Invensys RF Load Control Meter
General Instructions

Description

The Invensys RF Load Control Meter (LCM) is a remote switching device that receives load control OFF and ON commands from the GoodWatts system. Commands are received via an RF Communications network.

The LCM is connected in line with the existing electrical wiring to the appliance, which enables it to be mounted at any location with easy access to the existing wiring. The enclosure is watertight, dust tight, and corrosion resistant, making it suitable for both indoor and outdoor locations. Mounting holes are provided at each corner to secure the LCM to a flat surface.

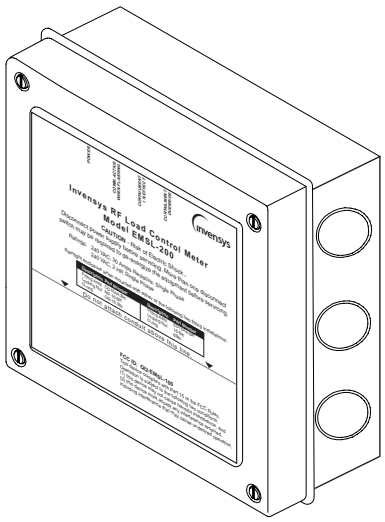
TABLE 1. Specifications

Item	Description
Electrical input:	**vL02606100:** 120 VAC rms, 60 Hz., 2-wire **vL02606200:** 240 VAC rms, 60 Hz., 2-wire
Contact rating:	30A @240VAC rms
Wiring Terminals:	#14 - #10 AWG, copper conductors only, solid or stranded
Operating temperature:	-40 to +65 deg. Celsius
Storage temperature:	-40 to +85 deg. Celsius
Humidity tolerance:	0 to 100% RH (non-condensing)
Enclosure:	NEMA 4x rated
Physical dimensions:	7.0” x 7.0” x 3.02”
Weight:	2 lbs

TABLE 2. Style Chart

Model Style	Description
vL02606100	– Controls 120 VAC single-phase loads with current up to 30A resistive. – Supports 1 h.p. single phase inductive motor.
vL02606200	– Controls 240 VAC single-phase loads with current up to 30A resistive. – Supports 2 h.p. single phase inductive motor.

FIGURE 1. Invensys RF Load Control Meter



Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

– Reorient or relocate the receiving antenna.

– Increase the separation between the equipment and receiver.

– Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

– Consult the dealer or an experienced radio/TV technician for help.

Installation

Caution: This equipment is authorized for use under the United States Federal Communication Commission Rules and Regulations, Code of Federal Regulations Chapter 47 part 15 and must be installed in accordance with the instructions provided in this document. In accordance with FCC requirements, changes or modifications to this equipment that are not expressly approved by the party responsible for FCC compliance could void the user's authority to operate this equipment.

Inspection

Inspect the carton for damage. If damaged, notify carrier immediately. Inspect LCM for damage. Return damaged products.

Requirements

- Installer must be a qualified, experienced technician.
- Job wiring diagrams
- Tools
  - Drill bits for panel mounting holes
  - Static protection wrist strap
- Mounting screws (4)

General Precautions

Warning: Electrical shock hazard! High voltage is present in the Load Control Meter. Turn OFF electrical power to the LCM and the electrical appliance prior to installation or service. Failure to turn off power may result in serious personal injury.

- Follow Static Precautions when installing this equipment.
- Use suitable copper conductors.
- Make all connections according to electrical wiring diagram, national and local electrical codes.

Static Precautions

Static charges damage electronic components. The microprocessor and associated circuitry are sensitive to static discharge. Use the following precautions when installing, servicing, or operating the system.

- Work in a static free area
- Discharge static electricity by touching a known, securely grounded object.

Location

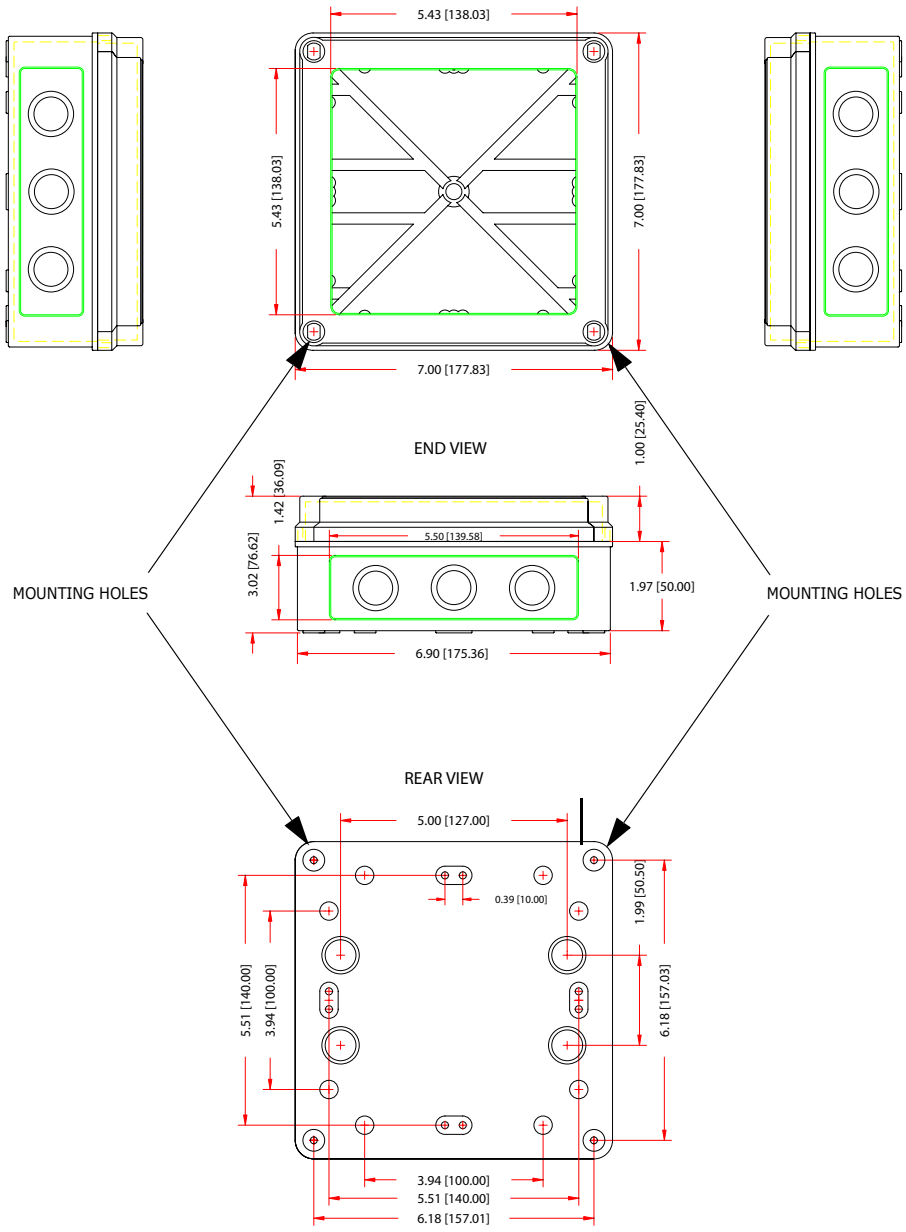
The LCM is connected in line with the existing electrical wiring to the appliance, which enables it to be mounted at any location with easy access to the existing wiring. The enclosure is watertight, dust tight, and corrosion resistant, making it suitable for both indoor and outdoor locations.

- Avoid mounting locations where excessive moisture, corrosive fumes, vibration, or explosive vapors are present.
- Avoid electrical noise interference. Do not install near large contactors, electrical machinery, or welding equipment.
- Locate where ambient temperatures do not exceed 150 deg. F (65 deg. C) or fall below -40 deg. F (-40 deg. C).

Mounting

Mounting holes are provided at each corner to secure the LCM to a flat surface. *Figure 4* shows mounting dimensions. Refer to *FIGURE 9. Mounting Template, on page 8* for an installation template at actual size.

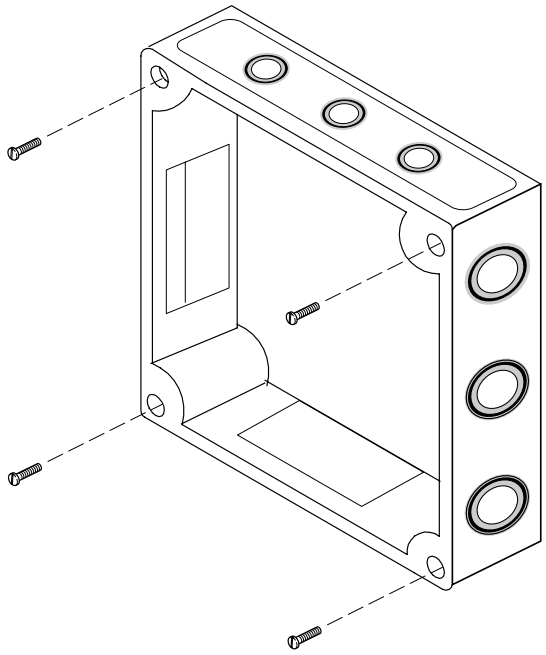
FIGURE 2. Enclosure dimensions



NOTE: DIMENSIONS ARE IN INCHES (MILLIMETERS)

1. Select a flat mounting location.
2. Mark and prepare the surface mounting holes, using dimensions above or use the template in *FIGURE 9. Mounting Template, on page 8*.
3. Remove the cover from the LCM enclosure by removing the four cover attaching screws in the corners of the cover.
4. Insert mounting screws down through the same holes that the cover screws came out of and securely fasten the LCM enclosure to the flat surface.

FIGURE 3. Mounting screw location



5. Refer to *Wiring*, on page 4 and wire the LCM.
6. After wiring is complete, replace the cover and tighten it securely with the four cover screws.
7. Reapply power to the LCM and the electrical appliance.

Wiring

Caution: It is important to select cable that complies with the NEC code for the electrical appliance being wired.

The EMSL-100 can control 120 VAC single-phase loads with current ratings up to 30A resistive. The EMSL-200 can control 240 VAC single-phase loads with current ratings up to 30A resistive. The LCM is connected in-line with the existing electrical wiring to the appliance. Multiple-size knockouts are provided around the exterior perimeter of the housing to accommodate a conduit connector or a cable clamp. Refer to the wiring chart in *Table 3* for terminal listings for both LCM models. Refer also to the example wiring diagrams in *Figure 5* through *Figure 8*.

Warning: You must turn off AC power to the electrical appliance that you are wiring. Failure to turn off power could result in physical injury or death.

1. ***Shut off AC power to the electrical appliance being wired.***

Caution: Use only NEMA 4x rated fittings in order to maintain the NEMA 4x rating.

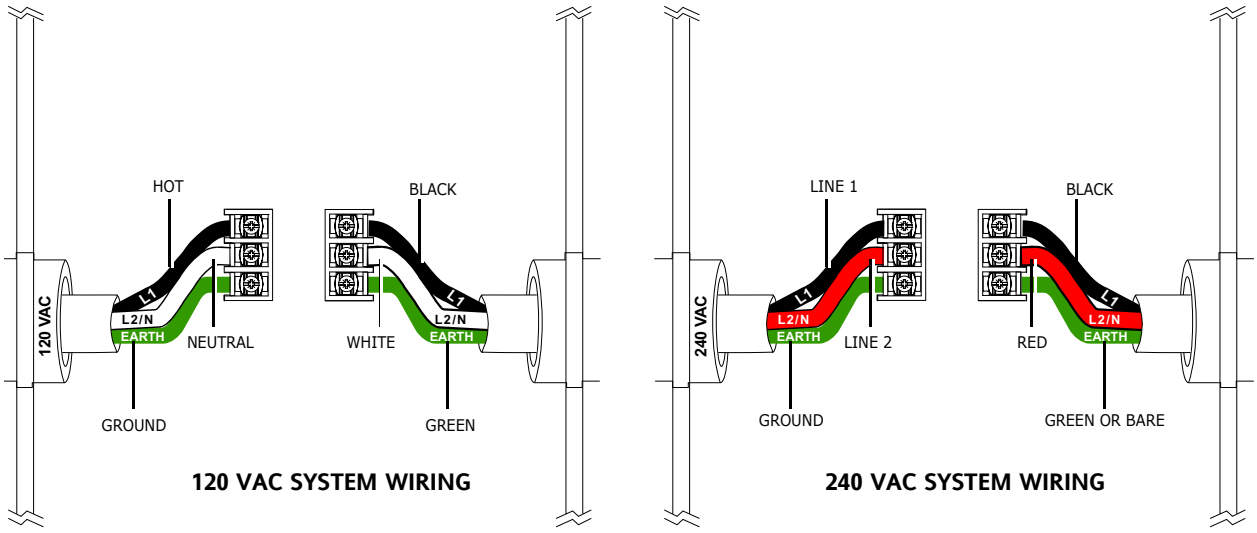
2. Connect the wires for the input (from the AC source) and output (to the electrical appliance) as shown in *Table 3* and in *Figure 4*. Refer to *Figure 4* to see typical wiring for a 120 VAC and a 240 VAC system.

Note: In four-wire 240 VAC configuration, the neutral wire is not connected to the LCM.

TABLE 3. Wiring Chart

LCM Style	Bottom Terminal	Center Terminal	Top Terminal
vL02606100	Ground (green)	Neutral (white)	Hot (black)
vL02606200	Ground (green or bare)	L2 (red)	L1 (black)

FIGURE 4. Installation wiring connections for a 120 and 240 VAC application



3. When wiring is complete reinstall cover (see *Mounting on page 3*) and apply power to the LCM and the electrical appliance.

Sample Wiring Schematics

The following schematics provide examples of wiring for hot water heaters and pool pumps for both 120 VAC and 240 VAC applications.

FIGURE 5. Example wiring for 120 VAC water heater application

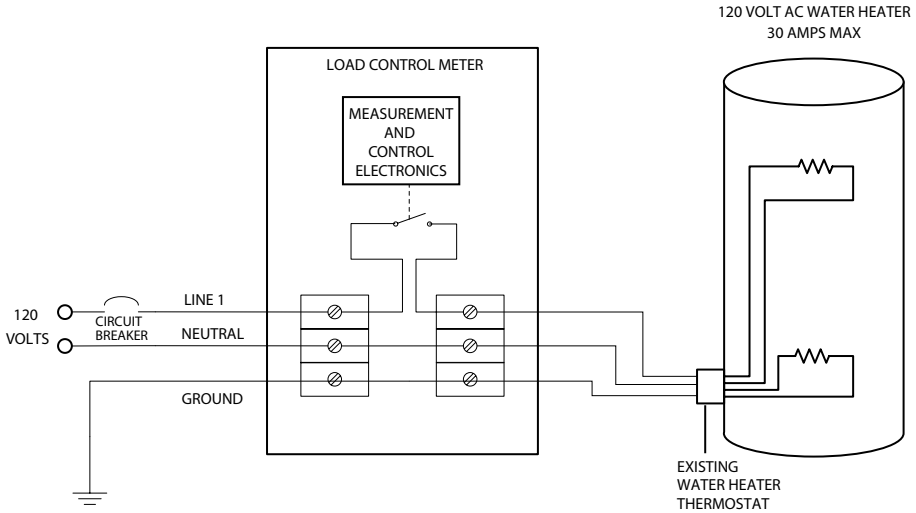


FIGURE 6. Example wiring for 240 VAC water heater application

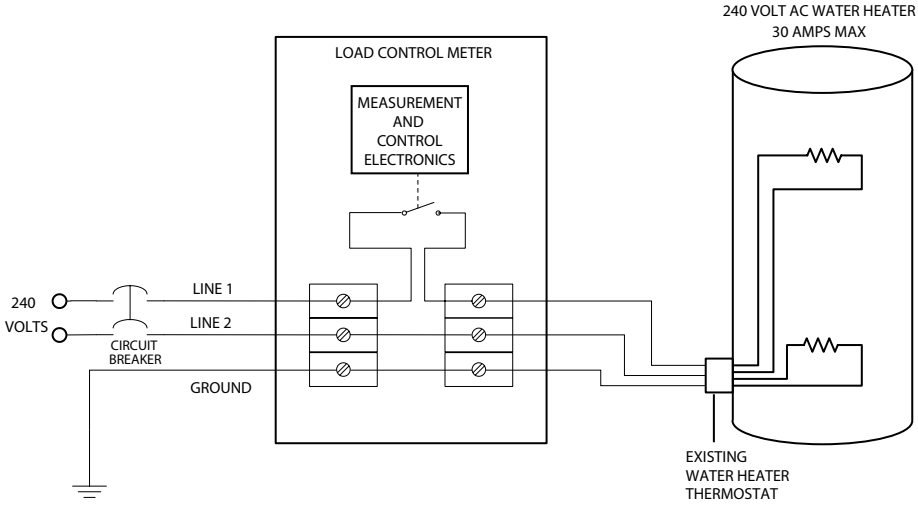


FIGURE 7. Example wiring for 120 VAC pool pump application

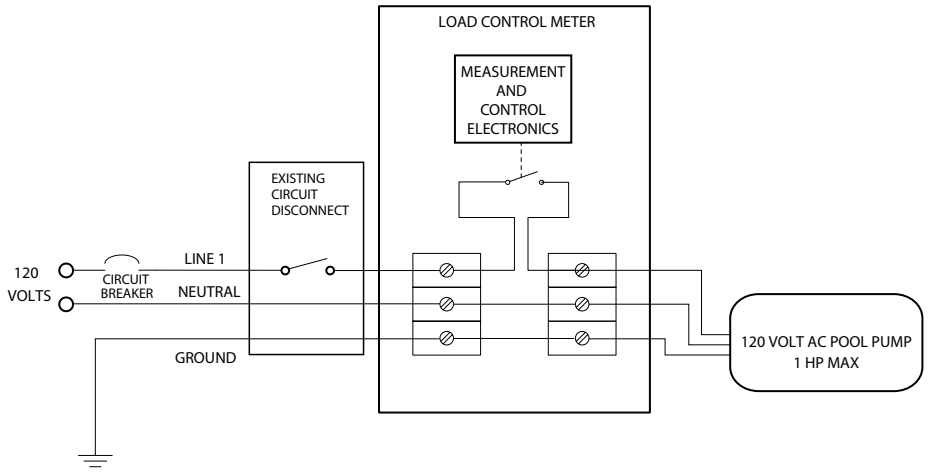
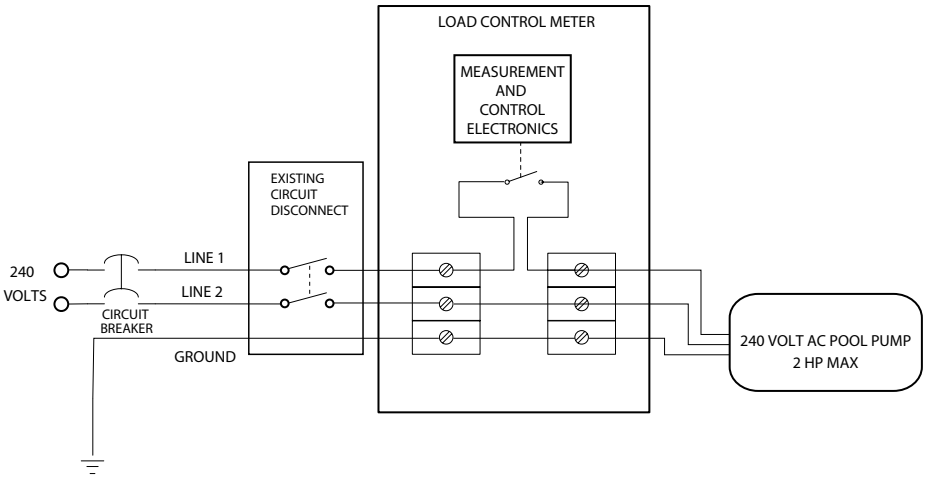


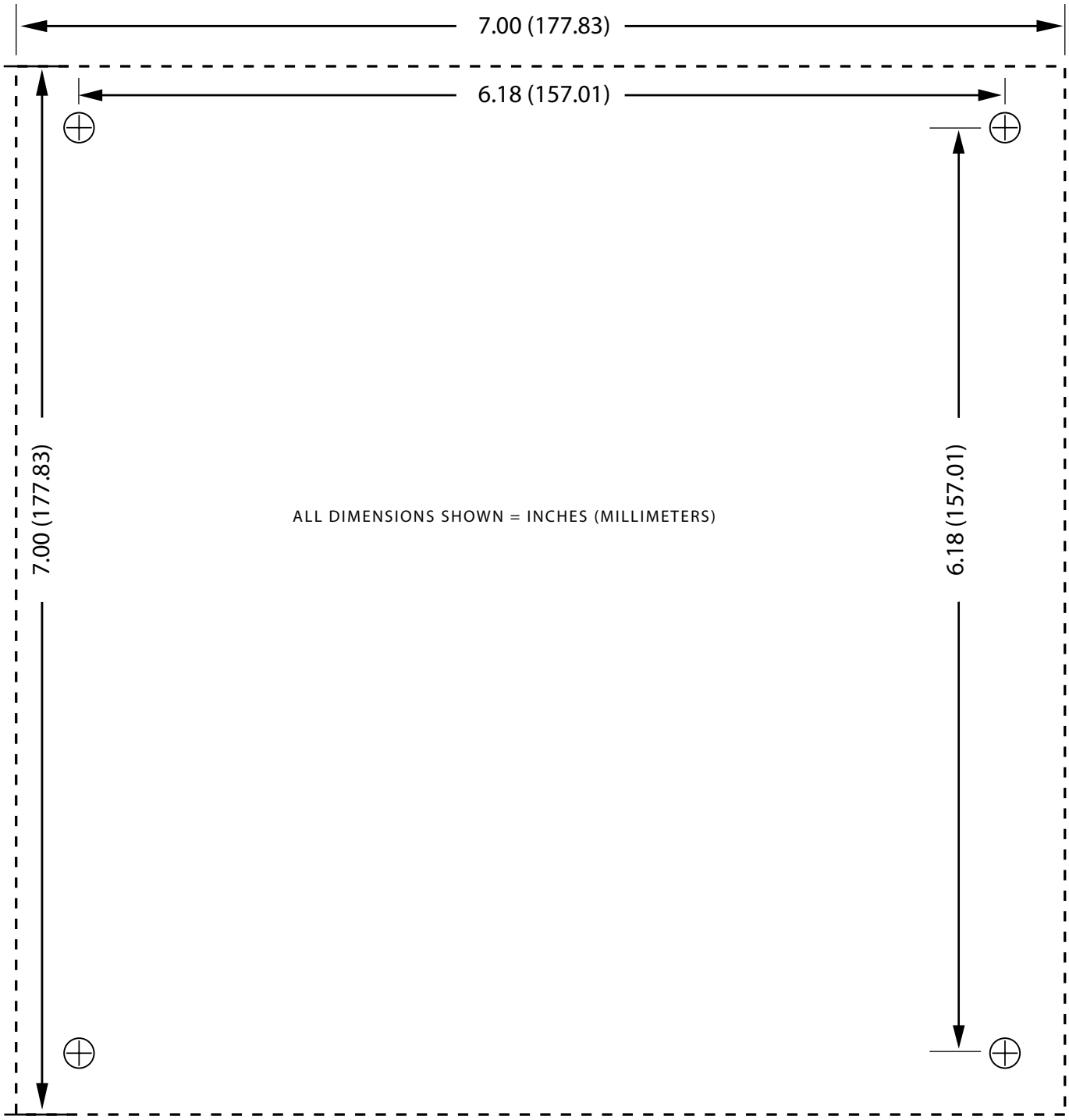
FIGURE 8. Example wiring for 240 VAC pool pump application



Mounting Template

Note: To ensure accuracy, this template must be printed at 100% actual size.

FIGURE 9. Mounting Template



LCM Operations

The only visible controls or indicators on the Invensys RF Load Control Meter are the four surface mount LED's. These indicators are listed in described in *TABLE 4. LED indicator descriptions*, below.

TABLE 4. LED indicator descriptions

LED Label	Color	Description
Power	Green	The green power light illuminates continuously when the following two conditions are met: – Power is applied to the LCM – The LCM is active (processor up)
Comm. Active when Flashing	Green	The green communications active light is firmware controlled and blinks to indicate activity in the RF communications subsystem.
Curtailment in Effect	Amber	The amber curtailment light illuminates to indicate that a curtailment is in effect. The LED is OFF when no curtailment is in effect. Curtailments may be initiated by the appropriate power provider in accordance with a particular GoodWatts program.
Curtailment Override	Red	The red override light illuminates when the Criminate Override switch has been set to the ON position. The light is OFF when Curtailment Override switch is set to the OFF position.

LED LOCATIONS