

INSTALLATION MANUAL
TAXITRONIC TC60-TV60

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DRAWINGS LIST

Drawing 1	TV60 bracket assembly
Drawing 2	TV60 unit drawing
Drawing 3	TC60 connectors
Drawing 4	Installation drawing (*1)
Drawing 5.1	TC60 Plastic sealing
Drawing 5.2	TV60 Plastic sealing
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Drawing 7	Taximeter with armoured cables
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Drawing 8.2	TV60 Sticker seals position

1. INTRODUCTION

This document describes the installation and parametrization of TAXITRONIC TC60/TV60.

2. MOUNTING

2.1. MOUNTING TC60

TC60 mounting is prepared for 4 adhesive supports, which can optionally be fixed with screws, and two cable ties. The supports must be fit rigidly, to avoid vibrations.

All TC60 connectors are on the front of the unit, covered by a sealable cover.

All other devices are interconnected with TC60. So it can't be sealed until the whole installation process is finished.

The tools necessary for the installation are:

- Screwdriver with head format Z1
- Isopropilic alcohol (if the previous installation seals have to be removed)

2.1.1. PLACING OF TC60

TC60 must be installed so that passengers can't see or access it. Seals and serial numbers must be easily visible and accessible upon verification at a verification office.

Standard positions are inside the glovebox or under the passenger seat. Some vehicle brands have standardised the TC60 position: Find these positions in Annex III

It is necessary that the identification sticker and the seals are easy to inspect. For this reason it is necessary to take care of the orientation, with the stickers looking to the outside. Cables cannot cover either the identification sticker nor the seals.

2.2. MOUNTING TV60

The installation of the TV60 is to be done on its certified support (See drawings 1 and 2). The design of the support allows for 3-dimension orientation of the TV60, so it is adapted to different dashboard designs.

The adhesive base is ready to be adhered to plastics, and supports the temperature ranges inside a vehicle.

The connexion is done by only one connector on the back of TV60. The direction the cable goes out, can optionally be to the back or pointing down.

The tools necessary for installing the TV60 are:

- Fixed hexagonal key n° 15.
- Allen key n°2, minimum length of the shaft 100mm.
- Allen key n°3.
- Screwdriver with head H1

- Isopropilic alcohol (If there are previous installation or tariff seals to be removed)

The orientation of TV60 is fixed by screwing the two Allen screws on the sides (points B and C on drawing 2). The central screw which touches directly on the support ball is not used (see drawings 1 and 2)

The height of TV60 is fixed by screwing the central hexagonal key (Points A of drawing 2)

2.2.1. PLACING OF TV60

It is normally located on the vehicle dashboard, most times centered, so that both the passenger and driver can clearly see it.

The version with printer needs space enough to open the printer cover, so that the paper can be changed. It can't be too close to the windscreen, so that the magnetic card can be passed easily. It must not interfere with the vehicle Airbag, and it must be fitted as low as possible so as to not obstruct the visibility of the road.

The positions established with the vehicle manufacturers are explained in Annex III

2.3. ELECTRICAL INSTALLATION

TC60 admits power supplies between 9 and 30 V, which makes it compatible with the current 12V and 24V vehicle batteries.

First perform all the connexions with the unit disconnected from the car battery. When all peripherals are connected, then connect the power supply

If it is necessary to make an intervention in the installation, it is necessary to first disconnect the main power supply cabling or fuse, and then modify the rest of the installation.

Drawing 3 details all the TC60 connectors.

Install the cabling and peripherals according to the connexions diagram in drawing 4

Pay attention that the antennae installation is done so that:

- The outside antenna for GPS and GSM is connected to GSM-B
- The inside antenna for GSM is connected to GSM-A

If an emergency button is used: Solder together the brown wire with the yellow wire of the emergency button, and protect the joint with a thermoretractile cover.

2.4. CHARACTERISTICS

The dimensions of the units are:

TC60	174x140x45 mm	(length x width x height)
Weight	520 g	

TV60	178x70x100 mm
Weight	630 g

TC60 and TV60 are designed and certified to operate in an environment of electromagnetic class E3 (instruments powered by a vehicle battery) and in a mechanical environment class M3 (high and very high vibration level, such as in all type of vehicle).

The units are designed to operate indoors, in an temperature range of -25°C / 70°C and without condensation, such as inside a vehicle

2.5. INSTALLATION RECOMMENDATIONS

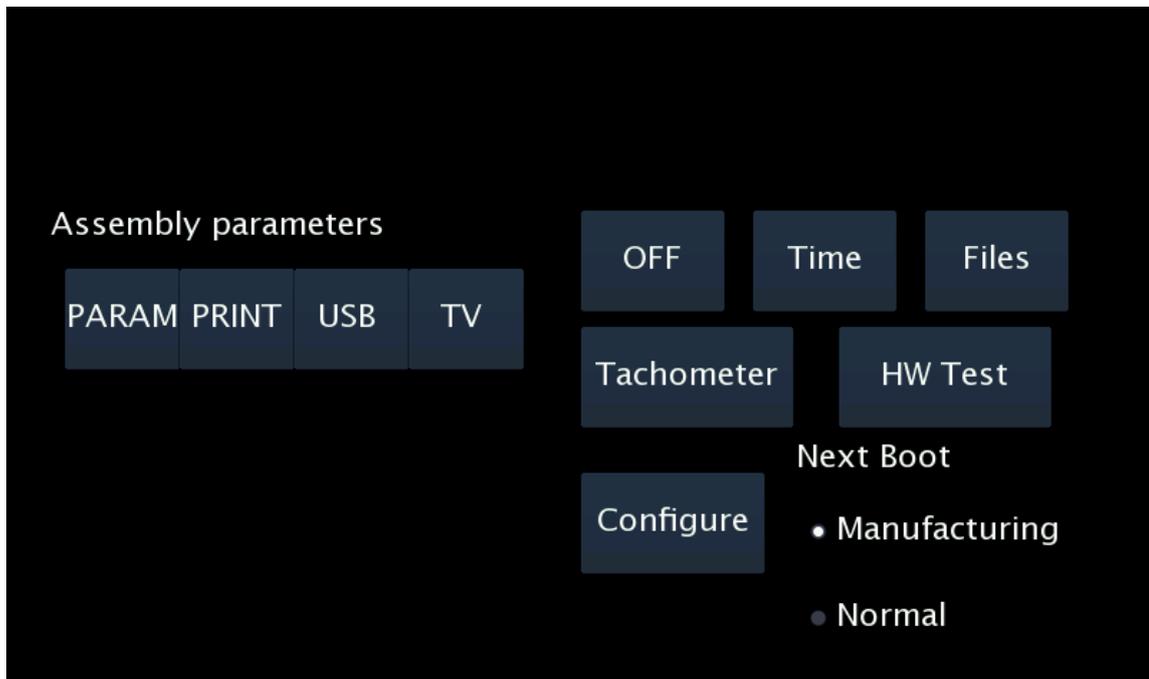
- Disconnect the battery positive contact until the whole electrical installation is finished.
- Any work on the terminal or accessory must be done with the device disconnected from the battery or without the general fuse.
- Always use the positive and negative directly from the battery, to get a more filtered power supply and avoid false contacts.
- Always connect the cables to the battery with a terminal, never by directly rolling the cables around the battery contact.
- If the cables crosses any edges, like metal edges, the cables must be protected with a rubber protector
- If the power supply cables are too long, they have to be cut to measure. They must never be rolled. Do not cut antenna, microphone nor loudspeaker cables.
- In case the vehicle has a radio transmitter, separate the transmitter installation as much as possible from the terminal and its wiring. The transmitter and the terminal antennae also are to be as separated as possible.
- The interior adhesive GSM antenna, can not be installed under shielded windscreens. Some vehicles have shielded windscreens that block the antenna transmissions and coverage. If the windscreen is shielded, locate an unshielded zone or replan the antenna installation.
- Antenna cables must not be cut NOR ROLLED. If the standard antenna cables are too long, consider asking for shorter cables.
- Make the distance between both antennas as large as possible.
- Do not connect any element connected to the terminal to the support of the radio transmitter or radio transmitter antenna.
- Install all the units and connect the power. Finally connect the general fuse.

3. FIRST TIME TURN ON

- Turn on the unit by pressing on the touchscreen.
- The unit starts, showing a progress bar. Finally you get a screen with the message “ENTER A VALID USB”
- Connect the USB stick with installer key to the USB connector
- A screen requests for the installer password
- Enter the password and press OK.

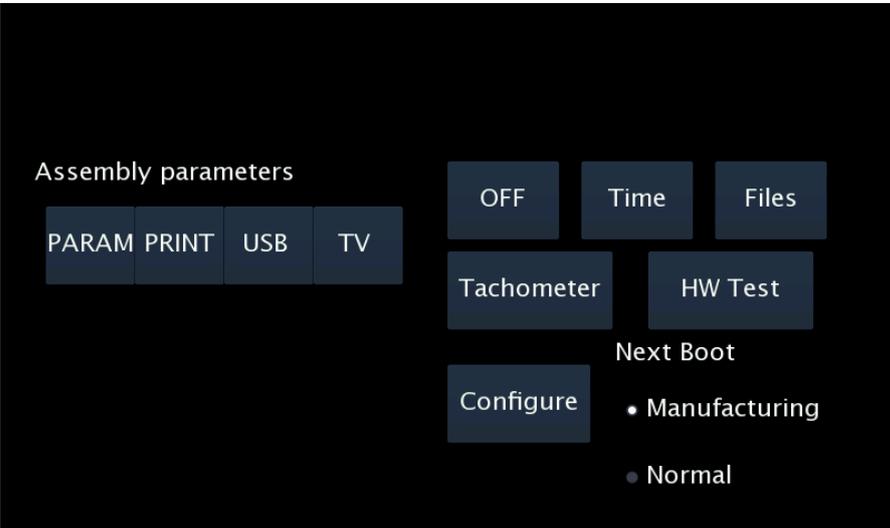
The start installer screen offers the following options:

- OFF
- Time: It updates the time and date of the terminal. This does not affect the taximeter time, it is only active in non-taximeter configurations.
- Files: Used for software updates
- Tachometer: Calibration of the tachometer. This is only used in non-taximeter configurations. This is not affecting the taximeter tachometer, which is calibrated inside the taximeter screens.



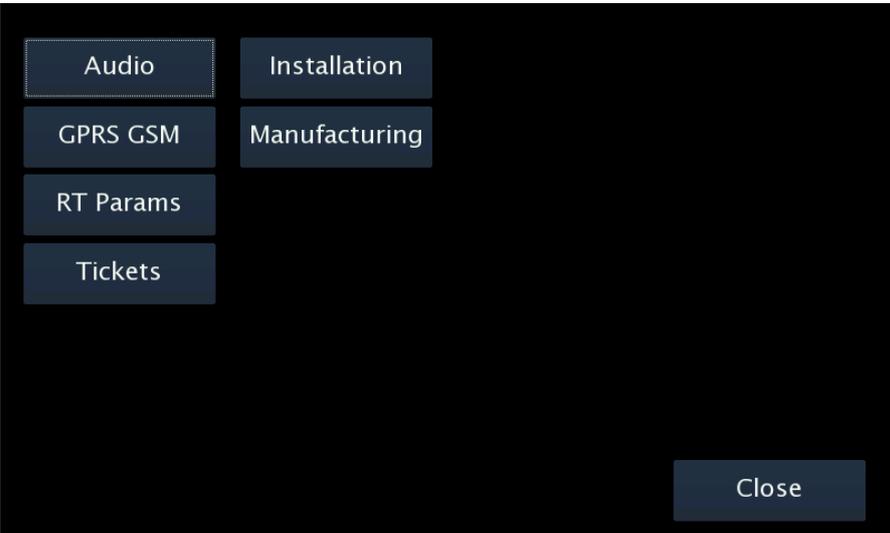
3.1. CONFIGURATION PARAMETERS

When in the main Manufacturing screen, press “Configure”



The application configuration parameters will open.

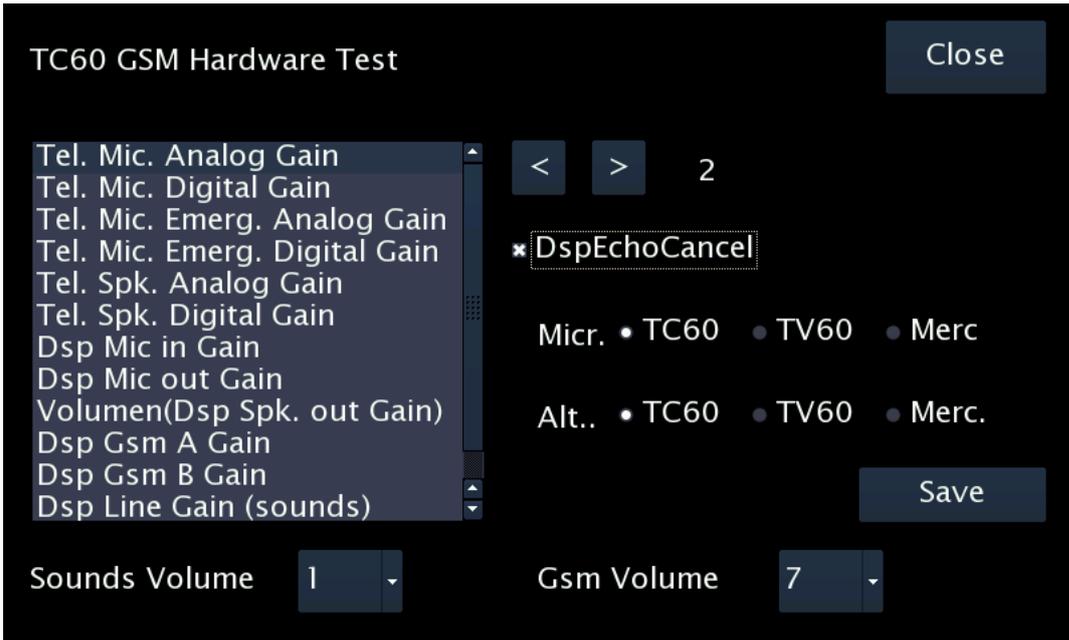
These parameters are not metrologic, so they are not subject to legal sealing. This can also be accessed with an installer magnetic card.



Audio

DspEchoCancel	Activates echo cancellation	Normally use this activated
Micr	Choose the used microphone	TC60 External mic connected to TC60 TV60 Internal TV60 mic Merc Specific Mercedes microphone
Alt	Choose the used loudspeaker	TC60 External loudspeaker TV60 Internal TV60 loudspeaker Merc Specific Mercedes loudspeaker
Sounds Volume	Default system sounds volume	Reception of dispatch, messages, etc
Gsm Volume	Default phone calls volume	

When you have finished press “Save” to store the new parameters



In case of vehicles with excessive echo, which can not be solved with the previously explained parameters, it is also possible to adjust the microphone gain to reduce the echo.

Echo is not solved by increasing the volume: On the opposite, it is solved by lowering the output volume or lowering the microphone gain.

The parameters affecting the microphone gain are:

Tel.Mic.Analog Gain	Phone micro analog gain	<p>These parameters are by default adjusted so that they are valid for a majority of vehicles. In case it might be necessary to adjust them:</p> <ul style="list-style-type: none"> - Select the parameter - Lower with button "<" - Increase with button ">" <p>In case the microphone gain is not adequate, adjust with parameter "Tel.Mic.Analog Gain" and check the result. Normally it will be enough with this only parameter.</p>
Tel.Mic.Digital Gain	Phone micro digital gain	
Dsp Mic Out Gain	Microphone gain at the output of the DSP	

These additional microphone gain parameters are not available on TC60 board version 2, produced between 2007 and 2008

GPRS GSM

Parameters				Close
GPRS APN	Central Port	ANI A	PIN A	
interfa.vf.es	3600		0000	
GPRS Suffix	Local Port		PIN B	
	3600		0000	
GPRS user	GPRS Password			
placa12	tc60			
Central IP Addr.	Mobitex Cent.			Save
172.17.1.41	0			

GPRS APN	Identification of the GPRS network	
Central Port	UDP Port of the central programm	
GPRS Suffix	GPRS Suffix, used as a second part of the GPRS user.	Your network support will give you this data if needed
Local Port	UDP Port of the local TC60 application	
GPRS User	Identification of the TC60 in the GPRS network	
GPRS Password	Password of the TC60 in the GPRS network	
Central IP Address	IP Address of the Radiotaxi central	
PIN GSMA	Enter the GSM A PIN	If the SIM is not in: 1.- First enter the PIN 2.- Then the SIM can be entered
PIN GSMB	Enter the GSM B PIN	If the SIM is not in: 1.- First enter the PIN 2.- Then the SIM can be entered
ANI GSMA	Enter the GSM A phone number	Needed for 112 applications
ANI GSMB	Enter the GSM B phone number	Needed for 112 applications
Mobitex Cent	Holland specific	

RT Params

RT Parameters
Close

Driver Name:

License: Company

Plate Number: Term. SN

NIF: * 2 Drivers/Shift

CarID:

Driver 1

Driver 2

Driver 3

Driver 4

Pins ShiftNr
Save

Name	Name of license owner	
Licence	License number	
Plate Number	Plate number	
NIF	Fiscal ID	
Car ID	ID of the car in the Radiotaxi	
Driver 1..4	Driver codes of the 4 drivers	
Company	Company code	Used by the Prima application
Term SN	TC60 serial number	Used by the Prima application
2 Drivers/Shift	Number of drivers per shift	Used by the Working Time Control application
Pins ShiftNr	To change the Shift number	

Tickets



These screens are used to set all the data related to tickets. The data are:

Ticket Headers	6 ticket headers	
Ticket Footers	8 ticket footers	
Extras text	Extras text in the tickets	4 Manual Extras 1 Automatic Extra
Sweden specific	Inspection texts Control Rapport Plomb	Used only in Sweden
Sweden specific	TXT 1..4	Used only in Sweden

Installation

Operator	Installer who installs the device	
Factory	Code of the workshop	
Date	Installation date	Format YYYYMMDD
Bat. Calibration	Battery calibration	
Touch Calibr.	Touchscreen calibration	
EMV Type	Type of EMV payment	
EMV SerialPort	Serial port where PinPad is connected	Port 2 or Port 3 (see drawing ITC600003)
Taximeter type	Type of taximeter	

Touchscreen calibration

If it is necessary to calibrate the display touchscreen, select “Touch Calibr”.

A pointer will appear near the left top corner. Press on the pointer, as precisely as possible.

Then the pointer will move to near the bottom right corner. Press on the pointer.

The touchscreen is now calibrated.

Battery calibration

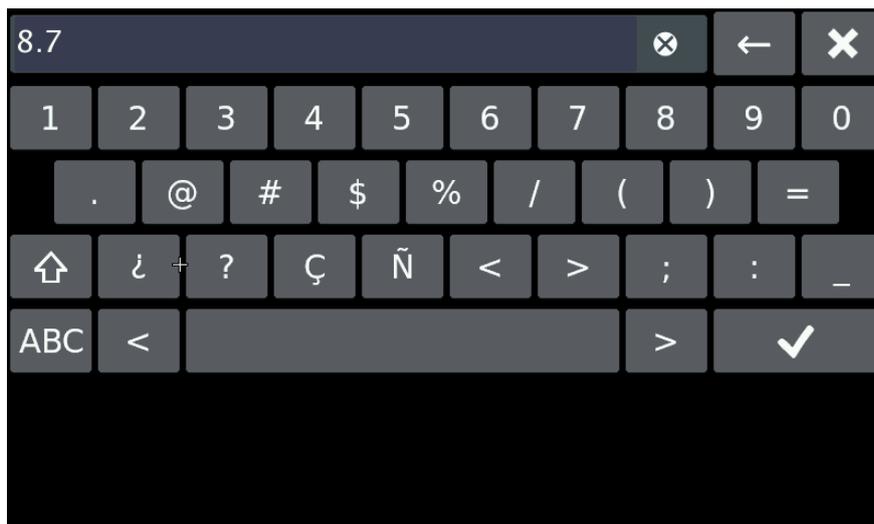
This operation is only necessary in case that you have formatted the board. Is not necessary if you change the battery.

To calibrate the battery:

- Open the TC60 box so you can access the battery
- Enter Bat. Calibration
- Measure the Battery voltage with a tester. The value should be above 8V for a valid calibration



- The TC60 battery is charged up to a maximum between 7,8 and 8,5 V with an ambient temperature of 25°C. To calibrate it, wait at least until the value read on the tester is 7,5 V, otherwise the calibration is wrong and battery may have a breakdown.



- Enter the value in format V.v and Enter

The battery is now calibrated. The voltage will be corrected the next time you reboot the system.

Hardware test

Press **HW Test**. These screens allow to test the TC60 and TV60. See the summary table on Annex II to have all the verification options



It is necessary to test the correct connexion of all the elements and peripherals connected to the TC60. In a typical installation, the verification must include:

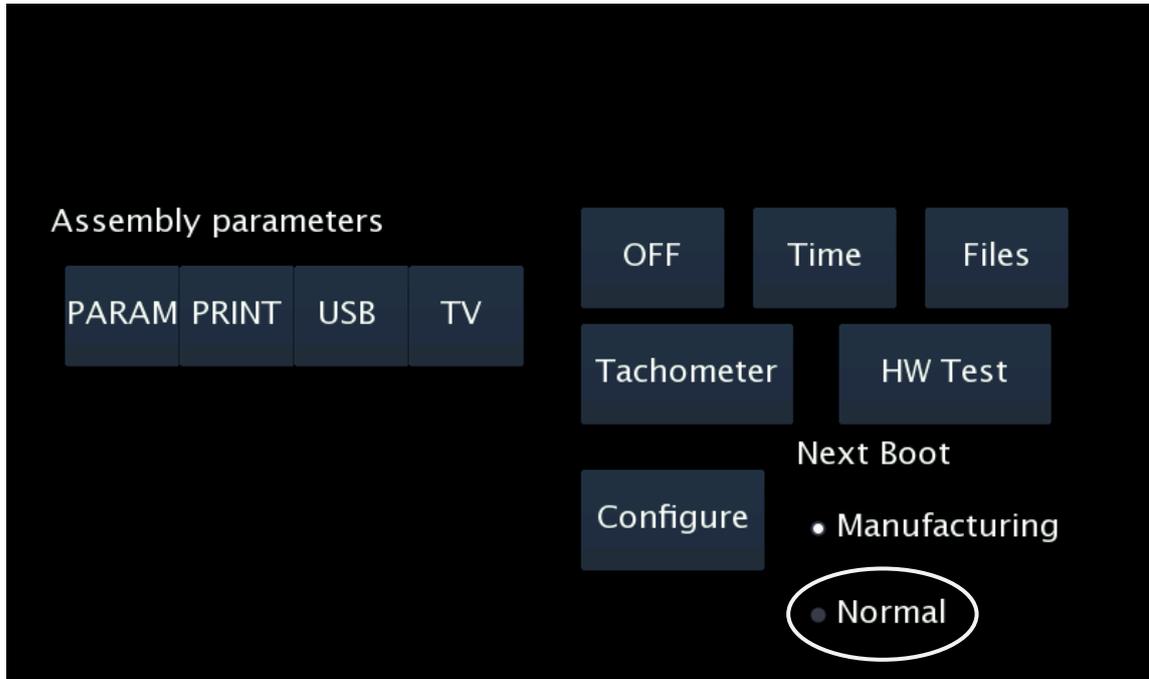
- Emergency button test
- Contact key test
- External lights
- GSM antenna, coverage of the GSM phones
- GPS antenna, GPS coverage

The TC60 installation cannot be considered as finished if the coverages of any of the phones are not good enough. In that case, recheck the affected antenna. Take into account that some vehicles have shielded windscreens, which attenuate the coverage.

3.2. SWITCH TO NORMAL MODE

Before installation is complete, change the working mode to Normal before the next restart of the unit.

Select **Normal** in the **Next Boot** frame. Then you can turn the TC60 off. At next startup, the TC60 will start in Normal mode.



4. TAXIMETER CONFIGURATION

With the TC60 in Normal mode, and with the taximeter in Free, open the sealed tariff cover and connect a USB memory containing a valid tariff and installer key.

The screen will display the tariffs present in the USB. Select the adequate one.

If you have few tariffs in the USB, this will be faster than if you have a large number of tariffs, so keep the number of tariffs as low as possible.

The taximeter configuration screen is displayed. In this screen the following operations can be done:

1. Configure the "K" constant
2. Configure passwords
3. Set the clock
4. Reset totalizers
5. Record the tariff to the taximeter

4.1. CONFIGURING CONSTANT K

Press on the button "K". The K constant configuration screen is entered.

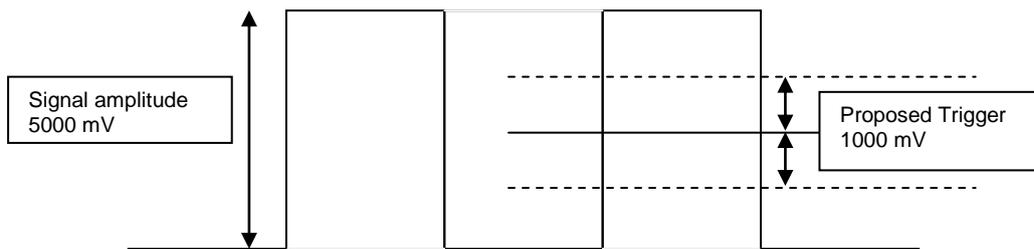
TARIFA	A PAGAR €	SUPL. €
K = 1000	TRIGGER(mV)	2000
PULSOS	LUMINOSO	SERIAL
METROS	PULL UP	NONE
CALC.K	CAN	NO
ENTRAR K		OK
		<

It is possible to enter the K value directly, or to calculate it by doing a distance.

From this screen it is also possible to access:

- External light type configuration
 - 0 = Serial channel rooflight
 - 1 = Parallel light

- Adjustment of the trigger value for adequation to the car signal. The trigger value counts from the center value of the signal
- Modify Trigger value. The default 1000 mV is compatible with most cars. Change only if the signal shape is not standard, and test until an adequate value is found.
- The value must be in millivolts, without decimals. The default value is 1000
 - Lower than the vehicle signal amplitude / 2
 - Higher than a possible noise, so that it does not trigger by noise
 - Recommended value is the signal amplitude in millivolts / 4.
 - Valid values are between 400 and 2000.



4.1.1. PULL-UP CONFIGURATION

In some vehicles, the vehicle signal does not provide a high level signal, but an open circuit instead. In these cases it is necessary to activate the pullup. Modify the value of the field PULLUP by pressing on it.

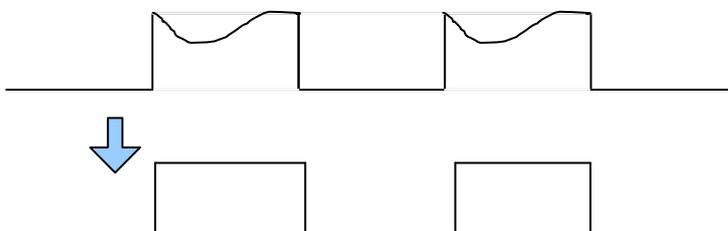
Pull-up=0

Use if the vehicle signal has a good level for 0 and for 1



Pull-up=1

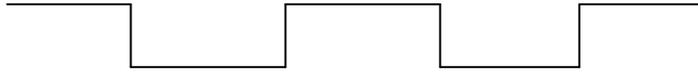
Use if the signal has a stable 0 level, but the 1 level given by the vehicle is an open circuit.



Pullup=2

Pull down. Use if the 1 value is stable, but the 0 value is an open circuit.





4.1.2. CALCULATION OF THE K CONSTANT

To calculate the value of the K constant

- On the main taximeter configuration screen, press on button **K**
- Press on the field “PULSES” to start the counting of the number of impulses
- The indicator will change to Red
- Drive for an exact known distance
or
- Measure a driven distance with enough precision
- Once the preestablished distance is reached, stop the car
- Press on the button “Meters” and enter the exact number of meters of the driven distance

The K value is calculated and displayed. The value is only updated after recording the tariff.

4.1.3. ENTERING CONSTANT K

In case the value of K is known, it can be entered:

- On the main taximeter configuration screen, press on button **K**.
- Press on the field K value. Now enter the value of K with the numeric keypad. The value has to be between 500 y 80000.

The K value is only updated after recording the tariff.

4.2. PROGRAMMING PASSWORDS

If you wish to activate the access to the protected taximeter options, use the password configuration utility.

- In the main taximeter configuration screen, press on the button **CODES**
- The passwords which can be entered are displayed. Maximum length is 9 numbers.
- Confirm the password with button **OK**. If you do not want to configure a password, just press on the **OK** button without entering a value. Next parameter is displayed.

CS1 Password to reset the partial totalizers
 CS2 Password for options of totalizers group 1
 CS4 Password to modify the revision date

4.3. SETTING THE CALENDAR - CLOCK

The date / time of the taximeter is updated with the following process:

- Press on the CLOCK button
- The date field is displayed in format YYMMDD (Year Month Day)
- Press OK
- Enter the current time in format HHMMSS (Hours Minutes Seconds)
- Press OK again to go to the main screen and record the configured data.

4.4. RESET TOTALIZERS

If it is necessary to reset all the taximeter totalizers to zero:

- On the main taximeter configuration screen, press on Totalizers.
- Press OK to confirm the erasing of totalizers.
- If you do not want to erase the totalizers, press on CANCEL

4.5. CAN BUS CIA447

If you are installing a TC60/TV60 taximeter in a taxi with CAN Bus CiA447, on the field CAN, select CiA447.

Otherwise, select NO

4.6. RECORD THE TARIFF

When the correct K constant has been set, it is possible to record the tariff to the taximeter. On the main taximeter configuration screen, press on CHARGE. The tariff charging process is started. Once the process is finished, the taximeter gets into position FOR HIRE, with the new tariff data, and constant K is updated also.

For the taximeter to accept the recording of the tariff, it is necessary to have previously set the time and the K constant. If this is not done, the tariff can not be recorded and an error is displayed

Once finished, disconnect the USB from the taximeter and seal the tariff cover.

5. SEALING

TC60

- Two sealing options are possible:
- OPTION A: Plastic seal (Drawing 5.1)

A housing for a plastic seal is used. It is not possible to access the sealed screw without breaking the seal.

- OPTIÓN B: Cable sealing (Drawing 6.1)

For this type of sealing, an anti-turn angle and a screw with a hole are used. The cable is passed through both parts and is then sealed. It is not possible to turn the sealed screw without previously breaking the cable.

- Seal item 1 seals the TC60 box, so it protects the electronics
- Seal item 2 seals the connectors cover, so it seals the TC60 electrical installation

On top of the installation seal, it is necessary to put a sealing sticker with the identification of the installer, and marking the year of the intervention (Drawing 8.1). Local regulations may differ, the installer seal must be adapted to the local regulation.

TV60

The same two sealing options are possible

- Seal item 1: It seals the TV60 box, so it protects the electronics
- Seal item 2: Seals the connectors cover
- Seal item 3: Seals the TV60 legal connector (Tariff, K constant, Time)

On top of the installation and tariff seal, it is necessary to put a sealing sticker with the identification of the installer, and marking the year of the intervention (Drawing 8.1). Local regulations may differ, the installer seal must be adapted to the local regulation.

The zone on which the seals are applied has to be clean and dry. Clean the zone with a mixture of 50% isopropilic alcohol and 50% water

6. MAINTENANCE

The TC60 has a utility to test the unit functioning once installed, be it locally or remotely, and for the update of its software.

6.1. HARDWARE TEST

In case any element in the units is not working correctly, a complete hardware test can be done.

On the main screen, enter an installer USB and wait until the OFF button changes to INSTALL. When pressing INSTALL, the TC60 will switch off and pass to installer verification mode.

- Start the unit pressing on the display
- A screen gives the message “enter a valid USB”
- Connect the USB with installer key to the USB port on the TV60
- Entering a password is now required
- Enter the password and accept. The TC will enter Installer mode.

While in installer mode it is possible to enter the verification sequence of the element that is not working fine, be it from the TC60 or the TV60. For the complete verification documentation, see ANNEX II HARDWARE TEST

6.2. REMOTE TEST

TC60 provides a tool for remote diagnostic of some of the possible installation problems. With this tool it is possible to make a first diagnostic even before the car comes to the workshop.

1.- Send an SMS with the text “testx” to GSM B

2.- The unit will run a basic function test

3.- It will send an SMS with the answer through GSM A.

As the message is coming back from the other phone, the functioning of both GSM modules is tested. It also allows to test that both GSM A and B numbers are as expected.

If only one of the GSM modules is working, the message “test” sends the diagnosis answer through the same GSM that has received it.

The test message allows to remotely check some of the parameters present in the Hardware test. The message can have the following format (can vary depending on configuration):

A/B	Indicates from which of the phones the message is sent (A or B)	
V x	Loudspeaker volume	(1 to 8)
MIC x	Microphone sensibility	
PUL x	Alarm button	(0= standby 1=active)
KEY x	Contact key	(0=Off 1=On)
GSMA xx	Coverage GSM A	(If it has GPRS, says GPRSA instead of GSM)
GSMB xx	Coverage GSM B	(If it has GPRS, says GPRSA instead of GSM)
GPS xx	Number of satellites	(0 to 12)
BT xx	Internal battery level	(%)
P:	Software package version, date and time	
CONF	Configuration version (not used)	
I:	GSM A number or Node number (used for some 112 applications)	
U:	GPRS user, GPRS password, IP address of the unit	
L:	Status of the leds of the control panel	

6.3. REPAIRS

If a unit is not functioning correctly, the car goes to the workshop for a repair or substitution.

A repair is possible if the breakdown lies in a cabling or peripheral. If the repair lies in the units, the complete unit has to be sent to Interfacom for repair.

In case TC60 is defect, the SIMs of the broken TC60 have to be exchanged with the SIMs of the substitution unit. The installation register has to be filled and sent again to Interfacom.

It is not possible to do substitutions of boards, only complete units. Only Interfacom can have access to opening the units and act on the boards. The seals which keep the integrity of the electronics, with the logo TAXITRONIC, must never be opened by unauthorised personnel. Only INTERFACOM can make repairs or interventions to the inside of the units.

6.4. REPAIRS OF TC60 WITH 112

Before disconnecting a TC60 with 112 service, it is necessary to enter into manufacturing mode and eliminate the SIM A number

When this operation is done, the TC60 call to the 112 is deactivated. Now it can be uninstalled without it making a call to the 112

If it is uninstalled without eliminating the SIM numbers, it still has power supply from the internal battery, it detects that the emergency button circuit has been activated, and raises an emergency call. This must be avoided in all cases.

6.5. SOFTWARE UPDATE

In case it is necessary to update the software, the installer will get an USB device with the updates to the last software version. The process is the following:

6.5.1. TC60 IN NORMAL MODE

In case the unit is started in normal user mode, it is necessary to switch to installing mode.

- In FUNCTIONS – SYSTEM – VERSION, note down the current software version of TC60
- Connect the USB memory with installer key in any of the TC60 or TV60 USB connectors.
- After some seconds, the OFF button changes to INSTALL
- Press on INSTALL

The unit will switch off.

Turn on the unit by pressing anywhere on the touch screen. The unit will turn on in installing mode. From this state, follow the steps in the following point for the update from the Installing mode.

6.5.2. TC60 IN INSTALLATION MODE

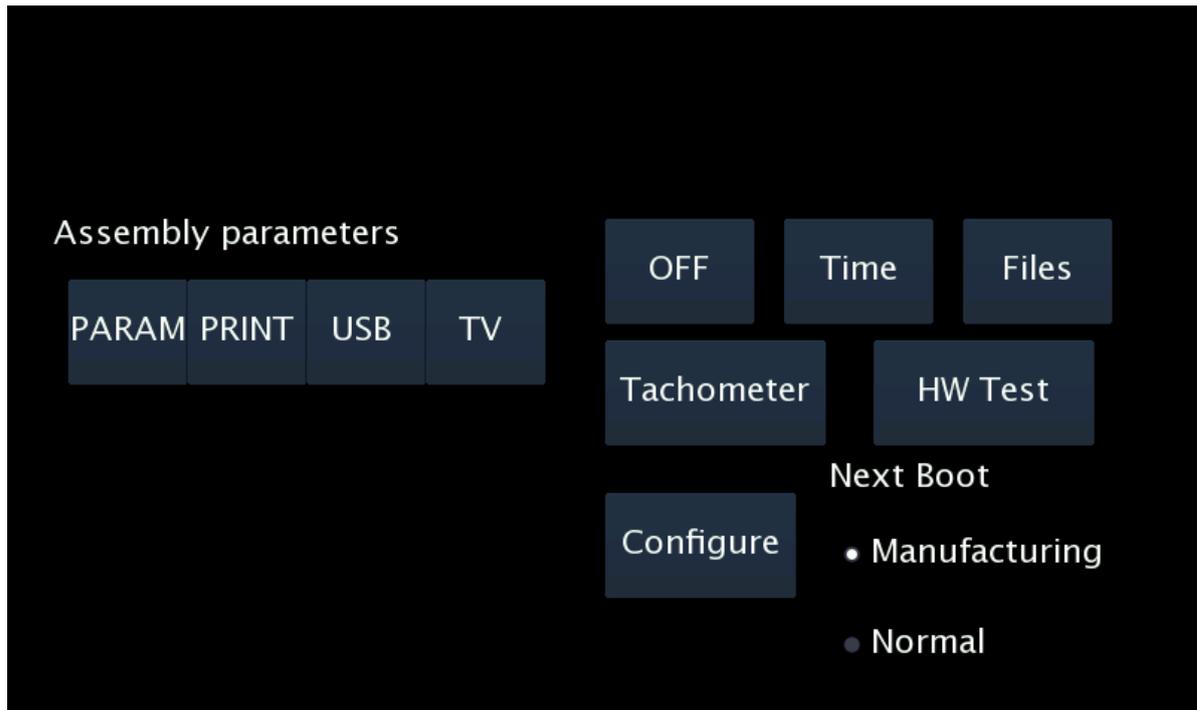
In case the unit is started in Installing mode:

Turn on the unit by pressing on the touch screen.

- A screen with the message “ENTER VALID USB” appears.
- Connect the USB memory with with installer key in any of the USB connectors of TV60 or TC60
- You will get a screen which requires the installer password
- Enter the password and press on OK.

If you are not sure which is ther current version in the TC60, check it inside of the Hardware test with button HW test – TC60 - Information

To go on with the update, press on the button **Files**:



- Connect the USB memory with the update files to a USB connector.
- The available update files are displayed. The name of each one indicates the origin version and the destination version.
- Select the adequate update file and press Accept

The unit will return to the start screen

- Press OFF to switch the unit OFF. A confirmation is requested.

A progress bar is displayed while the unit is being turned off

The unit is then restarted automatically, and it displays a “FIRMWARE UPGRADE” progress bar. The progress bar is completed when the process is finished correctly.

The unit is restarted again and starts with the new software version.

It is possible to check that the update has been correctly done, either on the normal user screen or in the Hardware test: TC60 test: Information (See 7.1.1)

- If the update could not be processed, the progress is interrupted and the unit starts with the previous software version

ANNEX I

TC60 HARDWARE TEST		
IO (INPUT/OUTPUTS)		
MEANING	EXPLANATION	
Checks the correct status of the inputs and outputs I/O	Run automatic test	An automatic test is started, and the result on each Pin is tested. If any of the pins does not work correctly, it is displayed onscreen. Once the test is finished, the circle on the right side is turned into green (OK) or red (Not OK)
	Run manual test	By pressing on this button, a table with each of the IO's inputs, outputs and Pullups is displayed. The pullup for each line is activated manually. By pressing on each output, it is possible to check that the corresponding Input is changing
AUDIO		
MEANING	EXPLANATION	
Checks the correct functioning of the microphone and loudspeaker	<p>In this screen, press button Play >>. An audio file is reproduced. Reproduce it at normal volume. If you want, change the max volume by moving the volume control on the bottom left corner.</p> <p>Press button << Rec >> and speak loud to the microphone. The TC60 starts recording, for 5 seconds. Once finished, it reproduces the recorded file. This way both microphone and loudspeaker are checked.</p>	
POWER		
MEANING	EXPLANATION	
Verifies the functioning of the power outputs for the analog external lights	<p>Pressing this button starts an automatic cycle to test the external lights. A circle in green or red will indicate if the result has been satisfactory or not.</p> <p>Pressing on any of the lights stops the cycle and forces the ON or OFF of each of them.</p>	
BATTERY		
MEANING	EXPLANATION	

Displays the voltage levels	External battery voltage level	Displays the voltage and charge status of the external battery (car) and internal battery. It also displays the temperature of the internal battery.
	Internal battery voltage level	
	Internal battery temperature level	

SERIAL

MEANING	EXPLANATION	
Verifies the functioning of the serial ports	RS232	Pressing on each of the buttons, the serial ports are tested. A green or red circle indicates if the result is satisfactory or not.
	RS485	

USB

MEANING	EXPLANATION
Verifies the correct functioning of the USB ports	Enter an USB into the USB connector on the TC60, and press Run >>. After some seconds, you should see the content of the USB memory, or an error message indicating it could not be read.

SD CARD

MEANING	EXPLANATION
Verifies the SD card module	Press RUN. After some seconds, the content of the card is displayed, or an error indicates that it could not be read. The card must be inserted before to start the TC60.

LIGHT

MEANING	EXPLANATION
It checks the external lights device	By pressing this button, the external lights device should start displaying different symbols, and turning on and off the For Hire light. The test finishes automatically and the result is displayed.

GPS

MEANING	EXPLANATION
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<p>Displays the GPS functioning parameters.</p>	<p>UTM DATE X Y TIME ZONE LATITUDE LONGITUDE SPEED TOTAL DISTANCE HOUR DATA STATE SATELLITES</p>	<p>The car has to be in the open for some minutes before the measure is reliable.</p> <p>Select GPS. The GPS data are displayed. If nothing is detected, the data will be displayed as 0, except possibly time and date.</p> <p>Connect and disconnect the TC60 antenna to check that the antenna is correctly detected.</p>
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GSM

MEANING	EXPLANATION	
<p>Displays the status values for each of the GSMs and checks its correct functioning</p>	<p>Status of the SIM Coverage GSM network status GPRS network status Connexion status (idle, in use) With or without IP address</p>	<p>The GPRS connexion is normally done on GSM B</p> <p>To check they function, make a call to each line, A and B, and check that they work correctly</p> <p style="padding-left: 40px;">Dial the number of the SIM to be tested</p> <p style="padding-left: 40px;">Once the incoming call is detected, press on ANSWER to pick the call</p> <p style="padding-left: 40px;">Once it has been checked that a normal conversation is correct, press HANGUP</p> <p>During the whole call, the TC60 will display which is the module receiving the call, the type of call and the status of both modules.</p> <p>You can take out and insert both GSM A and B antennas, or SIMs, or turn the modules OFF and ON, to check that they work correctly and data are correctly updated.</p>

CAN

MEANING	EXPLANATION	
<p>Checks the correct functioning of the CAN transmissions</p>	<p>Pressing this button starts the automatic test. When finished, the test result will be displayed.</p>	

BLUETOOTH

MEANING		EXPLANATION
Bluetooth status and functioning status		(Not currently implemented) Pressing this button the detected device is displayed, or an error message is displayed.
SRAM		
MEANING		EXPLANATION
Verifies the correct functioning of the Static RAM		Pressing the button starts the automatic test. The test result is finally displayed For this test to be reliable, the TC60 must have been for some seconds without power supply.
CTR PANEL		
MEANING		EXPLANATION
Checks the correct functioning of the control panel		A test cycle is started. Each of the 3 LEDs of the control pannel is lit, with configurations OFF, ON or BLINK The cycle can be stopped, and the position of each Led can be manually tested, by pressing on OFF, ON or BLINK for each led. It also displays the status of each of the buttons (red and blue). While they are pressed it is marked, and releasing them deactivates the mark
INFORMATION		
MEANING		EXPLANATION
Displays version information	Program Configuration Hardware GSMA GSMB GPS Front TV60	Displays the information on version of TC60, both GSM modules, GPS module and the TV60
TACHOMETER		
MEANING		EXPLANATION
Verifies the correct functioning of the tachometer	Time Distance Speed	Pressing this button starts the count of seconds, driven meters and speed in Km/h calculated from the received distance signal. This is not for the taximeter tachometer, but the terminal tachometer, used in case no taximeter is activated in the software.

TV60 HARDWARE TEST**SCREEN****MEANING****EXPLANATION**

Verifies the display functioning	Press T for the touchscreen test or C for the color test Color test: 4 color bars are displayed, with red, green, blue and black colors. Check that the 4 bars are displayed with correct gradual colors.
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AUDIO**MEANING****EXPLANATION**

Checks the correct functioning of the microphone and loudspeaker	Press Play. An audio file is reproduced at normal volume. If you want, change the max volume by moving the control on the bottom left corner. Press Rec and speak loud to the microphone. The TC60 records for 5 seconds. Then it reproduces the recorded file. Listen to the recorded sound.
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POWER**MEANING****EXPLANATION**

Verifies the screen can be turned of and on.	Press Run Test and the screen will turn OFF. Press on the screen again before 5 seconds, and it will turn ON
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PRINTER**MEANING****EXPLANATION**

Checks the printer functioning	Press this button for a printer test. A test ticket is printed. An error message is displayed if malfunction or out of paper
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USB**MEANING****EXPLANATION**

Checks the functioning of the USB ports	Enter an USB memory into each of the TV60 USB connectors. The content of the USB memory should be displayed
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MAG. CARD**MEANING****EXPLANATION**

Check the magnetic card reader	Pass a card from left to right to check that it is correctly read. The magnetic stripe pointing at the back of the TV60. If a track can not be read, or is read with error, an error message is displayed.
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LIGHT SENSOR**MEANING****EXPLANATION**

Checks the functioning of the light sensor	Cover the TV60 light sensor to check that the detected value goes to the low values. Point a light at the sensor to check that the detected light value goes up.
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