1. PRODUCT DESCRIPTION.

Omniterm TTT is a 24Vdc-powered universal-input Transmitter, which accepts mA, Volts, thermocouple and RTD inputs and provides universal output, selectable between milliAmps (4-20 or bipolar), Volts or pulses (frequency). It also provides two separate configurable trip relay outputs.

The product is designed for SIL1 safety loops and achieves reliability parameters specified by IEC61508 for this level.

2. CONDITIONS OF USE IN SAFETY-RELATED APPLICATIONS.

- The TTT must be used within its electrical and mechanical specifications.
- EMC environment must be typical industrial environment (IEC61000-4-4 Level 3 or IEC61000-4-3 Class 3).
- To maximise Diagnostic Coverage, input must be used in configuration such as 4-20mA or 1-5V where signal loss can be detected as a fault (see product configuration advanced settings).
- The relays must be set as "de-energized to trip".
- Output to be used in configuration such as 4-20mA or 1-5V where signal loss can be detected as a fault.

3. RELIABILITY INFORMATION.

Hardware reliability analysis yields the results as summarised in the Table below.

Subsystem	Type B
DC	74%
SFF	81%
PFD_{avg}, (TI = 1 year)	2.71×10^{-3}
PFD_{avg}, (TI = 2 years)	5.41×10^{-3}
MTBF (in years)	35.7
λ (total)	3196 FIT
λ_{SD}	111 FIT
λ_{SU}	682 FIT
λ_{DD}	1787 FIT
λ_{DU}	616 FIT

An MTTR of 8hrs was used in the above PFD calculations.

KEY:

DC = Diagnostic Coverage	λ = failure rate per billion hours (1 FIT = 1 failure in 10^9 hours)
SFF = Safe Failure Fraction	Failure Rate Categories:
PFD = Probability of Failure on Demand	SU = Safe Undetected
TI = Test Proof Interval	SD = Safe Detected
MTBF = Mean Time Between Failures	DU = Dangerous Undetected
MTTR = Mean Time To Repair	DD = Dangerous Detected

4.   EXPLANATION OF RESULTS.

Any hardware failure, which affects accuracy, is deemed a dangerous failure. If a fault results in the loss of output signal, that failure is considered detected. It requires a TTT setup where the output assumes a specific value on detected failure, such as 23mA for example.

SIL1 requirements – PFD figures for the device and Proof Test Interval of 2 years are better than the SIL1 requirements of EN61508-1 and fulfil the requirement not to claim more than 10% of allowed range.

As the TTT has no hardware fault tolerance, the applications are limited to SIL1 loops.

5.   DISCLAIMER

This datasheet provides reliability figures only. Omniflex does not assume responsibility for the correct and safe application of the TTT or its reliability data. In safety-related applications, it is the user's responsibility to comply with all other requirements of EN61508, which may be applicable to the system in question.

Omniflex reserves the right to change specifications without notice.