



www.alltraxinc.com

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**DCX300 - DCX400 - DCX600**

**SEPARATELY EXCITED DC MOTOR CONTROLLERS**

Alltrax motor controllers are designed to work with various golf cars from different manufacturers. Use the chart below to assure correct configuration of the Alltrax controller for your vehicle.

<b>EZ-GO</b>				
<i>Model</i>	<i>Alltrax Controller</i>	<i>Field Map #</i>	<i>Alltrax Adapter</i>	<i>Throttle Type</i>
DCS	DCX300/400/	3	None	ITS
PDS	600	4	PDS	ITS
<b>Club Car</b>				
IQ	DCX300/400/	6	IQ	5K-0, 3 Wire
PD Plus	600	8	PD Plus	5K-0, 3 Wire
<b>Yamaha</b>				
G-19	DCX300/400/	8	G-19	0-5K
	600			
<b>GE Elec-Trak</b>				
E-15 thru E-20	DCX300ET	5	None	0-5K
<b>Fairplay</b>				
Stock	DCX300/400/	3	None	0-5K
5.5HP	600	9	None	0-5K

The DCX300 is intended to be a bolt in replacement for the standard controller found in EZ-GO DCS cars. The DCX400 has the same foot print as the DCX300 but offers increased torque and acceleration. The DCX600 offers even more torque and is for heavier loads like larger tires and towing. The DCX600 may require mounting modifications since it has a *longer* footprint. All three may be used in all vehicles except the Elec-Trak. It uses the DCX300ET. The adapter kits allow the existing wiring to simply plug in.

Note: The Tach speed limiting is disabled on PDS and G-19 cars when using our controller. The Tach wires from the motor are unused and should be secured to the motor frame.

**Stock motors may not be able to handle sustained high current operation the DCX600 is capable of delivering. Overheating of motor can occur if vehicle is overloaded.**

## **Installation:**

Place jack stands under rear axle. Disconnect all wires from the battery pack + terminal.

### ***EZ-GO***

Remove black cover from existing controller. Observe wiring orientation prior to disassembly. Remove relay bracket. Mount relay on top of Alltrax controller using the stock bolts to secure the relay to the plastic inserts. Align notches in controller mounting flange with relay bracket holes in heatsink and secure with 2 bolts. The black cover can be re-installed over the DCX300 and DCX400 controllers but not over the DCX600 controller. The PDS car uses a PDS adapter cable that plugs between the stock connectors and the controller.

### ***Club Car & Yamaha***

See the installation instructions provided with the controller adapter kits for these golf cars.

### ***GE Elec-Trak***

The Elec-Trak comes with separate instructions.

### ***Fairplay***

The Fairplay comes with separate instructions.

## **Wiring conversion from Curtis to Alltrax DCX controller:**

<u>Curtis DCS/PDS</u>	<u>Alltrax DCX</u>	<u>Function</u>
A1	M-	Controller output to motor A1
B-	B-	Battery negative terminal
A2/B+	B+	Battery positive from solenoid & motor A2
F1	F1	Motor F1
F2	F2	Motor F2
10 pin	10 pin	Control wiring

Observe orientation of 10 pin connector. Pin 8 is removed to indicate connector polarity. Some cars may require replacement of the wire going from B+ on the controller to the output side of the solenoid as it is too short. Use 4-6AWG wire to replace if needed. Tuck wires sharply down the back of the controller to allow stock E-Z-GO cover to be reinstalled. Make sure a Diode (1A, 100V) is installed across the Solenoid/Contactor coil and other relays that may be installed for extra lights or accessories. The Cathode or Banded end should face the Positive terminal. These diodes are required to prevent the speed sensor from producing erroneous signals.

## **Fusing:**

A fuse is required in the battery circuit. Place a Buss ANN-250, 250A fuse for 300-400 amp controllers or a Buss ANN-400, 400A fuse for the 600 amp controller, in series with one of the

battery interconnects, or in line between the controllers B- bus bar and the B- terminal of the battery. Alltrax part numbers are FUS110-011 for 250A fuse and FUS110-012 for 400A fuse.

### **Troubleshooting:**

At power up the controller will blink the LED green a number of times, which identifies the throttle configuration stored in the controller. If no error is detected, the LED will stay solid green *after* the throttle pattern is displayed. Verify the throttle configured in the controller matches the throttle in the car. If the controller detects an error, a red pattern will blink right after the green throttle pattern. There is a ½ second delay between blinks. The error codes will repeat after a 1 second delay until the error is cleared.

<b>Green Blinks</b>	<b>Throttle Type</b>	<b>Car Type</b>
1	0-5K	Yamaha, Elec-Trak, Fairplay
4	ITS	EZ-GO
7	5K-0 3wire	Club Car

#### ***Red Blinks = Error Code***

- 1 red = Throttle sensor over range. Open throttle wires or wrong configuration for throttle used.
- 2 red = Under temperature. Controller shuts down at temps below -25C.
- 3 red = HPD. Throttle has not returned to zero during this power up sequence. Is throttle stuck?
- 4 red = Over temperature. Controller shuts down at temps greater than 95C.
- 5 red = Open field circuit. Check field connections and motor's field resistance.
- 6 red = Battery undervoltage shutdown. Check pack voltage and undervoltage slider.
- 7 red = Battery overvoltage shutdown. Check pack voltage, charger and overvoltage slider.

*NOTE: When making voltage measurements, measure at the **controller** not the battery pack. Open Field (5 red) nuisance alarms will occur when changing direction or cycling the throttle with older revisions of software. The alarms do not effect operation. Contact Alltrax, if this is a concern, to get software updates.*

Solid Green = Controller ready for operation.

Solid yellow = Throttle wide open and controller not in current limit.

Solid RED = Controller in bootload mode. This state only occurs during software upgrades.

## **Programming:**

AllTrax controllers are configured at the factory to the customer's requirements, but can be altered in the field if the requirements change. Characteristics such as throttle response rate, throttle type, top speed, braking force and battery over/under voltage can be changed. Go to [www.alltraxinc.com](http://www.alltraxinc.com) and download the free software tool ControllerPRO. Remove the black plastic plug in the top of the controller and connect a straight through DB-9 serial cable or a USB-to-Serial adapter ([www.StarTeck.com](http://www.StarTeck.com) or Radio Shack) from a PC running Windows 98, 2000 or XP. Connect the PC to the controller and have the controller powered up before starting ControllerPRO. You can click on one of the three tabs, *Control Panel*, *Throttle Response* or *Monitor* to display or change the controller characteristics.

### ***Control Panel***

Shows model and serial number of controller. You can enable or disable switches like High Pedal Disable and Plug Brake by clicking in the box next to the option desired and then clicking on Set. In the Settings area you can change Max Output Current and other options by moving the slider with your mouse and then clicking on Set to save the settings. Clicking on the Refresh button reads the controller settings back into ControllerPRO verifying the changes were stored.

### ***Throttle Response***

This tab allows you to change the throttle type and the throttle response curve. Not all throttle types are available for the DCX controllers. The Set button allows you to save your selection and the Refresh button allows you to verify the setting.

### ***Monitor***

The Monitor tab has Gauges that can be turned on to show six different conditions including Error Flags. The rate of display can be controlled by the Interval selected. Click Start after making the desired selections and the Gauges will display continuously until stopped. A log file can also be created on the PC by clicking Log to File and providing a file path for the log file. All the selected gauges will be logged to the file at the rate selected by Interval. The Settings pull-down is used to change the communications timing and is normally not used. The Tools pull-down allows you to reset the controller, upgrade the software or write error codes to a log file. The Help pull-down shows the rev. level of ControllerPRO. Controller configuration can be changed while the car is moving using a laptop computer. This aids the installer in fine tuning the golf car to the customer's exact needs.

**Caution is advised when making changes on the fly! Certain changes may cause the golf car to stop suddenly or lurch forward if changes to the throttle type are made. Throttle type changes should not be made while driving the golf car!**

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