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Installation Instructions

Introduction

This instruction sheet contains information for the Keithley Instruments Series 3700 System Switch/Multimeter cables and connector kits. These kits include all necessary hardware to assemble cables and connectors, as needed.

WARNING *These installation instructions are intended for use by qualified service personnel only. Do not assemble connectors or make connections to them unless qualified to do so. Failure to recognize and observe normal safety precautions could result in personal injury or death.*

Do not exceed the maximum specifications of the switching module.

General information

The following table lists available cable and connector kits, the number of connector pins for each kit, and cable length (where applicable).

Table 1

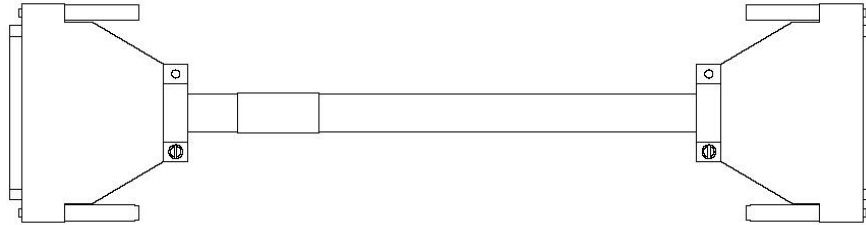
Series 3700 cables and connector kits

Model number	Number of pins	Description	Length
3720-MTC-1.5	78	Cable	1.5m (5 ft)
3720-MTC-3	78	Cable	3m (10 ft)
3721-MTC-1.5	50	Cable	1.5m (5 ft)
3721-MTC-3	50	Cable	3m (10 ft)
3722-MTC-1.5	104	Cable	1.5m (5 ft)
3722-MTC-3	104	Cable	3m (10 ft)
3722-MTC-1.5/MM	104	Cable	1.5m (5 ft)
3722-MTC-3/MM	104	Cable	3m (10 ft)
3790-KIT50-R	50	Connector Kit	N/A
3791-KIT78-R	78	Connector Kit	N/A
3792-KIT104-R	104	Connector Kit	N/A
3792-KIT104-R/F	104	Connector Kit	N/A

Model 3720-MTC-1.5 / 3.0

The Model 3720-MTC-1.5 / 3.0 cable is a 78-pin cable assembly (1.5m (5 ft) or 3.0m (10 ft) in length) terminated with a male D-sub connector on one end and a female D-sub connector on the other end.

Figure 1: Model 3720-MTC-1.5 / 3.0 cable



WARNING *Make sure the instrument that you are installing is in a powered-down state with all cables unplugged. Failure to install an instrument in a discharged state may cause personal injury or death from electrical shock. Do not exceed the maximum specifications of the switching module.*

To prevent electrical shock, observe the following safety precautions:

- *Both ends of the cable must be connected before applying any power to the system.*
- *Remove all power in the system before connecting the cable to a switching module or external circuitry.*
- *Both D-sub connector shells of this cable must be connected to a safety earth ground. A shock hazard exists when voltage levels greater than 30V RMS, 42.4V peak, or 60V DC are present.*

Cable maximum signal levels

The Model 3720-MTC-1.5 / 3.0 cable is rated for 300V DC or 300V RMS.

Maximum current rating

The Model 3720-MTC-1.5 / 3.0 cable maximum current ratings are as follows:

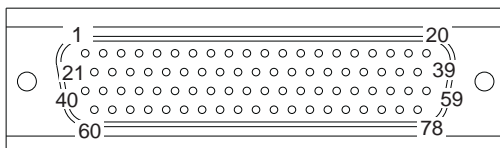
- Single conductor: 4.4A
- Multiple conductors: 2.2A per wire
- Conductor gauge: 22 AWG

Pin number identification

Pin number identification for the Model 3720-MTC-1.5 / 3.0 cables are shown in Figure 2 and Table 2 below:

Figure 2: Model 3720-MTC-1.5 / 3.0 pin number identification

Male D-sub connector:



Female D-sub connector:

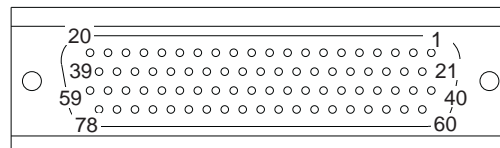


Table 2

Model 3720-MTC-1.5 / 3.0 and Model 3720-MTC-1.5/MM / 3.0/MM pin number identification¹

CONN 1 Pin #	Color	CONN 2 Pin #
1	Black	1
2	Brown	2
3	Red	3
4	Orange	4
5	Yellow	5
6	Green	6
7	Blue	7
8	Violet	8
9	Gray	9
10	White	10
11	White / Black	11
12	White / Brown	12
13	White / Red	13
14	White / Orange	14
15	White / Yellow	15
16	White / Green	16
17	White / Blue	17
18	White / Violet	18
19	White / Gray	19
20	White / Black / Brown	20
21	White / Black / Red	21
22	White / Black / Orange	22
23	White / Black / Yellow	23
24	White / Black / Green	24
25	White / Black / Blue	25
26	White / Black / Violet	26
27	White / Black / Gray	27
28	White / Brown / Red	28
29	White / Brown / Orange	29
30	White / Brown / Yellow	30
31	White / Brown / Green	31
32	White / Brown / Blue	32
33	White / Brown / Violet	33
34	White / Brown / Gray	34
35	White / Red / Orange	35
36	White / Red / Yellow	36
37	White / Red / Green	37
38	White / Red / Blue	38
39	White / Red / Violet (s) ³	39

CONN 1 Pin #	Color	CONN 2 Pin #
40	White / Red / Gray	40
41	White / Orange / Yellow	41
42	White / Orange / Green	42
43	White / Orange / Blue	43
44	White / Orange / Violet	44
45	White / Orange / Gray	45
46	White / Yellow / Green	46
47	White / Yellow / Blue	47
48	White / Yellow / Violet	48
49	White / Yellow / Gray	49
50	White / Green / Blue	50
51	White / Green / Violet	51
52	White / Black / Orange / Yellow	52
53	N / C ²	53
54	N / C	54
55	N / C	55
56	N / C	56
57	N / C	57
58	N / C	58
59	N / C	59
60	White / Black / Orange / Green	60
61	White / Black / Orange / Blue	61
62	White / Green / Gray	62
63	White / Blue / Violet	63
64	White / Blue / Gray	64
65	White / Violet / Gray	65
66	White / Black / Brown / Red	66
67	White / Black / Brown / Orange	67
68	White / Black / Brown / Yellow	68
69	White / Black / Brown / Green	69
70	White / Black / Brown / Blue	70
71	White / Black / Brown / Violet (s)	71
72	N / C	72
73	White / Black / Brown / Gray	73
74	White / Black / Red / Yellow	74
75	White / Black / Red / Green	75
76	White / Black / Red / Blue	76
77	White / Black / Red / Violet	77
78	White / Black / Red / Gray	78

Notes:

1. Connect drain wire to shield at both ends.
2. N/C = Not connected.
3. (s) = Spare.

Model 3721-MTC-1.5 / 3.0

The Model 3721-MTC-1.5 / 3.0 cable is a 50-pin cable assembly (1.5m (5 ft) or 3.0m (10 ft) in length) terminated with a male D-sub connector on one end and a female D-sub connector on the other end.

Figure 3: Model 3721-MTC-1.5 / 3.0 cable



WARNING *Make sure the instrument that you are installing is in a powered-down state with all cables unplugged. Failure to install an instrument in a discharged state may cause personal injury or death from electrical shock. Do not exceed the maximum specifications of the switching module.*

To prevent electrical shock, observe the following safety precautions:

- *Both ends of the cable must be connected before applying any power to the system.*
- *Remove all power in the system before connecting the cable to a switching module or external circuitry.*
- *Both D-sub connector shells of this cable must be connected to a safety earth ground. A shock hazard exists when voltage levels greater than 30V RMS, 42.4V peak, or 60V DC are present.*

Cable maximum signal levels

The Model 3721-MTC-1.5 / 3.0 cable is rated for 300V DC or 300V RMS.

Maximum current rating

The Model 3721-MTC-1.5 / 3.0 cable maximum current ratings are as follows:

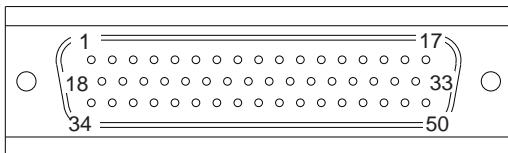
- Single conductor: 4.4A
- Multiple conductors: 2.2A per wire
- Conductor gauge: 22 AWG

Pin number identification

Pin number identification for the Model 3721-MTC-1.5 / 3.0 D-sub connectors are shown in Figure 4 and Table 3 below:

Figure 4: Model 3721-MTC-1.5 / 3.0 pin number identification

Male D-sub connector:



Female D-sub connector:

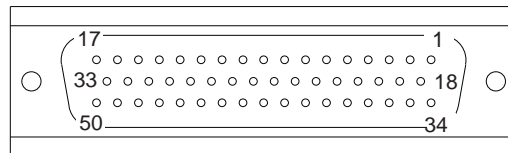


Table 3
Model 3721-MTC-1.5 / 3.0 pin number identification⁴

CONN 1 Pin #	Color	CONN 2 Pin #
1	Black	1
2	White	2
3	Red	3
4	Green	4
5	Orange	5
6	Blue	6
7	White / Black	7
8	Red / Black	8
9	Green / Black	9
10	Orange / Black	10
11	Blue / Black	11
12	Black / White	12
13	Red / White	13
14	Green / White	14
15	Blue / White	15
16	Black / Red	16
17	White / Red	17
18	Orange / Red	18
19	Blue / Red	19
20	Red / Green	20
21	Orange / Green	21
22	Black / White / Red	22
23	White / Black / Red	23
24	Red / Black / White	24
25	Green / Black / White	25

CONN 1 Pin #	Color	CONN 2 Pin #
26	Orange / Black / White	26
27	Blue / Black / White	27
28	Black / Red / Green	28
29	White / Red / Green	29
30	Red / Black / Green	30
31	Green / Black / Orange	31
32	Orange / Black / Green	32
33	Blue / White / Orange	33
34	Black / White / Orange	34
35	White / Red / Orange	35
36	Orange / White / Blue	36
37	White / Red / Gblue	37
38	Black / White / Green	38
39	White / Black / Green	39
40	Red / White / Green	40
41	Green / White / Blue	41
42	Orange / Red / Green	42
43	Blue / Red / Green	43
44	Black / White / Blue	44
45	White / Black / Blue	45
46	Red / White / Blue	46
47	Green / Orange / Red	47
48	Orange / Red / Blue	48
49	Blue / Orange / Red	49
50	Black / Orange / Red	50

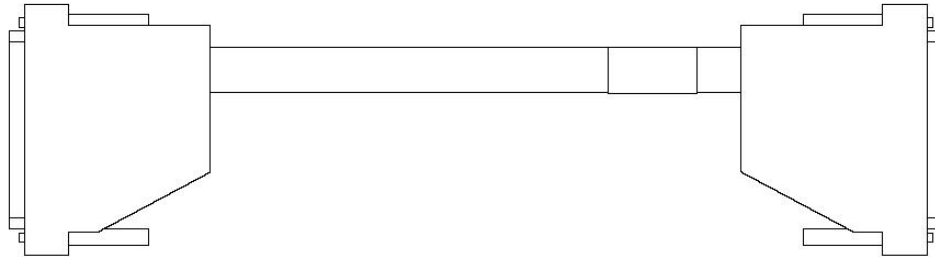
Notes:

4. Connect drain wire to shield at both ends.

Model 3722-MTC-1.5 / 3.0

The Model 3722-MTC-1.5 / 3.0 cable is a 104-pin cable assembly (1.5m (5 ft) or 3.0m (10 ft) in length) terminated with a male D-sub connector on one end and a female D-sub connector on the other end.

Figure 5: Model 3722-MTC-1.5 / 3.0 cable



WARNING *Make sure the instrument that you are installing is in a powered-down state with all cables unplugged. Failure to install an instrument in a discharged state may cause personal injury or death from electrical shock. Do not exceed the maximum specifications of the switching module.*

To prevent electrical shock, observe the following safety precautions:

- *Both ends of the cable must be connected before applying any power to the system.*
- *Remove all power in the system before connecting the cable to a switching module or external circuitry.*
- *Both D-sub connector shells of this cable must be connected to a safety earth ground. A shock hazard exists when voltage levels greater than 30V RMS, 42.4V peak, or 60V DC are present.*

Cable maximum signal levels

The Model 3722-MTC-1.5 / 3.0 cable is rated for 300V DC or 300V RMS.

Maximum current rating

The Model 3722-MTC-1.5 / 3.0 cable maximum current ratings are as follows:

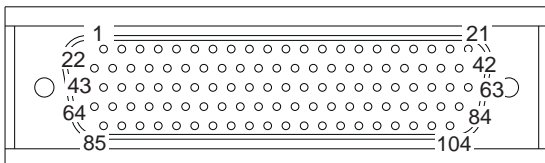
- Single conductor: 4.4A
- Multiple conductors: 2.2A per wire
- Conductor gauge: 24 AWG

Pin number identification

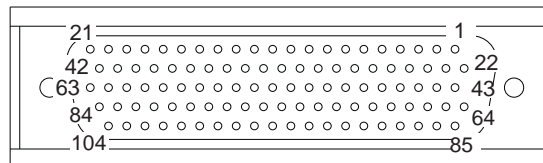
Pin number identification for the Model 3722-MTC-1.5 / 3.0 D-sub connectors are shown in Figure 6 and Table 4 below:

Figure 6: Model 3722-MTC-1.5 / 3.0 pin number identification

Male D-sub connector:



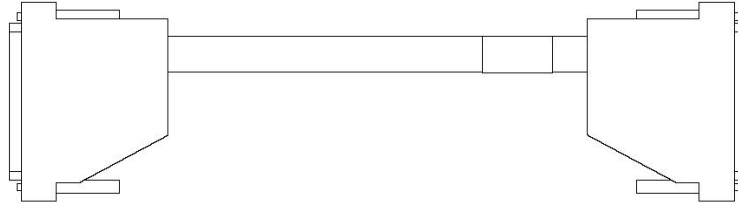
Female D-sub connector:



Model 3722-MTC-1.5/MM / 3/MM

The Model 3722-MTC-1.5/MM / 3/MM cable is a 104-pin cable assembly (1.5m (5 ft) or 3.0m (10 ft) in length) terminated with a male D-sub connector on each end.

Figure 7: Model 3722-MTC-1.5/MM / 3/MM cable



WARNING

Make sure the instrument that you are installing is in a powered-down state with all cables unplugged. Failure to install an instrument in a discharged state may cause personal injury or death from electrical shock. Do not exceed the maximum specifications of the switching module.

To prevent electrical shock, observe the following safety precautions:

- ***Both ends of the cable must be connected before applying any power to the system.***
- ***Remove all power in the system before connecting the cable to a switching module or external circuitry.***
- ***Both D-sub connector shells of this cable must be connected to a safety earth ground. A shock hazard exists when voltage levels greater than 30V RMS, 42.4V peak, or 60V DC are present.***

Cable maximum signal levels

The Model 3722-MTC-1.5/MM / 3/MM cable is rated for 300V DC or 300V RMS.

Maximum current rating

The Model 3722-MTC-1.5/MM / 3/MM cable maximum current ratings are as follows:

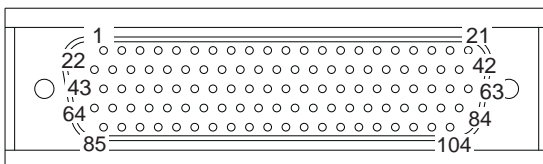
- Single conductor: 4.4A
- Multiple conductors: 2.2A per wire
- Conductor gauge: 24 AWG

Pin number identification

Pin number identification for the Model 3722-MTC-1.5/MM / 3/MM D-sub connectors are shown in Figure 8 and Table 4 below:

Figure 8: Model 3722-MTC-1.5/MM / 3/MM pin number identification

Male D-sub connector:



Male D-sub connector:

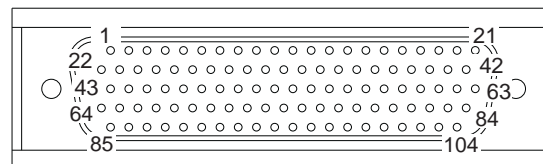


Table 4
Model 3722-MTC-1.5 / 3.0 and Model 3722-MTC-1.5/MM / 3/MM pin number identification⁵

CONN 1		Paired wire colors ⁶	CONN 2	
First color pin #	Second color pin #		First color pin #	Second color pin #
1	2	Blue paired w/ White	1	2
3	4	Orange paired w/ White	3	4
5	6	Green paired w/ White	5	6
7	8	Brown paired w/ White	7	8
10	11	Slate paired w/ White	10	11
12	13	Blue / White Striped paired w/ White	12	13
14	35	Blue / White Striped paired w/ White	14	35
15	16	Blue / Orange paired w/ White	15	16
17	18	Blue / Green paired w/ White (s)	17	18
19	20	Blue / Slate paired w/ White	19	20
21	42	orange / White paired w/ White	21	42
22	23	Orange / Green paired w/ White	22	23
24	25	Orange / Brown paired w/ White	24	25
26	27	Orange / Slate paired w/ White	26	27
28	29	Green / White paired w/ White	28	29
33	34	Green / Brown paired w/ White	33	34
36	37	Green Slate paired w/ White	36	37
38	39	Brown White paired w/ White	38	39
40	41	Brown Slate paired w/ White	40	41
43	44	Slate White paired w/ White	43	44
45	46	Blue paired w/ Red	45	46
47	48	Orange paired w/ Red	47	48
49	50	Green paired w/ Red	49	50
51	52	Brown paired w/ Red	51	52
53	54	Slate paired w/ Red	53	54
55	56	Blue / White paired w/ Red	55	56
57	58	Blue / Orange paired w/ Red	57	58
59	80	Blue / Green paired w/ Red	59	80
60	61	Blue Brown paired w/ Red	60	61
62	63	Blue / Slate paired w/ Red	62	63
64	65	Orange / White paired w/ Red	64	65
66	67	Orange / Green paired w/ Red	66	67
68	69	Orange / Brown paired w/ Red	68	69
70	71	Orange / Slate paired w/ Red	70	71
72	73	Green / White paired w/ Red	72	73
74	75	Green / Brown paired w/ Red	74	75
76	77	Green / Slate paired w/ Red	76	77
78	79	Brown / White paired w/ Red	78	79
81	82	Brown / Slate paired w/ Red	81	82
83	84	Slate / White paired w/ Red	83	84
85	86	Blue paired w/ Black	85	86
87	88	Orange paired w/ Black	87	88
89	90	Green paired w/ Black	89	90
91	92	Brown paired w/ Black	91	92
93	94	Slate paired w/ Black	93	94
95	96	Blue / White paired w/ Black	95	96
97	98	Blue / Orange paired w/ Black	97	98
99	100	Blue / Green paired w/ Black	99	100
101	102	Blue / Brown paired w/ Black	101	102
103	104	Blue / Slate paired w/ Black	103	104

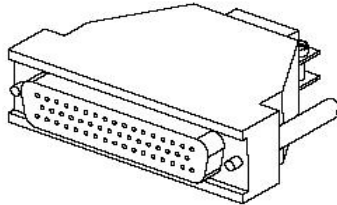
Notes:

5. Connect drain wire to shield at both ends.
6. Not connected: 9, 30, 31, 32.

Model 3790-KIT50-R

The Model 3790-KIT50-R kit is a 50-pin solder-cup connector kit terminated with a female D-sub connector.

Figure 9: 50-pin female D-sub connector kit assembled



WARNING

Make sure the instrument that you are installing is in a powered-down state with all cables unplugged. Failure to install an instrument in a discharged state may cause personal injury or death from electrical shock. Do not exceed the maximum specifications of the switching module.

To prevent electrical shock, observe the following safety precautions:

- *Both ends of the cable must be connected before applying any power to the system.*
- *Remove all power in the system before connecting the cable to a switching module or external circuitry.*
- *Both D-sub connector shells of this cable must be connected to a safety earth ground. A shock hazard exists when voltage levels greater than 30V RMS, 42.4V peak, or 60V DC are present.*

Maximum signal levels

The Model 3790-KIT50-R connector kit is rated for 300V RMS.

Maximum current rating

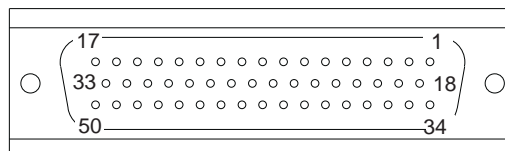
The Model 3790-KIT50-R connector kit maximum current is 7.5A.

Pin number identification

Pin number identification for the Model 3790-KIT50-R D-sub connector is shown in Figure 10 below:

Figure 10: Model 3790-KIT50-R kit pin number identification

Female D-sub connector:



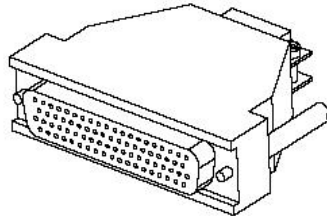
Contacts

The contact is 20 AWG maximum.

Model 3791-KIT78-R

The Model 3791-KIT78-R kit is a 78-pin solder-cup connector kit terminated with a female D-sub connector.

Figure 11: 78-pin female D-sub connector kit assembled



WARNING *Make sure the instrument that you are installing is in a powered-down state with all cables unplugged. Failure to install an instrument in a discharged state may cause personal injury or death from electrical shock. Do not exceed the maximum specifications of the switching module.*

To prevent electrical shock, observe the following safety precautions:

- *Both ends of the cable must be connected before applying any power to the system.*
- *Remove all power in the system before connecting the cable to a switching module or external circuitry.*
- *Both D-sub connector shells of this cable must be connected to a safety earth ground. A shock hazard exists when voltage levels greater than 30V RMS, 42.4V peak, or 60V DC are present.*

Maximum signal level

The Model 3791-KIT78-R connector kit is rated for 300V RMS.

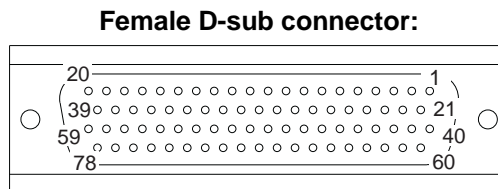
Maximum current rating

The Model 3791-KIT78-R connector kit maximum current is 5.0A.

Pin number identification

Pin number identification for the Model 3791-KIT78-R D-sub connector is shown in Figure 12 below:

Figure 12: Model 3791-KIT78-R kit pin number identification



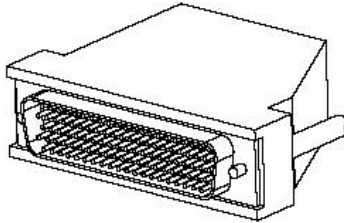
Contacts

The contact is 22 AWG maximum, and an insertion tool (not included) is required (part number 3791-CIT).

Model 3792-KIT104-R

The Model 3792-KIT104-R kit is a 104-pin solder-cup connector kit terminated with a male D-sub connector.

Figure 13: 104-pin male D-sub connector kit assembled



WARNING

Make sure the instrument that you are installing is in a powered-down state with all cables unplugged. Failure to install an instrument in a discharged state may cause personal injury or death from electrical shock. Do not exceed the maximum specifications of the switching module.

To prevent electrical shock, observe the following safety precautions:

- ***Both ends of the cable must be connected before applying any power to the system.***
- ***Remove all power in the system before connecting the cable to a switching module or external circuitry.***
- ***Both D-sub connector shells of this cable must be connected to a safety earth ground. A shock hazard exists when voltage levels greater than 30V RMS, 42.4V peak, or 60V DC are present.***

Maximum signal level

The Model 3792-KIT104-R connector kit is rated for 300V RMS.

Maximum current rating

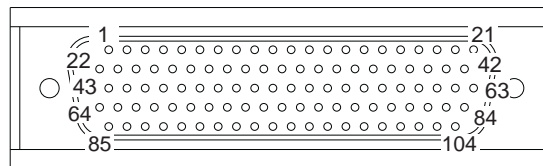
The Model 3792-KIT104-R connector kit maximum current is 5.0A.

Pin number identification

Pin number identification for the Model 3792-KIT104-R D-sub connector is shown Figure 14 below:

Figure 14: Model 3792-KIT104-R kit pin number identification

Male D-sub connector:



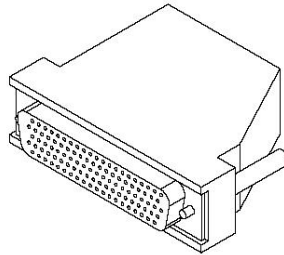
Contacts

The contact is 22 AWG maximum, and an insertion tool (not included) is required (part number 3791-CIT).

Model 3792-KIT104-R/F

The Model 3792-KIT104-R/F kit is a 104-pin solder-cup connector kit terminated with a female D-sub connector.

Figure 15: 104-pin female D-sub connector kit assembled



WARNING *Make sure the instrument that you are installing is in a powered-down state with all cables unplugged. Failure to install an instrument in a discharged state may cause personal injury or death from electrical shock. Do not exceed the maximum specifications of the switching module.*

To prevent electrical shock, observe the following safety precautions:

- *Both ends of the cable must be connected before applying any power to the system.*
- *Remove all power in the system before connecting the cable to a switching module or external circuitry.*
- *Both D-sub connector shells of this cable must be connected to a safety earth ground. A shock hazard exists when voltage levels greater than 30V RMS, 42.4V peak, or 60V DC are present.*

Maximum signal level

The Model 3792-KIT104-R/F connector kit is rated for 300V RMS.

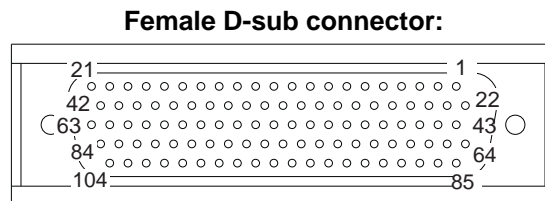
Maximum current rating

The Model 3792-KIT104-R/F connector kit maximum current is 5.0A.

Pin number identification

Pin number identification for the Model 3792-KIT104-R/F D-sub connector is shown in Figure 16 below:

Figure 16: Model 3792-KIT104-R/F kit pin number identification



Contacts

The contact is 22 AWG maximum, and an insertion tool (not included) is required (part number 3791-CIT).