3-17. QCI

Contact Input
(Style 7379A06G02)

3-17.1. Description

Group 02 is applicable for use in the CE MARK Certified System

The QCI provides 16 digital contact inputs and a +48 V contact-wetting supply voltage (see Figure 3-126). This contact-wetting voltage provides supply isolation and reduced current power consumption due to the current limiting capability of the supply. The QCI digitally filters the contact-input signals and provides the option of inverting the polarity of any data bit.

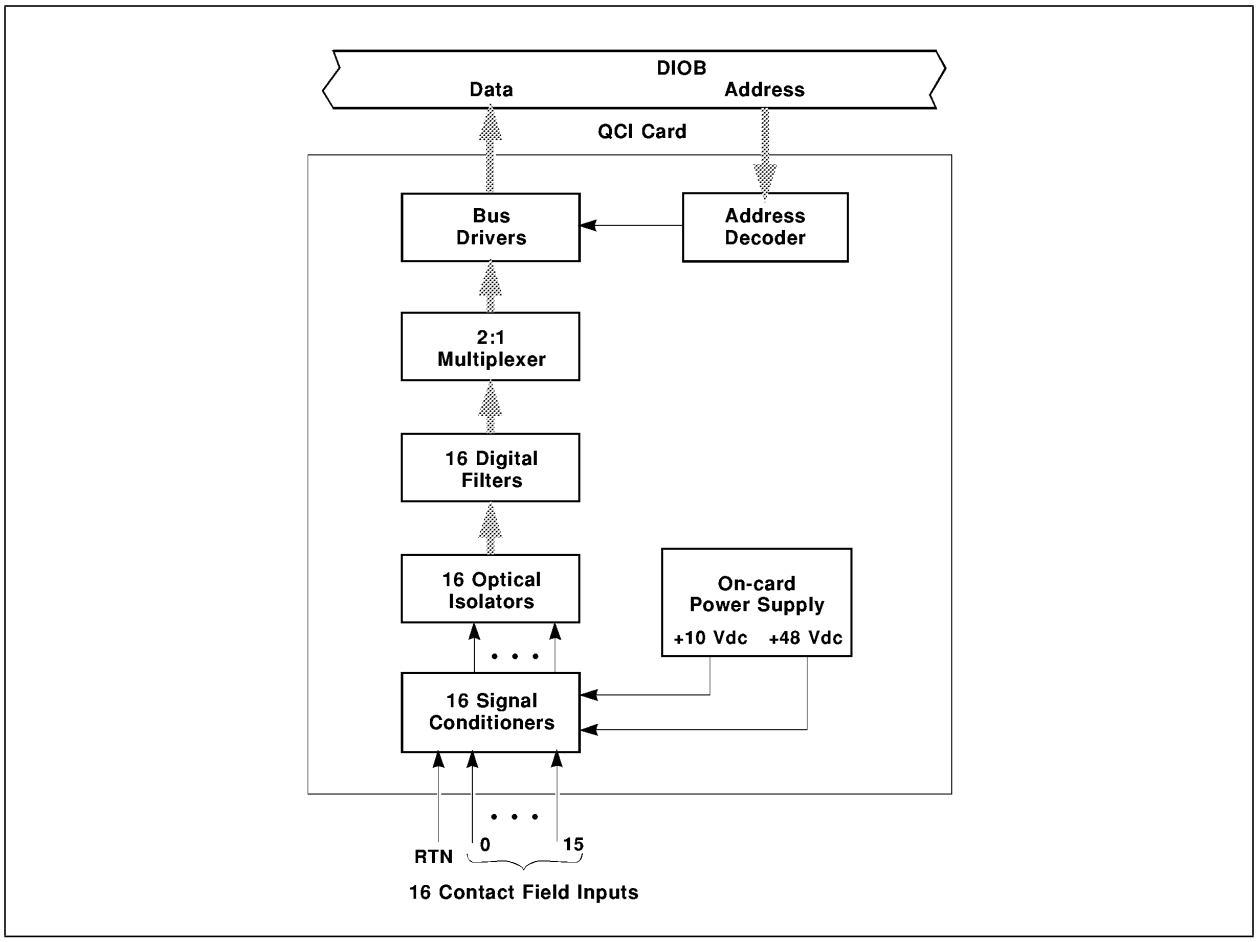


Figure 3-126. QCI Block Diagram

3-17.2. Features

The QCI card is available in two groups and provides the following features:

- Dual on-card contact-wetting power supply for low power consumption
- Separate status-indicating LEDs for each input
- Compatible with any DIOB controller
- IEEE surge-withstand protection
- Optical isolation for each input
- Optional digital switch selectable polarity of each bit

The Group 2 QCI provides 16 digitally-filtered contact inputs sharing a common return line with the ability to invert data-bit polarity (G01 does not have this option and is no longer manufactured).

3-17.3. Specifications

A functional block diagram of the QCI is shown in Figure 3-127.

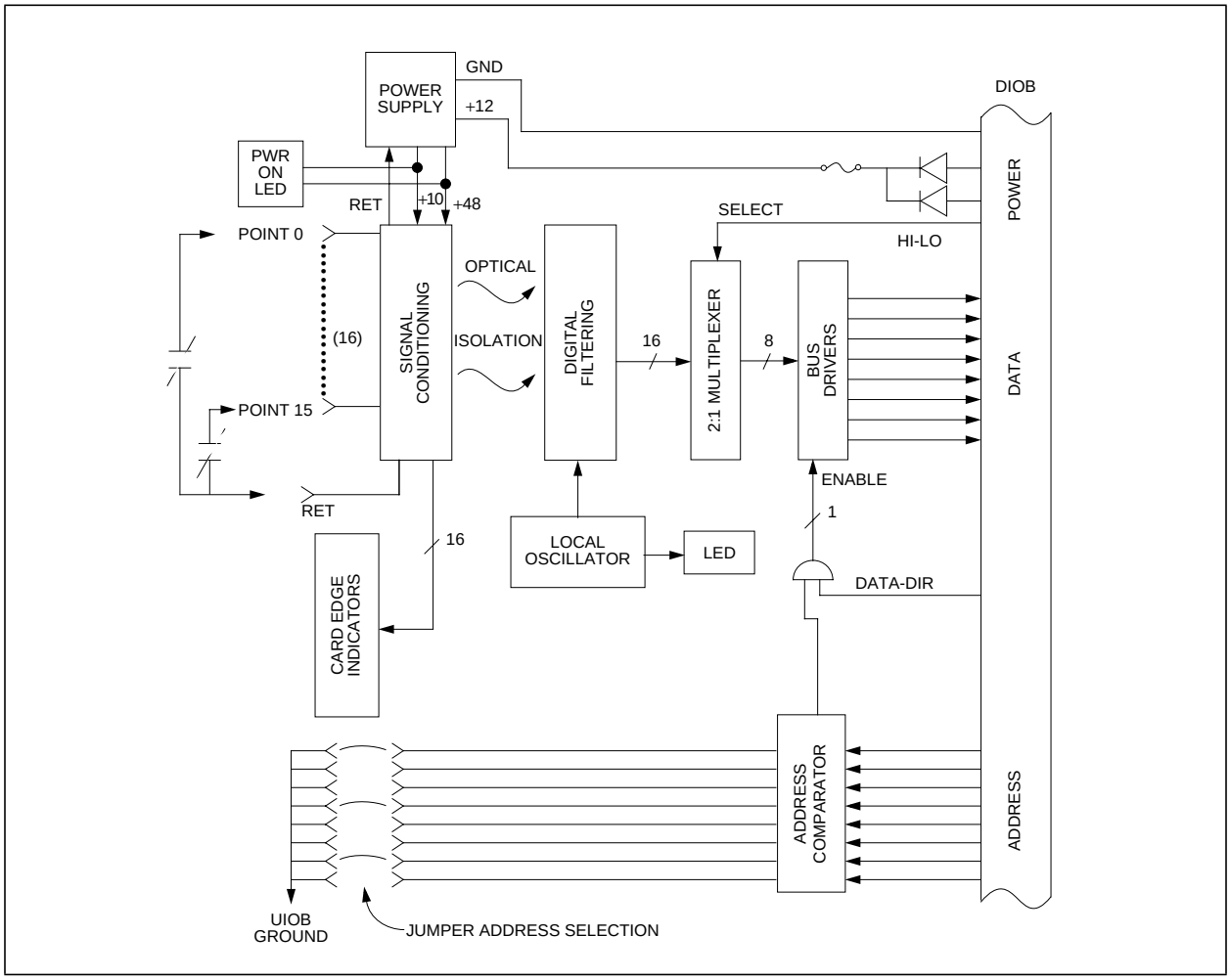


Figure 3-127. QCI Card Block Diagram

Input Requirements

Digital Filter Delay:2.6 msec to 6.0 msec

Input Signal Rejection

Input signal duration <2.6 msec is always rejected.
Input signal duration >6.0 msec is always passed.

Note

The elapsed time between the contact's opening and its subsequent closure must be >15 msec.

Contact leakage resistance:50 KΩ minimum.

Table 3-83. QCI Contact Wetting Voltage

Parameter	Minimum	Nominal	Maximum
Open Circuit Voltage	42V	48V	56V
Closed Contact Current	6mA	14mA	22mA

Input Capabilities

The signal lines at the DIOB interface are specified by the DIOB specifications description.

Power Supply

Primary: +13 V ±0.1 Vdc

Backup: +12.6 V ± 0.2 Vdc

Current: 500 mA (maximum) supplied by DIOB

Power Consumption: 6.3 W (maximum)

Electrical Environment

IEEE Surge withstand capability

Common Mode Voltage: 500 Vdc or peak ac (line frequency)

Card Addressing and Data Output

The QCI card address is established by eight jumpers on the front card-edge connector as shown in Figure 3-128. The insertion of a jumper encodes a "1" on the address line.

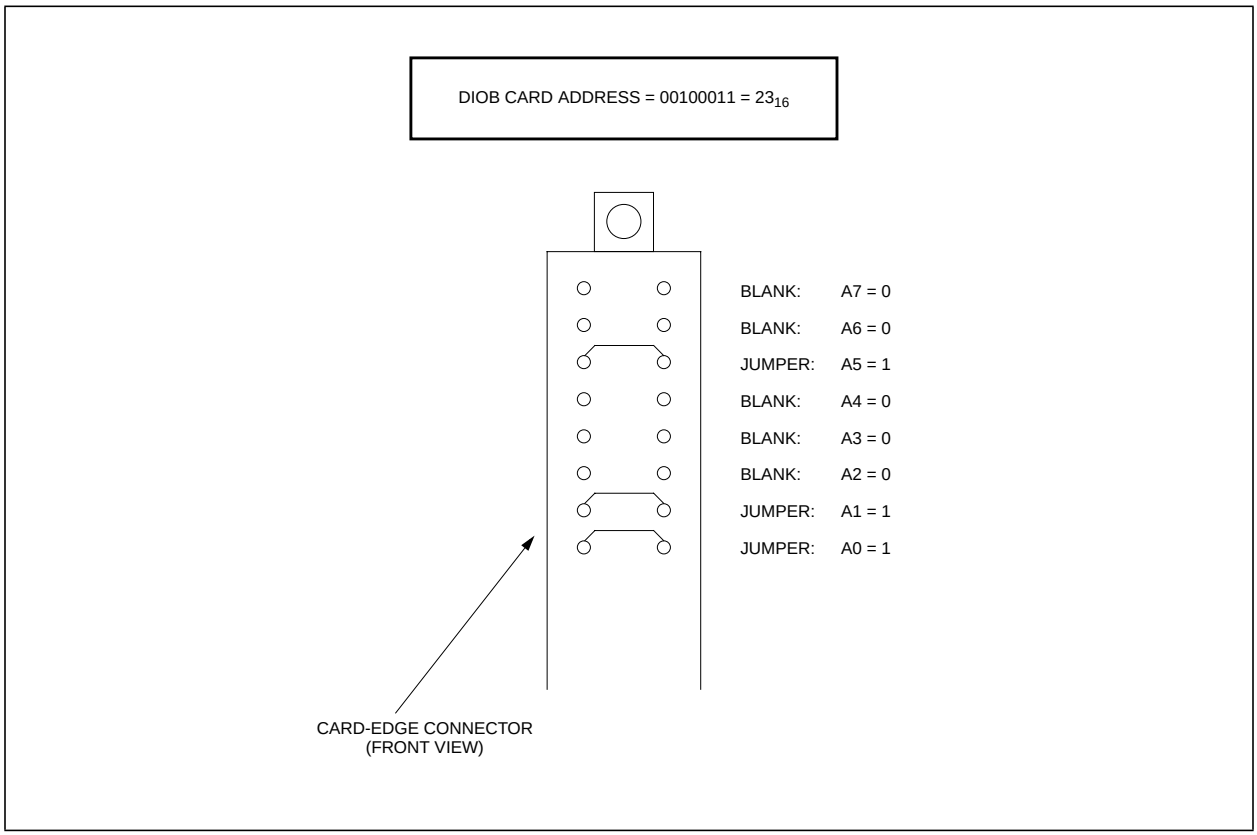


Figure 3-128. QCI Card Address Jumper Assembly

The binary data that is sent to the system controller over the DIOB are the 16 data bits from the 16 contact inputs divided into two eight-bit bytes.

Connections and Field Cabling

Refer to Figure 3-129 for details regarding the following discussion.

Up to 1.2 mA may flow through any contact shunt resistance from the +48V supply (with open contacts, no current can flow from the +10V supply due to reverse-biased diodes). A resistance of 50 KΩ (minimum) is required to maintain the high-level contact-wetting voltage. However, the contacts are recognized as open with a shunt resistance of 10 KΩ (minimum). To ensure that closed contacts are always recognized as closed, the following equation must be applied:

$R_C + R_{LINE} + 16R_R \leq 60\ \Omega$

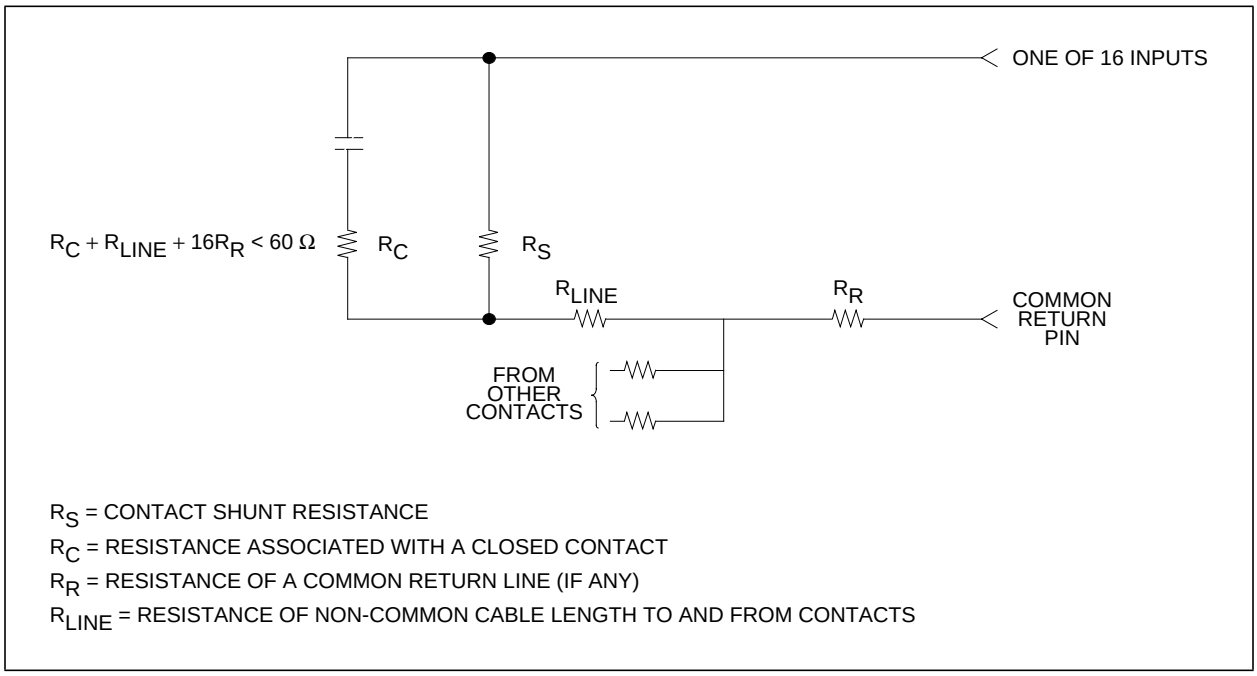


Figure 3-129. Cable Length Limitations for QCI Card

Contact Cycle Time

If the maximum QCI on card generated voltage is to be applied to plant contacts that interface to the QCI card, the elapsed time between a contact opening and its subsequent closure must be greater than 15 msec.

Table 3-84 gives the cable length limits for various gauges of wire.

Table 3-84. Cable Length Limits for QCI Card

Gauge	Ohms/ thousand ft	16 Commons/Card (thousand ft) (maximum)[1]	1 Common/ Card (ft) (maximum)[2]
8	0.654	92	5,400
10	1.04	58	3,400
12	1.66	36	2,140
14	2.27	26	1,560
16	4.18	14	845
18	6.64	9.0	530
20	10.2	5.9	345
22	16.2	3.7	215

[1]The maximum cable length for a 16-common/card assumes that $R_R = 0$ and $R_C = 0$. The length given is the sum of the lengths to and from the contacts.

[2]The maximum cable length for a 1-common/card assumes that $R_C = 0$. The length of the return is equal to the length of the cable to the contact. The length given is the length to the contact only.

The QCI pin assignments are given in Table 3-85. These pins are located on the front-edge connector.

Table 3-85. QCI Pin Assignments

Connection Pins	B Side (Component Side)	A Side (Solder Side)
28	$\overline{A7}$	GND
27	$\overline{A6}$	GND
26	$\overline{A5}$	GND
25	$\overline{A4}$	GND
24	$\overline{A3}$	GND
23	$\overline{A2}$	GND
22	$\overline{A1}$	GND
21	$\overline{A0}$	GND
20		
19		
18		
17	B15	B14
16		
15	B13	B12
14		
13	B11	B10
12		
11	B9	B8
10		
9	B7	B6
8		
7	B5	B4
6		
5	B3	B2
4		
3	B1	B0
2		
1	RET	RET