medlab

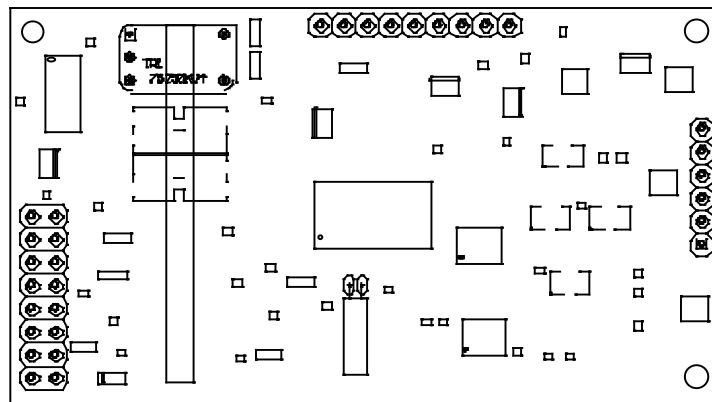# Two Channel Temperature OEM board

EG 00700

Technical Manual

Version 1.4

Medlab medizinische Diagnosegeräte GmbH
Helmholtzstrasse 1a
76297 Stutensee
Germany
Tel. +49(0)7244 741100
oemsales@medlab.eu
www.medlab.eu

Table of Content

Introduction

The EG00700 eases the task of integrating a medical temperature monitoring system into an existing or newly developed medical monitor.
The module is fully compatible with all YSI 400 standard temperature probes.
These probes are a de-facto standard in most hospitals and medical applications worldwide.

The patient side of the module is fully isolated from the rest of the module, the system includes also the DC/DC conversion for this isolated side. The leakage currents of the board itself are low enough to meet class CF regulations of the IEC 601. The insulation withstands voltages as high as 4000 Volt RMS.
The inputs of the module are shielded against high voltage transients that can be present at the module during some EMC checks and while applying defibrillation
pulses to the patient that are capacitively coupled to the temperature probe cable.

The module has two inputs as well as a reference input, that always reads as 38.8 °C. This channel can be used as a functional control of the whole system.

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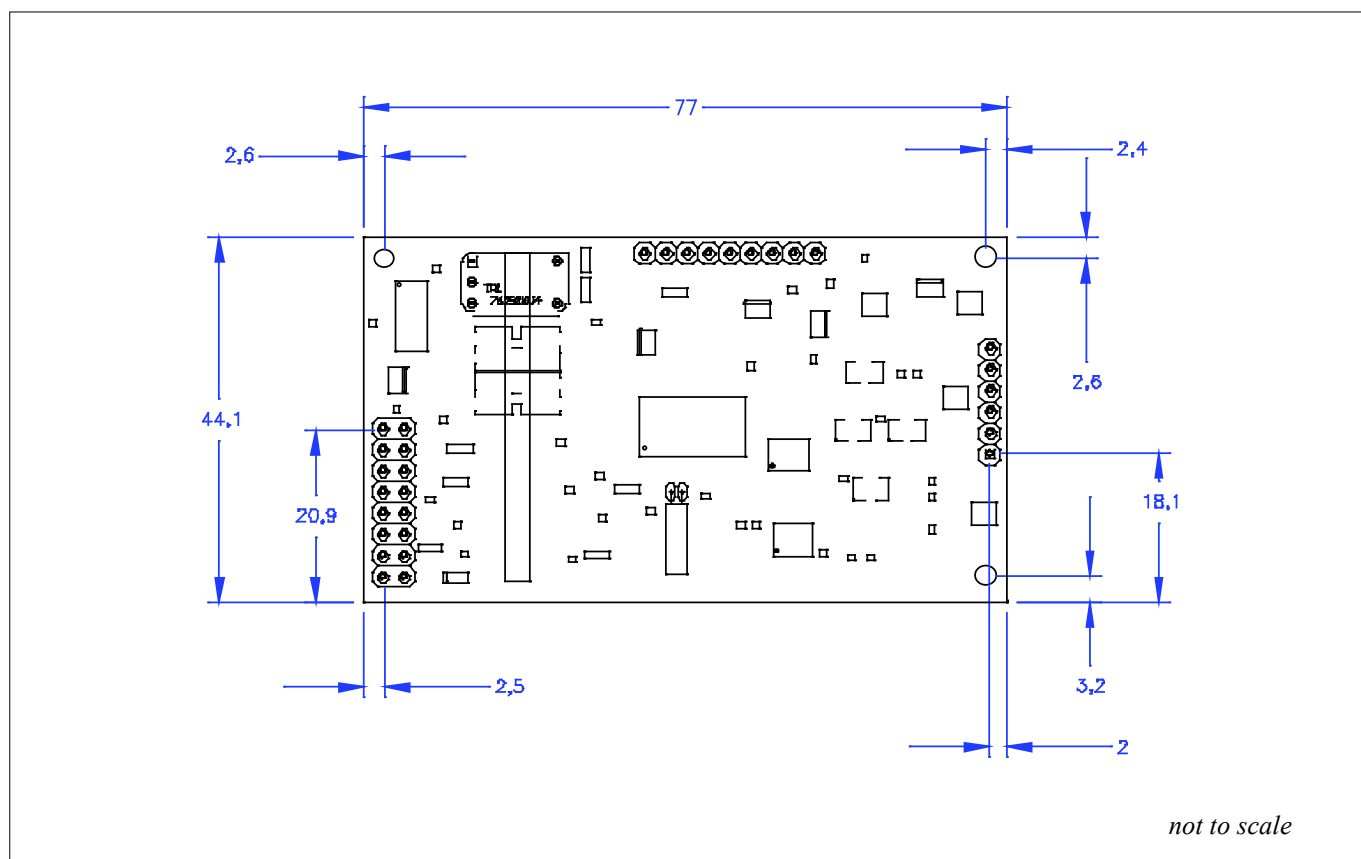
Mechanical Dimensions, all values in mm

Gnd

TxD
(RS232)

VCC
(5V)

TxD
(TTL)

Channel 3

Channel 2

not to scale
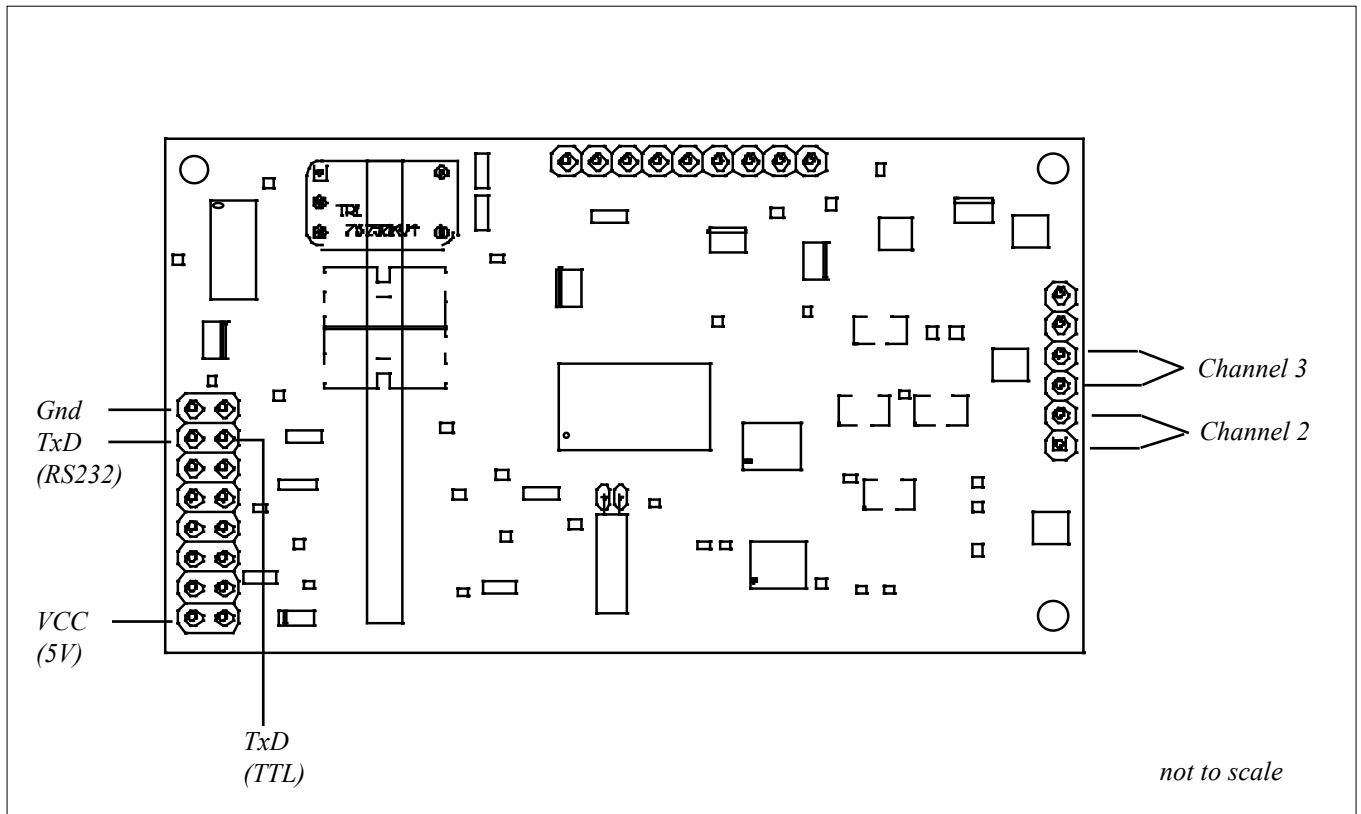
Connection to the host system and to the sensors

Technical Data

- Temperature OEM Module for medical purposes

- Compatible with all YSI Series 400 Probes

- Accuracy: ± 0.1 °C for an ambient Temperature of 10 °C to 40 °C

- Measurement range: 20.0 .. 44.0 °C

- Low Powered, Isolated Module with digital, serial RS232 Interface

- Interface has both TTL and RS232 Levels

- 4000 Volt RMS Isolation of Patient side (CF Type)

- Warm up time less than 30 seconds

- 2 Temperature Channels, 1 Reference channel (38.8 °C)

- ASCII Type output, visible on each terminal

- Small size: PCB 77 mm x 44 mm x 10 mm

- Low Power: less than 10mA @ 5 Volts

- Integrated selftest

Serial Data Format

The data is transmitted in serial format, at 9600 baud, 8 bits, no parity, 1 stop bit.

The boards transmits ASCII characters, giving the temperature on the two channels and on the reference channel in centigrades (→ T[°C] * 10). For example, 37.5 °C would read as 375 (0x33 0x37 0x35) at the serial outputs.
- The values are transmitted with 0.5 Hz.
- On overflow, the module shows a „!" after the value.
- If no probe is connected, the value of this channel is followed by a „?" after a value of 200.
- One data transmission string is always 29, 30 or 31 bytes long, depending on errors
- The reference channel is named channel 1
- The channels that can be connected to YSI probes are called channel 2 and channel 3

Description of the transmission without error characters::

„1",<bl>,<bl>,<bl>,T1H,T1T,T1O,<bl>,<bl>, „2",<bl>,<bl>,<bl>,T2H,T2T,T2O,<bl>,<bl>,
„3",<bl>,<bl>,<bl>,T3H,T3T,T3O,<bl>,<bl>,<0x0d>,<0x0A>

Description of the transmission with error characters::

„1",<bl>,<bl>,<bl>,T1H,T1T,T1O,<bl>,<bl>, „2",<bl>,<bl>,<bl>,T2H,T2T,T2O,ER2,<bl>,<bl>,
„3",<bl>,<bl>,<bl>,T3H,T3T,T3O,ER3,<bl>,<bl>,<0x0d>,<0x0A>

T1H   hundreds of Temp1
T1T   tens of Temp1
T1O   ones of Temp1
aso.
<bl> Blank (0x20)
<ER2> Error on channel 2 :   „?"   no sensor connected
                            „!"   temperature out of range
<ER3> Error on channel 3:   see error 2

Examples:
```
1___387__2___402__3___392__<0x0d><0x0A>                (29 bytes)
```

Reference channel: 38,7 °C (always reads as 38.8 °C, ± 0.1 °C)
Channel 2:   40.2 °C
Channel 3:   39.7 °C

```
1___387__2___200?__3___392__<0x0d><0x0A>               (30 bytes)
```

Reference channel: 38,7 °C (always reads as 38.8 °C, ± 0.1 °C)
Channel 2:   no sensor connected
Channel 3:   39.7 °C

```
1___388__2___403__3___450!__<0x0d><0x0A>               (30 bytes)
```

Reference channel: 38,8 °C (always reads as 38.8 °C, +- 0.1 °C)
Channel 2:   40.3 °C
Channel 3:   out of range

History

Rev. 1.4:   Corrected layout

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