

Section 8. Contact Input Module

8-1. Description

The Contact Input Module, comprised of an Electronics module and Personality module, provides 16 contact input current detecting channels with common returns. The field side circuitry and terminal connections for three of these channels are shown in [Figure 8-2](#).

A +48V on-board power supply provides current limited contact wetting voltage if the contact is open. If the contact closes, current is drawn from the +10V supply which turns on the associated opto-isolator; thereby, relaying a closed contact state to the I/O bus. The opto-isolators and the isolation provided by the 10V and 48 Volt power supply provide high dielectric isolation between the field side and the logic or I/O bus side.

There are two methods of wiring field devices to the Contact Input Module termination block, as shown in [Figure 8-2](#). Each field contact may have a separate input and return line as shown for channel 1. Alternatively, field contacts wired to the same Contact Input Module may share a return line as shown for channels 2 and 3. For either wiring method, **do not** tie the contact return line to earth ground or a ground fault condition will occur as well as a degradation of the common mode surge protection.

Debouncing of a contact input signal is done by an RC filter and digital debouncer on the logic side. If a contact changes state for less than 3 msec, the change of state will always be rejected. If the Contact changes state for more than 7 msec, the change of state will always be accepted.

Ground fault detection circuitry on a Contact Input Module activates when an input or return line for any channel finds a low impedance (<5 K ohms) path to earth ground. A single ground fault wire will not cause an error in the point data, but multiple ground faults (if they include input and return lines) could cause faulty data (that is, channels appearing as if contacts are closed when they are really open).

When a ground fault occurs, the external error LED lights, and the GND Fault bit in the Status Register ([Section 8-7](#)) is set. If the GND Fault Attention Enable bit is set in the Configuration Register ([Section 8-7](#)), a ground fault is seen as a catastrophic error causing an attention status to be sent back to the Controller. See [Figure 8-2](#) for ground fault detection circuitry. The Contact Input Module is applicable for CE Mark Certified Systems.

Note

See [Section 3. I/O Modules](#) for environmental, installation, wiring, and fuse information.

8-2. Module Groups

8-2.1. Electronics Module

There is one Electronics module group for the Contact Input Module:

- 1C31142G01 provides 48 VDC on-card auxiliary power for 16 contact inputs with common return.

8-2.2. Personality Module

There is one Personality module group for the Contact Input Module:

- 1C31110G03 contains surge-protection components for 16 inputs.

Table 8-1. Contact Input Subsystem

Range	Channels	Electronic Module	Personality Module
48 VDC On-Card wetting supply	16	1C31142G01	1C31110G03

All Configurations are CE Mark Certified.

8-3. Specifications

Electronics Module (1C31142)
Personality Module (1C31110)

Table 8-2. Contact Input Module Specifications

Description	Value
Number of channels	16
On board auxiliary power supply	42 V minimum 55 V maximum
Propagation delay	7 mSec maximum
Contact bounce rejection	
Always rejects contact change of state	< 3 mSec
Always accepts contact change of state	> 7 mSec

Table 8-2. Contact Input Module Specifications

Description	Value
Closed contact output current	4 mA minimum 8 mA maximum
Diagnostics	Internal module operating faults Ground Fault Detection
Dielectric isolation: Channel to logic	1000 V AC/DC
Module power	4.56 W typical 4.75 W maximum
Operating temperature range	0 to 60°C (32°F to 140°F)
Storage temperature range	-40°C to 85°C (-40°F to 185°F)
Humidity (non-condensing)	0 to 95%