TLR-Win

Kommunikationsprogramm für die Rotax 914 TCU

Communication program for the Rotax 914 TCU

English from page (see below)

Bedienungsanleitung · User Manual

Version 4.6

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https://kleinjung.de/rotax/doku.php?id=start



User Manual (English)

1. Introduction

TLR-Win is a communication program for the Turbo Control Unit (TCU) of the Rotax 914 aircraft engine. It is a Windows rebuild of the DOS program TLR 4.6 and talks to the TCU over a serial RS-232 connection (no dongle). Only functions required for maintenance and fault analysis are included.

- Single executable file – **no installation**, runs from any folder.
- All generated data (recordings, protocols, PDFs) is stored in the **Data** folder next to the program.
- User interface available in **German or English**.

2. Requirements and connection

- A Windows PC with a suitable **USB-to-RS232 adapter**.

1. Connect the TCU to the PC with the SUB D9 cable.
2. Start TLR-Win.

3. Starting the program

Start the program with a double-click. It opens a control window; a small console window runs in the background – please keep it open while the program is in use.

On first start, the Data folder (with the subfolders Logs and Memory), the settings file tlr_win.ini and the language folder lang are created automatically next to the program.

4. The interface at a glance

The top bar contains, from left to right:

- **TLR-Win V4.6** and the current COM indicator.
- Status chips: TCU status and LOG status.
- In the centre the **Copyright button** – a click shows the copyright notice in the active language.
- On the right the **language button** (DE/EN), the **COM selector**, the refresh button and **Connect/Disconnect**.

Below it is the **menu bar** with the main functions, and at the very bottom the **status line** with messages and hints.

5. Connecting

1. Select the TCU's **COM port** at the top right.
2. Click **Connect**. On success the TCU chip shows the version and dataset.
3. Click **Disconnect** to disconnect.

To try it without a connected TCU, choose **DEMO – simulated TCU** in the COM selector.

6. Switching the language

The language button at the top right (left of the COM selector) switches between German and English. The button always shows the language it will switch to.

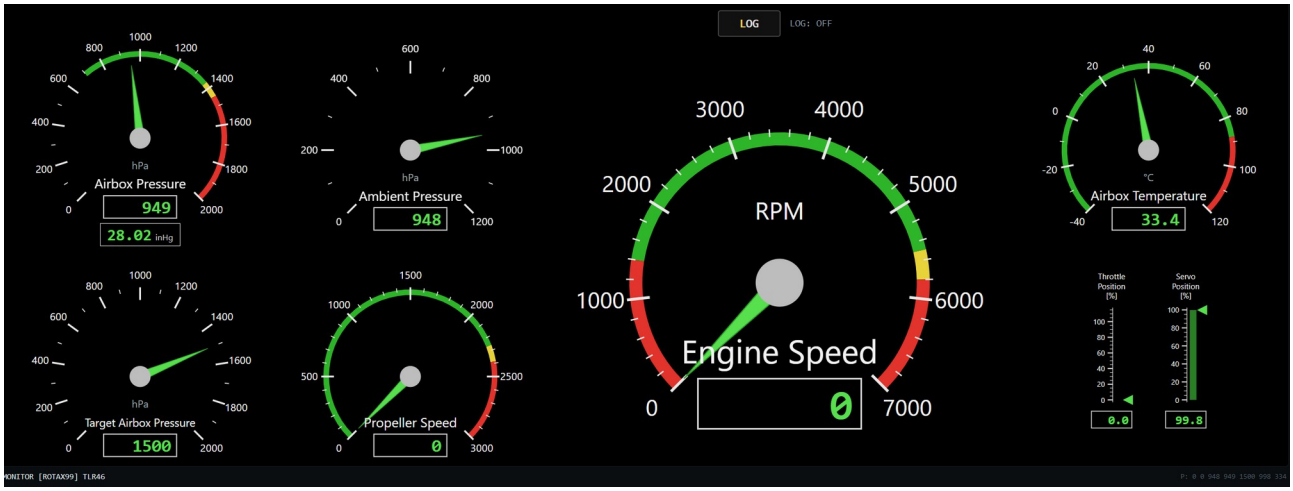
The texts live in editable files de.json and en.json in the lang folder next to the program and can be edited there.

7. MONITOR – live data

The menu item **MONITOR** (key M) shows the live readings of the TCU as round gauges:

- **Airbox pressure** (hPa) with an additional digital readout in **inHg**.
- **Ambient pressure** and **target airbox pressure** (hPa).
- **Engine speed** (rpm) as the large gauge.
- **Propeller speed** (engine speed divided by 2.43 – the Rotax 914 gearbox reduction).
- **Airbox temperature** (°C) and **throttle** and **servo position** (%) as bars.

The key L or the **LOG** button turns CSV recording on and off. Recordings are stored in Data\Logs. Press Esc to go back.



8. CFG/DAT – read and display memory

The menu item **CFG/DAT** (key C) opens a submenu with three functions:

READ_DATA (R) – read memory

Reads serial number, hours of operation and interval, lifetime and alarm data (4 KB EEPROM) from the TCU. The process takes about 20 seconds. Every read is saved as a protocol (.txt) in Data\Memory.

VIEW_DATA (V) – show protocol

Shows the last read protocol page by page on screen. Use **Page ↑ / Page ↓** to scroll.

PRINT_DATA (P) – as PDF

Creates a PDF from the protocol for viewing and printing. The PDF is also saved in Data\Memory and can be opened via **Open / print PDF**.

9. THROTTLE – throttle calibration

The menu item **THROTTLE** (key T) calibrates the throttle potentiometer – as in TLR 4.6:

1. Close the throttle **completely** (idle) → **RETURN** takes the idle value.
2. Open the throttle **completely** (full load) → **RETURN** takes the full-load value.
3. Check the values (OFFSET-NEW / RANGE-NEW) → **RETURN** stores them in the TCU.

Then check in the MONITOR: closed 0 % (max. +3 %), fully open 115 % (max. −2 %), linear display. If the range is too small, repeat the procedure.

10. GRAPHS – charts from recordings

The menu item **GRAPHS** (key G) creates a PDF with one chart per channel from a recorded CSV log.

- Pick a recording from the list.

- With **Open other CSV…** any CSV file can be chosen; the dialog opens in Data\Logs.
- The generated PDF is saved in Data\Logs and can be opened or printed.

11. QUIT

Use **QUIT** (key Q) to end the program. Then switch off the TCU and disconnect the cables.

12. Files and folders

All data is stored in the Data folder next to the program (if that is not writable, under %LOCALAPPDATA%\TLR-Win):

- Data\Logs – CSV recordings and the chart PDFs (…_charts.pdf).
- Data\Memory – read protocols (.txt) and the PRINT PDFs.
- lang\ – the editable language files de.json and en.json.
- tlr_win.ini – the settings file (see below).

The settings file tlr_win.ini

The ini file is only created if it does not yet exist; an existing file is not overwritten. Main parameters:

Parameter	Meaning	Default
poll_interval	Monitor polling interval in seconds	0.1
log_interval	Interval between CSV lines in seconds (0 = every poll)	0
log_max_lines	Lines per CSV file, then a new one (≈ 10 min at 0.1)	6000
pressure_order	Order of the two pressures in the data record	ambient_first
dtr / rts	Control lines when opening the port (1 = on)	1 / 0
language	Interface language: en or de	en

13. Keyboard shortcuts

Key	Function
M	MONITOR – live data
C then R / V / P	CFG/DAT: READ_DATA / VIEW_DATA / PRINT_DATA
T	THROTTLE – throttle calibration
G	GRAPHS – charts
L	CSV recording on/off (in MONITOR)
Page↑ / Page↓	Scroll in VIEW_DATA
Esc	Back
Q	QUIT

14. Copyright and liability

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The software is provided “as is”, without warranty. Use is at your own risk. TLR-Win can change data in the TCU – for work on aircraft equipment the applicable regulations and the manufacturer's specifications must be observed.