



Rugged Robot Data Logger User Guide



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Important Information

- Please read these instructions carefully before using the Rugged Robot Data Logger.
- Please retain this document for future reference as it contains important information.
- To clean use a soft damp cloth.
- Keep away from moisture and dirt.

Battery Information

- The Rugged Robot Data Logger is supplied with a non-replaceable lithium ion battery, do not attempt to replace the batteries.
- The battery should be recharged by connecting the supplied mini-USB cable to an available USB port or USB charger, and the other end to the product.
- The red LED above the display will illuminate during charging, and go out when finished.
- Do not leave the product on charge for long periods (overnight for example), it is good practice to only charge when they are flat to preserve the useful life of the battery.
- If the battery level is very low, you may have to restart the unit with the slide switch after fully charging to enable the screen.

Instructions for use

Referring to the opposite diagram, slide the power switch to turn on the data logger. After a brief loading screen, the menu will appear along with the battery status icon in the top right hand corner.

The menu consists of 8 options:

- 1) View Live Data** - View the current temperature, humidity and light level without saving the data.
- 2) Start Logging** - Save the data according to the current settings.
- 3) Set Sample Rate** - Set how often data points are recorded.
- 4) Select Save Location** - Select one of the seven data blocks (A to G) to store the data.
- 5) Erase Previous Data** - Frees up the memory blocks to be used again by deleting data.

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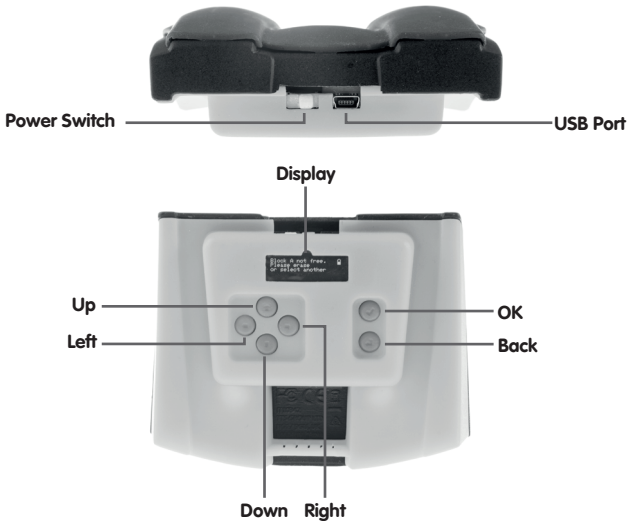
6) Set Time - Set the system time.

7) Select temperature unit - Select between metric Celsius and imperial Fahrenheit.

8) Export - Allows you to send the data to the PC.

To navigate the menu use the Up and Down buttons, and the OK button to select the option required.

Please see a more detailed description of each menu option overleaf.





1) View Live Data

This selection is useful for viewing the data. The three icons on screen are as follows:



Relative Humidity - this gives the humidity as a value 0-100%



Temperature - Shows the temperature, based on your unit selection (see menu item 7 to change between C and F).



Brightness - Shows the light level in Lux.

Press Back or OK to exit.

2) Start Logging

This selection starts recording data if the data block selected is free.

During logging the sample rate, memory block and current sample number are shown.

Pressing the OK or back buttons exit the logging screen and save the data.

If you receive a message 'Block X not free. Please erase or select another block' then please refer to menu items 4 and 5.

After initiating the log, you can now insert the logger into the Rugged Robot carry tray.

3) Set Sample Rate

This selection is useful to reduce the number of data points taken over longer logging periods, as large amounts of data can take a long time to export and also slow the computer down when plotting graphs etc. It also increases the length of time before the memory is full. Times below are per block.

1 second - this gives a memory capacity of 8158 seconds / 136 minutes / 2 hours 16 minutes

10s - This gives a memory capacity of 81580 seconds / 1360 minutes / 22 hours 40 minutes

30s - This gives a memory capacity of 244740 seconds / 4079 minutes / 67 hours 59 minutes

60s - This gives a memory capacity of 489480 seconds / 8158 minutes / 135 hours 58 minutes

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4) Select Save Location

This menu option allows you to select one of the 7 blocks (A to G) to use for logging.

5) Erase Previous Data

This menu option allows you to select a block to erase when the data is no longer required.

6) Set time

This menu option allows you to set the time. The time is stored in the logging file and is displayed when the data is exported.

7) Select temp. unit

This allows you to change the temperature unit type from Celsius to Fahrenheit. If you accidentally take a log in the wrong unit type, you can change the unit type later and the temperature data will be adjusted when the data is exported, without needing to log the data again.

8) Export

Before selecting this option please connect to an available USB port on a PC, Mac or Chromebook. The first time you connect it may prompt to install drivers depending on your operating system and configuration. It will install as a generic USB keyboard therefore no download will be required.

On selecting this option, a brief reminder will be shown to start your preferred spreadsheet software and select a blank cell. This is very important, as the data will be typed out automatically into the spreadsheet, so clicking elsewhere on the page or changing windows will disrupt export of the data.



Use the up, down, left and right arrows to select the data block you wish to export, and the resolution of the data.

The resolution option is useful when you have taken too many samples and don't want to wait for them all to be exported. It works as follows:

High Resolution - every sample is exported.

Medium Resolution - 1/10 samples is exported.

Low Resolution - 1/60 samples is exported.

Press OK to proceed to export. A header shall appear with the units, time and then the data shall be written line by line.

If during export you need to use the PC for other tasks you must first press and hold the OK button to pause the export. When the screen shows 'Printing paused' the automatic typing will stop and you're free to perform other tasks. To resume, click in the next available row of the spreadsheet and press the OK button once more. Alternatively you can use the back button to cancel the export completely and return to the main menu.



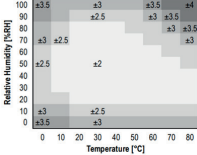
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Troubleshooting

Problem	Solution
The samples take too long to export.	Use the resolution option to reduce the sample quantity.
The data logger shows a couple of degrees hotter than expected at the start of the lesson.	It's likely that the unit was taken off charge recently—charging generates some heat so it is good practice to take it off charge at least 30 minutes prior to use to allow the temperature to equalise.
The time has changed significantly.	The battery was fully discharged at some point, which causes the time to be reset.
It displays 'Block X not free' when I try to start logging.	Either select another memory block, or erase the data in the selected block.
When exporting data, sometimes lines are skipped or the columns become misaligned.	This occurs when other background processes are happening that cause the computer to miss keystrokes sent by the data logger. Close any processor-intensive applications that may be running in the background. Also ensure any updates or virus scanning is complete before attempting again.



Specifications

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Light	Sensor Type: OPT3001 Range: Lux 0 - 83860.5
Temperature & Humidity	Sensor type: SHTC3 Temperature sensor maximum range of -40°C to $+125^{\circ}\text{C}$, however it is recommended to keep the product between -10°C and 50°C to prevent damage to the battery. The tolerance of the temperature is $\pm 0.2^{\circ}\text{C}$ Relative Humidity range of 0 to 100%. The tolerance of the humidity sensor at different temperatures is shown below: 
Battery	500mAh 4.2V Lithium Ion Charge input 5V, 500mA micro-USB Run-time approximately 6 to 8 hours Charge time approximately 3-4 hours.
Other Features	Rubberised grips to ensure a snug fit into the Rugged Robot carry tray. RGB LED lights to show the status even when the screen is not visible.

Technical Support

TTS Product Code: **IT10342**

Please visit www.tts-group.co.uk for the latest product information.

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WARNING: Do not dispose of this product in household waste.

WARNING: Hand it over to a collection point for recycling electronic appliances.

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