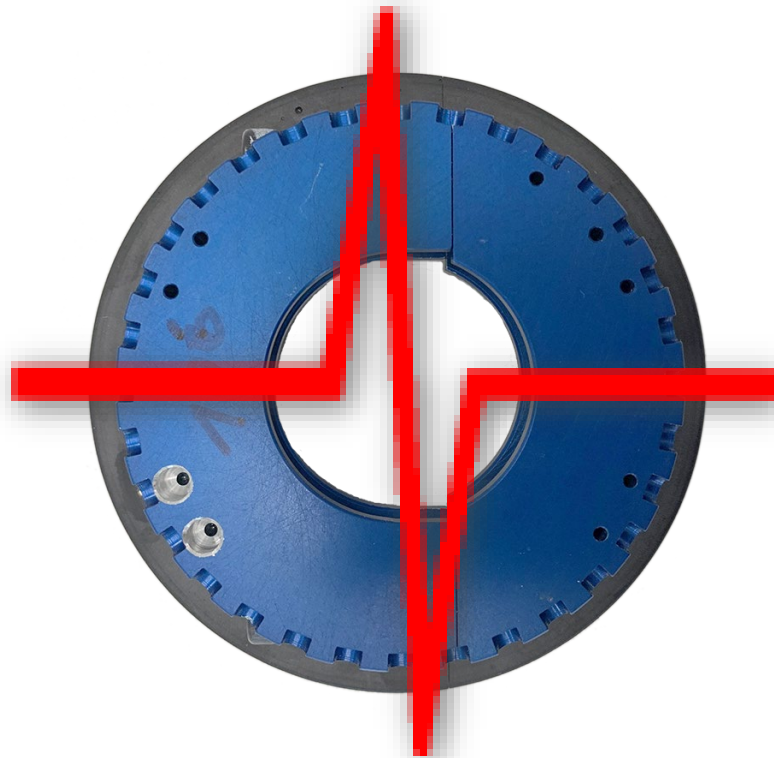
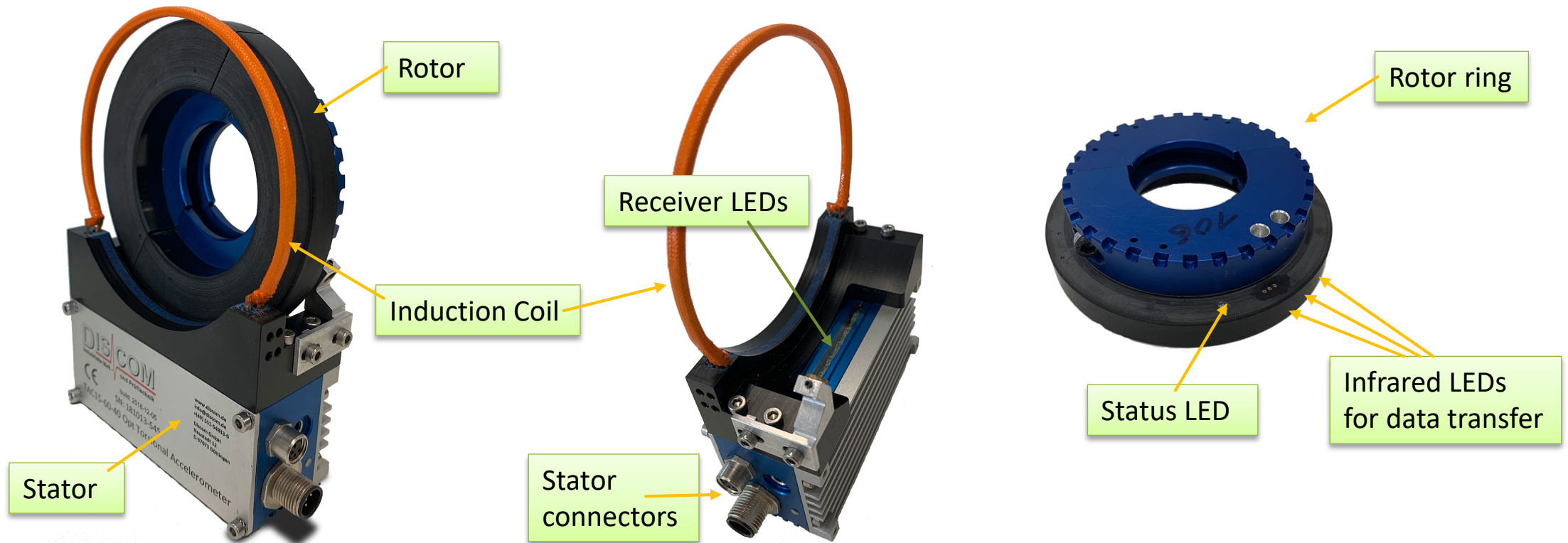


# TAC Installation Guide



# General Information

The TAC torsional accelerometer is mounted directly onto a shaft of the test stand and measures fluctuations of the rotational speed instead of vibrations. It consists of a fixed part (the stator) and a rotating ring which is mounted onto the shaft.



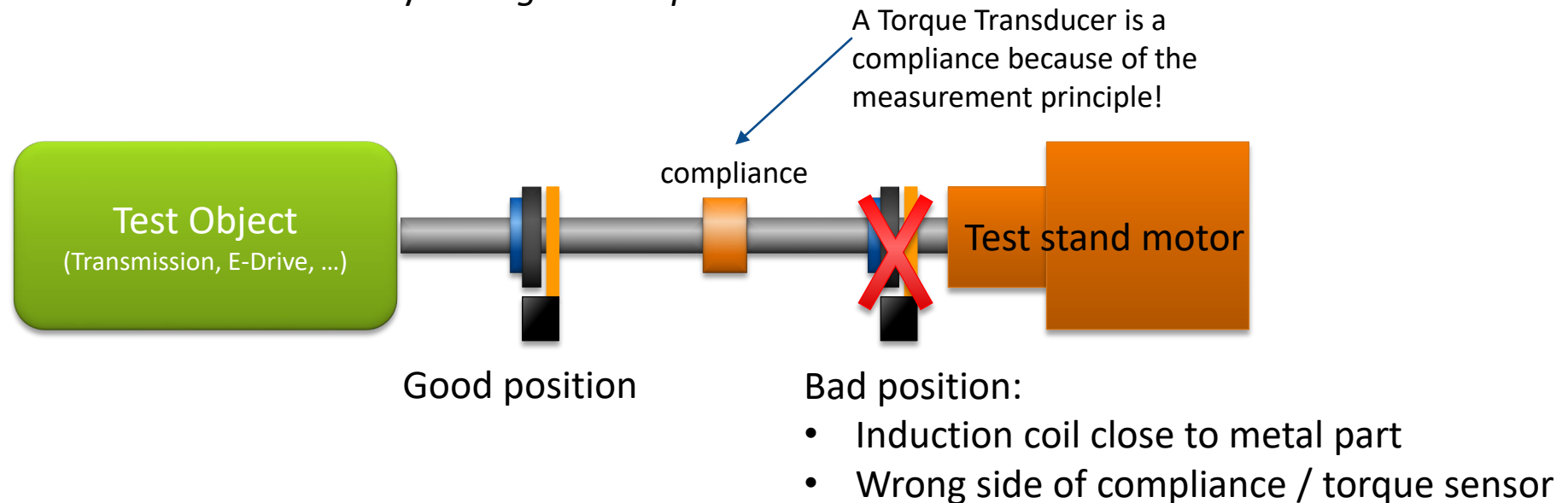
The rotor is powered by induction from the orange induction coil. Data is transferred with infrared LEDs (visible as ring of grey spots on the rotor).

# Test Stand Setup Considerations

The TAC should be positioned on the according shaft as *close to the test object* as possible.

It should be on the test object side of *compliances or couplings*.

Keep the induction coil out of the vicinity of *large metal parts*.

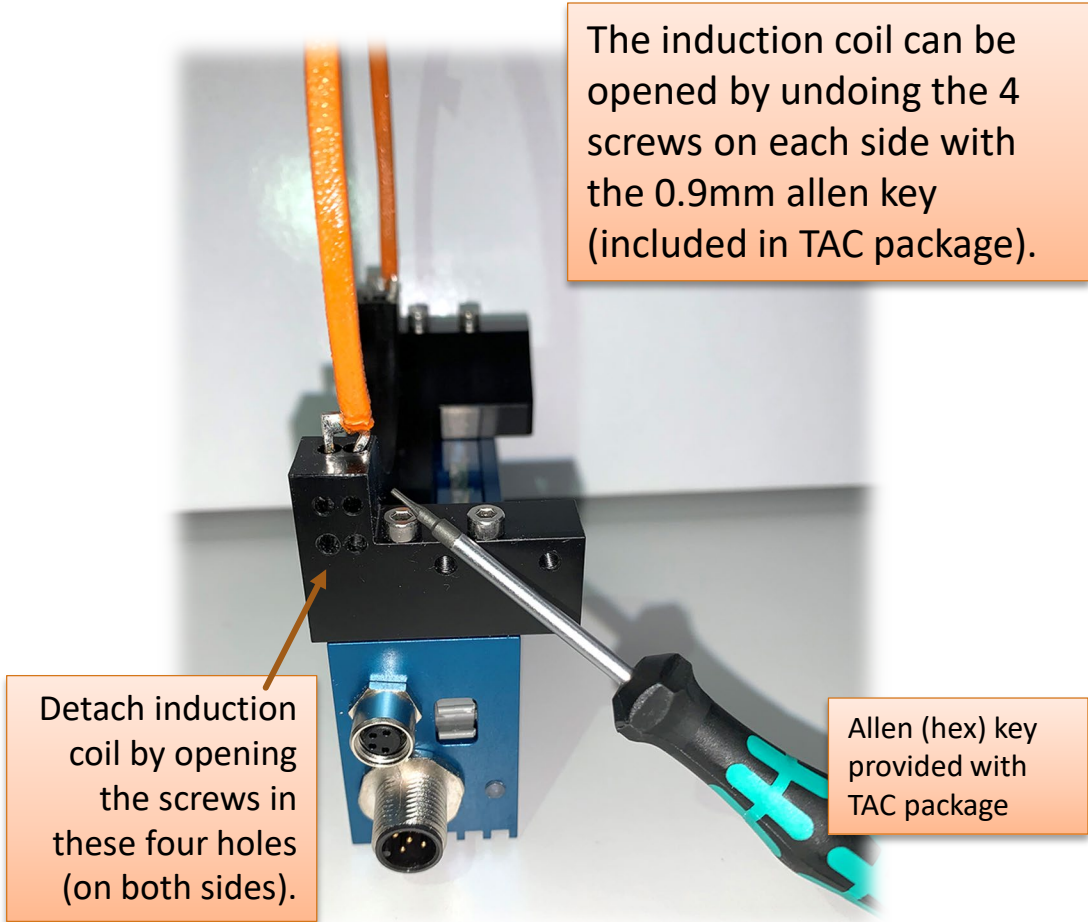
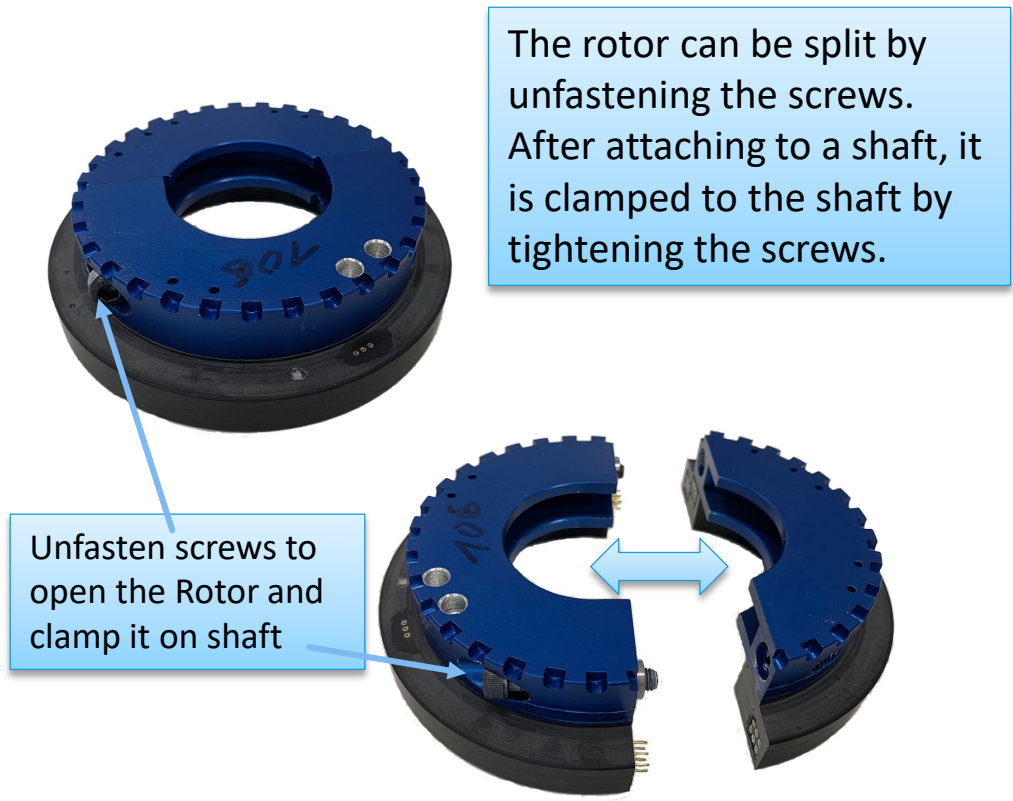


The Discom team can support you in deciding for a good measurement position.

For construction, keep in mind also the necessary cable connections of the TAC Stator (see next pages).

# Disassemble to Assemble

The TAC can be mounted onto a shaft by opening the parts.

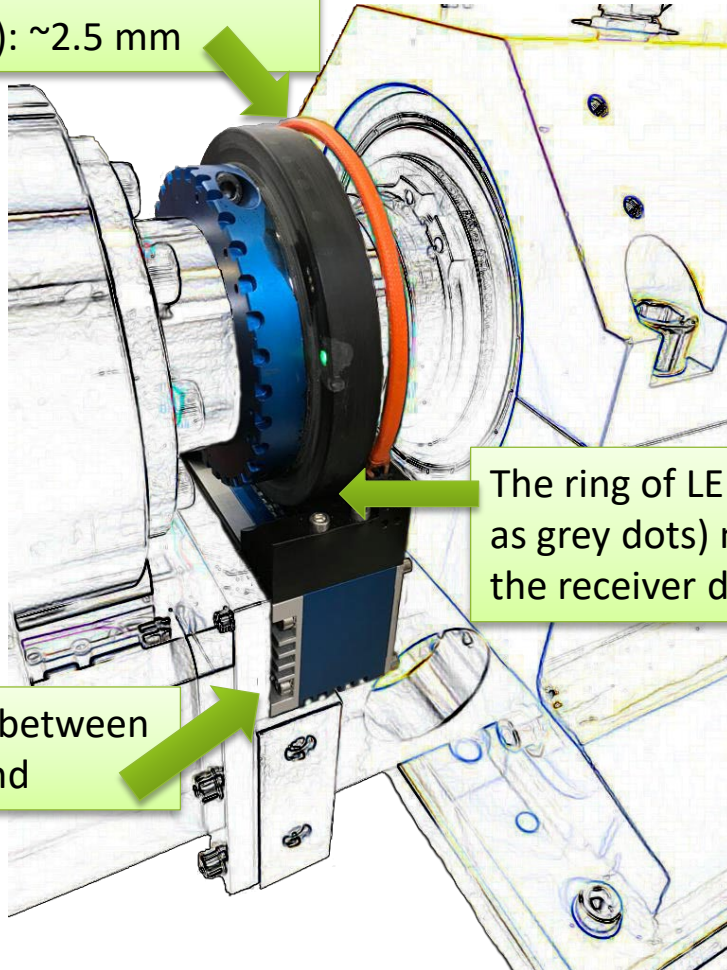




# Mounting in the test stand

It is important to keep the correct relative position of rotor and stator:

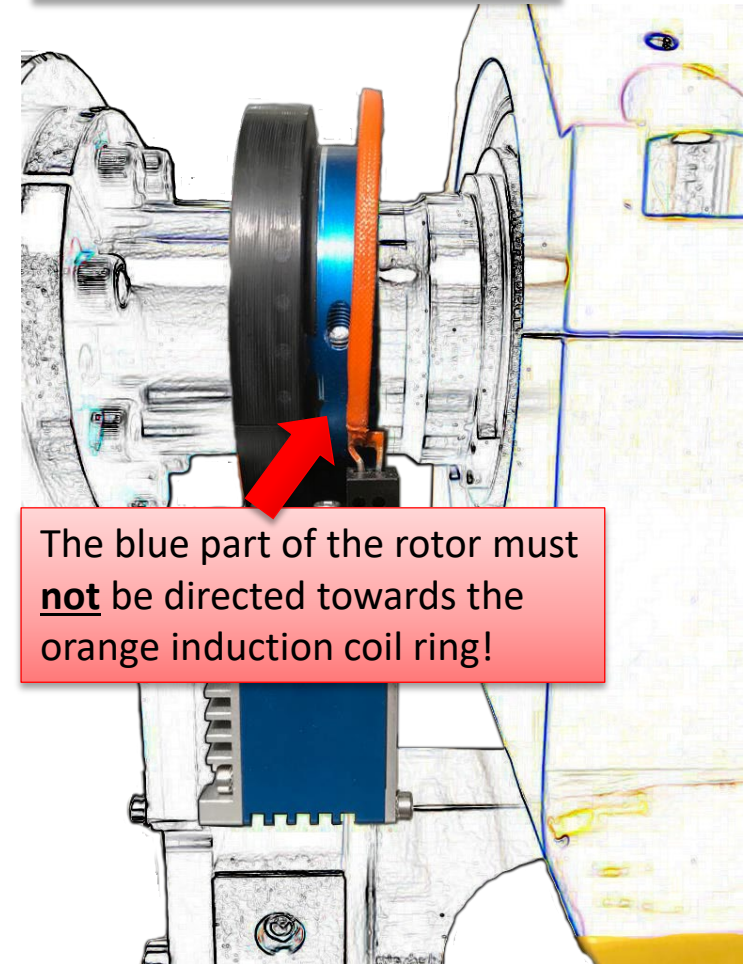
Gap between rotor and induction coil ring (orange): ~2.5 mm



The ring of LEDs on the rotor (visible as grey dots) must be aligned with the receiver diodes on the stator.

Electrical isolation between stator and test stand

**Wrong orientation:**

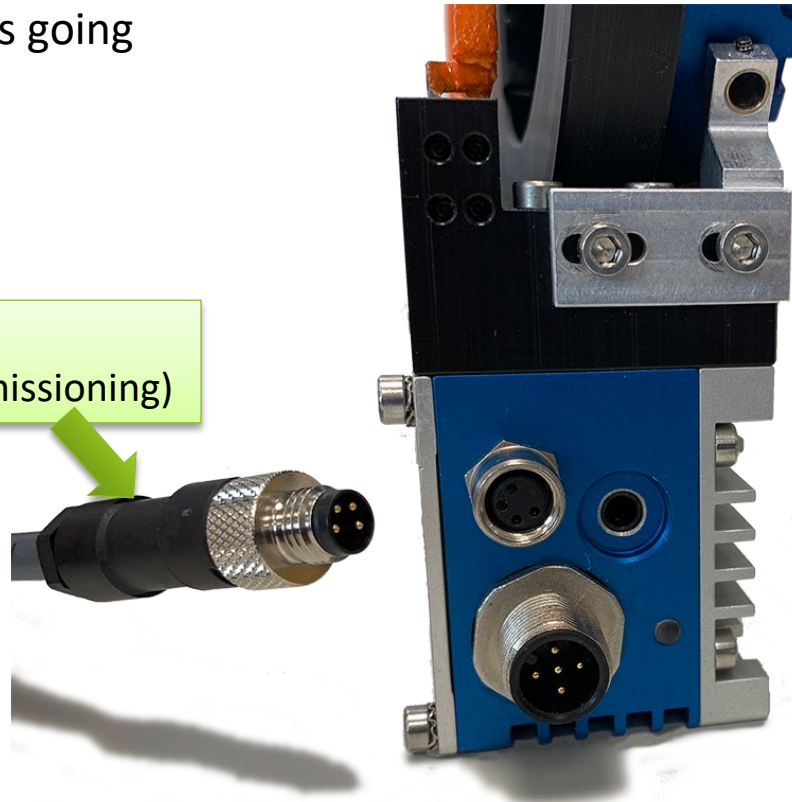


The blue part of the rotor must **not** be directed towards the orange induction coil ring!

# Connectors on TAC Side

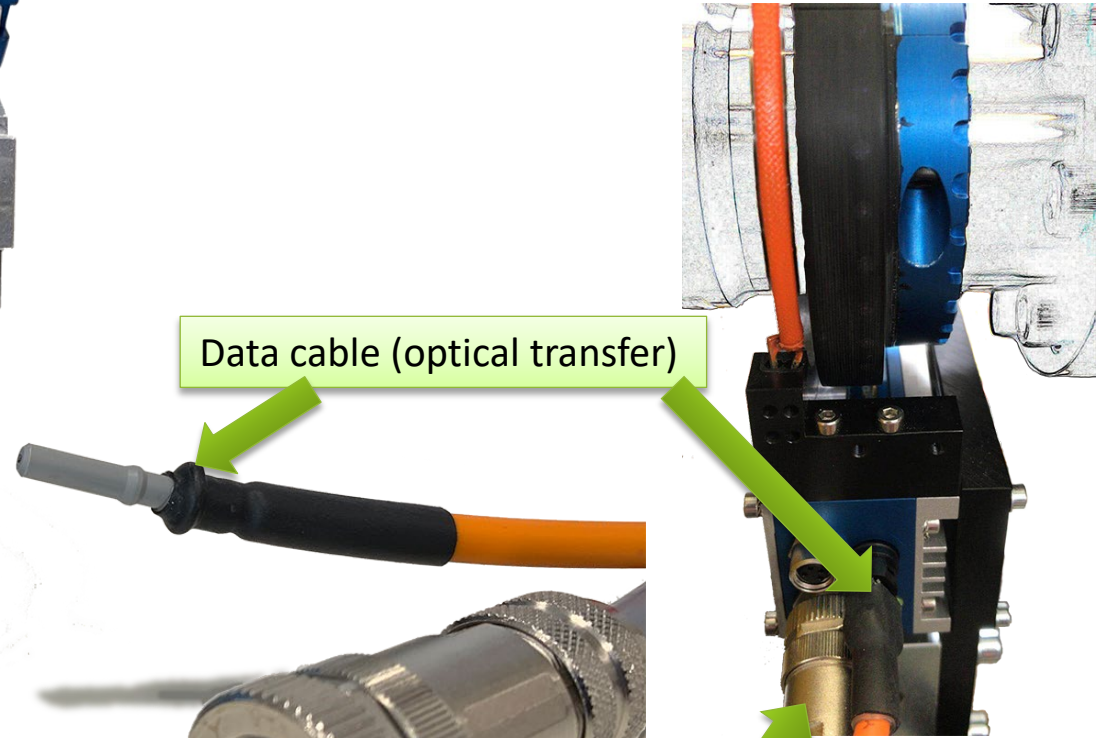
There are three cables going into the TAC Stator.

“Programming Cable”  
(used only during commissioning)



The data cable is connected with the Tas Box (see page 7).  
The programming cable is connected to a COM port on the measurement PC, when needed. (It can stay connected all the time or only be connected when used.)

Data cable (optical transfer)



Power supply for stator  
(see next page)

# Power Supply

The TAC stator needs DC power supply with 10~15V.  
We provide an according power source with adjustable voltage.

Adjust the output voltage here,  
using a screwdriver.

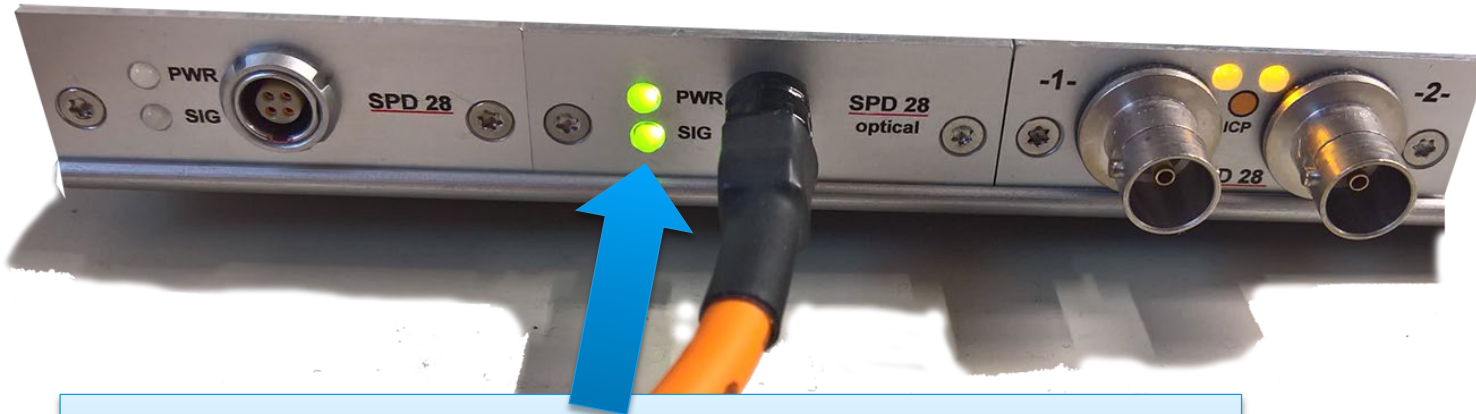


Try to reduce the output voltage towards 10 V while working with the PwrGen tool (see page 10). This will reduce power consumption and excessive heat production of the stator.

You can use your own DC power supply instead (with e.g. 12V output voltage).

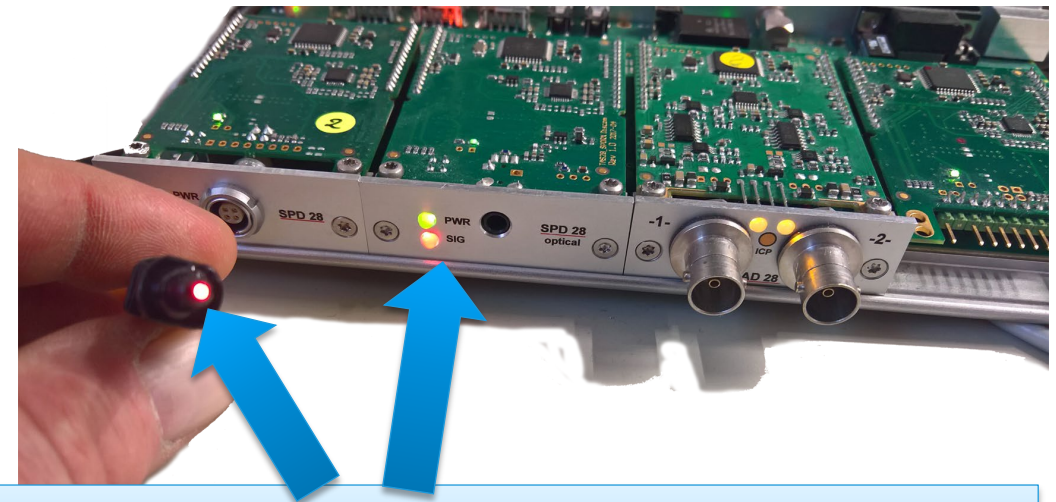


# Connector on Tas Box Side



Connect the orange cable to the SPD 28 connector in the Tas Box. When the TAC is correctly installed and powered, both LEDs must show green.

The status LEDs on the Tas Box (and the Rotor) are only lit when the TasAnalyser software is running and a test run started ("Inserted", see next page).

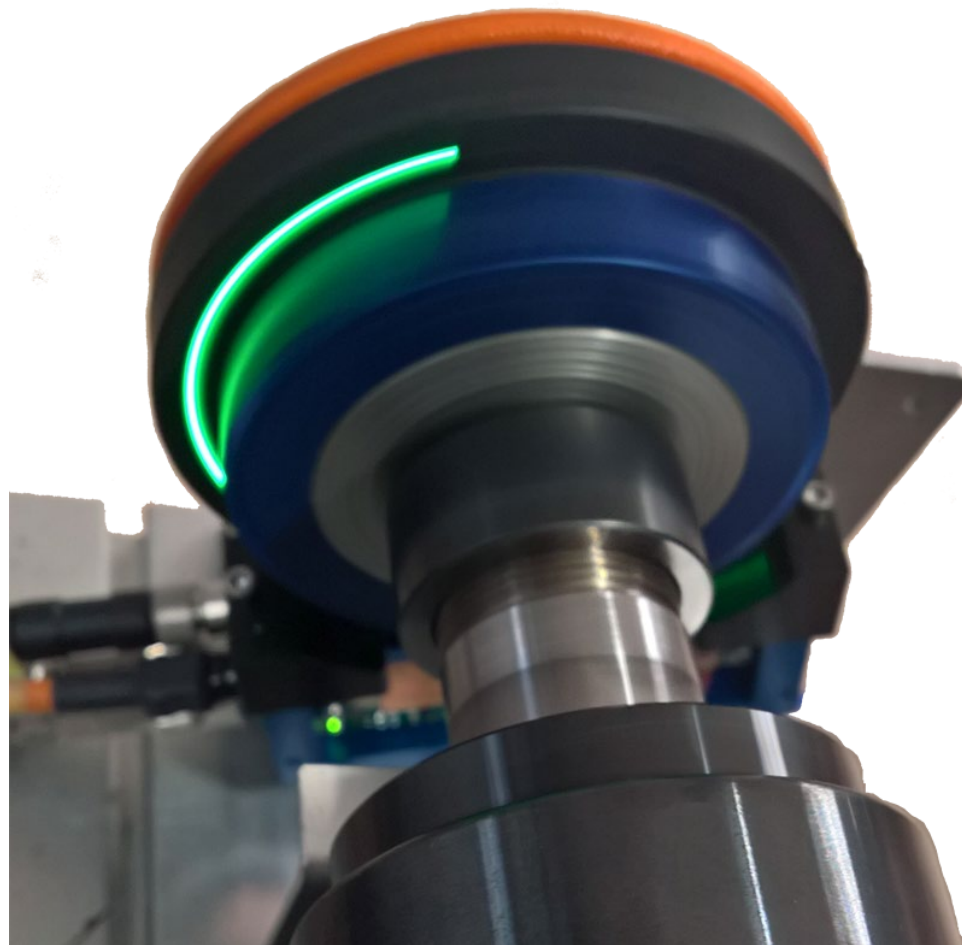


When you unplug the data cable, you can see the light of the optical data transfer. The SIG LED will go red when there is no signal input from the TAC rotor.



# Rotor Status LED

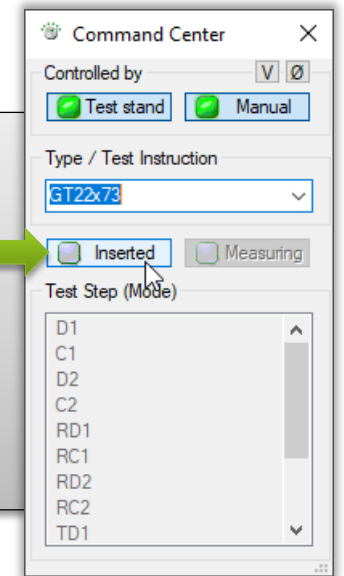
On the Rotor is a green LED spot, which will be lit when the Rotor has proper power and data connection.



When Rotor and Stator have been installed and connected to the Tas Box, start the TasAlyser measurement application, initiate a test run, and check the LEDs.

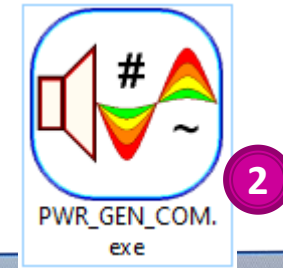
If the status LEDs on Rotor and Tas Box are not lit green, use the PwrGen tool (see next page) to adjust the inductive power supply.

To manually initiate a test run in TasAlyser, press the [Inserted] button in the “Command Center” window. When finished, press F9 on the keyboard to cancel the test run.



# Adjusting Rotor Power Supply

The rotor is powered by electromagnetic inductive transfer from the orange coil ring. Since this induction is highly dependent on the environment (large metal parts around), the parameters of the power supply (frequency and duty cycle) must be adjusted and optimized after final installation of the TAC. This is done using the “PwrGen” tool.



- (1) Connect the “Programming Cable” (see page 6)
- (2) Start the “PwrGen” tool
- (3) Select the correct COM port and 38400 bps
- (4) Press [COM Start]
- (5) Press [AutoRead ON]. You should see info data output in the center window (5a).
- (6) Press [Auto Search] and wait
- (7) Check the status LEDs on Rotor and Tas Box. They should go green.
- (8) With green LEDs, check the average power consumption “Ant. Avg Power”.
- (9) Try to reduce the power consumption: press the Duty Cycle [d--] button as long as the status LEDs stay green.
- (10) Enter “PWR15” into the Password field, press [EEP WR EN] and then [Save PWM settings...].

The screenshot shows the PWR\_GEN\_COM application window. It features a menu bar (File, Help), a COM port selection area (COM6, 38400 bps), and a central terminal window displaying device information: PWR\_active = 1, Pwr\_Gen, HW Rev. 1.6+, ATmega328P in TQFP-32, 20.000MHz, pwr\_ctl\_active = 0, pwr\_search\_always = 0x00, eep\_pwm\_search\_always = 0x00, frequency: 210.526 kHz, pwr\_freq\_reg: 94, duty cycle: 19.15 %, pwr\_duty\_reg: 18, fmax: 222.222 kHz / 89, fmin: 160.000 kHz / 124, PWM duty cycle, dmax: 37.5%, dmin: 12.5%. The interface also includes buttons for Read, Write, LOG Start, ClearScr, PWM on/off, DC CTL on/off, EEPROM Password, EEPROM settings, and hardware/firmware version information. A '5a' callout points to the central data display area.

# Calibration

The TAC rotor contains two accelerometers which are pre-calibrated by Discom. The calibration factors can be found on the data sheet provided with the TAC.

To perform calibration, the TAC has to be mounted on a horizontal shaft, because TAC calibration uses earth gravitational acceleration ( $9.81 \text{ m/s}^2$ ) as calibration normal.

If in the test stand, the TAC is rotating in a horizontal plane, in-place calibration is not possible. In this case, it is sufficient to remove and calibrate the rotor separately.

For more details about TAC calibration, see the separate documentation on this topic.

