Temperature monitoring
Thermotrip

INSTALLATION AND USER MANUAL

Version 1.24
English edition

THERMOTRIP **SSA202001X for four-wheel drive**

THERMOTRIP **SSA202001B for BUGGY**

CE

CONTENTS

1 PRESENTATION

Two types of THERMOTRIP are available:

- **q** Version 202001X for four-wheel drive vehicle.
- **q** Version 202001B for Buggy.

The THERMOTRIP takes the form of an independent case grouping together the functions of:

- Measurement of water temperatures engine and radiator.
- Measurement of oil temperature engine, gearbox and transfer.
- Measurement of exhaust temperature.
- Measurement axles temperature.
- Measurement of shock-absorber temperature.
- display of temperatures and alarms.
- Programming of temperature alarm threshold.
- Recording and reading of temperature maxima.
- Dialogue with a PC for configuration and reading of maxima.

The mimic-diagram type front panel makes reading of the various points of measurement easier. It incorporates two independent displays: one to indicate the temperature of the selected input, the other to indicate the number of the cylinder selected. The selection of the other inputs is indicated by an orange-coloured indicator lamp placed at the various points of the mimic diagram. Four keys enable the selection of the input which is to be displayed and the setting of the operating parameters of the THERMOTRIP.

The 202001X has 24 inputs for type K thermocouples, divided into 2 groups:

- 16 inputs with a temperature range from 50°C to 250°C.
- 8 inputs with a temperature range from 50°C to 1000°C (exhausts).

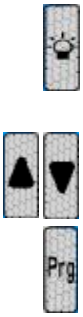
The 202001B has 22 inputs for type K thermocouples, divided into 2 groups:

- 14 inputs with a temperature range from 50°C to 250°C..
- 8 inputs with a temperature range from 50°C to 1000°C (exhausts).

The 50-1000°C sensors are to be ordered separately (see 9 ORDER CODES)

Each measurement is associated with a set-point value between 50 and 250°C (or 50 and 1000°C, depending on the input concerned). The number of inputs used and the associated set point values are programmable by an external PC via the serial link, or directly by the keys on the front panel.
The measurement inputs and the power supply are connected to the rear panel of the module.
Pull-out tension clamp connectors allow each input to be individually connected to its sensor via the compensated cable supplied. The other end of the cable is fitted with a compensated connector (female) for connection to the sensor.

1.1 Adjustment keys



A brightness adjustment key allows access to four display modes:
1. No display (except in case of alarm: high brightness display)
2. Low brightness display (night time)
3. Medium brightness display (normal)
4. High brightness display (in full sunshine)

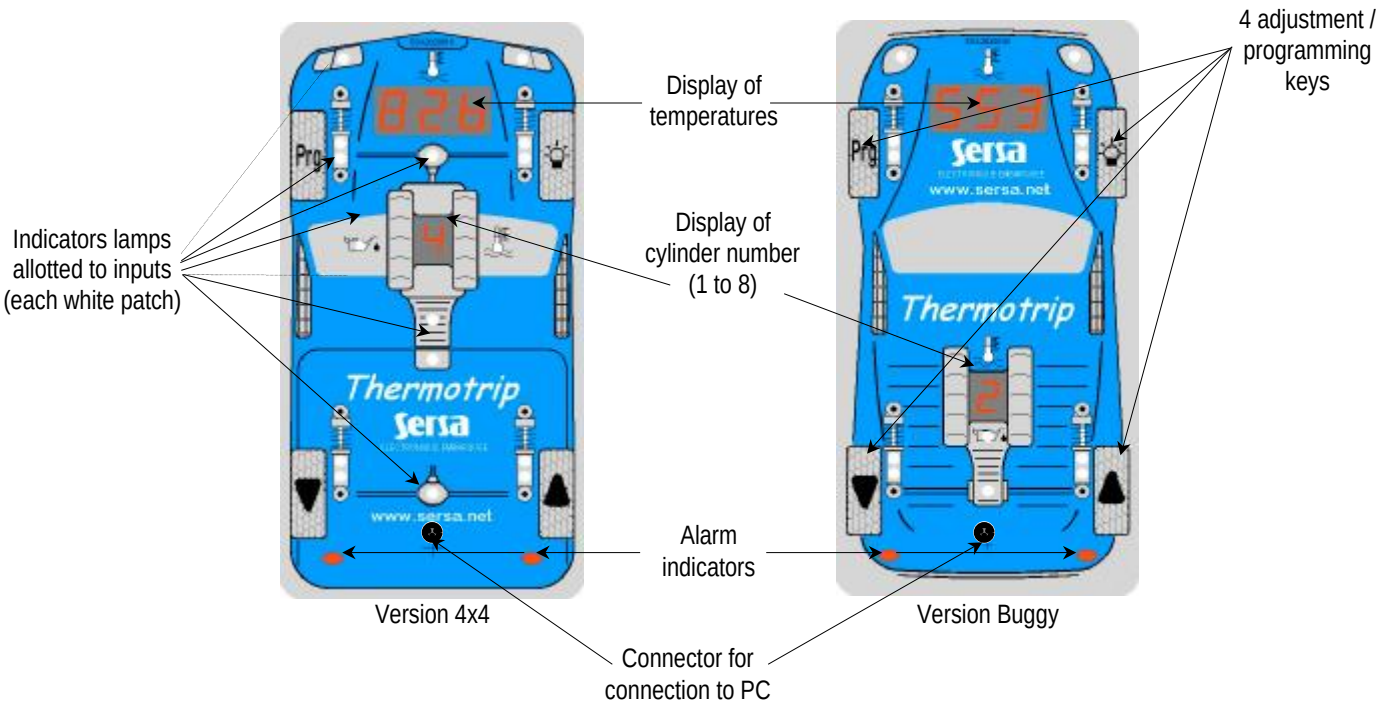
Two up and down keys enable:
1. Scrolling of the measurement inputs
2. To increase or decrease the alarm threshold value of temperature in mode PROGRAMMING (see 4 CONFIGURATION).

The programming key allows access to the alarm temperature threshold-setting menu.
This key also allows the recorded maximum temperatures to be read and erased.

1.2 Display

Two displays are used to display the value of temperature:  and the number of the cylinder selected: 
The other measurement inputs are associated with an orange-coloured indicator lamp positioned on the components of the vehicle.

1.3 Presentation of the mimic-diagram panels



2 EQUIPMENTS SUPPLIED

All elements necessary for installation of the *THERMOTRIP* on the vehicle are contained in the valise. In it can be found:

- The *THERMOTRIP* case

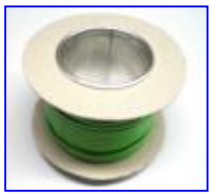
- 10 measurement sensors:
  - 8 sensors (250°C) for gluing; length 90cm. Reference : 202002

  - 2 thimble sensors ∅8mm (250°C) ; length 90cm. Reference : 202003

Each sensor is equipped with a compensated connector with locating pin enabling the whole thing to be disconnected quickly.

- 10 compensated connectors for thermocouple (female). Reference : 202004

- 1 reel of 25m of compensated cable for thermocouple K. Reference : 202006



Ø 10 - 2-pin pull-out connectors (sensor inputs). Reference : 202005

Ø 1 – 3-pin pull-out connector (power supply).

Ø Screwdriver for insertion/extraction of the cables in the pull-out tension clamp connectors. Reference : 202007

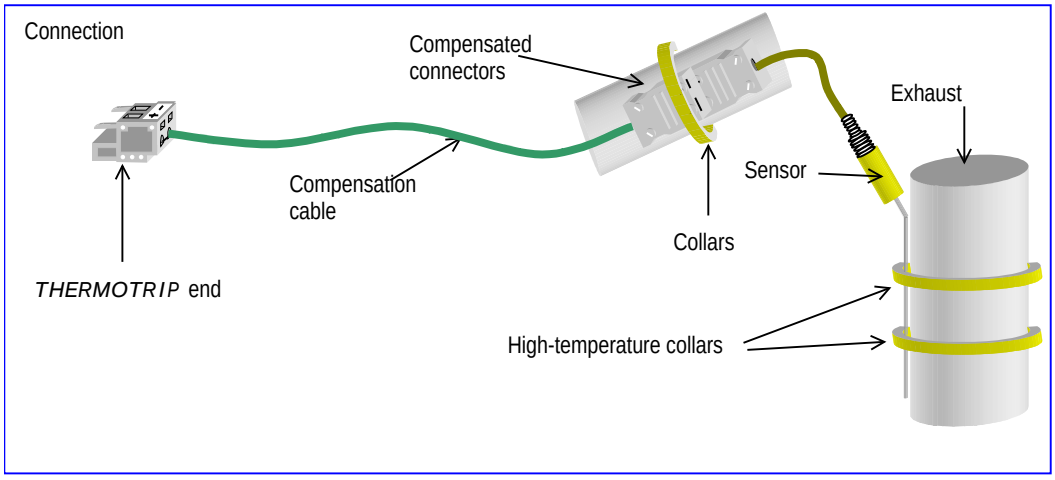
Ø One serial link cable (circular connector à 9 pin SUBD connector); length 2m. Reference : 202008

Ø "WinMonitor" configuration / monitoring software for pour Windows 9X, 2000, Me, XP or NT4.x. Reference : 202009

Ø The present instructions in English. Reference : 202099-2

OPTION

- 4 sensors (1000°C) to fix on the exhausts; length of sensor 30cm; length of cable 1.5m. Reference : 202011



3 INSTALLATION

3.1 Preparation

The first stage of the installation consists in defining the place where the *THERMOTRIP* will be fixed. For preference choose a place which is protected from dust, from water and from very large variations of light. The fixation of the monitor must be by at least three fixation points.

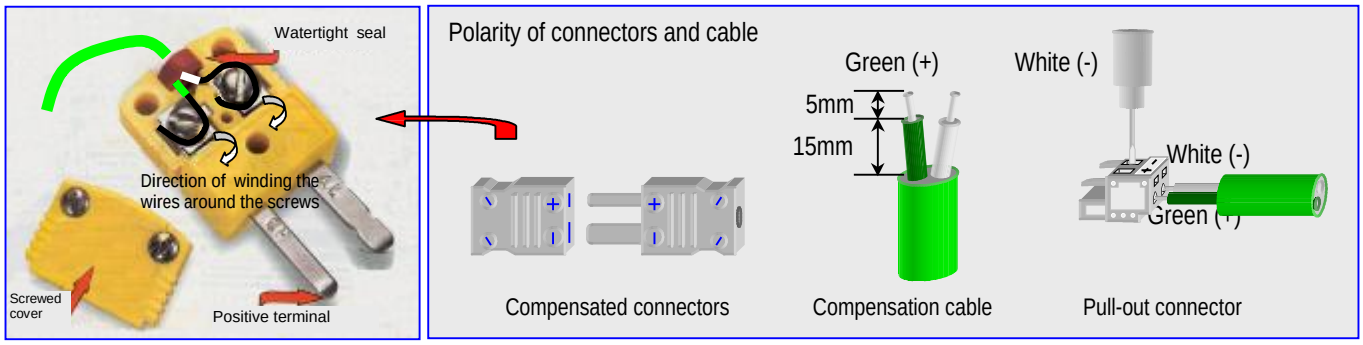
The second stage consists in passing through sufficient compensation cable for the number of sensors to be connected. For this purpose, use the reel of cable supplied with the equipment.

Use only the compensation cable supplied with the outfit. to avoid wear on the cables, it is preferable t cover them with a protective sheath.

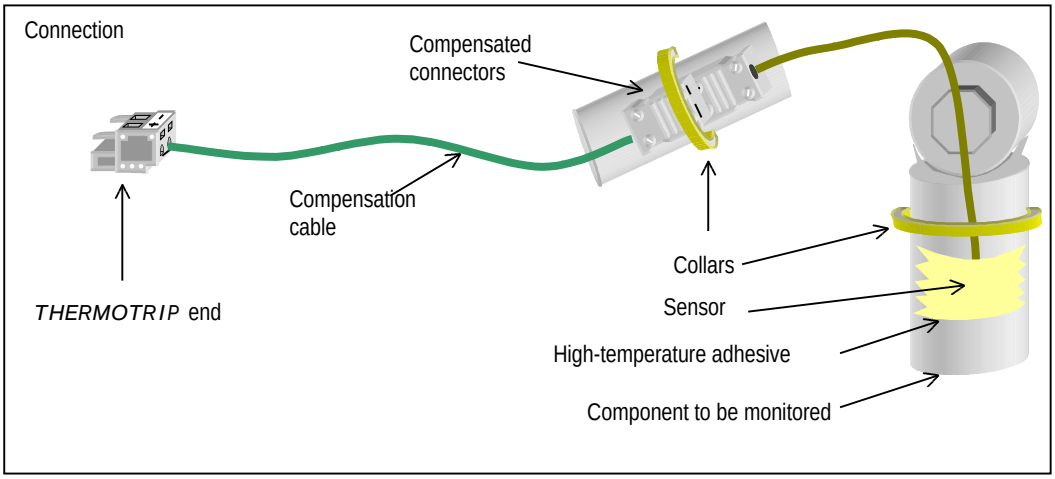
Since the power supply is polarized, a cable with two wires of different colours is strongly recommended.

3.2 Wiring of the sensors

CAUTION: The compensation cable is a POLARISED CABLE, it is therefore necessary to observe the polarities of connection as follows:

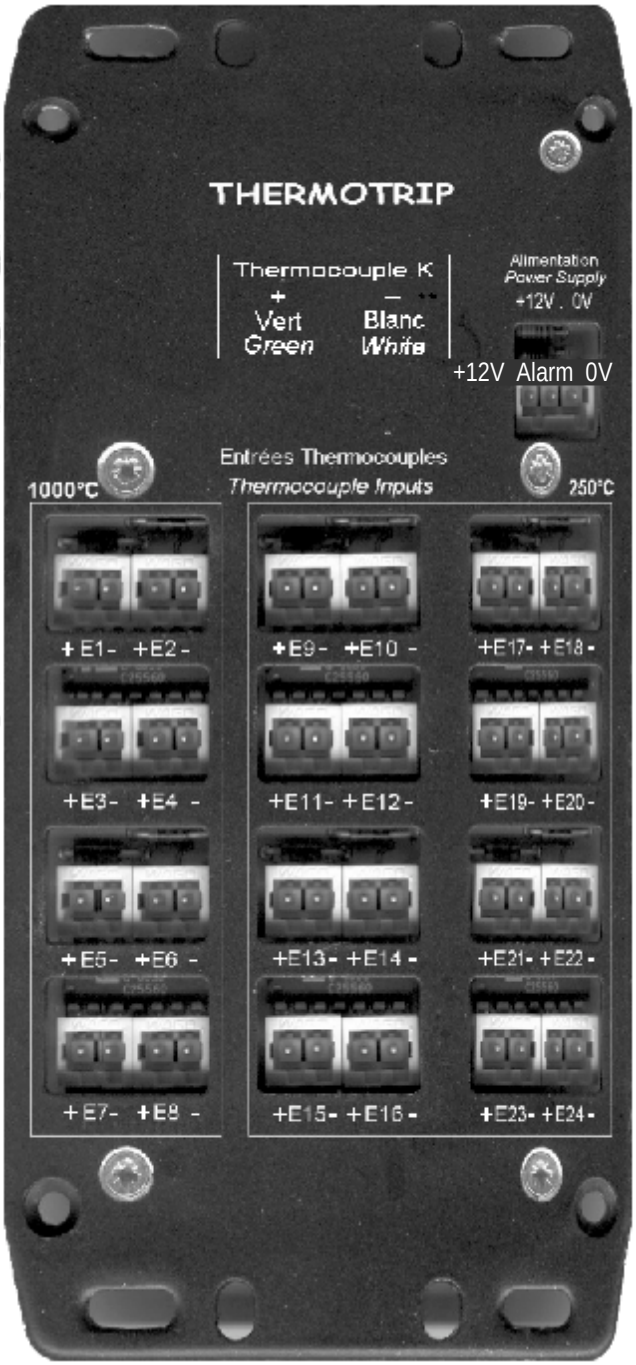


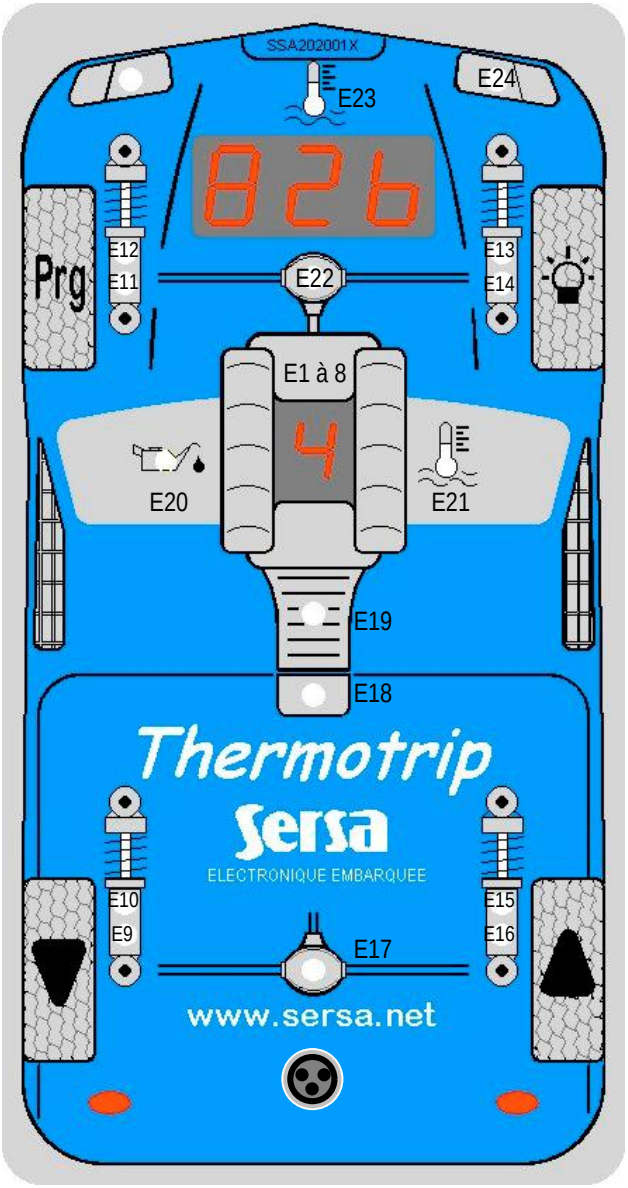
Once the compensated cable are installed in the vehicle, it remains only to install a compensated connector (sensor end) and a pull-out connector (*THERMOTRIP* end), observing the indicated polarities. After this connect each cable to the *THERMOTRIP* observing the input number allotted to each sensor. The insertion tool supplied will be used to connect the wires of the compensated cable to the pull-out connector. For this purposes, strip the wires without damaging them, insert the blade of the screwdriver into the upper slot of the connector (see figure below), then exert a slight pressure on the connector clamp and insert the corresponding wire into it. Release the pressure on the clamp while holding the wire in position. Pull gently on the wire to ensure that it is properly gripped in the clamp. Repeat the procedure for the second wire of the compensation cable.



Remove the connector mask situated on the back of the *THERMOTRIP*.
Then connect each sensor to the *THERMOTRIP* observing the input number allocated to each sensor (indication on the bottom panel of the device). The figures on the following page summarize the allocation of each measurement channel with respect to its input connector.

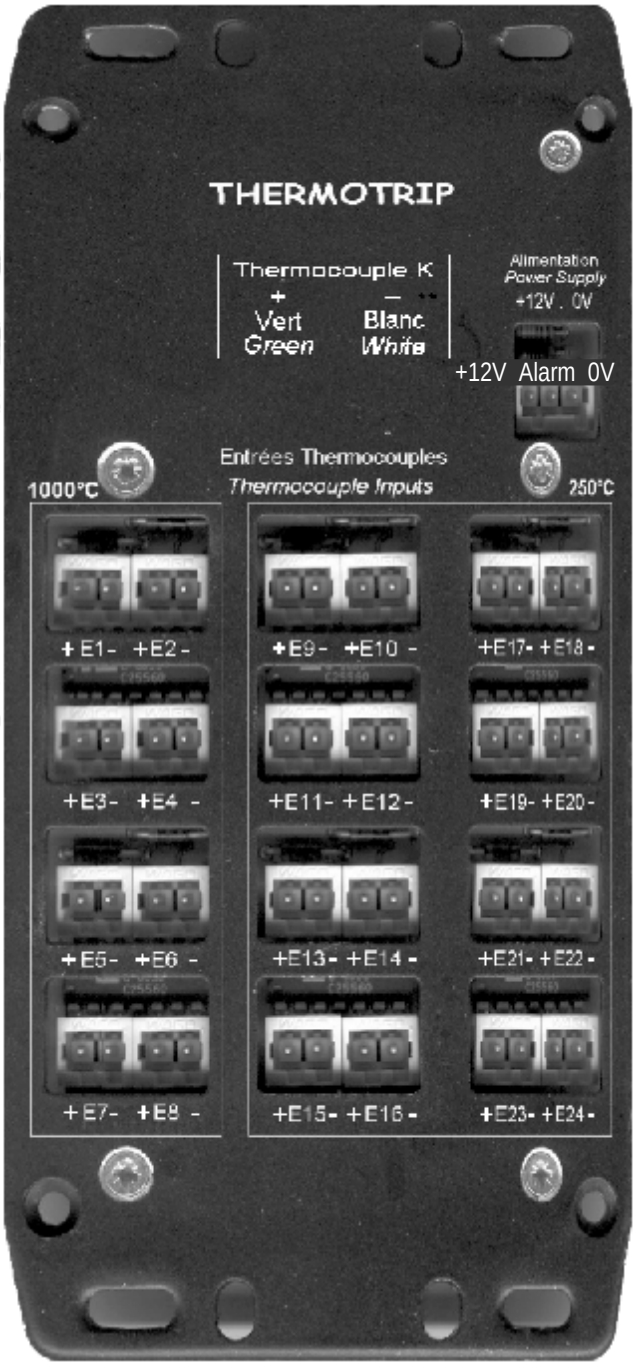
3.3 Allocation of channels SSA202001X (4-WHEEL DRIVE VERSION)

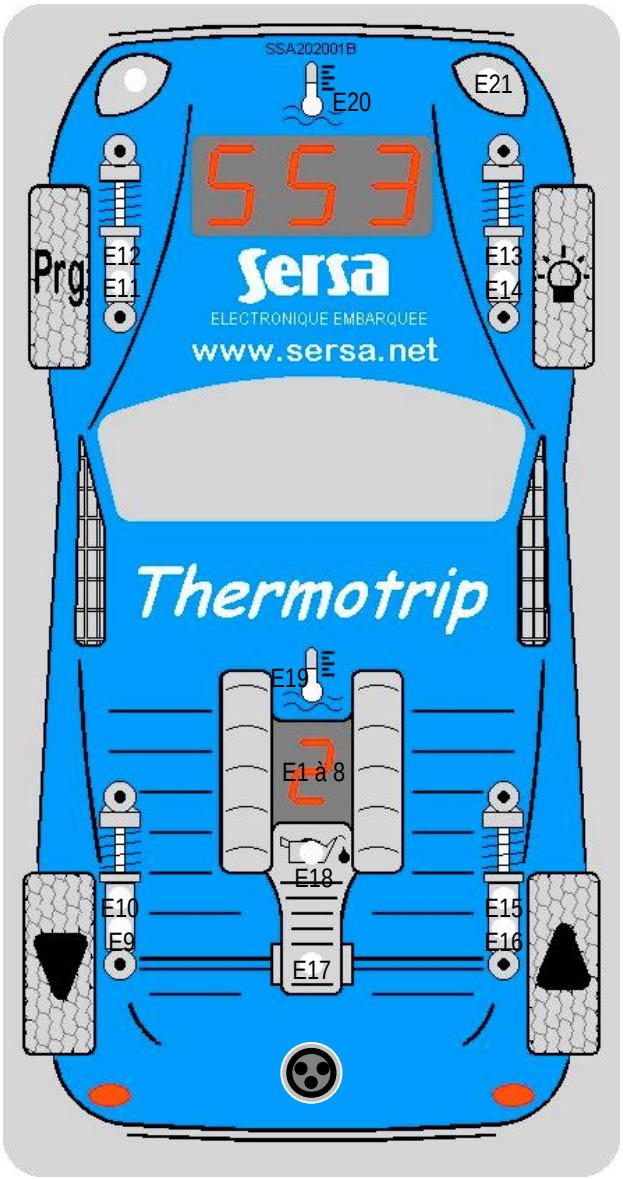




Input N°	Allocation	Input N°	Allocation	Input N°	Allocation
E1 to E8	Exhausts 1 to 8	E14	Sh. absorber Front Right Lwr	E20	Engine oil
E9	Sh. absorber Rear Left Lwr	E15	Sh. absorber Rear Right Upr	E21	Engine water
E10	Sh. absorber Rear Left Upr	E16	Sh. absorber Rear Right Lwr	E22	Front axle
E11	Sh. absorber Front Left Lwr	E17	Rear axle	E23	Radiator water
E12	Sh. absorber Front Left Upr	E18	Transfer box	E24	Option
E13	Sh. absorber Front Right Upr	E19	Gearbox		

3.4 Allocation of channels SSA202001B (BUGGY VERSION)





Input N°	Allocation	Input N°	Allocation	Input N°	Allocation
E1 to E8	Exhausts 1 to 8	E14	Sh. absorber Front right Lower	E20	Radiator water
E9	Sh. absorber Rear Left Lower	E15	Sh. absorber Rear right Upper	E21	Option
E10	Sh. absorber Rear Left Upper	E16	Sh. absorber Rear right Lower	E22	Unused
E11	Sh. absorber Front Left Lower	E17	Rear axle/ Gearbox	E23	Unused
E12	Sh. absorber Front Left Upper	E18	Engine oil	E24	Unused
E13	Sh. absorber Front right Upper	E19	Engine water		

3.5 Power supply wiring

Start by connecting the power supply of the module, observing the polarities (a cable made up of different coloured wires is preferable). The *THERMOTRIP* is not equipped with an on/off switch. Even if the display is not in operation, the system continues to operate with reduced consumption, we therefore recommend that you should connect the 12 V supply of the system to a +12V after contact)(+Neiman) or to a circuit-breaker dedicated to electronic apparatus.

If the power supply is no longer present on the *THERMOTRIP*, the configuration parameters and the maxima are retained in non-volatile memory.

As soon as the power supply is connected, all the indicator lamps light for 3 to 4 seconds to check correct operation. Then carry on with the configuration of each input (see chapter 4 CONFIGURATION).

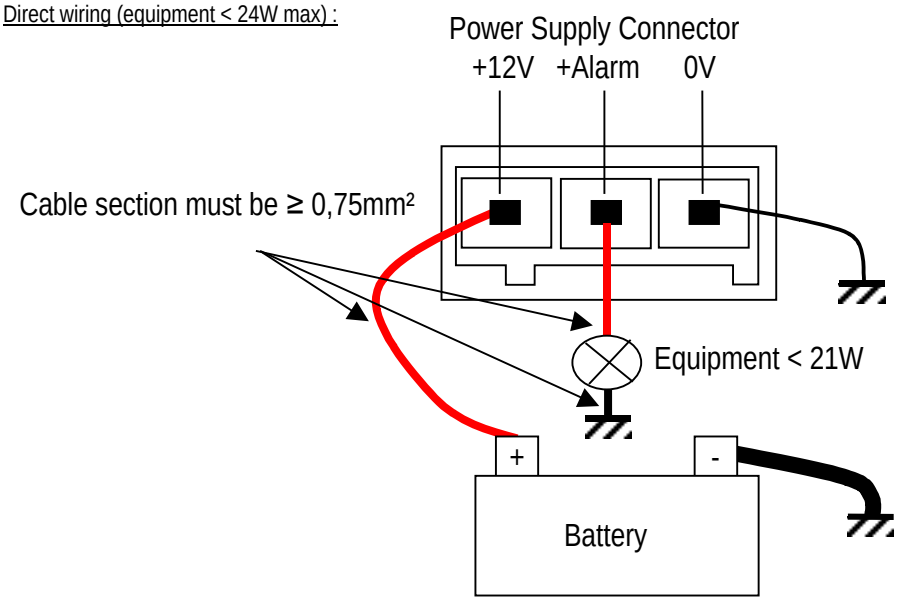
3.6 Alarm Output Wiring

The Alarm Output is used to supply large variety of equipment for which the consumption doesn't exceed 2 Amps at 12Vdc (24 Watts).

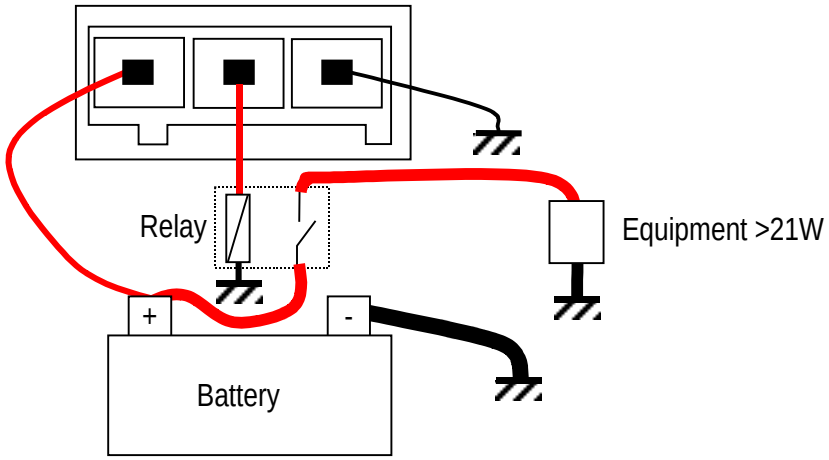
If the power of the equipment to be supplied exceeds 2 Amps, an additional relay is necessary (see wiring with additional relay section) .

In case of short circuit, the Alarm output is self protected with auto-reset function.

Direct wiring (equipment < 24W max) :



Wiring with additional relay (equipment >24W) :



4 CONFIGURATION

4.1 Modification alarm temperature thresholds

The modifications of set points are carried out directly by means of the front panel keys of the *THERMOTRIP* , or via the "WinMonitor" software supplied (refer to chapter 6 CONFIGURATION by WinMonitor).

With the *THERMOTRIP* under power, select the channel to be modified using the up-down keys, then press the key Prg (Programming).
The indicator corresponding to the previously displayed input flashes. The temperature displayed now corresponds to the value of alarm threshold above which an alarm will be displayed.

Use the up and down keys to scroll to the temperature value which you wish to allocate to this input. The maximum value programmable for an exhaust measurement input is 1000°C ; and 250°C for the other inputs. The minimum value of the threshold is 50°C.

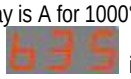
If the value 50 has been reached and if the down key is pressed once more, the display indicates OFF. In this case, the selected input (orange indicator flashing) is no longer programmed: this means that no measurement will be taken into account nor displayed on this input. To take account of this input again, press the up key once or more times until 50 appears, or the threshold value that you want.

To move to the threshold value of the next input, press the programming key once..
Repeat the adjustment using the up and down keys as seen above.

To leave programming mode, it is only necessary to wait for a few seconds, then the indicator or the display of the selected input stops flashing and the temperature display now indicates the real temperature of the input concerned.

5 OPERATION

It is possible to consult the temperatures by pressing he + or - keys. The LED of the input visualized de glows steadily.
If an exhaust temperature exceeds 1000°C, the first digit of the display is A for 1000°C, then B for 1100°C, etc.

For example :  indicates a température of 1053°C and  indicates a température of 1135°C.

5.1 Alarms and faults

When an input is on alarm (set point exceeded) :

- The display moves into high brightness mode (the brightness adjustment key no longer allows the display to be totally extinguished.
- The 2 "brake lights" of the mimic diagram flash.
- The LED of the defective input lights.

An alarm or a fault is always indicated by the flashing of the of the temperature display  .
If the value indicated is a number, it corresponds to a temperature exceeding the alarm temperature value previously programmed.

If the display indicates  , this means a thermocouple fault (broken wire or disconnection of the thermocouple).

CAUTION: if an input is configured (threshold value different from OFF) and no sensor is connected to this input, the input is considered to be in fault.

If second fault occurs, the faults will be automatically displayed one after the other with a pause between faults.

If an exhaust fault is indicated, the cylinder number(s) scroll on the engine display  .

5.2 Maximum temperatures reached

A long pressure on the Prg key allows access to reading the maxima. All displays and indicators flash. The key allows passage from a channel to the following channel. A further long pressure has the effect of setting all the maxima values to 0-.
On the other hand, if no key is operated for 5 seconds in this mode, the maxima values are retained in memory.

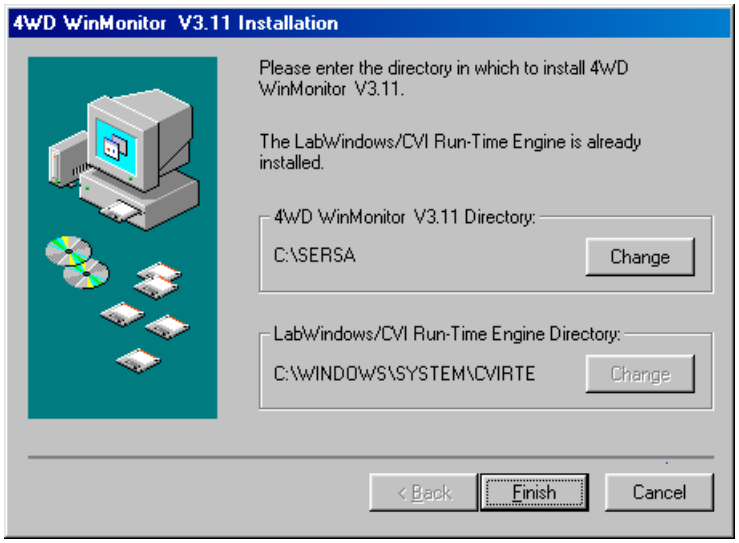
6 CONFIGURATION by WinMonitor

Minimum configuration required to install and use the WinMonitor software:

- PC PENTIUM I 166MHz minimum
- 16 Mo of RAM
- 10Mo of hard disk free
- Video board 2Mo minimum
- VGA screen 800x600
- Windows™ 95, 98, 2000, Me, XP or NT4.X installed

6.1 Installation of WinMonitor

1. Insert the WinMonitor CDROM.
2. Choose the directory which suits your equipment (4-wheel drive version 4x4 or Buggy version).
3. In the selected directory, double-click on the file SETUP.EXE.

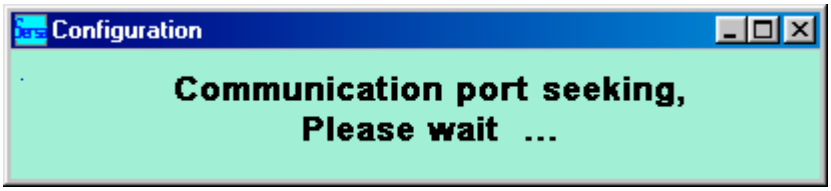


4. Follow the instructions of the installation software.

At the end of the installation, the directory SERSA is created by default (or the position you have chosen), containing the WinMonitor software.

Double-click on WinMonitor.exe to start the application.

The first time the software is opened a window opens which enables the software to choose the communication port used for the dialogue with the *THERMOTRIP*.

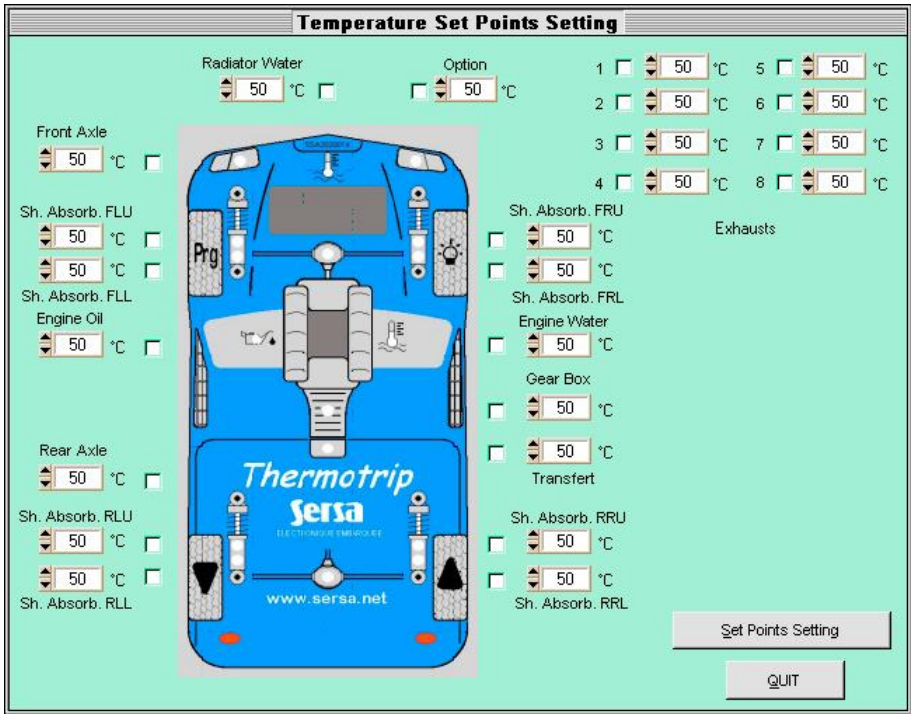


The second window offers 3 choices:

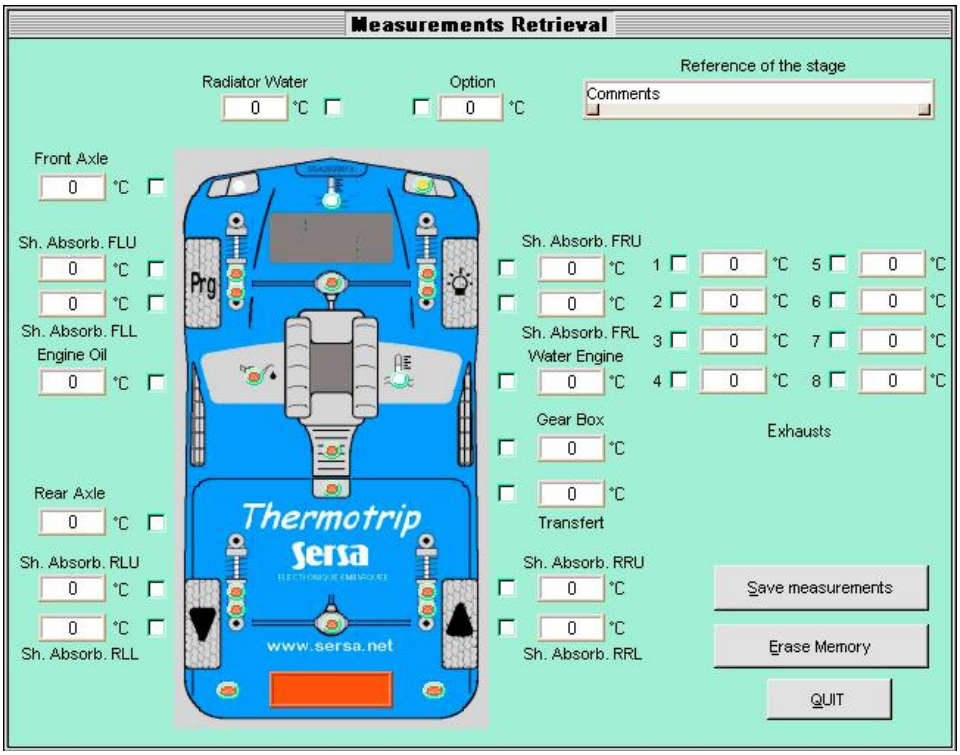
1. Reading and setting of set points
2. Retrieval of measurements
3. Exit from application

By clicking on the button “Set points reading and setting ” the following window is reached.

Each measurement channel is associated to a temperature value and to a tick-box indicating whether the channel is in service or not.
Fill in the various boxes corresponding to each sensor used, then click on the button “Set points Programming ” to download the values into the *THERMOTRIP* memory.



Retrieval of measurements



This window resembles the previous one, except that the values displayed are those memorized in the non-volatile memory of the *THERMOTRIP*.
The window "Reference of the stage" is reserved for the commentary which will be recorded at the same time as the maxima data, in the file savemax.txt (same directory as the application). To save the measurements following on from the measurements already contained in the file: click on the button "Save measurements".

Once this operation has been successfully carried out, it is possible to erase the maxima in memory by clicking on the button "Erase memory".
This will make it possible to take into account new values of maxima.

7 CHARACTERISTICS

7.1 Inputs / outputs

- 16 Inputs thermocouple K for measurements of temperature up to 250°C .
- 8 Inputs thermocouple K for measurements of temperature up to 1000°C (Exhausts).
- 2 power supply wires 12VDC protected against inversions of polarity. Operating range: 10VDC to 16VDC.
- 1 RS232C connection for connection to a PC.

7.2 Accuracy

- For Inputs 50..250°C : ±1°C
- For Inputs 50..1000°C : ±4°C
- For temperatures lower than 50°C, the values displayed are given for information.

7.3 Display

- 3 – 7-segment red displays for the temperature.
- 1 7-segments red display for the cylinder number (1 to 8)
- 10 orange LED indicators to show the measurement point displayed.
- 2 red LED indicators to indicate that a set point has been exceeded.
- 1 orange LED indicator to show that a thermocouple is cut off or disconnected.

7.4 Case

- Material: Cast aluminium.
- Dimensions of monitor: Width 80mm, Height 150mm, Depth 75mm.
- Weight: 800g.
- Fixation: by 4 oblong holes 10x4mm pitches 50 and 165 mm

8 ENVIRONMENT

- Operating temperature: -20°C to +65°C.
- Humidity : 90 % RH not condensed.
- Consumption on standby: < 0.1W at 14.4Vcc
- Maximum consumption: < 0.4W at 14.4Vcc

9 ORDER CODES

Two types of version are available:
KIT 202001X for 4-wheel drive pour vehicle
KIT 202001B for Buggy.
Each containing:
2X ref.: 202002 : 4 temperature sensors for gluing (0-250°C).
1X ref.: 202003 : 2 temperature sensors with thimble (0-250°C).
2X ref.: 202004 : 5 female compensated connectors for thermocouple K.
2X ref.: 202005 : 5 pull-out connectors for sensors + 1 power supply connector.
1X ref.: 202006 : 1 reel of 25m of compensated cable for thermocouple K.
1X ref.: 202007 : 1 insertion / extraction screwdriver for pull-out connector.
1X ref.: 202008 : 1 PC connection cable 2m, supplementary.
1X ref.: 202009 : 1 WinMonitor software.
1X ref.: 202010 : 1 transport valise for the outfit.
1X ref.: 202099-2 : the present technical note.

On option :

ref.: 202011 : 1 temperature sensor (0-1000°C) for fixation to exhaust by adhesive (not supplied).

All references can be separately ordered: please contact your contact assistant for further details.