



## Installation & Calibration Instructions.

The Terwin Ultra-MAX™ series sensors are precision instruments. It is important to follow the instructions detailed below to avoid unnecessary damage.

**Handling:** These instruments should be handled with great care. They should not be dropped and the front diaphragm should be prevented from coming into contact with sharp objects. Under no circumstances should the diaphragm be cleaned with a wire brush or abrasive cleaners. Should the diaphragm require cleaning, use only a clean cloth whilst the transducer/transmitter is hot and at approximately the same temperature as the material that was previously being processed. Additionally, before removing the transducer/transmitter from the extruder, always ensure that the processed material is still at working temperature. If the material being extruded has become cold, this could lead to the diaphragm being damaged when the transducer is removed.

**Fill Material:** The Ultra-MAX™ Series is filled with Ultra-MAX™ Safe liquid metal alloy.

The completely safe, high temperature fill material is Mercury, NaK & Oil FREE.

### Ultra-MAX™ Series Maximum Process / Diaphragm Temperatures / Approvals:

<b>Fill materials:</b>			Ultra-MAX™
<b>Approvals:</b>			CE, RoHS
<b>Maximum diaphragm temperature:</b>	Model	UM1	450°C/842°F
		UM3	
		UM4	

For higher temperature ratings, please refer to the Terwin Ultra-MAX-HT™ Series.

**Note:** Under no circumstances must the sensor be removed from the extruder whilst under pressure.

**Before Installation:** Always ensure that the mounting hole conforms to the required dimensions that are shown overleaf. Also, to avoid irreparable damage, ensure that the mounting port is free of old processed material that may fracture the sensing diaphragm.

**Installation:** Lubricate the threads of the transducer/transmitter before each installation with Dow Corning Molycote G or similar product. Screw the transducer into the extruder and torque to 20ft lbs maximum - 10 ft lbs minimum. **DO NOT** over torque as the may lead to irreparable damage.

**Electrical Connections:** Please refer to the calibration data sheet that is sent out with each transducer/transmitter, full electrical connections/specifications are detailed on this.

**Calibration:** All adjustments are to be made at zero pressure and at a stabilized working temperature.

**Transducers:** 1) Utilising the process indicator/controller or signal conditioner that is being used, adjust the instrument to give a true zero reading (see relative instruction manual for the instrument that you are using).

2) Calibrate the transducer to the CAL value that is detailed on the calibration data sheet and transducer label. This value is stated in both percentage of full-scale range and also in psi or bar etc. Transducers that have 6-wire negative shunt calibration are normally calibrated at 80% of full scale i.e., if the full range is 0 – 10,000 psi the calibration value will be 8,000 psi. However, because transducers are also available with four-wire open calibration, always check the label before making any adjustments.

3) Check the zero reading once again and adjust if necessary. Should any adjustment be made, repeat the calibration adjustment as detailed above in (2).

**Transmitters:** Are provided with a zero adjust potentiometer and this should be adjusted at working temperature to give the required zero pressure output (see calibration data sheet provided with each transmitter for details of voltage or current outputs). Next, short together the calibration wires and adjust the span potentiometer to give you 80% output (see calibration data sheet provided with each transmitter for details of voltage or current outputs).

**Caution:** Do not attempt to make any adjustments to zero or calibration of transducers/transmitters whilst pressure is applied. This will lead to incorrect readings and may result in the machine being over pressurized.

**Danger – Cold Starts:** Cold starts will almost certainly result in diaphragm damage and extensive damage to the machine. To avoid this, we recommend the use of dual pressure/temperature transducers and transmitters that can ensure the extruder barrel is up to temperature before allowing the machine to be started.

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