for intrinsically safe circuits according to EN 60079-11	244911
		Resistance value: 62R / 0.5 W Suitable for: AOM 9468; TIM 9482	244912
Labelling strips	 05869E00	"FB Addr ... Mod No ..." for pluggable terminal, sheet with 26 strips	162788
DIN A4 sheet	 09900E00	For label plate on I/O modules; 6 labels on each sheet; print-out using IS Wizard; packaging unit = 20 sheets	162832
Partition	 15196E00	For mounting between intrinsically safe and non-intrinsically safe connections of the I/O modules, in order to adhere to the required 50 mm distance	220101
Warning sign	 05872E00	"Clean modules only with a damp cloth."	162796

Ex n HART universal module, Zone 2 Series 9469/35



Dimensional drawings (all dimensions in mm [inches]) ⌀ Subject to modifications



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.