

<b>EMT</b>	<b>Environmental Monitoring TECHNOLOGIES</b> <b>R2S Remote Start Specifications</b>	
<b>TITLE</b> Timer, Power, Transport, Maintenance/Calibration & Sanitization	<b>PAGE</b> 1 of 8	

## R2S Timer

The microcontroller based countdown interval timer provides vacuum pump and sample head motor control with digital display of countdown time remaining.

Prior to the start of a timed cycle an LED on the front panel will be OFF. When running a timing cycle the LED will flash, and at the end of the cycle the timer will beep for five seconds, the LED will turn ON steady and the display will reset to the preset starting time.

Two arrow buttons on the front panel are used to set the time. Hold the UP ARROW button down to increase the time interval. The longer the button is held down, the faster the rate at which the time will increase. The DOWN ARROW button is used in the same manner as the UP ARROW button except it will cause the time interval to decrease. Using the UP ARROW and DOWN ARROW buttons in this manner permits accurate setting of countdown time.

The REMOTE START/STOP/RESET button performs three functions. Pressing the START/STOP/RESET button while the timer is not active, will cause the timer to begin counting down the time interval on the display and activate the vacuum pump and sample head turntable motor. Pressing the REMOTE START/STOP/RESET button while the timer is active, will stop the timer, turn off the vacuum pump and R2S sample head motor, and turn OFF the LED. The timer will display the time remaining in the cycle when it is interrupted by the START/ STOP/RESET button. If the START/STOP/RESET button is pressed again it will re-activate the vacuum pump and sample head motor, and the timer will continue timing from the point it was stopped. Should the START/STOP/RESET button be held down for longer than two seconds while it is in the STOP mode the timer will reset and the display will return to the original starting time and the LED will turn OFF.

Should power fail during a timing cycle the internal memory will backup the time to the last five second tick and upon restoration of power the timer will complete the preset timing cycle.

The timer always remembers the last interval time selected and when first powered up resets to that time.

<b>EMT</b>	<b>Environmental Monitoring TECHNOLOGIES</b> <b>R2S Remote Start Specifications</b>
TITLE Timer, Power, Transport, Maintenance/Calibration & Sanitization	PAGE 2 of 8

## **R2S Timer** *(continued)*

### ***Programming the Elapsed Timer Initial Timebase***

The time base can be programmed to countdown the time in the following ranges: 000.1-999.9 seconds, 0001-9999 seconds, 00:01-59:59 minutes:seconds, and 00:01-23:59 hours:minutes.

The timer is shipped from the factory preset to the Code 1 time base of 00:01-59:59 Minutes: Seconds. To program another time base perform the following steps:

REMINDER: The maximum sample period per test cycle (test plate) is one revolution in 60 minutes. As such, Code 1 is the recommended time base program for sampling with the R2S Sampling Assembly. If the Code 3 time base is used the test plate will be allowed to rotate for an unrecommended timer period .

1. Turn OFF the power.
2. Press the DOWN ARROW button while turning the power ON.
3. Release the button after the display turns ON.
4. A number from 0 to 3 will appear. This number corresponds to: 0 = 000.1 - 999.9 seconds 1 = 00:01 - 59:59 minutes: seconds 2 = 0001 - 9999 seconds 3 = 00:01 - 23:59 hours: minutes
5. Use the UP ARROW button to select the desired time base.
6. Turn OFF the power. 7. Wait 2 seconds.
8. Turn ON the power and the timer will remain in the new time range until reprogrammed as above.

<b>EMT</b>	<b>EnvironmentalMonitoringTECHNOLOGIES</b> <b>R2S Remote Start Specifications</b>
<b>TITLE</b> Timer, Power, Transport, Maintenance/Calibration & Sanitization	<b>PAGE</b> 3 of 8

## R2S Power

Controller design provides standard ground fault and over current protection for operator safety. Please read the following section for guidelines and limitations of protection.

### *GFCI*

#### **INSTALLATION AND OPERATION**

1. Plug unit into a 120 VAC power socket.
2. Press and release the Reset Button.
3. Press the Test Button to test the GFCI functionality
4. The GFCI should trip after pressing the Test Button
5. Press and release the Reset Button to reset power to the unit.

#### **WARNING**

1. If the GFCI fails to trip when the Test Button is pressed, or fails to reset, the device is defective. Contact EMTechnologies for warranty repair or replacement.
2. If the GFCI trips each time the cord is plugged in, then the controller or sampling head has a ground fault and needs to be repaired or replaced.

**DO NOT BYPASS THE GFCI IF THIS CONDITION OCCURS. A REAL SHOCK HAZARD MAY EXIST.**

#### **IMPORTANT NOTE:**

The GFCI will provide protection against ground faults when used with a 2 wire outlet receptacle and a 3-wire to 2 wire adapter. It is always desirable, where possible, to use a 3-wire grounded receptacle because a ground provides additional protection against electrical shock hazard. The adapter should be of the type that can be grounded to the outer mounting plate screw.

The GFCI does not sense ground faults in the input conductors. Therefore, when extension cords are used the GFCI provides not protection between itself and the AC outlet receptacle.

<b>EMT</b>	<b>Environmental Monitoring TECHNOLOGIES</b> <b>R2S Remote Start Specifications</b>
<b>TITLE</b> Timer, Power, Transport, Maintenance/Calibration & Sanitization	<b>PAGE</b> 4 of 8

## **R2S Power** *(continued)*

### **CAUTION**

1. Do not connect any electrical cord longer than 50 feet to the GFCI output in order to avoid the possibility of nuisance tripping.
2. Use on normal 120V/60Hz electrical distribution systems ONLY.
3. Ground fault circuit interrupters, do not protect against electrical shock resulting from contact with both line and neutral wires of the electrical circuit.
4. DO NOT USE where water may enter the GFCI case.
5. Test frequently and before each use to ensure correct operation

NOTE: Remove from receptacle by grasping the body of the GFCI. Not the cord.

### **Fuse**

#### **WARNING**

If the fuse blows when power is turned on the instrument is defective. Contact EMTTechnologies for warranty repair or replacement.

#### **CAUTION**

1. Do not substitute fuses of other ratings.
2. Replace the fuse when power is TOTALLY disconnected from the unit. Unplug the GFCI from the receptacle and toggle the main power switch to the OFF position.

<b>EMT</b>	<b>Environmental Monitoring TECHNOLOGIES</b>
	<b>R2S Remote Start Specifications</b>
<b>TITLE</b> Timer, Power, Transport, Maintenance/Calibration & Sanitization	<b>PAGE</b> 5 of 8

## **R2S Sampling Assembly Transportation**

For transportation or storage purposes follow the following procedures:

- 1) Coil the Primary AC Power Supply Cable around the supplied brackets on the back of the unit. The GFCI Plug can be tucked through the coiled power cord to keep the cord from unraveling during transport or storage.
- 2) Disconnect the R2S Power and Vacuum Cable Assembly from the R2S Controller.
- 3) Place the R2S in the supplied Transport Cup which is attached to the top of the R2S Controller as follows: Simply retract the plunger knob, place the base of the R2S into the transport cup at an angle so the lip of the base goes in below the retaining pin across from the retractable plunger and then release the plunger knob to retain the unit in the Transport Cup. The Transport Cup will securely retain the R2S for all routine transportation and storage purposes.
- 4) Coil the vacuum and power cable assembly in a small circle and thread the power cable ends together. The coiled assembly can then be placed over the R2S when located in the Transport Cup for transport.

### **NOTE:**

It is also strongly suggested that the entire R2S Sampling Assembly be placed in a large bag for transport between facilities (e.g., when exposed air outside) to minimize possible contamination of the unit.

<b>EMT</b>	<b>Environmental Monitoring TECHNOLOGIES</b> <b>R2S Remote Start Specifications</b>
TITLE Timer, Power, Transport, Maintenance/Calibration & Sanitization	PAGE 6 of 8

## R2S Exhaust Filter Maintenance

Although the R2S requires minimal maintenance, following are suggested maintenance procedures for the unit:

- The R2S Sampling Assembly should be calibrated on a 6-Month cycle. Although, it is very unlikely that the equipment will be found out of specification it is strongly suggested that the 6-month cycle be maintained as to assure proper operation of the unit.
- O-Rings, which are employed to seal components to the R2S body may be replaced at the calibration cycle as well if desired or less frequently (i.e., 12-18 months).
- Assure that the turntable shaft remains clean of contaminants for proper function. The shaft may require a minimal amount of lubricant on occasion to ease in operation.
- The Dome-to-Base Seal should be replaced when visibly worn, damaged or when an adequate seal is not felt to be achieved. This may be noted during calibration if the flow rate through the conduit is not what was found at previous calibration cycles. If the seal is autoclaved regularly, it may require replacement more frequently.
- The HEPA Filter on the vacuum pump exhaust may be replaced annually. This may be performed every other calibration cycle or more frequently if desired. As the Linear pump is non-particulate generating the load on the filter will be dependent on the environment in which the unit is operated. Integrity testing of the exhaust filter is not initially performed by EMT and is not required as part of its preventive maintenance, or calibration. This is solely a preventive measure and does not affect unit functionality. A failure of this filter would not affect the calibration status of the unit.

<b>EMT</b>	<b>Environmental Monitoring TECHNOLOGIES</b> <b>R2S Remote Start Specifications</b>
TITLE Timer, Power, Transport, Maintenance/Calibration & Sanitization	PAGE 7 of 8

## R2S Sanitization

Following are suggested sanitization procedures for the R2S:

- The R2S Sampling Assembly should be sanitized before use each day. Detailed sanitization procedures can be found in the R2S Operation Procedure.
- Suggested sanitants include Quarternary Disinfectants (e.g., Process NPD, TBQ), Sterile (irradiated or 02.µm filtered) 70% IPA or EtOH, or bleach.
- Although, chemical sanitants are very adequate, the dome assembly and dome-to-base seal can also be autoclaved if desired. This would assure complete sanitization of the most critical components of the R2S, the sample throat and slit.

### **CAUTION:**

Sanitizing agents such as Spore-Klenz and Chlorine Dioxide have been found to be harsh on the finish of the standard unit. If applied, they should be followed with a secondary disinfectant (70% IPA, or Ethanol) to remove the residues.

## R2S Specifications

<b>Sample Flow Rate</b>	60 (±5) SCFH (28.3 SLPM) @ sample conduit
<b>Sample Velocity</b>	76 (±7) meters per second @ sample conduit
<b>Test Medium</b>	100 mm Agar Test Plate (e.g., 100 mm TSA)
<b>Test Period</b>	Maximum: 59'59" / Minimum: 00'01"
<b>HEPA Filter (exhaust)</b>	0.2 Micron, 99.97% efficient or better
<b>Vac Tubing/Pwr Supply</b>	Standard Length: (2)6' or (2)12' / Max: 50' / Min: (2)1'
<b>Remote-Start/Stop/Reset Switch:</b>	NEMA 4 Switch Box
<b>Operating Voltage</b>	115 VAC @ 60 Hz
<b>Primary Power Cord/GFCI</b>	10 ft. / 4-6 mA
<b>Operating Temperature</b>	33°F to 100°F
<b>Operation Humidity</b>	10-100% Non-Condensing
<b>Weight/Dims R2S</b>	3.1 lbs / 5" OD x 5.5" H
<b>Materials R2S</b>	-Base: Aluminum w/316 Stainless components. White polyester/epoxy coating. -Dome: One piece clear PC w/PC Distance Gauge -Dome-to-Base Seal: Blue Fluorosilicone
<b>Weight/Dims Controller</b>	24 lbs / 23"L x 10"W x 8"H
<b>Materials Controller Case</b>	Aluminum Instrument Case w/Blue & White Powder Coat
<b>Calibration Frequency</b>	6-Months (Recommended)