TORO Ag Irrigation

RM400 Installation

NOTE: It is important for correct and continued reliable operation of the RM400 that cables and wires are not be subjected to deformation or damage during installation or normal use. During installation, ensure that cables and wires are not positioned or routed such that deformation of the cable or wires could occur. Routing of the antenna cable should not result in a bend radius of less than 75mm.
Using appropriate fasteners, attach the Module Mounting Plate in the desired position using the two ¼" holes located at the top and bottom of the Module Mounting Plate.
Using the 3/16" bolts and nuts attach the RM400 to the Module Mounting Plate and tighten.

Connect the antenna cable to the coaxial connector on the bottom edge of the RM400. Route the antenna cable such that a Rain drip loop is formed. The apex of the loop should hang below the bottom edge of the RM400 case.
Remove the front cover of the RM400.

Solar Panel Mounting Bracket Installation
The Solar Panel Mounting Plate has been designed to maximise the average available solar power whilst reducing wind resistance and providing ease of assembly. The angle of the Solar Panel has been optimised for locations near the latitude of Sydney, Adelaide, and Perth.
The Solar Panel Mounting Plate kit is supplied with 4 saddle clamps. Both 2" and 1" water pipe saddle clamps are supplied to allow several mounting options. Only two saddle clamps are required to mount the Solar Panel Mounting Plate.
Attach the Solar Panel Mounting plate to the mast using two saddle clamps and 3/16" bolts and nuts.

Orientate the Solar Panel Mounting Plate so that the dark face of the Solar Panel is facing the direction of the midday sun. This is approximately North and maximizes the Solar Panel irradiation.
Tighten the 3/16" nuts.
Route the Solar Panel power cable and antenna cable to the RM400. Secure the cables using cable ties or other appropriate means.

Aerial Installation
Note: Depending on the particular installation environment it may be easier to install the whip
antenna prior to mounting the Solar Panel assembly onto the mast.
Loosen the nut on the base of the antenna and slide the antenna into the slot located on the
top edge of the Solar Panel Mounting Plate.
Retighten the nut on the base of the antenna.

Connecting Solar Panel Cable
Loosen the left hand cable gland nut and insert the Solar Panel power wires.
Tighten the cable gland nut.
Strip ¼" of insulation from the Solar Panel wires.
Connect the red Solar Panel wire to the Connector Block SP position labelled "+" and connect the blue or black Solar Panel wire to the Connector Block SP position labelled "-".

Powering the RM400 from a RM101 Plug Pack

Ensure the RM101 Plug Pack is **not** plugged into the 240V mains wall socket. Remove the connector from the 2.1mm plug from RM101 Plug Pack cable.

Loosen the left hand cable gland nut and insert the plug pack wires.

Tighten the cable gland nut.

Separate the plug pack wire into the two conductors and strip ¼" of insulation from each wire. Connect the wire with the white stripe to the Connector Block SP position labelled "+" and connect the other wire to the Connector Block SP position labelled "-".

Plug the RM01 Plug Pack into a 240V mains wall socket and switch on. Using a voltmeter on at least a 20V range, confirm that a nominal 12V is present at the Connector Black position SP.

Turn on the RM400. The Pwr/Rx/Tx lights should flash quickly for approximately 10 seconds. The Pwr light will then flash for ¼ of a second every two seconds. This indicates that the RM400 is in low-power sleep mode. The 'On' and 'Off' lights will flash in a sequence determined by the RM400 setup. This is described further in **Chapter 3 RM400 operation**. When the Solar Panel power leads and all Valve wiring has been connected the cable gland nuts should be checked for gaps. To prevent insect infestation, any gaps should be eliminated, by tightening the cable glands securely, or filling the gaps with a suitable all weather sealant.

Connecting Valve Wire

The RM400 is designed for 2 wire solenoid operation; 12V is momentarily applied across the connector block positions labelled "L" and "U" for each valve when commanded on or off by a Micro-Master controller.

Loosen an appropriate cable gland nut and insert the solenoid wires.

Tighten the cable gland nut.

Strip ¼" of insulation from the solenoid wires.

Connect the solenoid latch wire to the to the Connector Block positions marked "L" for the appropriate valve number. For a Bermad S975 solenoid the Latch Wire is White. For a Baccara 2 wire latching solenoid the Latch wire is Green.

Connect the solenoid unlatch wire to the to the Connector Block positions marked "U" for the appropriate valve number as shown in the previous picture. For a Bermad S975 solenoid the Unlatch Wire is Red. The Black wire is unused. For a Baccara 2 wire latching solenoid the Unlatch wire is Black.

Interfacing the Radio Master system with a Micro-Master .

The RM400 Radio-Master Valve Modules can be connected into the controller by simply entering the RM400 address and output number in the Radio Node Database.

Each Radio-Master node (RM100, RM200 and RM400) is delivered with a 5 digit unique address (0 to 65500). This address will be found on the LHS of the connector block in the RM400.

The Valve outputs of each RM400 are numbered 1 to 4.

Connection of the Radio-Master Valve output to the Micro-Master controller can be entered directly at the Micro-Master controller under the Setup Menu.