

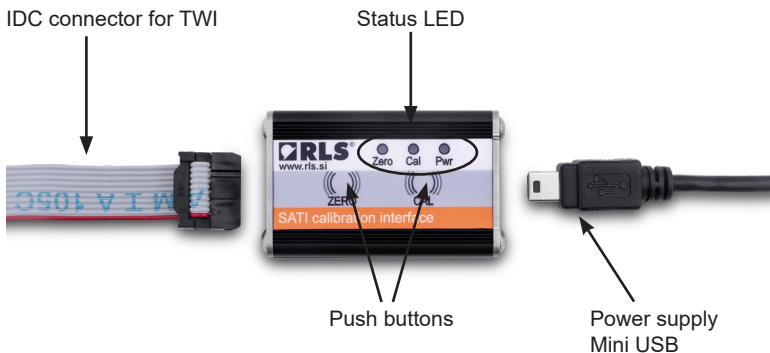
SATI stands for **Stand Alone Trimming Interface**. The interface optimizes the encoder absolute position error after installation. The trimming is performing while the magnet is rotating. It allows the trimming of the encoders made with AM4096.

Features

- Stand alone device
- Require external power supply
- TWI connections to encoder: 4 contacts (Vdd,Gnd, SDA, SCL)
- Digital inputs for external triggering
- Two functions realized by two push-buttons or external triggering: Trimming the sensor and Setting the encoder Zero position
- Three status LEDs
- Digital outputs for device status

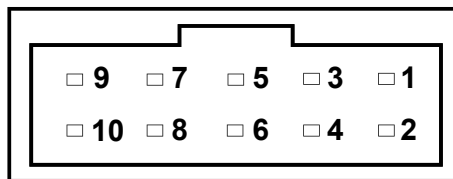


Description and connections



IDC connector pin assignment

Pin nr.	Signals
1	Vdd
2	GND
3	SDA (TWI)
4	SCL (TWI)
5	CAL trigger*
6	ZERO trigger*
7	B0 output**
8	B1 output**
9	B2 output**
10	GND



* Trigger is digital input, a high to low pulse with minimal width of 20 ms.

** Digital status outputs, see the table Status outputs on page 3.

Trimming procedure

Required conditions for successful trimming:

- Encoder current consumption <100 mA
- TWI lines must be HIGH (pull-up)
- Distance to magnet within specified tolerance
- Required rotational speed: 100 – 8,000 rpm (1.6 – 133 Hz)

Trimming process can start after required conditions are fulfilled. It starts by pushing the CAL push-button or applying adequate trigger pulse to digital input CAL trigger. The result is indicating by status LED Cal.

LED Cal must be off before starting the trimming process, to reset the LED, press the CAL push-button.

Trimming result:

- Absolute position error after successful trimming: < $\pm 0.2^\circ$

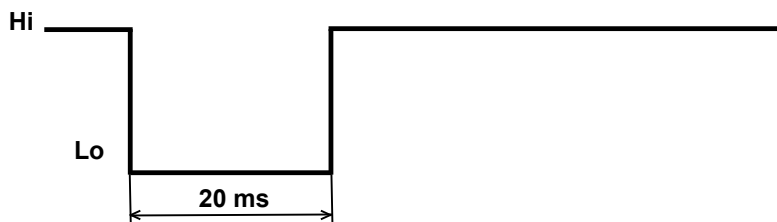
Setting zero position - Zeroing

Required conditions for successful zeroing:

- Encoder current consumption <100 mA
- TWI lines must be HIGH (pull-up)
- The encoder position must be steady for >3 s

To set the encoder zero position push and hold the ZERO button for >3 s or apply adequate trigger pulse to digital input ZERO trigger.

CAL /ZERO trigger timing



Status LEDs

LED Pwr shows the status of SATI/ encoder power consumption:

- OFF - no power
- Green - The interface is powered, no encoder connected or encoder powered by external power supply
- Yellow - Encoder powered by SATI with current consumption between 15 and 100 mA
- Red - Too high current consumption (>100 mA); the encoder power supply automatically turned off

LED Cal shows the status of callibration:

- OFF - SATI is ready for use; waiting for CAL button to be pushed
- Red - TWI communication error
- Red flashes - Rotational speed out of specification
- Yellow flashes - Distance to magnet out of specification
- Yellow - Trimming procedure in progress
- Red/Green flashes alternately - Not successful trimming, encoder absolute position error bigger than $\pm 0.4^\circ$
- Green flashes - $\pm 0.4^\circ >$ position error $> \pm 0.2^\circ$
- Green - Successful trimming, position error $< \pm 0.2^\circ$

LED Zero shows the status of zeroing procedure:

- Green - Encoder normal operation, not at zero position
- OFF - The zeroing procedure in progress
- Red - Encoder at zero position

Status outputs

Nr.	B2	B1	B0	Status
1	0	0	0	Encoder / SATI ready for use
2	0	0	1	TWI communication error
3	0	1	0	Rotational speed out of specification
4	0	1	1	Distance to magnet out of specification
5	1	0	0	Too high current consumption (>100 mA); the encoder power supply automatically turned off
6	1	0	1	Not successful trimming, encoder absolute position error bigger than $\pm 0.4^\circ$
7	1	1	0	$\pm 0.4^\circ >$ position error $> \pm 0.2^\circ$
8	1	1	1	Successful trimming, position error $< \pm 0.2^\circ$

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Document issues

Issue	Date	Page	Corrections made
1	8. 6. 2018	-	New document

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