



A Textron Company

TXT 48V HANDHELD DIAGNOSTICS & TROUBLESHOOTING GUIDE



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Read all of Section B and this section before attempting any procedure. Pay particular attention to all Notices, Cautions, Dangers and Warnings.

HOW TO USE THE HANDHELD PROGRAMMER

The Curtis handheld Programmer is used for programming, testing, troubleshooting, tuning, diagnosing and parameter adjustments for speed controller and auxiliary devices.



Fig. 1 Curtis Handheld Programmer

E-Z-GO utilizes a 'Molex to Tyco' adaptor connected to the power cord to connect to the vehicle diagnostic port provided under the seat. The power cord is standard with a 'Molex' end that may be plugged directly into the controller after removing the controller shield as shown in the 'Alternate Connection' graphic. The adapter will need to be not used or removed from the power cord to use the 'Molex' connection.

WARNING

Plug the Curtis handheld programmer into Curtis programmer port only. If plugged into the wrong port, voltage from other interface circuits may result in permanent damage to the programmer.

NOTICE

Handheld programmer will not work when Run-Tow switch is in the Tow position and also when the battery charger is connected to the vehicle.

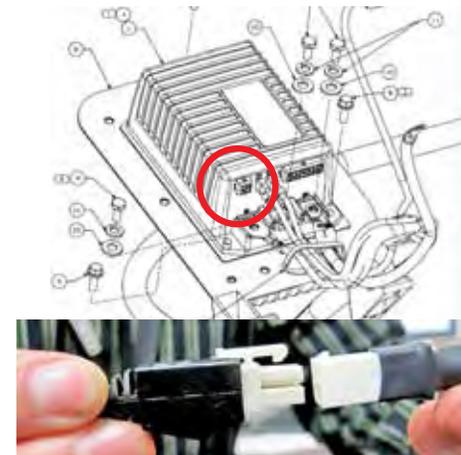
The main menu appears after the data is uploaded from the controller unit.

PRIMARY CONNECTION: 4 PIN TYCO

- Located under passenger seat
- Remove protective water cap
- Use both harness adapters
- Align white dots on connector
- Engage and twist sleeve to secure



ALTERNATE CONNECTION: 4 PIN MOLEX



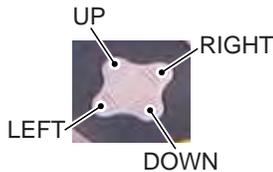
- Located under controller cover
- Remove cover for access
- Use single molex harness, remove the adapter from the power cord if it is installed. See graphic above.
- Locate 4 pin molex on controller
- Push molex pin into controller

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NAVIGATION

A blinking square on the left edge indicates the position of the cursor and the blinking square moves up or down when up or down navigation key is pressed. Press the right arrow on the navigation key to display a column of sub-menus and again press down the right arrow for more than one level of sub-menus to be displayed. Press the left arrow once or more on the navigation key to display the main menu.



MAIN MENU DEFINITIONS

- PROGRAM - Shows vehicle profile setting and adjustability.
- MONITOR - Shows vehicle real-time diagnostics
- FAULTS - Shows active and past faults
- FUNCTIONS - Shows parameter setting uploads and downloads
- INFORMATION - Shows controller information
- PROGRAMMER SETUP - Shows handheld information and adjustment

CHANGING DATA VALUE



Press the Data Increase or Data Decrease key to change the value of the parameter.

BOOKMARK



To set a position in the Menu, hold a Bookmark Key down for four seconds, until the Bookmark set screen is displayed. To jump to a selected Bookmark position, press the appropriate Bookmark Key.

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Menu	Submenu 1	Submenu 2	Submenu 3	Data Range	Default Value	Units	
Program	Profile Selection			1 - 5	2	-	
	i: xFreedom Enable			ON/OFF	OFF		
	Profiles	1 - Airport Mode	Speed		4 - 8	6.0	mph
			Accel Selection		1 - 2	1-Slow	-
			Braking Selection		1 - 2	1-Coast	-
		2 - Golf - Coastal	Speed		10.2 - 14.8	14.8	mph
			Accel Selection		1 - 3	1-Aggressive	-
			Braking Selection		1 - 3	1-Coast	-
		3 - Golf - Mild Hills	Speed		10.2 - 14.8	13.8	mph
			Accel Selection		1 - 3	2- Fast	-
			Braking Selection		1 - 3	2-Mild	-
		4 - Golf - Steep Hills	Speed		10.2 - 14.8	12.8	mph
			Accel Selection		1 - 3	2-Fast	-
			Braking Selection		1 - 3	3-Heavy	-
	5 - Freedom Mode	Speed		14.5 - 19.5	18.5	mph	
Accel Selection			1 - 2	1-Aggressive	-		
Braking Selection			1 - 2	1-Coast	-		
System Configuration	Amp Hours	Reset Trip Amp Hrs	ON/OFF	OFF	-		
Monitor	Battery	Amp Hours	-	0 - 100000		AmpHr	
		Battery Voltage	-	0 - 100		V	
		Elapsed Meters	Amp Hours Trip	0 - 100000		AmpHr	
	Vehicle	Speed	-	0 - 25		mph	
		Odometer	-	0 - 100000		miles	
		Hour Meter	-	0 - 100000		Hrs	
	I / O	Throttle	-	0 - 100		%	
		Speed Pulses	-	ON / OFF		-	
		Pers. Input 0	-	ON / OFF		-	
		Pers. Input 1	-	ON / OFF		-	
		Foot Input	-	ON / OFF		-	
		Key Input	-	ON / OFF		-	
		Forward Input	-	ON / OFF		-	
		Reverse Input	-	ON / OFF		-	
		Charger Inhibit	-	ON / OFF		-	
	Main Cont Driver	-	ON / OFF		-		
	Controller	Profile	-	1 - 5		-	
		VPS Active	-	ON/OFF	OFF	-	
		Temperature	-	-55 - 125		C	
		Arm Current	-	-300 - 300		A	
		Field Current	-	0 - 20		A	
		Armature PWM	-	0 - 100		%	
	Field PWM	-	0 - 100		%		
	Fault Counters	Throttle Fault	-	0 - 255		-	
		Low Battery Voltage	-	0 - 255		-	
		Overvoltage	-	0 - 255		-	
		Thermal Cutback	-	0 - 255		-	
HPD		-	0 - 255		-		
Main Drvr OverCurrent		-	0 - 255		-		
Neg Ia 250		-	0 - 255		-		
Neg Ia 300	-	0 - 255		-			

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Menu	Submenu 1	Submenu 2	Submenu 3	Data Range	Default Value	Units	
Monitor	Fault Counters	Main Welded		0 - 255		-	
		Speed Sensor Fault		0 - 255		-	
		Main Driver On		0 - 255		-	
		Main Coil Open		0 - 255		-	
		Main Dropout 1		0 - 255		-	
		Motor Stall		0 - 255		-	
		Main Driver Off		0 - 255		-	
		Main Dropout 2		0 - 255		-	
		Curent Sense Fault		0 - 255		-	
		M - Shorted		0 - 255		-	
		Field Missing		0 - 255		-	
		Hardware Failsafe		0 - 255		-	
		Fault Counter Hour Meter	Throttle Fault			0 - 100000	
	Low Battery Voltage				0 - 100000		Hrs
	Overvoltage				0 - 100000		Hrs
	Thermal Cutback				0 - 100000		Hrs
	HPD				0 - 100000		Hrs
	Main Drvr OverCurrent				0 - 100000		Hrs
	Neg Ia 250				0 - 100000		Hrs
	Neg Ia 300				0 - 100000		Hrs
	Main Welded				0 - 100000		Hrs
	Speed Sensor Fault				0 - 100000		Hrs
	Main Driver On				0 - 100000		Hrs
	Main Coil Open				0 - 100000		Hrs
	Main Dropout 1				0 - 100000		Hrs
	Motor Stall				0 - 100000		Hrs
	Main Driver Off				0 - 100000		Hrs
	Main Dropout 2				0 - 100000		Hrs
	Curent Sense Fault				0 - 100000		Hrs
	M - Shorted				0 - 100000		Hrs
	Field Missing				0 - 100000		Hrs
	Hardware Failsafe			0 - 100000		Hrs	
Faults	System Faults			Display active faults.			
	Fault History			Display non-active (past) faults.			
Functions	Settings	Get Settings From Controller		OK / ABORT			
		Write Settings to Controller		OK / ABORT			
		Reset All Settings		YES / NO			
Information	Model Number			Display controller model number			
	Serial Number			Display controller serial number			
	Software Number			Display controller software number			
	Hardware Version			Display controller hardware version			
	Protocol Version			Display controller protocol version			
	Param Block Version			Display controller param block version			

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Menu	Submenu 1	Submenu 2	Submenu 3	Data Range	Default Value	Units
Programmer Setup	Program	LCD Contrast		-150 - 150		
		Language		English	English	
		Set Security Code		Display security code creation		
	Faults	Fault History		Display fault history of the handheld		
	Information	OEM Info		Display OEM information		
		xReconfigured		Display reconfigure status		
		Model Number		Display handheld model number		
		Serial Number		Display handheld serial number		
		Manufacture Date		Display handheld manufacture number		
		Software Version		Display handheld software version		
		Hardware Version		Display handheld hardware version		
		MC - Protocol Ver		Display MC- Protocol version		
		ES - Protocol Ver		Display ES - Protocol version		
		S - Protocol Ver		Display S - Protocol version		
		Device Type		Display device type		

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1206HB-5201 Controller Faults and Troubleshooting

The 1311 Curtis Handheld may be connected to the vehicle diagnostic port/controller port while operating the E-Z-GO vehicle to assist in troubleshooting and diagnostics.

1311 Display	Explanation	Tested When	Controller Response	Recover When	Possible Cause
HW FAILSAFE	Hardware Failsafe Error	Throttle applied to cause contactor to initially close	1,2,3	KSI cycled	1. Controller defective 2. Controller power cables mis-wired
FIELD MISSING	Motor Field Winding open	Contactor closed	2,8	Condition clears	1. Field Winding or its connection open
M- SHORTED	Armature PWM pulses not detected	Contactor Closed	1,2	Condition clears	1. Controller defective 2. Power cables shorted
CURRENT SENSE FAULT	Armature Current reading at invalid Zero Amps level Out-of-Range value	KSI OFF -> ON, Continuous	1,2,3	KSI OFF-> ON when condition cleared	1. Controller defective 2. Excessive Plug Current detected
MAIN DROPOUT 2	Contactor detected as opening during Regen	Contactor commanded to be closed	3,9	Throttle reapplied	1. Contactor opened 2. Contactor coil or wiring opened
MAIN DRIVER OFF	Main Driver FET detected as not turning ON	Throttle applied to cause Contactor to close	3,8	Condition clears	1. Controller defective
MOTOR STALL	High Armature Current when no Speed Pulses detected	Contactor closed	6	Speed Pulses appear	1. Motor is stalled 2. Defective speed sensor or wiring
MAIN DROPOUT 1	Contactor detected as opening during Drive	Contactor commanded to be closed	3,9	Throttle reapplied	1. Contactor opened 2. Contactor coil or wiring opened
MAIN COIL OPEN	Main Contactor coil detected as open	Continuous while KSI ON	3	Condition clears	1. Contactor coil or wiring open
MAIN DRIVER ON	Main Driver FET detected as ON when commanded to be OFF	Continuous while KSI ON and Contactor commanded to be open	4	Condition clears	1. Controller defective 2. Pin 12 short to ground
SPEED SENSOR FAULT	No speed pulses detected	Contactor closed	4	Condition clears	1. Defective or missing speed sensor 2. Open speed sensor wiring
MAIN WELDED	Main Contactor detected as stuck closed	Contactor commanded to be Open	4	Contactor commanded to Open and does Open	1. Welded Contactor
NEG IA 300	Very high Regen Current	Continuous	No Action	Throttle reapplied	1. High Regen Current
NEG IA 250	High Regen Current	Continuous	No Action	Throttle reapplied	2. High Regen Current
MAIN DRIVER OVERCURRENT	High Driver Current Detected	Continuous while Contactor is commanded to be closed	No Action	Throttle reapplied	1. Main Contactor coil or wiring shorted 2. Electrical Noise

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1311 Display	Explanation	Tested When	Controller Response	Recover When	Possible Cause
HPD (HIGH PEDAL DISABLE)	High Pedal Disable Controller powers up with Key, Direction and Throttle applied OR Throttle applied before Key and Direction switch applied	KSI ON, Forward or Reverse ON	8	Throttle < 25%	1. Incorrect sequence of Vehicle input controls 2. Defective Throttle device
THERMAL CUTBACK	Over/Under Temperature Cutback	Continuous	5	Condition clears	1. Temperature >85°C or < -25°C 2. Excessive load on vehicle 3. Improper mounting of controller 4. Operation in extreme environment
OVERVOLTAGE	Battery Voltage > OVERVOLTAGE MIN parameter	Continuous	7	Condition clears	1. Battery Voltage > Shutdown limit
LOW BATTERY VOLTAGE	Battery Voltage < LOW VOLTAGE MAX parameter	Continuous	5	Condition clears	1. Battery Voltage < Cutback Limit 2. Corroded Battery Terminal 3. Loose Battery or Controller terminal
THROTTLE FAULT	Throttle Input Fault	Continuous	8	Condition clears	1. Throttle wiring open or shorted 2. Defective Throttle device

Controller Fault Responses

- | |
|---|
| 1 - Reduce Armature duty cycle to zero. |
| 2 - Reduce Field current to zero |
| 3 - Turn off Main Contactor |
| 4 - "Limp Home" in slow speed. Armature Duty Cycle = 75% Max, Field Min = 10.0 Amps |
| 5 - Gradual reduction in armature Drive current limit |
| 6 - Quickly reduce armature duty cycle to zero until speed sensor pulses reappear |
| 7 - Gradual Reduction in Regen Current Limit |
| 8 - Internal Scaled Throttle Signal set to Zero |
| 9 - Commence WalkAway Function |



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