



Key coding

Plug-and-play modules

Table 3 below shows the key coding of plug-and-play FSC modules (with type number 10xxx/2/x).

Table 3 Key coding of plug-and-play I/O modules

Module type	Module code		Module type	Rack code	
	Holes			Large pins	
10100/2/1	A5	A7	10100/2/1	A5	A7
10101/2/1	A5	C5	10101/2/1	A5	C5
10101/2/2	A5	C9	10101/2/2	A5	C9
10101/2/3	A5	C13	10101/2/3	A5	C13
10102/2/1	A5	C17	10102/2/1	A5	C17
10104/2/1	A5	C21	10104/2/1	A5	C21
10105/2/1	A5	C25	10105/2/1	A5	C25
10201/2/1	A9	C9	10201/2/1	A9	C9
10205/2/1	A9	C5	10205/2/1	A9	C5
10206/2/1	A9	C13	10206/2/1	A9	C13
10208/2/1	A9	C17	10208/2/1	A9	C17
10209/2/1	A9	C21	10209/2/1	A9	C21
10213/2/2	A9	C25	10213/2/2	A9	C25
10213/2/3	A9	C29	10213/2/3	A9	C29
10215/2/1	A13	C5	10215/2/1	A13	C5
10216/2/1	A13	C9	10216/2/1	A13	C9
10216/2/3	A13	C13	10216/2/3	A13	C13
10302/2/1	A5	A9	10302/2/1	A5	A9
10310/2/1	A5	A11	10310/2/1	A5	A11
10311/2/1	A5	A13	10311/2/1	A5	A13



10209/2/1

Digital output module (24 Vdc, 0.1 A, 16 channels)

Description

The digital output module 10209/2/1 has sixteen 24 Vdc, 100 mA output channels to drive loads up to 2.5 W. These loads may be resistive (e.g. LEDs) or inductive (e.g. relays). For inductive loads, a suppression diode is included on each output. The outputs are not tested and may therefore **not** be used for fail-safe applications.

The outputs are also controlled by the watchdog. This means that the outputs are de-energized if the system shuts down and the watchdog switches off.

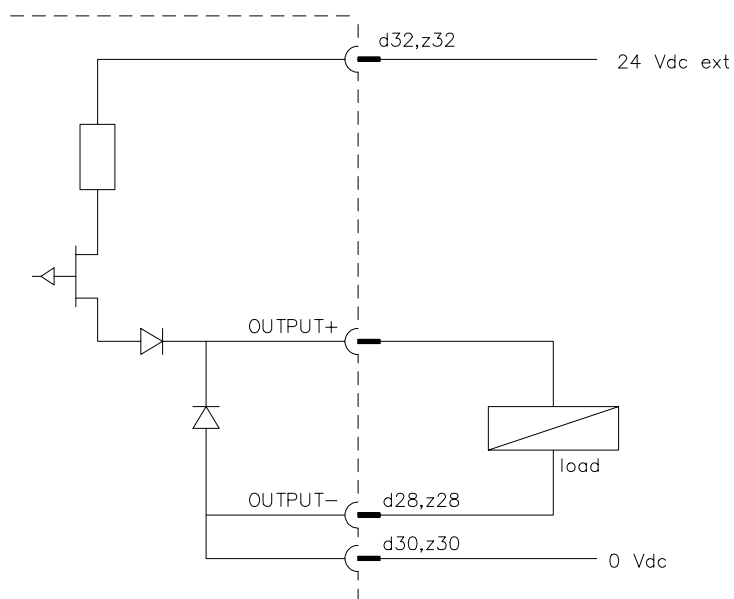
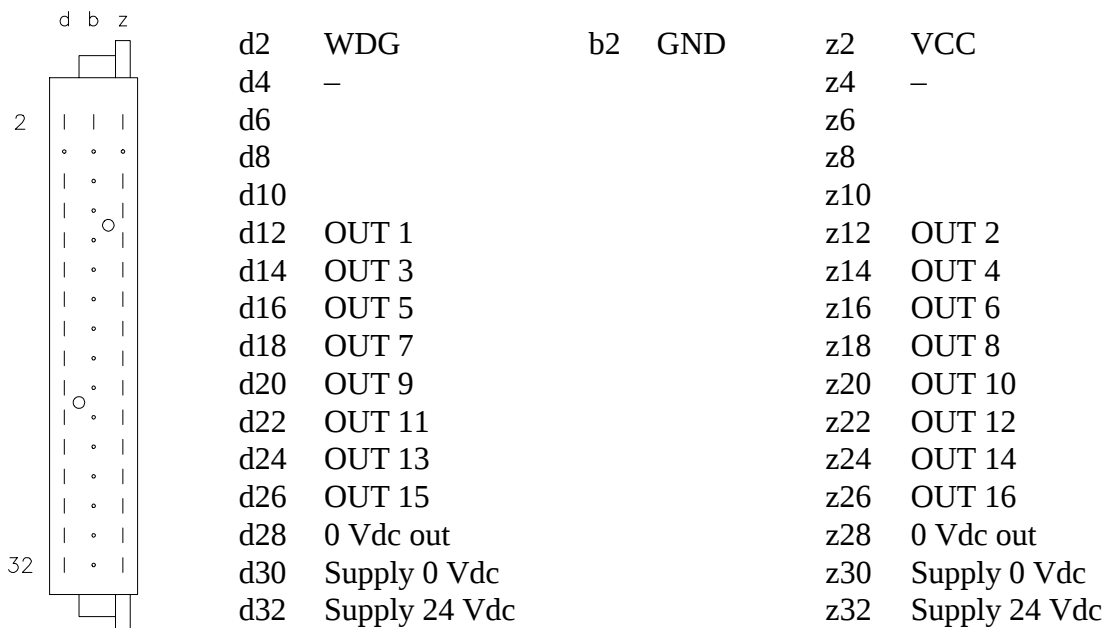


Figure 1 Schematic diagram for connection of one output to the 10209/2/1 module

Pin allocation

The back view and pin allocation of the 10209/2/1 module connector are as follows:



Connections examples

The figures below show a number of connection examples for the digital output module 10209/2/1.

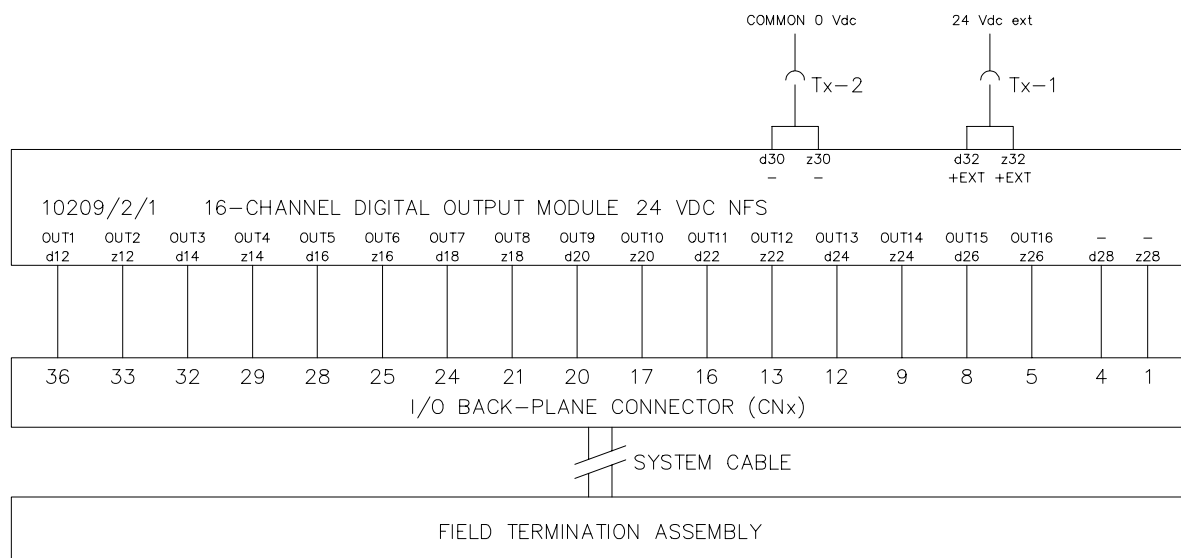
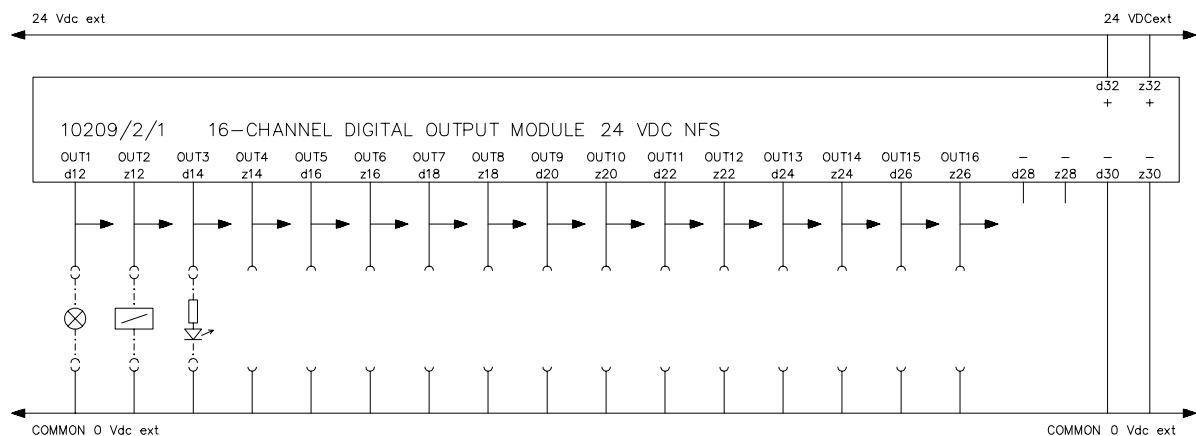
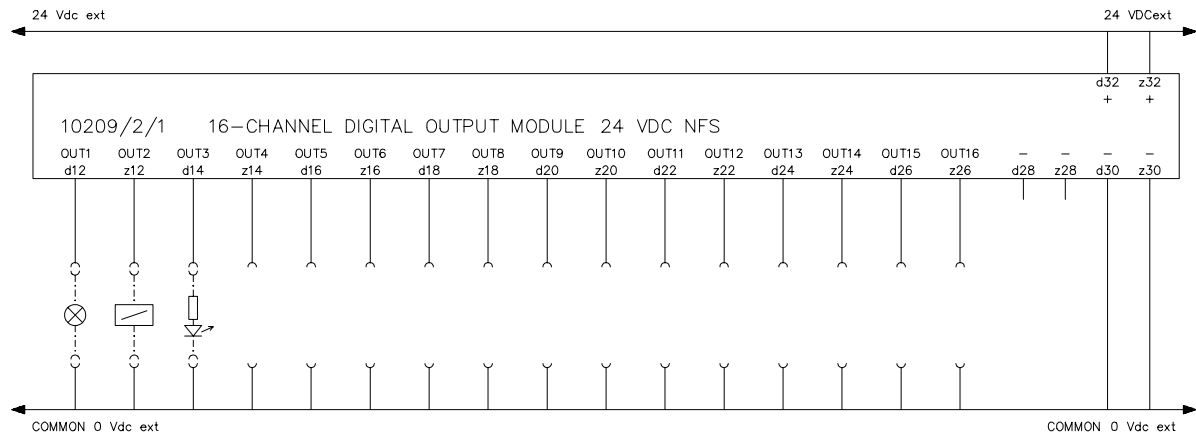


Figure 2 Connection example of 10209/2/1 module to FTA for both non-redundant and redundant I/O configurations





Technical data

The 10209/2/1 module has the following specifications:

General	Type number:	10209/2/1 11900
	Approvals:	CE, TÜV, UL
	Software versions:	≥ 3.00
	Space requirements:	4 TE, 3 HE (= 4 HP, 3U)
Power	Power requirements:	5 Vdc 35 mA 24 Vdc 85 mA (without output load)
Output	Number of output channels:	16
	Output specification:	24 Vdc solid-state source, short-circuit proof
	Maximum current:	100 mA (see 'FSC output modules' data sheet)
	Maximum lamp load:	50 mA (1.2 W)
	Maximum load capacitance:	1 µF
	Voltage drop:	< 1.2 Vdc at 100 mA
	Off current:	< 0.1 mA
	WDG input current:	4 mA
Key coding	(See 'Key coding' data sheet)	
	Module code:	
	– holes	A9, C21
	Rack code:	
	– large pins	A9, C21

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SIC-C cable connections

The tables below list the available SIC-C cables with their connections:

Table 2 Standard SIC-C-01 cable

SIC-C-01/Lx Cable type : 18 x 0.25 mm² (AWG 24), unshielded Outer diameter : 7.90 (± 0.20) mm, 0.311 (± 0.008) in Cable layout : Figure 5 SIC-C cable, layout type 4			
10101/2/ 10104/2/1 signal	10209/2/1 signal	I/O module connector pin	FTA connectors a and b pin
CH1	CH1	36	a-A5
CH2	CH2	33	a-B5
CH3	CH3	32	a-A4
CH4	CH4	29	a-B4
CH5	CH5	28	a-A3
CH6	CH6	25	a-B3
CH7	CH7	24	a-A2
CH8	CH8	21	a-A1
CH9	CH9	20	b-A5
CH10	CH10	17	b-B5
CH11	CH11	16	b-A4
CH12	CH12	13	b-B4
CH13	CH13	12	b-A3
CH14	CH14	9	b-B3
CH15	CH15	8	b-A2
CH16	CH16	5	b-A1
+ Vext	– Vext	4	a-B1
+ Vext	– Vext	1	b-B1

Table 3 Standard SIC-C-02 cable

SIC-C-02/Lx		Cable type : 16 x 0.5 mm ² (AWG 20), unshielded Outer diameter: 8.90 (± 0.20) mm 0.350 (± 0.008) in Cable layout : Figure 5 SIC-C cable, layout type 4	
10201/2/1 signal	10215/2/1 signal	I/O module connector pin	FTA connectors a and b pin
CH1+	CH1+	36	a-A5
CH1–	CH1–	33	a-B5
CH2+	CH1+	32	a-A4
CH2–	CH1–	29	a-B4
CH3+	CH2+	28	a-A3
CH3–	CH2–	25	a-B3
CH4+	CH2+	24	a-A2
CH4–	CH2–	21	a-B2
CH5+	CH3+	20	b-A5
CH5–	CH3–	17	b-B5
CH6+	CH3+	16	b-A4
CH6–	CH3–	13	b-B4
CH7+	CH4+	12	b-A3
CH7–	CH4–	9	b-B3
CH8+	CH4+	8	b-A2
CH8–	CH4–	5	b-B2

Table 4 Standard SIC-C-03 cable

SIC-C-03/Lx		Cable type : 4 x 2 x 0.25 mm ² (AWG 24), shielded, twisted pairs (STP) Outer diameter: 6.60 (± 0.20) mm 0.260 (± 0.008) in Cable layout : Figure 6 SIC-C cable, layout type 5	
	10205/2/1 modules 1 and 2 signal	I/O module connectors a and b pin	FTA connector pin
	shield	41 a	B1
	1 CH1+	36 a	A5
	1 CH1–	33 a	B5
	1 CH2+	24 a	A4
	1 CH2–	21 a	B4
	2 CH1+	36 b	A3
	2 CH1–	33 b	B3
	2 CH2+	24 b	A2
	2 CH2–	21 b	B2



Table 5 Standard SIC-C-04 cable

SIC-C-04/Lx	Cable type : Outer diameter : Cable layout :	20 x 0.5 mm ² (AWG 20), unshielded 9.80 (± 0.20) mm, 0.386 (± 0.008) in Figure 5 SIC-C cable, layout type 4	
	10208/2/1 signal	I/O module connector pin	FTA connectors a and b pin
	CH1 c	40	a-A5
	CH1 no	37	a-B5
	CH2 c	36	a-A4
	CH2 no	33	a-B4
	CH3 c	32	a-A3
	CH3 no	29	a-B3
	CH4 c	28	a-A2
	CH4 no	25	a-B2
	CH5 c	24	a-A1
	CH5 no	21	a-B1
	CH6 c	20	b-A5
	CH6 no	17	b-B5
	CH7 c	16	b-A4
	CH7 no	13	b-B4
	CH8 c	12	b-A3
	CH8 no	9	b-B3
	CH9 c	8	b-A2
	CH9 no	5	b-B2
	CH10 c	4	b-A1
	CH10 no	1	b-B1
c = common no = normally open			

Table 6 Standard SIC-C-05 cable

SIC-C-05/Lx	Cable type : Outer diameter : Cable layout :	8 x 0.5 mm ² (AWG 20), shielded 4.90 (± 0.20) mm, 0.193 (± 0.008) in Figure 2 SIC-C cable, layout type 1	
10213/2/2 10213/2/3 signal	10216/2/1 10216/2/3 signal	I/O module connector pin	FTA connector pin
shield	shield	41	B1
CH1+	CH1+	32	A5
CH1–	CH1–	29	B5
CH2+	CH2+	24	A4
CH2–	CH2–	21	B4
CH3+	CH3+	16	A3
CH3–	CH3–	13	B3
CH4+	CH4+	8	A2
CH4–	CH4–	5	B2

Table 7 Standard SIC-C-06 cable

SIC-C-06/Lx Cable type : 4 x 2 x 0.25 mm ² (AWG 24), shielded, twisted pairs (STP) Outer diameter : 6.60 (± 0.20) mm, 0.260 (± 0.008) in Cable layout : Figure 3 SIC-C cable, layout type 2			
	10102/2/1 signal	I/O module connector pin	FTA connector pin
	shield	41	B1
	CH1–	40	B5
	CH1+	37	A5
	CH2+	24	A4
	CH2–	21	B4
	CH3–	20	B3
	CH3+	17	A3
	CH4+	4	A2
	CH4–	1	B2

Table 8 Standard SIC-C-07 cable

SIC-C-07/Lx Cable type : 18 x 0.5 mm ² (AWG 20), unshielded Outer diameter : 9.80 (± 0.20) mm, 0.386 (± 0.008) in Cable layout : Figure 5 SIC-C cable, layout type 4				
10101/2/. signal	10209/2/1 signal	10206/2/1 signal	I/O module connector pin	FTA connectors a and b pin
CH1	CH1	CH1	36	a-A5
CH2	CH2	CH2	33	a-B5
CH3	CH3	CH3	32	a-A4
CH4	CH4	CH4	29	a-B4
CH5	CH5	CH5	28	a-A3
CH6	CH6	CH6	25	a-B3
CH7	CH7	CH7	24	a-A2
CH8	CH8	CH8	21	a-A1
CH9	CH9	CH9	20	b-A5
CH10	CH10	CH10	17	b-B5
CH11	CH11	CH11	16	b-A4
CH12	CH12	CH12	13	b-B4
CH13	CH13	– Vext	12	b-A3
CH14	CH14	– Vext	9	b-B3
CH15	CH15	– Vext	8	b-A2
CH16	CH16	– Vext	5	b-A1
+ Vext	– Vext	– Vext	4	a-B1
+ Vext	– Vext	– Vext	1	b-B1



SIC-P cable connections

The tables below list the available SIC-P cables with their connections:

Table 2 Standard SIC-P-01 cable

SIC-P-01/Lx		Cable type :	18 x 0.25 mm ² (AWG 24), unshielded
		Outer diameter :	7.90 (± 0.20) mm, 0.311 (± 0.008) in
		Cable layout :	Figure 2 SIC-P cable, layout type 1
10101/2/ 10104/2/1 signal	10209/2/1 signal	I/O module connector pin	Color code crimp pin
CH1	CH1	36	White
CH2	CH2	33	Brown
CH3	CH3	32	Green
CH4	CH4	29	Yellow
CH5	CH5	28	Gray
CH6	CH6	25	Pink
CH7	CH7	24	Blue
CH8	CH8	21	Red
CH9	CH9	20	Black
CH10	CH10	17	Violet
CH11	CH11	16	Gray / Pink
CH12	CH12	13	Red / Blue
CH13	CH13	12	White / Green
CH14	CH14	9	Brown / Green
CH15	CH15	8	White / Yellow
CH16	CH16	5	Yellow / Brown
+ Vext	– Vext	4	White / Gray
+ Vext	– Vext	1	Gray / Brown

Table 7 Standard SIC-P-06 cable

SIC-P-06/Lx Cable type : 4 x 2 x 0.25 mm² (AWG 24), shielded twisted pairs (STP) Outer diameter: 6.60 (± 0.20) mm, 0.260 (± 0.008) in Cable layout : Figure 3 SIC-P cable, layout type 2			
	10102/2/1 signal	I/O module connector pin	Color code crimp pin
	shield	41	Yellow / Green
	CH1–	40	Brown
	CH1+	37	White
	CH2+	24	Green
	CH2–	21	Yellow
	CH3–	20	Pink
	CH3+	17	Gray
	CH4+	4	Blue
	CH4–	1	Red

Table 8 Standard SIC-P-07 cable

SIC-P-07/Lx Cable type : 18 x 0.5 mm² (AWG 20), unshielded Outer diameter: 9.80 (± 0.20) mm, 0.386 (± 0.008) in Cable layout : Figure 2 SIC-P cable, layout type 1				
10101/2/. signal	10209/2/1 signal	10206/2/1 signal	I/O module connector pin	Color code crimp pin
CH1	CH1	CH1	36	White
CH2	CH2	CH2	33	Brown
CH3	CH3	CH3	32	Green
CH4	CH4	CH4	29	Yellow
CH5	CH5	CH5	28	Gray
CH6	CH6	CH6	25	Pink
CH7	CH7	CH7	24	Blue
CH8	CH8	CH8	21	Red
CH9	CH9	CH9	20	Black
CH10	CH10	CH10	17	Violet
CH11	CH11	CH11	16	Gray / Pink
CH12	CH12	CH12	13	Red / Blue
CH13	CH13	– Vext	12	White / Green
CH14	CH14	– Vext	9	Brown / Green
CH15	CH15	– Vext	8	White / Yellow
CH16	CH16	– Vext	5	Yellow / Brown
+ Vext	– Vext	– Vext	4	White / Gray
+ Vext	– Vext	– Vext	1	Gray / Brown

Table 1 Connections to I/O backplane connector (continued)

10206/2/1 signal	10208/2/1 signal	10209/2/1 signal	10213/2/ signal	10215/2/1 signal	10216/2/ + 10216/A/1 signal	I/O backplane connector pin	I/O module connector pin
					shield	41	earth
nc	CH1 c	nc	nc	nc	nc	40	d10
nc	CH1 no	nc	nc	nc	nc	37	z10
CH1	CH2 c	CH1	(– Vext)	CH1+	(– Vext)	36	d12
CH2	CH2 no	CH2	(– Vext)	CH1–	(– Vext)	33	z12
CH3	CH3 c	CH3	CH1+	CH1+	CH1+	32	d14
CH4	CH3 no	CH4	CH1–	CH1–	CH1–	29	z14
CH5	CH4 c	CH5	(– Vext)	CH2+	(– Vext)	28	d16
CH6	CH4 no	CH6	(– Vext)	CH2–	(– Vext)	25	z16
CH7	CH5 c	CH7	CH2+	CH2+	CH2+	24	d18
CH8	CH5 no	CH8	CH2–	CH2–	CH2–	21	z18
CH9	CH6 c	CH9	(– Vext)	CH3+	(– Vext)	20	d20
CH10	CH6 no	CH10	(– Vext)	CH3–	(– Vext)	17	z20
CH11	CH7 c	CH11	CH3+	CH3+	CH3+	16	d22
CH12	CH7 no	CH12	CH3–	CH3–	CH3–	13	z22
– Vext	CH8 c	CH13	(– Vext)	CH4+	(– Vext)	12	d24
– Vext	CH8 no	CH14	(– Vext)	CH4–	(– Vext)	9	z24
– Vext	CH9 c	CH15	CH4+	CH4+	CH4+	8	d26
– Vext	CH9 no	CH16	CH4–	CH4–	CH4–	5	z26
– Vext	CH10 c	– Vext	(– Vext)	(– Vext)	(– Vext)	4	d28
– Vext	CH10 no	– Vext	(– Vext)	(– Vext)	(– Vext)	1	z28
nc = not connected c = common no = normally open							



Selection table for field outputs

Table 6 is an aid in determining which combinations of FSC I/O modules, FTAs and SIC cables can be used depending on the characteristics of the field output signal. Modules, SIC cables and FTAs support different numbers of channels, depending on the field signal characteristics.

Table 6 Selection table for field outputs

Output signal characteristics	Module		SIC cable			ELCO FTA (FTA-E)		Terminal FTA (FTA-T)	
				A	B				
Digital Output, 24 Vdc, FS	10201/2/1	8	SIC-C-02	4	4	FTA-E-02	6x4	FTA-T-02	6x4
Digital Output, 24 Vdc – 2 A, FS	10215/2/1	4	SIC-C-02	(4÷2)	(4÷2)	FTA-E-02	6x(4÷2)	FTA-T-05	6x(4÷2)
Digital Output, 24 Vdc, FS line-monitored	10216/2/1	4	SIC-C-05		4	FTA-E-02	6x4	FTA-T-02	6x4
Digital Output, 24 Vdc, 550 mA, NFS	10206/2/1	12	SIC-C-07	8	4	FTA-E-03	3x8	FTA-T-03	3x8
Digital Output, 24 Vdc, 100 mA, NFS	10209/2/1	16	SIC-C-07	8	8	FTA-E-03	3x8	FTA-T-03	3x8
Digital Output, 48 Vdc, FS	10213/2/3	4	SIC-C-05		4	FTA-E-02	6x4	FTA-T-02	6x4
Digital Output, 48 Vdc, FS line-monitored	10216/2/3	4	SIC-C-05		4	FTA-E-02	6x4	FTA-T-02	6x4
Digital Output, 60 Vdc, FS	10213/2/2	4	SIC-C-05		4	FTA-E-02	6x4	FTA-T-02	6x4
Digital Output, 110 Vdc, FS	10213/2/1	4	SIC-C-11		4	---	---	FTA-T-11	2x4
Digital Output, potential-free contacts	10208/2/1	10	SIC-C-04	5	5	FTA-E-04	5x5	FTA-T-04	5x5
Digital Output, powered contacts	10208/2/1	10	SIC-C-04	5	5	FTA-E-05	5Fx5	---	---
Digital Output, relay, FS, AK1-4, 250 Vac / 110 Vdc	10201/2/1	8	SIC-C-02	4	4	---	---	FTA-T-08	1x4F
Digital Output, relay, FS, AK1-6, 250 Vac / 250 Vdc	10201/2/1	8	SIC-C-02	4	4	---	---	FTA-T-17	1x4F
Digital Output, relay, FS lin-mon, AK1-6, 250 Vac / 250 Vdc	10216/2/1	4	SIC-C-05		4	---	---	FTA-T-17	1x4F
Digital Output, relay, NFS, 250 Vac / 110 Vdc	10209/2/1	16	SIC-C-01	8	8	---	---	FTA-T-10	1x8F
	10201/2/1	8	SIC-C-10		8	---	---	FTA-T-10	1x8F
Analog Output, 0(4)-20 mA ext. power, FS	10205/2/1**	2	SIC-C-03	2*	2*	FTA-E-02	6x4	FTA-T-02	6x4
Analog Output, 0(4)-20 mA int. power, FS	10205/2/1**	2	SIC-C-03	2*	2*	FTA-E-02	6x4	FTA-T-02	6x4

** requires analog output converter:

0(4)-20 mA internal power 10205/A1
0(4)-20 mA external power 10205/A2
Dummy 10205/A3

Number of signals per module

Number of signals per SIC cable, specified by connector (where appropriate).

Examples:

8 / 8 = 2 FTA connectors, 8 signals each.

8 / 4 = 2 FTA connectors, 1st connector 8 signals, 2nd connector 4 signals used.

4 = 1 FTA connector, 4 signals.

2* / 2* = 2 I/O module connectors, 2 signals each

(4÷2) = 2 signals, since two wire pairs must be used per signal

Number of signals per FTA and per FTA connector

F=fused

Examples: 6 x 4 = 6 connectors, 4 signals each

5Fx5 = 5 connectors, 5 signals each and common fuse per 5 signals

1x4F = 1 connector of 4 signals, with one fuse per signal

1x8F = 1 connector of 8 signals, with one fuse per signal

Selection table for field outputs

Table 4 is an aid in determining which combinations of FSC I/O modules and SIC cables can be used depending on the characteristics of the field output signal. Modules and SIC cables support different numbers of channels, depending on the field signal characteristics.

Table 4 Selection table for field outputs

Digital input signal characteristic	Module		SIC cable	
Digital Output, 24 Vdc, FS	10201/2/1	8	SIC-P-02	8
Digital Output, 24 Vdc, 2 A, FS	10215/2/1	4	SIC-P-02	(8÷2)
Digital Output, 24 Vdc, FS, line-monitored	10216/2/1	16	SIC-P-05	16
Digital Output, 24 Vdc, 550 mA, NFS	10206/2/1	12	SIC-P-07	12
Digital Output, 24 Vdc, 100 mA, NFS	10209/2/1	16	SIC-P-07	16
Digital Output, 48 Vdc, FS	10213/2/3	4	SIC-P-05	4
Digital Output, 48 Vdc, FS, line-monitored	10216/2/3	4	SIC-P-05	4
Digital Output, 60 Vdc, FS	10213/2/2	4	SIC-P-05	4
Digital Output, 110 Vdc, FS	10213/2/1	4	SIC-P-05	4
Digital Output, potential-free contacts	10208/2/1	10	SIC-P-04	10
Analog Output, 0(4)-20 mA, ext. power, FS	10205/2/1**	2	SIC-P-03	2*
Analog Output, 0(4)-20 mA, int. power, FS	10205/2/1**	2	SIC-P-03	2*

** requires analog output converter:
 0(4)-20 mA internal power 10205/A/1
 0(4)-20 mA external power 10205/A/2
 Dummy 10205/A/3

Number of signals per module

Number of signals per SIC cable, specified by connector (where appropriate).
 Examples:
 2* / 2* = 2 I/O module connectors, 2 signals each.
 (8÷2) = 4 signals, since two wire pairs must be used per signal.

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