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TAU2_PLUS
Model: _____
0811.06p/g
Rev doc: 01

Engine protector for cans & trucks

User and install Manual

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Warnings

The device need 12Vdc to work (Or 24Vdcin version)



The probe wire is thin and fragile (is an earphone wire) should not be taut or strained and should be handled with care. With wells the motor moves, keep in mind.



The temperature sensor have internal crystal, the excessive pressure or hard work broke and void the warranty.



Install the device and wire the most away of heat sources and electrical noises like: exhaust, sparks, ignition coil and wires.



The electrical connections must be soldered, isolated and must not be strained since the cables are cut.



Do not wet the device and don't use chemical element for cleaning. Just a slightly damp cloth..



Don't forget add a fuse between 1A and 3A.



The right work depend from follow all instructions of this manual.



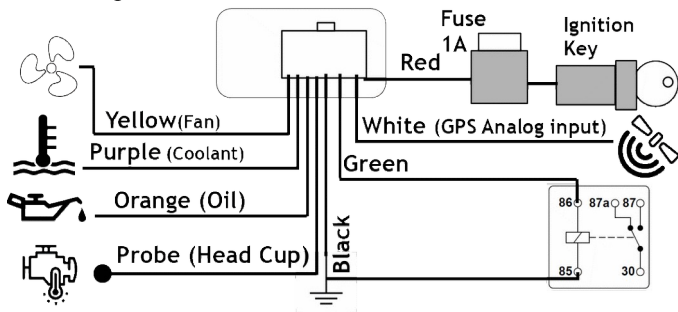
Fail to follow the instructions implies the warranty void and put in risk the car integrity.

NOTE 1: SCHlabs decline all responsibility for any damage to people or things due handling of devices or wires.

Electrical Installation

The electrical wiring must be done as described on the following diagram.

Where the connection of Green, Orange, Violet, Yellow and white are optional.



GPS link

Can connect the white wire to an analog input of a GPS tracking device. You need contact with you provider to enable the remote data view. They need apply the next formula:

$$\text{Centigrade} = \text{Voltage_in} * 30.$$

Radiator fan connection

With the radiator cooling fan off, measure the voltage on the fan cables and write them down on a piece of paper. Wait for it to turn on, measure and record again. The Yellow wire connects to the wire that changed its voltage the most. You can use the following charts for reference.

Example 1:

	Fan OFF	Fan ON
C 1	12v	12v
C 2	12v	<6V

Example 2:

	Fan OFF	Fan ON
C 1	0v	0V
C 2	0v	>6V

Your car:

	Fan OFF	Fan ON
C 1		
C 2		

You must connect to the wire marked on bold

Oil pressure connection

The device measure the voltage present in the original oil pressure bulb and share their connection. Do not remove or change nothing. When the voltage on the orange wire is lower to 5v for more than 15 seconds the device will think that there is no oil and will start the alarm and shutdown. To enable this warning the engine must have pressure at least for 15 seconds.



Shutdown Relay connection

The TAU send 12v on the green wire when a shutdown is required. So normally you will need a inersor relay. The shutdown is **optional**. The installer must be take care of way for the engine shutdown to avoid:

- The driver don't loss the brakes
- The driver don't loss the steering control
- The driver don't loss the control of engine

The most reasonable way is cut the fuel.

Cylinder cover probe placement (T1)

In the most cases this sensor will save your engine. However it depends a lot on the location of the probe, since it work by external contact and can be affected by the heat of the exhaust pipe, frontal wind and other circumstances. This mean that if is misplaced the measure will be wrong and you don't get any protection.

-The probe wire is thin and fragile (is an earphone wire) should not be taut or strained and should be handled with care. With wells the motor moves, keep in mind.

-Avoid that the probe be affected by exterior ambient (wind, cold, heat).

-The probe contain internal crystals, Don't do pressure, hit or twist it.

-The probe require isolation respect external environment

-The probe must have the max surface contact with the heat zone

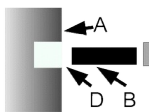
-The more heater zone is the gasket between block and cylinder cover (dashed zone on image)

-Do NOT remove any original sensor of vehicle.

-Do NOT remove any cover, gasket or cylinder head screw. (They get a special torque and remove them will damage the engine).



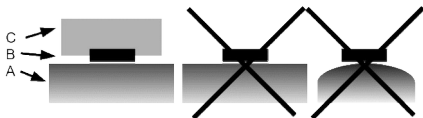
Use the next image as guide:



- A) Cylinder cover
- B) Sensor
- C) Thermal isolation
- D) Not used hole
- E) Half omega
- F) Existent screw

A=Cylinder cover or hose

B=Probe
C=Isolation (eva rubber)



Note 1: An adhesive can work fine, BUT is very important take care because the most household adhesives melt at 100°C (212°F) and you wouldn't want to drop the sensor just when you need it most. Also take care that when the glue cure (hardness) can be separated one or two millimeters and so loose heat transfer.

Note 2: Some people make a hole, this only can do trained people that know both sides of cylinder cover and take the risk that a hole implies.

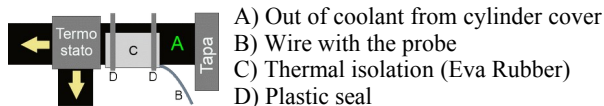
Connection Temperature 2 (coolant)

The second temperature is the coolant temperature. Is completely SEPARATED of the original temperature of vehicle. The device sell on 2 version, with screw metal probe or contact probe.

Contact probe:

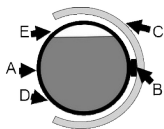
You must follow all directives of cylinder cover probe and follow this directives:

- Do not open the coolant circuit (will break the pressurization)
- Touch with the probe most close to the water out from the cylinder cover.
- Must be BEFORE to thermostat deviation.



Take care that the heat go up, but if there is any bubble the air loose thermal transference, try measure i the side of the hose.

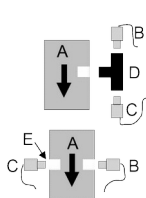
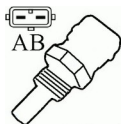
A) Hose or thermostat body



- B) Sensor
- C) Thermal isolator
- D) Coolant
- E) Air bubble

Screw metal probe.

In case of this sensor the installation is made with a TEE in the same place where is the original probe or making a new hole (and the screw) near the original sensor. The second option is best, but demand tools and knowledge. The chosen place must be have a permanent coolant flow, look that the thermostat block the coolant flow to the radiator and misplaced you can measure cold when is not real. Take care that the temperature is not uniform in all the engine, according the measured place you can get up to 25 degree of difference. Normally the original place is a good place.



Connect the center of purple cable in the terminal B and the exterior of purple wire to the terminal A.

- A) Thermostat box/original sensor pipe
- B) Original Sensor
- C) TAU2 sensor
- D) TEE
- E) New and screw hole

First start

In the first connection will appear “INI” on screen. When press any key the device will make some read of the car and will adapt to your car. For this reason the device must be installed.

How work

The TAU2-plus measure permanently and simultaneously 5 parameters: 2 temperatures, the charging voltage, radiator fan, presence of Oil pressure from original bulb (on/off).

For display reason it only one parameter at a time. With the up and down button you can change the displayed data in the following order.

T 1	Cylinder cover temperature	C° o F°
T 2	Coolant temperature	C° o F°
OIL	Oil pressure existence	0=without, 1=With pressure
VOLT	Charging voltage	Volt

The engine temperatures is shown in a range from 0~145°C or 30~293°F.

When at least one temp is greater to the critical set by user, or voltage is out of operating range, or Oil pressure fail (for more than 15 seconds) the alarm will start. The screen will show the reason (T1, T2, Oil, Volt), the digits will blink and the noise start (one beep by each additional degree). On this way the alarm is more annoying when more greater is the overheat.

Pressing the middle button the sound will be muted. The mute will remain until the parameters go to normal.








When the temp exceed on 6 degree the critical temperature, the voltage or oil fail the RED led will turn on and send the shutdown signal. The shutdown signal is immediate from factory but you can configure a delay up to 64 seconds. If mode driver is disabled, the middle button allow continue the travel.

If when you start, the TAU detect any fail condition, the alarm and shutdown will not activated until the situation go to normal.

When the radiator fan turn on, the blue LED will turn on, but no alarm will be generated.

Settings

When press the middel button by 3 seconds you will see the product version and enter into setup mode. Use up and down keys to choose the parameter that you want change and press the middle button. Change values with up/down buttons and press the middle button again

	Critical Temperature 1: Choose the temperature taking care that the warning start to work when the number is greater and the shutdown when reach 6 degrees more than this number.
	Critical Temperature 2: Choose the temperature taking care that the warning start to work when the number is greater and the shutdown when reach 6 degrees more than this number.
	Min Voltage: When the voltage is under this value the alarm will be triggered
	Max Voltage: When the voltage is over this value the alarm will be triggered
	Fan: 0=When the fan off there are 12v in the cable 1=When the fan on there are 0V in the cable
	Degree: 0=Show in centigrade degree 1=Show in fahrenheit degree
	Brightness: Change the brightness of display

ⓁⓈ	Delay: Is a time in seconds between the alarm and shutdown
ⓁⓈ	Chofer: 1= Force to the driver to stop until the engine get cold prior to continue driving. (Is recommended activate a delay to give time to the driver to park the vehicle)
ⓁⓈ	DO NOT TOUCH !!!
ⓁⓈ	END: Store the changes and end the setup mode.

Troubleshooting

- Appear SHT on screen

There are a Short circuit in the wire of the probe. Check the cable integrity and that the sensor is not under excessive pressure.

- Appear OPN on screen

A mistake on the install has cut the probe wire. Search the cut point and fix it. After that check the wire care. Remember that was calibrated and verified 2 times, so is a damage performed during install or usage.

- When start with an existent overheating, blink the LEDs but not sound.

Is normal that the engine have overheat temperature in short stop (for example when refuel the car). For this reason if when you start the engine is hot the device don't will sound and shutdown until the temperature go down

- Measure very low temperature.

You have a bad thermal transfer. Try move the sensor to a best place, with more isolation or even with thermal grease. Remember that the device was calibrated and verified 2 times.

Warranty

- General rules of the guarantee

SCHlabs, guarantees the good and correct functioning of this product.

The guarantee will be recognized for a period of 3 (three) months from the purchase, the defects of construction and materials being covered.

If, during the guarantee period, the product is defective, SCHlabs will take charge of the repairs or substitutions required by the product. They will be made at the SCHlabs facilities and the shipping costs will be borne by the customer.

For accessories or components that have not been manufactured by SCHlabs, only the guarantees of the respective producers are valid.

This guarantee is the only one given by SCHlabs, so any other is excluded.

- Terms

The guarantee will only be recognized with the presentation of this certificate with date and stamp of the reseller, or in its absence with the purchase invoice. This guarantee will be valid only for those who are in good standing with the payments.

- Warranty exclusions

- 1.- Periodic checks, maintenance, repairs or replacement of parts due to normal deterioration.
- 2.- Malfunction due to negligence, improper use or improper installation not in accordance with the given technical instructions and any defect that was not produced due to construction defects.
- 3.- Products installed, modified, repaired, replaced, assembled or maneuvered by people who do not have written authorization from SCHlabs
- 4.- Accidents due to external force or other causes (water, fire, lightning, electromagnetic fields, etc.) that do not depend on SCHlabs.

HRR2: Stepper, injector and IAC tester.

HMP1: Throttle and sensor tester and emulator, ckp & cmp generator

TAU2: Single temperature engine protector



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