

Instruction Manual

Thank you for purchasing the A' PEXi DIN 3 Meter. Please read through this Instruction Manual thoroughly to operate this product correctly and keep it near the product so that you may refer to it whenever necessary. If you transfer the product to another customer, be sure to attach this Instruction Manual and the warranty information to the product.

Product Name	DIN 3 Meter
Product Code	409-A003
Application	This device measures the following vehicle parameters. Engine Oil, Differential Oil, or Water Temperature Engine Oil Pressure
Applicable Vehicle	DC10V~16V Body Earth Vehicle
Operating Temperature	±0~+60°C

Before Installation and Use This Instruction Manual is intended to be used for the A' PEXi DIN 3 Meter. Please also refer to the Instruction Manual for the Sensor Unit that supports this product.

Version Information

No.	Date of Issue	Instruction Manual Ver.	#	Notes
1	June 1, '12	7207-0360-00	1	
2	Apr 21, '14	7207-0360-01	2	
3	Feb 19, '15	7207-0360-02	3	

Contact
Apex Co., Ltd.
 9-1 Matsugi Hachioji-City, Tokyo, 192-0362 Japan.
 Tel: +81-42-678-7130 Fax: +81-42-678-7131
Apex Integration Inc.
 1449 West Orange Grove Avenue, Suite#A, Orange, CA 92868 USA
 Tel: +1-714-685-5700 Fax: +1-714-685-5701

©Apex Co., Ltd. Printed in Japan

- It is strictly prohibited to reproduce or copy any portion of this manual. This manual may not be used for any other purposes than personal use without expressed written consent of A' PEXi.
- We are not responsible for any losses resulting from data memory loss caused by faulty installation, accidents, or any other factors.
- A' PEXi reserves the right to improve and change optional parts, part numbers, prices, and configurations without prior notice.

2 Safety Precautions

Please read "Safety Precautions" carefully to operate the product with safety. Keep the instruction manual in hand and refer to it whenever needed. The instruction manual describes the items that you must observe prior to installation and use of this product to avoid possible problems and damage which would be caused by improper installation and use. The meanings of pictorial indications by caution marks (signal words) are shown below. Please understand their contents correctly before starting to read the text of this instruction manual.

GLOSSARY

Display	Meanings	Display	Meanings
	Potential hazard that can result in death or serious injury of the operator or a third person if the product is wrongly operated in disregard of this indication.		Potential hazard that can result in slight injury or medium damage to the operator, third person, or vehicle if the instruction manual is not followed correctly.

WARNING

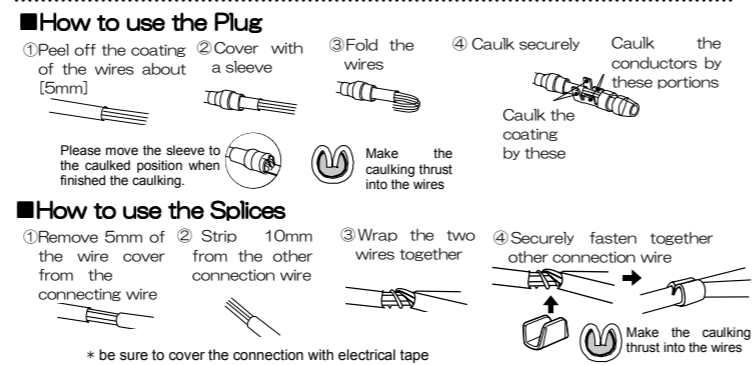
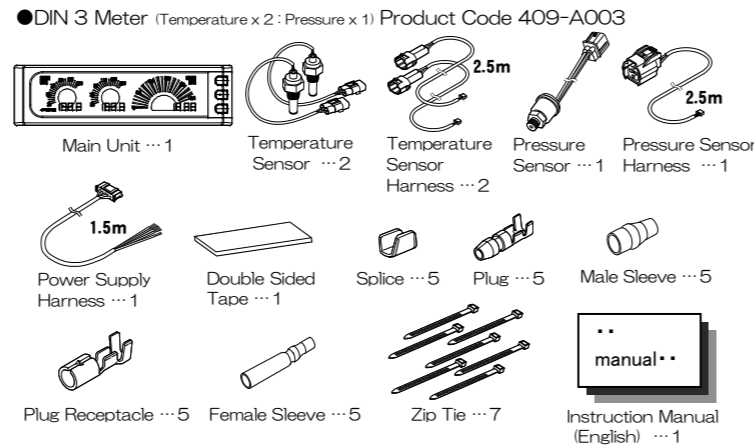
- Discontinue use of this product immediately if any unusual odor or smoke comes from the unit.** Failure to do so may result in electrical shorts and potential engine fire. Please consult with your distributor or nearest local installation shop.
- Always remove the negative terminal (-) of the battery before attempting installation.** Failure to do so may result in electrical fires and engine fires resulting in damaged products. After installation with the negative battery terminals disconnected, recorded ECU memory, idling learning system, anti-theft systems, vehicle radio security systems, etc. may be reset. In this case please refer to your vehicle's factory owner's manual for further information.
- Always wire this unit up according to the instruction manual.** Failure to do so may result in electrical fire, improper unit/ vehicle operation.
- Mount this product securely.** Do not install nor mount the product in an unstable location that may interfere with driving which can result in an accident.
- Never operate this unit while driving.** This may interfere with driving operations which can result in unexpected accidents and/or problems.
- Do not install and use this product and its accessories for any other purpose than the one specified by A' PEXi in this manual.** In this case, we shall disclaim all responsibility for any damage or loss to the customer or third persons from improper usage of this product.

CAUTION

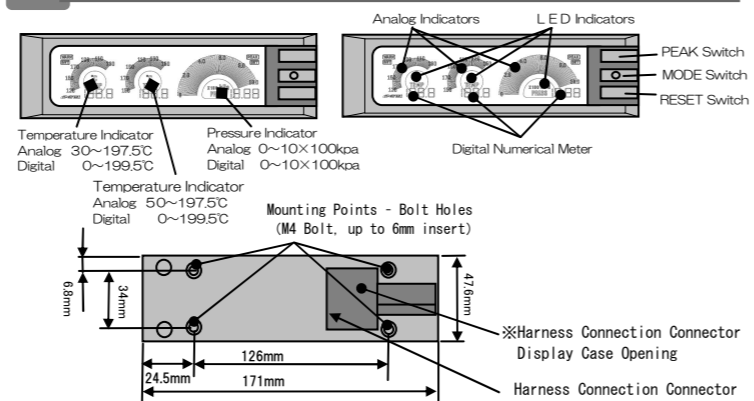
- This product should only be installed by a trained professional installer.** Installation requires past experience, technical knowledge and skill to prevent damage to the unit and vehicle.
- Never disassemble or tamper with this unit.** Failure to do so may lead to electrical short circuits and electrical fires resulting in product and engine damage.
- Do not drop this product or expose it to excessive shock.** Failure to do so may result in product malfunction and engine damage.
- Do not operate this unit in excessively hot or high-temperature vehicle interiors that are not air-conditioned during hot weather seasons.** Failure to do so may result in unit malfunction, thereby resulting in damage to the product and the vehicle.
- Keep this unit away from direct water and sunlight.** Failure to do so may result in electrical shorts causing product and vehicle damage.
- Be sure to perform installation of unit parts when engine bay area is at cool temperatures.** Failure to do so may result in burning oneself.

1 Parts List

This manual contains the parts list of each individual product for the DIN 3 Meter. Be sure to check the contents of the product BEFORE installation. If any parts are missing or damaged, please repack the unit and all of its contents and return to your dealer of purchase with proof of purchase.



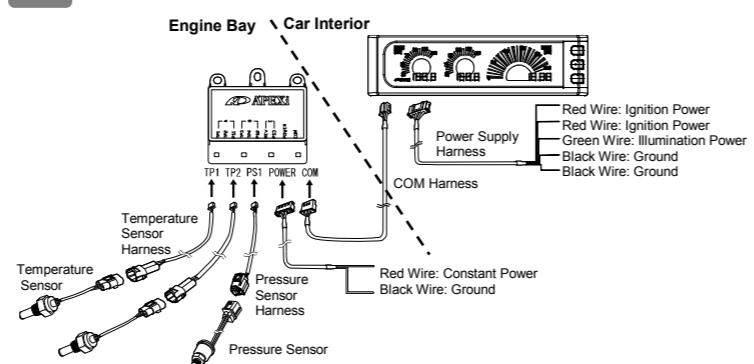
3 Part Descriptions



CAUTION

- Be sure to not touch the back of the DIN Meter where the Harness Connection Connector opening is located as it may be warm in temperature during and immediately after operation.

4 Wiring Connection Diagram



5 Installation Procedures

Please be sure to install the Sensor Unit before sensor installation.

Temperature Sensor Installation
 Temperature Sensor Thread Pitch = 1/8 PT.

- Locate a point where temperature can be measured.

CAUTION

- Be sure to use Teflon Tape or sealant to seal the 1/8 PT sensor and apply when needed.
- Be sure to mount sensor unit and sensors away from electrical interference or noise (ex: Ignition Systems).
- Be sure to route the harness away from moving parts and HOT areas.
- Be sure to drain and fill the oil and radiator fluid according to the vehicle owner's manual. For the radiator, once its filled with the appropriate coolant, make sure to bleed the system.
- Be sure to check for any water or oil leaks to prevent severe engine damage.

- The 1/8 PT threaded portion is tapered. Do not over-tighten, be sure to tighten by hand first then use a tool to torque down completely to prevent thread damage.

Oil Drain Plug Installation
 When installing the Temp Sensor onto the oil drain bolt location, be sure to use an optional sensor adapter and copper washer when required.

Pressure Sensor Installation
 Pressure Sensor Thread Pitch = 1/8 PT.

- Locate a point where pressure can be measured.

WARNING

- Do not use the pressure sensor on fuel systems with extremely high fuel pressure engines or on diesel engines where fuel is more prone to leaking and can result in fire causing severe engine and vehicle damage.

- For Pressure**
 Connect to Sensor Unit connector point labeled "PS1"

7 How to Install Meter

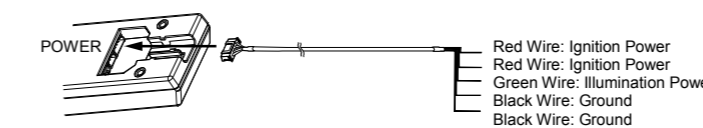
- Locate the mounting location for the DIN 3 Meter
- Be sure to mount in a location where wiring harnesses can reach the meter display unit.

WARNING

- Be sure to mount the meter in a location that does not interfere with normal driving and can be easily adjusted. Failure to do so may result in serious injury or even accidental death.
- Be sure to mount the meter in a location that does not interfere with vehicle airbag systems.

Power Supply Wiring Harness

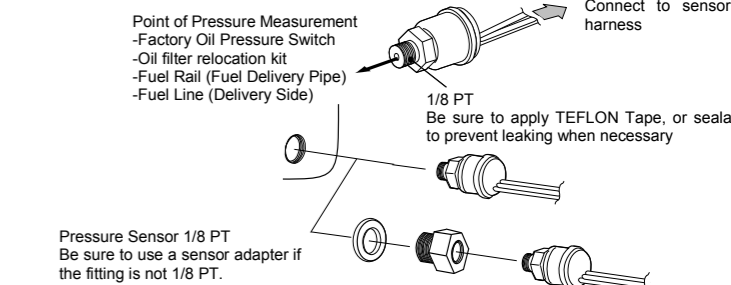
- The DIN 3 Meter requires the connection of an Ignition Power, Illumination Power, and a Ground.
- Install both Ignition Power wires and Ground wires on the same wire connection but separated by an inch.
- Connecting the wires can be done by using the included splices or by using professional soldering equipment. Be sure that each wire has a secure connection.
- Please confirm that wiring connectors are securely connected, use electrical tape when necessary to prevent connections from coming loose.



CAUTION

- Be sure to use Teflon Tape or sealant to seal the 1/8 PT sensor and apply when needed.
- Be sure to mount sensor unit and sensors away from electrical interference or noise (ex: Ignition Systems).
- Be sure to route the harness away from moving parts and HOT areas.
- Be sure to drain and fill the oil according to the vehicle owner's manual.
- Be sure to check for oil or fuel leaks to prevent severe engine damage.

- The 1/8 PT threaded portion is tapered. Do not over-tighten, be sure to tighten by hand first then use a tool to torque down completely to prevent thread damage.



6 Sensor Harness Connection

- Connect each sensor to its corresponding harness.
- Refer to the diagram and connect the sensor harness to the sensor unit.
- Be sure to securely tighten the sensor harness using zip ties and firmly mount the sensor unit to the vehicle.

- For Water Temperature**
 Connect to Sensor Unit connector point labeled "TP1"
- For Oil Temperature**
 Connect to Sensor Unit connector point labeled "TP2"

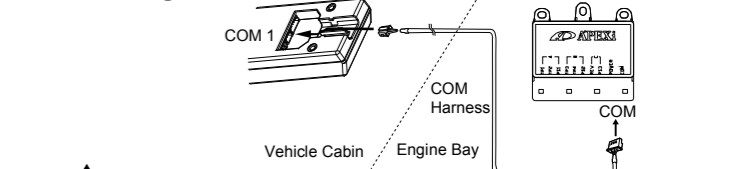
★ For Temperature sensors, both "TP1" and "TP2" can be used. Be sure to select the proper input as the meter indicator ranges differ on the display unit.
 ★ Temperature sensor harnesses are indicated by a "Red Wire · Green Wire" and "Blue Wire · Green Wire".
 ★ In the case where the Temp. Sensor Harness is too short, please use an extension harness (3M), sold separately.

CAUTION

- Always remove paint and oil from any Grounding location to prevent faulty connections.
- Do not use electro-taps during installation. Electro-taps may come loose after time causing faulty connections. This may lead to product failure and vehicle damage.
- Be sure to route the harness away from moving parts and HOT areas. If in a HOT area, be sure to wrap the harness with some type of insulation.
- Be sure to mount the meter away from electrical interference or noise (ex: Ignition Systems).

COM Wiring Harness

- Install the COM harness from the sensor unit in the engine bay to the DIN 3 Meter inside the vehicle cabin.
- Please confirm that wiring connectors are securely connected, use electrical tape when necessary to prevent connections from coming loose.



CAUTION

- Be sure to route the harness away from moving parts and HOT areas. If in a HOT area, be sure to wrap the harness with some type of insulation.
- Be sure to mount the meter away from electrical interference or noise (ex: Ignition Systems).

DIN 3 Meter Installation

- Be sure to mount the meter in a location that does not interfere with normal driving and can be easily adjusted. Failure to do so may result in serious injury or even accidental death.
- Use the Double-Sided Tape to securely mount. When using the double-sided tape, be sure to wipe the mounting surface clean of any dust, oil, and debris.

WARNING

- Be sure to mount the meter in a location that does not interfere with normal driving and can be easily adjusted. Failure to do so may result in serious injury or even accidental death.
- Be sure to mount the meter in a location that does not interfere with vehicle airbag systems.

Installation Confirmation

- Please check the following points after installation :
- Be sure to reconnect the negative terminal of the battery.
 - Please confirm that all wiring is secure and correct.
 - Check for water or oil leaks.
 - Check water and oil fluid levels and confirm they are up to specification.
 - Make sure that the Meter Display and Sensor Unit have been securely mounted.
 - Check to make sure that the harness does not run near any moving parts. Secure the harness using zip ties so that wires do not get cut and cause electrical shorts.
 - Be sure to reinstall any parts removed for the installation process.
 - Be sure to check for any tools or loose materials that may have been left behind in the engine bay and vehicle cabin during installation.

Operation Confirmation

- Turn Ignition to the [ON] position, check to make sure the meter display needle sweeps up and back down.
- Turn Ignition to the [ON] position, check to make sure the LED indicators change color.
- Turn Ignition to the [ON] position, check to make sure the Digital Meter numerical values are displayed in 1,2...order sequence, and back to zero.
- Make sure the pressure sensor is calibrated.
 - ※ Refer to [Frequently Asked Question] for calibration method.
- Please check for any unusual noise or odor coming from the unit.
- Once the engine is running, be sure to check for water or oil leaks.
- Once the engine is running, be sure to check that there is no interference for each individual part.

Meter Display Functions

Meter Indicators (Analog)

Diagram: A-1 (Needle line will display bright on actual measured value.)

LED Indicators

Diagram: C-1

Diagram: C-2

- The color gradation settings of the LED Indicator can be changed to corresponding numerical values.
 - ※ Initial Settings: (Temperature) Blue→Green→Yellow→Red (Pressure) Green→Yellow→Red
- A Warning Function can be preset for each LED Indicator.
- LED Indicator colors can be preset with user preferences, and also to match the vehicle's interior LED color, dashboard, console, etc...
 - ※ LED Indicators can also be preset to be fixed on a single color.
 - ※ The Warning Function indicator color will display when the measured value exceeds the preset warning value.
- The LED Indicators can be turned On / Off.
 - ※ At initial setting, the LED Indicators are turned On.

Operational Procedures

Indicator Setup

The features of the Analog Meter, Digital Meter, and LED Indicators can individually be preset by the following operational procedures.

Setup

- 1 Press the Mode Switch (about 1 sec)
- 2 Press the Peak Switch or the Reset Switch, and select 「SET」.
 - ※ By Pressing the switches you can select, 「WARN」・「BRT」 located in the Upper Left Corner and 「SET」 located in the Upper Right Corner.

Diagram: A-2 (The analog indicator will illuminate less than the measured value needle indicator line)

Diagram: A-3 (Needle indicator line in over scaling display)

- Meter parameters are displayed in a real-time analog needle display (As shown in Diagram: A-1 & A-2). When the measured value exceeds the numerical value displayed, the analog needle will transition into an over-scale display (Temperature only). During the over-scale display, the analog needle will illuminate brighter to indicate the measured value (As shown in Diagram: A-3). However, when only the indicator needle line is displayed as shown in [Diagram: A-1], the values will change.
 - Temperature 1... Normal Scale 30°C~130°C Over-Scale 130°C~190°C
 - Temperature 2... Normal Scale 50°C~150°C Over-Scale 150°C~190°C
- Analog needle indicator illumination setting can be turned On / Off.
 - ※ The initial illumination setting is shown in Diagram: A-2.

Digital Meter Parameters (Numerical)

Diagram: B-1

- Each parameter can be displayed in digital numerical value.
- The Digital Numerical indicator can be turned On / Off.
 - ※ At initial setting: all parameters are turned On.
 - ※ When the temperature sensor is: (below 0°C) or when the sensor is disconnected, the display will show " _ _ , _ "
 - ※ When the pressure sensor is disconnected, the display will show " _ _ , _ "

- 3 Upper Right Corner 「SET」 will be flashing.
- 4 Press the Mode Switch, 「SET」 will be selected and lit.
- 5 The setup of each display indicator can be changed by the following procedure:
 - Pressing Mode Switch, to activate menu selection
 - Activating. . . Press the Mode Switch
 - Selecting . . . Press the Mode Switch for over 2 seconds.
 - Press the Peak Switch or Reset Switch . . . to scroll through each display menu

Individual Setup Menu Details

- Turning the Digital Meter On / Off
 - Turning ON ⇒ Press the Peak Switch or Reset Switch until 「d o n」 is displayed.
 - Turning OFF ⇒ Press the Peak Switch or Reset Switch until 「d o f」 is displayed.
- Selecting Display Meter Features
 - Selecting the Analog Indicator Display method as shown "Meter Indicators (Analog)"
 - Press the Peak Switch or Reset Switch to select display method.
 - Turning ON⇒ 「A-1」 Needle line will display bright on actual measured value.
 - 「A-2」 The analog indicator will illuminate less than the measured value needle indicator line.
 - Turning OFF⇒ 「A o F」 Indicator display is turned OFF.
 - ※ Scale indicator marks will not illuminate.
- Selecting the LED Indicator Features
 - Turning ON⇒ 「L 1」 Color Gradation Display (Temp. Sensor) Blue→Green→Yellow→Red (Pressure Sensor) Green→Yellow→Red
 - 「L 2~8」 Selecting Various Colors.
 - ※ The LED Indicator will not change when a fixed color is selected.
 - ※ The Warning Function indicator color will display when the measured value exceeds the preset value.
 - Turning OFF⇒ 「L o F」 will display when the LED Indicator is turned OFF.
 - ※ The Warning Function indicator color will display when the measured value exceeds the preset value.

Analog and Digital Meter (LED Indicator OFF)

Digital Meter Only (Analog + LED Indicator OFF)

LED Indicator Only (Analog + Digital Meter OFF)

Analog Only (Digital Meter + LED Indicator OFF)

- After the above setup, when setting the meter for the Pressure Meter display ONLY, "b o n" or "b o F" will display on the screen ,please select "b o F".

Warning Function Setup

- The Warning Function will activate when the measured value exceeds preset values, the LED indicator will flash in Red Color.
- For Normal operating measured values, the LED Indicator can be preset to show the LED indicator in Green Color.
 - ※This preset can only be set when the LED Indicator is set on the 「L 1」 Color Gradation Setting.

Setup

- 1 Press the Mode Switch (about 1 sec)
- 2 Press the Peak Switch or Reset Switch, and select 「WARN」.
 - ※ By pressing the switches you can select, 「WARN」・「BRT」 located in the Upper Left Corner and 「SET」 located in the Upper Right Corner.
- 3 Upper Left Corner 「WARN」 will be flashing.
- 4 Press the Mode Switch, 「WARN」 will be selected and Lit.
- 5 The setup of each display indicator can be changed by the following procedure:
 - Pressing Mode Switch, to activate menu selection
 - Turning ON. . . Press the Mode Switch
 - Turning OFF. . . Press the Mode Switch for over 2 seconds.
 - To set Warning Preset Values, . . . Press the Peak Switch or Reset Switch
 - Raising the Preset Value . . . Press the Peak Switch
 - Lowering the Preset Value, . . . Press the Reset Switch

- 2 Press the Peak Switch or Reset Switch, and select 「BRT」.
 - ※ By Pressing the switches you can select 「WARN」・「BRT」 located in the Upper Left Corner and 「SET」 located in the Upper Right Corner.
- 3 Upper Left Corner 「BRT」 will be flashing.
- 4 Press the Mode Switch, 「BRT」 will be selected and Lit.
- 5 The setup of each display indicator can be changed by the following procedure:
 - Pressing Mode Switch, to activate menu selection.
 - Activating. . . Press the Mode Switch
 - Selecting . . . Press the Mode Switch for over 2 seconds
 - Press the Peak Switch or Reset Switch, . . . to scroll through each display menu.
 - Individual Setup Menu Details
 - Display Brightness (daytime) . . . Digital Meter (left side) => "d y 1~9"
 - Display Brightness (nighttime) . . . Digital Meter (center) => "d r 1~9"
 - ※The display brightness (nighttime) operates via the illumination signal wire.
 - ※The display brightness (daytime) cannot be set lower than the display brightness (nighttime).
 - ※The display brightness (nighttime) cannot be set higher than the display brightness (daytime).
 - Button Brightness and (ON / OFF) Adjustment Digital Meter (right side) => "I L O~5"
 - Button LED turned OFF => "I L O"
 - ※Button brightness is the default setting regardless of day / night settings.

Peak-Hold Function

- The Peak Hold Function records the maximum measured value.
- Unless reset, the Peak Hold value will remain in memory even when the power is turned off.

Setup

- 1 Press the Peak Switch

All meters will display Peak Value.

※Unlike, the other Menu Setup processes, the Peak menu is as follows:

Press Peak Switch

Individual Setup Menu Details

- Warning Function (LED Red Color)
 - Press the Peak Switch or Reset Switch when desired preset value is set and the LED Indicator is showing in Red Color.
 - Warning Setting Range Temp. 1... 35°C~199°C Temp. 2... 55°C~199°C Pressure . . . 0.0~9.5 (×100 k P a)
- Normal Operating Values (LED Green Color)
 - Press the Peak Switch or Reset Switch when desired preset value is set and the LED Indicator is showing in Green Color.
 - Normal Setting Range Temp. 1... 30°C~194°C Temp. 2... 50°C~194°C Pressure . . . 0.5~10.0 (×100 k P a)

«Warning vs. Normal Value Setup»

- For Temperature: the Normal value can be set at 5°C under the preset Warning value.
- For Pressure: the Normal value can be set at 0.5 (×100 k P a) above the preset Warning Value.
 - ※The Warning preset value will be priority over the Normal operating preset value. If the Warning preset value is set too close to the Normal value, please adjust preset values accordingly.
 - ※In the case when the Normal Operating value is setup higher than the Warning preset value, (Pressure - lower preset value), the unit will automatically adjust to the below settings:
 - For Temperature: Normal LED will be set at under 5°C Warning Preset value.
 - For Pressure: Normal LED will be set at over 0.5 (×100 k P a) Warning Preset value.

«Warning LED Flashing»

The Warning Function is designed to alert the driver when the measured value exceeds the warning preset value (Pressure: drops below preset value). The LED indicator will flash in Red Color, even if the LED Indicator is turned OFF.

〈Display Example〉

Warning Preset Exceeded LED flashes in Red Color

Display/Button Brightness

Brightness adjustments for: Analog / Digital Meter Display, and Buttons.

Setup

- 1 Press the Mode Switch (about 1 sec)

- Digital Meter (numerical) . . . All Peak Values shown.
- Analog Meter Peak values are shown as Diagram 「A-2」.
- LED Indicator Peak values are shown as Color Gradation 「L 1」.
- In Peak Hold mode, 「PEAK」 will be lit on the display Upper Right Corner.

- 2 Press the Peak Switch again, this will return back to real-time display. Peak Value will remain in memory until reset.

Resetting the Peak Hold Value

- 1 Press the Reset Switch (over 1 sec) while in Peak Hold Mode.
- 2 「PEAK」 LED on display will flash, then stay lit. This will reset the Peak Hold value.

12 Frequently Asked Question

Symptoms	Troubleshooting					
Meter Display does not turn on or display anything when Ignition key is ON.	<ul style="list-style-type: none"> ● Be sure to confirm the Power Supply Harness is securely connected in both the Sensor Unit and Meter Display Unit. ● Be sure to confirm the COM Harness is securely connected in both the Sensor Unit and Meter Display Unit. 					
The analog needle of the meter display does not move or is moving abnormally.	<ul style="list-style-type: none"> ● Check the Sensor and Sensor Connection Harness. 					
Display brightness does not change when parking lights are turned ON.	<ul style="list-style-type: none"> ● Check the Illumination Power Signal Wire of the Power Supply Harness. 					
If Pressure Meter displays a value that is not "0" at atmospheric pressure (engine turned off).	<ul style="list-style-type: none"> ● Calibration of the sensor is required when Pressure Meter does not display "0" at atmospheric pressure. (See Below) 【Method】 Turn Ignition [ON] – without turning the engine on. Wait for at least 10 seconds. (during this time, the unit will calibrate the value to "0"). When sensor calibration is completed, "CAL" will appear on the digital meter display for at least 1 second. If engine is turned on before 10 seconds, then the sensor calibration procedure will need to be repeated. 					
Digital Meter shows "Err"	<table border="1"> <tr> <td>Err 01 Internal Failure</td> <td>Main Display Unit or Sensor Unit may have operation failure, please consult with your dealer of purchase.</td> </tr> <tr> <td>Err 02 Communication Error</td> <td rowspan="2">Check each Sensor harness and Sensor again.</td> </tr> <tr> <td>Err 03 Communication Error</td> </tr> </table>	Err 01 Internal Failure	Main Display Unit or Sensor Unit may have operation failure, please consult with your dealer of purchase.	Err 02 Communication Error	Check each Sensor harness and Sensor again.	Err 03 Communication Error
Err 01 Internal Failure	Main Display Unit or Sensor Unit may have operation failure, please consult with your dealer of purchase.					
Err 02 Communication Error	Check each Sensor harness and Sensor again.					
Err 03 Communication Error						
Digital Meter display shows: " _ _ , _ " or " _ , _ "	<ul style="list-style-type: none"> ● Temperature displays " _ _ , _ " when the temperature is at freezing point (below 0°C) or when the temperature sensor is disconnected or not securely connected. ● Pressure displays " _ _ , _ " when the pressure sensor is disconnected or not securely connected. ● Check the Sensor Harness connections. 					