

**DE140708**

**PXIe**

**High Density  
Matrix Module**

64x2 2 A 1-Pole

# Contents

<b>1. Description</b>	<b>1</b>
1.1. Key Features	1
<b>2. Hardware Overview</b>	<b>1</b>
2.1. Circuitry	1
2.2. Hardware Specifications	1
2.2.1. Electrical Specifications	1
2.2.2. Relay Type	2
2.2.3. Connectors Specifications	2
2.2.4. Physical Specifications	2
2.2.5. Environmental Specifications	3
2.2.6. PXIe Compliance	3
<b>3. Signal Connections</b>	<b>3</b>
3.1. Front Connector Pinout	3
3.2. Relay Placement	4
<b>4. Safety Guidelines</b>	<b>6</b>
<b>5. Compatibility Guidelines</b>	<b>6</b>

# 1. Description

DE140708 PXIe High Density Matrix Module 64x2 2 A 1-Pole is a crosspoint matrix module designed for high-density switching in medium power applications. It features 128 crosspoint matrices with 64x2 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

- 128 crosspoints
- 64x2 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 DE140708 is shown in [Figure 1](#). The DE140708 features 64 connections along the X-axis and 2 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.

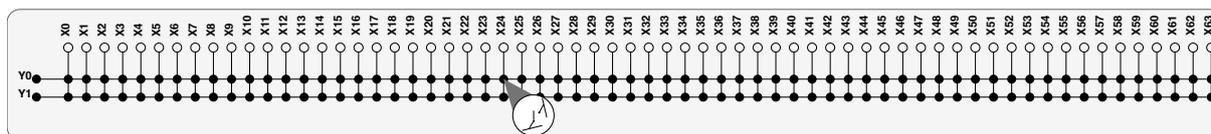


Figure 1: Relay Configuration of DE140708 PXIe High Density Matrix Module 64x2 2 A 1-Pole

## 2.2. Hardware Specifications

### 2.2.1. Electrical Specifications

Table 1: Power Supply Requirements

Specification	Min	Typ	Max	Units
Power Supply Current of +12 V (In Full Operation)	–	–	1.15	A
Power Supply Current of +3.3 V (In Full Operation)	–	–	0.5	A

### 2.2.2. Relay Type

DEI40708 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, non-latching
Relay Contact Material	Palladium-ruthenium, gold covered

The switching specifications of the relay are given in [Table 3](#).

Table 3: Relay Switching Specifications

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

### 2.2.3. Connector Specifications

The DEI40708 module's front connector is a 160-pin male DIN 41612 with part number 384298-E. The Pickering 40-960A-160-F connector and backshell can be used as the mating connector and backshell. 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.

### 2.2.4. Physical Specifications

DEI40708 is compatible with a single 3U PXIe Peripheral Slot.

## 2.2.5. Environmental Specifications

The environmental specifications of the module are given in [Table 4](#).

Table 4: Environmental Specifications

Specification	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

## 2.2.6. PXIe Compliance

The DE140708 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

DE140708 front connector pinout is given in [Table 5](#). The view of front connector is given in [Figure 2](#).

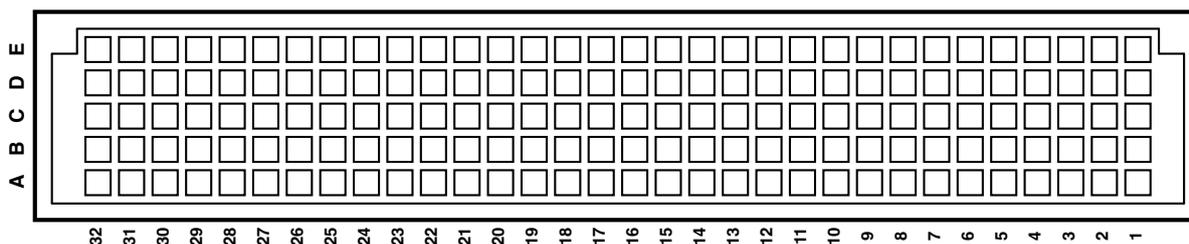


Figure 2: Front Connector

Table 5: Front Connector Pinout

Pin	A	B	C	D	E
1	X0	X1	X2	X3	CHASSIS
2	X4	X5	X6	X7	N.C.
3	X8	X9	X10	X11	N.C.
4	X12	X13	X14	X15	N.C.
5	X16	X17	X18	X19	GND
6	X20	X21	X22	X23	N.C.
7	X24	X25	X26	X27	N.C.
8	X28	X29	X30	X31	N.C.
9	X32	X33	X34	X35	N.C.
10	X36	X37	X38	X39	N.C.
11	X40	X41	X42	X43	N.C.

Pin	A	B	C	D	E
12	X44	X45	X46	X47	N.C.
13	X48	X49	X50	X51	N.C.
14	X52	X53	X54	X55	N.C.
15	X56	X57	X58	X59	N.C.
16	X60	X61	X62	X63	N.C.
17	N.C.	N.C.	N.C.	N.C.	N.C.
18	N.C.	N.C.	N.C.	N.C.	N.C.
19	N.C.	N.C.	N.C.	N.C.	N.C.
20	N.C.	N.C.	N.C.	N.C.	N.C.
21	N.C.	N.C.	N.C.	N.C.	N.C.
22	N.C.	N.C.	N.C.	N.C.	N.C.
23	N.C.	N.C.	N.C.	N.C.	N.C.
24	N.C.	N.C.	N.C.	N.C.	N.C.
25	N.C.	N.C.	N.C.	N.C.	N.C.
26	N.C.	N.C.	N.C.	N.C.	N.C.
27	N.C.	N.C.	N.C.	N.C.	N.C.
28	N.C.	N.C.	N.C.	N.C.	N.C.
29	N.C.	N.C.	N.C.	N.C.	N.C.
30	N.C.	N.C.	N.C.	N.C.	N.C.
31	N.C.	N.C.	N.C.	N.C.	Y0
32	N.C.	N.C.	N.C.	N.C.	Y1

## 3.2. Relay Placement

The cross-reference between the module and the relays is given in [Table 6](#). The relay placement of the module is given in [Figure 3](#).

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

Channel	Relay No						
Y0X0	K1	Y0X1	K2	Y0X2	K3	Y0X3	K4
Y0X4	K5	Y0X5	K6	Y0X6	K7	Y0X7	K8
Y0X8	K9	Y0X9	K10	Y0X10	K11	Y0X11	K12
Y0X12	K13	Y0X13	K14	Y0X14	K15	Y0X15	K16
Y0X16	K17	Y0X17	K18	Y0X18	K19	Y0X19	K20
Y0X20	K21	Y0X21	K22	Y0X22	K23	Y0X23	K24
Y0X24	K25	Y0X25	K26	Y0X26	K27	Y0X27	K28
Y0X28	K29	Y0X29	K30	Y0X30	K31	Y0X31	K32
Y0X32	K33	Y0X33	K34	Y0X34	K35	Y0X35	K36
Y0X36	K37	Y0X37	K38	Y0X38	K39	Y0X39	K40
Y0X40	K41	Y0X41	K42	Y0X42	K43	Y0X43	K44

Channel	Relay No						
Y0X44	K45	Y0X45	K46	Y0X46	K47	Y0X47	K48
Y0X48	K49	Y0X49	K50	Y0X50	K51	Y0X51	K52
Y0X52	K53	Y0X53	K54	Y0X54	K55	Y0X55	K56
Y0X56	K57	Y0X57	K58	Y0X58	K59	Y0X59	K60
Y0X60	K61	Y0X61	K62	Y0X62	K63	Y0X63	K64
Y1X0	K65	Y1X1	K66	Y1X2	K67	Y1X3	K68
Y1X4	K69	Y1X5	K70	Y1X6	K71	Y1X7	K72
Y1X8	K73	Y1X9	K74	Y1X10	K75	Y1X11	K76
Y1X12	K77	Y1X13	K78	Y1X14	K79	Y1X15	K80
Y1X16	K81	Y1X17	K82	Y1X18	K83	Y1X19	K84
Y1X20	K85	Y1X21	K86	Y1X22	K87	Y1X23	K88
Y1X24	K89	Y1X25	K90	Y1X26	K91	Y1X27	K92
Y1X28	K93	Y1X29	K94	Y1X30	K95	Y1X31	K96
Y1X32	K97	Y1X33	K98	Y1X34	K99	Y1X35	K100
Y1X36	K101	Y1X37	K102	Y1X38	K103	Y1X39	K104
Y1X40	K105	Y1X41	K106	Y1X42	K107	Y1X43	K108
Y1X44	K109	Y1X45	K110	Y1X46	K111	Y1X47	K112
Y1X48	K113	Y1X49	K114	Y1X50	K115	Y1X51	K116
Y1X52	K117	Y1X53	K118	Y1X54	K119	Y1X55	K120
Y1X56	K121	Y1X57	K122	Y1X58	K123	Y1X59	K124
Y1X60	K125	Y1X61	K126	Y1X62	K127	Y1X63	K128



Figure 3: Relay Placement of Main Board

## 4. Safety Guidelines



**Caution**

The DE140708 shall not be operated in any manner not specified in this document. Misuse of the product may result in a hazard. Safety protection features may be compromised if the product is damaged. In the event of damage, the product shall be returned for repair.

## 5. Compatibility Guidelines

This product has been tested and found to comply with the applicable regulatory requirements and limits for electromagnetic compatibility (EMC). These requirements and limits are intended to provide reasonable protection against harmful interference when the product is operated within the specified electromagnetic environment.

This product is intended for use in industrial locations. However, harmful interference may occur in certain installations if the product is connected to peripheral devices or test objects, or if it is used in residential or commercial areas. To minimize interference with radio and television reception and to prevent unacceptable performance degradation, the product shall be installed and operated in strict accordance with the instructions specified in the product documentation.

Any changes or modifications to the product not expressly approved by DEICO may void the user's authority to operate the equipment under local regulatory rules.



**Caution**

To ensure the specified EMC performance, the product shall be operated only with shielded cables and accessories.



**Caution**

To ensure the specified EMC performance, the length of any cable attached to the front connectors shall not exceed 3 m (10 ft.).