

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 20-SRS

20 Amp Controller

With Speedometer

User Manual



Family owned and operated since 1995

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Magnum 20-SRS Features

- **Connections:**

On the rear of the Magnum SRS there is a pair of connectors labelled 'TO TRACK' which you use to connect the Magnum 20-SRS to your track. If your train is on the track facing forward, and you connect the red terminal to the right rail, and the black terminal to the left rail, the train will go forward when the forward/reverse switch is in the forward position. If the engine moves backwards, swap the track wires. The best way to connect the Magnum 20-SRS to the track is with the included banana plug. You can attach your wire to the banana plug, and then just plug it into the back of the unit.

In addition to the TRACK connection, there is a connection which provides full voltage (24-32VDC) output which can be used to power accessories such as lighting or switch motors. You can connect to these terminals with a banana plug (additional plugs are available from Bridgewaterks or from a local audio shop), or by unscrewing the connection a little, and then tightening down on the bare wire. The yellow connectors are for use by the RC-100 remote control (not included.)

- **Speed Governor:**

Bridgewaterks' 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 momentum switch on the front panel will limit the acceleration and deceleration of the trains. When momentum is enabled 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 Magnum 20SRS 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 Magnum 20SRS has two different ways of protecting itself from damage: A manual circuit breaker 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 20-SRS, 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

- **Speedometer:**

The 20SRS has the ability to show the scale speed of the locomotive once it has been properly calibrated. To calibrate:

1. measure out a scale distance on your layout according to 'table A'
2. Turn the 'MPH' knob to 5 and the "O" adjust knob to "A"
3. With your train on the track, slowly increase the speed (using the slide throttle) until the train begins to move, then turn the "0" adjust knob until the speedometer just starts to move.
4. Increase the throttle so that the train is moving at a medium speed. Time the amount of time that it takes for the train to move through the distance that you measured out in step 1. Using table B, determine the speed of your train in Scale MPH.
5. Continue running at medium speed. Using the scale MPH speed that you calculated in step 4, adjust the MPH knob to show that speed. For example, if your train took 12 seconds to cover the pre-measured distance, then it is going 30MPH. So you adjust the MPH knob to get the speedometer to read 30MPH.

Table A

Scale	F	G	G	#1	O	S	HO
	1:20.3	1:22.5	1:24	1:32	1:48	1:64	1:87.1
Distance	26 ft	23.5 ft	22 ft	16.5 ft	11 ft	8ft, 3ins	6 ft

Table B

MPH	Sec
10	36
15	24
20	18
25	14.5
30	12
35	10
40	9
45	8
50	7
55	6.5
60	6
65	5.5
70	5
75	4.8
80	4.5
85	4.2
90	4
95	3.8
100	3.6
105	3.4
110	3.3
115	3.1
120	3

- **Wire:**

Use heavy gauge wire to connect the 20-SRS to the track. For distances of up to 15 feet, you should use 12 gauge wire. For distances over 15 feet, 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 Bridgewaterks 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.