REMOTE THROTTLE

FOR CUMMINS CELECT and CELECT+
ENGINES SERIES M11, N14, L10

MODEL : RTU 1

OPERATING INSTRUCTIONS

IDLE

PRESET

INCREASE

DECREASE

SETTING

1200

FRC

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**Introduction:**

The RTU is a state of the art electronic remote throttle designed for fire apparatus equipped with the Cummins CELECT and CELECT+ electronic engine control system. This includes the M11, N14 and L10 series engines. The RTU is connected to the CELECT or CELECT+ through the J1922 data link via a twisted pair cable. This arrangement allows the MP (master processor) of the RTU to communicate with the ECM (electronic control module) of the engine constantly. The RTU can be used to vary the engine speed through use of the "INCREASE" and "DECREASE" pushbuttons. A "PRESET" switch allows an operator to quickly bring the engine RPM to a predetermined value with one press of a button.

An optional high idle kit (PRO-38H) may be purchased that plugs directly into the RTU that allows engine RPM to be brought to a preselected RPM value through a toggle switch. Wiring for this option can be found in Fig 7 of this manual.
Before proceeding with any installation, please check to make sure you have the following components. **STOP** and call the factory if any components are missing. Components supplied are as follows:

1) Throttle controller
2) Extension cable for power
3) Extension cable for J1922 data link

**MECHANICAL - installing the display module**

The control module can be mounted anywhere on the pump panel. The display module has a square flange with overall dimensions of 4.25"x4.25". A cutout hole of 3.75" in diameter is required to fit the cylindrical can of the module into the panel. Insert the Throttle controller into the cutout hole and locate the four bolt holes. The holes are for 10-32 screws and are set up on a 3.5" bolt square at the four corners of the flange.
Wiring for the RTU 1 system is very simple. Refer to fig 1 below. All extension cables are supplied with unique connectors that simplify the interconnections. See fig 2 for cables.

1) Use the extension cable supplied, provide 12VDC and ground to the electronic module on the wire labeled POWER on the back of the module. Leave the white wire disconnected until step 3.

2) Connect the cable for the J1922 data link. The J1922 datalink is a data wire consisting of two wires leading from connector A of the ECM. On more recent Cummins ECMs (CELECT+), pin 5 on connector A of the ECM is the positive (+) (wire #020) and should be connected to the RTU’s red DATA J1922 wire. Pin 23 is the negative (-) (wire #021) and should be connected to the RTU’s black DATA J1922 wire. The cable used is a shielded twisted pair cable.

**NOTE:** If you have an older Cummins CELECT engine, there may be a 2 pin Packard connector for the J1922 data link located near the CELECT ECM by the bulkhead. Check that the positive (+) wire comes from pin 10 on the A connector. The negative (-) comes from pin 20 on the A connector.

3) The RTU will not be active until you provide 12V to the white wire. This connection should be wired through the pump engaged interlock and the parking brake for safety. In this manner, the RTU will not receive an "active" signal until these conditions are met.

4) If HIGH IDLE option was ordered, refer to Figure 7 for wiring instructions.

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**CONTROL MODULE**

- 1. Power cable
- 2. J1922 data link cable
- 3. High Idle cable

**FIG 1.**

RED = 12 VDC
BLACK = GND

WHITE = Interlock. 12VDC signal required

CELECT ECM

HIGH IDLE

Refer to Figure 7
Red = 12VDC
Black = GND
White = From INT-110

To High Idle inside cab
(see Fig 7)

To J1922 data link
at CELECT ECM

3 pins plug
Deutsch DT series

5'
Power

12'
High Idle

3 pins receptacle
Deutsch DT series

12'
J1922 data link

2 pins Packard plug

2 pins Packard receptacle
Simple to use!
The RTU is engineered with ease of operations in mind. All functions on the control module are self explanatory. The LED display which shows the desired RPM setting is easily visible both day and night.

How to operate:
When the RTU is on, the display will show 'IDLE' to indicate that the engine is at idle.

There are 4 pushbuttons on the control module:

1) The "Increase" and "Decrease" switches allow easy selection of desired RPM from IDLE to maximum governed speed. Depress "Increase" to ramp the engine RPM up, and depress "Decrease" to ramp the engine RPM down. The RPM will ramp up or down at 50 RPM increment when pressed momentarily. When the pushbutton is held down for more than 2 seconds, the RTU will ramp up or down in 100 RPM increments. Release the pushbutton when desired RPM is reached.

2) The "IDLE" switch will bring engine to idle immediately after operations.

3) The "PRESET" switch ramps engine to the preset RPM quickly and conveniently with the momentary touch of a single button.

(After the "PRESET" switch is used, the "Increase" and "Decrease" switches can still be used to change the selected RPM easily.)

How do I change the preset RPM?

a) Make sure the engine is at idle before proceeding. If the RTU does not display IDLE in the display window, press the "IDLE" switch.

b) Press the "PRESET" switch with your left thumb and hold it in until the display begins to flash. With your right hand press the "Increase" or "Decrease" switch to change the flashing display until it reads the desired RPM.

c) When the desired RPM is obtained, release the "PRESET" switch and the RPM shown in the window has become the new preset RPM and will be stored in the RTU's memory.
1) The " IDLE " switch brings engine to idle immediately after operations

2) The " INCREASE " switch ramps engine RPM up

3) The " DECREASE " switch ramps engine RPM down

4) The " PRESET " switch ramps engine to the preset RPM quickly and conveniently.
# Specifications:

## Control Module:

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>4.25&quot;W X 4.25&quot;H X 3.75&quot;D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response</td>
<td>Idle to full governed speed</td>
</tr>
<tr>
<td>Pressure Recovery</td>
<td>On open/close valve</td>
</tr>
<tr>
<td>Max. RPM</td>
<td>2000 RPM</td>
</tr>
<tr>
<td></td>
<td>3 seconds maximum</td>
</tr>
<tr>
<td></td>
<td>1 1/2 seconds</td>
</tr>
</tbody>
</table>

## Operational:

| RPM mode            | Idle to 2000 RPM          |

## Electrical:

<table>
<thead>
<tr>
<th>Power</th>
<th>12 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>1/2 A continuous</td>
</tr>
<tr>
<td>Microprocessor</td>
<td>8 Bit single chip MicroComputer</td>
</tr>
</tbody>
</table>
If you did not order the optional remote high idle, ensure that the dummy plug (supplied) is installed on the end of the high idle cable! If you did not receive a dummy plug, or have lost it, you NEED one!

For wiring instructions, refer to the next page.

All Fire Research **PRO** and **RTU** series governors have an additional cable port labeled “high idle” which can be used to provide a high idle switch at a remote location on the vehicle. The PRO-38H High Idle Kit provides all the necessary components needed to hook up this optional switch, including locking potentiometer, dpdt switch, 12V lamp indicator and 12 foot cable.

**How do I activate the high idle?**
To activate the high idle, simply toggle the high idle switch to “ON”. The high idle activated indicator light will go on and the engine will rise to the preset speed (set by the locking potentiometer).

**How do I change the high idle speed?**
Loosen the lock nut on the potentiometer. Use a small screw driver to rotate the potentiometer to raise the RPM. Using the tachometer in the cab as a reference, monitor the speed of the engine until you reach the desired speed. Once the desired RPM is reached, tighten the lock nut to lock in the new high idle speed.

**WARNING :** Turn off high idle before shutting the engine off!
From Control Module

2500 ohm potentiometer

Red

Black

White

Supply 12 VDC when the parking brake is on and the transmission is in neutral.

High idle indicator light

High idle ON/OFF switch

Diode

Interlock

white wire on the power cable

O.K. to pump

Diode

Figure 7

Note: Some FRC governors require an RPM sensor to be mounted on the drive shaft. If you have one of these units, be sure that the sensor is mounted on a section of shaft that spins even when the pump is not engaged or the high idle may not be able to function except when the pump is in gear. If there is no room to mount the sensor in such a location, a special “Alternator connection” for RPM signal may be required. This option may not be available for all devices, so be sure to call FRC for details.
Our aim is to minimize or eliminate field service, so be sure to call technical support (800) 645 0074 as soon as you think there may be a problem in operation or installation of the RTU governor. A simple call will go a long way toward quickly diagnosing a problem and determining what parts, if any, may need to be replaced under this warranty.

**Fire Research Corp. (FRC) warrants to replace the RTU unit for any defect in materials or workmanship.** This warranty shall apply for a period of one year after the unit goes in service. This period will begin upon official delivery date of the vehicle by a truck body manufacturer or upon installation by the enduser in cases where the unit is retro-fit to an existing unit.

During the warranty period, **FRC will replace any of the component parts of a defective unit by next day air freight by UPS or comparable courier, as our stock permits, free of charge.**

After the warranty period, FRC warrants to ship to the customer by quickest way, a temporary unit (as stock permits) for the customer to use while the defective unit is being repaired in order to minimize down time.

As the PRO was designed to be extremely reliable and has passed stringent third party testing, FRC expects minimal field defects.