



# **E201 - Optical Torque Transducer Display Module**

## Contents

*Torque Transducer Display Interface: TSE3249R*

*Optical Transducer Display Interface [E201] Operating  
Guide: TSE2097V (Includes Introduction, Description  
of Controls, Operating Instructions & Options  
Applicable to Your Unit & External Connections)*

# Torque Transducer Display Interface

A Transducer Interface is required with the E200 ORT Series (Optical Rotary Torque) Transducers, and is an option for the E100SIT/GBT (strain gauge) Transducers.

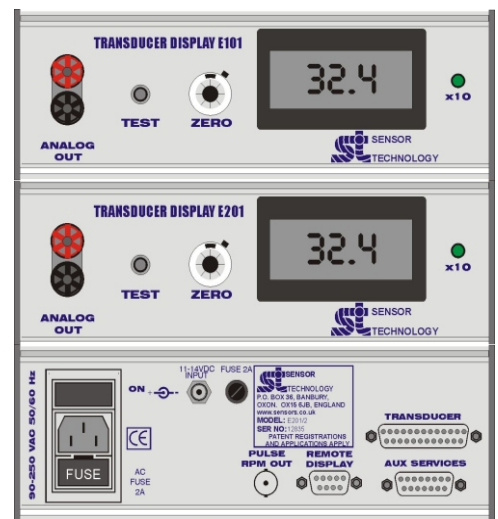
Transducer Displays E101/E102 integrate with the E100 SIT/GBT (Strain Gauge) transducers and Transducer Displays E201/E202 integrate with the E200 ORT Series (Optical Rotary Torque) Transducers.



A typical E Series Transducer Display unit. Front panel varies depending on model.

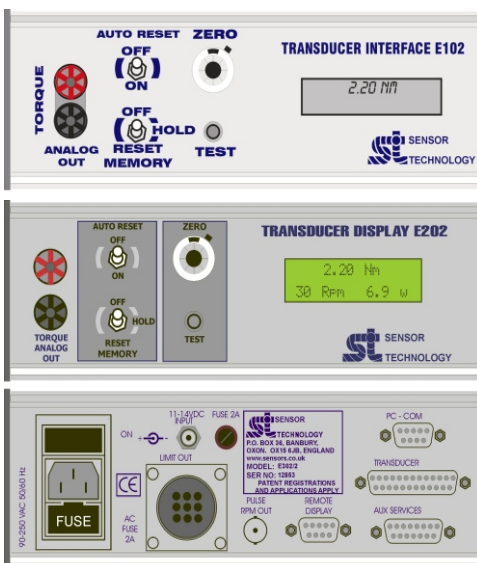
## Common Features

- E101/E102 automatically detects and sets the full-scale range of any E100 transducer.
- E201/E202 automatically detects and sets the full-scale range of any E200 transducer.
- The display is automatically programmed to read the full scale of the transducer.
- $\pm 5v$  analog output for Torque FSD.
- 90-250V ac or 12 v dc operation.



## Additional Features for E102/E202

- Operates independently or under control from remote PC.
- Operates with TorqView to give advanced display modes (see TorqView data sheet).
- 2 external analog input channels. (**Option only**)
- Peak readings can be displayed and reset manually or automatically.
- Options menu to allow user to:
  - Set torque limits.
  - Average torque readings.
  - Set instrument display to feature other options (e.g. analog inputs).
  - Fast record facility.



## Additional Features for E202 (if Optical RPM pickoff fitted to E200 transducer)

- Speed and power displayed.
- Options menu also allows user to:
  - Average speed readings.
  - Adjust speed output full scale setting.

**Display Interface Technical Data and Option Sheet**

		E101	E102	E201	E202		
<b>Display Interface Accuracy</b>	±0.1% Digital readout	•	•	•	•		
<b>Resolution</b>	0.1% Digital readout	•	•	•	•		
	0.05% Analog out	•	•	•	•		
<b>Display</b>	LCD (max 1999) with x10 LED indicator	•		•			
	LCD 16 x 2		•		•		
<b>Analog Bandwith</b>	10KHz @-3dB	•	•				
<b>Analog Bandwith</b>	50KHz @-3dB			•	•		
<b>Local display update rate</b>	10 times/sec		•		•		
<b>Overall Size (mm)</b>	220w x 290d x 100h (Aluminium enclosure)	•	•	•	•		
<b>Fitted Tilt Feet</b>		•	•	•	•		
<b>Weight (nominal)</b>	2.5Kg (5lb 10 oz)	•	•	•	•		
<b>Temperature Range</b>	-10°C - 50°C	•	•	•	•		
<b>Front Panel (Language)</b>	English	•	•	•	•		
						<b>Option</b>	
<b>Power Supply</b>	90-250v AC, 50-400Hz, 20W, IEC connector. 11-14 v DC 1 A 2.1mm jack reverse polarity protected	•	•	•	•	1	-
	Power Input - 24v	◇	◇	◇	◇		a
<b>Torque Analog Output</b>	Analog Output ±5v FSD	•	•	•	•	2	-
	Analog Output ±1v FSD	◇	◇	◇	◇		a
	Analog Output ±10v FSD	◇	◇	◇	◇		b
	Analog Output +0.5v (fsd ccw) +2.5v(zero) +4.5(fsd cw)	◇	◇	◇	◇		c
	Analog Output 4-20 mA			◇	◇		d
<b>Speed Analog Output</b> (Specify RPM FSD required) (Speed pickoff on Transducer reqd)	RPM Analog +1v for FSD				◇	3	a
	RPM Analog +5v for FSD				◇		b
	RPM Analog + 10v for FSD				◇		c
	RPM Analog 4-20 mA for FSD				◇		d
<b>Power Analog Output</b> (Specify Power FSD required) (Speed pickoff on Transducer reqd)	Power Analog +1v for FSD				◇	4	a
	Power Analog +5v for FSD				◇		b
	Power Analog + 10v for FSD				◇		c
	Power Analog 4-20 mA for FSD				◇		d
<b>Serial Output</b>	<b>TORQVIEW</b>		◇		◇	5	a
	RS232		◇		◇		b
	Optical Fibre Transmitter for RS232		◇		◇		c
	RS 422 Output 4800 baud		◇		◇		d
	USB Adaptor		◇		◇		e
<b>Auxiliary Inputs</b>	4-20mA		◇		◇	6	a
	AC RMS (50-400Hz)		◇		◇		b
	Dual Analog inputs + 1v		◇		◇		c
	Dual Analog inputs +5v		◇		◇		d
	Dual Analog inputs +10v		◇		◇		e
<b>External Limit Outputs</b>	Limit output (relay)		◇		◇	7	a
	Limit output (opto)		◇		◇		b
	Limit output TTL/HC +5v positive logic		◇		◇		c
<b>Extended Cable Driver</b>	Over 10 Metres				◇	8	a

• – Standard      ◇ – Option available

Data parameters measured at 20°C

Sensor Technology Ltd reserves the right to change specification and dimensions without notice.



# Optical Transducer Display Interface [E201] Operating Guide

TSE2097V  
Rev 1

## 1. Introduction

The E201 provides a stabilised power supply and display for the E200 ORT torque transducer. Torque is displayed on a 3½ digit LCD display, while the RPM output (if fitted), can be accessed by the RPM out connector on the back of the instrument.

The E201 can be powered either from 96-250V, 50/ 60Hz AC mains supply, or from an 11-14V DC source. Power to the transducer is supplied from the E201.

Although the system does not require routine maintenance, we recommend that, for maximum accuracy, the equipment be recalibrated annually.

## 2. Description of Controls

### Front Panel



### 2.1 “Zero control”

This multi-turn potentiometer is used to zero, if necessary, the torque signal output of the transducer when no torque is applied to it. A dial lock is incorporated to prevent accidental movement of the control while measurements are being made. The normal setting of this control is close to the position 5.00. If the zero is away from this position by more than  $\pm 1.00$ , recalibration should be carried out, as the transducer may have been overstrained. This control can also be used to bias the torque reading in either direction to correct for any residual torque present.

### 2.2 “Test” Push Button

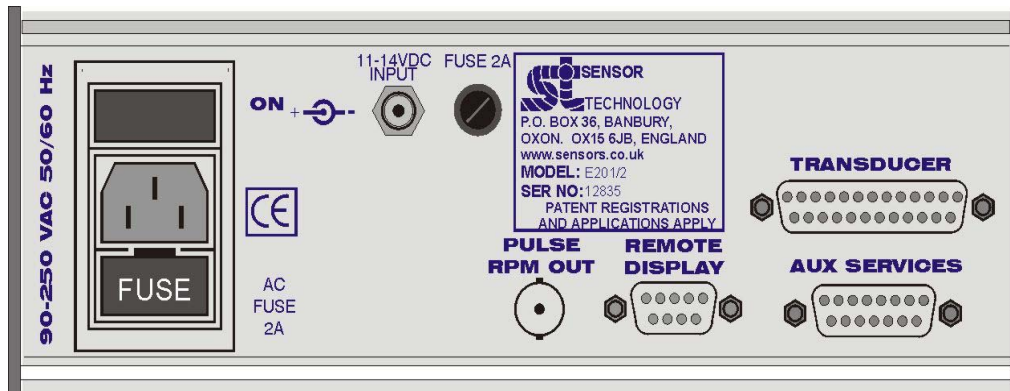
This button is for checking the integrity of the transducer and display electronics. With the E201 on, and an E200 ORT Transducer connected, pressing this button will cause the E201 torque display to show the Full Scale Deflection of the transducer, indicating that the system is functioning correctly. The reading should be within  $\pm 2$  digits, if not, check the zero setting, with no torque applied.

### **2.3 “Analog out” 2 x 4mm Front Panel Connector**

This connector outputs the torque reading from the E200 ORT, giving (as standard) + Full Scale Deflection = + 5.000v\* and – Full Scale Deflection = - 5.000v\*. The black 4mm connector is OV signal ground. This signal should not be loaded with less than 500 Ohms to maintain accuracy and is protected against accidental short circuits.

\* On instruments prior to Serial Number 11010, this was  $\pm 1.000v$  FSD.

### **Back Panel**



### **2.4 Power Supply Connectors**

DC power (not switched) is connected through the round socket marked 11-14VDC; the fuse for this supply is the round fuse on the right of the DC input connector.

AC Mains power is connected and switched on/off through the combined switch/fuse/plug on the back panel of the E201.

**DO NOT CONNECT AC AND DC SUPPLIES AT THE SAME TIME**

### **2.5 Transducer Socket**

The E200 ORT should be connected to the 25 pin ‘D’ socket marked “TRANSDUCER” on the rear of the E201. To ensure a good connection, the locking screws should be tightened.

### **2.6 “RPM” Socket**

This socket is connected to the rotary speed sensor of the transducer (when fitted) and allows the user to display the RPM on a Frequency Counter at the rate of 1 Hz = 1RPM. Do not load below 500 Ohms, accidental short circuit protection is provided.

### **2.7 Auxiliary Services Connector**

Signals are available through this connector for any output options, such as  $\pm 5V$  or  $\pm 10V$  FSD, fitted to the module. See Section 4 for details of options fitted and Pin Out connections (if applicable).

### **3. Operating Instructions**

Connect the E201 and the E200 ORT using the correct E200 ORT lead.

#### **THE SERIAL NUMBER OF THE LEAD MUST MATCH THE SERIAL NUMBER OF THE E200 ORT.**

This is important because the lead carries important calibration history and scaling information, which is reported to the E201. This ensures that the E201 displays the correct torque readings.

The E201 must be connected to either a 96-250V DC, 50/60Hz, AC mains, or an 11-14V DC source to supply power for the E201 and the transducer.

#### **DO NOT CONNECT AC AND DC SUPPLIES AT THE SAME TIME**

When the E201 is turned on, the Transducer reports to the E201 with the scaling information. Zero the E200 ORT using the zero control on the front panel of the E201. To check the validity of the E200 ORT, press the test button, and the display will show the Full Scale Deflection of the E200 ORT. If the transducer range is greater than the display can show, for example, 2000Nm, the display will show 200 and the x10 indicator will be lit.

#### 4. E201 Serial No

#### Options Fitted & External Connection Details

#### 4.1 Options Fitted

Option 2) Torque Analog Output

Standard) Analog Output  $\pm 5v$  Transducer FSD where:

- +5v = Clockwise Transducer FSD
- 0v = Zero Torque
- 5v = Anticlockwise Transducer FSD

See Individual Option Sheets Attached for Detailed Specifications

<b>15 Way Auxiliary Services Connector</b>					
Option	PIN	SERVICE	FITTED	RANGE	LEVEL
	1&9	ANALOG GND	✓	N/A	N/A
	8&15	DIGITAL GND			
	2	SPEED OUT			
	3	TORQUE OUT	✓	0 - FSD	<u>+5v</u>
	4	POWER OUT			
	10	ANALOGUE AUX A			
	11	ANALOGUE AUX B			
	5	LIMIT A OUT (TTL)			
	6	LIMIT B OUT (TTL)			
	7	LIMIT C OUT (TTL)			
	12	A (TTL)			
	13	B (TTL)			
	14	+5v OUTPUT			

Mating Connector is 15Way Male "D" Series