

Tacholink Professional Installation Guide

CL-T5-001
Version: 1.7
Date: 9/02/2015

Legal Notice

This document contains confidential and proprietary information of Circuitlink and is for the use of and disclosure to employees, Circuitlink Authorized Service Providers and their employees.

The use of this document by or disclosure of this document to, any other person or entity is strictly prohibited.

Contents

Legal Notice	2
Figures	4
Safety Warnings	5
Installation.....	5
FCC RF Radiation Exposure Statement	5
FCC Warning Statement.....	6
Australian Communications and Media Authority Notice.	6
Modifications	6
Specifications	6
Electrical	6
Enclosure.....	7
Connecting to the Tacholink 5.....	7
Blunt Cut Hardwired.....	8
Samtec 20 pin (Blunt Cut).....	10
Samtec 40 Pin (Blunt Cut)	11
T5 Standard External OBDII (PN 3400123)	12
T5 Standard J1939 + Power (PN 3400124)	13
T5 Power Loom (PN 3400133)	13
T5 CAN Bus Loom (PN 3400134).....	14
Remote Accelerometer.....	14
Installation	15
Under Seat Mounting	15
Cabinet / Panel Mounting.....	15
Dashbox.....	15
T5 Standard External OBDII (PN 3400123)	15
Connecting the T5.....	16
Removing the Face Plate	16
Loading Fleet Configuration File	17
Event Data Recorder	17
Remote Accelerometer	17
Troubleshooting	18
Circuitlink Configuration Utility	18
LED Activity	21
FCC Approved Antennas	22
MA600	22
MA206	22
ANT-2.4-CW-RH.....	23
Contact Information.....	24
Revision History	25

Figures

Figure - Cinch ModICE LE Enclosure Dimensions	7
Figure - 3400124	13
Figure - 3400133	13
Figure - 3400134	14
Figure - Locating the T5 when there are multiple COM ports	18
Figure - Circuitlink Configuration Utility during a live connection	19

Safety Warnings

Installation

The T5 unit must be installed by a professional installer familiar with vehicle systems and RF signals. Incorrect installation may interfere with vehicle safety systems such as ABS, stability control and airbags or engine management CAN bus signalling.

The T5 Unit must be mounted in a secure and hidden location to deter driver tampering.

When mounting the T5 Unit, find a suitable location that will not interfere with the safe operation of the vehicle (e.g., braking, clutch operation, or other electronic equipment).

The T5 Unit must be secured in the vehicle. Use tie wraps, screws, nut/bolts. The use of double sided tape to secure the unit is not recommended, the T5 unit needs to be firmly fixed to a flat surface to allow the correct operation of the internal accelerometer with all axes' square to the direction of travel.

Caution

The T5 must be mounted at least 25cm away from any transmitting antennas.

Do Not Mount the T5 Unit :

- To Air Lines or any vehicle cabling
- In direct exposure to the elements
- In excessive heat areas (exhaust manifolds, etc.)
- In excessive cold areas (refrigeration units)
- In high vibration areas (engine compartments, transmission)
- Near corrosive fluids and gases (acids, petroleum)
- In direct exposure to water
- In areas where excessive dust is present



Caution

Vehicles equipped with air bags.

An air bag inflates with great force. Do not place objects, including this device, in the area over the air bag or in the air bag deployment area. Serious injury could result if in-vehicle wireless equipment is incorrectly installed and the air bag inflates.

FCC RF Radiation Exposure Statement

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with a minimum distance of 25 centimeters between the radiator and your body.

FCC Warning Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Australian Communications and Media Authority Notice.

Warning

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Modifications

This product does not contain any user serviceable components. Any unauthorised product changes or modifications will invalidate warranty and all applicable regulatory certifications and approvals.

Specifications

Electrical

Input Voltage	9-32VDC
Current	0.21A at 9V
	0.11A at 32V

The Tacholink 5 is fitted with internal self-resetting thermal fuses to limit current in the event of a fault. To protect the vehicle against faults in the external wiring, the use of a 5A slow-blow fuse is recommended.

Enclosure

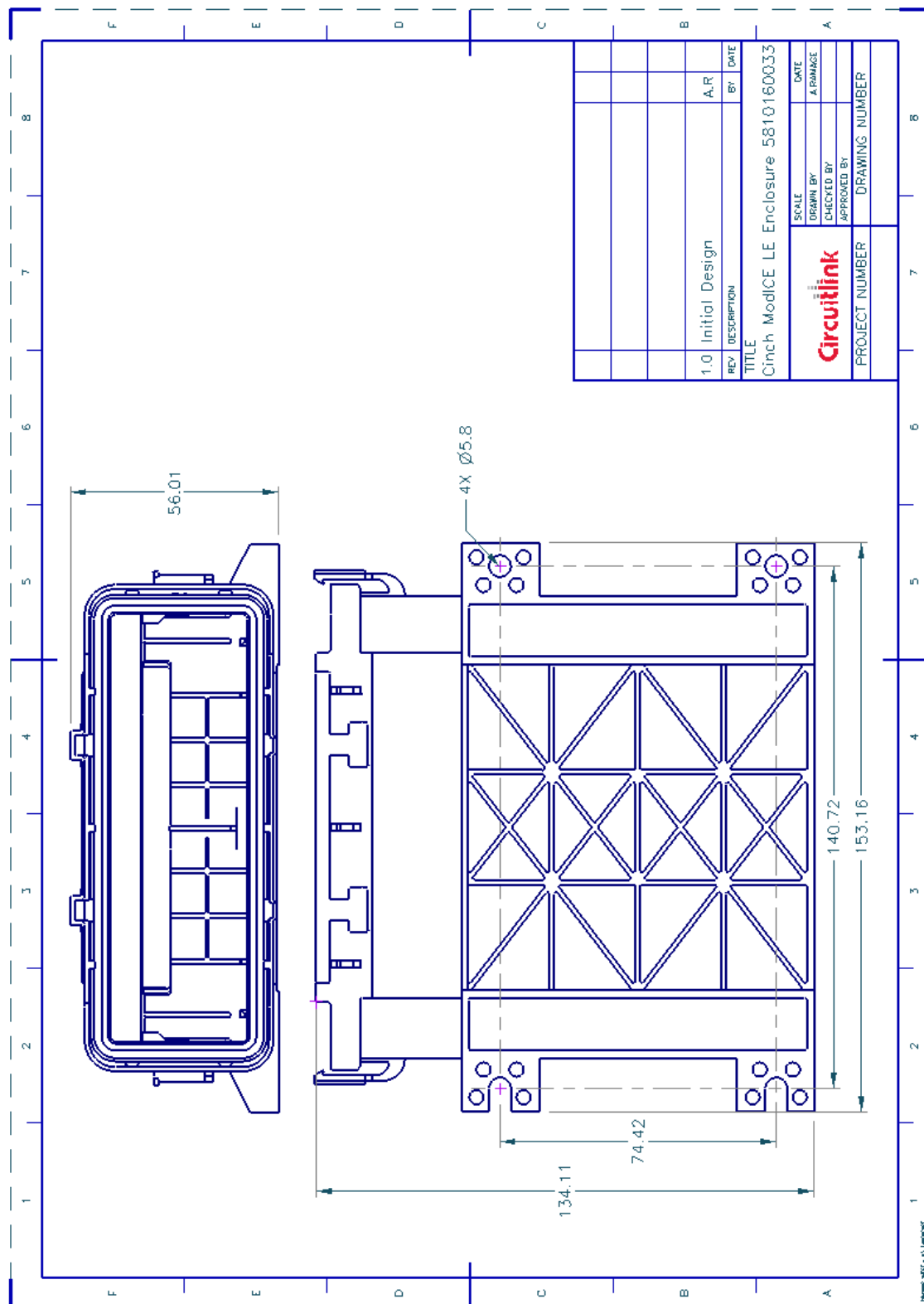


Figure 1 - Cinch ModICE LE Enclosure Dimensions

Connecting to the Tacholink 5

Blunt Cut Hardwired

Cable 1 (3400163)

NEAREST AWG	NO. OF CORES	CONDUCTOR NO/DIA (MM)	INSULATION THICKNESS (mm)	NOM. DIA (mm)
28	20	7/0.2 TC	0.2	7

Signal	Colour	Installer Notes
Shield	NOT CONNECTED	
GND	GREEN	
PWR IN	RED	
Ignition	YELLOW	
Speed	WHITE	
RPM	BLUE	
PWR Out	BLACK	
GND	BROWN	
PWM 1	PURPLE	
PWM 2	ORANGE	
PWM 3	PINK	
PWM 4	TURQUOISE	
1WIRE	GREY	
RS485 RxA	RED / BLUE	
RS485 TxA	GREEN / RED	
RS485 RxB	YELLOW / RED	
RS485 TxB	WHITE / RED	
RS485 BR	RED / BLACK	
CAN0V	RED/BROWN	
CANL	YELLOW/BLUE	
CANH	WHITE/BLUE	
CANS	NOT CONNECTED	

Cable 2 (3400164)

NEAREST AWG	NO. OF CORES	CONDUCTOR NO/DIA (MM)	INSULATION THICKNESS (mm)	NOM. DIA (mm)
28	20	7/0.2 TC	0.2	7

Signal	Colour	Installer Notes
ANALOG IN 1	GREEN	
ANALOG IN 2	RED	
ANALOG IN 3	YELLOW	
ANALOG IN 4	WHITE	
ANALOG IN 5	BLUE	
ANALOG IN 6	BLACK	
ANALOG IN 7	BROWN	
ANALOG IN 8	PURPLE	
RELAY 1	ORANGE	
RELAY 2	PINK	
RELAY 3	TURQUOISE	
RELAY 4	GREY	
RS232 TX	RED / BLUE	
RS232 RX	GREEN / RED	
RS232 RTS	YELLOW / RED	
RS232 CTS	WHITE / RED	
GND	RED / BLACK	

Cable 3 (3400165)

NEAREST AWG	NO. OF CORES	CONDUCTOR NO/DIA (MM)	INSULATION THICKNESS (mm)	NOM. DIA (mm)
28	20	7/0.2 TC	0.2	7

Signal	Colour	Installer Notes
ADDITIONAL INPUT 1	GREEN	
ADDITIONAL INPUT 2	RED	
ADDITIONAL INPUT 3	YELLOW	
ADDITIONAL INPUT 4	WHITE	
ADDITIONAL INPUT 5	BLUE	
CANSHIELD/J1939	BLACK	
CANGND/J1939	BROWN	
CANL/J1939	PURPLE	
CANH/J1939	ORANGE	

Samtec 20 pin (Blunt Cut)

NEAREST AWG	NO. OF CORES	CONDUCTOR NO/DIA (MM)	INSULATION THICKNESS (mm)	NOM. DIA (mm)
28	20	7/0.2 TC	0.2	7
Signal	Colour	Installer Notes		
Ground	BLACK			
Power In	BROWN			
Ignition	RED			
Speed	ORANGE			
RPM	YELLOW			
Power Out	GREEN			
Ground	BLUE			
PWM 1	PURPLE			
PWM 2	GREY			
PWM 3	WHITE			
PWM 4	PINK			
1 Wire	LIGHT GREEN			
RS485 RxA	BLACK / WHITE			
RS485 TxA	BROWN / WHITE			
RS485 RxB	RED / WHITE			
RS485 TxB	ORANGE / WHITE			
RS232 Br	GREEN / WHITE			
CAN 0V	BLUE / WHITE			
CAN Low	PURPLE / WHITE			
CAN High	RED / BLACK			

Samtec 40 Pin (Blunt Cut)

NEAREST AWG	NO. OF CORES	CONDUCTOR NO/DIA (MM)	INSULATION THICKNESS (mm)	NOM. DIA (mm)
28	40	7/0.2 TC	0.2	7
Signal	Colour	Installer Notes		
Analog Input 1	BLACK			
Analog Input 2	BROWN			
Analog Input 3	RED			
Analog Input 4	ORANGE			
Analog Input 5	YELLOW			
Analog Input 6	GREEN			
Analog Input 7	BLUE			
Analog Input 8	PURPLE			
Relay 1	GREY			
Relay 2	WHITE			
Relay 3	PINK			
Relay 4	LIGHT GREEN			
RS232 TX	BLACK/WHITE			
RS232 RX	BROWN/WHITE			
RS232 RTS	RED/WHITE			
RS232 CTS	ORANGE/WHITE			
Ground	GREEN/WHITE			
Additional Input 1	LIGHT BLUE/BLUE			
Additional Input 2	LIGHT BLUE/GREEN			
Additional Input 3	GRAY/RED			
Additional Input 4	GRAY/GREEN			
Additional Input 5	PURPLE/BLACK			
CAN SHEILD/J1939	BLUE/BLACK			
CAN GROUND/J1939	LIGHT GREEN/BLACK			
CAN LOW/J1939	LIGHT GREEN/RED			
CAN HIGH/J1939	LIGHT GREEN/BLUE			

Wires 18-31 are not connected.

T5 Standard External OBDII (PN 3400123)

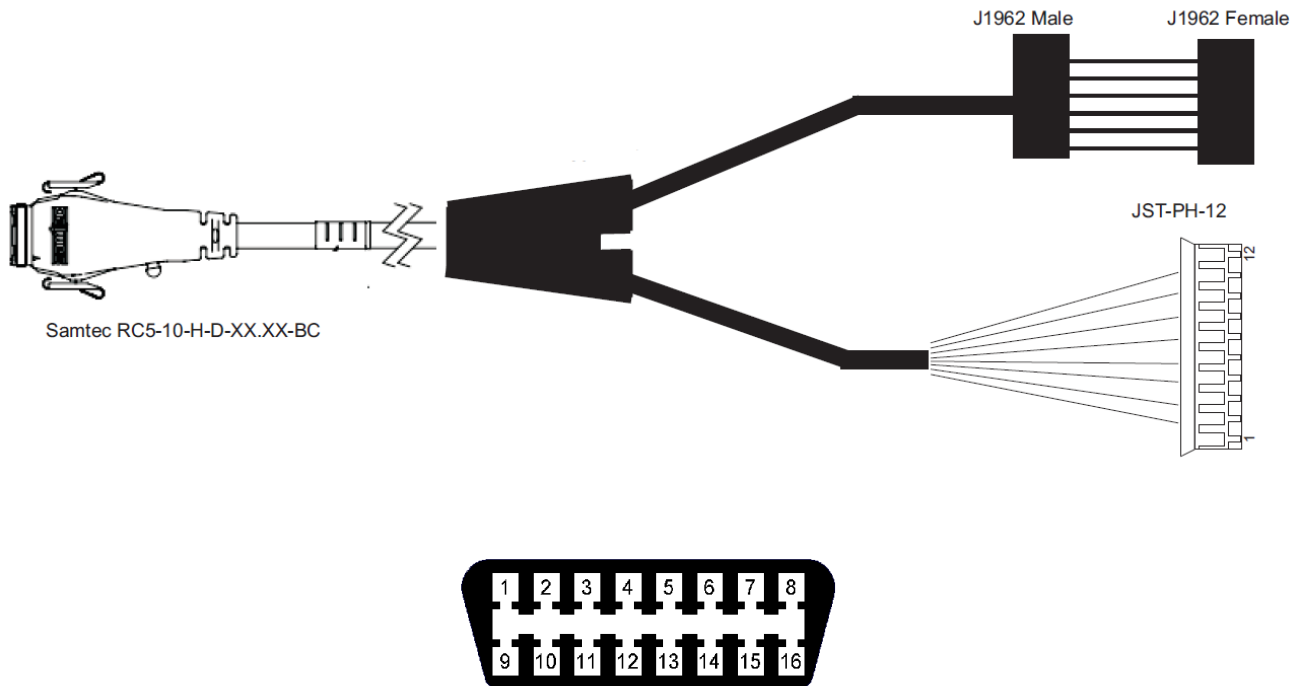


Figure 2 - 3400123

J1962 Male + Female

Signal	Terminal	Installer Notes
Ground	4 (B)	
Power In	16 (A)	
CAN GROUND	5 (C)	
CAN LOW	14 (B)	
CAN HIGH	6 (A)	

Both Male and Female connectors have the same pin outs.

JST-PH-12

The JST-PH-12 connector is used for attaching the Dashbox (PN 5060107) to the T5.

T5 Standard J1939 + Power (PN 3400124)

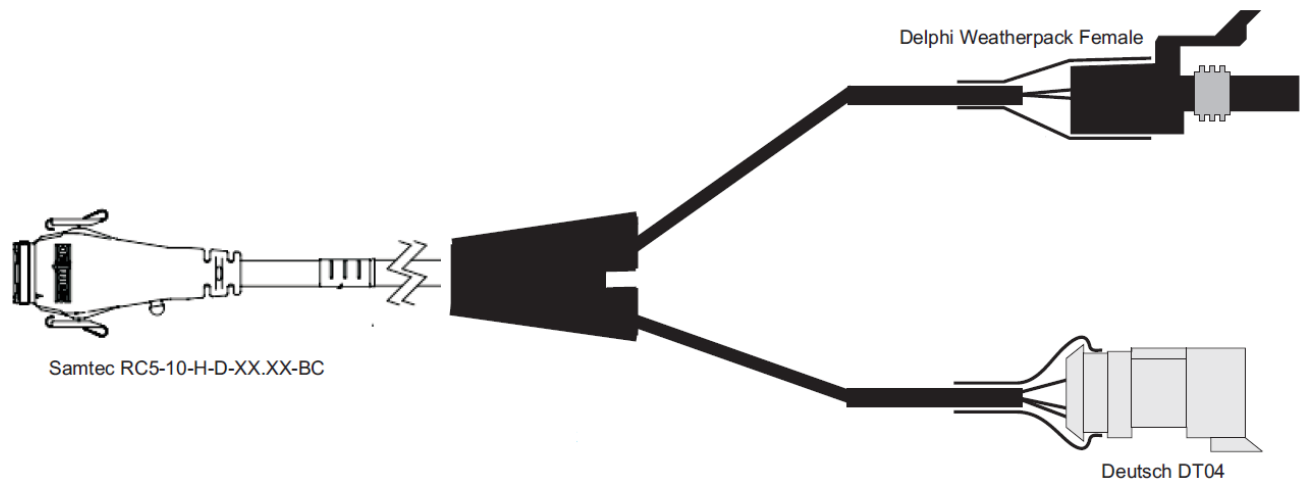


Figure 3 - 3400124

Deutsch DT04

Signal	Terminal	Installer Notes
CAN GROUND/J1939	C	
CAN LOW/J1939	B	
CAN HIGH/J1939	A	

Delphi Weatherpack 2 Cavity Female

Signal	Terminal	Installer Notes
Ground	B	
Power In	A	

T5 Power Loom (PN 3400133)



Figure 4 - 3400133

Delphi Weatherpack 2 Cavity Female

Signal	Terminal	Installer Notes
Ground	B	
Power In	A	

T5 CAN Bus Loom (PN 3400134)



Figure 5 - 3400134

Deutsch DT04

Signal	Terminal	Installer Notes
CAN GROUND/J1939	C	
CAN LOW/J1939	B	
CAN HIGH/J1939	A	

Remote Accelerometer

The Tacholink T5 Remote Accelerometer uses the same hardware platform as the Tacholink T5 EDR. Mount the T5 RA to the vehicle using the same method as the T5 EDR. Both devices use the same power and J1939 connectors



The Tacholink T5 Remote accelerometer acts as a transducer; sending all of it's information across the CANBus network to other device. The T5 RA does not store data or broadcast it wirelessly

Installation



To make full use of the internal accelerometer and gyroscope, the T5 must be firmly mounted with any of its axis perpendicular to the direction of travel.

Under Seat Mounting

Care should be taken when securing the T5 under seating in vehicles. Make sure the unit and its cables are properly mounted away from any passengers and moving parts.

Caution



- Care should be taken when drilling into the floor of any vehicle as there may be wiring or parts on the other side.
- When mounting on the driver's side of the vehicle, it is extremely important to ensure that the T5 is secured and cannot interfere with the safe operation of the vehicle
- Do not expose the T5 or any of its peripherals to temperatures outside of 0°C - 80°C

Cabinet / Panel Mounting

Although we design our equipment to operate in IP rated environments, we recommend when the unit is not installed within the cabin of a vehicle that it be placed in a protected area. Avoid mounting equipment and cabling where it may come in contact with moving parts and liquids as it will reduce its lifespan and reliability.

Different design configurations will change the IP rating depending on the front panel connectors. For more information, contact Circuitlink.

Firmly secure the unit with bolts M5 or equivalent, using washers to distribute force evenly. Cable ties may be used for temporary mounting and should be firmly tightened. Do not use double sided tape or any permanent adhesives.

Dashbox

Secure the Dashbox unit within the reach of the operator careful for it not to interfere with the operation of the vehicle. Avoid placing the Dashbox where it could be exposed to weather as it does not have the same protection as the EDR.

T5 Standard External OBDII (PN 3400123)

The J1962 interconnect harness is designed to integrate with the existing diagnostic port and piggyback off it.

1. Locate and unscrew the existing connector from its mounting position. Typically it will be located within 1m of the drivers position however may differ based on the make and model.
2. Connect the wiring assembly to the vehicles socket and mount the piggyback extension in the existing position.
3. Secure the connection between the vehicles J1962 socket and the harness by using a cable tie around the housings.
4. Tidy cabling by securing excess wires away, careful not to kink or allow them to become tangled.

Connecting the T5

Caution



- The vehicle should be turned off when disconnecting any connectors on the T5
- Ensure when inserting the Samtec connector it is plugged in straight to avoid damaging the fine pitched pins within the connector.

Warning



Only use cable assemblies described in this guide. Using assemblies for other models may damage the unit and other equipment on the vehicle.

1. Attach and firmly tighten the SMA connectors for the GPS, GSM and WIFI antennas.
When antennas are not in use it is recommended to keep the antenna attached or use (PN 3400139 - SMA plug cap) to protect the connector from dust and water.
2. With power to the unit disconnected, connect the I/O cables from the unit to the vehicle.

Removing the Face Plate

For any reason you are required to remove the T5 from its housing either to change SIM cards or as directed by Circuitlink, you must follow these steps. For best results, use PN 5991111611 available from Cinch.

1. With power to the unit disconnected, remove the I/O and antenna cables from the T5.
2. If possible, remove the T5 from where it is mounted as you need access to all sides.
3. With a small flat blade screw driver, gently release the one of the side tabs and let it balance without re-seating. Starting from the top of the case, prise each of the tabs along the top, then along the bottom to release the face plate.
4. Finally release the last side tab and gently slide the unit from the case.
5. When re-inserting the unit, make sure there are no internal wires caught and gently press the face plate back into the housing making sure not to damage the rubber sealing gasket until all the tabs click into place.

Warning



Do not place the PCB on any conductive or wet surfaces.

Where possible, follow steps to protect against ESD damage.

Improper removal of the face plate will compromise its IP rating and reliability of the device

Loading Fleet Configuration File

Configuration files use the .PV2 file extension. Fleet and Dynamic configuration files hold different variables for each device.

Fleet contain parameters required to set how the data recorder operates. This can be anything from accelerometer configuration to CAN/OBD packet settings.

The process and handling of configuration files in the EDR and Remote Accelerometer is different due to the differences in firmware and flash storage architecture.

As the Remote Accelerometer is a transducer that does not store any data, the available storage to hold configuration files is only a few kilobytes. Because of this, it will not hold multiple copies of the same file like how the EDR operates.



Do not delete or modify the Device configuration file. This file is required for the device to operate

Event Data Recorder

The process for updating configuration is the same for all event data recorders regardless of the firmware version or family.

1. Connect the T5 to power and allow it to boot up.
2. Connect a USB cable from the T5 to your PC
3. Open My Computer and navigate to the removable storage device with the label that of the T5
4. Place the desired configuration file in the PARAMS.
5. Disconnect the USB to reinitialise the device

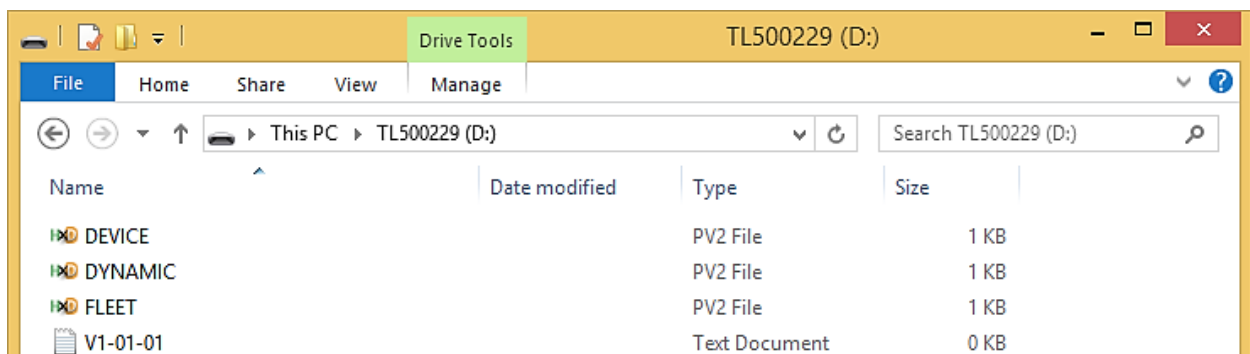
Remote Accelerometer

The Remote Accelerometer will only hold one fleet configuration file in its internal storage at any time.

1. Connect the RA to power and allow it to boot up.
2. Connect a USB cable from the RA to your PC
3. Open My Computer and navigate to the removable storage device with the label that of the RA
4. Place the desired configuration file in the root of the drive.

The device will reinitialise and process the file. A status file will be present in the drive indicating if the update was successful.

5. Disconnect the USB to reinitialise the device



A completed unit ready for use.

Troubleshooting

Circuitlink Configuration Utility

View Live Data

Circuitlink has developed an application to interactively monitor live inputs and activity on the Tacholink T5

1. With the T5 connected to the vehicle and turned on, unscrew the dust cover from the USB port and connect a mini USB B to USB A from it to your computer.
2. The T5 will mount itself as a volume in My Computer and set up a virtual COM port.
3. Download and install CLConfig from :
<http://t5production.circuitlink.com.au:2370/CLConfig/publish.htm>
4. If you have multiple serial devices connected, open Device Manager to determine which port to use. (Start > Run > devmgmt.msc).
 - i. Expand your computer name > Ports (COM & LPT).
 - ii. Identify the COM# affixing the **Kinetis MSC-CDC COM Port** device.

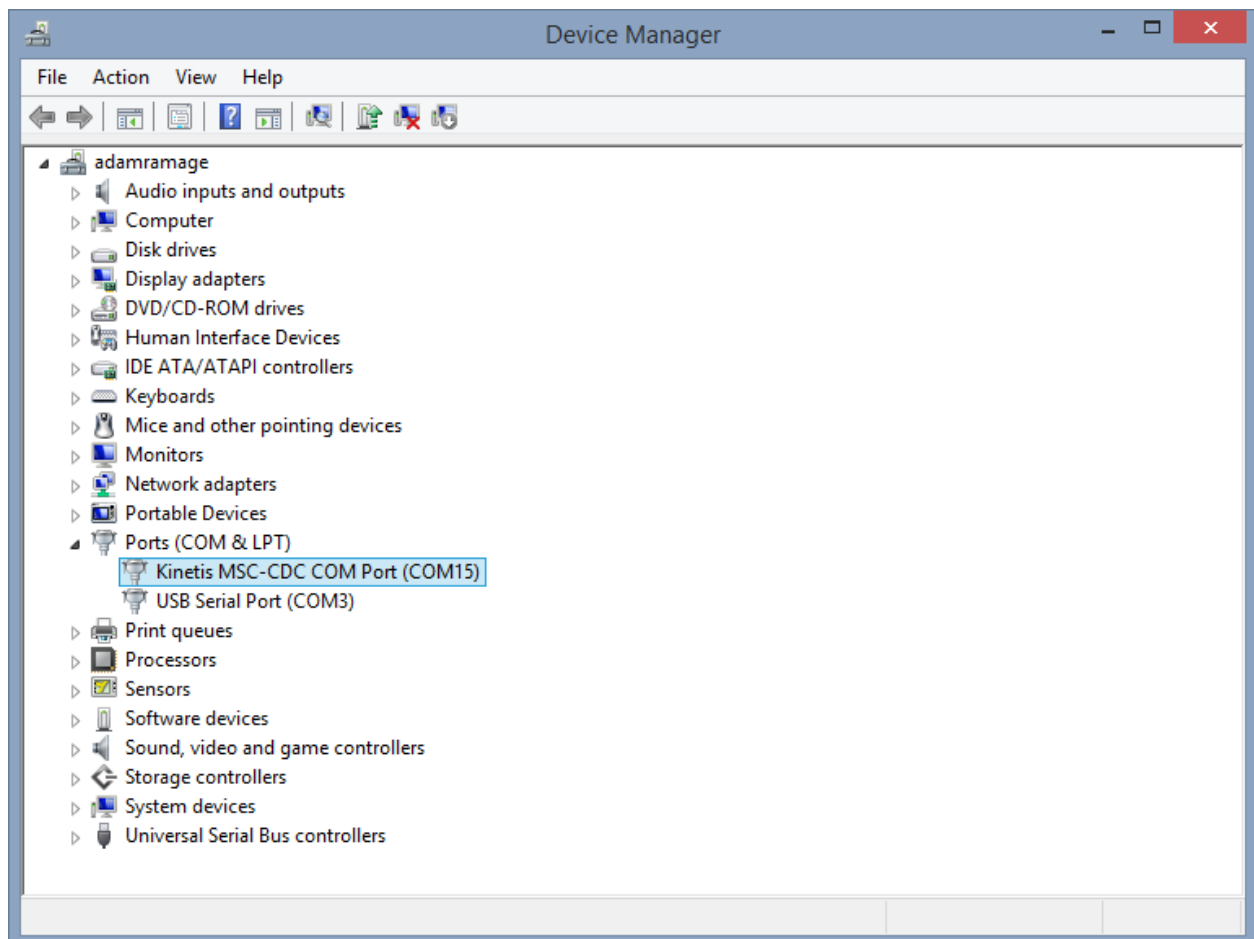


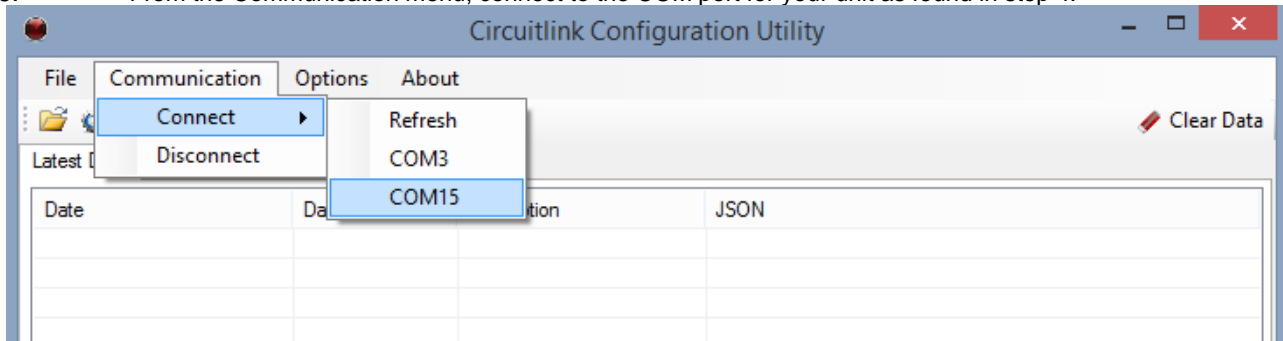
Figure 6 - Locating the T5 when there are multiple COM ports

5. Launch CLConfig.



Do not disconnect the USB cable while the application is running. This will cause unexpected results when trying to reconnect the unit.

6. From the Communication menu, connect to the COM port for your unit as found in step 4.



7. If you have the configuration file available, you can populate the labels for each input by adding the configuration file. For best results, this can be located by navigating to the **PARAMS** folder on the unit after selecting the **Add config file** button in the menu. The T5 operating system is designed to select the latest configuration file from this folder. The configuration file follows the following scheme : Fleet-YYYY-MM-DD-HH-MM-SS.pv2
8. When you are finished with the utility disconnect the device by selecting **Disconnect** from the **Communication** menu. If the device was removed without disconnecting it first, the serial port may remain locked by the application. With the USB cable disconnected, close the Configuration Utility and restart the T5. With power applied to the unit, reconnect the USB cable and launch the configuration utility.

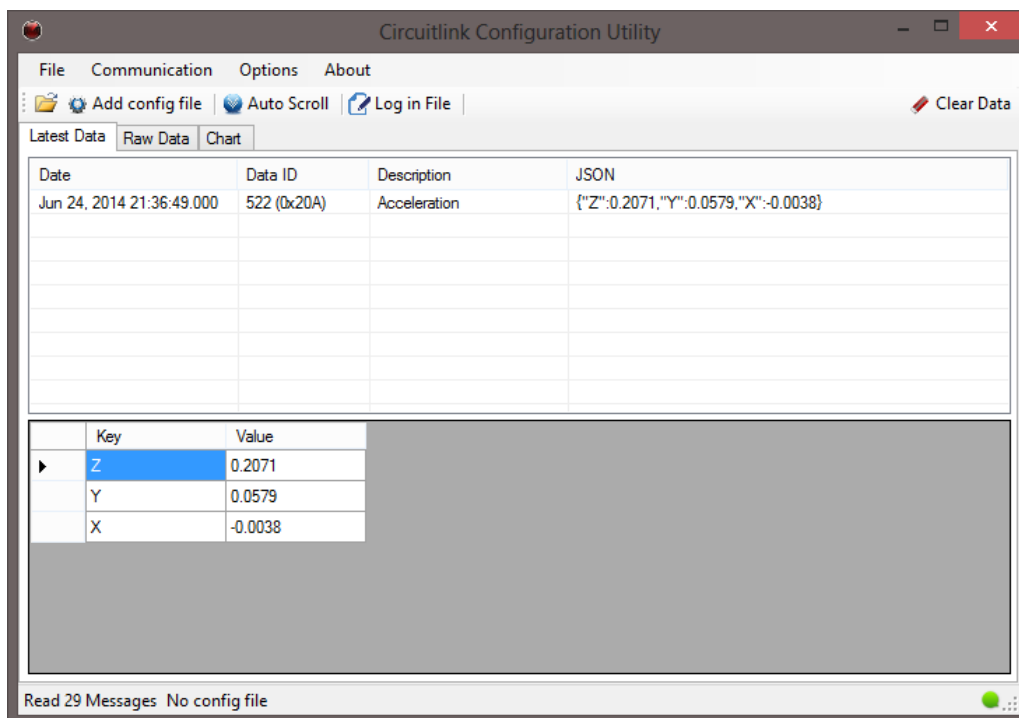


Figure 7 - Circuitlink Configuration Utility during a live connection

View .TRD files

Viewing .TRD files allows you to analyse previous events and see some configuration parameters.

1. Open the Circuitlink Configuration Utility
2. From the **File menu**, Select **Open** and navigate to the .trd file you wish to view. If you're retrieving this from your device, it will be located in the **DATA** folder on the root of the drive.
3. Raw Data will show data in chronological order as it was received by the unit whereas Latest data will show the latest entry for each data input. Information can be sorted by selecting the corresponding header and sorting ascending or descending.

Date	Data ID	Description	JSON
Jun 27, 2014 15:28:19.000	12314 (0x301A)	Usb Storage	{"Status":0}
Jun 27, 2014 15:28:19.000	12309 (0x3015)	IgnitionStatus	{"Status":false}
Jun 27, 2014 15:28:19.000	512 (0x200)	Speed	{"Speed":0}
Jun 27, 2014 15:28:19.000	24590 (0x600E)	AccDecHighBegin	{"Level":0,"Axis":2}
Jun 27, 2014 15:59:59.000	522 (0x20A)	Acceleration	{"Z":1.9601,"Y":0.0152,"X":0.0231}
Jun 27, 2014 15:28:20.000	12313 (0x3019)	Reset	{"Value":0,"Count":0}
Jun 27, 2014 15:28:20.000	12318 (0x301E)	FirmwareVersion	{"Major":2,"Minor":10,"Build":6,"Beta":4}
Jun 27, 2014 15:28:20.000	12322 (0x3022)	ParameterFile	{"Version":2,"Name":"Device-2014-06-17-07-20-31.pv2"}
Jun 27, 2014 15:28:20.000	12323 (0x3023)	ParameterFile	{"Version":3,"Name":"Fleet-2014-06-27-04-21-09.pv2"}
Jun 27, 2014 15:28:20.000	12324 (0x3024)	ParameterFile	{"Version":2,"Name":"Dynamic-2014-06-17-07-20-31.pv2"}
Jun 27, 2014 15:28:21.000	12326 (0x3026)	GpsAntennaStatus	{"Status":2}
Jun 27, 2014 15:18:36.000	24591 (0x600F)	AccDecHighEnd	{"TimeStamp":{"date":"2014-06-17T07:20:31.000Z","highres":13068},"HighValue":9961,"SetValue":5000,"Level":0,"Axis":0}
Jun 27, 2014 15:59:59.000	513 (0x201)	Rpm	{"RPM":1200}
Jun 27, 2014 15:28:19.000	12305 (0x3011)	EngineRunning	{"Status":true}
Jun 27, 2014 15:28:19.000	12303 (0x300F)	InputDigitalProcessed	{"Name":"Parking Brake","Value":1,"Number":136}
Jun 27, 2014 15:28:19.000	12303 (0x300F)	InputDigitalProcessed	{"Name":"Vehicle Ignition","Value":1,"Number":130}
Jun 27, 2014 15:28:19.000	12303 (0x300F)	InputDigitalProcessed	{"Name":"Door Open Front","Value":1,"Number":132}
Jun 27, 2014 15:59:59.000	525 (0x20D)	GPSPosition	{"Speed":0,"Satellites":0,"Heading":0,"Altitude":0,"Longitude":73.538489,"Latitude":44.71297}
Jun 27, 2014 15:28:20.000	12316 (0x301C)	TripEnd	{"Odometer":0,"Distance":0,"TagId":"0000000000000000","TripId":9}
Jun 27, 2014 15:59:59.000	526 (0x20E)	InputsAnalogue	{"Name":"24V Monitor System","Value":27611,"Channel":129}
Jun 27, 2014 15:59:59.000	526 (0x20E)	InputsAnalogue	{"Name":"Reverse Gear","Value":0,"Channel":128}
Jun 27, 2014 15:59:52.000	12303 (0x300F)	InputDigitalProcessed	{"Name":"Event Marker","Value":0,"Number":129}
Jun 27, 2014 15:59:52.000	24598 (0x6016)	InputsDigitalBegin	{"InputId":129}
Jun 27, 2014 15:59:52.000	24599 (0x6017)	InputsDigitalEnd	{"TimeStamp":{"date":"2014-06-17T07:20:31.000Z","highres":13462},"InputId":129}

An example of data received in a .trd file

LED Activity

The LED's on the face of the unit server to give a visual indicator of the activity currently occurring.



Different firmware may display different results as of the publication of this document

GPS

Description	LED Pattern
Failed to get valid NMEA message from GPS module	Solid Red
Received valid NMEA message from GPS module but hasn't received a valid position yet.	Solid Orange
Antenna open circuit, not connected	Flash Red Slow
Antenna short circuit.	Flash Red Fast
Received GPS valid position	Flash Green

DATA

Solid Amber	OFF	Flashing Green
Initialising after start-up	No activity	Receiving CAN data

COMS

Amber	Flashing Green	Flashing Red
<ul style="list-style-type: none"> - Failed to connect to server - Connected to server successfully but failed to transfer all files to FTP server 	<ul style="list-style-type: none"> - Open Live socket successfully - Transferred all file successfully through FTP - Login FTP successfully and transferring files. 	<p>WIFI:</p> <ul style="list-style-type: none"> - Failed to connect to router - Router failed to connect to internet <p>GSM:</p> <ul style="list-style-type: none"> - Failed to connect to GSM Modem - SIM card error - Failed to connect to GPRS network - The GPRS network failed to connect to internet

Often the LED's will show a grouped message meaning there may be an issue with the system. For more information regarding this, contact Circuitlink Support.

FCC Approved Antennas



The following antennas are FCC approved for use with the Tacholink 5 in the United States. Installation and use of alternate antennas without written permission from Circuitlink Pty Ltd will void equipment warranty and may void FCC approval to operate.

The MA600 and MA206 are combination antennas, the Linx antenna is Wi-Fi only. The following table summarizes the capabilities of each antenna and the matching Tacholink 5 models.

ANTENNA	WIFI	GPS	CELLULAR	TACHOLINK 5 MODEL
MA600 Combination	Yes	Yes	Yes	TACHO5A, 5B, 5C
MA.206 Combination	Yes	Yes	No	TACHO5B
Linx ANT-2.4-CW-RH	Yes	No	No	TACHO5B



Only one of the above antennas may be connected to the Tacholink 5 at one time. The best choice of antenna for the TACHO5B will be determined by installation requirements.

MA600

This is a combined GPS/Cellular/2.4GHz 802.11 antenna manufactured by Taoglas, part number MA600.A.ABC.006.

Antenna Type

The cellular WWAN and 2.4GHz 802.11 Wi-Fi antennas within the MA600.A.ABC.006 are a type known as 'planar inverted F antennas' (PIFA).

Cellular Antenna Gain

Frequency (GHz)	824 ~ 896	1710 ~ 1880	1850 ~ 1990
Peak Gain (dBi)	2.1	2.9	3.0
Average Gain (dBi)	-4.7	-2.7	-3.1

802.11 WiFi Antenna Gain

Frequency (GHz)	2.4 – 2.6
Peak Gain (dBi)	2.1
Average Gain (dBi)	-2.3

Antenna Cable Length

The MA600.A.ABC.006 is supplied with 3m +/-30mm cables for the Cellular, 802.11 and GPS antennas.

MA206

This is a combined GPS/2.4GHz 802.11 antenna manufactured by Taoglas, part number MA206.A.AB.004.

Antenna Type

The 2.4GHz 802.11 WiFi antenna within the MA206.A.AB.004 is a dipole.

802.11 WiFi Antenna Gain

Frequency (GHz)	2.4 – 2.5
Peak Gain (dBi)	3.4

Antenna Cable Length

The MA206.A.AB.004 is supplied with 3m +/-30mm cables for the 802.11 and GPS antennas.

ANT-2.4-CW-RH

This is a 2.4GHz 802.11 antenna manufactured by Linx, part number ANT-2.4-CW-RH-SMA.

Antenna Type

The antenna is a $\frac{1}{4}$ wave helical whip.

Antenna Gain

Frequency (GHz)	2.39 – 2.49
Peak Gain (dBi)	-0.9

Antenna Cable Length

This antenna has no cable. It is fitted with an SMA connector for direct connection to the Tacholink 5.

Contact Information

For questions and or amendments to this guide, please contact:

Circuitlink Pty Ltd

7/30 Foundry Road, Seven Hills NSW 2147 Australia

T: +61 2 9624 1922

F: +61 2 9624 1911

E: support@circuitlink.com.au

W: CIRCUITLINK.COM.AU

General Support Enquiries:

support@circuitlink.com.au

Revision History

Version	Date	Change	Author
1.0	14/7/14	Initial Version	A.Ramage
1.1	14/7/14	Pre-release amendments	A.Ramage
1.2	29/9/14	Adjusted formatting and cable diagrams	A.Ramage
1.3	8/12/14	<ul style="list-style-type: none"> FCC Warnings updated Antenna Specifications added 	J. Skeen
1.4	18/12/14	<ul style="list-style-type: none"> FCC Logo removed from P5 	J. Skeen
1.5	20/01/15	<ul style="list-style-type: none"> FCC warning statement changed FCC Label statement deleted modifications put into separate section 	J. Skeen
1.6	30/01/15	<ul style="list-style-type: none"> Added instruction for loading new configuration file Added notes for Remote Accelerometer Added minimum specification for Intelligo and CLConfig Final release 	A.Ramage
1.7	9/2/15	<ul style="list-style-type: none"> Added Voltage and Current specifications Updated wording for RF Radiation Exposure Statement Updated document format to include document status and publish date in footer Added vehicle fusing recommendation Added information on antennas versus Tacholink models Added information on fitting one antenna at a time 	A.Ramage/JSkeen

Table 1 - Revision History