

# BLITZ

## Instruction Manual

# RACING METER SD

Stepping motor Drive

Thank you for purchasing BLITZ product. Please read this instruction manual, the vehicle's service manual and wiring diagram before installing.

When this product or the vehicle equipped with this product is given/rent to others, please hand this manual to the person who receive the product or vehicle.

### Read this first

#### Attention

- This instruction manual includes the usage and installation. Read this manual thoroughly before any operation. BLITZ cannot be responsible for any injury or damage to the individual or third party or malfunction of the vehicle, products and (or) accessories.
- Please keep this instruction in the vehicle all the time.
- This product includes the parts listed in the parts list in this instruction manual. If you find missing or damaged parts, please contact your local retailer.
- BLITZ cannot be responsible for any loss or damage to the product or the vehicle, when used in combination with other product and (or) modification to this product.
- BLITZ cannot be responsible for any injury, damage or malfunction to the individual, third party or vehicle due to usage of this product and (or) accessories.
- This product uses high intensity LED (Light Emitting Diode). Brightness and color can vary due to manufacturing process of LED.
- This product and accessories can be changed without prior notice due to BLITZ production reason.
- BLITZ cannot be responsible for any lost factory stock parts temporary removed in process of installation.
- Some components such as car audio and clock can lose memory when the battery is disconnected while product installation. After the installation is complete, recover the setting referring to each instruction manual. BLITZ cannot be responsible for lost settings.
- Perform periodical inspection. The durability of this product can vary depending on the surrounding condition.
- BLITZ cannot be responsible if the factory warranty is void due to installation of this product.

#### Danger

- Any service to the car with removal of the parts should be performed by professionally trained mechanic at properly equipped workshop.
- Resting, sleeping in the car, or working in the car or in the closed garage can cause carbon monoxide poisoning, which can be fatal. Must turn the engine off and keep the area well ventilated.
- Always place wheel chock to prevent the vehicle from moving.
- Be careful with wiring when making connection to directly in relationship with driving equipment, such as engine, steering, brake, and air-bag.
- Always make sure to have 30A or lower capacity fuse/fusible link on the power supply line when making connection to such wiring. Over 30 A fuse can stay alive without fusing and cause a vehicle fire.
- Always make sure that the wiring is done properly. Must not make mistake with positive and negative polarity. Make sure that the wires are insulated, and there is no loose wire. If the wiring is done wrongly, it may cause a fire on this product and/or the vehicle. Must disconnect the battery terminal wires before installing. In case if it is not possible to shut off the power supply, it is your own responsibility to protect yourself from any injury as well as avoid electric shock and/or short circuit which can cause damage to the product and/or the vehicle.

#### Warning

- Exhaust manifold, radiator, engine unit can be very hot. Must wait until cool enough not to get burnt before installation.
- Exhaust manifold, radiator, engine unit can be extremely hot while engine is running or right after engine is shut off. There is high possibility of severe burn in case of contact with such components.
- Be careful with baby, small children, and pets. Keep small parts away to avoid accidents. (prevent the parts from being swallowed/inhaled)
- Exhaust pipe can be very hot. Watch out the clothing/skin from being burnt, especially loading/unloading the baggage from rear trunk/hatch.
- Avoid to install this product from the area which can interfere with the front view area, driving equipments, and/ or air-bag system and other safety features..
- Be careful when installing this product near electric wires, water hoses, and air hoses, to avoid damage them. Damaging the electric wires, water hoses, and air hoses can cause short circuit and/or engine damage.

#### Caution

- Dropping and/or applying the excessive force to this product before or when installing can cause the damage to this product, resulting in malfunction of the product.
- This product is designed to be used in 12V power supply vehicle. Do not install this product in different voltage supplied vehicle.
- Make sure to insulate the unused connector and wirings to avoid short circuit.
- Always use the supplied wiring. If it is necessary to use different wiring, be careful with voltage/ampere capacity and strength of the wiring.
- Do not pinch the wire between the body and/or interior panel to avoid the damage to the wiring.
- Keep the wire away from the noise source such as ignition signal, radio, HID system, navigation system, Television. Also, keep the wire away from the heat source such as turbocharger. Such noise/heat can cause this product to work improperly or damage to the product.
- Keep the wiring near the sensor and connector with minimum bend to avoid the damage to the wiring.
- Make sure to release the latch when removing the connector. Pull on the connector, not the wiring.
- Installing on the panel on the passenger side or center section can interfere with safety standard. Please refer to your local law in your country.
- Use soft cloth to clean product gently. Using cleaner agent or abrasive agent can damage the product.

### NOTE

#### Warning

- Installing by non-professional shop voids product warranty.
- Staying focused on this product while driving is very dangerous, leading to accident.
- Perform meter setting and other operation when the vehicle is parked at safe place.
- Do not disassemble or apply any modification to this product. Such alteration can cause accident or product damage, also voids warranty.
- If any problem is found (Got wet/odor/smoke/erratic movement etc.), stop using the product IMMEDIATELY and contact your local retailer. Prolonged usage with such symptom can lead to accident or vehicle damage.

#### Caution

- BLITZ cannot be responsible for any damage while using this product, or damage caused by this product usage.
- Do not apply excessive force to this product. Especially pulling on the while the connector is latched can easily damage the wire.

#### Attention

- Displayed value on this is for reference. Refer to factory meter while driving.



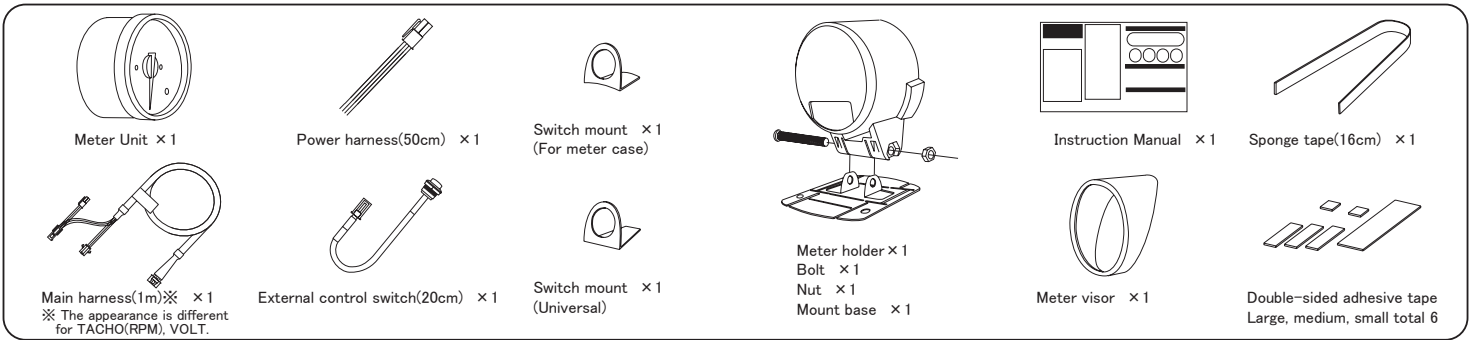
Wear protective glass and gloves.

#### Symbol legend

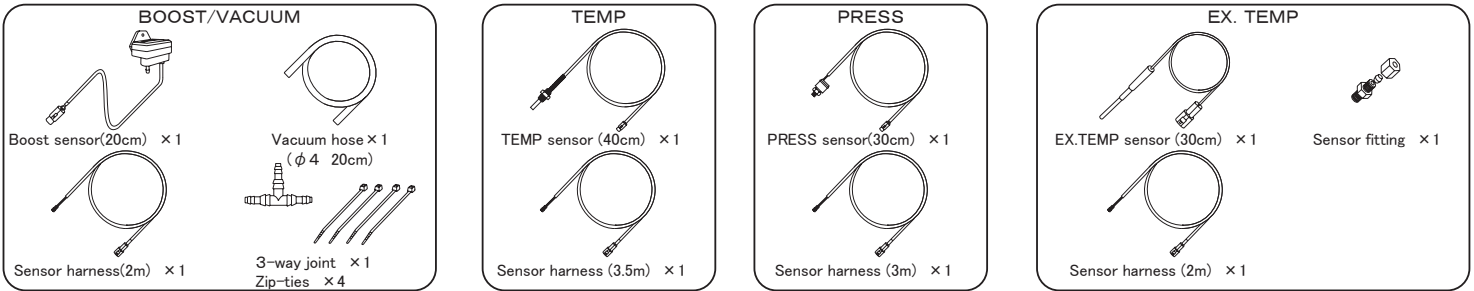
	An immediate possibility of serious injury and (or) even death can be assumed to the individual and (or) to the third party if this indication is ignored and wrongful usage and (or) operation is performed.
	An potential possibility of serious injury and (or) even death can be assumed to the individual and (or) to the third party if this indication is ignored and wrongful usage and (or) operation is performed.
	An potential possibility of serious injury can be assumed to the individual and (or) to the third party if this indication is ignored and wrongful usage and (or) operation is performed.
	An potential possibility of a malfunction and (or) breakage can be assumed to the product and (or) to the vehicle if this indication is ignored and wrongful usage and (or) operation is performed.

## PARTS LIST

### Common parts



### Product-specific parts



## INSTALLATION

- 1 Disconnect the negative (-) terminal of the battery.

**Attention** Equipments such as radio can lose memory when the battery is disconnected. Please take the setting note, and reprogram the equipment after the installation is complete.

- 2 Connect the power harness as illustrated on the right side.

**CAUTION** Connect the wiring with solder, connector or electrical tap. Make sure to insulate the connected area to avoid the shortcircuit. If the wiring requires protection, use protection tube from the retail stores.

- 3 Install each sensors, referring to "Sensor Installation" on the back side of this instruction.

※In case of TACHO (RPM), connect the wiring to RPM signal line from ECU.  
Wiring diagram is available at BLITZ homepage.  
(<http://www.blitz.co.jp/Operation-manual/Operation-manual.htm>)  
Separate sensor wiring is not required for VOLT meter.

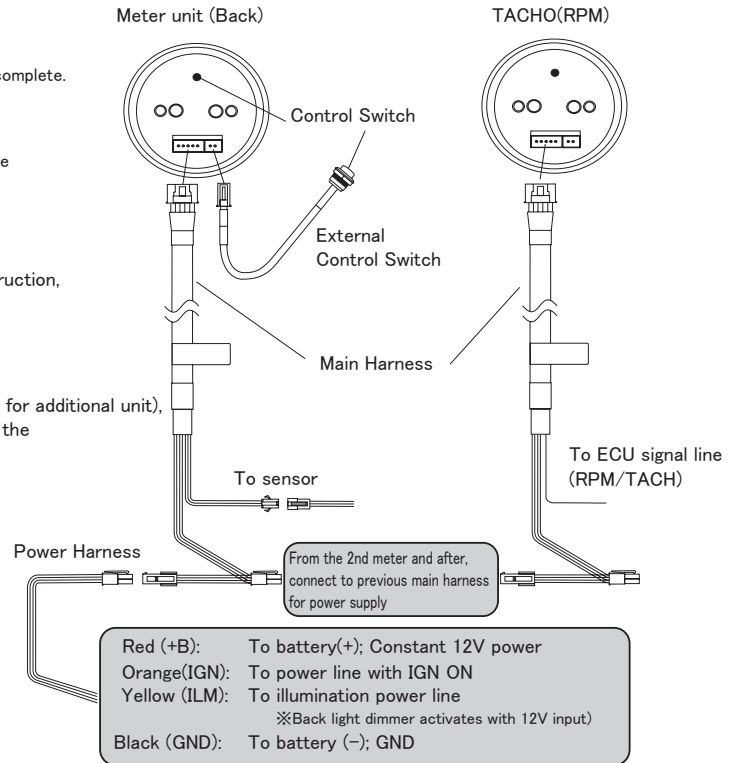
- 4 Connect main harness with meter unit, sensor harness, power harness (not needed for additional unit), and external control switch. From the second meter, connect the main harness to the split of the previous main harness for the power supply.

- 5 Re-connect the negative (-) terminal of the battery.

**CAUTION** Make sure to disengage the latch of the connector when disconnecting. Pulling on the wires can cause damage to the wire and/or damage to the product. Note that shape/location of the latch can vary depending on the connector.

※ Function of the control switch on the back of the meter can be replaced by connecting external control switch to the meter.

※ All warning/peak memory of other SD meter will be cleared if the first power harness is disconnected, in case that power supply is shared with first SD meter.



## Meter holder installation

- 1 Insert the mounting base into the meter holder, and fix with bolt and nut. Insert switch bracket.

- 2 Attach a sponge tape on the meter unit. Be careful not to wrinkle the sponge tape. When attaching the meter visor, attach meter visor before attaching the sponge tape.

※ Note: Meter visor and switch bracket cannot be used at the same time.

- 3 Remove the nut behind the external control switch, and place the switch through the bracket, and fix with the nut again.

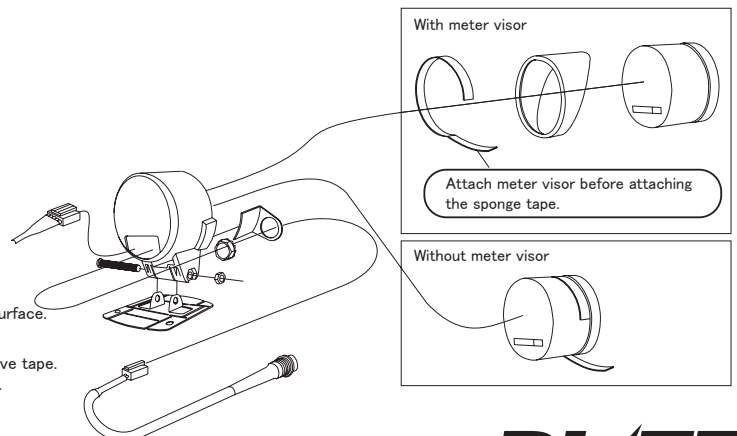
- 4 Connect the main harness and external control switch on the back of the meter, through the meter holder.

- 5 Insert the meter unit into the meter holder. Be careful with the sponge tape from detaching.

- 6 Place double-sided adhesive tape to the mount base. Before attaching the meter onto the mounting surface, bend the mount base to fit the mounting surface. Attach the adhesive tape with various sizes for maximum adhesion surface area.
- 7 Clean and degrease the mounting surface, and attach the mounting base with double-sided adhesive tape. If the double-sided tape is not secure enough, use tapping screw (Not included) for reinforcement.

**Attention**

- To the maximum adhesion of the double-sided adhesive tape, make sure to clean/degrease the mounting surface thoroughly.
- Be careful not to damage the wiring by pinch between the meter unit and the meter holder.

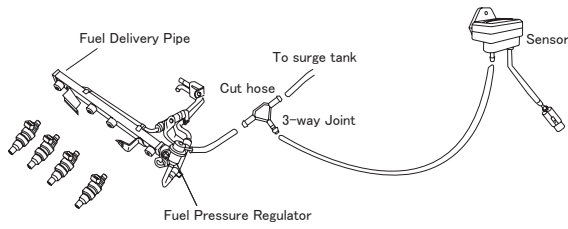


# BLITZ

## Sensor Installation

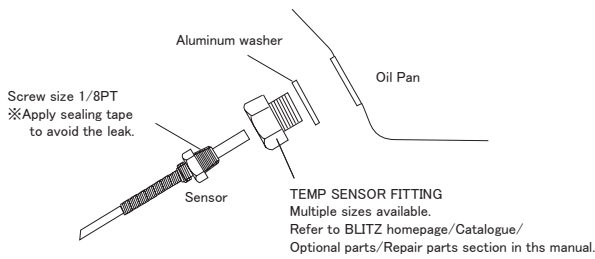
### BOOST / VACUUM

- 1 Install the sensor onto the surface away from the source of heat and vibration.
- 2 Divide the vacuum hose from the stable vacuum source using supplied 3-way connector such as between the fuel pressure regulator and surge tank.
- 3 Connect the sensor and 3-way using supplied vacuum hose.



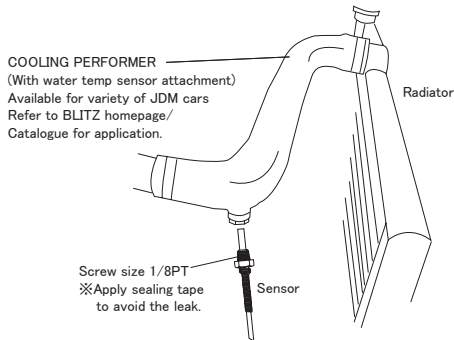
- Caution**
- Loose connection can cause vacuum leak resulting engine damage. Use supplied zip tie or hose bands to keep secure connection.
  - To avoid the wiring from getting damaged, be careful not to bend the wiring at the base of the sensors.

### TEMP (Oil Temperature)



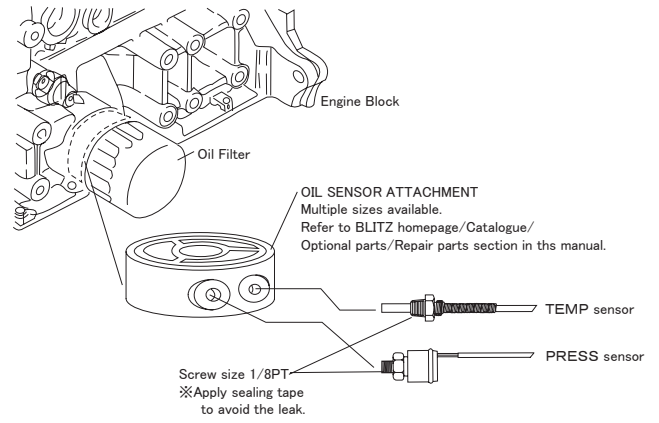
- Caution**
- Install sensor securely with seal tape to avoid oil leak. Check for any oil leak before driving. Driving with oil leak can result the damage to the vehicle and/or vehicle fire.
  - Avoid overtightening the sensor.
  - To avoid the wiring from getting damaged, be careful not to bend the wiring at the base of the sensors.
  - To avoid the wiring from getting twisted, connect the sensor and sensor harness after installing the sensor in the fitting and oil pan.

### TEMP (Water temp)



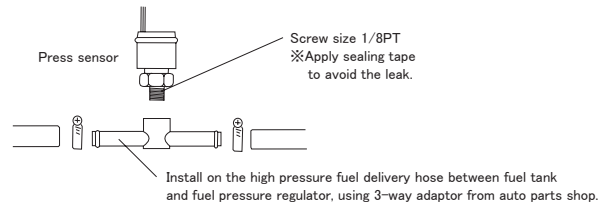
- Caution**
- Install sensor securely with seal tape to avoid oil leak. Check for any coolant leak before driving. Driving with coolant leak can result the damage to the vehicle.
  - Secure the temperature sensor to COOLING PERFORMER or aftermarket radiator hose with hose band to avoid the coolant leak. Driving with coolant leak can result the damage to the vehicle.
  - Make sure to refill the coolant after the installation is complete. Low coolant can lead to overheat, resulting in engine damage.
  - To avoid the wiring from getting damaged, be careful not to bend the wiring at the base of the sensors.
  - To avoid the wiring from getting twisted, connect the sensor and sensor harness after installing the sensor in the fitting and radiator hose.

### TEMP / PRESS (Oil temperature and pressure)



- Caution**
- Make sure to have enough space surrounding the oil filter area to avoid any interferences with other engine component.
  - Install sensor securely with seal tape to avoid oil leak. Check for any oil leak before driving. Driving with oil leak can result the damage to the vehicle and/or vehicle fire.
  - Avoid overtightening the sensor.
  - Refill the oil to adequate level after installing the sensor.
  - To avoid the wiring from getting damaged, be careful not to bend the wiring at the base of the sensors.
  - To avoid the wiring from getting twisted, connect the sensor and sensor harness after installing the sensor in the fitting and oil pan.

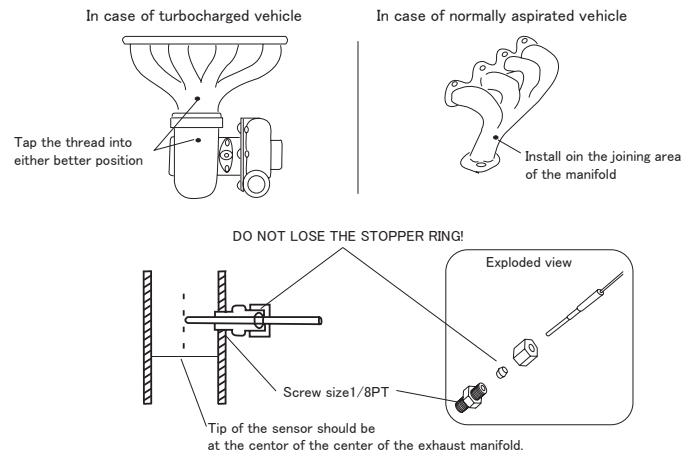
### PRESS (Fuel pressure)



- Caution**
- Install sensor securely with seal tape to avoid fuel leak. Check for any fuel leak before driving. Driving with fuel leak can result the damage to the vehicle and/or vehicle fire.
  - Make sure to relieve fuel pressure before cutting the fuel line. Pressurized fuel can spurt out and cause the vehicle fire.
  - To avoid the wiring from getting damaged, be careful not to bend the wiring at the base of the sensors.
  - To avoid the wiring from getting twisted, connect the sensor and sensor harness after installing the sensor in the fitting and fuel line.

### EX. TEMP

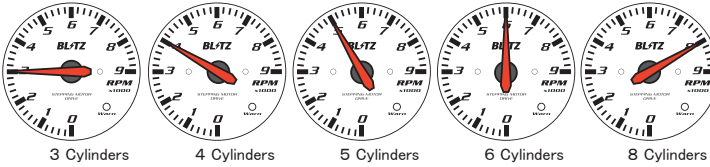
- 1 Tap the screw thread (1/8 PT) into the exhaust manifold. (If there is not enough thickness, weld the fitting onto the manifold.)



- Caution**
- To avoid the burn, install when the engine is cold.
  - Make sure to clean the exhaust manifold and turbocharger after installing to avoid the damage to engine and/or turbocharger.
  - To avoid the wiring from getting damaged, be careful not to bend the wiring at the base of the sensors.
  - To avoid the wiring from getting twisted, connect the sensor and sensor harness after installing the sensor in the fitting and fuel line.
  - Secure the wiring harness from heat source to avoid the damage.

## RPM Cylinders setup (Initial setup)

- After the power harness is connected, RPM (Tacho) meter enters setup mode. (The needle points at 4,000 rpm, and indicator LED blinks)
- After control switch is pressed shortly (<2 seconds), needle start to move form 4, 5, 6, 8, 3, 4..... repeatedly.
- Hold down the switch (longer than 3 seconds) when the needle on desired cylinder number, to decide the setting. after setting is complete, the needle returns to original position. (0 rpm) Previous setting is cleared when the power to the meter is lost.



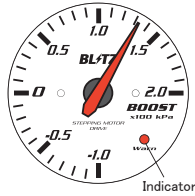
### Caution

- All warning/peak memory of the SD meters will be cleared if the first power harness is disconnected, in case that power supply is shared with first SD meter.
- If the constant power supply is connected, the meter enters initial setting mode. The power does not go off until initial setup is complete. Therefore, perform initial setup before disconnecting the harness from the meter. When the battery is disconnected, initial setting of the meter becomes necessary
- On some vehicles, different setting is required from actual cylinder numbers. ※4-cylinder setting on some V8, 3-cylinder setting on some V6
- In case that there is no input of RPM (Tach) signal to ECU, this RPM meter does not work properly.

## Peak display function

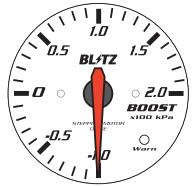
### How to display peak value

- Pressing the control switch (Less than 2 seconds) under normal mode will enable peak display mode. (Indicator will flash while peak value is displayed.)
- The meter will go back to normal mode after the switch is pressed again (Less than 2 seconds) or no action is taken more than 5 seconds.



### How to reset the peak value

- Under peak display mode, press the control switch longer than 3 seconds to clear the peak value.
- ※ After the peak value is displayed, needle will point zero, and goes back to normal mode.



- ※ Illustration shows the boost meter for an example.  
All other meters can display/clear the peak value with same method.

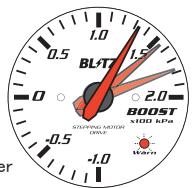
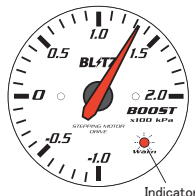
## Warning function

### Warning indicator

- ※ Warning indicator flashes when the measured value exceed the warning value.

### How to change the warning value

- Press the control switch more than 3 seconds to enable the warning setting mode. (Indicator will flash while warning value is displayed.)
  - Warning value can be changed by pressing the control switch during the warning setting mode.
- ※ Needle pointer moves clockwise when the control switch is pressed. Needle pointer goes back to minimum value after reaching the maximum value, and repeat the action.
- Release the switch at desired value, and the meter will go back to normal mode after 5 seconds without action.



- ※ Warning function cannot be displayed.  
※ Illustration shows the boost meter for an example.  
All other meters can display/clear the peak value with same method.

### Warning initial value

○ BOOST	1.0 × 100kPa	(MAX)
○ VACUUM	0.0kPa	(MAX)
○ TEMP	120°C	(MAX)
○ PRESS	1.0 × 100kPa	(MIN)
○ EX.TEMP	800°C	(MAX)
○ RPM(TACHO)	6000rpm	(MAX)
○ VOLT	10V	(MIN)

MAX...Indicator flashes when the value goes over the set value  
MIN...Indicator flashes when the value goes under the set value  
※ MAX/MIN threshold direction cannot be changed.

## Sensor short circuit /disconnect warning

- When the short circuit or disconnected sensor is suspected, back light is turned off and the needle pointer flashes. After the problem is solved, the meter goes back to normal mode.



### Caution

- This function does not work for the meter without sensors: RPM (Tachometer) and VOLT meter.
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## Optional parts/Repair parts

### TEMP SENSOR FITTING

Product Name	Code No.
TEMP FITTING OUT M12-1.25 IN1/8PT	19220
TEMP FITTING OUT M14-1.50 IN1/8PT	19221
TEMP FITTING OUT M16-1.50 IN1/8PT	19222
TEMP FITTING OUT M20-1.50 IN1/8PT	19224

### OIL SENSOR ATTACHMENT

Product Name	Code No.
Oil sensor attachment TYPE-A (φ 65)	19231
Oil sensor attachment TYPE-B (φ 70)	19232
Oil sensor attachment SUBARU	19233

※ Check BLITZ homepage for detailed application.

### OIL PRESSURE ADAPTOR

Product Name	Code No.
Oil pressure adaptor SET	19551

### REPAIR PARTS

Product Name	Code No.
Boost sensor for SD METER	19488
Boost sensor harness for SD METER	19488H
TEMP SENSOR SET for SD METER	19216
TEMP SENSOR unit	19210A
TEMP SENSOR harness for SD METER	19216H
PRESS SENSOR SET for SD METER	19217
PRESS SENSOR SA-P15	19961
PRESS SENSOR harness for SD METER	19217H
EX-TEMP SENSOR SET for SD METER	19218
EX-TEMP SENSOR harness for SD METER	19218H
Power harness for SD METER	19214
Main harness SD METER(BOOST/VACUUM/PRESS)	19561H
Main harness SD METER(TEMP)	19563H
Main harness SD METER(EX-TEMP)	19565H
Main harness SD METER(RPM)	19566H
Main harness SD METER(VOLT)	19567H