

WARRANTY

Bridgewater provides technical support free of charge, regardless of how long you have had your controller. Sometimes an issue can be fixed over the phone, saving the cost of shipping and getting your railroad running faster.

Parts and labor are warranted for a period of 5 years. If your Bridgewater Product requires repair, ship it back to Bridgewater, We will repair or replace it and return it to you. If your warranty has expired, or is not registered, there will be a charge for repair and shipping.

If a unit is returned for repair and no problem is found, there will be a \$25 service charge.

Return Freight Policy: Customer is responsible for return freight; you will be advised the amount when your unit is ready for return.

Warranty does not cover repairs to damage caused by misuse or abuse. Please do not leave this product outdoors; unplug the quick disconnect plugs and bring it indoors when it is not in use.

Be sure to keep the packaging just in case your unit ever does need to be returned for service. Some of our products are very heavy, and the special packaging is designed specifically to protect the internal parts and cosmetics of the product.

Please take a moment to fill out the Warranty card in the box or online at Bridgewater.com and return it to us.

Thank you.



Magnum 220RM

20 amp 2-Track controller

User Manual



Family owned and operated since 1995

BRIDGEWERKS

901 N Brutscher St Suite D383

Newberg OR 97132

www.bridgewater.com

Magnum 220RM Features

- **Connections:**

The on/off switch is located in the left side of the top panel. On the rear panel, there are six pairs of outputs. The track outputs (bottom set) connect to each track using one of the banana plugs included. The jacks and plugs are color coded black (- negative) and red (+ positive) voltage. One of the features of Bridgewater's controllers is the ability to piggyback the jacks when you have very long track and want to have additional wire connected at several points on your layout. This gives you maximum evenly distributed power on your track. There are also two 24-30 volt DC outputs at the top of the rear panel to use for accessories. The middle set of yellow jacks is used for the RC-100 remote (not included).

- **Speed Governor:**

Bridgewater's exclusive "speed-stop" can be used as a safety device to limit the maximum speed of your trains. The speed stop consists of a metal plate which is held in place with a thumb screw. To adjust the speed stop, loosen the thumb screw, adjust the throttle slide control so that the train is going as fast as you want to allow, and then slide the speed stop down to limit the maximum speed. Tighten the thumb screw. Now you can move the throttle control from 0 up to the maximum selected speed.

- **Momentum:**

The 220RM features an adjustable momentum control for each track that will limit the acceleration and deceleration of the trains. When momentum is at maximum and you move the throttle from the minimum to the maximum, the train will slowly accelerate from a stop to the maximum speed. Similarly if the throttle is moved quickly from maximum to 0, the train will slowly decelerate to a stop. Momentum adds another dimension of realism to your model railroad. In addition, the combination of speed governor and momentum makes it easier to limit derailments when younger engineers are at the controls.

- **Direction Control:**

The 220RM has a direction control switch which will change the direction of the locomotive. If the locomotive runs backwards when the switch is in the forward position, reverse the connections going to the track.

- **Overload Protection:**

In the event of an overload, the 220RM has two different ways of protecting itself and your train from damage. A manual circuit breaker is on the left side of the rear panel. The button will pop out and the power to the track will be cut off. If this happens, correct whatever caused the overload, wait 2 or 3 minutes and then push the switch to reset it.

In addition, there is an automatic thermal cutoff inside the controller which will be activated in the event of an overload. This will reset itself automatically in 2-3 minutes after the cause of the overload is removed.

- **Optional Remote Throttle Capability (RC-100):**

On the back of the 220RM there is a pair of yellow terminals for the remote control. Plug the receiver into these two yellow terminals (it will automatically also plug into the accessory power pins) and provide you with wireless remote control over the throttle

- **Accessory Power**

On the back of the 220RM in addition to the pair of yellow remote terminals and the terminals that provide power to the track, there are two pairs of terminals for accessory power. The pair on the top provide an unregulated DC power source that will be from 24 to 32V depending on how much power you are drawing from the connection.



- **Wire:**

Use heavy gauge wire to connect your power controller to the track. For distances of up to 15 feet, you should use 12 gauge wire. For distances over 15 ft, you use 10 gauge wire. Although the track itself is similar to a very heavy gauge wire, in larger layouts, significant loss can occur from the connections between sections of track. To improve this, run multiple power connections to the track from the controller and/or use track clamps rather than slider type couplers. In outdoor layouts which are exposed to extreme temperatures, the track will expand and contract as the temperature changes, and slider type couplers may have to be used.

- **Outdoor operation**

Garden railways are often installed outdoors and Bridgewater's controllers are built to be used with outdoor railroad layouts. However, they are not waterproof, and as with any electronic equipment, **they should not be left outdoors when not in use.** To make this easy, the connections are all made so that they can simply be unplugged and the controller can be carried indoors.