INSTRUCTIONS FOR C-mini/t

Coralba AB, Sweden
Tel: +46-8 662 70 60
E-mail: info@coralba.se

TABLE OF CONTENTS

Page

1.0. INTRODUCTION

Congratulations! You have just purchased Coralba's C-mini/t meter, the newest addition to our line of high quality road data measurement meters. The C-mini/t was developed at the request of our customers who wanted a meter with limited functionality when compared to our existing line. The C-mini/t is designed for gathering accurate road data such as distance and speed.

Coralba's high quality design allows C-mini/t to **quickly** carry out most types of longitudinal measurement from the **safety** and **comfort** of your vehicle.

Mounted in your vehicle and connected to your speedometer - C-mini/t is a precision odometer/speedometer. The instrument's high accuracy is achieved through a simple calibration procedure. After calibration the meter is capable of generating values to a 0.03% error rate.
Coralba's wide range of instruments have been used for years by highway engineers; surveyors; and technical staff who work with highway maintenance, inventory collections, planning, and counting.

A complete **C-mini/t** set consists of:

- instrument
- cables
- pulse generator for your vehicle
- Velcro and screws for mounting
- fitting and using instruction

NOTE! Distance units (e.g. feet, meters) are pre-set at the factory and cannot be altered by the user. Preference must be specified when ordering.

2.0. HOW TO START

1. Before installation - please check to see that you have all necessary components. If you determine that some parts are missing - please contact your Coralba dealer.
2. Install the pulse generator according to separate instructions. Pulse generator are specific for your vehicle (make, model, year, and type of speedometer - electrical or mechanical).
3. Connect the electrical wires according to *chapter 2.2. Electrical connections.*
4. Fasten the instrument in a safe place, we suggest the dash, either by using the supplied Velcro or the enclosed screws. You are ***not allowed*** to use longer screws than those enclosed.
5. Calibrate the instrument, *see chapter 3.0. Calibration.*
6. Your C-mini/t meter is now ready for high accuracy measurement.

NOTE! By pressing the NEXT key you are able to select different functions. By holding the NEXT key depressed a description of the function will be displayed in the LED. After releasing the NEXT key this function becomes current.

2.1. Pulse generator

The pulse generator supplied with the meter falls into one of the four general classes outlined below:

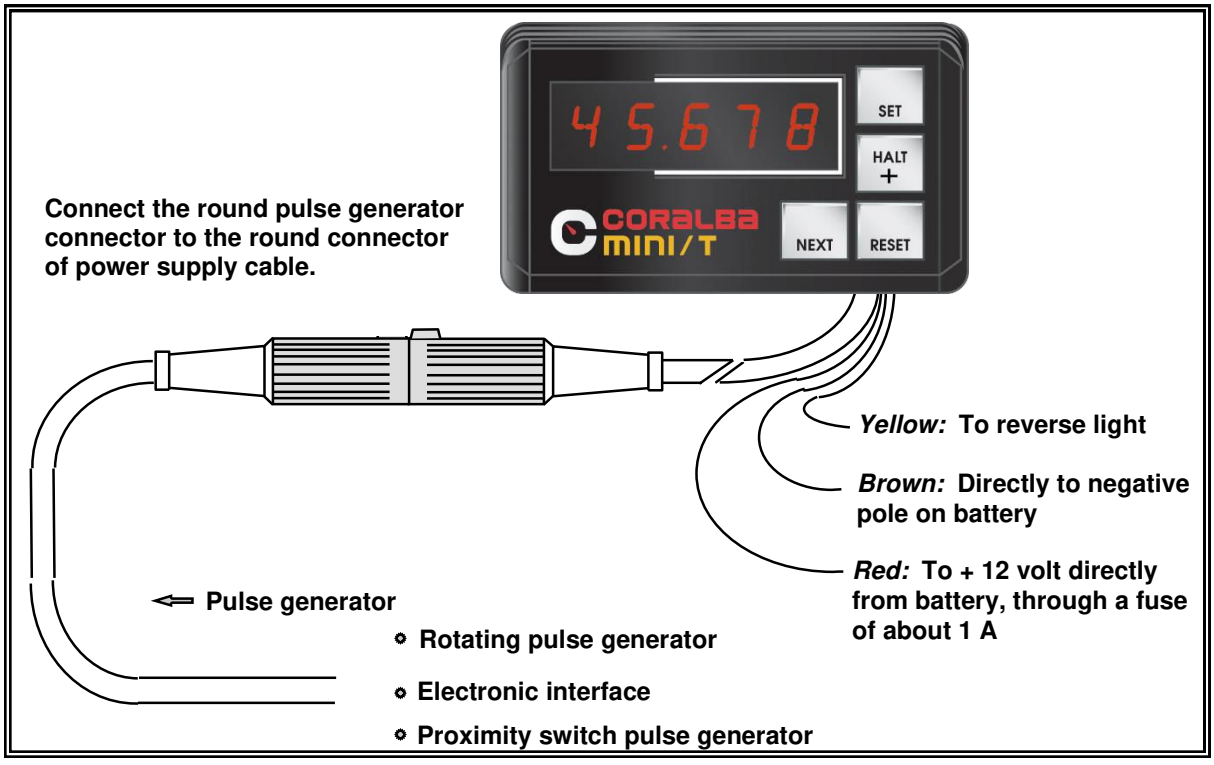
Rotating pulse generator with universal fittings
Rotating pulse generator with special fittings
Interface for a vehicle with electronic speedometer
Proximity switch pulse generator

The pulse generator supplied with your meter is specific to your vehicle's requirements. Enclosed you will find separate instructions for installation of your pulse generator.

NOTE! We have supplied a pulse generator specific for your vehicle according to your instructions (make, model, year, type of speedometer, etc.). If you feel that the supplied pulse generator is not the correct one for your vehicle - please contact your Coralba dealer.

2.2. Electrical connections

Care must be taken when installing the meter as damage is possible if incorrectly wired. The system must have a negative ground.



Red cable (power) needs to be connected directly to your vehicle's +12 volt battery through a 1 Amp fuse.

Brown cable needs to be connected to the negative pole of your vehicle's battery.

Yellow cable needs to be connected to the reverse light.
The meter needs to be supplied with +12 volts when the vehicle is driven in reverse. This is required to change the counting direction. If this is not possible, connect the yellow cable to the ground - the meter will count forward continuously.

Make sure all connections are done professionally. The cables should be fixed to avoid damage. Most disturbances in function that occur are caused by poor connections to the power supply.

2.2.1. Power supply 24 V instead of 12 V

For vehicles equipped with 24 volt power you will either need to install one of Coralba's 24 volt wiring kits or a 24volt to 12 volt converter. The **RED** cable can only handle 12 volts.

2.2.2. Power on /off

There is no On/Off switch for the **C-trip** meter. The meter will automatically power up when any key is pressed or the vehicle starts moving. The meter will automatically switch itself to the idling mode (display and keyboard unlit) within 7 minutes either after your vehicle has stopped or there has been no activity on the keyboard.

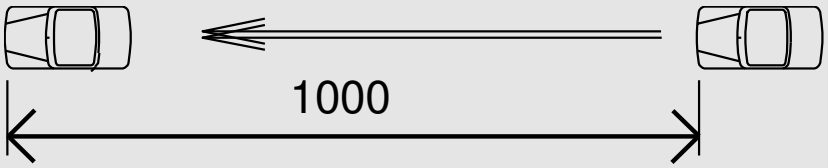
3.0. CALIBRATION

3.1. Calibrate C-mini/t, fixed distance of 1000

In order for the C-mini/t to measure accurately it first must be calibrated. Additionally, any time alterations are made to your vehicle's tires or transmission ratios it is important to re-calibrate the meter.

You need to check tire pressure and inflate to factory recommended values. Next, you will need to be able to locate an exact calibrating distance of 1,000. *(See chapter 5.2 Calibrate C-mini/t, various distance) .*

Procedure:	**C-trip shows:**
Select any TRIP or SPEED, by pressing [NEXT]	Selected register
Press [HALT +] for at least 3 seconds	Current calibrating constant
Press [RESET]	Display text .drivE
Drive the calibrating distance and stop.	" .drivE " and number of pulses flash alternatively.



Press [SET] (sets in the distance of 1000 automatically)	New calibrating constant
Press [NEXT] and you will be back at	TRIP 1

If the calibrating sequence has been carried out correctly, and the distance used for this calibration was correct, you will usually be able to measure to an accuracy better than 0.03% (30 cm/km).

Check the accuracy by traveling over your calibrating distance whilst measuring its length. If all factors are correct the length should correlate exactly.

You have now calibrated your **C-mini/t** for distance and speed.
Even if **C-mini/t** is disconnected from the power supply it will keep its calibrating constant in memory. The calibration should be checked at least once a month and when tire are changed. The value may of course be changed by using the standard SET procedure as described in chapter *4.1.2. Operator keys* .

NOTE! Your instrument will never be more accuracy than the accuracy of your calibration.

4.0. FUNCTION

Now that the C-mini/t is calibrated various functions of the meter need to be further explained. This chapter will attempt to familiarize you with all meter functions

The keyboard has two different kinds of keys:

[NEXT] Selector key: selects different registers and displays their values.

[SET] [HALT +] [RESET] Operator keys: operates on the value in the selected register.

The basic philosophy for **C-mini/t** is that when you press any of the keys you do not influence any other register in the instrument other than the one that you see in the display.

The register in the display is called the current register. While pressing [NEXT] to select a new register, the display shows a leading text telling you which current register will be shown next.
Different registers / functions are selected by repeatedly pressing the key, until you have done a «loop» and are back to the beginning. For every press the leading text tells you which current register will be next.

4.1. Key explanation

The following two Chapters explain the two different groups of keys:

Selector key
Operator keys

4.1.1. Selector Key

Key	***Leading text***	***Function***	***Appropriate keys***
First press [NEXT]	.trip P.1	Count the distance with a resolution of 1, in the decided unit. Every trip register is independent of the other.	[SET] [HALT +] [RESET]
Second press [NEXT]	.trip P.2	Count the distance with a resolution of 1, in the decided unit. Every trip register is independent of the other.	[SET] [HALT +] [RESET]
Third press [NEXT]	.SPEEd	A precision speedometer, shows the exact speed of your vehicle.	

4.1.2. Operator keys

This chapter deals with various functions associated with the instrument's Operator keys.

Key	***Used with register***	***Function***
[SET]	.trip P.1 and / or .trip P.2	SET is used to input a displayed value to the current register. When SET is used with any TRIP register one may key in a beginning start distance value. Press 'SET' once and the left digit in the display will flash. You can now use the 'HALT/+' key to increase this digit one unit for each press. Press 'NEXT' and you can set the next digit in the same manner. When you have the desired value displayed - Press 'SET' once more.

Key	*Used with register*	*Function*
HALT +	.trI P.1 and / or .trI P.2	You will stop current register from counting when you press 'HALT/+'. Press 'HALT/+' once more and you will start current register counting again.
Pressing HALT + for at least 3 seconds	.trI P.1 , .trI P.2 or .SPEEd.	You have initiated the Calibration sequence *(See Chapter 3.0 Calibration).*
RESET	.trI P.1 and / or .trI P.2	Will set the current register to zero. You have to RESET every register individually.
RESET		If you use RESET in the SET mode, you will restore the previous value.

5.0. MORE ADVANCED USE AND PRACTICAL EXAMPLES

5.1. Distance measurement.

When measuring DISTANCES C-mini/t has two different dedicated registers, TRIP 1, and TRIP 2.
'HALT/+' stops and starts the current register. The trip registers will automatically switch counting direction when the vehicle is going in reverse if the meter's yellow cable is correctly connected to the reverse light.

Example: Let's say that you want to determine both the total distance of a road segment and the distance needing re-asphalting. Drive to the starting point and RESET every TRIP register to zero. (In this example we will use TRIP 1 for the total distance and TRIP 2 for the distance needing re-asphalting). Since TRIP 1 will be used to log the total distance driven - we want it to count continuously - so therefore, we will RESET it to zero and then leave it alone. Since TRIP 2 will log the sections requiring re-asphalting - we will press HALT/+ whenever the vehicle is traveling over good pavement - and repress HALT/+ whenever the vehicle is traveling over bad pavement. At the end of the road TRIP 1 will read the total distance driven and TRIP 2 will read the distance requiring re-asphalting.

5.1.1. Pre-set a value

If you want to start measuring from a given point it is easy to set that value into a trip register. Select the trip to be used (TRIP 1 or TRIP 2), press the 'SET' key and feed the value into the register by the HALT/+ key and the NEXT key. (The HALT/+ increases the current digit by one for each press. The NEXT key moves you to the next digit.) Confirm your new value by pressing SET. Now your measuring starts from the set distance. If you change your mind it is possible to get the original value back by pressing 'RESET' instead of 'SET' as the confirmation.

> *Example: Let's say you done some registration work yesterday and you had to stop at 5500 meter. Today you want to continue from this position, simply choose a TRIP register press SET (the actual value will flash) and use the explained SET sequence and set in the value 5500, and confirm with SET.*

5.2. Calibrate C-mini/t, various distances

The easiest method to calibrate the C-mini/t meter is over a distance of 1000 (feet or meters). *(See Chapter 3.1 Calibrate C-mini/t, fixed distance of 1000).* Distance values other than 1000 may be used to calibrate the meter. This is accomplished by driving the longer distance (for instance one may drive 5,280 feet - step 4 in the chart) and then keying in the longer calibrating distance length (5.280 - step 6 in the chart).

Procedure	**C-trip shows**
Select any TRIP or SPEED, by pressing [NEXT]	Selected register
Press [HALT +] for about 2 seconds	Current calibrating constant
Press [HALT +]	Display text .drivE
Drive the calibrating distance calibrating and stop.	" .drivE " and number of pulses flash alternatively.

Press [SET] (start input)	Left digit in display will flash.
Enter the calibration distance length. The calibration distance should be at least 4 places (e.g. 1.000 or greater) *See chapter 4.1.2. Operator keys.*	xx.xxx
During this procedure - you will by pressing RESET go one step backwards. NEXT breaks the procedure.	
Press [SET] (store the value)	New calibration constant
Press [NEXT] and you will be back at TRIP 1	

6.0. OPTIONS

There are no options available for the C-mini/t meter. If your application requires other functionality, please refer to our website www.coralba.se for our other products.

7.0. TROUBLE SHOOTING

This Chapter will present both an explanation of Error Codes and give you practical Problem solving advise.

7.1. Error Codes

In some occasions an error code may appear in the display. The following codes are available:

Code	Reason	Action to be taken
P6.Err	This error message appears when the vehicle reverses its direction and the meter believes the vehicle is traveling at 10 (km/h or MPH) or greater.	The meter is calibrated incorrectly. Re-calibrate Distance. *See chapter 3.0. Calibrate C-trip, DISTANCE.*
	There has been a change in polarity in the yellow cable (reverse light wire.)	Check for a short in either the yellow wire or pulse generator.
SUErr	Probably caused by a bad connection in power supply	Consult your Coralba dealer for service
CALEr	Probably caused by a bad connection in power supply	Re-calibrate Distance *See chapter 3.0. Calibration.*

7.2. Problem solving

The following table outlines a number of common problems and the appropriate Problem solving actions:

Problem	Reason	Action to be taken
No light in the instrument at all, even if you press any of your keys.	Incorrect power supply	-Check every connection, also '+' and '-' battery cables. -Check fuse.
Light in the instrument only after you have pressed any of your keys.	No pulses are sent to the instrument.	-Check every connection between instrument and pulse generator. -Install a new pulse generator
The Instrument counting incorrectly	Wrong calibration number	-Check your calibration number. -Re-calibrate your instrument.
Counting negative direction the entire time	Yellow wire are not connected	-Connect the yellow wire to the backup light as it have +12V when the backup light is lit.
Counting positive direction the entire time	Yellow wire incorrectly connected	-Change the connector point of the yellow cable.

8.0. WARRANTY

Coralba AB warrants that Coralba products are free from defect reason of improper workmanship and / or materials for a period of one year after your purchase date.

Failure of any Coralba products caused by incorrect installation or improper use shall void this warranty. No other warranty is expressed or implied.

All requests for warranty claims must be made in writing to your dealer. If your dealer determines that your Coralba product requires warranty repair or replacement you will need to return the product to your dealer along with proof of purchase. Coralba will either repair or replace any product at its sole discretion.