# TSGASH-1624

Safe gas/flame detector input FTA with HART interface (0-20 mA, 16 channels)

## Description

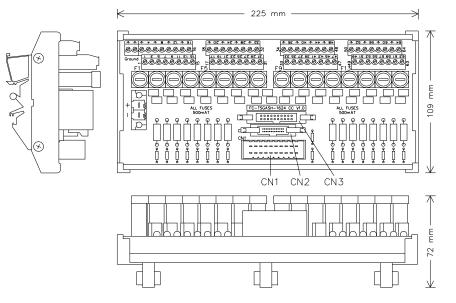
The field termination assembly module TSGASH-1624 is the interface between gas/flame detectors with HART interface in the field and the safe high-density analog input module SAI-1620m in Safety Manager.

The TSGASH-1624 module has sixteen analog input channels which may be used for both safety-related and non-safety-related applications.

The TSGASH-1624 module provides HART interface on all 16 channels. The module uses a SICC-0001/Lx system interconnection cable to transfer the 16 input signals to a (redundant pair of) SAI-1620m module(s).

The FTA module has a universal snap-in provision for standard DIN EN rails, and screw terminals for connection of ground and field wiring.

The FTA module has a 2-pole power connector to connect the module with a 24Vdc power source.



#### Figure 334 Mechanical layout

## **Main functions**

The TSGASH-1624 module has the following functions:

- Linear direct conversion of 0(4)-20mA DC field signals to signal levels of the safe high-density analog input module SAI-1620m
- Power supply distribution to each transmitter (500mAT fused)
- Enable connection to HART multiplex units of MTL or Pepperl+Fuchs (P+F)
- Enable monitoring of the external power connected to the TSGASH-1624 module.

#### Linear direct conversion

The input circuit of each channel consists of a high-precision resistor which converts the input current (0-20mA) to the input voltage for the high-density analog input module SAI-1620m. The power to the analog transmitter is fused (500mAT) per channel.

Each analog input has its own terminal for the field cable shield.

Figure 335 on page 559 shows the schematic diagram for connecting a transmitter (active or passive).

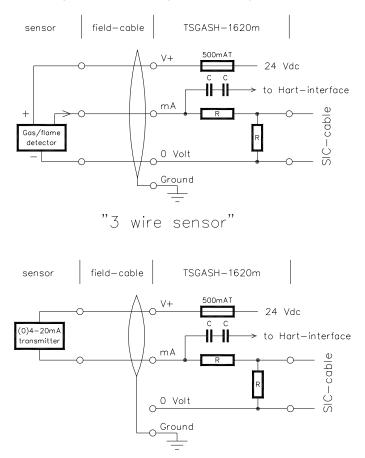
### HART interface

The TSGASH-1624 module provides interfaces to HART multiplex units from MTL and Pepperl+Fuchs (P+F). Dedicated connectors are installed on the FTA to enable the use of the standard cables from these suppliers.

	MTL Solution	P+F solution
Multiplexer unit	MTL4842	KFD0-HMS-16 or KFD2-HMM-16
Cable	MTL FLAT20-2.2	K-MH26
Connector on FTA <sup>1</sup>	CN3	CN2

The following equipment can be connected:

1 See Figure 334 on page 557



#### Figure 335 Schematic diagram for connecting a transmitter

"2 wire sensor"

#### External power

 $\mathbb{Z}$ 

A 24 Vdc power distribution cable (see data sheet "PDC-MB24-x" on page 812 for details) can be used to connect the main bus bar with the power connector on the TSGASH-1624 module.

• When using other connection cables, make sure the wire size is adequate and the supplied Weidmuller BL 5.08/SN OR connector is used.

Note

The 0 V connection of the external power is directly connected to the common 0 V of all sixteen analog inputs.

The Safety Manager software can monitor the external power voltage via the safe high-density analog input module SAI-1620m.

## Applications

For applications and connection options for the TSGASH-1624 module, see section "SICC-0001/Lx" on page 715.

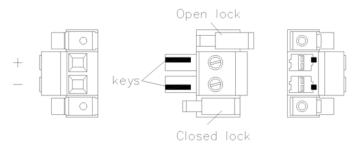
## Connections

### External power and ground

Figure 336 on page 560 shows the top, side & bottom view and the pin assignment of the power input connector.

- The pin marked '+' is pin 1: connected to +24Vdc bus bar.
- The pin marked '-' is pin 2: connected to the 0Vdc bus bar.

Figure 336 Power input connector (Weidmuller BVZ 7.62/02F SW) top, side and bottom view



The two (orange) locking slides of the cable-connector in Figure 336 on page 560 keep the cable-connector locked when inserted into the power connector.

The (two) Ground screw connections on the top left side in Figure 334 on page 557 are used to connect Ground with the "ground" pins of the channels. One ground wire is enough.

### **Connections diagram**

The TSGASH-1624 module has sixteen groups (= sixteen channels) of four screw terminals to provide optimum connection of field wiring, with a ground terminal per channel for screening of analog input cables. The screw terminals are numbered 1 to 64.

The connections diagram of the TSGASH-1624 module is as follows:

	TIONS DIAGRAM FC-TSGASH-1624		
Internal connectors		Field termina	
I E Signal		Signal	Terminal number
1 + 24 Vdc	F	Ground	÷
1 <del>+</del> 24 V0C	500mAT	Ground	÷
2 - 0 Vdc		N1 (V+) N1 (ground)	1 +
24 Vdc ext.	+ <u>R</u> +	IN1 (mA input)	3
	500mAT	IN1 (0 Volt) IN2 (V+)	4
CN3		IN2 (ground)	÷
MTL Hart— interface		N2 (mA input)	7
Hart1 Hart2		IN2 (0 volt) IN3 (v+)	8 9
Hart3 Hart4	Hart3 ← III	- IN3 (ground)	÷
Hart5 Hart6 Hart7 Hart8		IN3 (mA input)	11
Hart9 Hart10	500mAT	IN3 (0 volt) IN4 (v+)	12
Hart11 Hart12	Hart4 ←	IN4 (ground)	÷
Hart13 Hart14 Hart15 Hart16		N4 (mA input)	15 16
0 Volt 0 Volt	500mAT	N4 (0 Volt)	16
0 Volt 0 Volt		IN5 (v+)	17
20-pole conn.	Hart5 ← HH	IN5 (ground) IN5 (mA input)	÷ 19
	500mAT	INS (mA input) INS (0 Volt)	20
CN1		IN6 (v+)	21
SIC connector		IN6 (ground) IN6 (mA input)	÷ 23
A10 0 Vdc	500mAT	IN6 (0 Volt)	24
B10 0 Vdc		- IN7 (ν+)	25
B9 IN2	Hart7 ←	IN7 (ground) IN7 (mA input)	÷ 27
A8 IN3		- IN7 (0 Volt)	28
B8 IN4		- IN8 (v+)	29
B7 IN6 -	Hart8 ← +	IN8 (ground) IN8 (mA input)	÷ 31
A6 IN7		- IN8 (0 Volt)	32
B6 IN8	500mAT		
B5 IN10		IN9 (V+) IN9 (ground)	33
A4 IN11 - B4 IN12 -		IN9 (mA input)	35
A3 IN13	500mAT	- IN9 (0 Volt)	36
B3 IN14 -	+ <b>I</b> − <b>I</b>	IN10 (v+) IN10 (ground)	37 - 느
A2 IN15		IN10 (mA input)	39
A1 0 Vdc	500mAT	IN10 (0 Volt)	40 41
B1 +Vext/8		IN11 (V+) IN11 (ground)	41 +
		IN11 (mA input)	43
	500mAT	IN11 (0 Volt) IN12 (V+)	44 45
	Hart12 ← H	- IN12 (ground)	÷
CN2		IN12 (mA input)	47
P&F Hart-	500mAT	- IN12 (0 Volt)	48
interface 0 Volt 0 Volt		– IN13 (v+)	49
0 Volt 0 Volt	Hart13 ←	IN13 (ground)	+
0 Volt Hart1	500mAT	<ul> <li>IN13 (mA input)</li> <li>IN13 (0 Volt)</li> </ul>	51 52
Hart2 Hart3 Hart4 Hart5		IN14 (v+)	53
Hart6 Hart7	Hart14 ← III	IN14 (ground) IN14 (mA Input)	÷ 55
Hart8 0 Volt	500mAT	IN14 (mA input) IN14 (0 Volt)	55 56
0 Volt Hart9 Hart10 Hart11		- IN15 (v+)	57
Hart12 Hart13	Hart15 ←	N15 (ground) N15 (mA input)	÷ 59
Hart14 Hart15	500mAT	IN15 (mA input) IN15 (0 Volt)	59 60
Hart16 0 Volt 0 Volt 0 Volt		– IN16 (v+)	61
26-pole conn.		IN16 (ground) IN16 (mA input)	÷ 63
i <u> </u>		IN16 (mA input) IN16 (0 Volt)	63 64
		•`````	

Figure 337 Connections diagram

## **Technical data**

General	Type numbers <sup>1</sup> :	FC-TSGASH-1624 CC V1.0	
	Approvals:	CE; TUV, UL, CSA pending	
Input	Number of input channels:	16 (with common 0 V)	
	Power requirements:	24 Vdc external, 2.5mA (without field loads)	
	Input current:	0—25 mA	
	Input resistance:	500 Ω (± 5%)	
Output	To SAI-1620m module:		
	Output voltage	0—4 Vdc	
	Accuracy	0.1%	
	To HART multiplexer unit:		
	Output voltage	Max. 11 V peak-peak	
	Series impedance	> 2µF	
Fuses	Rating:	500 mAT (slow-acting)	
	Dimensions:	$5 \times 20 \text{ mm} (0.20 \times 0.79 \text{ in})$	
Physical	Module dimensions:	$225 \times 109 \times 60 \text{ mm} (L \times W \times H)$	
		$8.86 \times 4.29 \times 2.36$ in (L × W × H)	
	DIN EN rails:	TS32 / TS35 × 7.5	
	Used rail length:	226 mm (8.90 in)	
Termination	Screw terminals:		
	• Max. wire diameter	2.5 mm <sup>2</sup> (AWG 14)	
	Strip length	7 mm (0.28 in)	
	Tightening torque	0.5 Nm (0.37 ft-lb)	
	Power connector:		
	• model	2 pole header with keying	
	• Make and type	Weidmuller: BVZ 7.62/02F SW (con.)	
		Weidmuller: KO BV/SV7.62 (keys)	
	Strip length	8 mm (0.28 in)	
	connectable conductors	0.5—6 mm <sup>2</sup> (AWG20—AWG10)	

The TSGASH-1624 module has the following specifications:

1 FC-type modules are conformal coated modules. Conformal coated modules have the letters "CC" preceding the version number.