

NELSON VOLTAGE MONITOR

INSTALLATION & PROGRAMMING MANUAL



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GENERAL INFORMATION

The Nelson VM Circuit Monitor is a scanning microprocessor system which sequentially monitors and displays each circuit number and the status of each circuit.

The VM is environmentally hardened and requires no protected operative environment. It can be located in a control room or out in a plant. The low voltage, optically isolated design allows the unit to be installed in Division 2 Hazardous Locations.

The VM is ideally suited for application where voltage monitoring of critical circuits is required. Monitoring of conventional circuit breakers, ground fault circuit breakers, and monitor wire heater applications and others are easily accommodated.

INSTALLATION

When routing conduit to panel, avoid top entry into the VM enclosure. Top conduit entry provides a potential moisture path to the electronic circuit boards. Bottom conduit entry is recommended. If top entry cannot be avoided, avoid the area directly over the circuit boards. Drip loops as shown are recommended for side entry and top entry when top entry cannot be avoided. A drip loop is a dip or bend in the circuit wire to block or shed moisture which may follow a wire to the circuit boards.



WARNING:

Moisture intrusion can damage the VM electronic circuit boards; do not place conduit entry directly over the circuit boards.

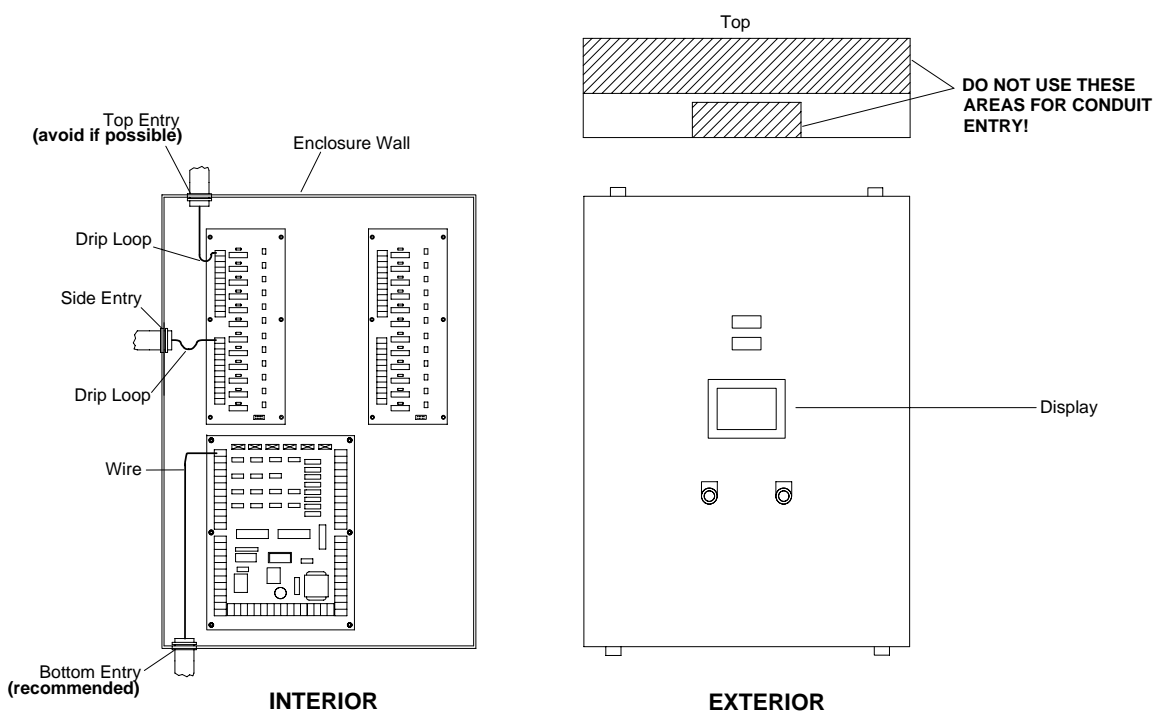


Figure 1
VM Panel Enclosure

FIELD WIRING

Typical wiring diagrams are included in this manual for field wiring. These are located at the end of this manual.

PROGRAMMING

The VM is shipped with programming to monitor all available circuits. With this configuration, all 24 circuits will be scanned for voltage alarms. Alarm delay is set for 5 seconds, alarm reset is automatic, and the display speed is fast. Each of these features and options will be covered on the next few pages. However, the system is suitable to be powered in the existing configuration. When programming refer to Figure 10, which is also provided inside the door of the VM enclosure. If all 24 circuits are not active (*monitor not required*) remove the corresponding programming jumper. Programming can be changed in the field by removing or adding option jumpers as needed.

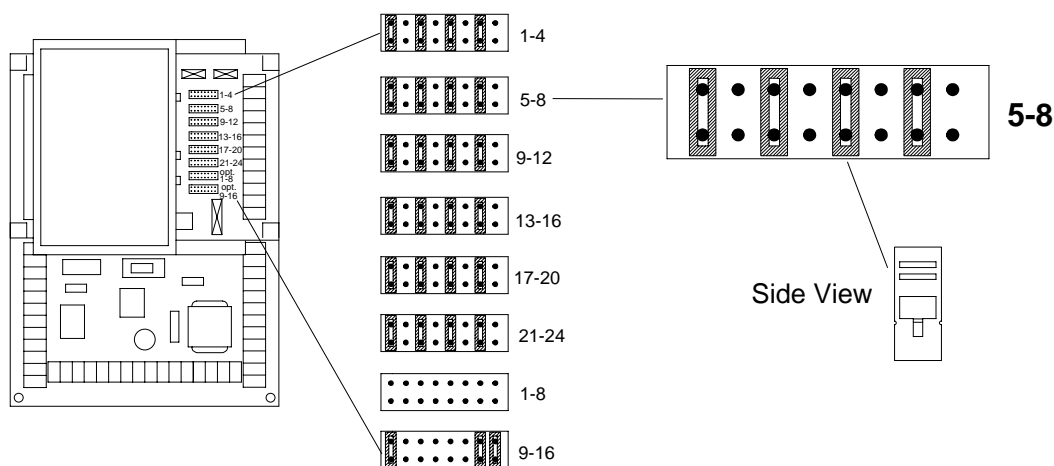


Figure 2

Programming of the VM is accomplished by adding or removing the plastic program jumpers located on the scanner board.

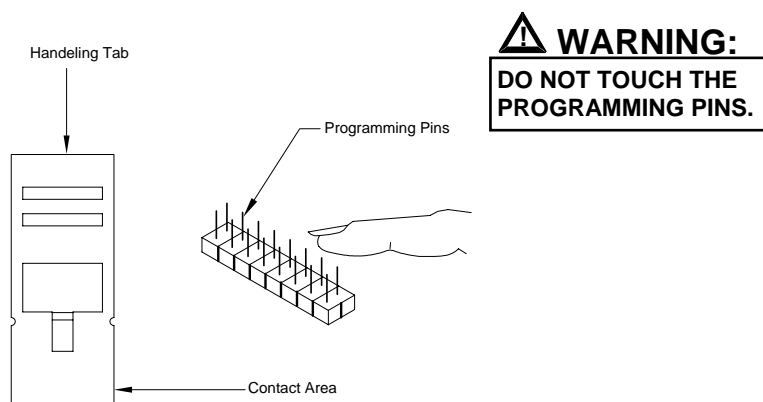


Figure 3
Programming Jumper

Circuit Monitor Options

The top 6 rows of option jumpers in the jumper programming area are the circuit monitor jumpers. As the system is shipped, all circuits available in the system will be monitored, or “active”. If a circuit is de-activated, remove the appropriate programming pin, and the circuit will be skipped in the monitor sequence.

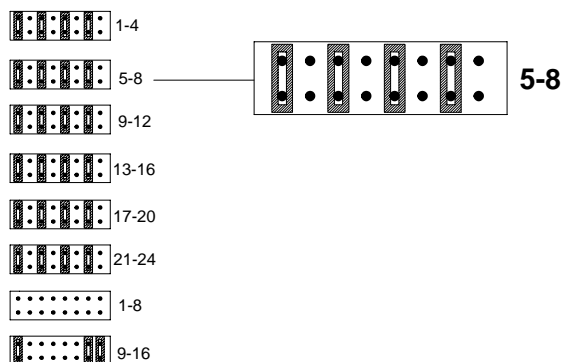


Figure 4

Example: If circuit #6 is to be de-activated, remove this jumper. This circuit will not be scanned or monitored until the programming pin is replaced.

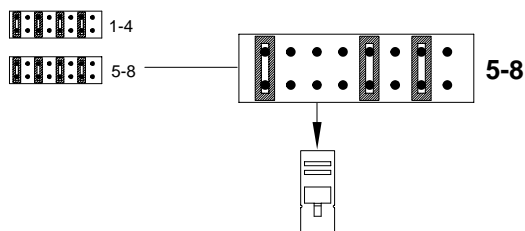


Figure 5

Power Frequency

As shipped from factory, the system is suitable for 60hz. If 50hz is required, a jumper must be placed on option #8 programming pin.

Open for 60hz -
Closed for 50hz -

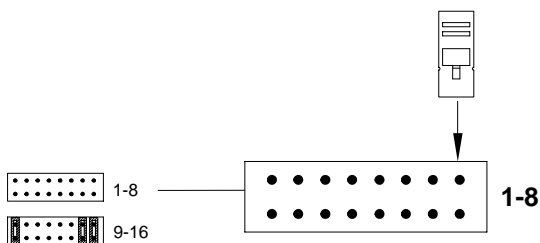


Figure 6

Alarm Silence Time-out

This establishes the amount of time and acknowledged alarm is silenced before re-alarm. If an alarm is acknowledged (*which silences the remote alarm relay*), and the voltage problem is not corrected, the system will re-activate the remote alarm relay.

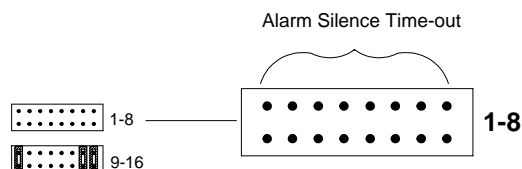


Figure 7

Scan Speed

This is a customer preference option. Recommended practice is to leave this jumper on fast scan (*option #16*), for installation and set-up, then removed for slow scan operation.

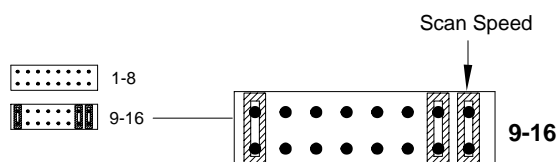


Figure 8

Alarm Reset Auto / Manual

In auto reset mode (*pin installed*): The alarm status and remote alarm will clear automatically when a circuit fault clears. In manual mode (*pin removed*): When a fault is cleared, both the scanner display and the remote alarm output will remain in alarm until the *Alarm Reset Button* is pressed. (See the “*OPERATION*” section.)

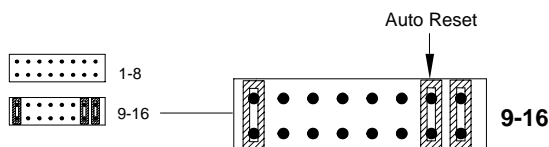


Figure 9

Note: After any change in the system program, press the “*Alarm Reset Button*” on the front of the enclosure. This will reset all options and finalize any changes that have been made by adding or removing programming pins.

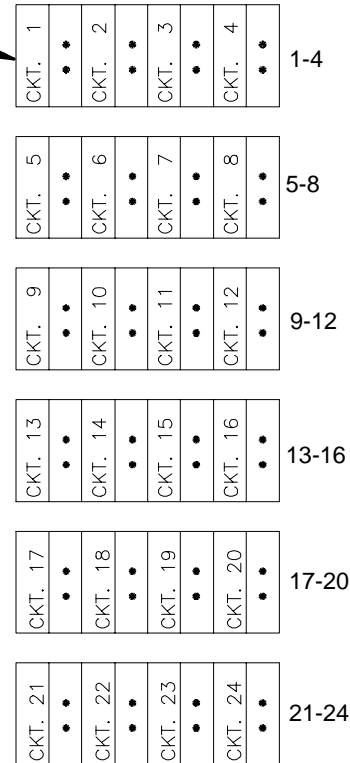
TYPICAL FOR ALL CKTS.

CIRCUIT MONITOR OPTION

OPEN: CIRCUIT DISABLED-WILL NOT BE MONITORED
CLOSED: CIRCUIT FUNCTIONS-WILL BE MONITORED

NOTE: JUMPER PLUGS ARE USED TO "CLOSE"
OR CONNECT A SET OF PINS. ALL REFERENCES
TO "CLOSED" MEANS A JUMPER PLUG IS
INSTALLED. A REFERENCE TO " OPEN" MEANS
THE JUMPER IS REMOVED.

OPTION PINS LOCATED ON
SCANNER BOARD GC-562



OPEN: 60HZ.
CLOSED: 50HZ

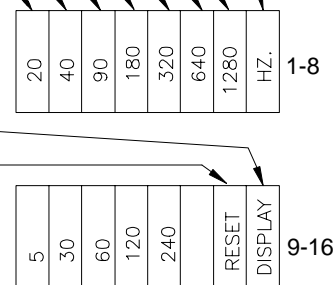
ALARM SILENCE TIMEOUT
(BEFORE RENUNCIATION) IN MINUTES.
(TIMEOUT IS 24 HRS. IF NO PINS CLOSED)

OPEN: SLOW (NORMAL)
CLOSED: FAST

OPEN: EXTERNAL RESET
CLOSED: AUTO RESET
(ALARM RESETS WHEN FAULT CLEARS)

ALARM DELAY IN SECONDS.
(TIMEOUT IS 5 MIN. IF NO PINS CLOSED)

THIS IS AN ALARM DELAY TO PREVENT TRANSIENT
CONDITIONS THAT OCCUR DURING HEATER LOAD
SWITCHING FROM TRIGGERING FALSE ALARMS.
A 5 MIN. TIMEOUT SHOULD BE USED FOR SELF-REG.
HEATER CABLES.



**PROGRAMMING OPTION FEATURES
NELSON CABLE MONITOR CAT. VM**

Figure 10

OPERATION

After the installation and programming is completed and 120VAC has been applied to TB-1, turn the power switch to "ON".

For a moment both red and green L.E.D. bars will light, then the system will start scanning. The green light bar will always appear under each active circuit the first scan after powering up or resetting alarms. The green bars will continue to appear under the circuit number until a loss of voltage to the voltage input terminal occurs. Then after the programmed alarm delay time-out, the red bar will light-up and the remote alarm relay will energize. This will continue until power is restored to the heater circuit (*and the Alarm Reset Button is pressed if the system is in manual reset mode*).

WARNING:

During normal operation of the system, the cabinet door will not need to be opened. Therefore, keep door closed and completely fastened to protect the electronics from dirt and moisture.

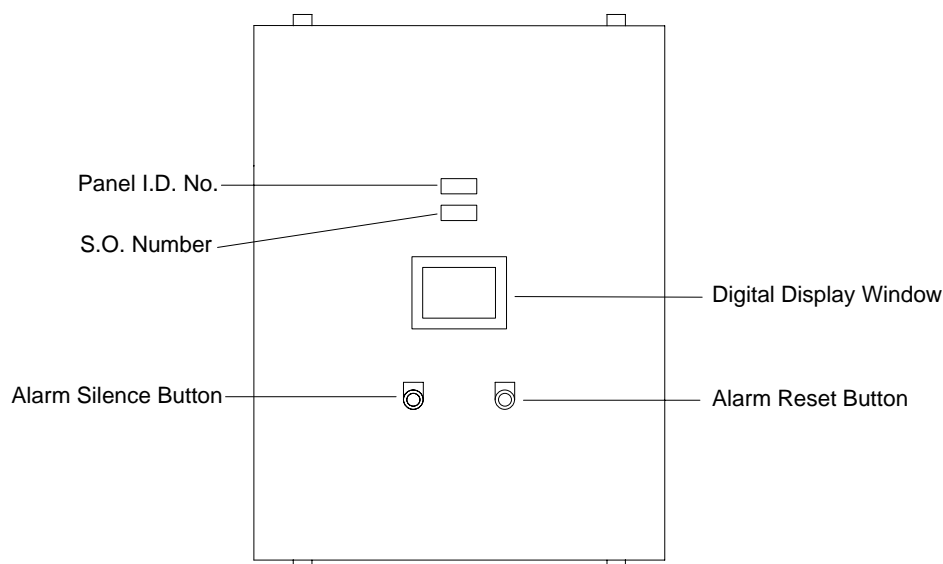


Figure 11
VM Panel Enclosure

Alarm Delay

This is customer preference. This option establishes the minimum time delay before a loss of voltage condition is registered by the scanner the option ranged is from 5 seconds to 5 minutes. The times shown are in seconds and are additive. A longer time is recommended to prevent alarming of temporary power interruptions.

Example: For a 65 second delay; place jumpers on the 60 second and the 5 second pins.

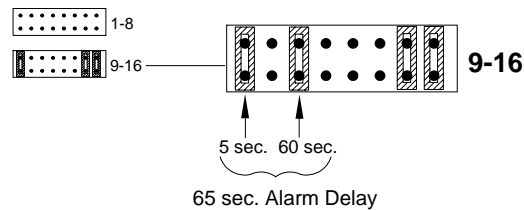


Figure 12

Alarm Silence Button

This button will temporarily silence the remote alarm (up to 24 hours depending on the program pins; (see the “PROGRAMMING” section for “Alarm Silence Time-out”). While corrective actions are being taken on failed circuit(s) the alarm will re-enunciate if a new circuit fails when the system is silenced. Pressing the *Alarm Silence Button* will silence the remote alarm relay and reset the timer.

When voltage has been restored to all of the failed circuits, press the *Alarm Reset Button* to clear all alarms from the system if the *Manual Reset* has been selected.

Digital Display Window

As circuits are scanned by the system the circuit numbers being scanned are displayed here. Under the circuit number block is a status area.

Conditions:

1. No light bar energized below the circuit number indicates the circuit is de-energized. This is a non-alarm condition.
2. The voltage green light bar energized indicates that the circuit voltage is present. This is a non-alarm condition.
3. The alarm red light bar energized indicates that voltage is not present when the circuit should be energized. This is an alarm condition.

Nelson Heat Tracing Systems products are supplied with a limited warranty. Complete Terms and Conditions may be found on Nelson's website at www.nelsonheaters.com.

