

Section 7. Analog Output Module

7-1. Description

The Analog Output Electronics Module uses low-power-drain 12-bit serial digital-to-analog converters (DACs) to provide four isolated output channels. The serial clock and data allow the four channels to be updated every 1.5 ms. The serial interface uses opto-isolators for high-voltage isolation.

The Analog Output Module is applicable for CE Mark Certified Systems.

Note

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

7-2. Module Groups

7-2.1. Electronics Modules

There are four groups of Electronics modules for the Analog Output Module:

- 1C31129G01 provides voltage output range of 0 to 5 V DC.
- 1C31129G02 provides voltage output range of 0 to 10 V.
- 1C31129G03 provides voltage output range of 0 to 20 mA with diagnostics.
- 1C31129G04 provides voltage output range of 0 to 20 mA without diagnostics.

7-2.2. Personality Module

There is one Personality module group for the Analog Output Module:

- 1C31132G01 routes field signals from the Electronics module to the terminal block.

Table 7-1. Analog Output Subsystem

Range	Channels	Electronic Module	Personality Module
0-5 Volts DC	4	1C31129G01	1C31132G01
0-10 Volts DC	4	1C31129G02	1C31132G01
0-20 mA with Diagnostics (4-20 mA with Diagnostics can also be selected in the I/O Builder; card will be configured appropriately)	4	1C31129G03	1C31132G01
0-20 mA without Diagnostics (4-20 mA without Diagnostics can also be selected in the I/O Builder; card will be configured appropriately)	4	1C31129G04	1C31132G01

All Configurations are CE Mark Certified.

7-3. Specifications

Electronics Module (1C31129)
Personality Module (1C31132)

Table 7-2. Analog Output Module Specifications

Description	Value
Number of channels	4
Maximum update time	2 mSec
Output range	0 – 5 V ¹ , 0 -10 V ¹ , 0 - 20 mA ²
Resolution	12 bits
Guaranteed accuracy (@25°C)	0.1% of full scale.
Temperature coefficient	30 ppm/°C
User loop voltage	Power for current loop output is supplied by module.
Dielectric isolation: Channel to channel Channel to logic	1000 V AC/DC 1000 V AC/DC
Output loading: Current Voltage	0 Ω minimum; 750 Ω maximum 10 mA maximum
Module power Current output Voltage output	4 W typical; 6 W maximum 2 W typical; 3 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%
¹ Overcurrent load indications. ² Module supplied loop voltage, overcurrent and undercurrent diagnostic indication, redundant output. Ability to measure current without disconnecting loop.	

7-4. Analog Output Terminal Block Wiring Information

Each Personality module has a simplified wiring diagram label on its side, which appears above the terminal block. This diagram indicates how the wiring from the field is to be connected to the terminal block in the base unit. The diagram for the analog output Personality module is illustrated in [Figure 7-1](#). The following table lists and defines the abbreviations used in this diagram.

Abbreviation	Definition
	Earth ground terminals.
+I	Current output source terminal.
RSV	Reserved terminal. No connections allowed on these terminals.
SH	Shield terminal connection (for non-CE Mark certified systems).
+V	Voltage output source terminal connection.
PS+, PS-	Auxiliary power supply terminals.
-	Reference for voltage and current output.

Notes

1. Do **not** use unmarked terminal block locations.
2. Shield terminals (SH) are **not** connected in CE Mark systems.

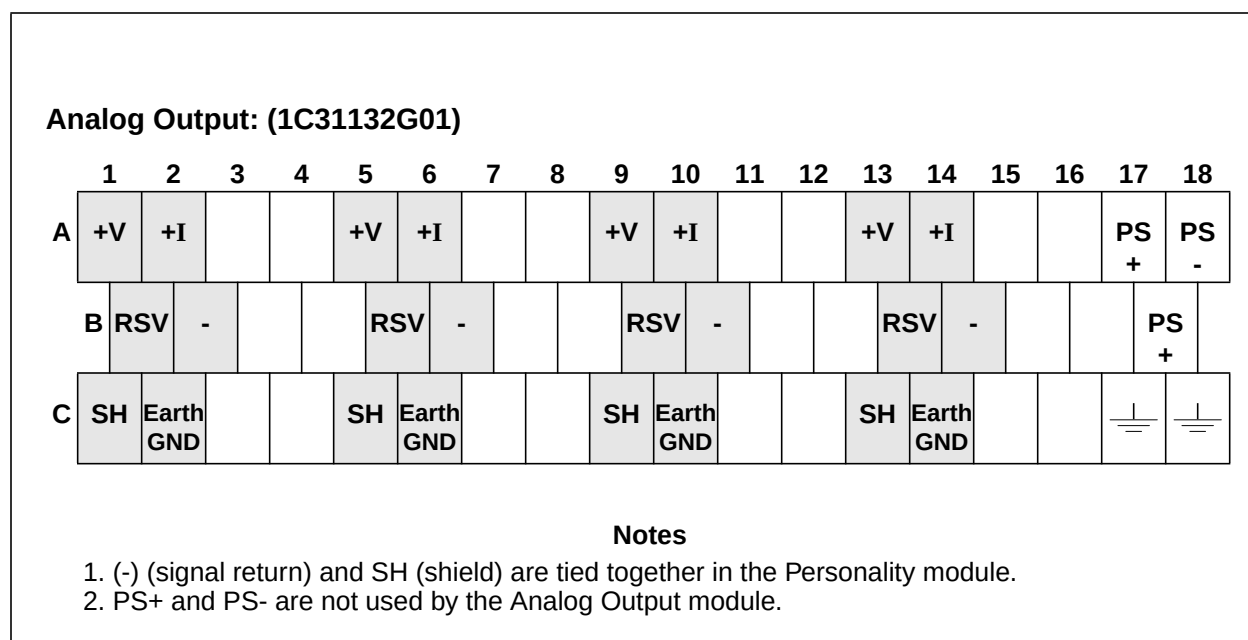


Figure 7-1. Terminal Block Connections for the Analog Output Personality Module

7-5. Analog Output Field Connection Wiring Diagrams

Non-CE Mark Certified Systems

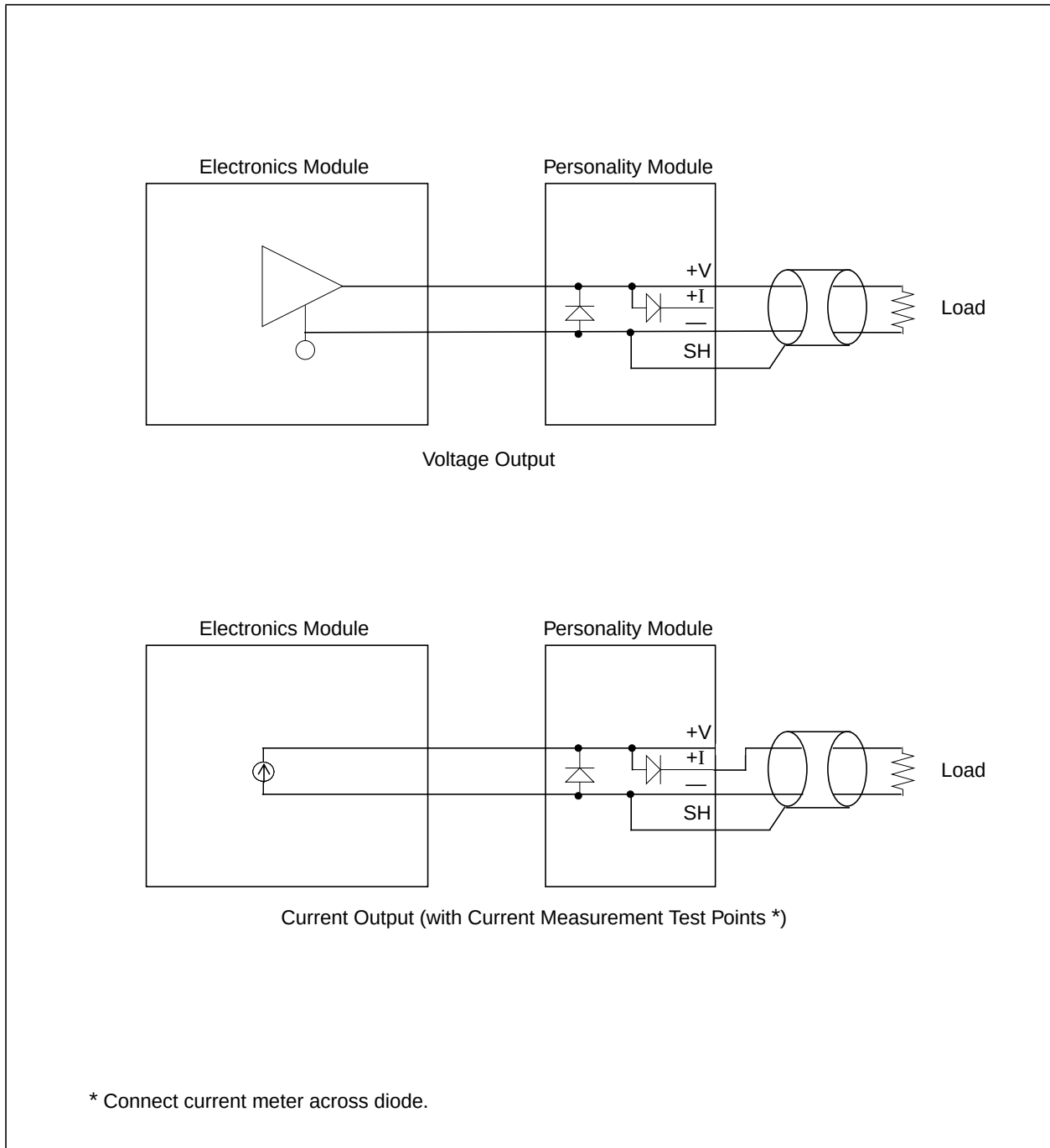


Figure 7-2. Field Connection for the Analog Output Personality Module (Non-CE Mark)

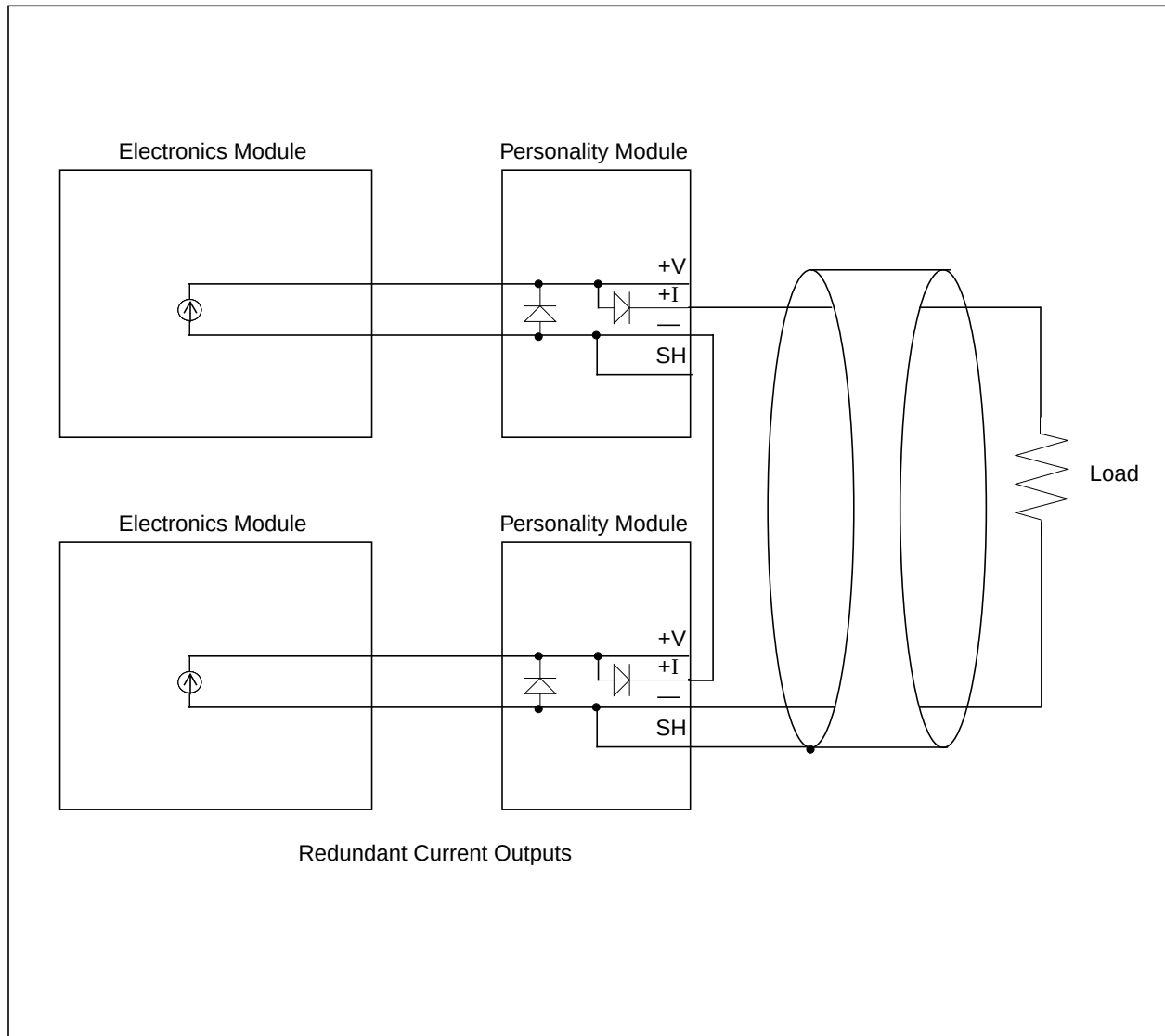


Figure 7-3. Field Connection for Redundant Analog Output Personality Module (Non-CE Mark)

CE Mark Certified Systems

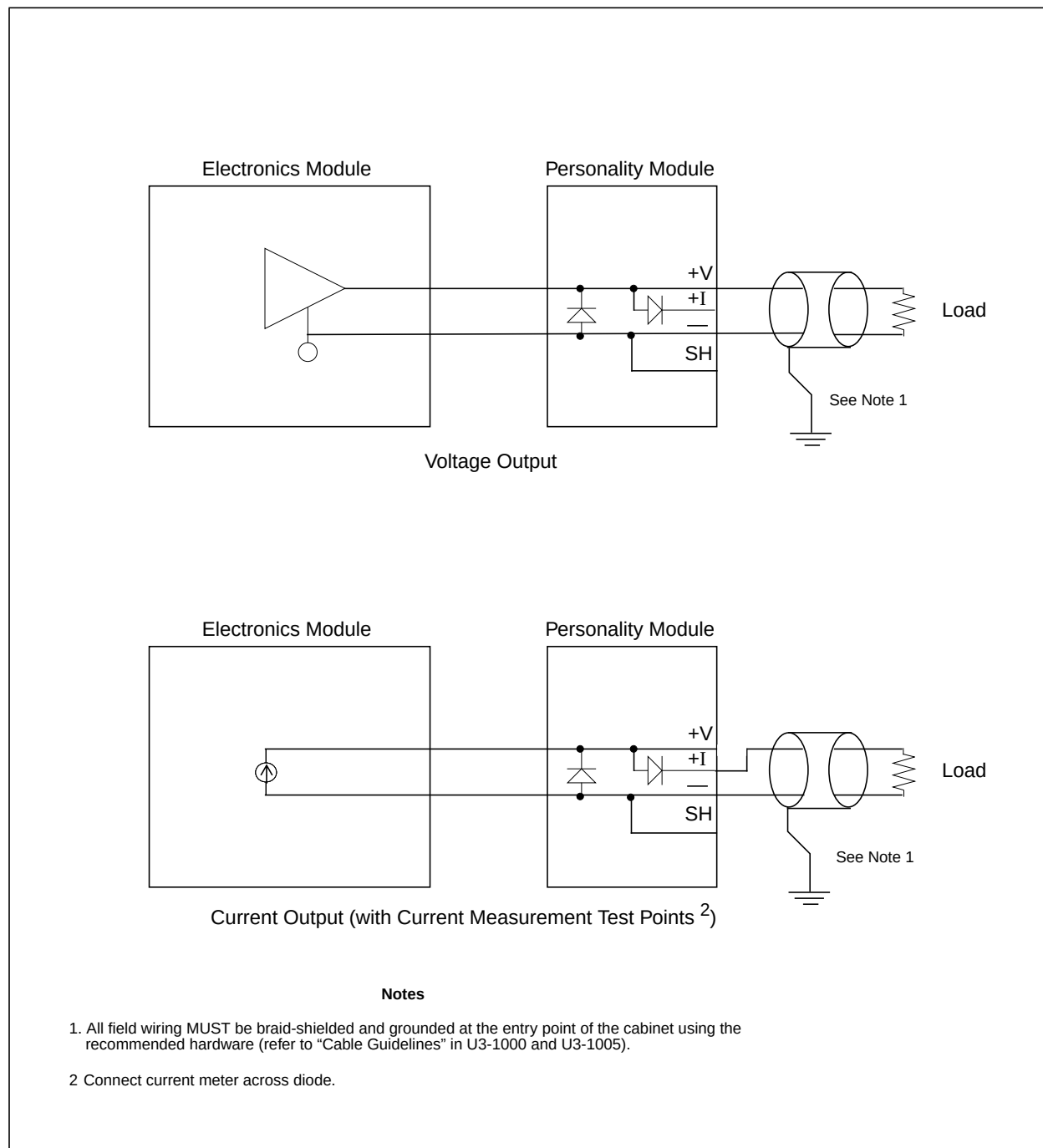


Figure 7-4. Field Connection for the Analog Output Personality Module (CE Mark)