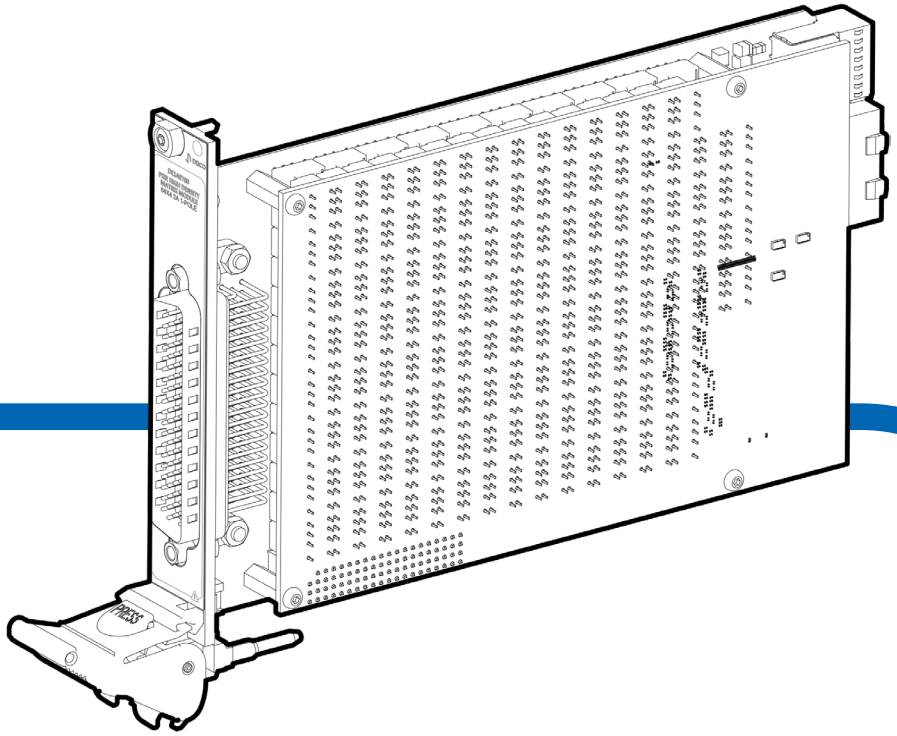
Datasheet



DE140700

PXIe High Density Matrix Module

64x4 2 A 1-Pole

DEICO

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1. Description

DE140700 PXIe High Density Matrix Module 64x4 2 A 1-Pole is a crosspoint matrix module designed for high-density switching in medium power applications. It features 256 crosspoint matrices with 64x4 single-pole configuration, each utilizing an electromechanical relay. Each relay supports switching voltages of up to 220 V DC or 250 V AC and can handle power ratings of up to 60 W (DC) / 62.5 VA (AC). The module has a maximum current capacity of 2 A per channel. The module's current capacity is 2 A. A PXIe chassis is required for operation.

1.1. Key Features

- 256 crosspoint
- 64x4 single pole configuration
- Up to 220 V DC / 250 V AC
- Up to 60 W / 62.5 VA
- 2 A rated current
- Hot or cold switching
- Maximum 500 mΩ DC path resistance
- Maximum 5 ms relay operate time

2. Hardware Overview

2.1. Circuitry

The architecture of DE140700 is shown in Figure 1. The DE140700 features 64 connections along the X-axis and 4 connections along the Y-axis. It allows the connection of any X-Y pair, as well as X-X connections, through the Y-axis path.

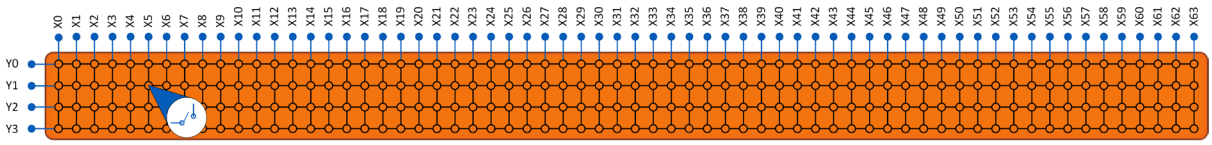


Figure 1: DE140700 Relay Configuration

2.2. Electrical

The power supply requirements of the DE140700 module are given in Table 1.

Table 1: Power Supply Requirements

Specification	Min	Typical	Max	Units
Power Supply Current of +12 V (In Full Operation)	–	–	1.85	A
Power Supply Current of +3.3 V (In Full Operation)	–	–	0.8	A

2.3. Relay Type

DE140700 is designed with electromechanical relays for reliable switching performance. The module's field maintenance is simplified as it utilizes through-hole relays, ensuring easy replacement and servicing. Relay placement is given in section "Relay Placement". The information on relays is given in Table 2.

Table 2: Information on Relays

Specification	Value
Manufacturer	TE Connectivity
Part Number	IM03TS
Relay Type	Electromechanical, latching
Relay Contact Material	Palladium-ruthenium, gold covered

The switching specification of the relay are given in Table 3.

Table 3: Relay Switching Specification

Specification	Min	Typical	Max	Units
Switch Voltage	10^{-4}	–	220 250	V DC V AC
Switch Current	10^{-6}	–	2	A
Switch Power	–	–	60 62.5	W VA
Thermal Offset	–	–	10^{-5}	V
DC Path Resistance	–	–	500	mΩ
Operate Time	–	1	5	ms
Bounce Time	–	1	5	ms
Relay Endurance				
At Contact Application (≤ 30 mV / ≤ 10 mA)	$2.5x10^{6}$	–	–	Operations
Resistive, 220 V DC / 0.27 A - 60 W	10^{5}	–	–	Operations
Resistive, 250 V AC / 0.25 A - 62.5 VA	10^{5}	–	–	Operations
Resistive, 30 V DC / 1 A - 30 W	$5x10^{5}$	–	–	Operations

2.4. Connectors

The DE140700 module's front connector is a 78-position male D-SUB with part number 181-M78-113R001. A standard D-SUB78 connector and backshell can be used for mating. This connector and backshell ensure there are no mechanical interference issues. The pinout of the front connector is given in Table 5, in the "Front Connector Pinout" section.

2.5. Physical

DE140700 is compatible with a single 3U PXIe peripheral slot.

2.6. Environmental

The environmental specifications of the module are given in Table 4.

Table 4: Environmental Specifications

Parameter	Condition	Value
Operating Humidity	Relative, non-condensing	10%- 90%
Storage Humidity	Relative, non-condensing	5%- 95%
Operating Temperature	Forced-air cooling from chassis	0 °C - +40 °C
Storage Temperature	–	-40 °C - +85 °C

2.7. PXIe Compliance

The DE140700 complies with PXIe Hardware Specification 1.1; however, the Local Bus, Trigger Bus, and Star Trigger are not implemented.

3. Signal Connections

3.1. Front Connector Pinout

DE140700 front connector pinout is given in Figure 2. The view of front connector is given in Table 5.

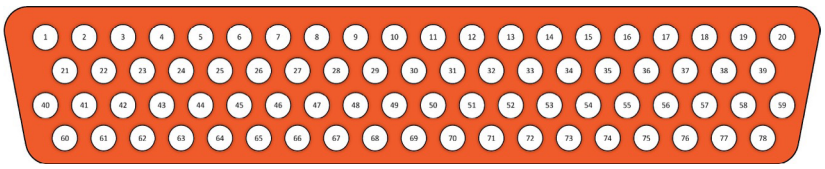


Figure 2: Front Connector

Table 5: Front Connector Pinout

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	X0	21	X1	40	X2	60	X3
2	X4	22	X5	41	X6	61	X7
3	X8	23	X9	42	X10	62	X11
4	X12	24	X13	43	X14	63	X15
5	X16	25	X17	44	X18	64	X19
6	X20	26	X21	45	X22	65	X23
7	X24	27	X25	46	X26	66	X27
8	X28	28	X29	47	X30	67	X31
9	X32	29	X33	48	X34	68	X35
10	X36	30	X37	49	X38	69	X39
11	X40	31	X41	50	X42	70	X43
12	X44	32	X45	51	X46	71	X47
13	X48	33	X49	52	X50	72	X51
14	X52	34	X53	53	X54	73	X55
15	X56	35	X57	54	X58	74	X59
16	X60	36	X61	55	X62	75	X63
17	NC	37	NC	56	NC	76	NC
18	Y0	38	Y1	57	Y2	77	Y3
19	NC	39	NC	58	NC	78	CHASSIS
20	NC	–	–	59	NC	–	–

3.2. Relay Placement

The DE140700 module consists of two boards: Main board and Addon board. When replacing the relay, carefully separate the two boards by unscrewing the four screws on the module. The cross-reference between the main board and the relays is given in Table 6. The relay placement of the main board is given in Figure 3. The cross-reference between the addon board and the relays is given in Table 7. The relay placement of the addon board is given in Figure 4.

Table 6: Main Board Cross-Reference of Channels & Relays

Channel	Relay No	Channel	Relay No	Channel	Relay No	Channel	Relay No
X0Y0	K1	X0Y1	K2	X0Y2	K3	X0Y3	K4
X1Y0	K5	X1Y1	K6	X1Y2	K7	X1Y3	K8
X2Y0	K9	X2Y1	K10	X2Y2	K11	X2Y3	K12
X3Y0	K13	X3Y1	K14	X3Y2	K15	X3Y3	K16
X4Y0	K17	X4Y1	K18	X4Y2	K19	X4Y3	K20
X5Y0	K21	X5Y1	K22	X5Y2	K23	X5Y3	K24
X6Y0	K25	X6Y1	K26	X6Y2	K27	X6Y3	K28
X7Y0	K29	X7Y1	K30	X7Y2	K31	X7Y3	K32
X8Y0	K33	X8Y1	K34	X8Y2	K35	X8Y3	K36
X9Y0	K37	X9Y1	K38	X9Y2	K39	X9Y3	K40
X10Y0	K41	X10Y1	K42	X10Y2	K43	X10Y3	K44
X11Y0	K45	X11Y1	K46	X11Y2	K47	X11Y3	K48
X12Y0	K49	X12Y1	K50	X12Y2	K51	X12Y3	K52
X13Y0	K53	X13Y1	K54	X13Y2	K55	X13Y3	K56
X14Y0	K57	X14Y1	K58	X14Y2	K59	X14Y3	K60
X15Y0	K61	X15Y1	K62	X15Y2	K63	X15Y3	K64
X16Y0	K65	X16Y1	K66	X16Y2	K67	X16Y3	K68
X17Y0	K69	X17Y1	K70	X17Y2	K71	X17Y3	K72
X18Y0	K73	X18Y1	K74	X18Y2	K75	X18Y3	K76

Channel	Relay No	Channel	Relay No	Channel	Relay No	Channel	Relay No
X19Y0	K77	X19Y1	K78	X19Y2	K79	X19Y3	K80
X20Y0	K81	X20Y1	K82	X20Y2	K83	X20Y3	K84
X21Y0	K85	X21Y1	K86	X21Y2	K87	X21Y3	K88
X22Y0	K89	X22Y1	K90	X22Y2	K91	X22Y3	K92
X23Y0	K93	X23Y1	K94	X23Y2	K95	X23Y3	K96
X24Y0	K97	X24Y1	K98	X24Y2	K99	X24Y3	K100
X25Y0	K101	X25Y1	K102	X25Y2	K103	X25Y3	K104
X26Y0	K105	X26Y1	K106	X26Y2	K107	X26Y3	K108
X27Y0	K109	X27Y1	K110	X27Y2	K111	X27Y3	K112
X28Y0	K113	X28Y1	K114	X28Y2	K115	X28Y3	K116
X29Y0	K117	X29Y1	K118	X29Y2	K119	X29Y3	K120
X30Y0	K121	X30Y1	K122	X30Y2	K123	X30Y3	K124
X31Y0	K125	X31Y1	K126	X31Y2	K127	X31Y3	K128

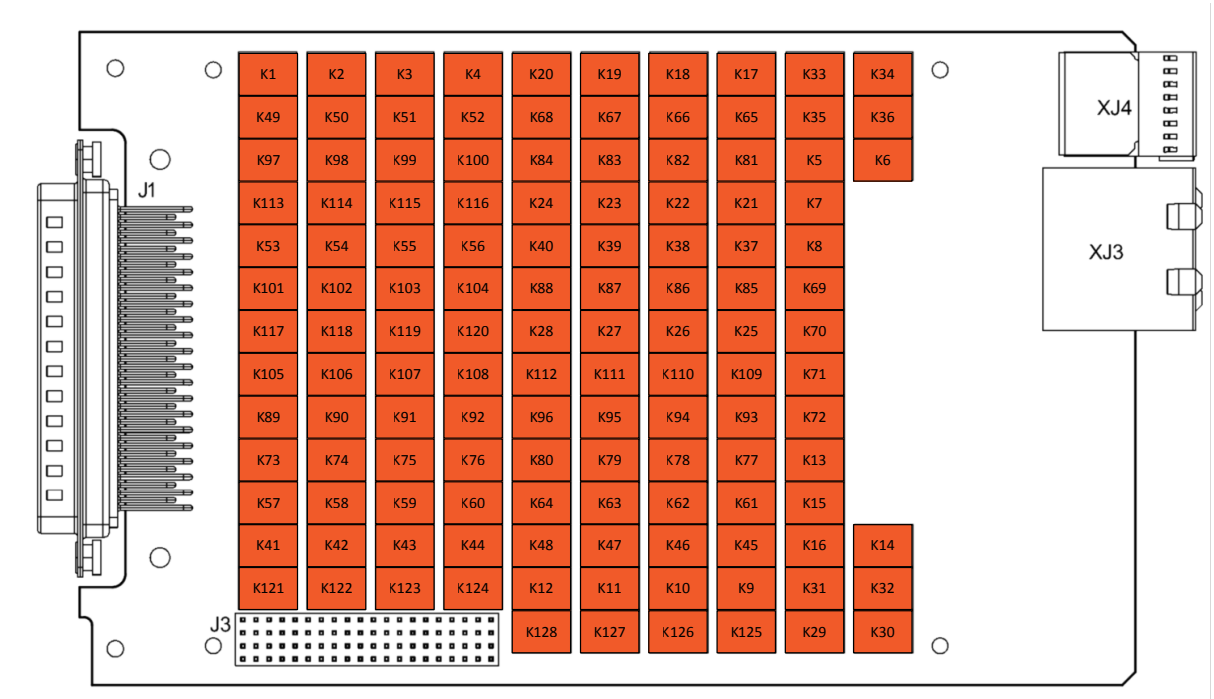


Figure 3: Relay Placement of Main Board

Table 7: Addon Board Cross-Reference of Channels & Relays

Channel	Relay No	Channel	Relay No	Channel	Relay No	Channel	Relay No
X32Y0	K1	X32Y1	K2	X32Y2	K3	X32Y3	K4
X33Y0	K5	X33Y1	K6	X33Y2	K7	X33Y3	K8
X34Y0	K9	X34Y1	K10	X34Y2	K11	X34Y3	K12
X35Y0	K13	X35Y1	K14	X35Y2	K15	X35Y3	K16
X36Y0	K17	X36Y1	K18	X36Y2	K19	X36Y3	K20
X37Y0	K21	X37Y1	K22	X37Y2	K23	X37Y3	K24
X38Y0	K25	X38Y1	K26	X38Y2	K27	X38Y3	K28
X39Y0	K29	X39Y1	K30	X39Y2	K31	X39Y3	K32
X40Y0	K33	X40Y1	K34	X40Y2	K35	X40Y3	K36
X41Y0	K37	X41Y1	K38	X41Y2	K39	X41Y3	K40
X42Y0	K41	X42Y1	K42	X42Y2	K43	X42Y3	K44
X43Y0	K45	X43Y1	K46	X43Y2	K47	X43Y3	K48
X44Y0	K49	X44Y1	K50	X44Y2	K51	X44Y3	K52
X45Y0	K53	X45Y1	K54	X45Y2	K55	X45Y3	K56
X46Y0	K57	X46Y1	K58	X46Y2	K59	X46Y3	K60
X47Y0	K61	X47Y1	K62	X47Y2	K63	X47Y3	K64
X48Y0	K65	X48Y1	K66	X48Y2	K67	X48Y3	K68
X49Y0	K69	X49Y1	K70	X49Y2	K71	X49Y3	K72
X50Y0	K73	X50Y1	K74	X50Y2	K75	X50Y3	K76
X51Y0	K77	X51Y1	K78	X51Y2	K79	X51Y3	K80
X52Y0	K81	X52Y1	K82	X52Y2	K83	X52Y3	K84

Channel	Relay No	Channel	Relay No	Channel	Relay No	Channel	Relay No
X53Y0	K85	X53Y1	K86	X53Y2	K87	X53Y3	K88
X54Y0	K89	X54Y1	K90	X54Y2	K91	X54Y3	K92
X55Y0	K93	X55Y1	K94	X55Y2	K95	X55Y3	K96
X56Y0	K97	X56Y1	K98	X56Y2	K99	X56Y3	K100
X57Y0	K101	X57Y1	K102	X57Y2	K103	X57Y3	K104
X58Y0	K105	X58Y1	K106	X58Y2	K107	X58Y3	K108
X59Y0	K109	X59Y1	K110	X59Y2	K111	X59Y3	K112
X60Y0	K113	X60Y1	K114	X60Y2	K115	X60Y3	K116
X61Y0	K117	X61Y1	K118	X61Y2	K119	X61Y3	K120
X62Y0	K121	X62Y1	K122	X62Y2	K123	X62Y3	K124
X63Y0	K125	X63Y1	K126	X63Y2	K127	X63Y3	K128

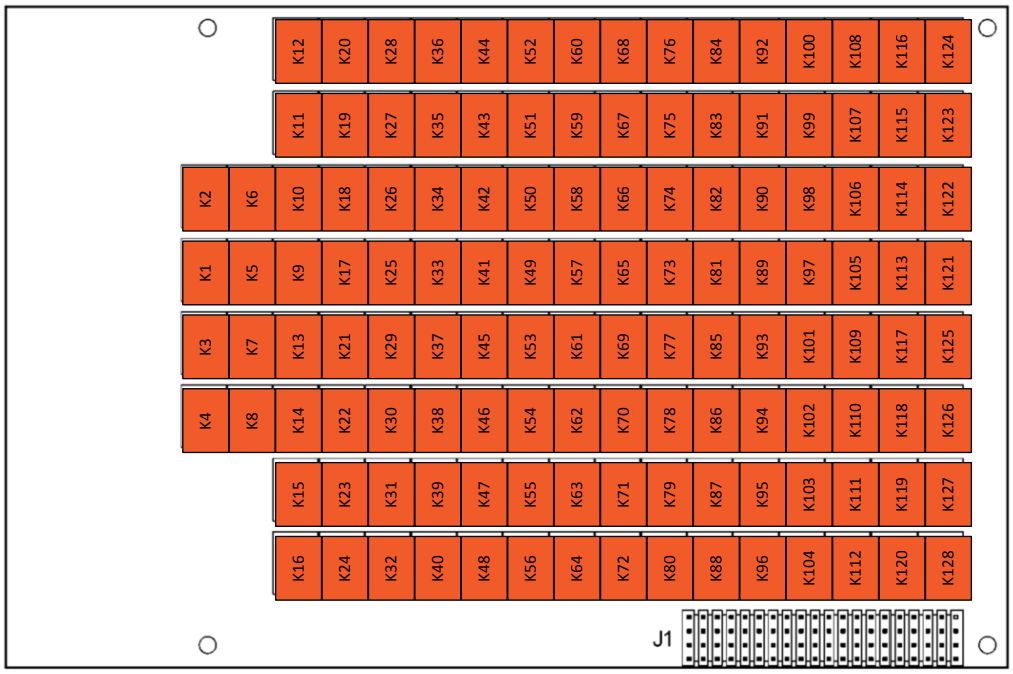


Figure 4: Relay Placement of Addon Board

4. Safety Guidelines



Caution

ESD can damage electronic components without adequate protection and may cause permanent damage to the device.



Caution

Hot-plug is not supported by the DE140700; therefore, the device must not be inserted or removed when the chassis power is on.