Section 18. Relay Output Module

18-1. Description

An Ovation Relay Output module consists of an Electronics module, a base assembly, and relays. The Relay Output module provides a means to switch high AC and DC voltages at high currents to field devices. There are two versions of the Relay Output base assembly which contain either 12 or 16 relays within each base. The 12 Relay Output base assembly provides the additional advantage of being able to switch larger DC voltages at high currents.

Each Relay Output base assembly incorporates an integral Relay Output Electronics module to interface between the relays and the Ovation I/O Controller. The Relay Output Electronics module provides configurable communication timeout periods and LEDs to indicate the status of each output.

The Relay Output module is applicable for CE Mark certified systems.

18-2. Module Groups

18-2.1. Electronic Module

There is one Electronics module group for the Relay Output module:

- 1C31219G01 provides an interface between the Ovation Controller and the mechanical relays that are used to switch high AC and DC voltages at high currents. This module plugs into the Relay Output base assembly.

Note

The Relay Output base assembly does not incorporate a Personality module.

18-2.2. Relay Output Base Assemblies

There are two different styles of Relay Output base assemblies:

- 1C31223G01 is configured with 16 Form C (G2R style) relays which switch high AC and DC voltages at high currents. Each relay contains one Form C contact arrangement which is brought to terminal blocks for user connections.

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- 1C31222G01 is configured at the project level with either 12 Form C (KUEP style) or 12 Form X (KUEP style) relays which switch high AC and DC voltages at high currents.

  In the case of the Form C relay, only one of the contact pairs within the relay is available at the terminal blocks for user connection. The KUEP style relay bases (1C31222G01) have the advantage of being able to switch larger DC voltages at higher currents than the G2R style relay bases (1C31223G01).

Table 18-1. Relay Output Module Subsystem

Description	Channels	Electronic Module	Base Unit [1]
KUEP Relay Panel (Form C)	12	1C31219G01	1C31222G01
KUEP Relay Panel (Form X)	12	1C31219G01	1C31222G01
G2R Relay Panel	16	1C31219G01	1C31223G01

[1] Relay Outputs do not use standard Ovation I/O bases. Use the listed base units for Relay Output applications. Also note that the Relay Output module does not use a Personality module.

All Configurations are CE Mark certified

Relay Contact Ratings must be adhered to when utilizing the Relay Output Module Assemblies. The application must include external current limiting protection for the Relay Output Module Assemblies.

18-2.3. Relay Output Panel Kits

There are four different styles of Relay Output panel kits:

- 5A26457G01 contains a Relay Output Electronics module a relay output base assembly, and 16 Form C relays (G2R style).
- 5A26458G01 contains a Relay Output Electronics module, a relay output base assembly, and 12 Form C relays (KUEP style).
- 5A26458G02 contains a Relay Output Electronics module, a relay output base assembly, and 12 Form X relays (KUEP style).
- 5A26458G03 contains a Relay Output Electronics module, and a relay output base assembly. This is a project specific base assembly in which the project determines the mix of the Form C and Form X relays on a panel. The KUEP Form C relay is 4960A71H16 and the KUEP Form X relay is 4960A71H05.

Caution

When using the Relay Output base, the power distribution panel should be equipped with a jumper Module 5A26471G01 that connects the returns for the auxiliary power supply and main power supply.

In applications where all radial power terminal block connectors on the power distribution are required for cabling, Cable 5A26472Gxx should be employed that incorporates the jumper into the cable assembly.

Caution

The jumper module or cable mentioned above, ties auxiliary power return to earth ground locally via cabinet grounding. Therefore, to avoid potential ground loops, do not ground auxiliary power to any other point.

Auxiliary power is bussed (via PCB traces) to all bases in any given branch. Relay Output bases must be installed only on I/O branches containing +25V typical Aux power (before auctioneering diode drop within Ovation auxiliary power supply).

Do NOT install Relay Output modules/bases on the same branch with Ovation bases with different voltage wired as Aux power (for example, DI modules using 125V AC).

18-3. External Power Supplies

It is recommended that the Relay Output base assembly obtain relay coil voltage from the internal Ovation auxiliary power supplies. These supplies distribute power through the Controller backplane and ROP panel to base assemblies. Use of external power supplies for relay coil power is **NOT** recommended.

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18-4. Specifications

Electronics Module (1C31219G01) (Table 18-2)
Base Assembly (1C31223G01, G2R Style) (Table 18-3)
Base Assembly (1C31222G01, KUEP Style) (Table 18-4)

Table 18-2. Relay Output Electronics Module Specifications (1C31219G01)

Description	Value
Number of channels	16
Blown fuse detection [1] Operating voltage range	 18V ≤ auxiliary supply voltage ≤ 25.5V
Module power	Main: 1.88 W typical, 2.5 W maximum Auxiliary: 0.3 W typical, 0.35 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] You can configure the module to enable/disable the blown fuse detection function.	

Table 18-3. Relay Output Base Assembly Specifications (1C31223G01, G2R Style)

Description	Value
Number of relays	16
Relay Type	G2R electromechanical style with 1 Form C contact style
Relay contact ratings	10 amps @250 VAC, PF=1 10 amps @30 VDC
Maximum propagation time	Operate time: 15 mSec, bounce approximately = 3 mSec Release time: 10 mSec, bounce approximately = 8 mSec
Dielectric isolation: Relay contacts to logic	 2300V AC/DC
Relay base power	Auxiliary power: 9.1 W typical, 11.68 W maximum
Auxiliary power supply [1]	25V typical (before output auctioneering diode drop within Ovation auxiliary power supply) 25.5V maximum@60°C
Operating temperature range [2]	0 to 60°C (32°F to 140°F)
Storage temperature range	-40 to 70°C (-40°F to 158°F)
Humidity (non-condensing)	35 - 85%
[1] Use of the internal Ovation auxiliary power supply is recommended for relay output modules. [2] See additional application derating information contained in Table 18-5.	

Table 18-4. Relay Output Base Assembly Specifications (1C31222G01, KUEP Style)

Description	Value
Number of channels	12
Relay Type	KUEP electromechanical style: 5A26458G01 Kit - 1 Form C contact type 5A26458G02 Kit - 1 Form X contact type 5A26458G03 Kit - Project specific
Relay contact ratings	Form C relays: 10 amps @240 VAC, PF=0.8 3 amps @150 VDC Form X relays: 10 amps @240 VAC, PF=0.8 10 amps @150 VDC
Typical propagation time	Operate time: 15 mSec, excluding bounce Release time: 10 mSec, excluding bounce
Dielectric isolation: Relay contacts to logic	 2200V AC/DC
Relay base power	Auxiliary power: 23.45 W typical, 30.1 W maximum (5A26458G01 Kit - Form C relays) 15.9 W typical, 20.41 W maximum (5A26458G02 Kit - Form X relays)
Auxiliary power supply [1]	25V typical (before output auctioneering diode drop within Ovation auxiliary power supply) 25.5V maximum @42°C (108°F) (Form C relays) 25.5V maximum @60°C (140°F) (Form X relays)
Operating temperature range [2]	0 to 45°C (32°F to 113°F) (5A26458G01 Kit - Form C relays) 0 to 60°C (32°F to 140°F) (5A26458G02 Kit - Form X relays)
Storage temperature range	KUEP X: -40 to 70°C (-40°F to 158°F) KUEP C: -40 to 50°C (-40°F to 122°F)

[1] Use of the internal Ovation auxiliary power supply is recommended for Relay Output modules.
[2] See additional application derating information contained in Table 18-5.

18-5. Relay Output Terminal Block Wiring Information

Each relay base assembly employs terminal blocks which are permanently marked with appropriate relay contact designations at each position. The terminal block marking indicates how field wiring is connected to each terminal block position in the respective relay base assemblies.

The terminal block markings for the G2R style relay output base assembly are illustrated in Figure 18-1. The terminal block markings for the KUEP style Relay Output base assemblies are illustrated in Figure 18-2. The following table lists and defines the abbreviations used in those diagrams. The Relay Output Modules are depicted in Figure 18-3 and Figure 18-4.

Abbreviation	Definition
NC [1]	Normally Closed contact connection
NO	Normally Open contact connection
C	Common contact connection

[1] Do **NOT** use the NC terminal position when using the KUEP style base assembly with a Form X style relay inserted. The terminal position should remain unconnected.

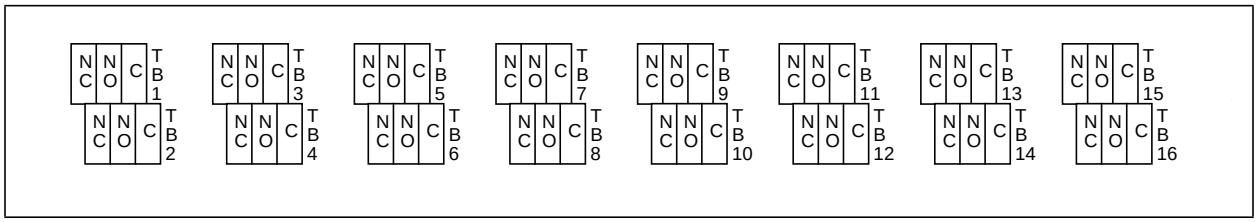


Figure 18-1. Terminal Block Connections for the G2R Relay Output Base Assembly

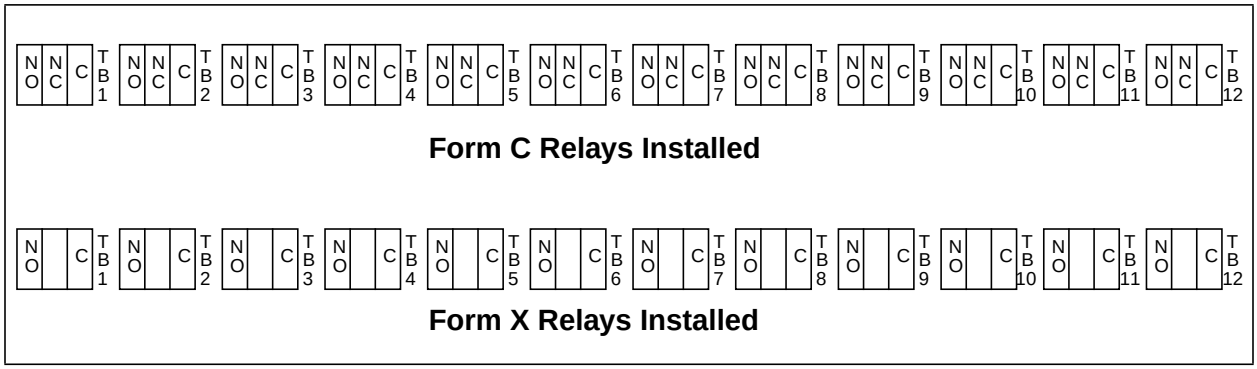


Figure 18-2. Terminal Block Connections for the KUEP Relay Output Base Assembly

Relay Output Terminal Block Wiring Information

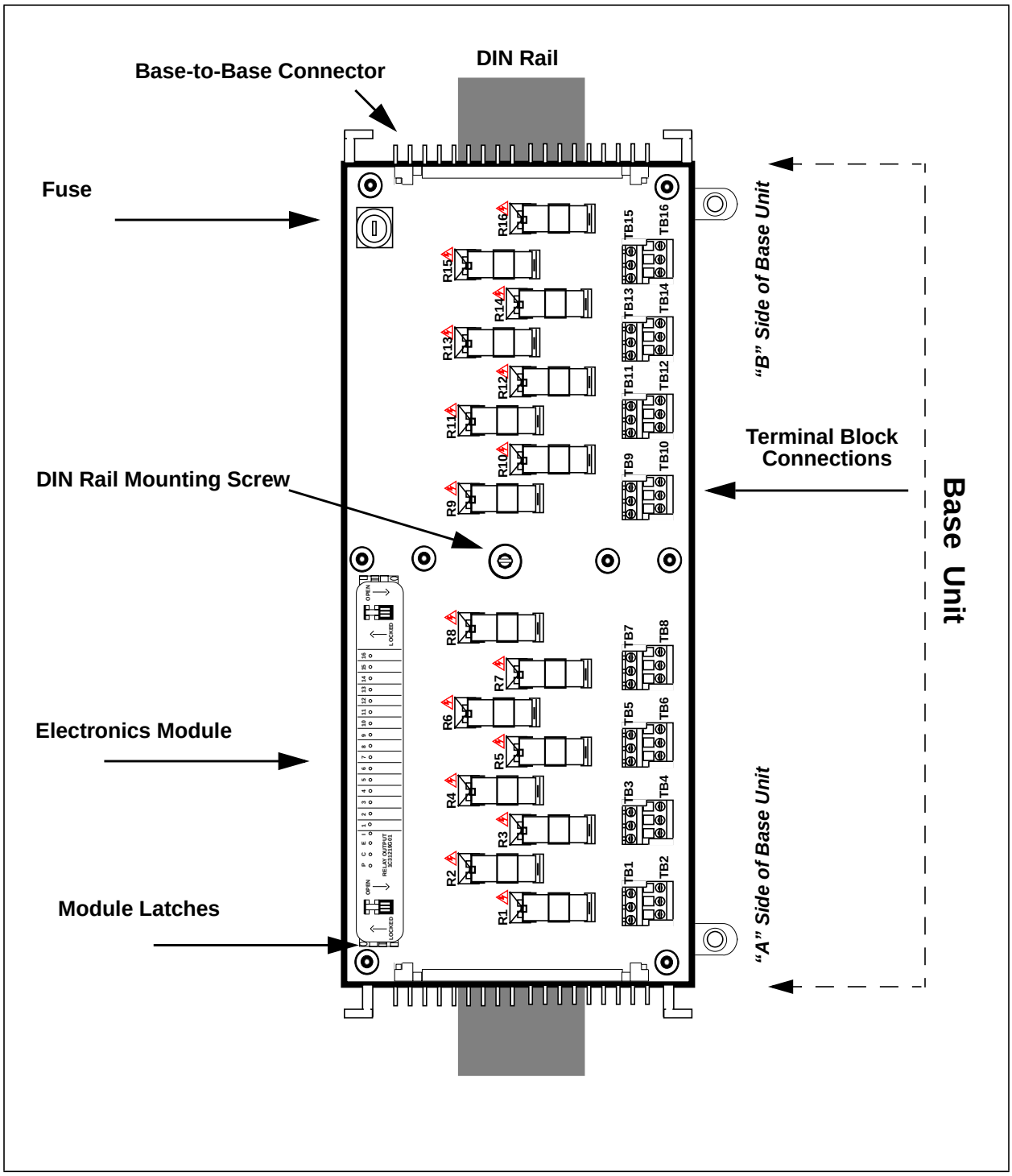


Figure 18-3. Relay Output Panel G2R

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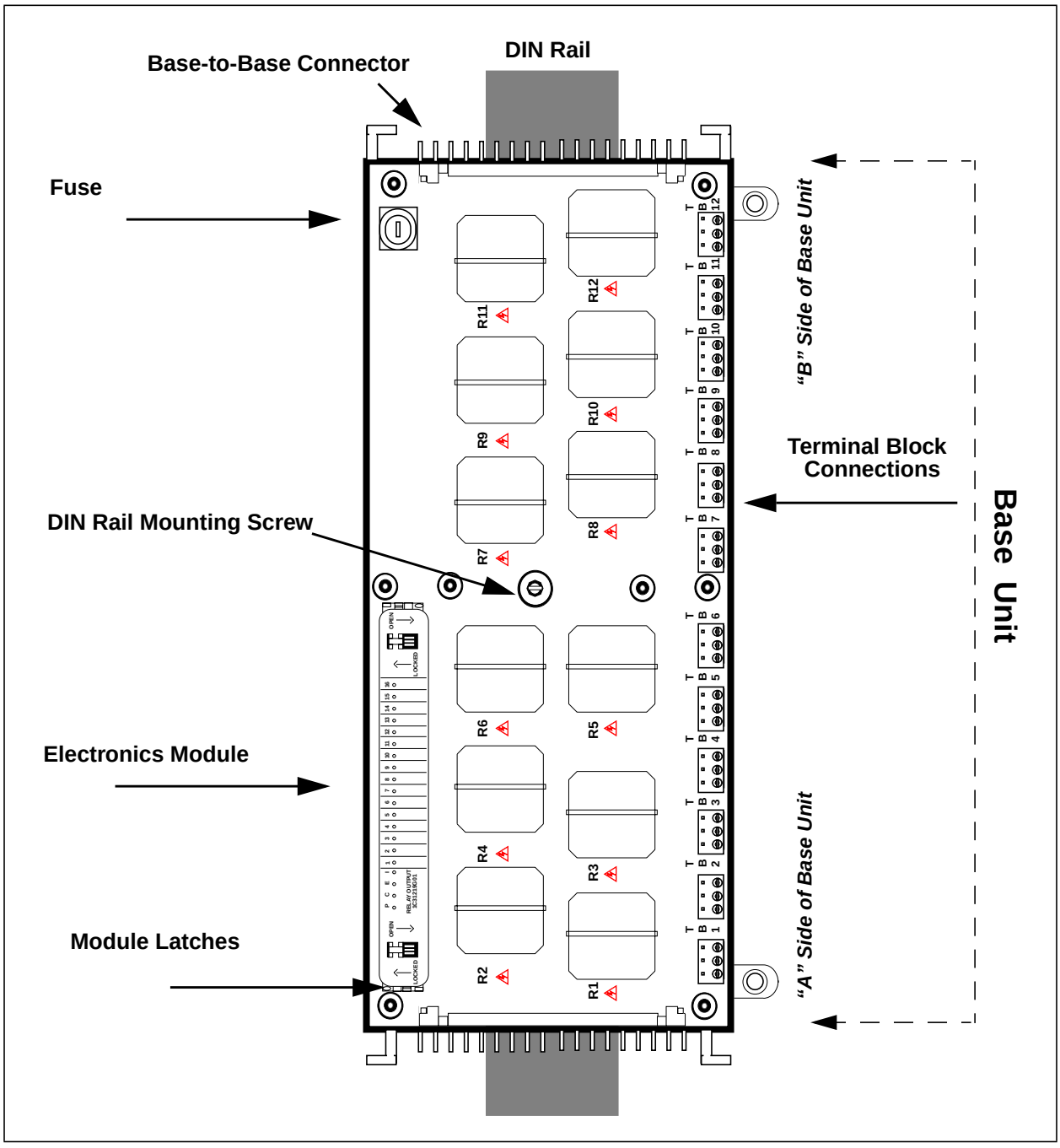


Figure 18-4. Relay Output KUEP

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