

TS-100 HATI Temperature Sensor User Manual



Installation and User Guide

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Thank you for purchasing the TS-100.

This manual contains setup and general use instructions. Should you require any further information feel free to contact our support team on 01904 792211.

TS-100 Overview

The TS-100 HATI Temperature Sensor produces a pulse output where the pulse frequency is a function of the ambient temperature.

The pulse frequency is relatively low at around 0.4Hz at room temperature and pulse counting over an extended period provides improved accuracy of measurement. With pulse counting over a 30minute period, the temperature measured by the TS-100 is typically within $\pm 1.5^\circ$ Centigrade of that measured by a reference thermocouple.

Electrical Specification

Power requirements:	5V \pm 5% Current draw \leq 10mA
Pulse output:	Open collector, max voltage 30V Current sink capability: 20 mA Pulse width: 100mS Pulse frequency: temperature dependent (see below)

Electrical Connections

Three wire cable:	Red = 5V Black = Ground White = Pulse output
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The TS-100 is supplied with 1m cable. Depending on the specification of the cable used and the data logger to which it is connected, it is in principle possible to extend the cable length to 10m.

Pulse Indicator LED

There is a red LED on the end of the TS-100 opposite to the cable entry which flashes every time a pulse is generated. At normal room temperatures, it will flash approximately every 2 seconds. If the LED does not flash, it indicates either that the TS-100 is not correctly powered or a fault with the unit.

Temperature Measurement Specification

Temperature Range: -10° C to +40° C

Typical Accuracy: ± 1.5° C

(Accuracy specification based on comparison to average temperature measured by a reference thermocouple versus pulses counted over a 30 minute period applying the conversion formula on page 5)

Environmental

The TS-100 is designed to be compatible with both indoor and outdoor installation. However it should be sited so as to not be exposed to either direct sunlight as this will heat the sensor and effect the measured temperature or direct precipitation as this may damage the electronics.

Pulse to Temperature Conversion Formula

Based on counting pulses for 30minutes, the following formula can be used to convert number of pulses to temperature:

$$\text{Temperature [Centigrade]} = \left(\frac{60894}{N(\text{pulses})} \right) - 59.68$$

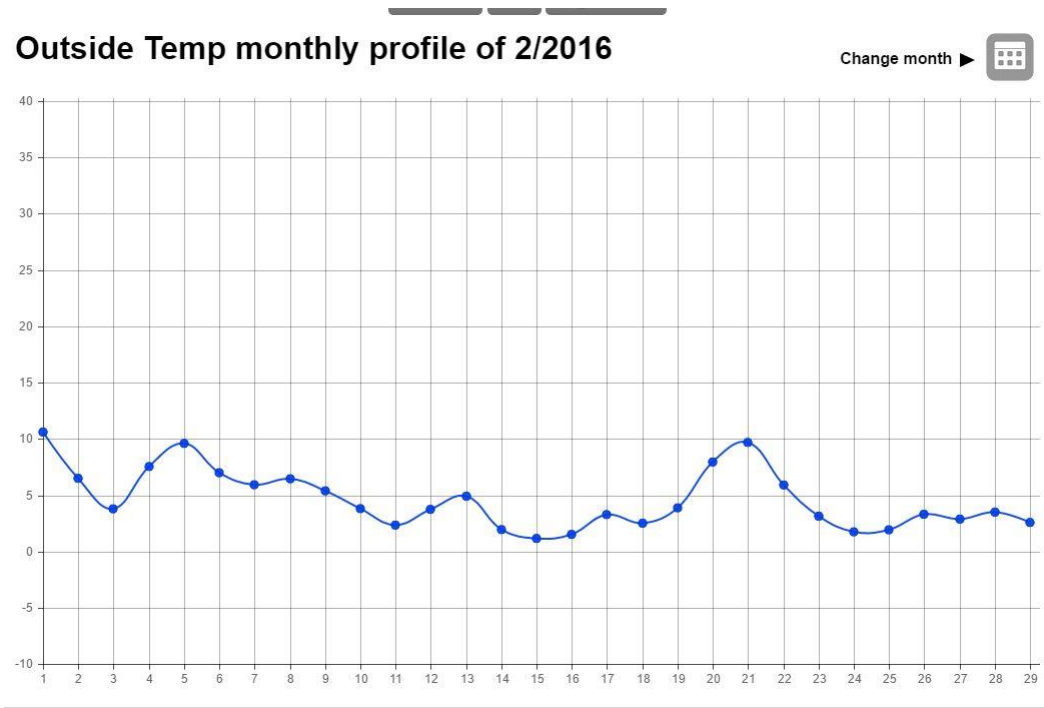
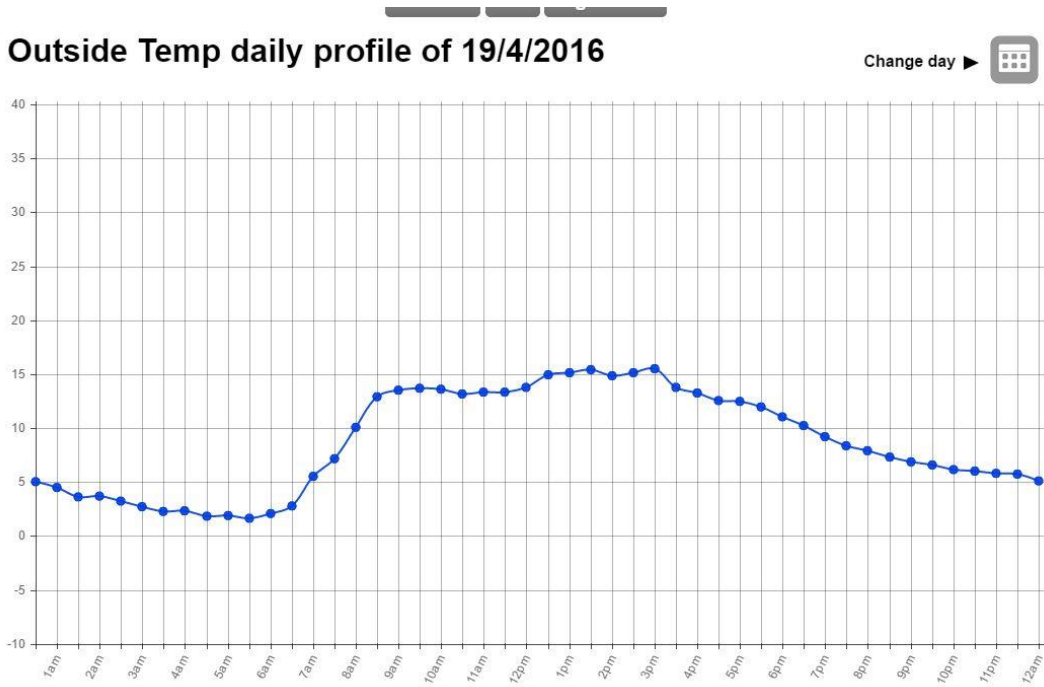
The following table shows the relationship between pulses counted in a half-hour period and temperature using the above formula:

Number of pulses	Temperature (° C)
1200	-8.9
1100	-4.3
1000	1.2
900	8.0
800	16.4
700	27.3
600	41.8

Connection to Crucible Technologies Meter Logger

The TS-100 is fully supported by the Crucible Technologies ML6C 6-channel Meter Logger (running firmware versions V1.1 and later).

Conversion of pulses generated to temperature is automatic and graphs of average temperature per 30 minute period and 24 hour average temperatures are provided – see example plots below:



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“We will provide unlimited telephone support for 30 days following purchase of the product. Following this period, we will provide unlimited e-mail support for the life of the product. This will allow us to keep the cost of the product competitive.”

When contacting us for support, please have the following information to hand (or include in e-mail):

- Serial number of unit (usually on base of product)
- Where purchased from? (i.e. directly from us or a reseller)
- Your contact details including telephone and e-mail address
- Description of the problem

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