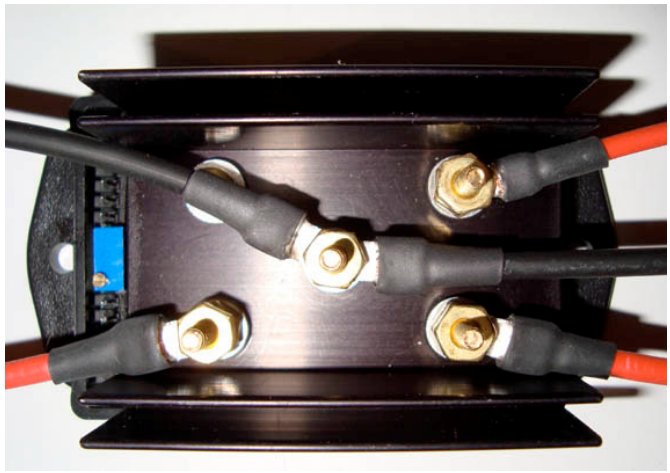
65P35 Quick Installation Guide



Setting the Temperature
The controller is set from the factory for use with a 180 degree thermostat, the set temperature, however, can be adjusted byway of the multiturn potentiometer, located on the input side of the controller. Each turn clockwise will raise the temperature approximately 3 1/2 degrees, each turn ccw will lower the temperature by the same amount. A total adjustment of +/- 35 degrees is possible. The temperature set point can be measured on pin 13 and calibrated with the chart below

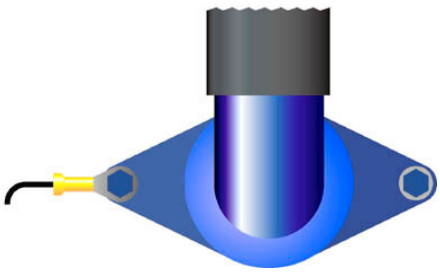
Thermostat temperature	I/O voltage	Thermostat temperature	I/O voltage
160	2.76	190	2.03
170	2.51	200	1.81
180	2.26	210	1.60

Mounting the control unit
Find a **flat surface** in the engine compartment, the preferred area being the radiator support sheet metal near the battery. Allow for adequate airflow. Drill two 1/8" holes by using the control unit as a template. Drill two more 1/8" holes at about 8" centers to install the wire hold-downs. Mount the control unit using two self tapping screws and flat washers.

Figure 1a shows the Delta temperature probe. Figure 1b shows the typical mounting on the thermostat housing. Note that on engines with the thermostat on the engine coolant intake, the probe must be mounted near the outgoing engine (hot side) coolant.

Figure 1a

Figure 1b



AC input, temperature sensor, 12V source
Install the red connector on pins 12-14. If the vehicle has air conditioning and a factory installed electric fan, connect the blue AC input wire of the harness to the unit and to the positive terminal of the OEM fan wiring harness. If the vehicle has air conditioning and originally came with a mechanical fan, connect the blue AC input wire of the harness to the air conditioning compressor input. Connect the yellow wire to a 12V ignition switched source. Install the white sensor connector on pins 1-2

High current wiring

High current wiring
1. Using the supplied wiring loom, secure one connectored end of the 10 gauge red wire on the **FAN terminal** of the controller using one star washer and brass 6-32 hex nut. A snug fit is all that is needed (5-in-lb), Be careful not to overtighten. Route the wire to the **positive fan terminal**, cut and trim the wire and install the butt connector to connect the fan wiring.

2. Place the connectored end of the remaining 10 gauge red wire on the **INPUT terminal** of the controller and secure the wire with one star washer and brass 6-32 hex nut. Route the wire to the **positive battery terminal**. Attach the fusible link and connect to the positive battery terminal. Do not connect to the starter end of the battery cable or to the alternator.

3. Using the supplied wiring loom, secure the connectored end of the 12 gauge red wire on the **PUMP terminal** of the controller using one star washer and brass 6-32 hex nut. A snug fit is all that is needed (5-in-lb), Be careful not to overtighten. Route the wire to the **positive water pump terminal**, cut and trim the wire and install the butt connector to connect the water pump wiring.

4. Place one connectored end of the black wire on the **GND** terminal of the controller. Route the wire to the **negative fan terminal**, and **negative water pump terminal** cut and trim the wire and install the splitter to connect the water pump and fan.

5. Place the connectored end of the remaining black wire on the **GND** terminal of the controller and secure both wires with one star washer and 6-32 brass hex nut. Route the wire to the negative battery terminal. Attach the 5/16 ring terminal and connect to the **negative battery terminal**.

Use the supplied wire hold downs, along with two self tapping screws and flat washers to secure the wires.

Testing the unit
Start the car. The fan should run at 5% power, the water pump should run at 25% power. The fan and water pump should run at the necessary speed to stabilize engine temperature.

Parts list

1 control unit with radiator temperature probe	2 controller to fan connectors	4 6-32 brass nuts
1 high current wiring harness	1 5/16 ring terminal	4 # 6 self tapping screws
1 low current wiring harness	2 wire hold downs	4 flat washers
1 fusible link	4 internal star washers	1 ground splitting loom

LIMITED WARRANTY

Delta Current Control, hereon referred to as DCC, warrants to the first consumer purchaser that this DCC brand product, hereon referred to as the product, when shipped in its original container, will be free from defective workmanship and materials and agrees to, at its option, either repair the defect or replace the defective Product or part thereof at no charge to the purchaser for parts or labor for the time period(s) set forth below.

This warranty does not apply to any appearance items of the Product nor to any product the exterior of which has been damaged or defaced, which has been subjected to misuse, abnormal service or handling or which has been altered or modified in design or construction.

In order to enforce the rights under this limited warranty, the purchaser should follow the steps set forth below and provided proof of purchase to the servicer.

The limited warranty described herein is in addition to whatever implied warranties may be granted to purchasers by law. ALL IMPLIED WARRANTIES INCLUDING THE WARRANTIES OF MERCHANT ABILITY AND FITNESS FOR USE ARE LIMITED TO THE PERIOD"(S) FROM THE DATE OF PURCHASE SET FORTH BELOW. Some states do not allow limitations on how long an implied warranty lasts, so the limitation may not apply to you.

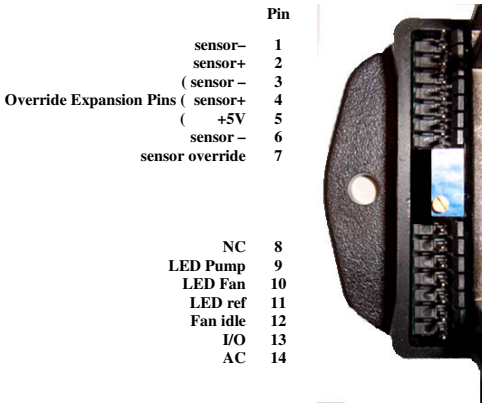
Neither the sales personnel of the seller nor any other person is authorized to make any warranties other than those described herein or to extend the duration of any warranties beyond the time period described on behalf of DCC.

The warranties described herein shall be the sole and exclusive warranties granted by DCC and shall be the sole and exclusive remedy available to the purchaser. Correction of defects, in the manner and for the period of time described herein, shall constitute complete fulfillment of all liabilities and responsibilities of DCC to the purchaser with respect to the Product and shall constitute full satisfaction of all claims, whether based on contact, negligence, strict liability or otherwise. In no event shall DCC be liable, or in any way responsible, for any damages or defects in the Product which were caused by repairs performed by anyone other than an authorized servicer. Nor shall DCC be liable, or in any way responsible, for any incidental or consequential economic or property damage. Some states do not allow the exclusion of incidental or consequential damages, so the above exclusion may not apply to you.

THE WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

Warranty Period for this Product:	Ninety (90) days parts and labor from date of purchase.
Where to obtain service:	To locate an authorized DCC service center, contact Delta Current Control at (408) 379 – 8951

65P35 Advanced Options



Quick Reference - Pin functions

Pin	Pin Description	Function
1,2	Primary sensor	Standard sensor input
3,4,5	Override expansion pins	Can be configured to provide either an averaging sensor or an override sensor
6,7	Overide sensor	Internally configured sensor override inputs
8	N/C	
9,10,11	Smart LED Outputs	LED output drivers for fan and water pump functions
12	Fan Idle	Provides a 10% idle function for fan output; 35% idle function for water pump output
13	I/O	Provides a potentiometer voltage output and temperature set input
14	AC Input	Provides a 50% idle function for fan output

Detailed Reference - Pin functions

Pins 1,2 are the radiator sensor inputs used for all configurations with the standard sensor

Pins 3,4,5 Using pins 3 and 4, an averaging sensor will average between this sensor and the sensor of pins 1 and 2. Adding pin 5, along with an external diode will provide for an override circuit that will have a gain 60% higher than the pin 1,2 sensor. This gain can be lowered with an external resistor. Custom sensor harnesses are available to customer specifications.

Pins 6,7 will provide for an override circuit that will have a gain 60% higher than the pin 1,2 sensor. No external diode is required. Like pins 3,4,5, the This gain can be lowered with an external resistor. Custom sensor harnesses are available to customer specifications.

Pins 9,10,11 provides a smart LED output, pin 11 provides a reference voltage when the controller is operating, pin 10 provides a variable duty cycle pulsed output referenced to the fan circuit and pin 9 provides a variable duty cycle pulsed output referenced to the water pump circuit (65p35 only). In lieu of referencing the controller output, the LED function measures the difference between the set point and the temperature of the sensor to illuminate the LED from green through yellow to red, depending on the measurement. Given the full-off to full-on temperature range of the controller is only seven degrees, this measurement causes the LED to illuminate red if the measured temperature is 3-4 degrees above the set point, regardless of the controller output. This is far more useful for alerting the operator of a problem than having an Led that doesn't glow if the controller or any part of the cooling system doesn't function.

Pin 12 Applying 12V to pin 12 will idle the fan at 10% of full power (overrridden by any temperature sensors). This pin is generally used to idle the fan and water pump on the 65p35, but can also be used to add stability to a system when the mechanical thermostat has too much hysteresis.

Pin 13 is the I/O port, this is a multi-use pin that can be used to measure the temperature set point or adjust the controller temperature remotely. Because of the temperature range availble, it can also be used to force the controller on or force the controller off. I has a negative temperature coefficient of –20 degrees per volt, in that lowering the voltage raises the temperature. A remote temperature adjuster harness is available for this pin.

Pin 14 is the ac input, this pin sets the controller minimum power to 50% when 12V is applied, but is an analog input, so that the power level can be dropped with an external resistor. A 10k ohm resistor will drop the power level to 10%

Troubleshooting Guide

The controller doesn't start the fan

Probable causes:

Pin 13 is grounded
High resistance in high power wiring
Low impedance fan

Troubleshooting:

With the engine off, connect pin 14 (blue wire) to 12V. If the fan does not start, but emits a high pitched tone, check the high-current wiring for loose crimps. If the crimps are fine, the fan may have a low impedance motor, which will trigger the short circuit protection. These are typically dual fans (Ford Contour, "ramchargers", Ford F150). Order a 1.5ks filter from dccontrol.com If a temporary solution is needed, obtain a 470 micro Farad capacitor from Radio Shack with a voltage rating of at least 35V. Observe the polarity and connect it across the input and ground lugs of the main harness. Order a 1.5ks filter from dccontrol.com to replace it.

The controller doesn't regulate the temperature

Probable causes:

The sensor isn't seated correctly in the radiator
The thermostat is not opening
The temperature gauge is incorrect

Troubleshooting:

Verify that the sensor fits tightly within the fins of the radiator, and that the small flange at the wire-side of the sensor rests flush against the fins. The flange should not be between the fins.

Using a meat thermometer or infra red detector, measure the temperature at the sensor, you should measure no more than 20 degrees below the indicated engine outlet temperature. If this isn't the case, measure the engine outlet temperature with the infra-red detector in order to verify the gauge accuracy.

If the gauge is accurate and there is more than a 20 degree heat rise through the engine, the most likely cause is an unopen or partially open thermostat. This can be caused by either a defective thermostat or air in the system. There are two ways to check whether or not there is air in the system. One is to rev the engine with the cap off, if the water level drops a significant amount, there is air being compressed by the water pump pressure. A second way is to squeeze the upper hose as the engine warms. Water is non-compressible, so once the hose has any pressure, you should not be able to compress the hose any significant amount. The easiest way to bleed the system on most engines is to loosen the temperature gauge sensor behind the thermostat while the system is pressurized in order to let any air out.