

Ovation I/O Reference Manual

<u>Section</u>	<u>Title</u>	<u>Page</u>
----------------	--------------	-------------

Summary of Changes

Section 1. Introduction

1-1.	I/O Reference Manual Overview	1-1
1-2.	Description of Terms	1-2
1-3.	Contents of This Document	1-4
1-4.	Additional Reference Documents	1-5

Section 2. Noise Minimization Techniques

2-1.	Overview	2-1
2-2.	Background	2-1
2-3.	Noise Discrimination	2-2
	2-3.1. Energy Level	2-2
	2-3.2. Frequency	2-3
2-4.	Noise Sources	2-4
2-5.	Noise Classes	2-4
2-6.	Noise Rejection	2-5
	2-6.1. Digital Signal Noise Rejection	2-5
	2-6.2. Analog Signal Noise Rejection	2-6
	2-6.3. Output Signal Noise Rejection	2-6
	2-6.4. Noise-Sensitive Circuit Noise Rejection	2-6
2-7.	Analog Signal Shielding Techniques	2-8
2-8.	Common Input Considerations	2-12
	2-8.1. 4 to 20 mA Signal Considerations	2-12
	2-8.2. Digital Signal Considerations	2-12
	2-8.3. Contact Closure Signal Considerations	2-12

Section 3. I/O Modules

3-1.	Overview	3-1
	3-1.1. Ovation I/O Module Overview	3-1
3-2.	I/O Modules	3-9
	3-2.1. Ovation Module Choices	3-11
3-3.	Installing Ovation Modules	3-16
	3-3.1. Standard and Compact I/O Modules	3-16
	3-3.2. Relay Output Modules	3-16
3-4.	Ovation Module Configuration and Status	3-17
3-5.	Ovation Module Diagnostic LEDs	3-18
3-6.	User Serviceable Fuses	3-19

Table 3-1. Ovation Module Choices (Cont'd)

Module Type	Channel	Electronic Module	Personality Module
Digital Input (24 VAC/DC or 48 VDC differential)	16	1C31107G01	1C31110G02
Digital Input (24 VAC/DC or 48 VDC single ended)	16	1C31107G01	1C31110G01
Compact Digital Input (125 VAC/DC differential)	16	1C31232G03	5X00034G01 or Cavity Insert) ²
Compact Digital Input (24/48 VAC/DC differential)	16	1C31232G02	5X00034G01 or Cavity Insert) ²
Compact Digital Input (24/48 VDC single ended)	16	1C31232G01	Cavity Insert) ²
Digital Output (0 - 60 VDC)	16	1C31122G01	1C31125G01
Digital Output (0 - 60 VDC w/relay pnl comm)	16	1C31122G01	1C31125G02
Digital Output (0 - 60 VDC w/relay pnl comm ext fuses)	16	1C31122G01	1C31125G03
HART Analog Input (4 - 20 mA)	8	5X00058G01	5X00059G01
HART Analog Output (4 - 20 mA)	8	5X00062G01	5X00063G01
HART High Performance Analog Input (4 - 20 mA)	8	5X00062G01	5X00063G01
Loop Interface (AI: 0 - 10V AO: 0 - 10V)	6	1C31174G01	1C31177G01
Loop Interface (AI: 0 - 10V AO: 0 - 10V) User defined Digital Inputs³	6	1C31174G21	1C31177G01
Loop Interface (AI: 0 - 5V AO: 0 - 10V)	6	1C31174G02	1C31177G01
Loop Interface (AI: 0 - 5V AO: 0 - 10V) User defined Digital Inputs³	6	1C31174G22	1C31177G01
Loop Interface (AI: 4 - 20mA AO: 4 - 20mA remote powered)	6	1C31174G03	1C31177G03
Loop Interface (AI: 4 - 20mA AO: 4 - 20mA remote powered) User defined Digital Input³	6	1C31174G23	1C31177G03
Loop Interface (AI: 4 - 20mA AO: 4 - 20mA local powered)	6	1C31174G03	1C31177G02
Loop Interface (AI: 4 - 20mA AO: 4 - 20mA local powered) User defined Digital Input³	6	1C31174G23	1C31177G02
Loop Interface (AI: 4 - 20mA remote powered)	4	1C31174G04	1C31177G03

Table 3-3. Personality Module Fuses (Cont'd)

Type	Rating	Used On	Part Number
5 x 20 mm cartridge	1.25A; 250V; Fast acting	Loop Interface Pmods 1C31177G01 - G03 Digital Output Pmods 1C31125G01 Valve Positioner Pmods 1C31197G01 - G04 Relay Panels (Solid State) 5A22410H01 - H02 Relay Panels (16 G2R) 5A22411H01	EX06098
5 x 20 mm cartridge	2.0A; 250V; Fast acting	Relay Panels (8 KU) 5A22412H01 Relay Base (12 KUEP) 1C31222G01	EX06105
5 x 20 mm cartridge	3.15A;250V Fast acting	Digital Output Pmods 1C31125G02	EX06101
Micro-Fuse Plug-in	0.5A;125V Fast acting	16 Point Individually fused Digital Input Pmod 5X00034G01	PS10007H03
Micro-Fuse Plug-in	0.063A;125V Fast acting	HART Analog Input Pmods Analog Inputs 5X00059G01	1X00030H01
Micro-Fuse Plug-in	0.6A;125V Fast acting	HART Analog Output Pmods 5X00063G01	PS10007H14
Micro-Fuse Plug-in	0.5A;125V Fast acting	HART Analog Input Pmods 5X00059G01 Rev. 2 or later	PS10007H03

Section 12. Digital Output Module

12-1. Description

The Ovation digital output module provides a means to switch up to 60 VDC at moderate currents (for example, relay coils and lamps). The digital output module contains 16 current sinking transistor outputs capable of switching 60 VDC loads at up to 500mA.

The digital output module provides configurable communication timeout periods and LEDs to indicate the status of each output.

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

Note

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

12-2. Module Groups

12-2.1. Electronics Module

There is one Electronics module group for the Digital Output Module:

- 1C31122G01 provides for switching 60 VDC loads.

12-2.2. Personality Modules

There are three Personality module groups for the Digital Output Module:

- 1C31125G01 is used to interface the digital output module to the field through the terminal blocks.
- 1C31125G02 is used to interface the digital output module to the relay modules when power is supplied locally (from the I/O backplane auxiliary power supply). It can also be used to interface the digital output module to the field through the terminal blocks.

- 1C31125G03 is used to interface the digital output module to the relay modules when power is supplied remotely (from the relay modules). It can also be used to interface the digital output module to the field through the terminal blocks.

Caution

When 1C31125G03 is used, the returns for the remote power supply and the local power supply are connected together. Therefore, to avoid problems with differences in earth ground potentials, ensure that the power supply return lines are earth grounded at only ONE point.

Table 12-1. Digital Output Subsystem

Description	Channels	Electronic Module or Panel Kit	Personality Module
0-60 VDC Single ended Direct	16	1C31122G01	1C31125G01
Relay Panel Interface:			
Local Power Supply	16	1C31122G01	1C31125G02
Field Power Supply	16	1C31122G01	1C31125G03
Relay Panels:			
Solid State Relay Panel (AC)	16	5A22410G01	
Solid State Relay Panel (DC)	16	5A22410G02	
G2R Relay Panel (Low Power Electromechanical)	16	5A22411G01	
KU Relay Panel ¹ (High Power Electromechanical)	16	5A22412G01, G02, G03	

¹ Two panels (8 relays each) are included in the KU Relay Panel kit 5A22412G01, G02, and G03.

All configurations are CE Mark certified, except AC/DC Solid State Relay Panels.

12-3. External Power Supplies

The Digital Output module may obtain voltage from the internal auxiliary power supply (backplane) or from an external power supply.

If an external power supply is used, see [Appendix D](#) for the steps to be undertaken before connecting the external power supply to the Digital Output module base unit terminal block. The external power supply DC output voltage level depends on the Digital Output module application.