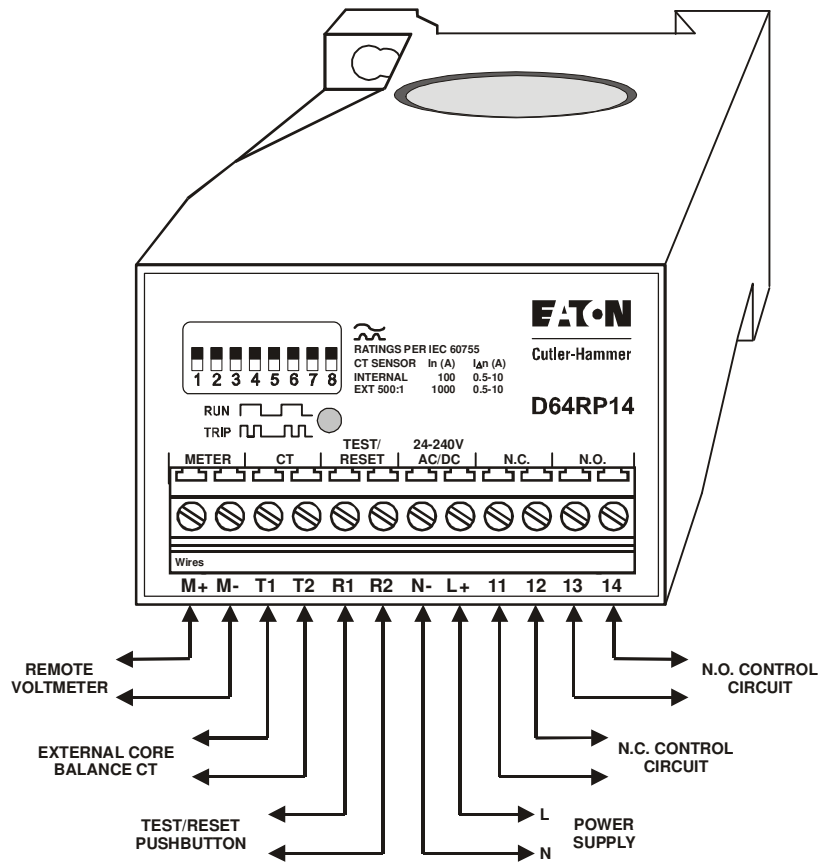


D64RP14 SERIES A2 DIGITAL GROUND FAULT RELAY

D64RP14 INSTRUCTION MANUAL



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D64RP14 SERIES A2 DIGITAL GROUND FAULT RELAY

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D64RP14 SERIES A2 DIGITAL GROUND FAULT RELAY

1. GENERAL DESCRIPTION

The D64RP14 is a microprocessor based ground fault relay for use on solidly grounded or resistance grounded systems. This innovative digital electronic relay measures ground fault current using a built-in 1.1" zero sequence current transformer (CT).

The D64RP14 reacts to alternating current only and will reject direct current signals. It will maintain accuracy over a frequency range of 45 to 65Hz, filtering out harmonics which could cause nuisance tripping, making it ideal for use on systems employing static switching.

The D64RP14 is designed for use with neutral grounding resistors (NGRs) having let through currents from 2 Amps to 10 Amps.

660 Volts is the maximum system operating voltage for the D64RP14 when passing the system power conductors through the built-in CT. However, by using any Eaton's Cutler-Hammer C311CT zero sequence current transformers with 500:1 ratio, connecting the secondary to terminals T1 and T2 of the relay, and passing the system insulated power conductors through the window of this CT, the D64RP14 can be applied on any system voltage.

The ground fault current trip level is set on a front accessible binary DIPswitch array. Trip currents from 1 Amp - 10 Amps can be selected in 8 discrete steps. These same trip settings are available when using any C311CT 500:1 ratio external CT. The trip level can be set just above the charging current¹. Any deterioration in the circuit will trip the relay. This also permits scheduled field testing of the relay (by lowering the trip level).

¹ The capacitance-to-ground charging current on a system will vary depending on: the overall length of the cables; the types of loads; the quality of insulation on the phase conductors; the surrounding equipment grounding, cable trays, junction boxes, etc.; and, the type of transformer.

A "Rule-of-Thumb" for systems 600 Volts and lower: The charging current is 0.5 Amps per 1000 kVA of transformer capacity.

The response time on ground fault trip is set on a front accessible binary DIPswitch array. Trip times from 0.5 seconds to 10.0 seconds can be selected in 8 discrete steps.

The output relay has Form "Z" (4 terminal) N.O. and N.C. contacts which may be used to operate the upstream protective device and to indicate a failure of the system. The relay can be set to operate in any one of the following modes: Failsafe; Non-failsafe; or Pulsed Output Auto Reset by means of front accessible DIPswitches.

By double clicking the remote Test/Reset button connected to terminals R1 and R2, a functional test of the D64RP14 is invoked. A single press of the remote Test/Reset button resets the relay after a trip. (It is not necessary to press the remote Test/Reset button to invoke Auto Reset). The green LED indicates two functions: When slow flashing it denotes control power is applied to terminals N- and L+; when fast blinking it denotes the relay has sensed a ground fault current higher than the trip level for a period longer than the trip time and that the output contacts have operated.

Terminal blocks are provided for connection of an external voltmeter. The output is 0 to 10 Volts proportional to the Trip current level set on the DIPswitches. For example: If the trip current level is set at 4 amps, the 0 – 10 Volts would be proportional to 0 – 4 Amps.

The 12 point terminal block is pull-apart and has two 12 AWG screw clamps per pole (Double Row T Connector) simplifying connection of field wiring.

The D64RP14 operates on any control voltage from 24 to 240 Volts ac or dc.

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2. OPERATION**2.1 GLOSSARY OF TERMS****Manual Reset:**

A N.O. contact remote RESET pushbutton connected to terminals R1 and R2 of the D64RP14 must be pressed once to reset the output relay after a trip, providing the ground fault has been cleared or the measured values are within the preset limits.

Pulsed (Trip) Auto Reset:

The output relay N.O. contact is closed when tripped and the N.C. contact is open when tripped.

The output relay does not change state when control power is applied to terminals N- & L+.

With control voltage on terminals N- & L+ (Green LED slow flashing), when the measured values reach or exceed the DIPswitch settings for current and time, the output relay changes state (trips) and the green LED changes to fast blinking. The output relay will remain tripped until one of the following conditions is met:

- Three seconds after the ground fault current drops below the trip current set point the relay will reset and the green LED resumes slow flashing. This is, in effect, pulsed Auto Reset.
- If the control voltage is removed by the trip action of the output relay (i.e. it operates the shunt trip of the breaker that is providing the control voltage), the relay will reset with a short delay and the green LED is turned off. This is, in effect, Auto Reset.

If the ground fault has not been cleared when control voltage is restored, the relay will trip and the green LED will resume fast blink after 500 milliseconds, regardless of the time delay set on the Trip Delay DIPswitch, and the above cycle will be repeated.

If the ground fault has been cleared when control voltage is restored, the relay will remain reset.

The Pulsed Trip Auto Reset mode can be used when the application calls for Auto Reset.

The Pulsed Trip Auto Reset mode is designed for applications where the output relay is operating a shunt trip device. The D64RP14 resets automatically 3 seconds after the ground fault current is interrupted by the tripping action of the circuit breaker. The output contact to the shunt trip coil opens. This prevents damage to the internal mechanism of the circuit breaker in the event that the operator tries to reset the circuit breaker. When the control voltage to the D64RP14 is interrupted by action of the shunt trip, the D64RP14 resets with a short delay.

Non-Failsafe:

The output relay N.O. contact is closed when tripped and the N.C. contact is open when tripped.

The output relay does not change state when control power is applied to terminals N- & L+.

With control voltage on terminals N- & L+ (Green LED slow flashing), when the measured values reach or exceed the DIPswitch settings for current and time, the output relay changes state (trips) and the green LED changes to fast blinking.

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If control voltage is maintained on terminals N- & L+ after a ground fault trip, the remote Test/Reset button must be pressed to reset the relay after clearing the ground fault.

If control voltage is removed from terminals N- & L+ while a ground fault is detected, the output relay resets and the green LED is turned off.

If the ground fault has not been cleared when control voltage is restored, the relay will trip and the green LED will resume fast blinking after 500 milliseconds, regardless of the time delay set on the Trip Delay DIPswitch.

If the ground fault has been cleared when control voltage is restored, the relay will remain reset.

The Non-Failsafe mode can be used when the output relay is operating undervoltage devices. This includes: contactor coils; starter coils; and circuit breakers equipped with UV trip coils.

Failsafe:

The output relay N.O. contact is closed when tripped and the N.C. contact is open when tripped.

The output relay contacts change state 500 ms after control voltage is applied to terminals N- & L+.

The output relay trips when either or both of the following conditions occur:

- The measured values reach or exceed the DIPswitch settings for current and time. In this condition the green LED changes to fast blinking.
- Control voltage is removed from terminals N- & L+. In this condition the green LED does not light.

If control voltage is maintained on terminals N- & L+ after a ground fault trip, the RESET button must be pressed to reset the relay after clearing the ground fault.

If control voltage is removed from terminals N- & L+ after a ground fault is detected, the output relay remains tripped.

If the ground fault has not been cleared when control voltage is restored, the relay remains tripped.

If the ground fault has been cleared when control voltage is restored, the relay contacts will change state 500 ms after control voltage is applied to terminals N- & L+.

The Failsafe mode can be used when the output relay is operating undervoltage devices. This includes: contactor coils; starter coils; and circuit breakers equipped with UV trip coils provided that the control voltage to the D64RP14 is not interrupted by the action of the UV trip.

External Current Transformer:

External current transformers (CTs) are required for any of the following applications:

- The size of the power conductors on which the D64RP14 is being applied is too large for the 1.1" built-in CT.
- The system voltage on which the D64RP14 is being applied is higher than 660 Volts.
- The system primary phase current on which the D64RP14 is being applied exceeds 100 Amps continuous.

Any Eaton's Cutler-Hammer C311CT with 500:1 ratio may be used when the above requirements dictate the use of an external CT. The ground fault trip current setting range of 1 Amp – 10 Amps in 8 steps is the same. The maximum continuous primary phase current is to be 1000 Amps.

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The two secondary terminals of the external CT are to be connected to terminals T1 and T2 of the D64RP14.

Chassis Ground

Chassis ground is the ground to which all of the non-current carrying metal equipment is connected/bonded. Typically, equipment grounding is provided by means of a ground bus. A solid connection is to be made from terminal N- of the D64RP14 to the nearest chassis ground to ensure the relay complies with the specified Electromagnetic compatibility (EMC) standards.

2.2 DIPSWITCH SETTINGS

FOR MAXIMUM SAFETY THE SETTINGS DESCRIBED IN THIS SECTION SHOULD BE MADE WITH CONTROL VOLTAGE REMOVED FROM THE D64RP14 RELAY.

The DIPswitches are mounted inside of the relay and are accessible through the front cover. It is recommended that all of the DIPswitches be set at one time.

Should it be necessary to make changes to the DIPswitch settings when the D64RP14 relay is energized, this can be done without having any adverse effect on the performance of the relay.

Please Refer to Table 1. This provides a list of the 8 DIPswitches, the function of each group, and the values related to each setting. The DIPswitches are numbered from 1 to 8 left to right.

TABLE 1 – DIPSWITCH SETTINGS

In the table below ‘D’ denotes down and ‘U’ denotes up.

Switch	Function	Set to	Meaning
1 2 3	Ground fault trip current limit	D U U	1.0 Amps
		D U D	1.5 Amps
		D D U	2.0 Amps
		D D D ♦	2.5 Amps
		U U U	4.0 Amps
		U U D	6.0 Amps
		U D U	8.0 Amps
		U D D	10.0 Amps
4 5 6	Trip time delay	D D D ♦	0.5 seconds
		D D U	1.0 seconds
		D U D	1.5 seconds
		D U U	2.0 seconds
		U D D	2.5 seconds
		U D U	5.0 seconds
		U U D	7.5 seconds
		U U U	10.0 seconds
7 8	Trip relay operation mode	D D ♦	Non-failsafe, continuous operation
		D U	Failsafe, continuous operation
		U D	Pulsed Auto reset operation (pulse turns off 3 seconds after G/F removed)
♦ FACTORY SETTING			

2.2.1 GROUND FAULT TRIP CURRENT LEVEL - DIPSWITCHES 1, 2, & 3

The ground fault TRIP LEVEL range is 1 Amp - 10 Amps. Table 1 provides a listing of the eight TRIP LEVEL settings, which can be made on DIPswitches 1, 2, & 3.

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As indicated in the General Description, it is recommended that the ground fault TRIP LEVEL setting be kept as close to the charging current as possible. This will provide maximum safety for operating personnel and equipment protection. On resistance grounded systems, the TRIP LEVEL setting should be set lower than 20% of the Neutral Grounding Resistor let-through current.

If the measured ground fault current exceeds the TRIP LEVEL setting, the output relay changes state after the pre-selected TRIP DELAY time.

2.2.2 GROUND FAULT TRIP DELAY TIME – DIPSWITCHES 4, 5, & 6

The ground fault TRIP DELAY time range is 0.5 - 10.0 seconds. Table 1 provides a listing of the eight TRIP DELAY settings, which can be made with DIPswitches 4, 5, & 6.

The TRIP DELAY time begins when the ground fault trip level setting is reached or is exceeded.

Set the ground fault TRIP DELAY time to provide the desired delay before the output relay changes state when the ground fault TRIP LEVEL setting is reached or exceeded.

The setting should be selected to co-ordinate with other ground-fault devices connected on the same transformer secondary: set shorter than upstream devices; set longer than downstream devices. If no other ground-fault devices are connected, set for the shortest time.

2.2.3 OUTPUT RELAY OPERATING MODE - DIPSWITCHES 7 & 8

Referring to the Glossary of Terms, determine if FAILSAFE, NON-FAILSAFE, or PULSED AUTO RESET operation of the output relay is required. The factory setting is NON-FAILSAFE with DIPswitches 7 & 8 in the **Down** position.

Refer to Table 1 for DIPswitch settings for FAILSAFE and PULSED AUTO RESET operation.

2.3 OUTPUT RELAY CONTACT STATE

The output relay contact state is determined by the operating mode selected and the sensing condition of the D64RP14 relay. This is shown in Table 2. Use this table when deciding on field connections. Refer to the CONNECTIONS section.

2.4 INDICATION

There is one green LED on the front of the D64RP14:

Off:	No control voltage or D64RP14 defective
Slow Flashing:	Okay, control voltage on
Fast Blinking:	Ground Fault Trip
Steady On:	Control voltage too low or D64RP14 defective

2.5 RESET

The D64RP14 has two terminals R1 and R2 for a remote N.O. Test/Reset button. After a trip, the electronics remain in the tripped state until the ground fault has been cleared and the Reset button has been pressed, or the control voltage is removed from terminals L- & N+.

It is **NOT** necessary to press the remote Test/Reset button after the ground fault has been cleared when the D64RP14 is set in the Pulsed Trip Auto Reset mode. In this mode the relay will reset automatically in 3 seconds.

2.6 GROUND FAULT TEST

Double clicking the external button connected to terminals R1 and R2 invokes a relay test. A simulated current equal to 1.2 times the trip current set on the Trip Level DIPswitches replaces the measured current. After the trip delay time set on the Trip Delay DIPswitch has elapsed, the unit should trip and the green LED will fast blink. This procedure tests the functionality of the unit.

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After the trip, if the relay operating mode is Non-Failsafe or Failsafe, the output relay will remain tripped and the green LED will fast blink until the button is pressed (Manual Reset)

After the trip, if the relay operating mode is Pulsed Trip Auto Reset, the output relay will reset and the green LED will revert to slow flash 3 second after the test was invoked (Auto Reset)

A "Test Record Form" is included in this instruction manual. This form provides spaces to record the date the test was performed and the results. Those in charge of the building's electrical installation should retain the form in order to be available to the authority having jurisdiction.

3. INSTALLATION INSTRUCTIONS

Place the D64RP14 in a clean dry enclosure. Try to keep the exposure to mechanical shock and vibration to a minimum, even though the internal electronics have been encapsulated in epoxy to improve the performance in high vibration environments.

Locate the relay close to the isolating device (circuit breaker or contactor) that is protecting the circuit being monitored. If using an external CT keep the distance between the relay & CT as short as possible.

Provide maximum clearance between the D64RP14 (and the external CT if being used) and any strong magnetic flux producing devices such as power transformers, autotransformers, control transformers, reactors, and high power conductors and buswork.

CAUTION: For reliable ground fault detection by the D64RP14 use one CT configuration only: Built-in CT; or, External CT (i.e. do not pass power conductors through the built-in CT when using an external CT.)

3.1 MOUNTING

Refer to Figure 3 for mounting dimensions of the D64RP14 relay. It is designed to be mounted with either mounting screws or 35 mm DIN rail.

Two #8-32 x 3/4" (M4 x 20) mounting screws are required for screw mounting.

For DIN rail mounting the rail should be bolted to a flat surface. Install the DIN rail horizontally. Allow at least 3/4" (20 mm) of rail to extend beyond each end of the relay. Secure the relay to the DIN rail ensuring the white release latches at the bottom of the relay engages the rail. If the relay is to be mounted in any other position take appropriate steps to prevent the relay from becoming disengaged from the DIN rail.

3.2 BUILT-IN CURRENT TRANSFORMER

The D64RP14 has a built-in current transformer (CT) with 1.1" (28 mm) opening.

Refer to Figure 1. Pass the neutral conductor running from the star point of the transformer secondary to the Neutral Grounding Resistor (NGR) through the CT window. Note that the relay is located on the ungrounded side of the NGR. This is the preferred location so that any ground ahead of the NGR but after the D64RP14 will be detected.

The D64RP14 Trip Level range is 1 Amp to 10.0 Amps when using the built-in CT. The maximum continuous primary phase current is to be 100 Amps.

3.3 EXTERNAL CURRENT TRANSFORMER

Refer to the Glossary of Terms to determine if an external Current Transformer is required for the application.

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The D64RP14 will work with Eaton's Cutler-Hammer C311CT current transformers having a turns ratio of 500:1. These are epoxy molded to give exceptional mechanical properties and have high-grade silicon iron cores for excellent coupling characteristics.

Refer to section 4 to select the catalog number of the C311CT current transformer with the opening required for the application.

Phase conductors must be insulated for the system voltage when it is higher than 660 Volts.

Refer to Figure 2. Pass the phase conductors through the CT window. If the neutral conductor is being connected downstream, it is to be passed through the window. Do not pass ground conductors through the CT window. In applications that require shielded wires to pass through the CT window, return the shields through the CT window before connecting them to ground.

Verify that the polarity of the conductors is correct when they pass through the CT. Verify that ground paths do not exist that would bypass the CT.

Position power cables in the center of the current transformer opening. Keep cables and buswork clear of the split on split core current transformers.

The two secondary terminals of the external CT are to be connected to terminals T1 and T2 of the D64RP14.

3.4 CONNECTIONS

All connections to the D64RP14 are by means of two screw clamp terminals per pole (Double Row T Connector) rated 10 Amps, 300 Volts. Each screw clamp terminal will accept #26-12 AWG solid or stranded conductors.

The terminals are pull apart.

For remote metering connect a meter having a 0-10 volt movement with a 0-100% scale to terminals M+ and M-. Observe polarity when making the connections.

Note: Terminals M+ and M- are NOT isolated from the control voltage; terminal M- is internally connected to terminal N-.

If an external CT is being used, connect the two secondary terminals of the CT to terminals T1 and T2 of the relay using 14 AWG (minimum). Twist the leads to optimise electromagnetic immunity.

Note: The CT's input terminals T1 and T2 are NOT isolated from the control voltage. If an external CT is used it is grounded internally via the power supply input and **must not** be grounded again externally (ground loops).

For remote Test and Reset connect a N.O. momentary contact TEST/RESET button to terminals R1 and R2.

Note: Terminals R1 and R2 are NOT isolated from the control voltage; terminal R2 is internally connected to terminal N-.

Connect ac or dc control power to terminals N- and L+. Observe polarity.

In order to meet the Electromagnetic Compatibility (EMC) requirements a chassis bond is required between terminal N- and the nearest ground point. This distance should be kept to an absolute minimum. If the D64RP14 is mounted on 35 mm DIN rail a DIN rail mounted ground terminal block can be installed beside the relay to act as the chassis ground point.

Refer to Figure 1, Figure 2, and Table 2. Decide on the connection of field devices to control voltage and output relay contact terminals by comparing the desired control of the field devices under various operating conditions.

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Figure 1 shows the D64RP14 using its built-in current transformer in conjunction with a NGR and a typical connection of a circuit breaker with a shunt trip coil (ST). Pulsed Trip Auto Reset operating mode has been selected. Comparing the operating mode and the relay contact states in Table 2, it can be seen that the N.O. contact, terminals 13 and 14, would be used for the shunt trip coil. The D64RP14 will reset automatically as soon as the ground fault current is interrupted by the tripping action of the circuit breaker.

Figure 2 shows the D64RP14 using an external current transformer (C311CT 500:1 ratio) and a typical connection of an ac motor starter coil (1M). Non-Failsafe operating mode has been selected. Comparing the operating mode and the output relay contact states in Table 2, it can be seen that the N.C. contact, terminals 11 & 12, would be used for the starter coil circuit and the N.O. contact, terminals 13 and 14, would control the external red TRIP light. A manual reset is required after a ground fault trip.

3.4.1 CONNECTING MORE THAN ONE D64RP14 TO REMOTE TEST/RESET

Up to 5 D64RP14 relays in the same enclosure may share a common remote Test/Reset button. Connect one terminal of the button to terminal R2 of one of the units, and connect the other terminal of the button to terminals R1 of all the units in parallel.

4. CATALOG NUMBERS

D64RP14	Ground Fault Relay with built-in 1.1" (28mm) CT, 24 – 240 Volts ac or dc control voltage, for use on 660 Volts maximum, 50/60 Hz power system.
C311CT8	Zero sequence current transformer, 1.1" window
C311CT1	Zero sequence current transformer, 1.8" window
C311CT9	Zero sequence current transformer, 2.56" window
C311CT2	Zero sequence current transformer, 3.5" window
C311CT5	Zero sequence current transformer, 5.7" window
C311CT6	Zero sequence current transformer, 9.45" window
C311CT3	Split core zero sequence current transformer, 5.9" x 6.7" window
C311CT4	Split core zero sequence current transformer, 4" x 13.8" window

For mounting dimensions and additional information on C311CT current transformers refer to the current Cutler-Hammer catalog.

5. TECHNICAL SPECIFICATION

Control Voltage (non-isolated).....	24 – 240 Volts ac or dc
Power consumption	proportional to voltage: 0.15 W @ 24 V ac/dc 1.5 W @ 240 V ac/dc
Operating voltage tolerance.....	80% to 110% of rated voltage 24 -32 V ac 55% to 110% of rated voltage 32 – 240 V ac 80% to 110% of rated voltage 24 – 240 V dc
Under voltage tolerance (no impaired operation)	withstands loss of supply up to 100 ms
Power Up Time	500 milliseconds
Maximum System Voltage & Frequency.....	660 Volts ac, 45 to 65 Hz

The D64RP14 may be applied on higher voltage circuits providing an external current transformer is used and the power conductors are insulated for the system voltage.

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Output Relay:

Contacts:	Maximum UL rating:	5 A @ 250 Vac, general use 5 A @ 30 Vdc, resistive 1/8 hp, 250 Vac 2 A, 250 VA, @ 125 Vac, pilot duty 1 A, 250 VA, @ 250 Vac, pilot duty 0.88 A, 26.4 VA, @ 30 Vdc, pilot duty
	EN 60947-5-1 rating:	5 A @ 250 Vac, Utilization category AC-12 4 A @ 250 Vac, Utilization category AC-13 3 A @ 250 Vac, Utilization category AC-14, AC15 5 A @ 30 Vdc, Utilization category DC-12 3 A @ 24 Vdc, Utilization category DC-13

Maximum fusing under EN 60947-5-1:	13 A
Isolation voltage	3 kV rms, 50-60 Hz, 1 min.
Between open contacts	1 kV rms, 50-60 Hz, 1 min.
Between contact sets	2 kV rms, 50-60 Hz, 1 min.

Configuration..... Voltage free form "Z" 1 N.O. and 1 N.C. (4 terminals)

Operating Mode (Selected on DIPswitches 7 & 8)	Non-Failsafe Failsafe Pulsed Auto Reset
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Functional Test:

A simulated current equal to 120% of the trip current set on the Trip Level DIPswitches replaces the measured current. This tests all internal electronics and secondary winding of the built-in current transformer. No external power supply or additional wiring is required.

Remote Test Double click button connected to terminals R1 and R2

Remote Reset Single push of button connected to terminals R1 and R2

Reset mode Manual or Pulsed Auto Reset

Ground Fault Circuit:

Ground Fault Trip Current Level 1.0 Amp – 10.0 Amps in 8 settings: 1.0, 1.5, 2.0, 2.5, 4.0, 6.0, 8.0, and 10.0 Amps

Setting within the Range DIPswitches 1, 2, & 3, on front of relay

Accuracy +0%, -15% of trip setting

Note: The accuracy of the trip point refers to the value of the real world current (assuming a purely sinusoidal wave shape) that just causes a trip, with respect to the specified value in the table.

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Ground Fault Trip Time Delay0.5 –10.0 seconds
 Setting within RangeDIPswitches 4, 5, & 6 on front of relay

Accuracy:

Has a current dependent behavior:

If set for	Delay when current exceeds trip current setting by a factor of			
	<u>1.2</u>	<u>2</u>	<u>4</u>	<u>≥6</u>
0.5 sec	546-579 ms	523-542 ms	512-529 ms	506-523 ms
1.0 sec	1018-1082ms	995-1045 ms	984-1032 ms	978-1026 ms
1.5 sec	1518-1582 ms	1495-1545 ms	1484-1532 ms	1478-1526 ms
2.0 sec	2018-2082 ms	1995-2045 ms	1984-2032 ms	1978-2026 ms
2.5 sec	2518-2582 ms	2495-2545 ms	2484-2532 ms	2478-2526 ms
5.0 sec	5018-5082 ms	4995-5045 ms	4984-5032 ms	4978-5026 ms
7.5 sec	7234-7582 ms	7211-7545 ms	7200-7532 ms	7194-7526 ms
10.0 sec	9734-10082 ms	9711-10045 ms	9700-10032 ms	9694-10026 ms

Frequency Response Range45 - 65 Hz

Thermal Characteristics:

Short Time Withstand:

1000A 1 second
 2000A 0.1 second

Environment:

Operating Temperature -35°C to +60°C
 Storage -40°C to +80°C
 Humidity 85% (No Condensation)

Shock resistance 10G (no malfunction)

Vibration resistance10G, 10-55 Hz at 1.5 mm double amplitude (no malfunction)

Ingress protectionIP20

Dimensions (refer to Figure 3):

Height1.77" (45 mm)
 Width2.76" (70 mm)
 Depth (not including terminal blocks)4.03" (102.4 mm)
 Depth (including terminal blocks) 4.95" (125.7 mm)

Mounting (refer to Figure 3):

DIN rail 35 mm
 Two Screw #8 x 3/4" (M4 x 20 mm)

Weight:

Open 0.88 lbs. (0.40 kg)
 Packaged 1.08 lbs. (0.49 kg)

Applicable Standards:

EN 61000-6-3 Electromagnetic compatibility (EMC) - Part 6-3 Generic standards–
 Emission standard for residential, commercial and light-industrial
 environments (note: = lowest levels):
 30-230 MHz 30 dBµV at 10m distance
 230-1000 MHz 37 dBµV at 10m distance

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EN 61000-6-2	Electromagnetic compatibility (EMC) - Part 6-2 Generic standards– Immunity standard for industrial environments (note: = highest levels): 80-1000 MHz with 80% AM modulation up to 10 V/m at 3m distance from source
EN 61000-4-2	Electromagnetic compatibility (EMC) for industrial-process measurement and control equipment – Part 4-2: Electrostatic discharge (ESD) immunity
EN 61000-4-3	Electromagnetic compatibility (EMC) for industrial-process measurement and control equipment – Part 4-3: Radiated electromagnetic field immunity
EN 61000-4-4	Electromagnetic compatibility (EMC) for industrial-process measurement and control equipment – Part 4-4: Electrical fast transient/burst immunity
EN 61000-4-5	Electromagnetic compatibility (EMC) for industrial-process measurement and control equipment – Part 4-5: Surge immunity
EN 61000-4-6	Electromagnetic compatibility (EMC) for industrial-process measurement and control equipment – Part 4-6: Conducted radio frequency field immunity
EN 61000-4-11	Electromagnetic compatibility (EMC) for industrial-process measurement and control equipment – Part 4-11: Voltage dips/drops/variations immunity
EN 60947-5-1	Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices
IEC 60755	General requirements for residual current operated protective devices
UL	UL 1053 Ground-Fault Sensing and Relaying Equipment, Class 1 UL File E195341
CSA	C22.2 No. 144-M91 Ground Fault Circuit Interrupters CSA File 700103
CE	CE mark – Declaration of Conformity

External Current Transformer (when required)

Use Eaton's Cutler-Hammer C311CT series with 500:1 ratio, listed in section 4 – Catalog Numbers.

D64RP14 SERIES A2 DIGITAL GROUND FAULT RELAY

TABLE 2 – OUTPUT CONTACT STATES

STATE OF OUTPUT RELAY CONTACTS UNDER VARIOUS OPERATING CONDITIONS WITH DIPSWITCHES 7 & 8 IN SELECTED POSITIONS

OPERATING CONDITIONS		NON-FAILSAFE 7-Down, 8-Down		FAILSAFE 7-Down, 8-Up		PULSED AUTO RESET 7-Up, 8-Down	
		13 14	11 12	13 14	11 12	13 14	11 12
1. CONTROL POWER OFF							
2. CONTROL POWER ON							
3. CONTROL POWER ON, FAULT CURRENT ABOVE TRIP SETTING & TRIP TIME							
4. CONTROL POWER ON, FAULT CLEARED	NO RESET REQUEST						
	RESET REQUEST					Not Required	Not Required
5. CONTROL POWER OFF, FAULT STILL ON SYSTEM							
6. CONTROL POWER RESTORED, FAULT STILL ON SYSTEM							
7. CONTROL POWER RESTORED, FAULT CLEARED WHILE CONTROL POWER OFF, WITH OR WITHOUT RESET							

D64RP14 SERIES A2 DIGITAL GROUND FAULT RELAY

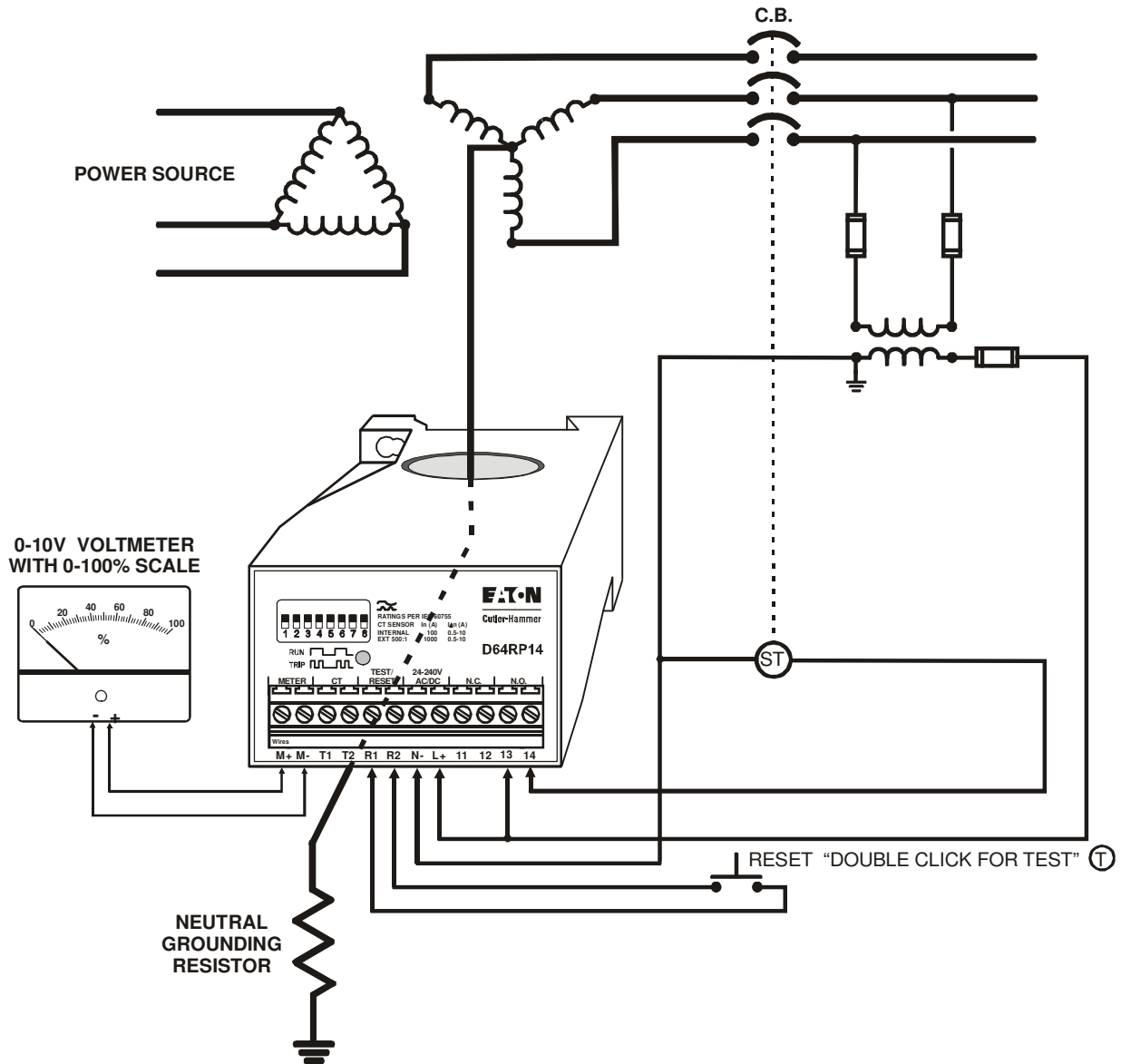


FIGURE 1 - TYPICAL NGR FIELD CONNECTION USING BUILT-IN CURRENT TRANSFORMER AND PULSED TRIP - AUTO RESET

D64RP14 SERIES A2 DIGITAL GROUND FAULT RELAY

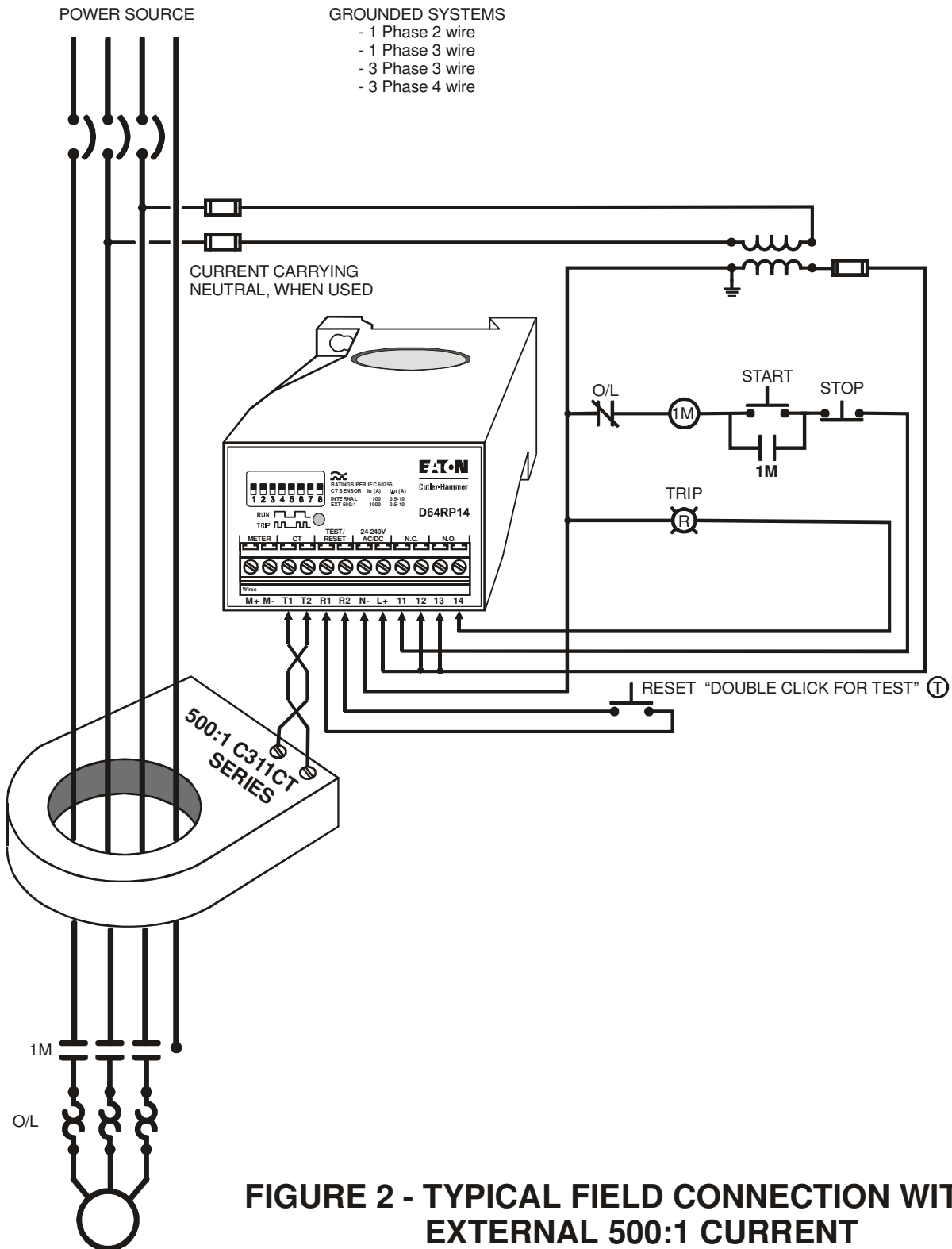
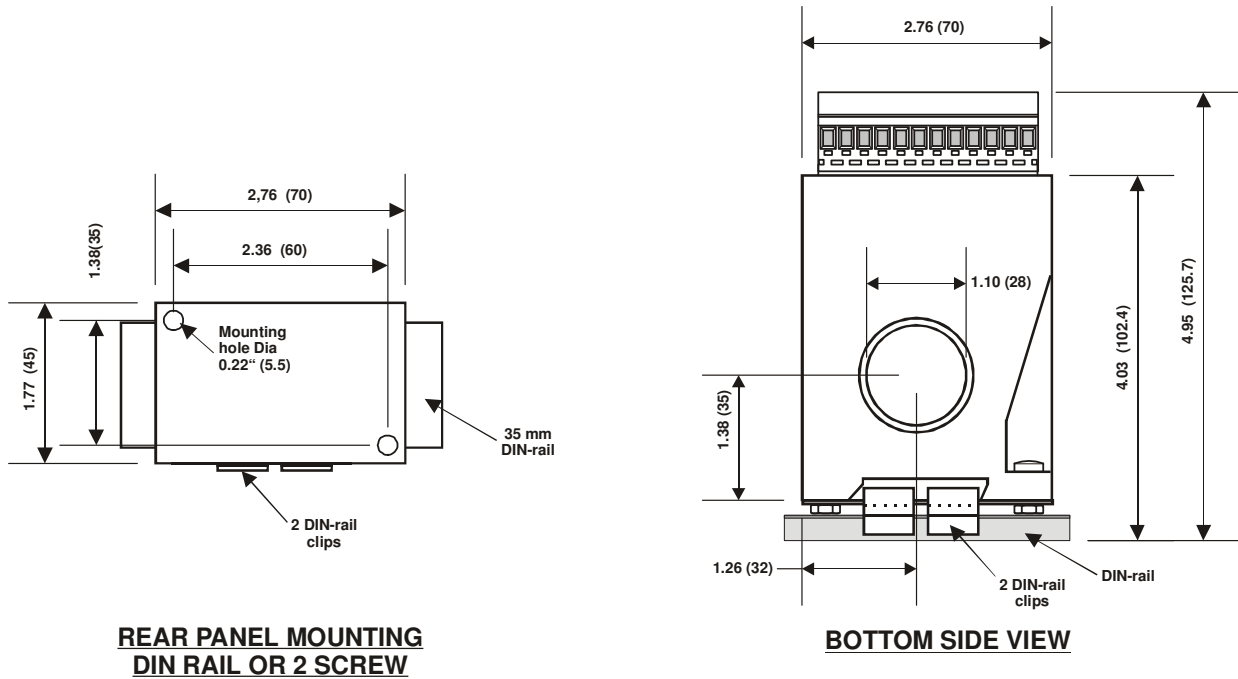


FIGURE 2 - TYPICAL FIELD CONNECTION WITH EXTERNAL 500:1 CURRENT TRANSFORMER

D64RP14 SERIES A2 DIGITAL GROUND FAULT RELAY

FIGURE 3 - DIMENSIONS AND WEIGHTS D64RP14



OPEN WEIGHT: 0.88 LBS. (.40 KG)
PACKAGED WEIGHT: 1.08 LBS. (.49 KG)

DIMENSIONS ARE IN INCHES (MM IN BRACKETS)

