RDF52
REMOTE DISPLAY PANEL

INSTALLATION
OPERATION AND MAINTENANCE
MANUAL

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1 Overview

The RDF52 remote display panel has been designed to connect to an M-Controller Gas Monitoring System, which is a set of remote sensors and relay control modules tied together and controlled by the M-Controller. The M-Controller can host up to 16x RDF52 units and up to 12x M-Relay units to provide flexible and programmable controls. The RDF52 units display the relay status and gas concentrations, and perform actions programmed in the M-Controller.

The RDF52 will be installed on the wall where is easily accessible and visible, normally close to each entry door of the mechanical equipment room. It offers four relay outputs for alarms, fans etc. and a 3-level-LED stack lights/buzzer for visual indicators and audible alarm.

The RDF52 can be assigned to one of M-Controller's eight zones, all units in the same zone will perform identical functions.

The RDF52 contains a FAN Switch which can be programmed to be Latched or Unlatched, when it's latched (normally installed outside of the mechanical room), it shall be capable of starting but not stopping the ventilation; when it's unlatched (normally installed inside of the mechanical room), it shall be capable of starting and stopping the ventilation. Once one FAN Switch is pressed, all Fan Switch in the same zone are switched On or Off.

The RDF52 contains a Hush button, it will hush all buzzers in the RDF52 in the same zone, it will also hush the buzzer of the M-Controller and all buzzer-style relays in the same zone.

The enclosure of the RDF52 is rated IP66 & NEMA 4, 4X, 12 & 13 and is UL listed. Relay status indicator and RS-485 communication indicator are visible at the front of the enclosure.

RDF52 power supply is designed for 24VDC/AC.

The RDF52 will make the M-Controller system easily compliance with ASHRAE 15 and CSA-B52 standards.

2 Specifications

Specification:	
Power Supply	Voltage: 24VDC nominal, range 18 to 30VDC 24VAC nominal, range 15 to 24VAC 50/60HZ **Note: RDF52 has full-wave rectifier and half-wave rectifier circuit on board for flexibility. You will damage devices if you mix half wave and full wave rectifiers on the same AC source. Use extreme caution when sharing a common AC source. Sharing a common DC source is less problematic.** Current: max. 0.75 A (fuse protected)
Fuse	F1 on the Main Board: Polyswitch 750mA Polyswitch device resets after the fault is cleared and power to the circuit is removed.
Enclosure	IP66 & NEMA 4, 4X, 12 & 13 ratings UL listed 508 listed (File # E65324)
Environmental conditions	Location: Indoor use only Altitude: Up to 2 000 m Temperature: -20 °C to 50 °C Relative Humidity: 0 to 95% RH (non-condensing) Pollution Degree: 2, in accordance with IEC 664. Installation Categories (Overvoltage Categories) II
Display & Keypad	LCD display c/w backlight 6x tactile & audible keypad
Panel Indicators	8 Status LEDs 2 RS-485 port TX/RX Status 4 Relay Status LEDs 1 FAN Status LED 1 Hush Status LED
On-Board Relays	4 Relays SPDT, Dry contacts, Relay1 to Relay4 Resistive load: 5.0A at 250VAC 5.0A at 30VDC Inductive load: 3.7A at 250VAC

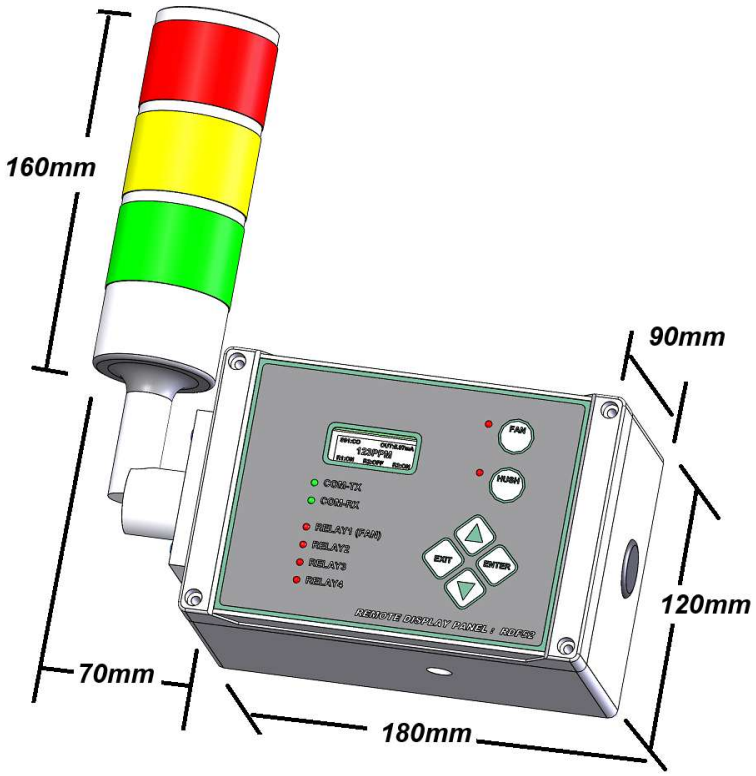
	3.7A at 30VDC
3 Level Stack LED with Buzzer	3 Colors Red/Yellow/Green Green: Normal operation and no alarm found Yellow: FAN is on or low alarm or fault Red: High alarm and buzzer on

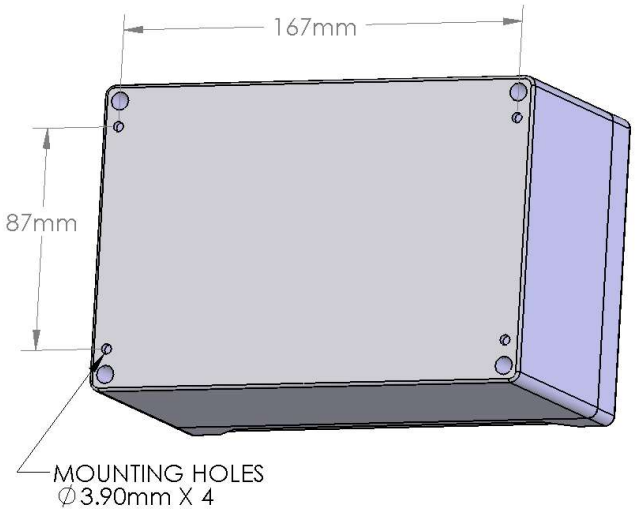
3 Type and Location

The RDF52 is designed and certified for installation in a fixed location where is not subject to shock and vibration. Please observe the temperature and humidity specifications above for ambient conditions. Observe the possibility of leaks or possible water damage from cleaning done in the area.

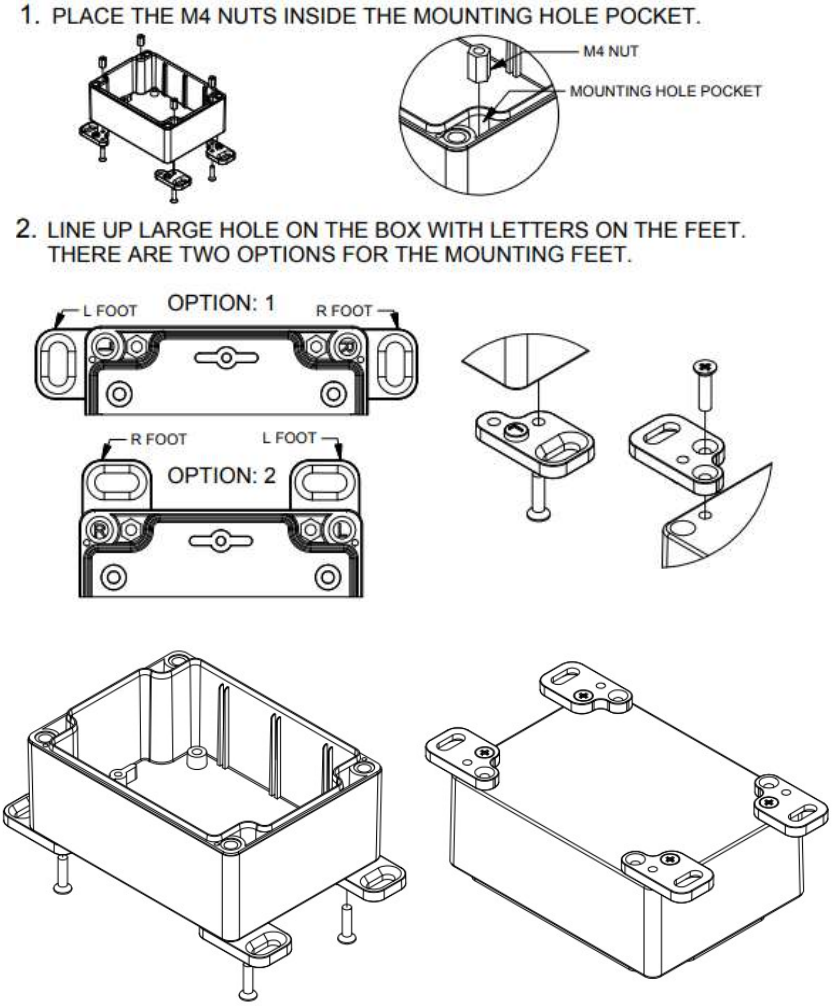
The mounting height and location should provide easy access to the wiring terminals and front-panel. Backlighting is provided for the display in case of low lighting conditions.

It is recommended that the RDF52 be installed 5 feet (1.5m) above the floor, at approximate eye level. Securely mount the RDF52 using the appropriate screws or below mounting kit.





The RDF52 also comes with a mounting feet kit as an option. The same wall mounting holes can used to install the feet kit.

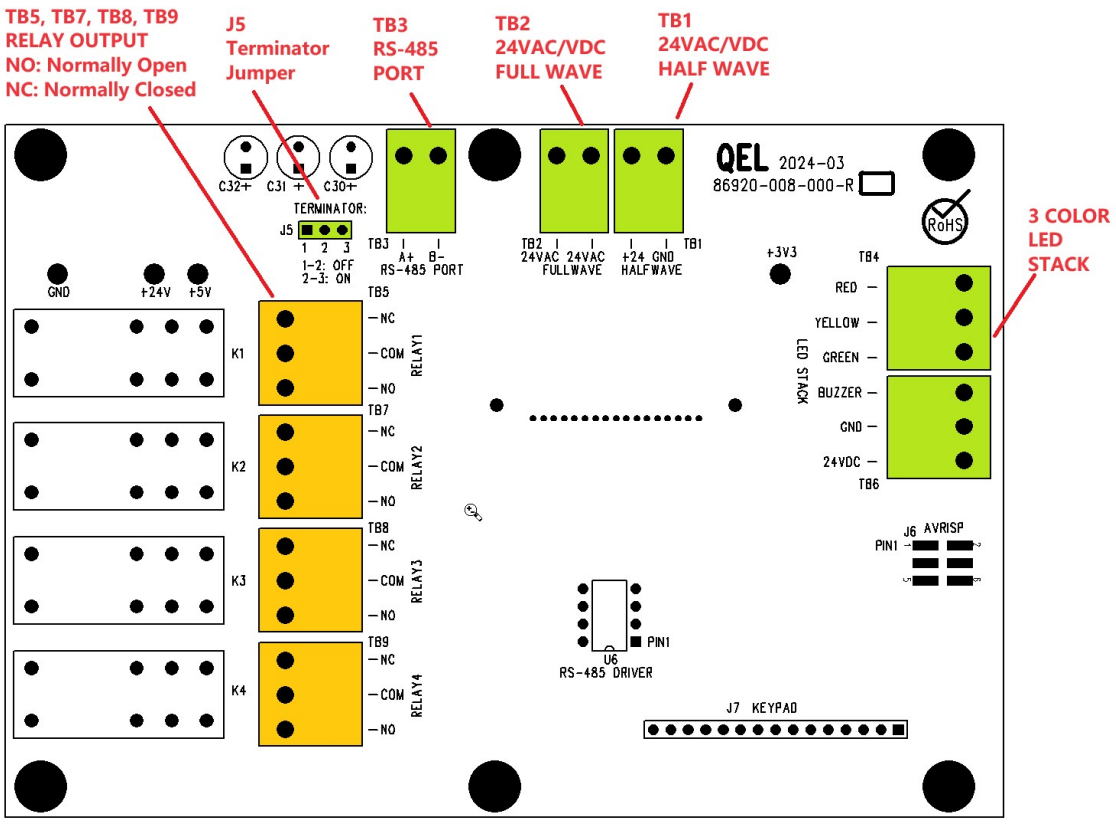


4 System Wiring

The RDF52 power supply voltage requirements are nominally 24VAC/DC.

NOTE: The RDF52 has a full-wave rectifier and a half-wave rectifier circuit on board for flexibility. You will damage devices if you mix half wave and full wave rectifiers on the same AC source. Use extreme caution when sharing a common AC source. Sharing a common DC source is less problematic.

4.1 RDF52 Terminal Blocks



4.2 RDF52 RS-485 Terminator

RS-485 Terminator: RDF52 supplies end-of-line resistor onboard.

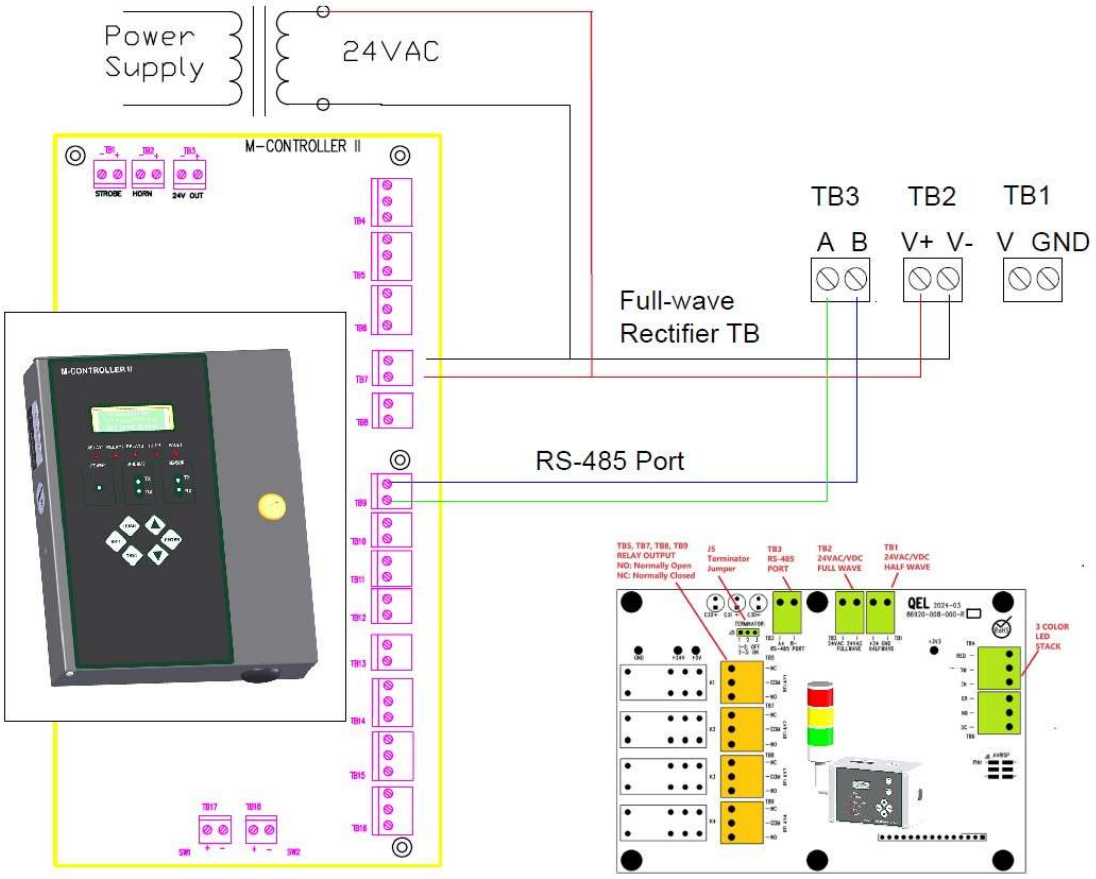
- J5 1-2: Terminator Disabled/Off (Default)
- J5 2-3: Terminator Enabled/On

U6: RS-485 TRANSCEIVER [SKU#: 3200-0044]

4.3 Connect RDF52 to M-Controller-II

The max. distance between the M-Controller and the last RDF52 is 1000 ft. (305m). Use twisted and shielded cable #24/2 AWG (Belden 9841) for the communication (green and blue)

Connections: Wire terminals A+ to A+ to A+ etc., and B- to B- to B- etc.



4.4 Relays, LED stack and Buzzer

The RDF52 supports 4 relays outputs and visual indicator and audible alarm.

- Relays SPDT, Dry contacts, Relay1 to Relay4
    - Resistive load: 5.0A at 250VAC 5.0A at 30VDC
    - Inductive load: 3.7A at 250VAC 3.7A at 30VDC
- 3 Color LED visual indicators

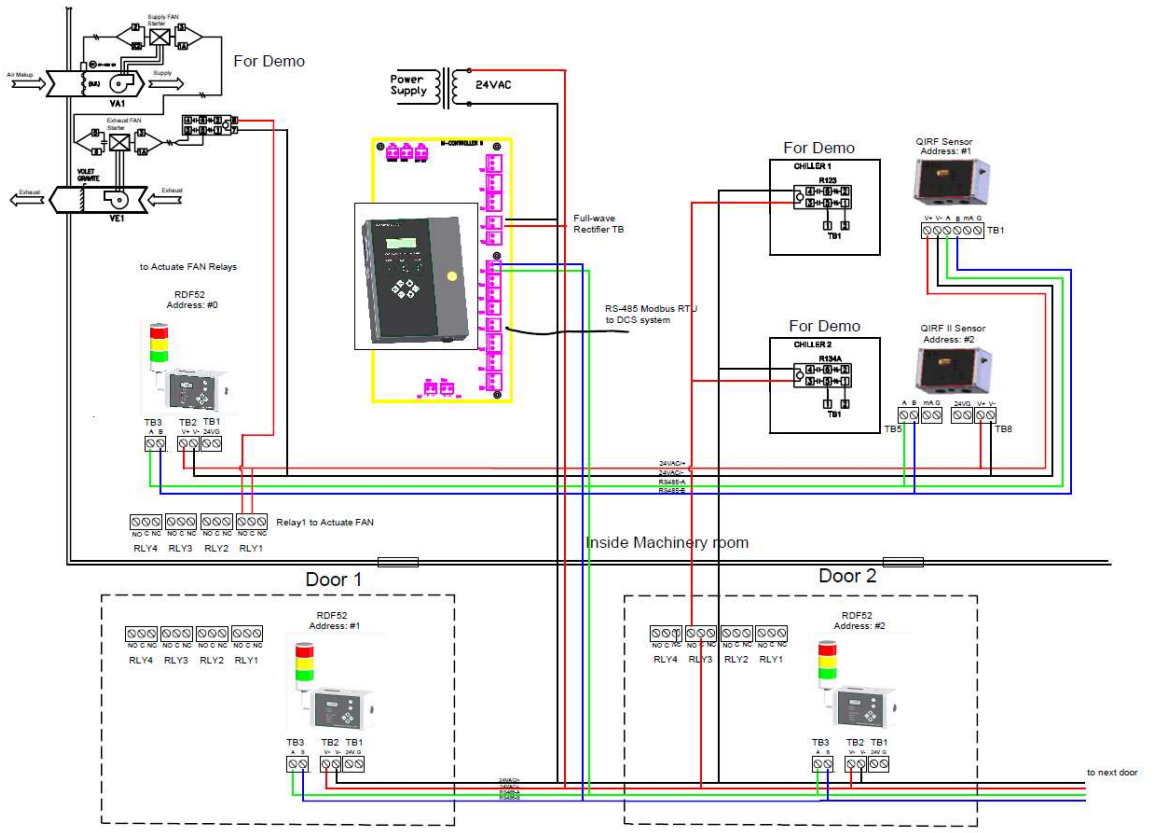
- Green LED: Normal operation
- Yellow LED: Low alarm, Fan SW is On, or Fault Alarm
- Red LED: High alarm

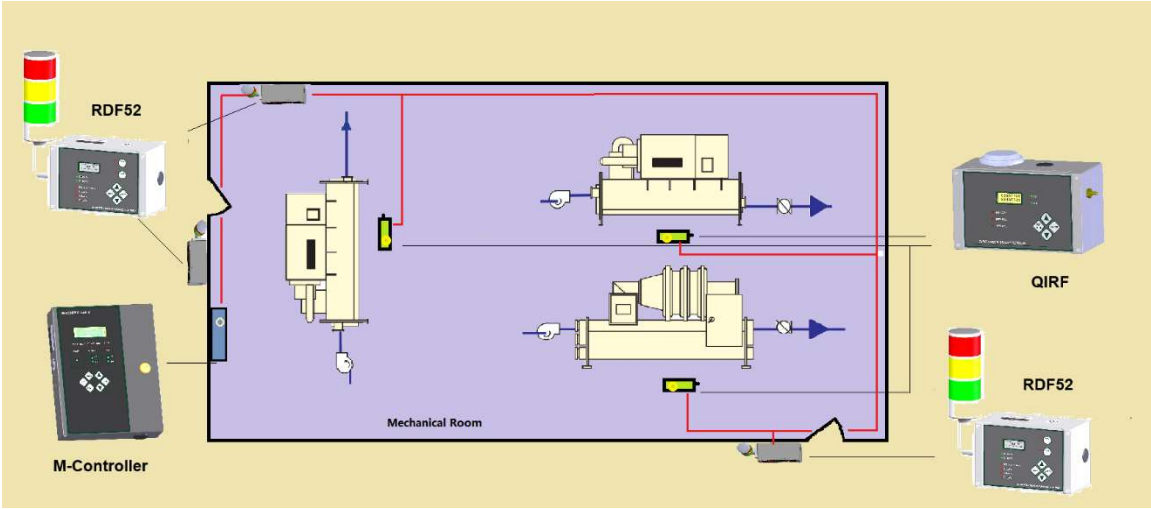
- Buzzer: audible alarm when High alarm is On

4.5 FAN Switch and Hush Switch

- Once Fan Switch is pressed, all Fan Switches in the same zone are switched ON.
- Once the Hush switch is pressed, all Hush switches in the same zone are switched ON.
- Fan Switch and Hush Switch have an LED beside it to indicate the switch status.
- FAN-Switch features:
  - Programmable Latched or Unlatched (Factory default: Latched)
  - When one Fan Switch is pressed, all RDF52 in the same zone's FAN Switches are switched On, at the same time the relay1 in all RDF52s of the same zone will be actuated On.
  - Latched mode is used to the RDF52 which is located outside the mechanical room, so it shall be capable of starting but not stopping the ventilation.
  - Unlatched mode is used to the RDF52 which is located inside the mechanical room, so it shall be capable of starting and stopping the ventilation. When it's stopping the ventilation, all RDF52 Fan switches are switched OFF.
  - When the Fan switch is ON, the Yellow LED is ON.
  - The M-Controller II can reset the latched Fan switch too. Go to [Menu] -> [6. Unlatch All RDF52] and press [Enter]
- Hush Button:
  - programmable Enabled or Disabled (Factory default: Enabled)
  - hush all buzzers in the RDF52 in the same zone.
  - hush the buzzer of the M-Controller and all buzzer-style relays in the same zone.

4.6 Config System to meet CSA-B52 standard.





5 Function and Configuration

After the unit powers up, it will display the product's name and firmware version. The RDF52 actions and settings are programmed in the M-Controller, but the RDF52 address must be programmed on each unit to enable them to receive settings from the M-Controller. Address can be input through the Menu. The menu is password protected. The default password is 4321.

5.1 Main Menu

Setting	Description
Password:	The default password is 4321.
Address:	Acceptable Address: 0 to 15 **The default address is 1.**
LCD Backlight:	The LCD backlight can be set to • Always Off • Always On • AUTO turn Off In AUTO mode, the backlight will be auto turned Off after 10 seconds. **The default setting is AUTO mode.**
Offline Timeout:	The RDF52 will display "OFFLINE" after a certain time if it has not received messages from the M-Controller. The feature can be Enabled or Disabled in the Menu, if enabled, the timeout without polling can be defined here. **Default setting is Enabled.** **The default timeout is 10 minutes.**
Display:	• My Zone only RDF52 only displays the sensors and relays status in the same zone as the RDF52's. • All Zone RDF52 displays all the sensors and relays status in the M-Controller system. **The default setting is My Zone only.**
Change Password:	The new password can be any combination of up to four digits.

5.2 Config RDF52 through M-Controller

All config settings of the RDF52 are saved in the M-Controller. You can set up the RDF52 through M-Controller's keypad and Menu.

5.2.1 Zone setup

Go to M-Controller Main Menu -> [7. Zone Setting] -> Select a Zone and config the zone.

Settings	Description
High Alarm On Level:	For each sensor or analog input assigned, set the concentration at or above which the high alarm will be ON. • Default is 500ppm.
High Alarm Off Level:	For each sensor or analog input assigned, set the concentration at or below which the high alarm will be OFF. • Default is 450ppm.
Low Alarm On Level:	For each sensor or analog input assigned, set the concentration at or above which the low alarm will be ON • Default is 300ppm.
Low Alarm Off Level:	For each sensor or analog input assigned, set the concentration at or below which the low alarm will be OFF. • Default is 250ppm.
Low Alarm Trigger:	When low alarm is ON, which relay will be actuated. • Default is relay1.
High Alarm Trigger:	When high alarm is ON, which relay will be actuated. • Default is relay1 and relay3.
FAN Switch Trigger:	When FAN Switch in RDF52 is ON, which relay will be actuated. • Default is relay1.
Hush DeEnergize:	When Hush button is pressed in RDF52, which relay will be deenergized. • Default is no relay
Treat Sensor fault:	• Faults do nothing. (No relay triggered) • As Low Alarm When the assigned sensors in the zone report fault, the fault will trigger Low alarm, low alarm will trigger assigned relays. Default is "As Low Alarm"

5.2.2 RDF52 setup

Go to Main Menu -> [8. RDF52 Setting] -> Select a RDF52 and config the RDF52.

Settings	Description
Zone:	Assign the RDF52 to a zone.
FAN Switch Latch Style:	• Latch Style Latched mode is used to the RDF52 which is located outside the mechanical room, so it shall be capable of starting but not stopping the ventilation. • Non-Latch Style Non-latch mode is used to the RDF52 which is located inside the mechanical room, so it shall be capable of starting and stopping the ventilation. When it's stopping the ventilation, all RDF52 Fan switches are switched OFF.

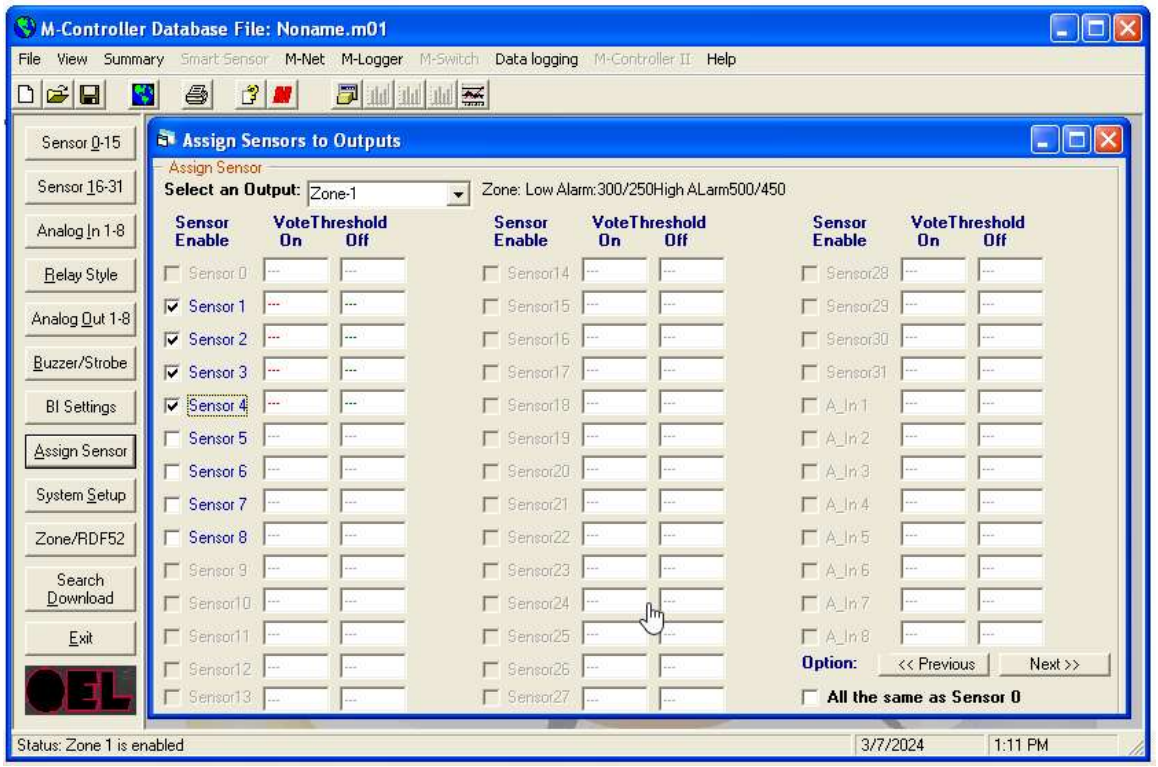
5.2.3 Assign sensors to Zone.

Go to Main Menu -> [11. Assign Output] -> [Zone 1 - 8] -> Select a Zone and assign sensors to the Zone.

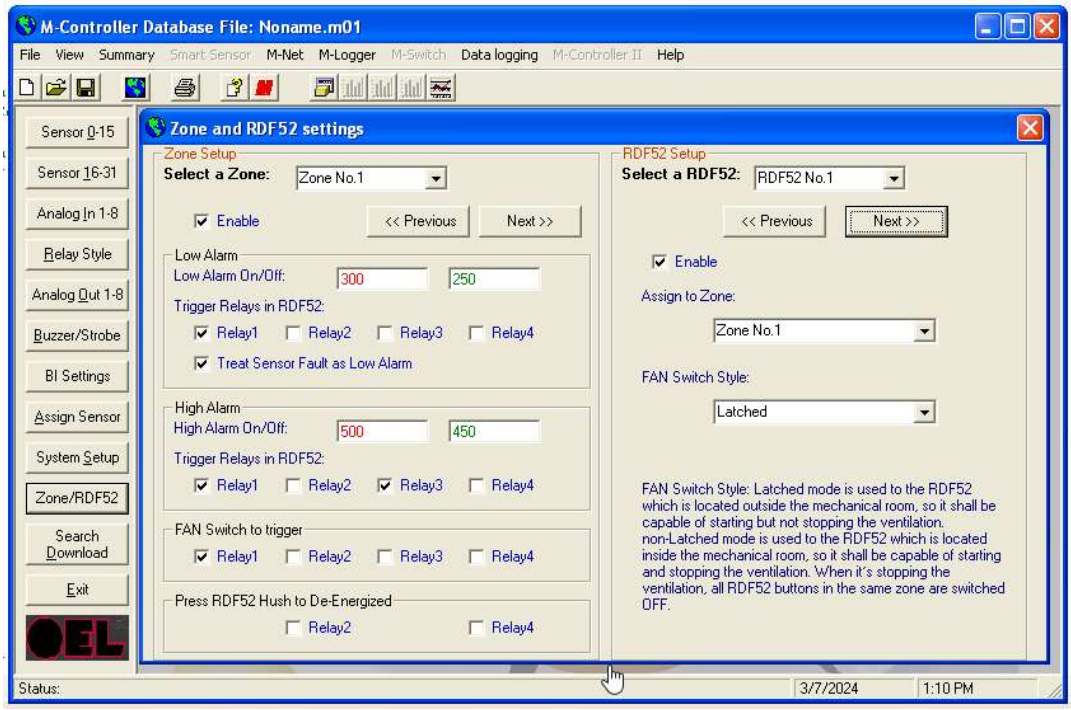
5.3 Config RDF52 through M-View Software

NOTE: WHEN PROGRAMMING THE CONTROLLER WITH A LAPTOP ENSURE THAT THE LAPTOP IS NOT CONNECTED TO ANY POWER SOURCE. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT WITH DAMAGES TO THE CONTROLLER AND OTHER DEVICES CONNECTED TO IT.

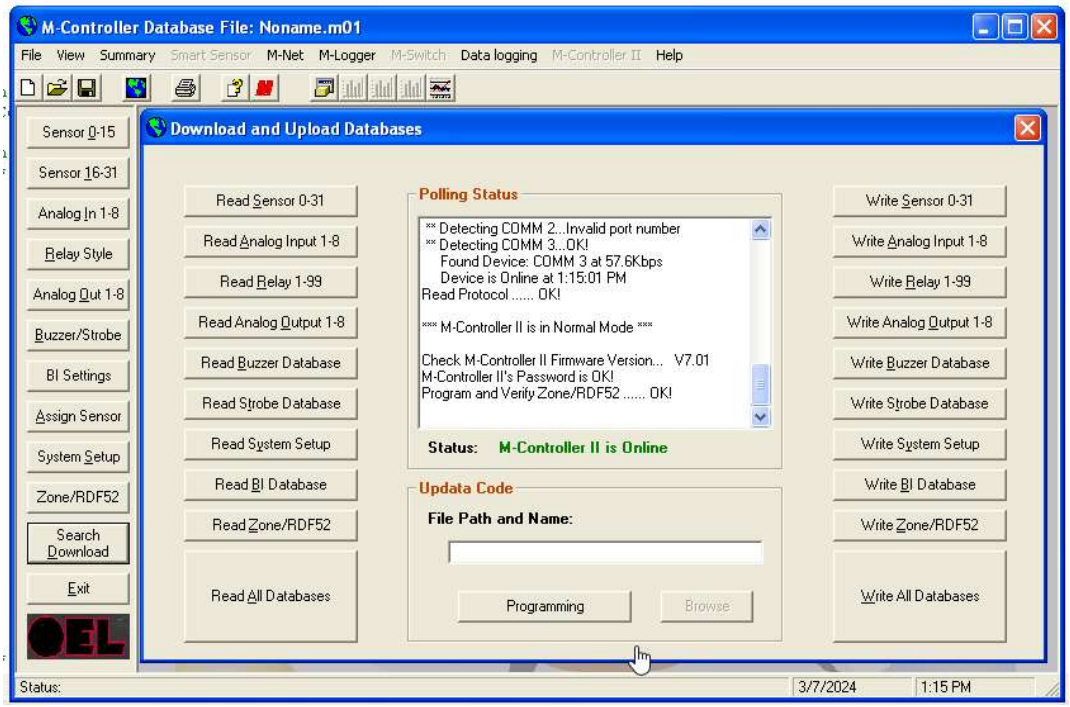
5.3.1 Assign sensors to Zone.



5.3.2 Zone setup and RDF52 setup



5.3.3 Download settings to M-Controller



WARRANTY STATEMENT

The information contained in this manual is based upon data considered accurate; however, no warranty is expressed or implied regarding the accuracy of this data. All GES equipment is warranted against defects in material and workmanship for a period of two years from date of shipment with the following exceptions:

Electrochemical Sensors (Toxic)	Six Months
Catalytic Sensors (Combustible)	One Year

During the warranty period we will repair or replace, at our discretion, any components or complete units that prove, in our opinion, to be defective. We are not liable for consequential or incidental damage to auxiliary interfaced equipment.

A returned material authorization number should be obtained from the factory prior to returning any goods. All return shipments must be shipped freight prepaid and a copy of the maintenance records should accompany the unit concerned.

Warranty should be considered F.O.B. the factory. Labour and travel time are chargeable for any field site visits required for warranty work.

LIMITED LIABILITY

All GES systems shall be installed by a qualified technician/electrician and maintained in strict accordance with data provided for individual systems in the form of installation/maintenance manuals. GES assumes no responsibility for improper installation, maintenance, etc., and stresses the importance of reading all manuals. GES shall not be responsible for any liability arising from auxiliary interfaced equipment nor any damage resulting from the installation or operation of this equipment.

GES's total liability is contained as above with no other liability expressed or implied, as the purchaser is entirely responsible for installation and maintenance of systems.

This warranty is in lieu of all other warranties, expressed or implied, and no representative or person is authorized to represent or assume for GES any liability in connection with the sales of our products other than that set forth herein.

NOTE: Due to on-going product development, GES reserves the right to change specifications without notice and will assume no responsibility for any costs as a result of modifications.

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