

Timer RR400/410/420 Appendix



Heading navigation

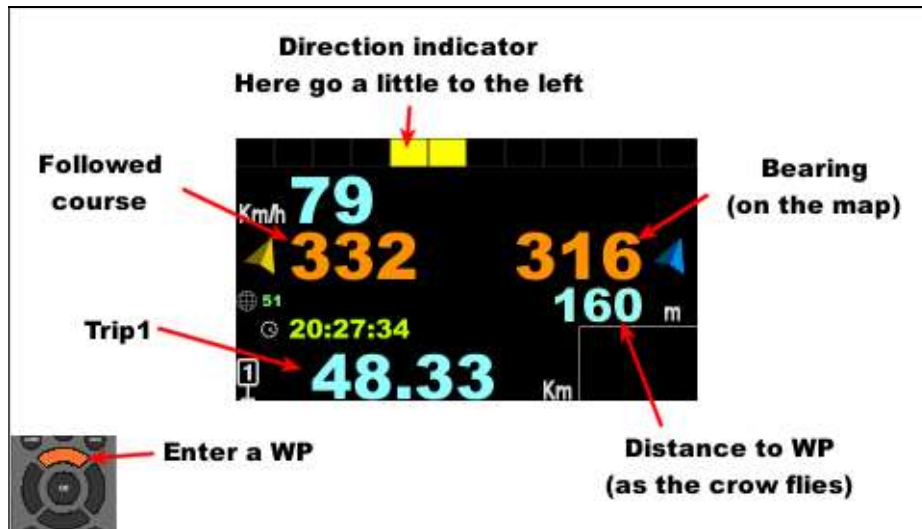
Important: videos explaining how to use the device can be viewed at a later date. on the **CRISARTECH Youtube** channel:

<https://www.youtube.com/user/CRISARTECH>

1 Principle of guidance to a point

When following a road-book, you may have to navigate "on course". This means that from a current point, you will have to head for a destination point (or target or WP in the rest of the document). It won't always be possible to get there in a straight line. This device will therefore calculate the coordinates of our WP from the information provided (distance and heading) and then guide us towards these coordinates, even if we take a long detour, or even go backwards.

Guidance to a destination point is provided on a dedicated page:



The direction indicator lets the pilot know, out of the corner of his eye, whether he's going :

- in the right direction: everything is switched off,
- too far to the right, and needs to turn left: the left bars (yellow/orange/red) light up,
- too far to the left, and has to turn right: the right-hand bars (blue/blue-green) light up,
- in the wrong direction and has to turn around: the left (orange/red) and right (blue-green) bars light up at the same time:



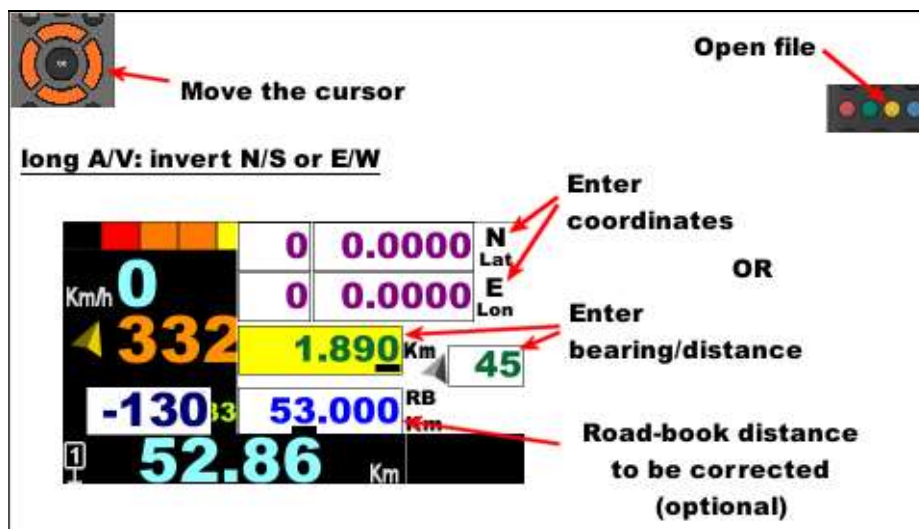
Pressing the **yellow button** makes the coordinates of the destination WP appear/ disappear:



This can be used for confirmation.

2 Entering the destination point

This can only be done using the infrared remote control.
Press the up arrow to open the input popup:



Then use the up and down arrows to move the yellow background representing the active input field:

- the bottom distance (in blue) is the distance to the next square in the road-book. Entering it activates the decreasing distance displayed on the left (-130 above). When you validate the current position used to calculate the next WP, this distance will correct the Trip1 displayed at the bottom,
- in the middle, in green, you enter the heading between the current point and the destination WP, then its distance. This is the "heading" on the map (0 north, 180 south),
- at the top, in purple, you can also enter the coordinates of a point directly. In this case, the heading and distance to the WP are displayed below. This can be used to detect a gross input error: if you think that the WP is a few km away and the distance below indicates a few tens of km, you need to check your input. To change **N/S** or **E/W**: press **and hold A/V**.



To close the popup regardless of what you have entered: press **EXIT**.

When you confirm your entry with the **OK** button, TRIP1 is updated (if you have entered a value in the bottom line) and if you have entered distance/cap. **The destination WP coordinates are calculated from the position where this validation was made.**

It is then possible to automatically validate the points if you are in **Auto** mode (see configuration below): as soon as you enter a circle that you have defined, the device will automatically validate the WP. If you have entered distance/cap, the coordinates of the WP will be calculated **from the coordinates of the WP you are aiming at.**

To change this mode quickly (**Manual** <-> **Auto**): press and hold the **A/V** button with the indication in the centre of the page: **A** or **M**.

If you need to stop typing, to concentrate on navigation for example, press the **red key**. This closes the popup. There are two options:

- you have only entered one item of information: a grey disk appears, prompting you to start again from where you left off: 
- you have finished entering data and you want to "put it aside" to validate it later, when you are at the location specified in the road-book: a green disk appears, prompting you to validate:  You can reopen the popup (arrow up) to validate with **OK** or validate directly (without opening the popup) with the **red key**.

When you've reached the last WP, to avoid the device constantly urging you to turn around, **open the popup** and interrupt the guidance with the **blue button**.

Example:

When you get here press OK to correct any difference in distance from the RB and start guiding to the next point

82,14 0,48		50	<p>When we're here we type:</p> <p>When we're here we type:</p> <p>When we're here we type:</p>
82,39 0,25 FZ		50	
82,75 0,36 N		DN L2	
84,43 1,68 N			
86,88 2,45 N			

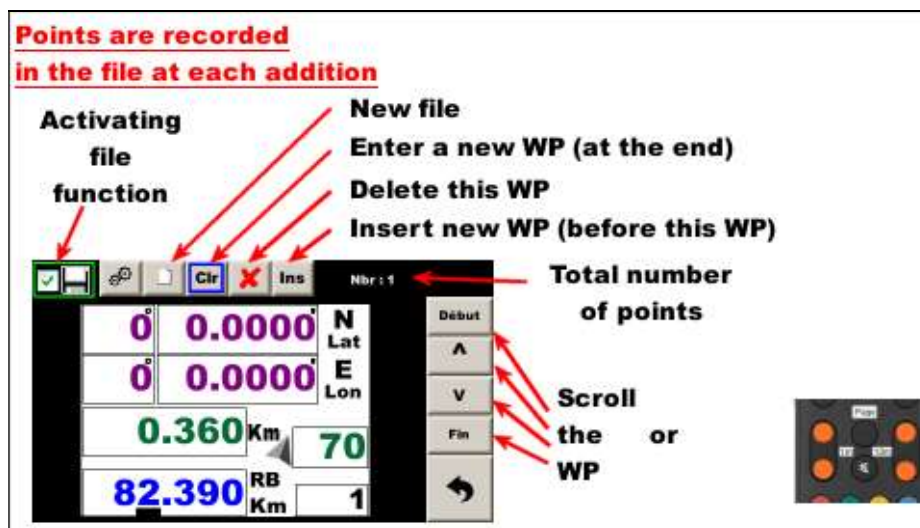
3 Entering points in advance

3.1 On-screen input with remote control

When preparing your road-book, you can save these points in a file (**nav.csv**).
 First, open the input popup as above, then press the **yellow key** to go to a new page containing a checkbox to activate the "file" (floppy disk) function:



Press the diskette or the **green button** to switch to the file function:



opens the configuration page, see below.

To start recording a new point, **press the blue button** or the  button. Enter the data as shown on the previous page.

Press **OK** to save the WP and clear the page to move on to the next entry.


The buttons on the right-hand side of the screen, like the buttons on the remote control, allow you to navigate through the points already saved:


- **- 1 m**: previous WP,
- **+ 1 m**: next WP,
- **- 10 m**: first WP,
- **+ 10 m**: last WP.


As soon as you touch one of these buttons, the device switches to 'play' mode.

In the bottom right-hand corner, you can type in the number of the box in the road-book that corresponds to the WP, and in the top left-hand corner, the total number of WP.

To resume entering a point that will be **saved at the end of the file**: **blue key** or .

To enter a WP to be inserted **before** the point currently displayed : 

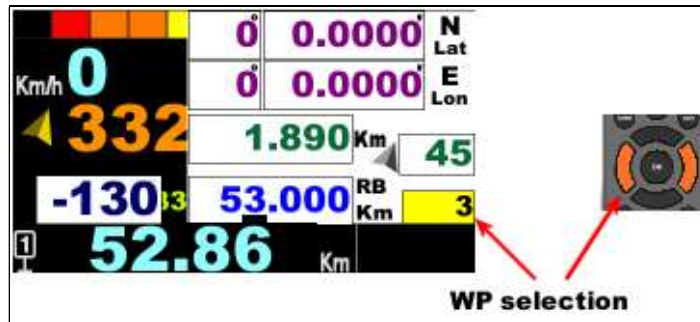
To delete **the entire file** : 

To delete the point currently displayed : 

To change the point currently displayed:  then  without changing the index between the two presses.

To return to the navigation page: **EXIT** key. **The WP currently being edited will be the WP selected to start navigation.**

When you are in "file" mode, the number of the road-book box is always displayed in the bottom right-hand corner, and it is highlighted in yellow when you exit the points recording page. To move to the next/previous WP, simply use the **right/left arrow** keys respectively (when the index is highlighted in yellow):



Then when using the navigation, you only have to do two things, following the road-book:

- **arrow up** as in "manual" mode to display the popup,
- **OK** to confirm the point (or **red key** to "set aside for later").

There is no need to repeat the previous operation for each point. The points will follow the order in the file.

If you activate automatic validation (see configuration below or long press on **A/V**), as soon as you enter a circle whose radius has been defined, the device will automatically move on to the next WP.

When you validate, **the coordinates used to calculate the next point are the coordinates of the point you are aiming for, which means** you won't be off-centre.

In the centre, there is an indicator showing **the index of the next road-book box** to be automatically validated (not

the one you are currently aiming for):



Note: if you are unable to enter the validation circle for a point, you can always validate it manually using the **red button** to be guided to the next point. You can even go further and **validate several WPs to be guided directly to a particular WP, the last one for example, if you leave a sector.**

Warning: it may be useful to switch to **Manual** mode if you realise that you are off course (generally the wrong starting point). You then need to position yourself as close as possible to the WP (visual marker such as a tree or cairn or the electronic road-book guiding you precisely to the WP). Then press the **red button** to return to the list of WP.

3.2 Computer input

When you exchange files with the USB drive, you can read or write the **nav.csv** file. It has the following format, one line for each navigation point on course:

- road-book distance in km,
- number of the box in the road-book,
- course to follow in degrees,
- distance from this course,
- 0 (latitude not used),
- 0 (longitude not used).

This is a text format, with the various fields separated by ";" characters. It can be edited with a spreadsheet program such as Excel or OpenOffice Calc. It can also be edited with a text editor such as Notepad, but you need to be careful with the ; characters, as in the example provided above:

```
82.39;1;70;0.360;0.0;0.0  
82.75;2;31;1.680;0.0;0.0  
84.43;3;334;2.450;0.0;0.0
```

And for a line with WP coordinates instead of heading/distance:

- road-book distance in km,
- number of the box in the road-book,
- 0 (heading not used),
- 0 (distance not used).
- latitude in decimal degrees, positive north and negative south,
- longitude in decimal degrees, east positive and west negative.

```
85.14;4;0;0.0;44.654562;1.875240
```

Remarks :

- **the decimal separator must be the dot** (the comma may be used in a later version),
- "0" or "0.0" are equivalent.

4 Tips

Pressing the stopwatch button will pause our guidance: the green diskette is displayed. If you have made a typing error, simply press the **red button** to resume the guidance.

If you want to mark **the current point** as the destination WP (for testing, training or finding your starting point again after 'playing' in the dunes), open the input popup and press the **green button** (if not in file-tracking mode).

If you validate a point by mistake, **you can use the EXIT key to return to the previous point**, in the same way you cancel a distance correction, and only one cancelation is possible. If the distance was also corrected, the device will first offer to restore the distance, then the WP.

If you are going to be navigating for a long time, it is a good idea to define the navigation page as the "main" page in the display configuration. When you start up and exit the main menu, this page will be displayed directly in place of the regularity page.


When a pilot display is connected, the device will automatically send the file to the pilot display in the event that the pilot display has the redundancy function (taking over from the cadence unit in the event of failure of the latter). Once all these files have been sent (this takes 15 to 20 seconds as it analyses 200 files), it sends the navigation file. This is done in the following cases:

- after modifying the navigation file: when you exit to the navigation page, the transfer is launched. After a few seconds, you'll see all the navigation points scroll by, which is normal,
- after importing files from the USB drive,
- if you manually launch the analysis of the averages and corrections files (button with USB drive in the averages input page, then button "?" and button with round arrow).

An hourglass appears during these transfers.

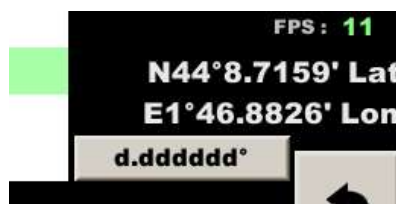
If the pilot display has the redundancy function, it displays the files received as they are received.

5 Configuration

At the top of the page for entering points in a file, the  button opens the configuration page:

- how to enter and display coordinates (decimal degrees or with minutes and/or seconds),
- automatic validation of WP's at a certain distance to move on to the next.

You can also configure the format for entering and displaying GPS coordinates on the GPS configuration page :



The current position is also displayed (handy if you need to call for help) and a button for changing the format. In the example above, the format is decimal degrees-minutes and pressing the button switches to decimal degrees. Pressing it again will switch to decimal degrees-minutes-seconds.

6 Activating the function

If this function is not activated at the time of purchase, **a code specific to the device serial number must be requested and then entered** as indicated in the general manual § Purchase / activation / deactivation of optional functions .

Note: this **software option is not compatible with the GPS distance correction option**. Entering the code for one function disables the other.

Then you need to activate the heading display. The easiest way to do this is to set the device to 'Raid' rally type in the guidance options.

Please note: **these two operations must be carried out in the same order**.

The pilot display (non-touch) requires version **230901** or later to display directions and distances.

If you want to use a second RR410 as a pilot display, you also need to activate this function to be able to display directions and distances. In this configuration, the two devices acquire the remote control signals and send each other the key codes. As a result, each press is doubled. To avoid this, the firmware on the acquisition card must be version **45** or later (at least for the device used on the driver side). This is the number shown after the display program version, e.g. **230929-45** indicates version **230929** for the display and **45** for its acquisition card.

Warning: when you configure a display in pilot mode, it must be plugged in on its own: **it must therefore be plugged in instead of the co-pilot's display** while this configuration is being carried out.