



Sensata Technologies
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Introduction

The MM-C remote monitor has five LED indicators (see Figure 1): the AC IN LED monitors the status of any external AC power connected to the inverter's input, the FAULT LED alerts you to any faults, and the three charging LEDs (BULK, ABSORB, FLOAT) monitor charger status and provide information on charger operation.

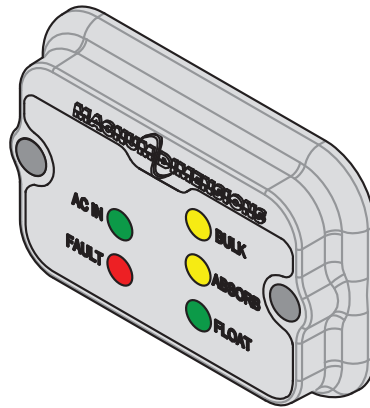


Figure 1, MM-C Remote Monitor

Installation

Before proceeding, read the entire Installation section to determine how best to install your MM-C remote monitor.

Installation Guidelines

- Before connecting any wires, determine the remote monitor's communication cable route throughout the home or vehicle/boat, both to and from the inverter.
- Always check for existing electrical, plumbing, or other areas of potential damage BEFORE drilling or cutting into walls to mount the MM-C remote.
- Ensure all wires have a smooth bend radius and do not become kinked.
- If installing the MM-C in a boat, RV or truck, ensure the conductors passing through walls, bulkheads, or other structural members are protected. This minimizes insulation damage (such as chafing) which can be caused by vibration or constant rubbing.

Unpacking and Inspection

Carefully remove the MM-C remote monitor from its shipping container and inspect all contents. Verify the following items are included:

- MM-C remote monitor
- MM-C instruction sheet
- 25' Communication cable
- Two Phillips screws

If items appear to be missing or damaged, contact your authorized Magnum-Dimensions dealer or Sensata Technologies. Save your proof-of-purchase as a record of ownership; it is needed if the MM-C requires in-warranty service.

MM-C Remote Monitor Instruction Sheet

Tools Required

The MM-C remote monitor is easy to install and requires the following tools:

- Phillips screwdriver
- Drill
- Drill Bit (3/4" circular)
- Level
- Pencil
- Drill bit (7/64")

Locating the MM-C Remote Monitor

Find a location to mount the MM-C remote monitor that is clean, dry, and protected. Allow ample room to view the LEDs. The MM-C remote monitor can be flush mounted—with the communication cable being routed through an opening in the wall (Figure 6).

Note: The MM-C remote monitor has a black O-ring around the back edge to ensure a water-tight seal when mounted.

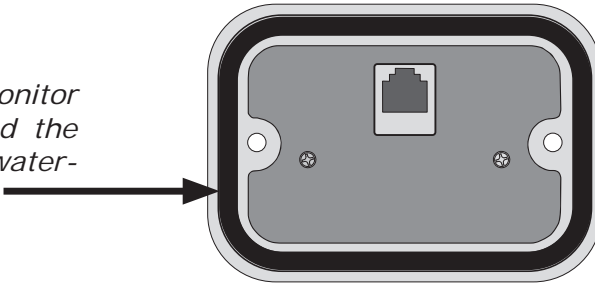


Figure 2, O-Ring Water Seal

MM-C Dimensions

Refer to the dimensions in Figure 3 in preparation for mounting the MM-C remote monitor (using the supplied two Phillips screws).

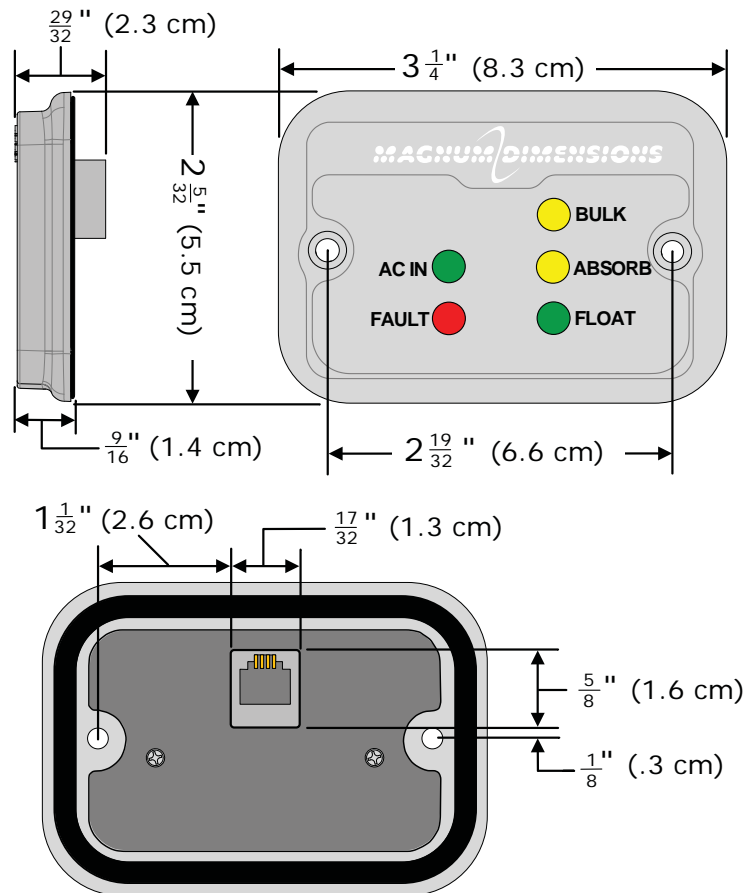


Figure 3, MM-C Remote Monitor Dimensions

MM-C Remote Monitor Instruction Sheet

Connecting the Communication Cable

The MM-C monitor comes with a cable to enable communication between the inverter and the remote monitor. The communication cable is a flat 25' telephony standard with 6P4C (6-position, 4-conductor) connectors on each end. When the 6P4C connectors are held as shown in Figure 4 below, the color of the conductors in each connector is the same from top to bottom.



Info: The 25' cable is long enough for most applications. If additional cable length is needed, the cable can be extended up to 50' using a standard phone cable and a female-to-female connector.

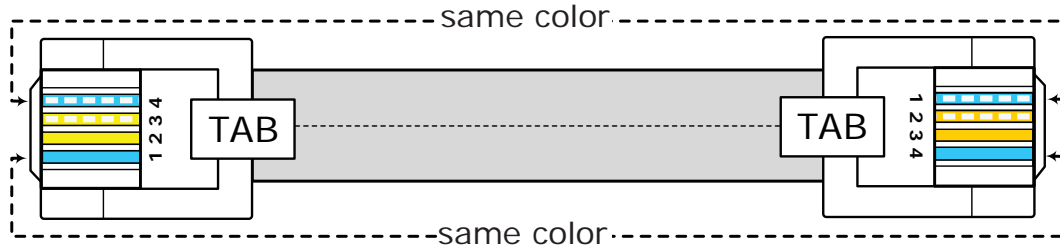


Figure 4, Communication Cable

Connecting the MM-C to a Magnum Inverter

One end of the communication cable is connected to the RJ11 jack on the rear of the MM-C remote monitor, and the other end is connected to one of the remote ports (blue) on Magnum's MMA/MMSA inverters (see Figure 5).

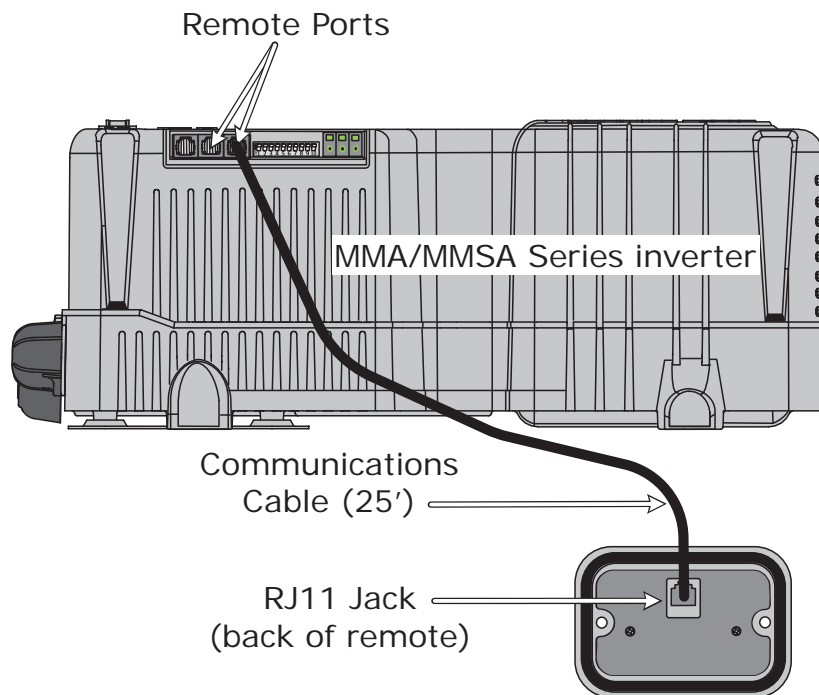


Figure 5, Communication Cable Connections

MM-C Remote Monitor Instruction Sheet

Flush Mounting the MM-C Remote Monitor

To flush mount, the remote's protruding RJ11 jack on the back needs to be placed into an opening—see Figure 6. This opening must have a depth of at least 1" (2.5 cm) to allow adequate room for the remote's RJ11 jack and the attached communication cable. Review the MM-C's dimensions in Figure 3 to determine where to cut the opening in relation to the remote's mounting screws.

1. DO NOT cut the opening too big—ensure there is enough material at the top of the cut out area to allow the MM-C remote's O-ring to establish a water-tight seal on the mounting surface.
2. Route the communications cable from the inverter up into the opening in the wall.
3. Connect the communications cable to the RJ11 jack on the back of the remote monitor (Figure 5).
4. Secure the remote monitor to the wall (use supplied two Phillips screws).
5. After ensuring the inverter is OFF, plug the other end of the communications cable into the remote port (blue) on the inverter.

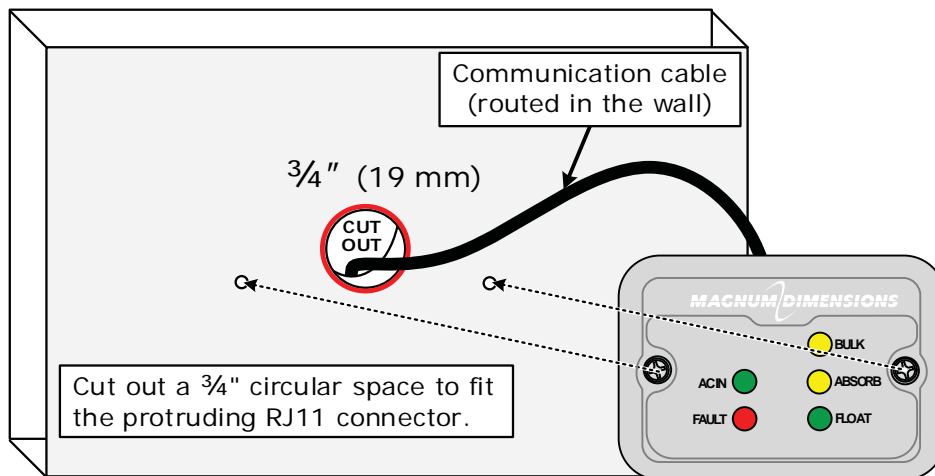


Figure 6, Flush Mounting the MM-C

Operation

This section explains what is occurring when the MM-C monitor's various LEDs illuminate. Use this information to determine your system's operating status, and to assist you in troubleshooting any faults that may arise.

Note: The MM-C does not provide inverter settings, either the inverter's internal settings or the settings from a connected remote control are used.



Info: An optional remote control (e.g., ME-RC, ME-ARC) is required to modify listed default values and to adjust preselected inverter/charger settings.

AC IN LED (GREEN)

- *On (solid)* – external AC power (utility/shorepower or generator) is connected to the inverter's input and passing through the inverter to power the AC loads connected to the inverter's output.
- *Blinking On (once every second)* – external AC power detected on the inverter's input, either: 1) AC input is being qualified (takes approx. 15 secs); or, 2) If a charge LED is on, then input AC voltage is low. Ensure incoming AC voltage >80 volts (*VAC Dropout* default).
- *Off* – no external AC power is detected on the inverter's input.

FAULT LED (RED)

Under normal operating conditions, the MM-C remote's FAULT indicator will be off. If there is a fault condition, this LED will blink differently for each specific fault to help troubleshoot the inverter. Monitor the FAULT LED for at least 10 seconds and count the number of blinks that occur every four seconds to determine the particular reason for the shutdown. Once you have identified and cleared the fault, the inverter can be turned on. Refer also to the Troubleshooting section of your inverter owner's manual.

- *Blinks On (1 time every 4 seconds)* – **Low Battery Voltage**; the battery voltage level has dropped below 10.0 VDC (*LBCO* default setting). Your batteries need to be charged—this fault condition automatically clears when the battery voltage >12.5 VDC, or the inverter begins charging.
Note: *The above voltage settings are based on not having a battery temperature sensor (BTS) connected to the inverter; if a BTS is connected, these voltage settings will increase or decrease depending on the temperature around the BTS—this ensures correct charging.*
- *Blinks On (2 times every 4 seconds)* – **High Battery Voltage**; the battery voltage is above 15.5 VDC. Reduce or turn off the external charging source to bring the battery voltage down.
- *Blinks On (3 times every 4 seconds)* – **Over-temperature Condition**; the internal temperature of the inverter has risen above acceptable limits. This may be caused by loads too great for the inverter to operate continuously, or by a lack of ventilation to the inverter. When the unit has cooled, it automatically resets and resumes operation.
- *Blinks On (4 times every 4 seconds)* – **AC Overload**; the inverter has turned off because the connected loads are larger than the inverter's output capacity, or there is a short on the output wiring. The inverter can be restarted after the AC loads are reduced, or the wiring short has been removed. To restart the inverter, momentarily press the ON/OFF button on the inverter.
- *Blinks On (5 times every 4 seconds)* – **Internal Fault**; the inverter has turned off because it has detected an internal problem. To clear this fault, the inverter will need to be reset by: 1) Pressing and holding the inverter's ON/OFF switch for 15 seconds; or, 2) Disconnect all DC power to the inverter for at least 15 seconds, and then reconnect. After resetting the inverter, momentarily press the inverter's ON/OFF switch and verify the fault has cleared. If the internal fault remains, the inverter requires service at an authorized repair facility.

BULK LED (YELLOW)

- *On (solid)* – **Bulk Charging**; the charger is delivering maximum current to the batteries. The charger will remain in Bulk Charge until the absorb voltage is achieved.
- *Blinks On (1 time every 4 seconds)* – **Charger Back-off**; charger current is reduced. This occurs if: 1) The internal temperature is very hot (the charger reduces the charge rate to maintain temperature) or, 2) The AC input voltage has fallen below 85 VAC (the charger reduces the charge rate to help stabilize the incoming AC voltage).
- *Off* – the charger is not in Bulk Charge mode.

MM-C Remote Monitor Instruction Sheet

ABSORB LED (YELLOW)

- *On (solid)* – **Absorb Charging**; the charger is in the Absorb Charge stage (Constant Voltage) and begins charging after the bulk voltage has been reached. The DC charging current will start to taper down to maintain the bulk voltage setting. The Absorb charging time is 120 minutes (per the preselected *Battery AmpHrs* setting).
- *Blinks On (1 time every 4 seconds)* – **Charger Back-off**; the charger current is reduced. This occurs if: 1) The internal temperature is very hot (the charger reduces the charge rate to maintain temperature) or, 2) The AC input voltage has fallen below 85 VAC (the charger reduces the charge rate to help stabilize the incoming AC voltage).
- *Off* – the charger is not in Absorption Charge mode.

FLOAT LED (GREEN)

- *On (solid)* – **Float Charging**; at the end of the Absorb charging time, the charger reduces the charge voltage to maintain the batteries at the float voltage.
- *Blinks On (1 time every 4 seconds)* – **Charger Back-off**; charger current is reduced. Occurs if: 1) The internal temperature is very hot (the charger reduces the charge rate to maintain temperature) or, 2) The AC input voltage has fallen below 85 VAC (the charger reduces the charge rate to help stabilize the incoming AC voltage).
- *Blinks On (2 times every 4 seconds)* – **Full Charge**; monitors the battery voltage to determine when to continue charging. After four hours in the Float Charge mode, the charger turns off and goes to Full Charge mode. If the battery voltage drops to 12.9 VDC, the charger automatically initiates another float charge.
- *Off* – the charger is not in Float Charge mode.

Limited Warranty

Sensata Technologies warrants the MM-C remote monitor to be free from defects in material and workmanship that results in product failure during normal usage, according to the following terms and conditions:

1. The limited warranty for the product extends for 12 months beginning from the product's original date of purchase.
2. The limited warranty extends to the original purchaser of the product and is not assignable or transferable to any subsequent purchaser.
3. During the limited warranty period, Sensata will repair or replace at our option any defective parts—or any parts that will not properly operate for their intended use—with factory new or remanufactured replacement items if such repair or replacement is needed because of product malfunction or failure during normal usage. The limited warranty does not cover defects in appearance, or cosmetic, decorative, structural or non-operative parts. Sensata's limit of liability shall be the actual cash value of the product at the time the original purchaser returns the product for repair, determined by the price paid by the original purchaser. Sensata shall not be liable for any other losses or damages.
4. Upon request, the original purchaser must prove the product's original date of purchase by a dated bill of sale, itemized receipt.
5. The original purchaser shall return the product prepaid to Sensata. After the completion of service under this limited warranty, Sensata will return the product prepaid to the original purchaser via a Sensata selected, non-expedited surface freight within the contiguous United States and Canada; this excludes Alaska and Hawaii.
6. If Sensata repairs or replaces a product, its warranty continues for the remaining portion of the original warranty period or 90 days from the date of the return shipment to the original purchaser, whichever is greater. All replaced products and parts become the property of Sensata.
7. This limited warranty is voided if:
 - the product has been modified without authorization
 - the product has been damaged through abuse, neglect, accident, high voltage, or corrosion
 - the product was not installed and operated per this guide

How to Receive Repair Service

If your product requires warranty service or repair, contact Sensata at:

Telephone: 425-353-8833

Email: MagnumWarranty@Sensata.com

If returning your product directly to Sensata (in Everett, WA), you must:

1. Return the unit in the original, or equivalent, shipping container.
2. Receive a Return Materials Authorization (RMA) number from the factory prior to the return of the product to Sensata for repair.
3. Place the RMA numbers clearly on the shipping container or on the packing slip.

When sending your product for service, please ensure it is properly packaged.

Damage due to inadequate packaging is not covered under warranty.

We recommend sending the product by traceable or insured service.

**A RETURN MATERIAL AUTHORIZATION (RMA) NUMBER IS
REQUIRED BEFORE RETURNING ANY PRODUCT**



Magnum-Dimensions Products

Manufactured by:

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