



Safety Manager Release 162



Hardware Reference

EP-SM.MAN.6284

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- Original Instructions -

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8 Input modules

8.4 SAI-1620m

8.4 SAI-1620m

8.4.1 Safe high-density analog input module (16 channels)

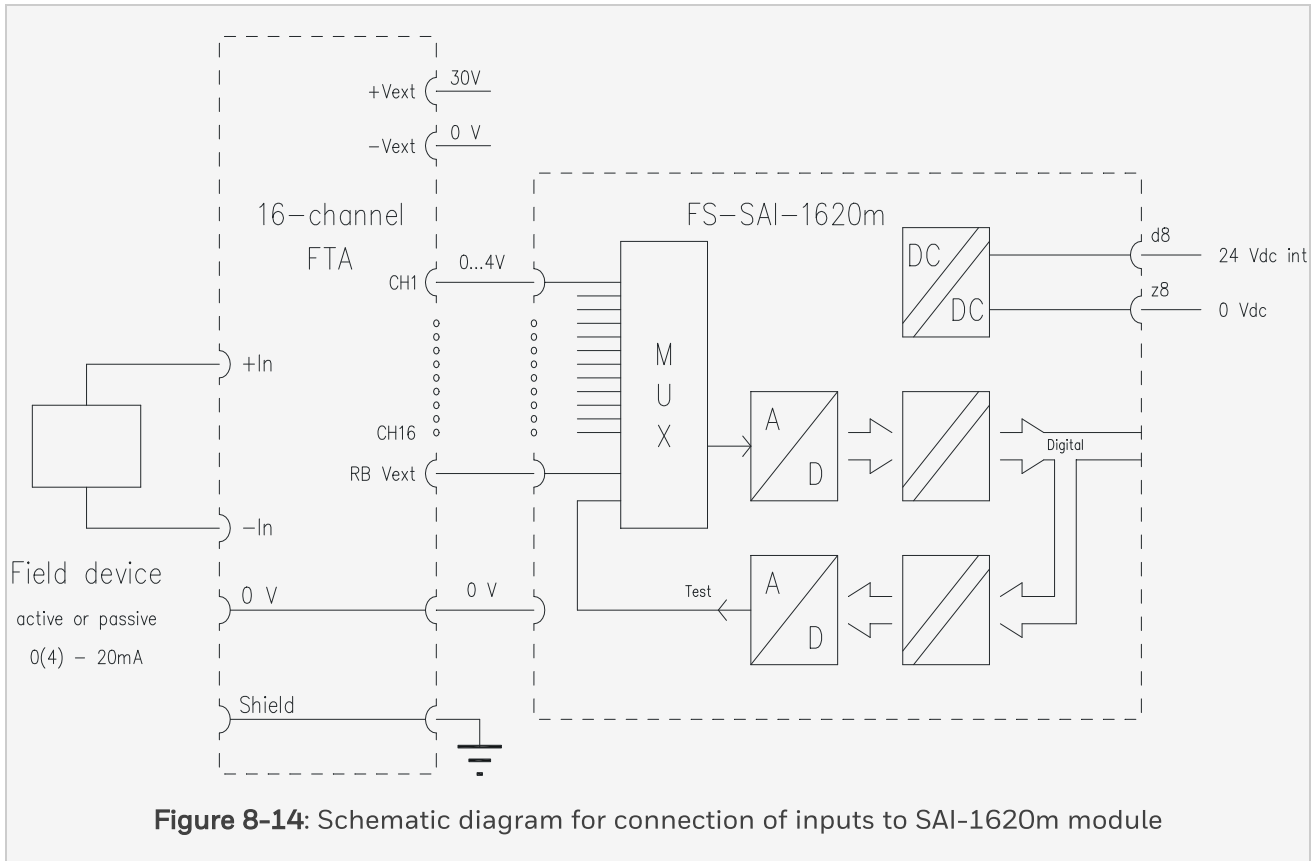
The analog input module SAI-1620m has sixteen analog inputs (0–4 V) and an external voltage readback input (0–4 V). The sixteen channels are safe (safety class SIL3, in compliance with IEC 61508) and have an isolated analog 0 V common to all sixteen channels.

The field signals for the analog inputs of the SAI-1620m module need to be converted from 0–20 mA to a level suitable for the SAI-1620m module.

You can perform this conversion in two ways:

- On the field termination assembly module TSAI-1620m, TSHART-1620m, TSGAS-1624 or TSFIRE-1624
- Analog input conversion module BSAI-1620mE, located on programming connector (P_x) on the back of the IO backplane in the 19-inch chassis.

Analog input signals, such as thermocouple or PT-100, can only be used after conversion to 0(4)–20 mA with a dedicated converter (and a TSAI-1620m or BSAI-1620mE module).



The self-test of the module, which is controlled by the Safety Manager Controller, checks:

- Absolute accuracy
- Correct conversion over the full range
- Crosstalk between inputs
- Channel input filters
- Internal supply voltages

8.4.2 Pin allocation

The following overview contains the back view and pin allocation of the SAI-1620m module connector:

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8.4 SAI-1620m

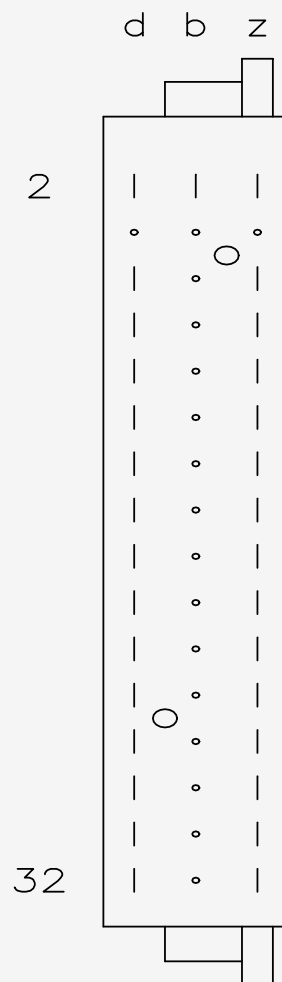


Figure 8-15: Back view and pin allocation of the SAI-1620m module connector

d2	
d4	-
d6	
d8	Int. 24 V DC supply
d10	Analog ground
d12	IN 1
d14	IN 3
d16	IN 5
d18	IN 7
d20	IN 9
d22	IN 11
d24	IN 13
d26	IN 15
d28	Analog ground
d30	
d32	
b2	GND
z2	5 V DC
z4	-
z6	
z8	Int. 0 V DC supply
z10	Analog ground

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z12	IN 2
z14	IN 4
z16	IN 6
z18	IN 8
z20	IN 10
z22	IN 12
z24	IN 14
z26	IN 16
z28	Readback external power
z30	
z32	

8.4.3 Connection examples

The below figures show typical connection examples for the SAI-1620m module.

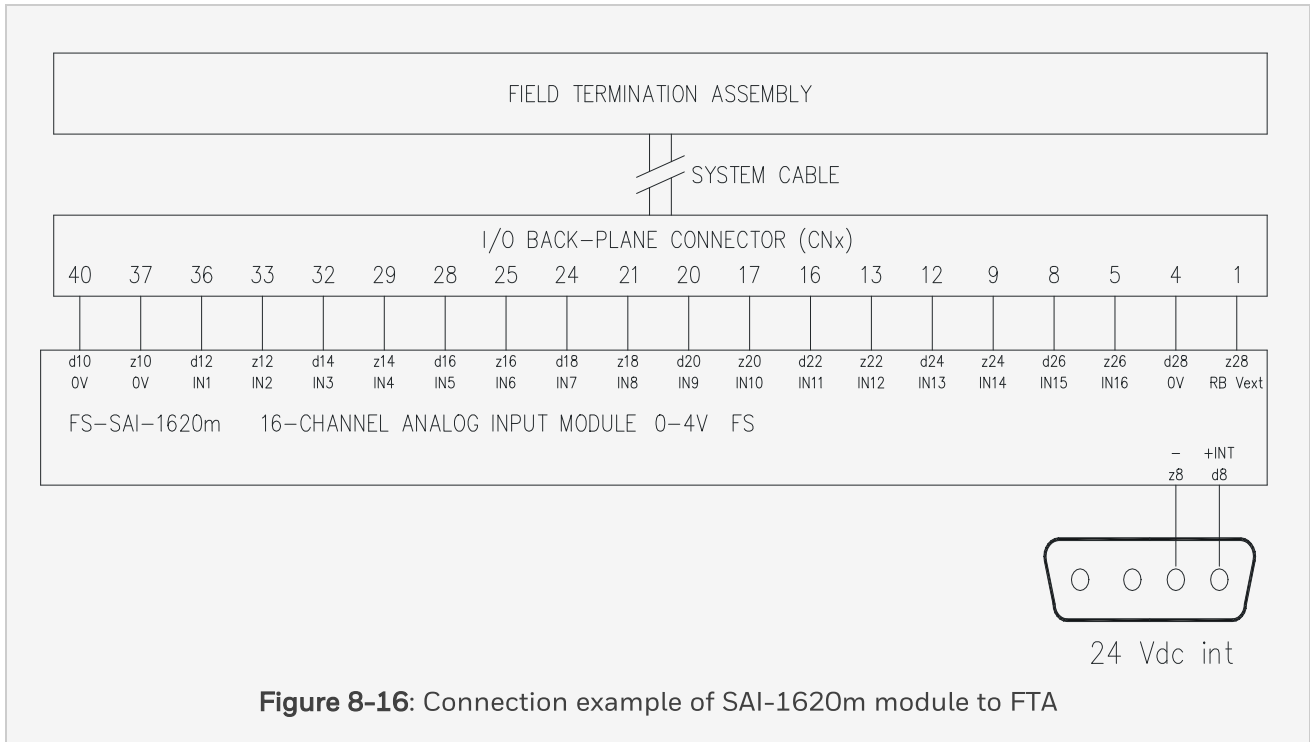


Figure 8-16: Connection example of SAI-1620m module to FTA

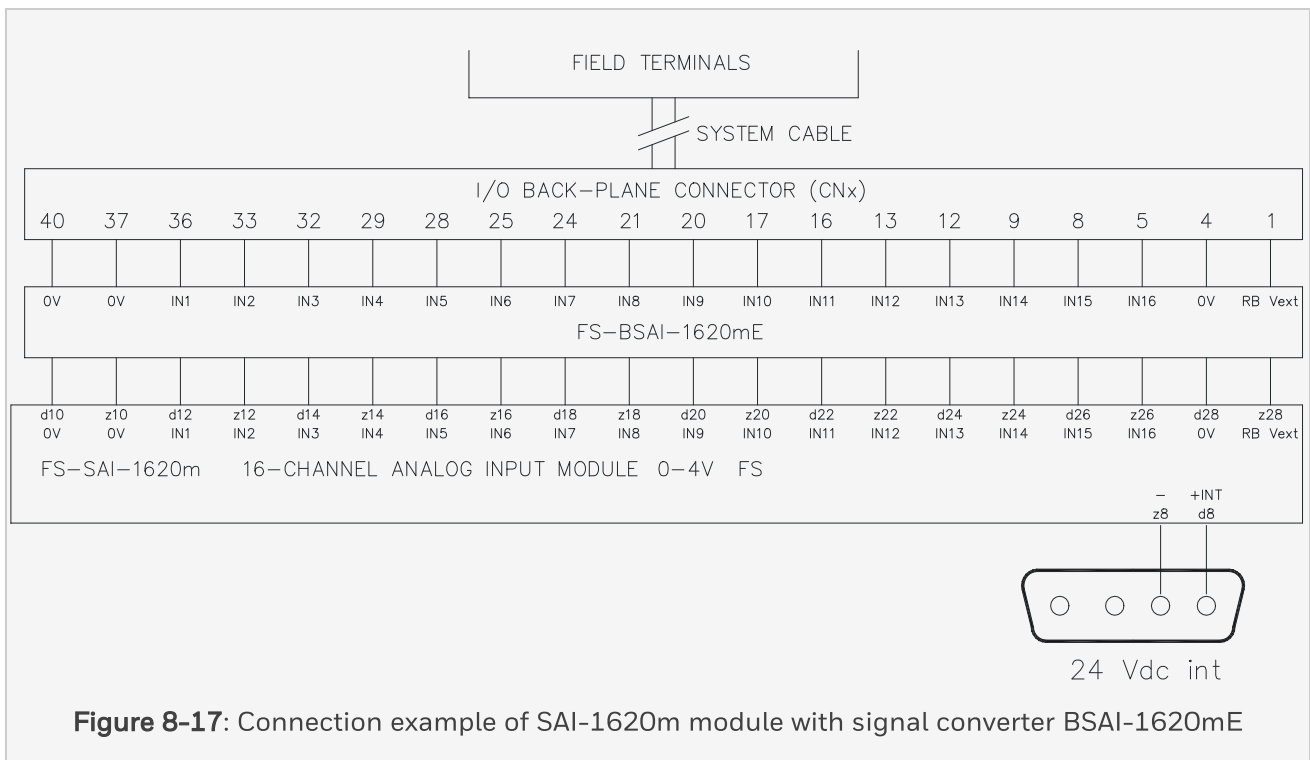


Figure 8-17: Connection example of SAI-1620m module with signal converter BSAI-1620mE

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8.4 SAI-1620m

8.4.4 Hazardous locations (FM 3611)

The SAI-1620m module can also be used in non-hazardous areas for non-incendiary field circuits to Division 2 locations in compliance with FM 3611 (Class I, Division 2, Groups ABCD; Class II, Division 2, Groups FG). For more details, see Safety Manager FM approval PM.MAN.6348.

8.4.5 Technical data

The SAI-1620m module has the following specifications:

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General	Type numbers:	FS-SAI-1620m
		FC-SAI-1620m
		FA-SAI-1620m
	Approvals:	CE, TUV, UL, CSA, FM
	Space requirements:	4 TE, 3 HE (= 4 HP, 3U)
Power	Power requirements:	5 V DC, 35 mA
		24 V DC, 35 mA
Input	Number of input channels:	16
	Input range:	0-4.1 V
	Input resistance:	> 1 M Ω
	Maximum load capacitance:	100 nF
	A/D converter:	12-bit
	A/D converter inaccuracy:	± 1 LSB
	Module inaccuracy:	< 0.25%
	Absolute max. input signal:	± 36 V DC
	Cross talk between channels:	> 60 dB ³
	External voltage read back:	
	• Range	0-4.1 V
	• Input resistance	Typically 1 M Ω

Key coding	(See section Key coding)	
	Module connector code:	
	• Holes	A5, C25
	Chassis connector code:	
	• Large pins	A5, C25