



fleetilla[®]



FL18XX INSTALLATION GUIDE

Version 2.0

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NOTICE:

Do not install or operate this device where explosive atmospheres may be present. Do not install this device in any vehicle fueled by liquefied petroleum (Compressed Natural Gas or Propane) or governed by petrochemical regulations without additional safety measures being employed. Do not operate this device near life support equipment or aircraft.

CONTACT INFORMATION:

For questions or information about this product, please contact: Fleetilla, Inc., 1745 Fritz Drive, Trenton MI 48183
Phone: (734) 699-6150, Email: support@fleetilla.com

SECTION 1 - FL 18XX COMPONENT IDENTIFICATION

Components 1 and 2 are shipped with all orders. Components 3 through 6 (or similar components) will be shipped, depending on choices made at time of order. Check your shipment to ensure that you have received all the necessary components prior to beginning installation.



1
FL1800 / 1850 MAIN UNIT



2
MAIN WIRING HARNESS ASSEMBLY



3
DUAL THROUGH-HOLE MOUNT ANTENNA



4
DUAL MAGNETIC-MOUNT ANTENNA



5
SINGLE MAGNETIC-MOUNT GPS ANTENNA



6
SINGLE "STICK STYLE" CELLULAR ANTENNA

SECTION 2 - INSTALLATION OVERVIEW



INSTALLATION PREPARATION

The following tools and supplies are generally recommended for typical FL18XX installations. Actual tool requirements will vary according to the specifics associated with each vehicle, mounting location, antenna type, etc.

Allow 30 minutes for less complicated installations and up to two hours for more involved installations. These time estimates are a general guide and will vary according to vehicle type, installation type and installer experience.

INSTALLATION PROCEDURE

1. MOUNTING COMPONENTS

Installing the FL18XX involves:

- (a) Identifying locations for installing the antenna and the main FL18XX unit
- (b) Connecting the power wiring and sensors (if any)
- (c) Routing and securing the appropriate cables

The Installation Steps (section 3), explains these steps in detail.

RECOMMENDED TOOLS AND SUPPLIES

- WIRE CUTTER / STRIPPER
- SCREWDRIVERS (SLOTTED AND PHILLIPS TYPE)
- 1" HOLE SAW (FOR THROUGH-HOLE ANTENNA)
- ELECTRIC DRILL
- PLIERS
- BUTT SPLICES / CRIMP TOOL
- ELECTRICAL TAPE
- TIE WRAPS (TO SECURE WIRING IN PLACE)
- #10 MOUNTING SCREWS FOR MAIN UNIT
- RUBBER HOLE GROMMETS
- SILICONE SEALANT (FOR THROUGH-HOLE MOUNT ANTENNA INSTALLATION)
- OPTIONAL MOUNTING BRACKET FOR ANTENNA

2. CONNECTING POWER

The device must be connected to both “Constant” and “Ignition” power sources. See the power connection diagrams in section 5 of this guide for specific connection details. “Constant” power is power that is always present, even when the vehicle is turned off. Sometimes this is referred to as a “Battery” connection. “Ignition” power is power that is present only when the

vehicle ignition is keyed “ON”. Ensure that the source from where power will be tapped is a direct connection and there are no switches or other devices that can break the circuit.

SECTION 2 - INSTALLATION OVERVIEW (cont.)

Wires connecting any power to the main unit should be routed so that they are not susceptible to pinching, flexing or chafing from contact with other parts of the vehicle or operator. Tapping into the vehicle harness can be achieved using crimp-on splices or through manually cutting and splicing into the harness. Properly insulate completed connections to prevent contact with other connections or the vehicle chassis. You must turn the vehicle off before attempting this. Further, it is a good practice to disconnect the battery during these procedures.

Make the power cabling route as short as feasible during installation and secure wires firmly with tie wraps or some other means. Re-connect the battery and check the wiring connections to the vehicle with a meter for proper operation (ignition power etc...) prior to making final connections to the FL18XX. Connect the power cabling that extends from the vehicle to the FL18XX with butt splices or twist connections. Carefully insulate connection points with electrical tape to prevent short circuits. Unused connections coming

from the FL18XX should be covered to prevent contact with adjacent metallic objects.

Note: It is vital that the installer establish good quality ground connection between the FL18XX and the vehicle. This is typically achieved by establishing ground connections to a non-movable portion of the vehicle chassis. Poorly grounded devices may operate intermittently or erratically, so emphasis should be placed on this step.

3. CONNECTING ANTENNAS

The antennas used with the FL18XX vary according to application. All antennas have a fixed-length cable, so be sure the selected mounting and cable routing path can reach the mounting location of the FL18XX with the supplied length of the antenna cable.

Tips on establishing appropriate locations for antenna mounting can be found in the Installation Steps (section 3) of this guide. Caution should be exercised so

that the cable or the end connectors are not damaged in any way. Antenna cable paths should generally be hidden and should avoid sharp bends, pinching or chafing. Use grommets and/or silicone sealant to seal any holes placed in the cab wall for cable passage. Connect the ends of the antenna cables to the matching color connectors on the FL18XX unit. See the photo example of the proper connector insertion method in section 3, page 9.

SECTION 3 - INSTALLATION STEPS

1. RECORD DEVICE SERIAL NUMBER

Record the 15 digit serial number (known as device ESN or IMEI) located on the outside of the FL18XX main unit and the name and/or number of the vehicle in which the device will be installed.



15 digit ESN/IMEI Example

- The 8-pin power connector must be accessible for maintenance and servicing.
- The four diagnostic lights should be visible for trouble shooting purposes.
- The location of the FL18XX must not interfere with any vehicle or driver functions.
- Do not install the unit in a location that may generate heat that exceeds 140 degrees F.
- The FL18XX is not suitable for installation under the hood of a truck or car.
- Do not install the FL18XX in locations where it may come into contact with water, grease, mud or any other contaminant.
- The FL18XX must be installed at least 36" from the nearest source of RF interference (radio, CD player, CB, radar detector, etc.).

2. IDENTIFY INSTALLATION LOCATION

Identify an installation location for the FL18XX unit:

- Make sure the length of the antenna and power cables are sufficient
- **The mounting location must allow the unit to be securely fastened.**

3. INSTALL THE ANTENNA

The antenna installation will vary based on the type of antenna being installed.

- The antenna must be installed facing up, on a flat horizontal surface with no metallic objects above the antenna that may obscure its view of the sky (for items 3 and 4 on page 3).

- Install the antenna in a location that is away from other transmitting or receiving antennas
- Ideal locations include:
 - *On the roof at the rear of the cab/vehicle (only items 3 and 4 on page 3, items 5 and 6 to be installed inside the vehicle)*
 - *Under the air faring, as long as it is not metallic*
- The antenna must be at least 36" from any other antenna.

WARNING

**RF EXPOSURE:
KEEP 20CM (7.9 INCHES)
SEPARATION DISTANCE FROM
THE ANTENNA AND THE
HUMAN BODY.**

SECTION 3 - INSTALLATION STEPS (cont.)

DUAL GPS/CELLULAR THROUGH-HOLE MOUNT ANTENNA MOUNTING and INSTALLATION

This Dual GPS/Cellular through-hole antenna (pictured right) must be mounted on a HORIZONTAL surface, with a clear view of the sky. It is suitable for external (on the roof of a vehicle) mounting or on a mounting plate as shown. This requires a 1" diameter hole on the antenna mounting surface. If mounted off cab, the wires should enter through a hole that is sealed and will not cause chaffing. There should not be any metallic components immediately above the antenna. The GPS reception is significantly impacted by the

antenna's ability to view a clear (no metal above) sky. This antenna must be placed at least 2 feet away from sources of electromagnetic radiation such as CD players, CB radios, any transmitting antennas, etc. Gently bend and route the antenna wires, avoiding sharp turns/kinks and ensure that they are routed away from other sources of radiation (Radios, CD Players, etc.). Mounting under non-metallic air farings is acceptable.



DUAL GPS/CELLULAR MAGNETIC-MOUNT ANTENNA MOUNTING and INSTALLATION

This Dual GPS/Cellular antenna (pictured right) must be mounted on a HORIZONTAL surface, with a clear view of the sky. It is suitable for external (on the roof of a vehicle) mounting. There should not be any metallic components immediately above the antenna. The GPS reception is significantly impacted by the antenna's ability to view a clear (no metal above) sky. This antenna must be placed at least 2 feet away from sources of electromagnetic radiation such as CD players, CB radios, any transmitting antennas, etc. Gently bend and

route the antenna wires, avoiding sharp turns/kinks and ensure they are routed away from other sources of radiation (Radios, CD Players, etc.). If routed through

an exiting door or window opening, route both wires through or around weather stripping so that they will not be pinched or flexed by door or window operation.

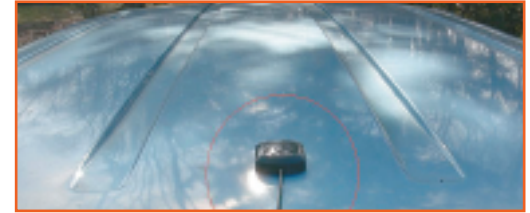


SECTION 3 - INSTALLATION STEPS (cont.)



SINGLE MAGNETIC-MOUNT GPS ANTENNA MOUNTING and INSTALLATION

This GPS antenna (pictured right) must be mounted on a HORIZONTAL surface, with a clear view of the sky. It is suitable for external (on the roof of a vehicle) mounting or inside the vehicle (dashboard). There should not be any metallic components immediately above the antenna. GPS reception is significantly impacted by the antenna's ability to view a clear (no metal above) sky. GPS antenna must be placed at least 2 feet away from sources of electromagnetic radiation such as CD players, CB radios, any



transmitting antennas, etc. Gently bend and route the antenna wire, avoiding sharp turns/kinks and ensure it is routed away from other sources of

radiation (Radios, CD Players, etc.). Route the wire through or around weather stripping so that it will not be pinched by door or window operation.

SINGLE "STICK-STYLE" CELLULAR ANTENNA MOUNTING and INSTALLATION

This antenna (pictured right) must be mounted VERTICALLY on the INSIDE of a vehicle. It should be attached to a glass/non-metallic surface and must have minimum amount of metal areas/surfaces immediately close to it. Gently bend and route the antenna wire, avoiding sharp turns/kinks. The photograph below shows a typical installation on the windshield of a truck. This antenna is not suitable for mounting outside of the vehicle.



SECTION 3 - INSTALLATION STEPS (cont.)

4. SECURE THE FL18XX

Secure the FL18XX in a location identified in step 2.

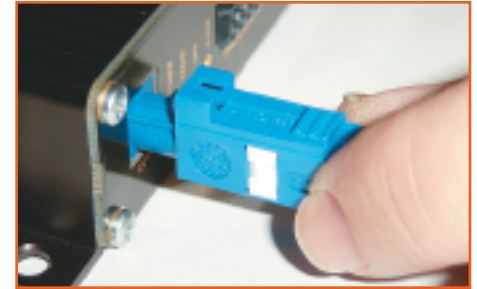
- Use four screws or rivets (not provided).
- If installing vertically, the connectors should point down so as to prevent dirt, debris, etc. from entering the device through the connector openings.

Note: For additional mounting options, additional holes may be drilled into the device mounting rails only. Do NOT drill holes into the enclosure body of the device as this may damage the device and will void your product warranty.

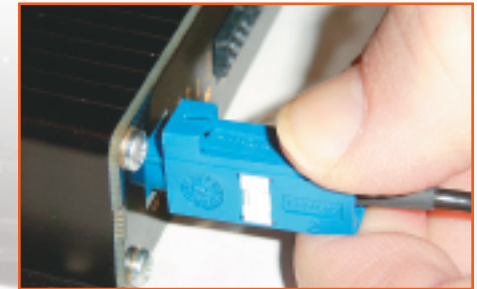
5. CONNECT ANTENNA LEADS

Connect the antenna leads to the FL18XX.

- Install each connector to the receptacle that matches in color, located at opposite ends of the FL18XX faceplate.
- Push the antenna connector onto its receptacle with the release latch facing toward the top of the FL18XX.
- Remove antenna connector by pressing down the release tab at the top-rear of the antenna cable connector while gently pulling back on the connector body.
- Do not pull on the antenna wires when installing or removing the antenna connector(s).



Install the antenna cable onto the FL18XX by pushing antenna connector straight onto receptacle protruding through the front panel. The release tang should be facing upward during this operation.



Remove the antenna cable by first pushing in on the connector, then fully depressing the release tang at the rear of the connector and pulling straight back. It is important to depress the release tang before pulling back on the connector. Do not pull directly on the antenna cable or apply excessive pull force.

SECTION 3 - INSTALLATION STEPS (cont.)



6. CONNECT WIRING HARNESS

Connect the 8-pin harness wires to power wires from vehicle (do not connect the 8-pin harness to the FL18XX yet!)

- Turn the vehicle off, remove the key and if possible, disconnect battery before connecting to vehicle wiring.
- Identify the wiring schemes that will be used:



Install power cable into the FL18XX by pushing the power connector straight into the 8 position power receptacle located on the front panel. The retention catch should face up and fit through the clearance notch cut into the front panel.

- *Power wiring - Follow diagram 2 in section 5, page 13.*
- *Optional sensor connections - Follow diagram 3 in section 5, page 14. This permits the use of door switches, relays and powers signals from the vehicle for sensing special conditions.*
- *Contact Fleetilla for other wiring configuration or sensor application options.*



Remove the power cable by depressing the release lever at the rear of the power connector while pulling straight back on the connector. Do not pull directly on the wires.

- The bare black wire should be connected to the nearest chassis ground.
- Verify that the constant power (RED wire) and ignition power (ORANGE wire) connections are delivering approximately 12 volts.
- Verify that these power connections are uninterrupted by other in line switches (such as a vanity light switch), etc...
- Avoid connecting the FL18XX to a line with high intermittent loads, such as flood lights, refrigerators, etc...

7. CHECK LED LIGHTS

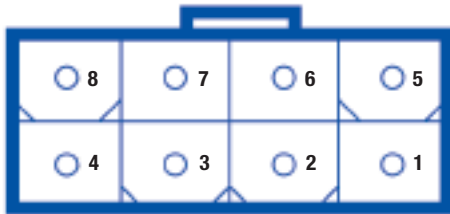
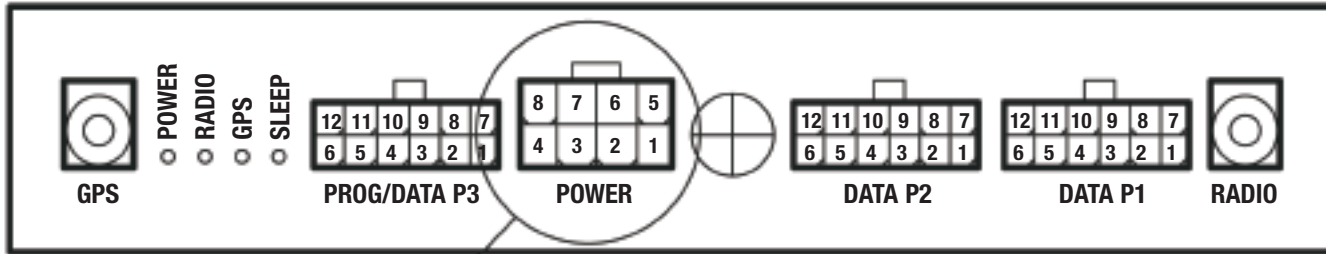
- Ensure that the green power light is illuminated after powering on the FL18XX device.
- See section 4, page 11 for front panel LED indicator interpretations.

Section 4- LED Indicator Status

FL18XX FRONT PANEL LED STATUS

<i>LED</i>	<i>INDICATION</i>	<i>MEANING</i>	<i>POSSIBLE SOLUTION</i>	<i>STATE</i>
POWER- GREEN	STEADY OFF	UNIT NOT OPERATING OR RECEIVING POWER	<ul style="list-style-type: none"> ❖ Ensure power is connected ❖ Ensure correct supply voltage 	
POWER- GREEN	STEADY ON	IGNITION POWER IS ON	No action necessary; normal for Ignition "ON" condition	NORMAL
POWER- GREEN	ONE BLINK	IGNITION POWER IS OFF	No action necessary; normal for Ignition "OFF" condition	NORMAL
POWER- GREEN	FOUR BLINKS	ONLY IGNITION POWER PRESENT ; NO AUX (BATTERY) POWER	<ul style="list-style-type: none"> ❖ Incorrect wiring configuration or loose connection; check wiring 	
RADIO- YELLOW	STEADY OFF	HARDWARE OR CARRIER ISSUE	Contact Fleetilla	
RADIO- YELLOW	STEADY ON	POSSIBLE PROBLEM	Contact Fleetilla	
RADIO- YELLOW	ONE BLINK	CELLULAR SIGNAL IS GOOD	No action necessary	NORMAL
RADIO- YELLOW	TWO BLINKS	NO CELLULAR SIGNAL PRESENT	<ul style="list-style-type: none"> ❖ Verify that antenna cable is connected and that there are no breaks or kinks in the cable. ❖ Move vehicle to area with better cellular coverage ❖ Relocate cellular antenna, if possible. 	
RADIO- YELLOW	THREE BLINKS	CELLULAR TRANSMITTER SENDING DATA	No action necessary	
RADIO- YELLOW	FOUR BLINKS	LOW CELLULAR SIGNAL LEVEL	<ul style="list-style-type: none"> ❖ Relocate cellular antenna if possible ❖ Move vehicle to area with better cellular coverage 	
GPS- RED	STEADY OFF	GPS NON-FUNCTIONAL OR INITIALIZING	Contact Fleetilla if condition persists	
GPS- RED	ONE BLINK	GPS SIGNAL IS GOOD	No action necessary	NORMAL
GPS- RED	TWO BLINKS	GPS SIGNAL NOT PRESENT	<ul style="list-style-type: none"> ❖ Ensure that GPS antenna is securely connected ❖ Ensure GPS antenna has clear view of the sky ❖ It may take up to 12 minutes to acquire GPS lock ❖ Ensure no breakage or kinks in antenna cable 	
GPS- RED	THREE BLINKS	POSSIBBLE PROBLEM	Contact Fleetilla	
GPS- RED	FOUR BLINKS	POOR (LOW) GPS SIGNAL LEVEL	<ul style="list-style-type: none"> ❖ Relocate GPS antenna as it does not have a clear view of sky 	
SLEEP- GREEN	ONE BLINK EVERY 9 SECONDS	SLEEP CIRCUITS OK	No action necessary	NORMAL

SECTION 5 - WIRING DIAGRAM 1 - FL18XX UNIT

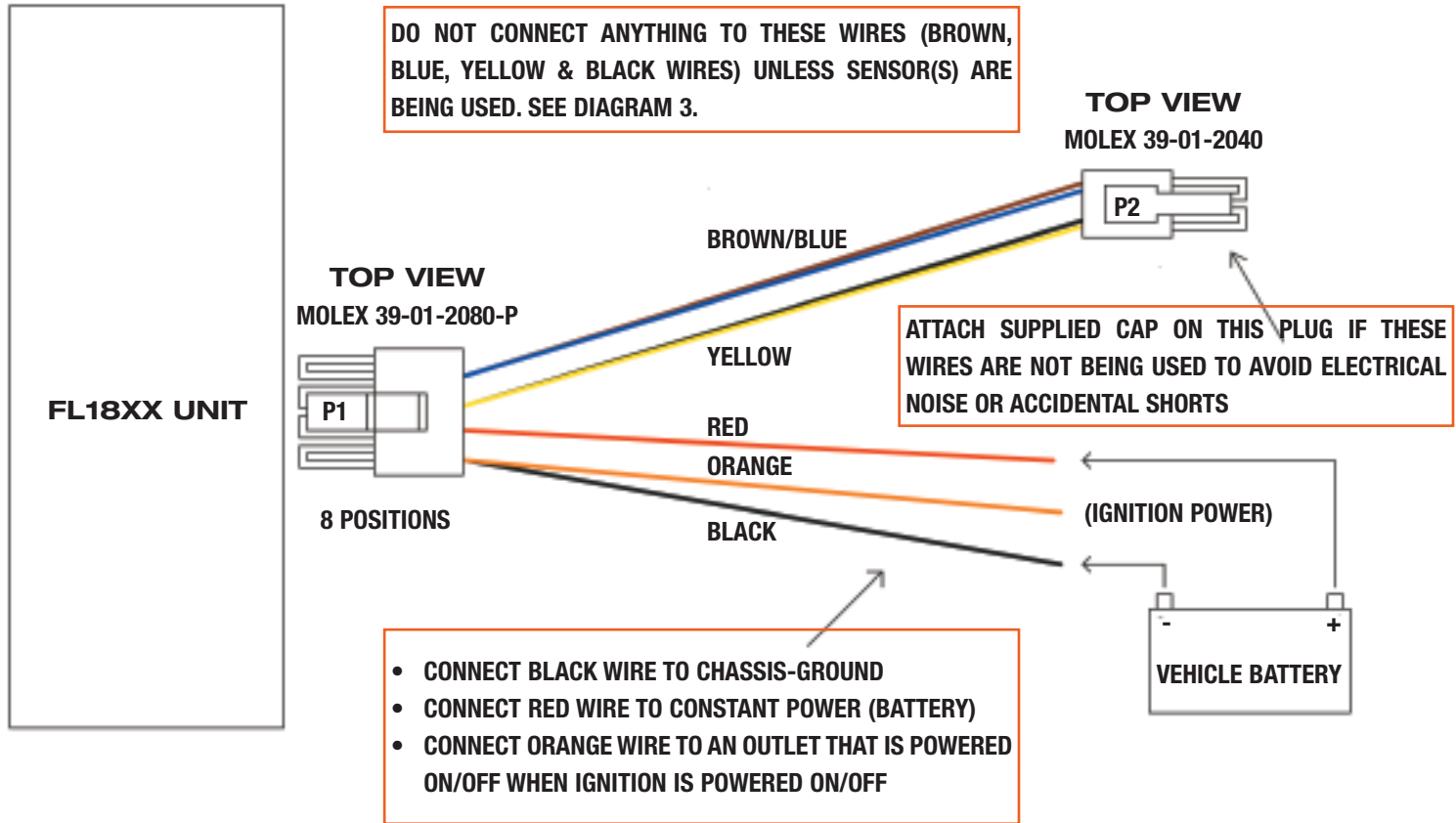


P1 - POWER CONNECTOR
Looking Into Connector

PIN FUNCTIONS

- P1-1: SENSOR 1 (INPUT)
- P1-2: GROUND
- P1-3: NO CONNECT
- P1-4: GROUND
- P1-5: SENSOR 2 (INPUT)
- P1-6: RAW POWER (OUT)
- P1-7: CONSTANT BATTERY POWER IN (8-33VDC)
- P1-8: IGNITION POWER IN (8-33VDC)

SECTION 5 - WIRING DIAGRAM 2 - FL18XX POWER CONNECTIONS



SECTION 5 - WIRING DIAGRAM 3 - FL18XX SENSOR INPUT CONNECTIONS

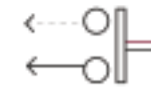


REMOVE CONNECTOR AT THE END OF P2 AND
CONNECT THESE WIRES (BLUE, BROWN &
YELLOW) TO EXTERNAL SENSORS OR SWITCHES.

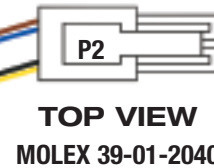
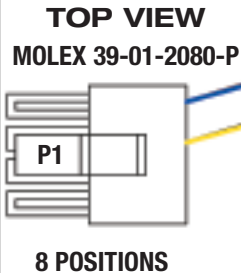
LOOPBACK SIGNAL WITH
CONTACT SWITCH TO
BROWN OR BLUE WIRES

OR
EXTERNAL SIGNALS
TO BROWN OR BLUE
WIRES

BROWN
OR BLUE



YELLOW



THE YELLOW WIRE PROVIDES A VOLTAGE OUTPUT THAT CAN BE LOOPED BACK TO EITHER
THE BROWN OR BLUE SENSOR WIRES VIA A SWITCH. THIS CAN BE USED TO DETECT DOOR
OPENING, TAMPERING ETC. DO NOT CONNECT YELLOW WIRE TO GROUND!

FL18XX UNIT

SECTION 6 - TECHNICAL SPECIFICATIONS

MECHANICAL		ENVIRONMENTAL	
SIZE:	1.16" H x 6.90" W x 4.25" L	OPERATING TEMP:	-20C to +60C (-4F to +140F)
WEIGHT:	13 oz.	STORAGE TEMP:	-40C to +85C (-40F to +185F)
CASE MATERIAL:	Anodized aluminum	OPERATING HUMIDITY:	5 to 95%, non-condensing
MOUNTING:	4" x 3/8" flange w/ mounting holes	SHOCK & VIBRATION:	Meets SAE J1455 requirements
ANTENNA CONNECTORS:	SMB w/FAKRA keyed housing	APPLICABLE STANDARDS	
GPS KEY-"C", GSM KEY- "D"			
I/O CONNECTORS:	Molex Microfit (43025-1206)	GPS:	L1 frequency (1575.42 MHz), C/A code (standard positioning service), 12 channel Continuously tracking receiver
ELECTRICAL (@ 25C)		RADIO:	Quad-band 850 MHz (GSM), 900 MHz (EGSM), 1800 MHz (DCS), 1900 MHz (PCS). Equipped with 3-volt SIM
OPERATING VOLTAGE:	8 to 33 volts DC.	INTERFACES	
OPERATING CURRENT:	55mA average @12VDC (Receiving)* 188mA average @12VDC (Transmitting) 150µA @12VDC (Sleep mode)	SENSORS:	Two analog inputs (0-33V) 6 TTL inputs/outputs
*FL18XX unit only with GPS and GSM radio enabled, no peripherals attached to ports.		SERIAL PORTS:	Three ports for connection
FCC INFORMATION: Contains GSM/GPRS modem transmitter model FCC ID:#MIVGSM0108. This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device must not cause harmful interference. (2) This device must accept any interference received, including interference that may cause undesired operation.		WARNING: RF EXPOSURE. KEEP 20CM (7.9 INCHES) SEPARATION DISTANCE FROM THE ANTENNA AND THE HUMAN BODY TO COMPLY WITH FCC RF EXPOSURE GUIDELINES.	

SECTION 7 - MOUNTING DIMENSIONS (not to scale)



Note: Make sure that a minimum of 6.25" of space is available for the FL18XX and the antenna connections/wires. Bends in the antenna wires should be made with smooth transitions as shown in the drawing to the right. Never "kink" the antenna cable(s) around corners to make them fit in a particular location. Doing so will result in a broken antenna wire and/or reduced antenna performance.

