



# Cutler-Hammer

## Digitrip 520MCV with Maintenance Mode

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**FIG. #1 Digitrip 520MCV with ARMs in Medium Voltage Circuit Breaker - VCP-T**

### Table of Contents

1.0 General .....	2	4.0 Remote Indicator .....	3
2.0 Maintenance Mode Settings .....	2	5.0 Choosing the Reduction Setting .....	4
3.0 Arming Maintenance Mode .....	2	6.0 Tripping and Testing .....	4
		Wiring Diagram .....	5
		Manufacturer's Statement .....	6



## WARNING

**ONLY CERTIFIED AND COMPETENT PERSONNEL SHOULD ATTEMPT TO INSTALL OR MAINTAIN POTENTIALLY HAZARDOUS EQUIPMENT.**

**DO NOT ATTEMPT TO INSTALL OR PERFORM MAINTENANCE ON EQUIPMENT WHILE IT IS ENERGIZED. DEATH OR SEVERE PERSONAL INJURY CAN RESULT FROM CONTACT WITH ENERGIZED EQUIPMENT. ALWAYS VERIFY THAT NO VOLTAGE IS PRESENT BEFORE PROCEEDING. ALWAYS FOLLOW SAFETY PROCEDURES.**

**EATON IS NOT LIABLE FOR THE MISAPPLICATION OR MISINSTALLATION OF ITS PRODUCTS.**



## CAUTION

**OBSERVE ALL RECOMMENDATIONS, NOTES, CAUTIONS, AND WARNINGS RELATING TO THE SAFETY OF PERSONNEL AND EQUIPMENT. OBSERVE AND COMPLY WITH ALL GENERAL AND LOCAL HEALTH AND SAFETY LAWS, CODES, AND PROCEDURES.**



## CAUTION

**A FLASH HAZARD ANALYSIS SHOULD BE DONE TO DETERMINE PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS**

### 1.0 General

Per the above WARNING, it is highly recommended that maintenance be conducted on electrical equipment including circuit breakers with the system de-energized.

For situations that arise where this is not possible, the Maintenance Mode function of the Digitrip 520MCV (Catalog #5ARMVSLIG) can reduce Arc Flash incident energy that is generated on a fault condition. This is accomplished by a analog trip circuit which, when armed, provides a fast acting response to the fault. The reduced arc condition will occur only in devices downstream of the trip unit in Maintenance Mode. This is separate from the normal system protection setting of Instantaneous. The Maintenance Mode is located in the upper, white portion of the unit.

### 2.0 Maintenance Mode Settings

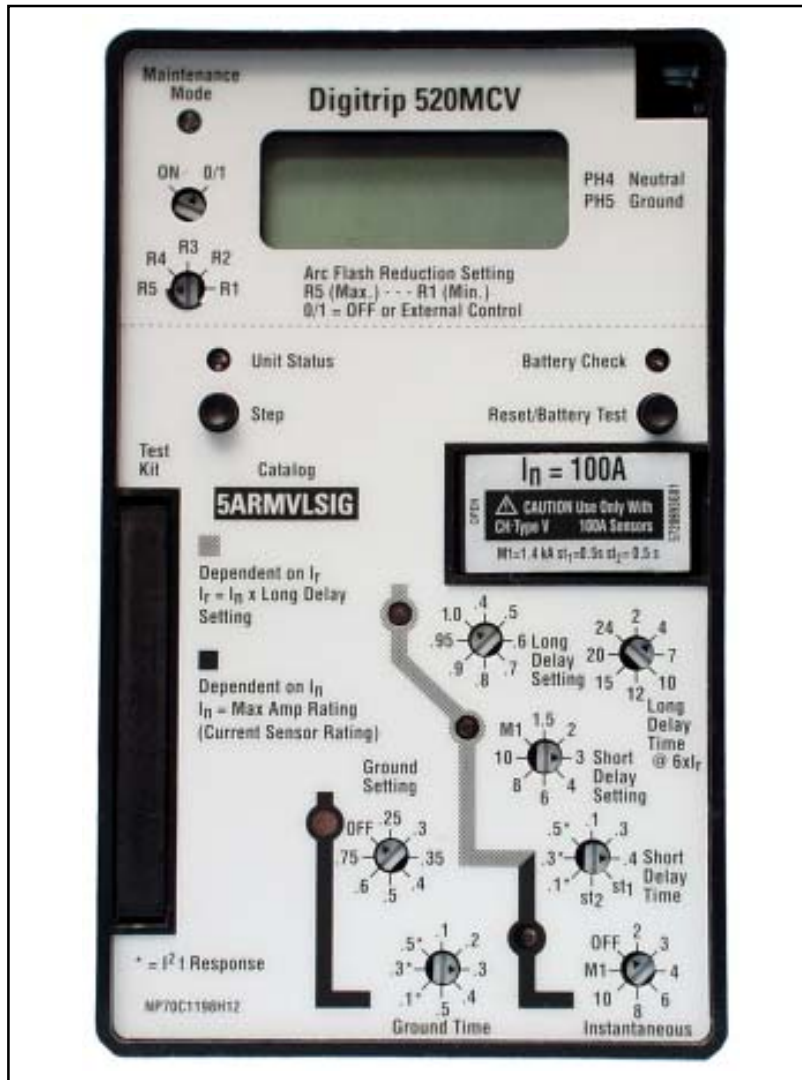
The Maintenance Mode Settings (labeled R5, R4, R3, R2, R1) provide the Arc Flash Reduction setting. R5 is the Maximum reduction setting which correlates to the lowest pickup value.

Nominal Trip current of Maintenance Mode Settings

Setting R5	2.5x	Rating Plug Amperes
Setting R4	4.0x	Rating Plug Amperes
Setting R3	6.0x	Rating Plug Amperes
Setting R2	8.0x	Rating Plug Amperes
Setting R1	10x	Rating Plug Amperes

### 3.0 Arming Maintenance Mode

There are three ways to arm the Maintenance Mode Arc Flash Reduction setting. One method is locally via the two position switch in the Maintenance Mode section of the trip unit. Turning the switch to the ON position will arm the setting selected. A blue LED confirms that the function is on.



**FIGURE 2. Digitrip 520MCV with ARMs**

For the other two methods of arming the Maintenance Mode function, this switch must be in the position labeled 0/1. With this setting, a remote switch wired through the breaker secondary contacts can remotely arm the Maintenance Mode setting. A high quality, gold plated or palladium contact is required in this application. The blue LED will verify that the function is armed. (See *wiring diagram on page five.*)

A third method to arm the maintenance setting is via a communication device. A Palm Pilot along with an IR Mint device can be employed to arm the setting. By initiating the ENABLE setting, the Maintenance Mode selection in the control screen of the Palm, Maintenance Mode is set.

There is a confirmation screen that verifies the arming. A BIM (Breaker Interface Module) is another communication method to arm the setting. When Maintenance Setting is enabled via device communications, this setting must be disabled by device communications.

#### 4.0 Remote Indicator

The circuit breaker will be wired with secondary contacts A9 and A12. This contact can be used to indicate remotely that the Maintenance setting is armed. Refer to diagram on page three for a wiring of this remote (blue light) indicator.

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## 5.0 Choosing the Reduction Setting

The Arc Flash Maintenance Switch is an eight position rotary switch that has five unique settings. Setting R5 is repeated four times. From the factory, the Medium Voltage circuit breaker is shipped with the Digitrip unit set to the R5 setting and with its arming switch set to the 0/1 position. The 0/1 position means that it is locally OFF, but can be remotely turned ON. The blue LED, if illuminated, provides indication that the Maintenance Mode setting is armed per one of the three methods described in section 3.0.

In general, the selection of one of the Reduction Settings (R5 through R1) should be determined and selected by a person who is experienced in power system analysis.

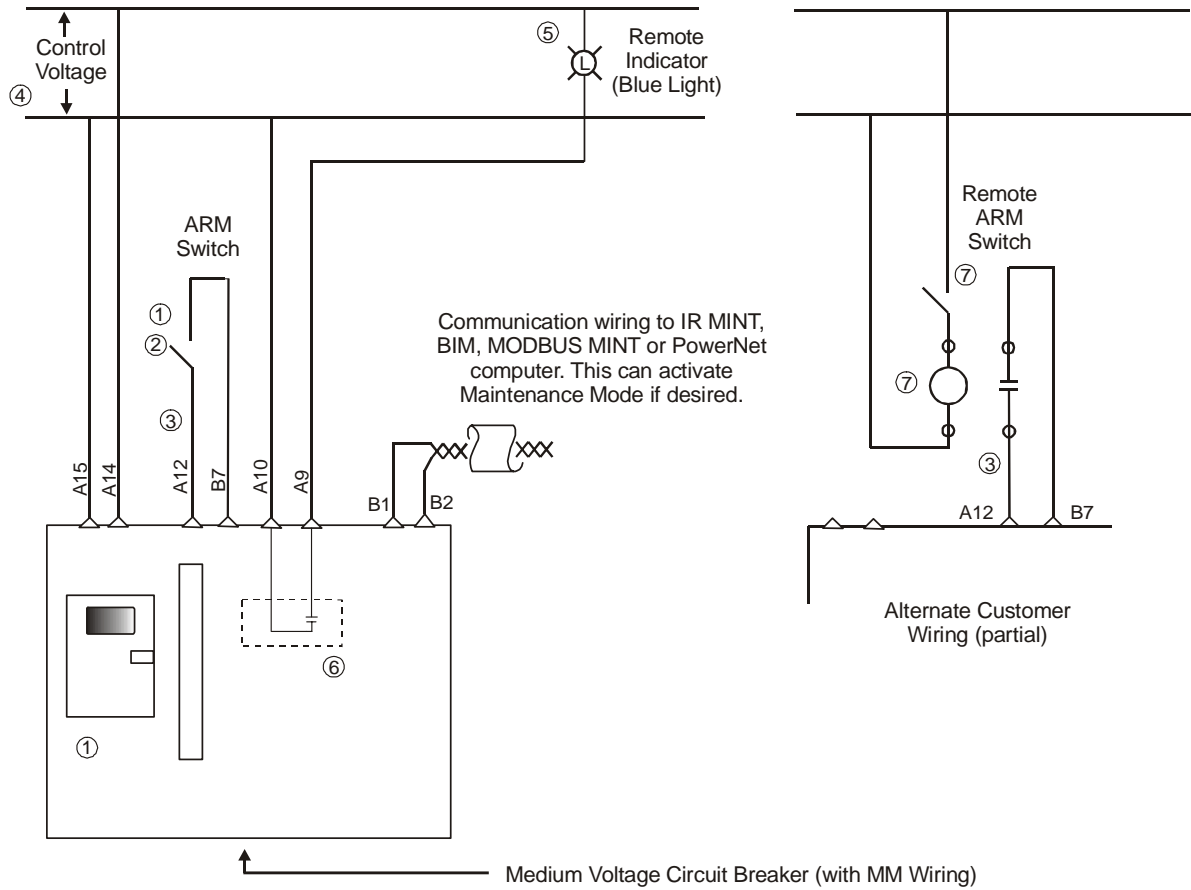
This setting choice normally does not change unless there are future system modifications that could increase or decrease fault levels at the circuit breaker location.

## 6.0 Tripping and Testing

The Maintenance Mode function will provide fast tripping even when the regular Instantaneous is set to OFF. The Instantaneous LED position is also used to indicate a trip initiated by the Maintenance Mode setting. The LCD display, if powered, will indicate this with four dashes.

The Maintenance setting, external wiring (if any) and tripping functionality should be periodically verified by primary or secondary injection current testing.

## Maintenance Mode Wiring - Digitrip 520MCV



### NOTES:

- ① The Digitrip 520MCV (Cat. # 5ARMVLSIG) can locally be placed in Maintenance Mode via a two position switch located on the Trip Unit. The function can also be armed via a remote switch as shown. In addition, the function can be activated via communications. A blue LED on the Digitrip verifies that Maintenance Mode is armed.
- ② The recommended selector switch for this low voltage application is Cutler-Hammer part number #10250T1333-2E which includes a contact block rated for Logic Level and Corrosive use.
- ③ The maximum length of this wiring to remote "Arm" switch (or alternate relay contact) is three meters (9.78 feet). Use #20 AWG wire or larger.
- ④ Control voltage is 120VAC or 230VAC or 24-48VDC or 125VDC. Check circuit breaker front cover for Trip Unit power requirements.
- ⑤ A remote Stack Light, Annunciator Panel or other remote indication device can be connected to verify that the Digitrip is in the Maintenance Mode.
- ⑥ Relay in GF Alarm/PS Module closes when Maintenance Mode is armed. Contact is rated: 1A @ 120VAC or 0.5A @ 230VAC or 1A @ 24-48VDC or 0.35A @ 125VDC.
- ⑦ The Digitrip 520MCV can also be placed remotely in its Maintenance Mode via a general purpose relay (ice cube type with Logic Level contacts) activated by a remote control switch. A recommended type is IDEC relay RY22. Choose voltage as desired.

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