

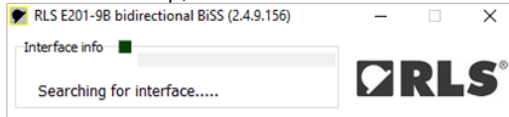
# E201-9B demo software user manual

## Software installation

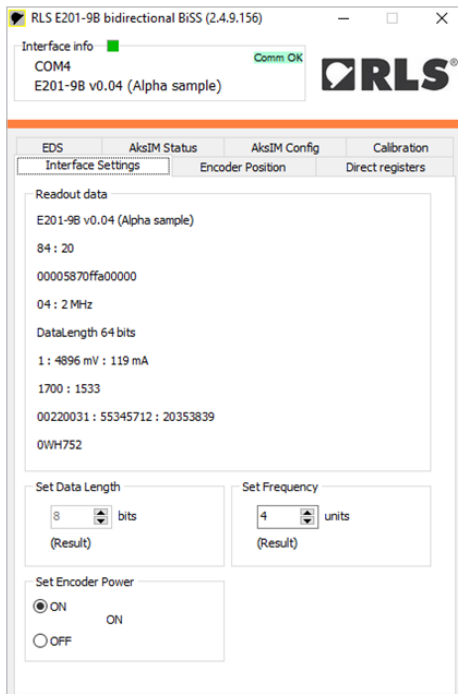
**NOTE: Please ensure you have the latest software by downloading it from [www.rls.si/e201-9b](http://www.rls.si/e201-9b).**

- Download the latest software and USB drivers package from [www.rls.si](http://www.rls.si).
- Run the wizard and follow the installation instructions.

Software startup, E201 hardware not connected:

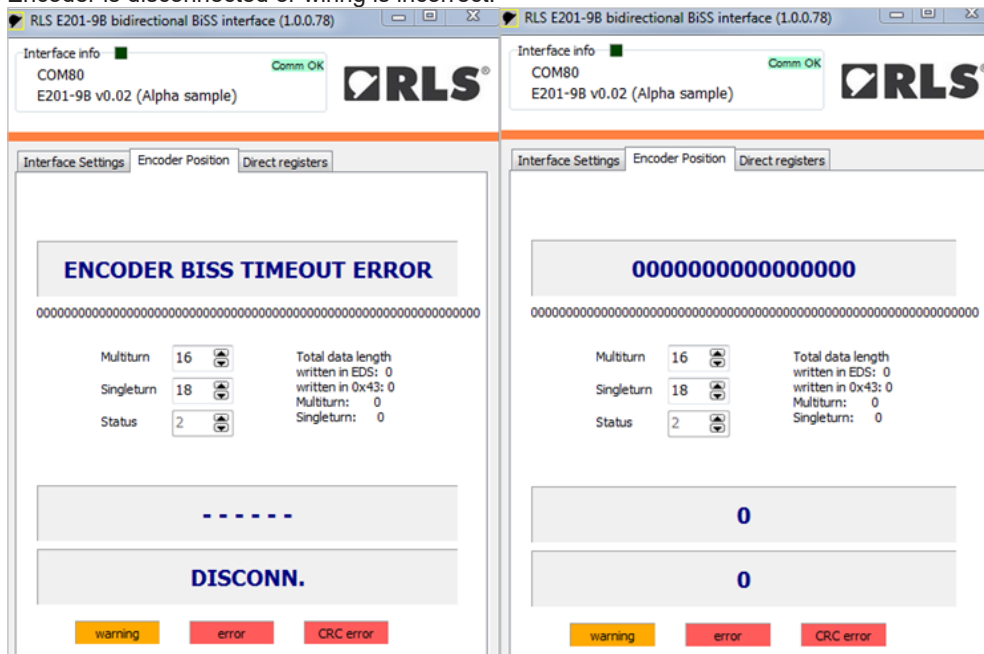


Interface status, readout of all supported commands.  
 Encoder voltage and current readout  
 Encoder power switch  
 BiSS frequency settings



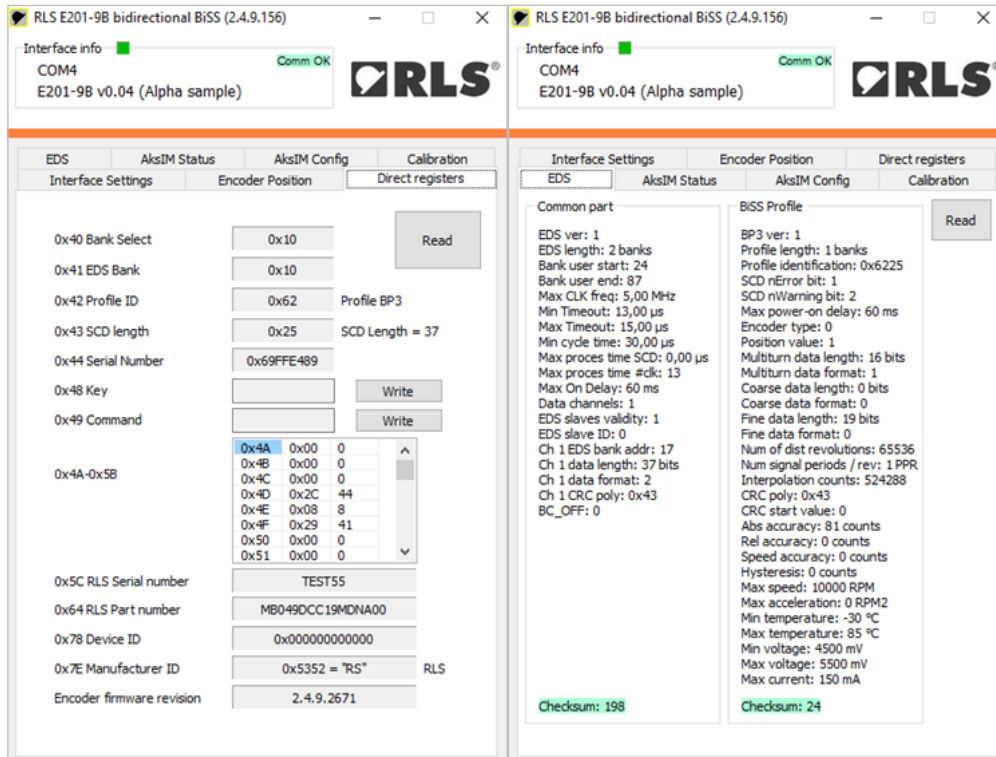
Nominal current consumption:  
 AksIM: 130 mA  
 Orbis: 67 mA

Encoder is disconnected or wiring is incorrect:



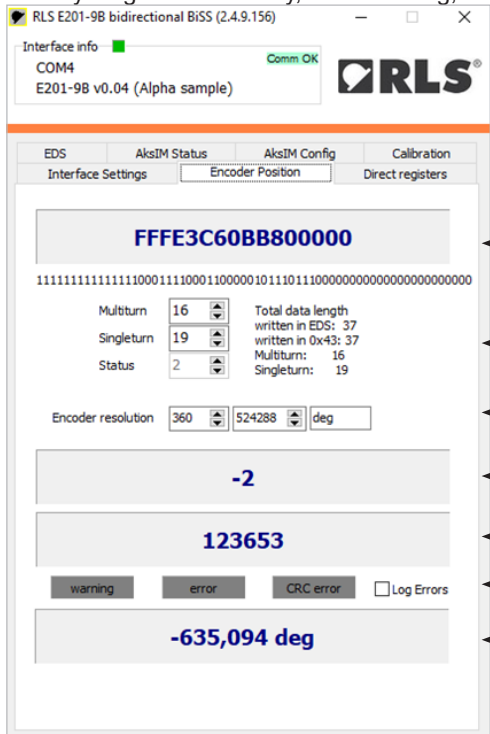
## Reading registers in the encoder

Open tab Direct Registers and click Read. Multiple tabs will appear after successful read. Electronic datasheet (EDS) should be read next to get all the data about encoder and to configure single-cycle data packet to read encoder position.



## Reading encoder position

If everything is set correctly, then Warning, Error and CRC status lights will be off.

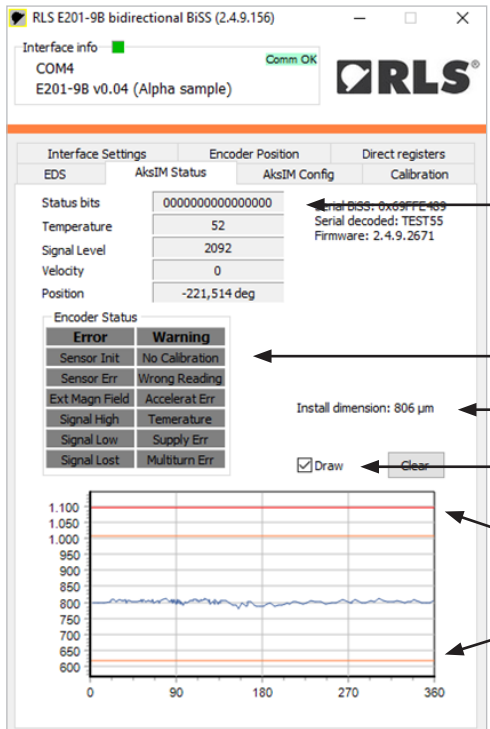


The screenshot shows the 'Encoder Position' tab in the RLS E201-9B software. The interface includes a status bar at the top with 'Comm OK' and a 'warning' light. The main display area shows the following data:

- Data read from the encoder:** FFFE3C60BB800000
- Position data length:** 111111111111100011100011000010111011100000000000000000000000
- Nominator, denominator and units for position readout:** Encoder resolution: 360 / 524288 deg
- Multiturn counter:** -2
- Singleturn position:** 123653
- Status lights:** warning, error, CRC error (all are off)
- Position readout:** -635,094 deg

## Encoder status

Readout of detailed status bits and auxiliary values.



The screenshot shows the 'Encoder Status' tab in the RLS E201-9B software. The interface includes a status bar at the top with 'Comm OK' and a 'warning' light. The main display area shows the following data:

- Detailed status bits read from the encoder:** Status bits: 0000000000000000
- Visualized status bits:**

Error	Warning
Sensor Init	No Calibration
Sensor Err	Wrong Reading
Ext Magn Field	Accelerat Err
Signal High	Temperature
Signal Low	Supply Err
Signal Lost	Multiturn Err
- Distance between ring surface and readhead mounting surface:** Install dimension: 806 µm
- Plot the gap distance over the ring rotation:** A graph showing the gap distance (Y-axis, 600 to 1100) versus rotation angle (X-axis, 0 to 360 degrees). The graph shows a blue line fluctuating around 800 µm, with red and orange horizontal lines indicating error and warning limits.

## Encoder settings

Interface info: COM4, E201-9B v0.04 (Alpha sample), Comm OK

Interface Settings | Encoder Position | Direct registers

EDS | AksIM Status | AksIM Config | Calibration

0.00.u32 Position Offset: 0 ← Zero position offset

0.04.u32 Pos Filter Value: 180 ← Factory settings (do not change)

0.08.u32 Pos Filter Speed: 100

0.0C.u32 Velocity Filter Value: 150

0.10.u32 Velocity Filter Speed: 0

0.18.u8 Multiturn Error Arc: 64 ±90,0 deg ← Multiturn error wake-up tolerance arc length\*

0.2E.u8 Write protect: 0x5A Write allowed ← Write protect\*

Read Write

New Multiturn counter: 12345 Apply ← Multiturn counter preset

Zero preset: Set zero here ← Automatic zero preset

Reset to factory ← Reset all parameters to factory settings (except Write protect)

\* Parameters available with later encoder firmware revisions.

## Setting multiturn counter and clearing Multiturn counter error

Write the desired number and press Apply. Value must be between 0 and 65535.

## Running encoder self-calibration

Interface info: COM4, E201-9B v0.04 (Alpha sample), Comm OK

Interface Settings | Encoder Position | Direct registers

EDS | AksIM Status | AksIM Config | Calibration

Calibration arc length (deg): 360 ← Partial arc settings (same or equal to mechanical movement, min. 180°)\*

Start calibration ← Send command to the encoder\*

Progress bar (10 sec countdown)

Self-calibration status:

- Procedure finished ← Encoder back to normal operation
- Timeout - 10 seconds expired ← Reasons for calibration failure
- Calibration out of range ← Reasons for calibration failure
- Input Arc Length out of range ← Reasons for calibration failure
- Calibration successful ← Calibration completed successfully

Counter: 1  
Ring eccentricity: 20 µm  
Eccentricity angle: 19 deg  
Readhead radial shift: -153 µm ← Numerical results of calibration\*

\* Parameters available with later encoder firmware revisions.

If measured ring eccentricity is too big (> 0.2 mm), it is recommended to adjust mechanical assembly.

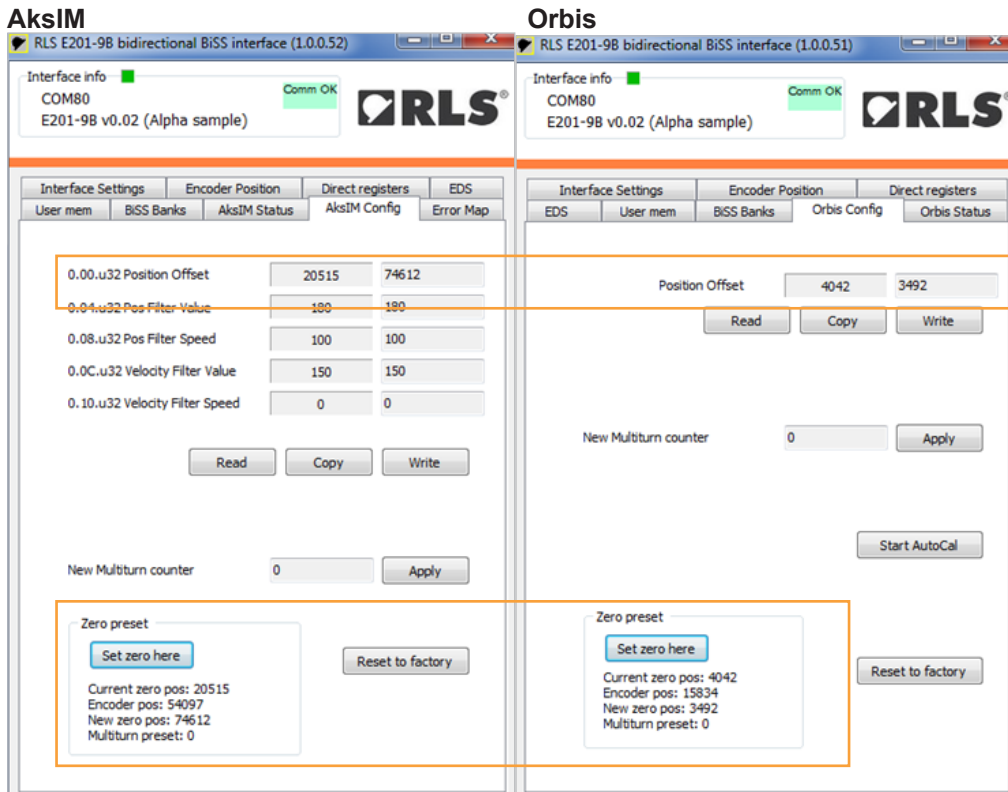
## Setting encoder zero position

### 1. Manual

Switch to tab AksIM Config or Orbis Config. Read current zero offset. Write desired position offset (unit is encoder counts). Value must be between 0 and max encoder count value. Press Write button. This number will be subtracted from the absolute encoder position.

### 2. Automatic

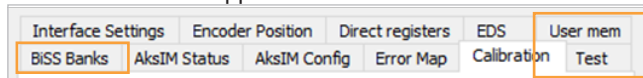
Rotate the encoder to mechanical position, where zero is required. Press the button "Set zero here". Multiturn and singleturn position will be set to zero on this mechanical position.



## Advanced functions

Press CTRL + A

Additional tabs will appear:



**BiSS Banks** are used to check the raw data contents of all registers on the encoder.

**User mem** offers access to free memory for storage of custom data into the encoder.

**Test** allows recording the encoder data for further analysis.

## Head office

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## Document issues

Issue	Date	Page	Corrections made
1	6. 9. 2018	-	New document

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