Part Number: 280-CA-EFICAN

CAN Adapter Harness for IQ3S, IQ3D, Universal CAN & Vantage EFI Interface module

Supported EFI Systems:

AEM V2/EMS-4/Infinity EMS
MSD Atomic LS
Generic CAN
Electromotive TECGT
Haltech*
Haltech V2*
MoTeC CAN (Data set 3)
MegaSquirt-III (DIY Autotune)
Micro Tech
Pro EFI
FAST XFI

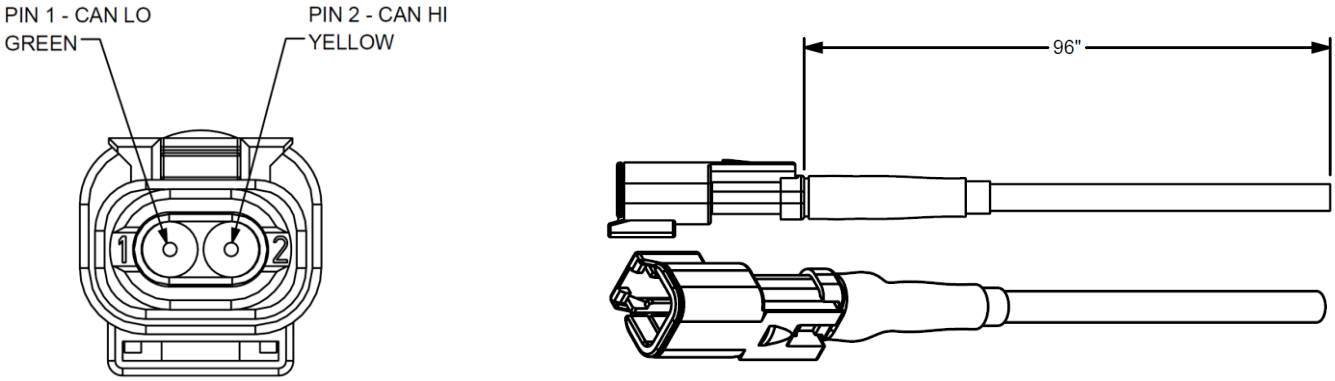
Description:

This adapter harness is used to connect the CAN bus data stream from the above listed ECUs to the Racepak IQ3S, IQ3D, Vantage CL1, or the Universal CAN module. Once connected and properly set up, data from the ECU is then available for use with the Racepak IQ3S, IQ3D, Vantage CL1 or the Universal CAN module to enable the use of all Racepak V-Net devices including real-time telemetry, and data logging applications.

Harness Installation:

Locate the 2-pin Deustch connector found on the main harness of the IQ3S Street Dash or Racepak Universal CAN module. Plug pre-terminated 2-pin mating Deustch of the adaptor harness into this connector. Route the wires from the adaptor harness to the ECU or ECUs CAN cables. Avoid mounting near heat sources and high voltage ignition wires.

YELLOW WIRE - CAN HIGH
GREEN WIRE - CAN LOW



*(Universal CAN module only)

ECU Connection and Setup:

Consult with the ECU manufacturer to confirm the correct wires and set up to enable the data stream is correct. The below list is a simplified general guideline for the supported ECUs.

AEM Connection:

Enable CAN data stream by

1. Open the AEMTuner software,
2. Go to Wizards > Setup Wizard > Telemetry: AEMNet.
3. Double click "AEMNet Datastream".

It should then be bolded and report "Matched". This will turn on CAN communication, and map several channels to data parameters. Connect the wires to the AEM harness as shown below:

Racepak Wire Color	Function	Series 2	EMS-4
Yellow	CAN High	Position D10	Position 33
Green	CAN Low	Position D14	Position 34

AEM_CAN

Input Number	Channel Name	V_Net ID #	AEM Variable	Default Units
1	EFI Engine Rpm	0x532	Engine Rpm	RPM
2	EFI Engine Load	0x53B	Engine Load	%
3	EFI TPS	0x538	Throttle Position	%
4	EFI Intake Temp	0x529	Air Temp	deg F
5	EFI H2O Temp	0x536	Coolant Temp	deg F
6	EFI A/F 1	0x539	Air/Fuel Ratio 1	lambda
7	EFI A/F 2	0x53A	Air/Fuel Ratio 2	lambda
8	EFI Speed	0x533	Vehicle Speed	MPH
9	EFI Gear	0x551	Gear	
10	EFI Ign Timing	0x288	Ignition Advance	DBTDC
11	EFI Voltage	0x52A	Battery Volts	V
12	EFI ADCR11	0x50B	ADCR 11 Input	V
13	EFI ADCR13	0x50D	ADCR 13 Input	V
14	EFI ADCR14	0x50E	ADCR 14 Input	V
15	EFI ADCR15	0x50F	ADCR 15 Input	V
16	EFI ADCR16	0x510	ADCR 16 Input	V
17	EFI ADCR17	0x511	ADCR 17 Input	V
18	EFI ADCR18	0x512	ADCR 18 Input	V

Atomic LS Connection:

Using the handheld unit, enable the Racepak Dash within the Advanced Setup settings. Since the connector is no longer available, the user must modify a cable to gain access to the CAN wires. Using a Trunk-to-Trunk extension cable (MSD part number 1334, 4ft long), connect one end of the extension cable into the “Monitor Connector Only” port on the MSD Power Module. The other end may be cut to access wires.

Racepak Wire Color	Function	MSD CAN Wires
Yellow	CAN High	Yellow
Green	CAN Low	Green

ATOMIC_LS

Input Number	Channel Name	V-Net ID #	EFI Variable	Units
1	TBI Engine RPM	0x750	Engine Rpm	RPM
2	LS Coolant Temp	0x751	Coolant Temp DegF	Deg F
3	LS Oil Press	0x752	Oil Pressure PSI	PSI
4	LS Intake Air Temp	0x753	Intake Air Temp DegF	Deg F
5	LS Battery Voltage	0x754	Battery Voltage	V
6	LS Barometer	0x755	Barometer “Hg	In Hg
7	LS AFR 1	0x756	A/F 1 AFR	AFR
8	LS Fan 1 Stat	0x757	Fan 1 Status	
9	LS Fan 2 Stat	0x758	Fan 2 Status	
10	LS Map	0x759	MAP “Hg	In Hg
11	LS Ignition Timing	0x75A	Ignition Timing	Deg
12	LS Injector DC	0x75B	Injector Duty Cycle	%
13	LS Closed Loop Stat	0x75C	Closed Loop Status	
14	LS TPS	0x75D	Throttle Position	%
15	LS Two Step Stat	0x75E	Two Step Status	
16	LS DTC Count	0x75F	DTC Count	
17	LS Rev Limit Stat	0x760	Rev limit	
18	LS Fuel Press	0x761	Fuel Press PSI	PSI
19	LS Vehicle Speed	0x762	Vehicle Speed MPH	MPH
20	TCM Gear	0x763	Gear	

Generic CAN Connection:

Generic CAN settings require extensive knowledge of CAN protocols for setup. It is up to the end-user to program message ID and scaling/offsets. Connect the wires as shown below:

Racepak Wire Color	Function
Yellow	CAN High
Green	CAN Low

Electromotive TecGT Connection:

Before attempting any communication between Electromotive ECU devices, it is necessary to enable CAN export data on your ECU. This setting is disabled by default.

1. Open WinTEC software
2. Click “Open” button to load your file.
3. Select “Advanced” layer and enable CAN-Bus.

Racepak Wire Color	Function	DB9 Pinout
Yellow	CAN High	Position 1
Green	CAN Low	Position 4

Haltech V1 and V2 Connection:

(Universal CAN module only)

Contact Haltech to make sure CAN data stream is enabled.
Connect the wires to the AEM harness as shown below:

Racepak Wire Color	Function	Haltech 26 Position Connector on E11v2
Yellow	CAN High	Position 23
Green	CAN Low	Position 24

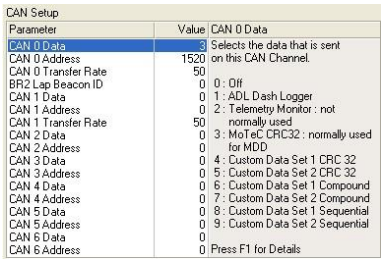
HaltechV2_ECU

Channel Number	Channel Name	V-Net ID #	EFI Variable	Units
1	EFI Engine RPM	0x750	Engine Rpm	RPM
2	EFI Oil Press	0x751	Engine Oil Pressure	PSI
3	EFI Ign Timing L	0x752	Ignition/Leading Timing	Deg
4	EFI Manifold Pres PSI	0x753	Manifold Pressure	PSI
5	EFI Fuel Comp	0x754	Fuel Composition	%
6	EFI Check Engine	0x755	MIL (Check Engine Light	BIT
7	EFI Throttle Position	0x756	Throttle Position	%
8	EFI Coolant Temp F	0x757	Coolant Temp DegF	Deg F
9	EFI AFR 1	0x758	A/F 1 Ratio Gasoline	AFR
10	EFI Miss Count	0x759	Miss Counter	Cnts
11	EFI Vehicle Speed MPH	0x75A	Vehicle Speed	MPH
12	EFI Fuel Press PSI	0x75B	Fuel Pressure	PSI
13	EFI Inj DC	0x75C	Inj Duty Cycle Primary	%
14	EFI Intake Air Temp F	0x75D	Air Intake Temp DegF	Deg F
15	EFI EGT 4 F	0x75E	EGT 4 DegF	Deg F
16	EFI EGT 2 F	0x75F	EGT 2 DegF	Deg F
17	EFI Gear	0x760	Gear	Ge
18	EFI EGT 1 F	0x761	EGT 1 DegF	Deg F
19	EFI EGT 3 F	0x762	EGT 3 DegF	Deg F
20	EFI Fuel Consump	0x763	Fuel Consumption Rate	L/H

MoTec Connection:

You need to turn on MoTec CRC32 Data Set 3 in the CAN 0 slot using the MoTec ECU Manager software. Connect the wires to the MoTec harness as shown below:

Racepak Wire Color	Function
Yellow	CAN High
Green	CAN Low



MOTEC

Channel Number	Channel Name	V_Net ID #	EFI Variable	Default Units
1	EFI Engine RPM	0x532	Engine Rpm	RPM
2	EFI MAP Press	0x53C	Manifold Abs Pressure	MoTec Defined
3	EFI. TPS.	0x538	Throttle Pos.	%
4	EFI A/F 1	0x539	Air Fuel Ratio	Lambda
5	EFI A/F 2	0x53A	Air Fuel Ratio	Lambda
6	EFI Voltage	0x52A	EFI Volts	Volts
7	EFI H2O Temp	0x536	Water Temperature	MoTec Defined
8	EFI Intake Temp	0x529	Charge Air Temp	MoTec Defined
9	Timing Ign. 1	0x288	Ignition Timing	Deg
10	Engine Load	0x53B	Load Point	%
11	Injector Pulse Width	0x520	Injector Pulse Width	ms
12	Injector Duty Cycle	0x521	Injector Duty Cycle	%
13	EFI Gear	0x551	Selected Gear	
14	EFI Speed	0x533	Drive Speed	MoTec Defined
15	Custom 1	0x501	User Channel 1	MoTec Defined
16	Custom 2	0x502	User Channel 2	MoTec Defined

MegaSquirt CAN Connection (DIY Autotune stream)

You will also need to turn on the Megasquirt Simplified Dash Broadcasting messages using the Megasquirt PC software. The base identifier must be set to 1512 decimal.

1. The settings are on the CAN-Bus/Testmodes menu:
2. CAN-Bus/Testmodes > CAN Parameters
3. Set Master enable to "On" (or Enable for Megasquirt-2, Microsquirt, and other MS2 based ECUs)
4. CAN-Bus/Testmodes > Dash Broadcasting
5. Set Enable to "On"

'Automatic' setting will lock the CAN Identifier to 1512 and broadcast at 20 times per second.
Connect the wires as shown below:

Racepak Wire Color	Function
Yellow	CAN High
Green	CAN Low

MEGASQUIRT_CAN

Input Number	Channel Name	V_Net ID #	EFI Variable	Default Units
1	EFI Engine Rpm	0x700	Engine RPM	RPM
2	EFI TPS	0x701	Throttle position	%
3	EFI Ign Timing	0x702	Ignition spark advance	Deg BTDC
4	EFI MAP Press	0x703	Manifold air pressure	kPa
5	EFI Man Temp	0x704	Manifold air temperature	DegF
6	EFI H2O Temp	0x705	Coolant Temperature	DegF
7	EFI Speed	0x706	Vehicle speed 1	MPH
8	EFI Battery Volts	0x707	Battery voltage	V
9	EFI AFR Cyl 1	0x708	AFR Cyl #1	AFR
10	EFI AFR B1 Target	0x709	AFR bank 1 target	AFR
11	EFI EGO Corr 1	0x7A0	EGO correction cyl 1	%
12	EFI EGT Cyl 1	0x7A1	EGT cyl 1	DegF
13	EFI PW Seg 1	0x7A2	Sequential pulse width cyl 1	ms
14	EFI Knock Retard	0x7A3	Knock retard	Deg
15	EFI Traction Retard	0x7A4	Traction control retard	Deg
16	EFI Launch Retard	0x7A5	Launch control retard	Deg
17	EFI Main PW B1	0x7A6	Main pulse width bank 1	ms
18	EFI Main PW B2	0x7A7	Main pulse width bank 2	ms
19	EFI Gen Sensor 1	0x7A8	Generic sensor input 1	
20	EFI Gen Sensor 2	0x7A9	Generic sensor input 2	

MicroTech Connection:

Contact MicroTech to make sure CAN data stream is enabled.
Connect the wires to the MicroTech ECU as shown below:

Racepak Wire Color	Function
Yellow	CAN High
Green	CAN Low

MICROTECH_ECU

Channel #	Channel Name	V_Net ID #	EFI Variable	Default Units
1	EFI Engine Rpm	0x750	Engine Rpm	RPM
2	EFI Throttle Pos	0x751	Throttle Position	%
3	EFI Oil Press	0x752	Oil Pressure	Bar
4	EFI Coolant Temp	0x753	Coolant Temperature	DegC
5	EFI Speed	0x754	Vehicle Speed	KPH
6	EFI Gear	0x755	Gear Selection	
7	EFI Manifold Press	0x756	Manifold Pressure	mBar
8	EFI Air Temp	0x757	Intake Air Temp	DegC
9	EFI Fuel Press	0x758	Fuel Pressure	Bar
10	EFI Lambda	0x759	Lambda AFR	La
11	EFI Inj Main PW	0x75A	Main Injector Pulse Width	ms
12	EFI Inj Aux PW	0x75B	Aux Injector Pulse Width	ms
13	EFI Battery Voltage	0x75C	Supply Voltage	V
14	EFI Ign Timing	0x75F	Ignition Timing	Deg
15	EFI Fuel Composition	0x75E	Fuel Composition	%
16	EFI Flags	0x75F	Flag Bit Mask	
17	EFI Aux 1	0x760	User Defined	
18	EFI Aux 2	0x761	User Defined	
19	EFI Aux 3	0x762	User Defined	
20	EFI Aux 4	0x763	User Defined	

PRO EFI CAN Connection:

Contact Professional EFI System to make sure CAN data stream is enabled. Connect the wires to the ProEFI System ECU as shown below:

Racepak Wire Color	Function
Yellow	CAN High
Green	CAN Low

PROEFI_MOD

Input Number	Channel Name	V-Net ID	ECU Variable	Units
1	EFI MAP Press	0x53C	Manifold Pressure	PSI
2	EFI TPS	0x538	Throttle Position	%
3	Target A/F 1	0x556	Target Air/Fuel Ratio	AFR
4	EFI A/F 1	0x539	Air/Fuel Ratio	AFR
5	EFI Ing Timing	0x555	Spark Advance	Deg BTDC
6	Bottle 1	0x308	Nitrous Pressure 1	PSI
7	EFI Inj Duty C	0x521	Injector Duty Cycle	%
8	Waste Duty	0x33D	Wastegate Duty Cycle	%
9	Waste Setpoint	0x33E	Wastegate Setpoint	Kpa
10	Wheel Speed	0x3B8	Driven Wheel Speed	MPH
11	EFI Speed	0x533	Non Driven Wheel Speed	MPH
12	Custom 0	0x500	Launch Time	Seconds
13	Custom 1	0x501	Drivers Info Light	On/OFF
14	Custom 2	0x502	Current RPM Limit	RPM
15	Custom 3	0x503	Two Step ADC	ADC
16	Custom 4	0x504	Pressure Ratio	

FAST XFI Connection:

You will also need to turn on the XFI RP CAN bus using the C-ComWP software.
Enable CAN data stream by

1. Open the C-COM WP software,
2. Go to File > Read All Tables
3. Select your Calibration File
4. Go to View > System Configuration > CAN Configuration
5. Enable Racepak Stream

Connect the wires as shown below:

Racepak Wire Color	Function	XFI Blue Connector "C"
Yellow	CAN High	Position 9
Green	CAN Low	Position 10

XFICAN_MOD

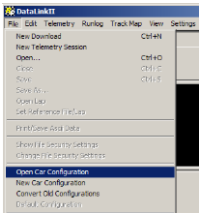
Channel #	Channel Name	V-Net ID #	EFI Variable	Units
1	EFI Engine RPM	0x532	Engine Rpm	RPM
2	Man A.B.S. Press	0x20E	MPA	kPa (abs press)
3	EFI TPS	0x538	Throttle Position	
4	EFI A/F 1	0x539	Air/Fuel Ratio	AFR
5	EFI H2O Temp	0x536	Coolant Temperature	Deg F
6	EFI Intake Temp	0x529	Intake Air Temperature	Deg F
7	EFI Voltage	0x52A	XFI Supply Voltage	Volts
8	Fuel Flow	0x231	Engine Fuel Flow	LBS/HR
9	Timing Ign 1	0x288	Ignition Timing	Deg BTDC
10	Inj Duty Cycle	0x521	Injector Duty Cycle	%
11	Inj Pulse W	0x520	Injector Pulse Width	milliseconds
12	EFI Speed	0x533	Driveshaft RPM	RPM
13	Power Add Cor	0x525	Power Adder Correction	
14	O2 Correction	0x523	O2 Correction	

Configuration File Update (IQ3S Street Dash):

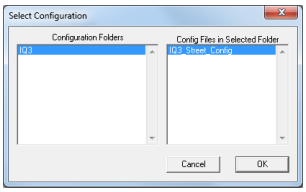
Before the channels from the ECU can be displayed on your IQ3S dash, you will need to update enable the ECU interface on the IQ3S dash, sync the channels into the configuration file and then program the selected channels to be displayed on the dash screen(s).

1. Connect PC to IQ3 Street Dash unit using the USB programming cable supplied with the IQ3 Street Dash unit system. The programming port is located on the rear of the IQ3 Street Dash unit.
2. Ensure the main power is turned on for the IQ3 Street Dash. The dash backlight will be on and lit when power is on.
3. Start the DatalinkII program by double-clicking on the DatalinkII Program icon located on the Windows desktop of the PC (shown right).

4. Open the car configuration file. To open the car configuration file, select **File** located in the main menu bar across the top of the screen and select **Open Car Configuration.** (Shown right).

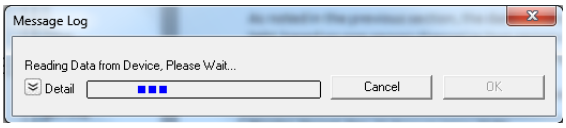


5. The dialog box (shown lower right) will be displayed.
6. The list on the left-hand side of the **Select Configuration** dialog box will display all of the file folders in the RacePakData subdirectory (C:\RacePakData) that contain valid configuration files with a .rcg file extension. Select the IQ3 listing by selecting with the cursor.

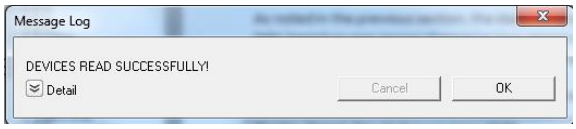


7. The list on the right will now contain the list of configuration files contained in this folder. The factory configuration file for the IQ3 Street Dash unit will be located here.
8. Once the IQ3_Street_Config is selected, select the OK button.
9. The configuration file for the IQ3 Street Dash is now open.
10. Click ***Edit*** on the menu bar and select ***Read V-NET Config***.

11. A dialog box (shown right) may appear asking if you wish to make this configuration the default configuration file. If this is the only Racepak system you will be programming, select the top option to make it the default. If using this PC to program more than one Racepak system, select the second box.
12. A message log will appear and should begin reading your system configuration.



13. When finished the message log should display ****DEVICES READ SUCCESSFULLY****.



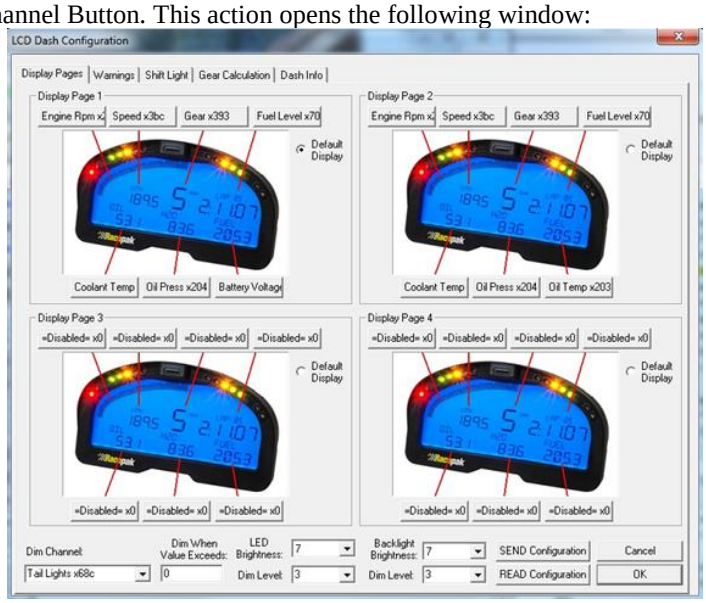
14. Click on the OK button.
    a. If the ECU interface was turned on using the pushbuttons/Setup Mode 1 you should now see new channel buttons (boxes) for each channel.
    b. If the ECU interface was not previously enabled, you can do so using the pushbuttons/Setup Mode 1, and then repeat the Read process after which the new ECU channels will appear.
    c. If the ECU interface was not previously enabled, you can do so using the DataLink Software,
        i. navigate to the Dash Info tab by right-clicking on the main channel button labeled **IQ3 Street**
        ii. Select Dash Info tab, locate the listing ECU Type under the Custom Programming Options
        iii. Click on ECU type and select your ECU from the drop-down list on the right
        iv. Select Send Configuration

v. Exit the LCD Dash Configuration window to return to the main configuration window and repeat the Read process after which the new ECU channels will appear

15. Right-click on any of the channel boxes to modify/change their parameters.
16. Once any change is made, you must select **Send Configuration** to send change to the dash.
17. The channels are now ready to be selected and programmed to the Display pages.

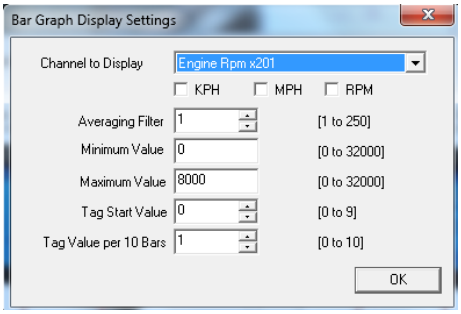
Programming the Display Pages

Right-click over the IQ3 Street Channel Button. This action opens the following window:



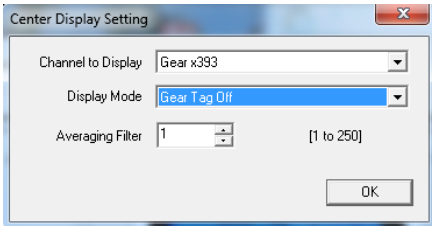
A view representing the current programming of all four display pages is obtained by selecting the Display Pages tab. Each input is programmed by selected the text box related to that input area, as indicated by the red line extending down to the dash, from each text box.
Once the page is programmed as desired, select the SEND Configuration to send any changes to the IQ3S Street Dash. The dash should now represent the programmed parameters.

Bar Graph (Sweep Tach)



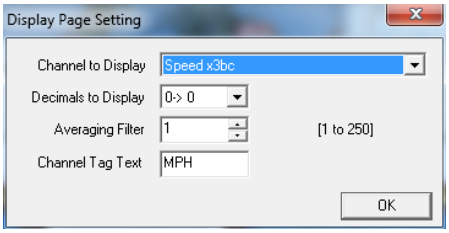
Function	Description
KPH MPH RPM	Selection defines channel name on dash
Channel to Display	Pull down arrow selects channel for bar graph data
Averaging Filter	Smooths displayed data. 10 is default
Minimum Value	Determines starting point for bar graph
Maximum Value	Determine ending point for bar graph
Tag Start Value	Determines start value for bar graph
Tag Value per 10 Bars	Determines value for each 10-bar segment. **There are a total of 8, 10 bar segments for 80 total bars.** Channel tag value **must** be equally divisible by the 80 bars to correspond correctly with a channel's actual reading.
OK	Closes window following programming changes

Gear Indicator (center of dash) "Gear Position"



Function	Description
Channel To Display	Pull down arrow selects sensor channel
Averaging Filter	Smooths displayed data. 10 is default
Display Mode	Selects when to display the gear number in the center display.
OK	Closes window following programming changes

Remaining Inputs



Function	Description
Channel to Display	Pull down arrow selects sensor channel
Decimals to Display	Number of digits to display after the decimal
Averaging Filter	Smooths displayed data. 10 is default
Channel Tag Text	Name/channel label to be displayed. 5 total characters

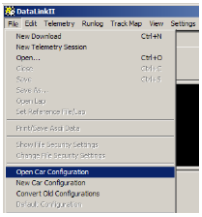
As shown above, to program an input area, simply locate the desired sensor channel by use of the pull-down arrow, select the sensor channel, then define the remaining values for Decimals to Display, etc.
Once the page is programmed as desired, select the SEND Configuration to send any changes to the IQ3S Street Dash. The dash should now represent the programmed parameters.

Configuration File Update (Racepak Universal CAN module):

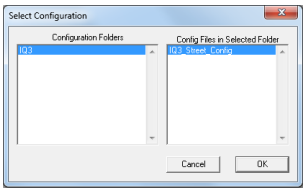
Before the channels from the ECU can be displayed on your Racepak device, you will need to sync the channels into the configuration file and then program the selected channels to be displayed and or recorded.

1. Connect PC to the Racepak device using the appropriate programming cable supplied with the device.
2. Ensure the main power is turned on for the Racepak device.
3. Start the DatalinkII program by double-clicking on the DatalinkII Program icon located on the Windows desktop of the PC (shown right).

4. Open the car configuration file for the Racepak device you are intending to communicate with. To open the car configuration file, select **File** located in the main menu bar across the top of the screen and select **Open Car Configuration.** (Shown right).

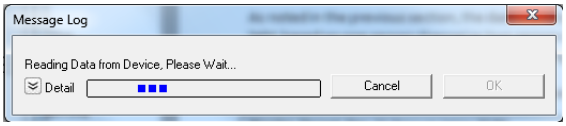


5. A dialog box will be displayed with a left and right pane.
6. The list on the left-hand side of the **Select Configuration** dialog box will display all of the file folders in the RacePakData subdirectory (C:\RacePakData) that contain valid configuration files with a .rcg file extension. Select the appropriate Racepak device.

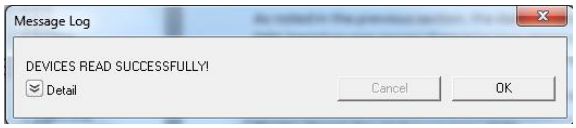


7. The list on the right will now contain the list of configuration files contained in this folder. Select the appropriate Racepak device you intend to communicate with and click the OK button.
8. The configuration file for the Racepak device is now open.
9. Click ***Edit*** on the menu bar and select ***Read V-NET Config***.
10. A dialog box (shown right) may appear asking if you wish to make this configuration the default configuration file. If this is the only Racepak system you will be programming, select the top option to make it the default. If using this PC to program more than one Racepak system, select the second box.

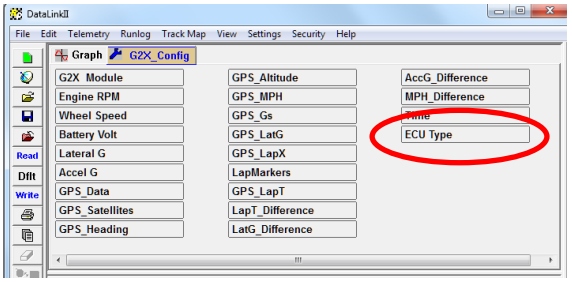
11. A message log will appear and should begin reading your system configuration.



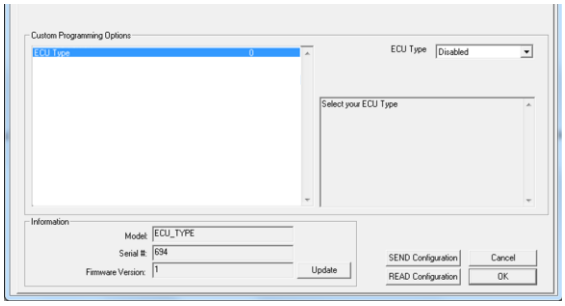
12. When finished the message log should display **DEVICES READ SUCCESSFULLY**.



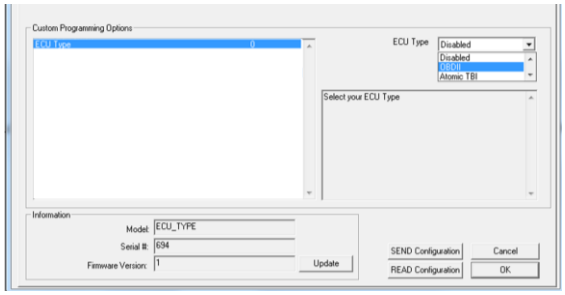
13. Click on the OK button.
14. If everything works properly, a new channel button named **ECU Type** will be added to the configuration file (shown right).
15. At this point, the particular ECU will have to be selected; you can do this by right clicking on the ECU Setup channel button.



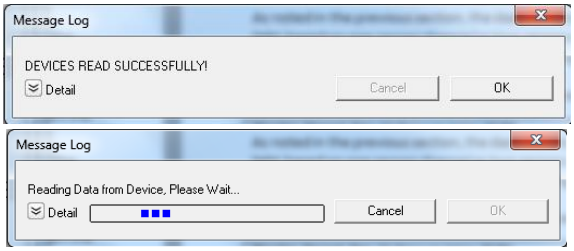
16. Locate and select the line listed in the Custom Programming Options window labeled ECU Type.



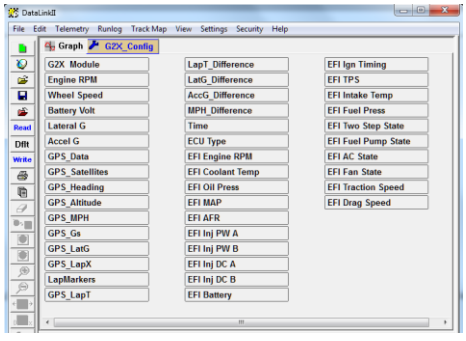
17. The drop down box to the right of the window can be clicked on and you will be able to scroll through the list of available ECU interfaces.



18. Select the ECU interface for the ECU you are connecting to.
19. Once selected, click the SEND Configuration button to program the Racepak Universal CAN module for that ECU.



20. When finished the message log should display **DEVICES READ SUCCESSFULLY**.
21. Click on the OK button on the ECU window to go back the main channel listing window.
22. Channels boxes should now appear for each of the ECU channels. If the new channels are not present, select Read button on toolbar.



23. Final step is to save the updated configuration file. To do this, select File from the menu bar and click on Save. All programming is now complete. Turn power to the system off and then back on before its next use.

Vantage EFI Interface Module setup:

Please visit the Vantage CL1 site for instructions on how to set up your Vantage EFI Interface Module

https://documents.holley.com/cl1-v2/track-day/vantage-obd2-module-programming.pdf

If you have any questions regarding warranty, please contact customer service at Racepak LLC. 1-866-464-6553

Rev Date: 06/24/21