TC100
Operation & Installation Guide
Revision 1.1

monit
RALLY COMPUTERS

Introduction

Thank you for your purchase of this rally computer product. At monit, we take pride in everything we make, and the TC100 is no exception. Every detail of the product has been designed and manufactured using the latest engineering technology—and the greatest care.

We sincerely hope you will enjoy the use of your new rally computer, and that you will continue to choose monit products as your motorsport career progresses!

Regards, the monit team.

Contents

▶ Installation

Simple instructions for fitting and wiring the
TC100 into your vehicle.

Installation

Before You Start

Installation of the TC100 requires a moderate level of mechanical ability and a basic understanding of electrical systems. If you do not have experience in these areas, we recommend that you employ the services of a qualified automotive technician.

If you do decide to install the unit yourself, please ensure that you read all the instructions carefully before starting.

| ⚠️ **Warning**	Monit Limited accepts no liability for any damage to property or persons, whether direct or consequential, as a result of the incorrect installation of the product.

Fitting to the Vehicle

The small size and weight of the TC100 make it easy to mount almost anywhere inside your vehicle. Wherever you put it, ensure that your co-driver can comfortably reach all the buttons while seated, and that the unit cannot come free of its mountings in the event of an accident. If your vehicle has airbags fitted, it is very important that the device is not placed over the covers from which they are deployed. Doing so could result in serious injury.

To simplify attachment to your vehicle, the device has two metal bosses molded into the back part of the case. These accept standard M4 bolts. When mounting, also remember to leave space behind the unit for its electrical connector.

*Mounting
Boss Positions
(not to scale)*

M4

91mm (3.6inch)
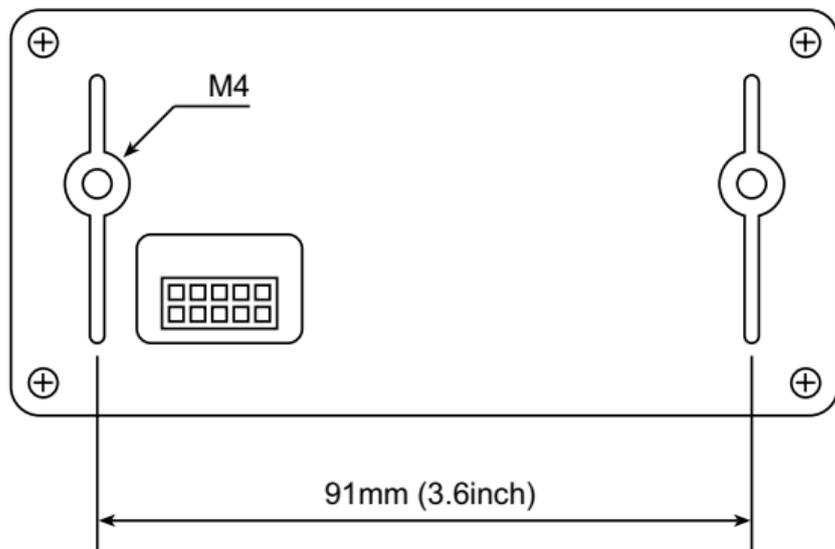
Installation

Electrical Connections

All electrical connections to the device are made through a single connector located on the back of the unit. Included with your TC100 is a pre-wired loom that attaches to this connector, and provides colour coded wires for each signal. The functions associated with each of the wires on this loom are shown in the table on the right.

In its most basic configuration, the unit require only three wires to be attached: the two connections to the battery, and a vehicle speed signal. More complex setups might also use one or more of the auxiliary inputs, or the regulated 5V power supply for active type speed sensors. Whether these are required or not will depend on your vehicle type and setup preferences.

Colour	Description
Red	Battery +12V
Black	Battery Ground
White	Auxiliary A Input
Brown	Auxiliary B Input
Orange	Sensor +5V Supply
Blue	Speed Signal Input
Yellow	Sensor Ground

When connecting the unit up, ensure that any unused wires on the loom cannot short against each other or the vehicle's chassis.

Power Supply

The device should be connected to the vehicle's battery through a 2A fuse as shown on the right. Make sure it is attached to a point in the system where power is always available, even when the ignition is turned off. An external power switch is not required.
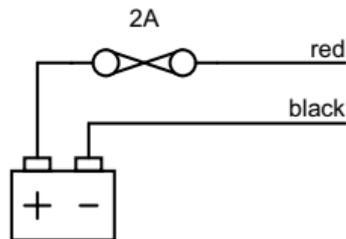
Auxiliary Inputs

The unit includes two auxiliary inputs that can provide short-cuts to common tasks, such as resetting the counters or controlling the stop-watch. If used, these should be connected to user supplied switches as shown on the right. For more information on the setup and operation of this feature, see page C-4.
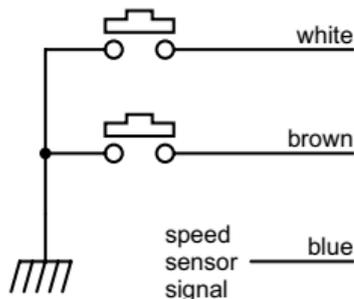
Installation

Vehicle Speed Signal

The most important input to the rally computer is the vehicle's speed signal. If your vehicle has a factory fitted speed sensor, chances are you will be able to connect this directly to the unit. Otherwise, you will have to purchase and install an after-market sensor solution. For more information, contact a monit sales representative to discuss the options for your vehicle.

The type of speed signal accepted by the device is a digital pulse that switches between 0-5V or 0-12V and with a frequency of less than 1kHz. Sensors that produce this type of signal can be connected directly to the unit's blue wire. For sensors that require external power, a regulated 5V power source is available from the orange coloured wire.

Tidying Up

Before you power the unit up for the first time, check that all your electrical connections are correct and securely made. Also make sure that any exposed wires in the circuit are covered with insulation tape or heat-shrink.

▶ Getting Started

Basic setup and operating information to
get you up and running quickly.

Getting Started

Overview

If you have ever used a mobile phone or MP3 player device, you should find the TC100's user interface quite familiar. But if not don't despair—the TC100 has been designed with you in mind. Just take the time to read through this section and discover for yourself how easy to use it is.

Turning On & Off

The device enters a low power sleep state after five minutes of inactivity. To start the unit up again, press any of the buttons or begin driving the vehicle.

User Interface Basics

The device's user interface consists of the liquid crystal display and the four buttons that surround it. Like many modern devices, these buttons do not have dedicated functions assigned to them. Instead, the tasks they perform change depending on where in the menu system you are. The task that is currently assigned to a particular button is shown on the screen by a text label, as can be seen below. The four labels are inside the dark bars on the right and left edges of the screen.


Remember to always read these labels, as they are there to guide you through the menu system.

Telemetry Screen

The first screen to appear on the display when you power the device up is the Telemetry Screen. It can be seen in the image on the right. This screen displays the vehicle's distance, speed and timing information and, as you might expect, is the one you will use the majority of the time during a rally.

Functionally, the screen is split vertically into two display areas. The first of these, the top half, always contains the Interval Distance counter. This counter is typically used during a rally to measure the distance between junctions, landmarks and other road-book instructions. To reset the counter, press the top-right button labelled CLR.
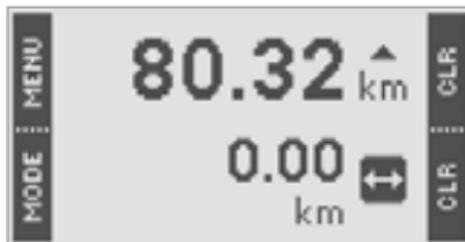
Telemetry Screen (kms)

The bottom half of the screen works differently. Rather than being dedicated to one particular function, the space can be used to display a Total Distance counter, the vehicle's Current Speed, Maximum Speed, or a stop-watch. Press the MODE button to cycle through each of these functions.

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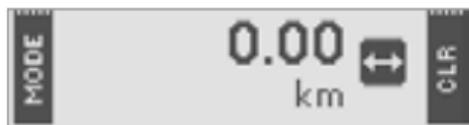
The first image on the left shows the Total Distance counter. This works independently from the Interval counter and is typically used to measure the distance since the start of a stage, day or event. When selected, it can be cleared by pressing the bottom-right CLR button for one second.

The second and third images show the Current and Maximum Speed readouts respectively. When the latter is visible, it can be cleared by pressing the bottom-right CLR button for one second.

The final image shows the built in stopwatch. When visible, this can be started and stopped by pressing the bottom-right button. It can be reset by holding down the same button for one second.

Menu System

Using the menu system you can quickly change settings and access the device's more advanced features. To exit the Telemetry Screen and enter the menu system, press the MENU button.

The main menu consists of a set of six icon, one for each of the six sub-menu categories. To cycle through these use the LEFT or RIGHT buttons. When the desired category is highlighted, press the OK button to bring up the associated sub-menu. These can then be navigated in a similar way.

To return to the Telemetry Screen at any time, press the top-left BACK button.

Getting Started

Calibration

Once you have finished installation of the rally computer, you will need to calibrate it to ensure it works accurately. Fortunately this is very easy to do. With the unit powered up, navigate to the Calibration sub-menu and select the item called 'Calibrate'. This will start a special calibration wizard that will guide you through each step of the process with clear on-screen instructions.

All you need to perform the calibration is a section of road with an accurately known distance. In some areas you may be able to use special road markings, otherwise your vehicle's factory odometer may suffice. For best results choose any distance of between 1 and 99km. When the process is completed, the unit will retain its calibration, even if power is removed.

When the wizard is started, the first screen to appear will instruct you to drive to the start of your known distance. Press the OK button when this has been reached. Continue to drive until you are at the end of the known distance, then press OK again. A data entry screen will now appear prompting you to enter the distance you have travelled.

The data entry screen (shown right) works by allowing you to enter each of the value's digits individually. The digit that is currently being modified is shown highlighted and can be adjusted using the UP and DOWN buttons. Once you have set it to the desired value, press the NEXT button to move the highlight to the adjacent digit. When all the digits have been entered, the NEXT button will change to say SET. Press this to confirm the value and complete the calibration process.
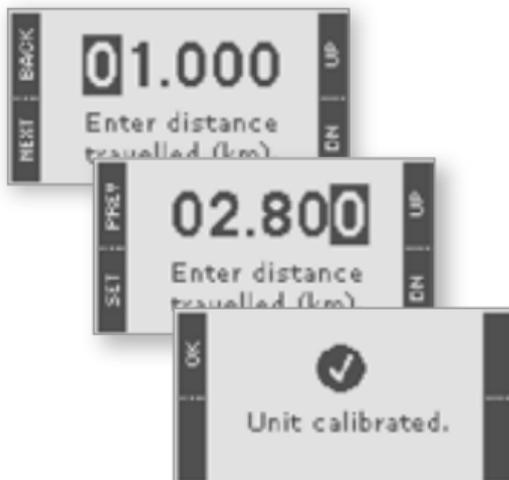
Getting Started

Dimming the Backlight

The TC100 has a very bright white LED backlight. In daytime and low light conditions this substantially improves the visibility of the display. However, at night, this intense light may be distracting. To reduce its intensity hold down the MENU button in the Telemetry Screen for one second. Repeating this will return it to full brightness.

Changing the Display Units

The TC100 works in either miles or kilometres. To change the units that are used, navigate to the Settings sub-menu and select the 'Display Units' item. Calibration values, stored maximum speed, and distance counter values are automatically converted when this setting is changed.

Changing the Display Resolution

The TC100's distance counters usually show a resolution of ten metres, which is suitable for most motorsport applications. If, however, you desire a higher level of accuracy (e.g. for road survey work), the display resolution can be increased to one metre. To do this, navigate to the Settings sub-menu and select the 'Resolution' item. This will toggle between the two available levels.

Setting the Counting Direction

The unit's distance counters can be configured to count either up or down. To change the direction, navigate to the Settings sub-menu and select the 'Counting' item. This will toggle between the two available modes.
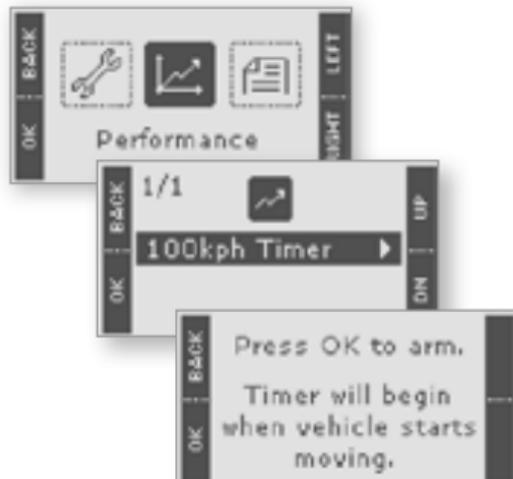
▶ Advanced Features

Detailed information about some of the
TC100's more powerful features.

Advanced Features

100kph (60mph) Sprint Timer

The built in sprint timer can be used to accurately measure your vehicle's 0-100kph (0-60mph) times. It can be accessed from the Performance sub-menu. To use the timer, bring the vehicle to a halt and follow the on-screen instructions to arm the system. Once this is done, the timer will start automatically when it detects movement, so simply begin accelerating when ready. Upon reaching 100kph (60mph), the timer will stop and display the acquired sprint time.

Presetting a Distance

In some situations you may wish to preset one of the distance counters to a particular initial value. To do this, navigate to the Set Distance sub-menu and select the name of the counter you want to preset. The display will then show a data entry screen that will prompt you for a new value.

The data entry screen works by allowing you to enter each of the new value's digits individually. The digit that is currently being modified is shown highlighted and can be adjusted using the UP and DOWN buttons. Once you have set it to the desired value, press the NEXT button to move the highlight to the adjacent digit. When all the digits have been entered, the NEXT button will change to say SET. Press this to complete the process and return to the Telemetry Screen.

Advanced Features

Auxiliary Inputs

Many co-drivers like to connect foot-pedals or handheld switches to their rally computers so they can quickly perform commonly used functions. The TC100 allows for this through the provision of two auxiliary inputs. These can be connected to external switches and configured in software to perform particular tasks when activated. The list of available tasks is shown on the next page.

To assign a task to one of the inputs, navigate to the Settings sub-menu and select either the 'Auxiliary A' or 'Auxiliary B' item. This will bring up a list of the available tasks, with the currently selected one marked by a small arrow. To change the assignment, move the highlight to the desired task and press OK. Both inputs may be assigned to the same task.

Task	Switch Type	Description
None	None	Auxiliary input not used.
Clear Interval	Momentary	Clear Interval Distance counter.
Clear Total	Momentary	Clear Total Distance counter.
Freeze	Momentary	Toggles freeze (also called split) mode on and off. This feature halts updates of the Telemetry Screen, while the counters continue to operate in the background.
Stopwatch	Momentary	Starts and stops the stop-watch.
Display Mode	Momentary	Same effect as MODE button on Telemetry Screen.
Backlight Dim	Toggle	While input is held low, backlight intensity is reduced.
Count Up/Dn	Toggle	While input is held low, both distance counters count down.

Advanced Features

Manual Calibration

The device stores calibration information as the number of pulses produced by the speed sensor for every kilometre (or mile) travelled. If you used the unit's calibration wizard (see B-6) you will not have seen the actual value calculated for your vehicle. In most situations this does not matter, but if you share the device between vehicles, or have different tyre configurations for your vehicle, you may want to record this number for re-use at a later time.

To view the calibration number, navigate to the Calibration sub-menu and select the 'Value' item.
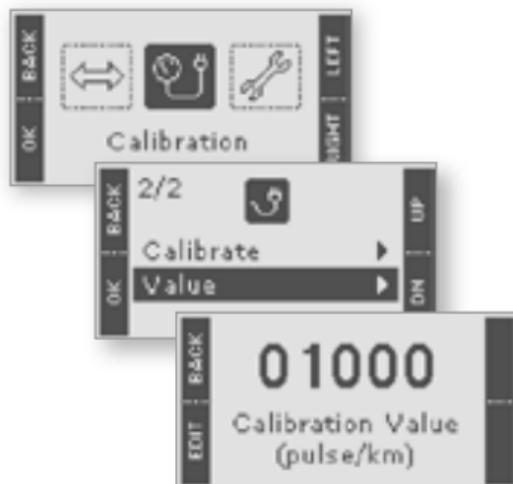
In this same menu you can also manually adjust the displayed value by pressing the EDIT button. This will bring up a data entry screen that will prompt you to enter a new value.

The data entry screen works by allowing you to enter each of the new value's digits individually. The digit that is currently being modified is shown highlighted and can be adjusted using the UP and DOWN buttons. Once you have set it to the desired value, press the NEXT button to move the highlight to the adjacent digit. When all the digits have been entered, the NEXT button will change to say SET. Press this to complete the process.
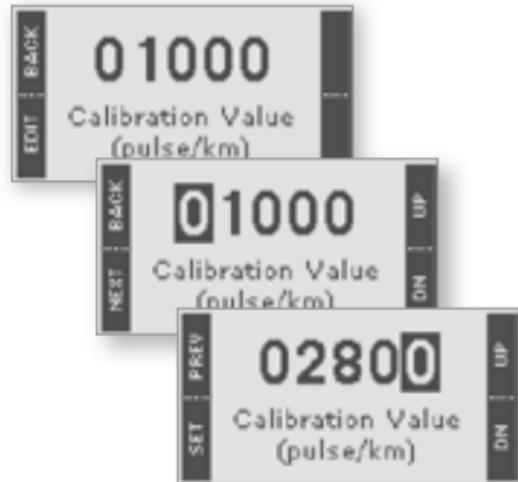
Advanced Features

Advanced Probe Setup

The device's probe input circuit can be configured to operate at two different voltage levels. To choose between these, navigate to the Settings sub-menu and select the 'Probe Type' item. This will toggle the level between the 5V or 12V settings. Note: you should not change this setting unless instructed to by one of our probe installation guides.

Contrast Adjustment

In vary rare situations, such as operating at extreme temperatures, you may want to change the display's contrast to improve viewability. To do this, navigate to the Settings sub-menu and select the 'Contrast' item. This will bring up another menu that will allow you to increase or decrease the contrast level.

Adjusting the Sleep Timer

The period of inactivity required before the device enters the low power sleep state can be easily adjusted. To do this, navigate to the Settings sub-menu and select the Sleep Timer item. In the menu that appears, select the desired sleep time from the list. If you select the 'Never' option, take precautions to ensure that your vehicle's battery does not run flat.

Serial Number Location

Every monit rally computer has a unique serial number. To view this number, go to the About sub-menu. The serial number is the nine digit number adjacent to the text 'S/N'.

Notes

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