ESI Technology Limited	**ESI-USB Plus** **Operating Instructions**

ESI- USB-PLUS USER MANUAL
Issue 01, Oct 2023

1. *Summary*

2. *General Specification*

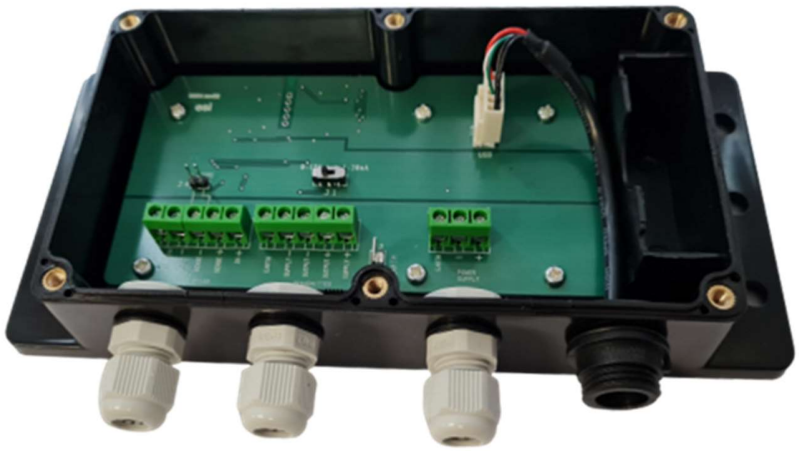
The ESI USB-PLUS interface adapter is designed to extend the functionality of the existing 'ESI-USB' Windows based data logging software, originally supporting ESI GS/GD4200-USB and RS485 pressure transmitters.
ESI-USB-Plus interface allows customer to use the software with a wide range of analogue transmitters - with current or voltage output, and to measure temperature with a separate PT100 temperature sensor.

USB-Plus specification:

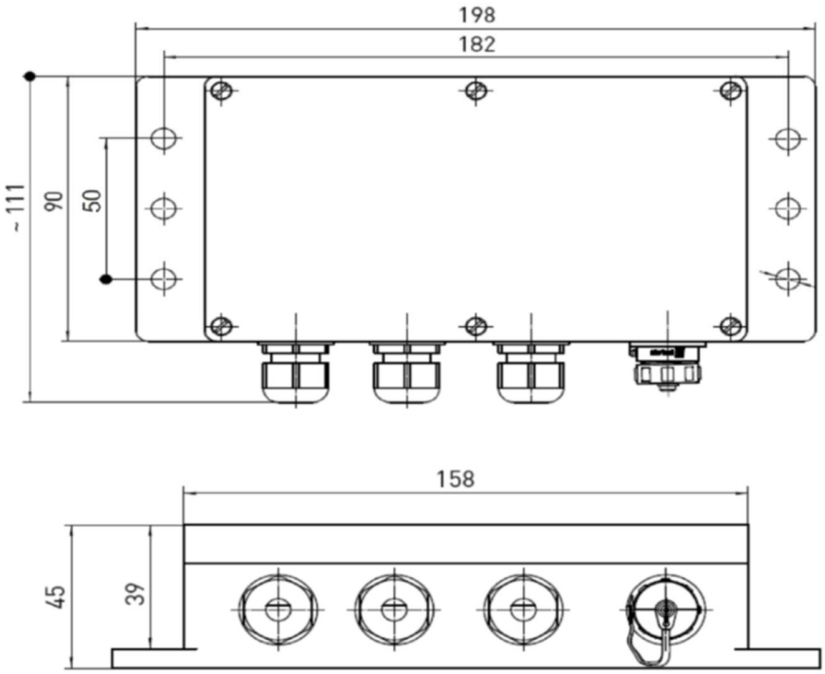
USB 2.0, 3.x compatible, connects to USB type A port on computer	
Integrates with ESI-USB software version 2.7.12.0 onwards	
Compatible with Windows 8, Windows 10, and Windows 11	
Analogue input types	4-20mA or 0-10V differential
Sampling rate	Up to 1000 Hz
Accuracy (NLHR)	± 0.15% of span BFSL *(1)*
Temperature input type	PT100 class B, RTD 3-wire or 4-wire connection
Temperature sampling rate	Minimum interval 0.2 seconds
Temperature accuracy	Class B (IEC 60751): • -20.00°C ±0.45°C • 0.00°C ±0.35°C • 100.00°C ±0.85°C • 200.00°C ±1.35°C
Electrical protection	Reverse polarity and over-voltage protection
USB software	Allows using engineering units (V, mA) alongside with pressure and temperature

Note 1: Performance specifications, including accuracy, are applicable to the USB interface alone and not the external sensors or power supply.

3 x PG7 Cable Glands for cable diameters 3.5mm to 6mm



Dimensions in mm



Mounting holes 6 x Ø7 mm

Inputs:

1 general analogue input channel, single ended analogue input 4-20mA or single ended / differential 0-10Vdc.

1 temperature input channel, PT100 class B (IEC 60751) 3-wire or 4-wire.

Mating to USB mini-B socket on ESI-USB Plus. Supplied with 2m lead to connect to USB A port on computer.

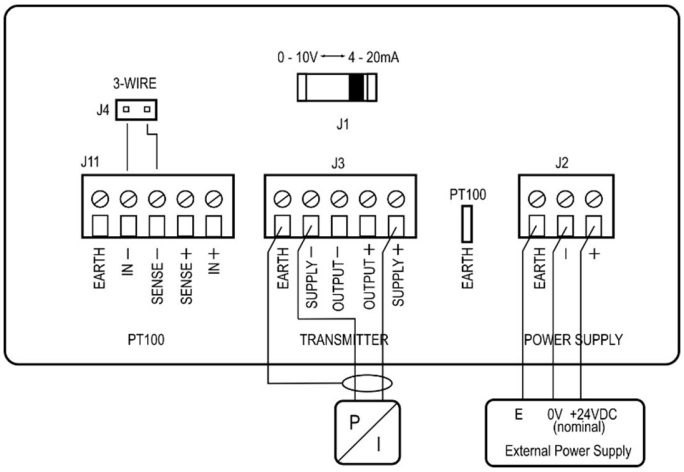
USB adapter box is powered via the USB.

External power supply is used for powering the transmitter.

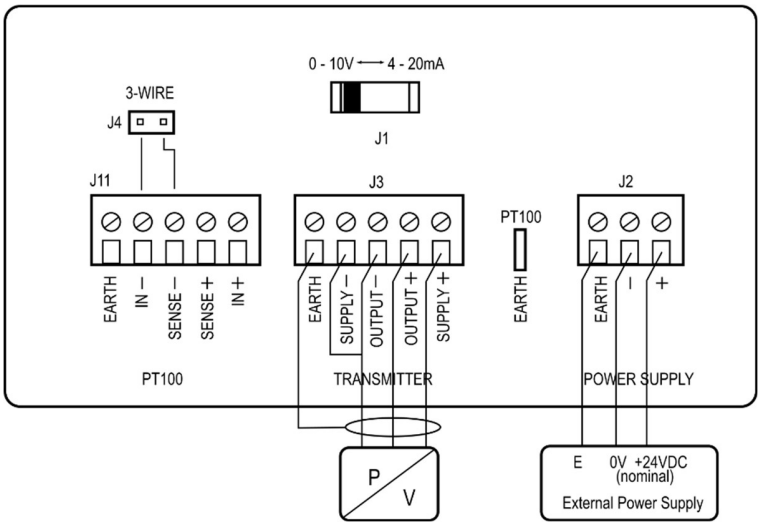
Power supply voltage must not exceed maximum transmitter supply voltage or 32VDC, whichever is lower!

3. Electrical connections

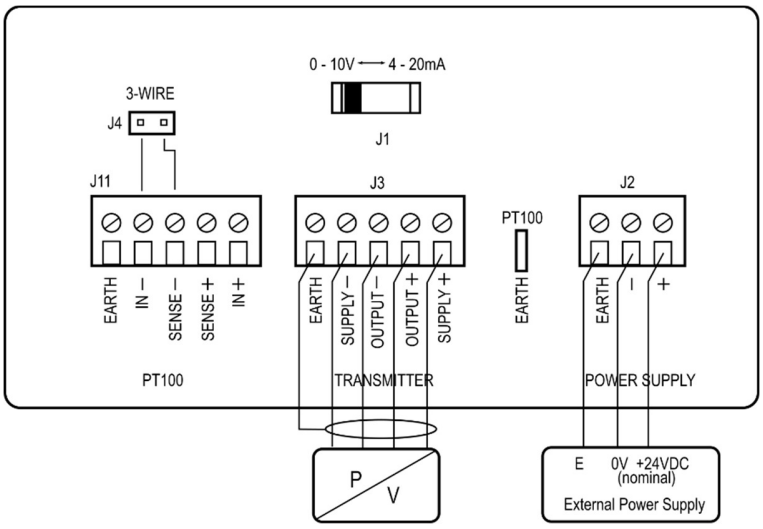
1. 4-20mA 2 wire configuration
    a. Switch transmitter type selector J1 into “4-20mA” position,
    b. Connect 24V external power supply to terminal J2,
    c. Connect transmitter to terminal J3 “Supply+” and “Supply-“.
    d. Connect USB cable to a PC.



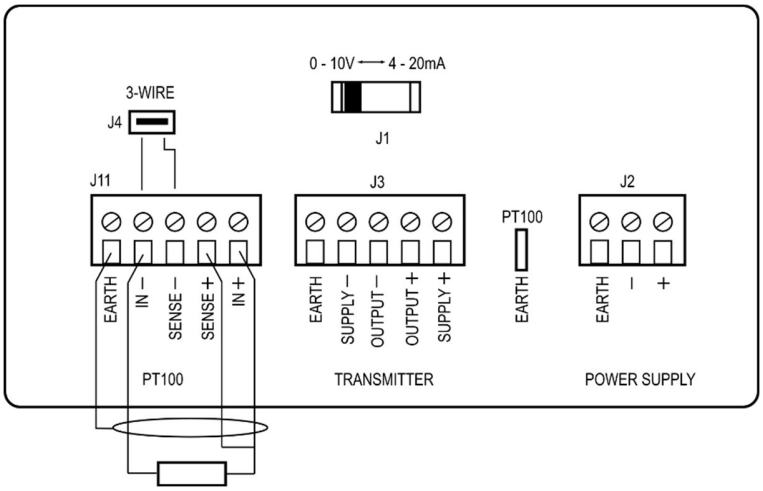
2. 0-10V 3-wire
    a. Switch transmitter type selector J1 into “0-10V” position,
    b. Connect 24V external power supply to terminal J2,
    c. Connect transmitter to terminal J3:
        i. Positive supply input to “Supply+”,
        ii. Negative supply input to “Supply-”,
        iii. Transmitter positive output to “Output+”,
        iv. Join terminals “Output-“ and “Supply-“.


0 - 10V ⟷ 4 - 20mA
3-WIRE
J4
J1
J11
J3
J2
PT100
EARTH
IN −
SENSE −
SENSE +
IN +
EARTH
SUPPLY −
OUTPUT −
OUTPUT +
SUPPLY +
EARTH
EARTH
I
+
PT100
TRANSMITTER
POWER SUPPLY
P
V
E
0V +24VDC
(nominal)
External Power Supply

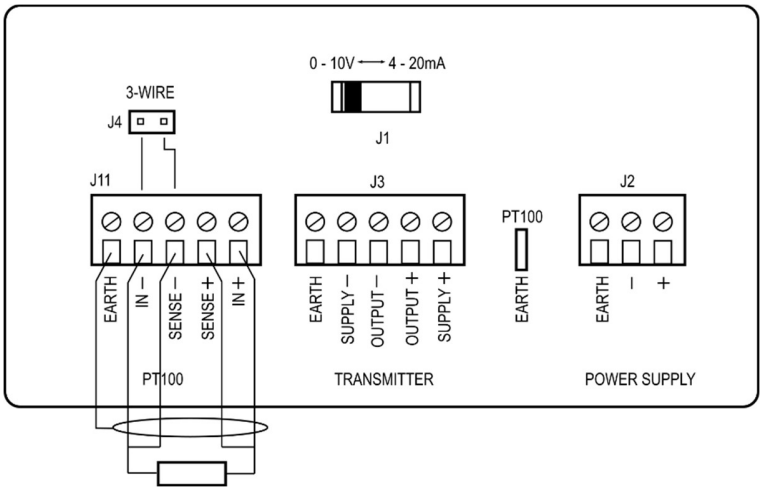
3. 0-10V 4-wire
    a. Switch transmitter type selector J1 into “0-10V” position,
    b. Connect 24V external power supply to terminal J2,
    c. Connect transmitter to terminal J3:
        i. Positive supply input to “Supply+”,
        ii. Negative supply input to “Supply-”,
        iii. Transmitter positive output to “Output+”,
        iv. Transmitter negative output to “Output-”,



4. Platinum thermometer Pt100 3-wire
    a. Install a “3-wire” link on J4,
    b. Connect Pt100 to terminal J11:
        i. Positive excitation wire to “IN+”,
        ii. Negative excitation wire to “IN-”,
        iii. Positive side of PT100 to “SENSE+”,



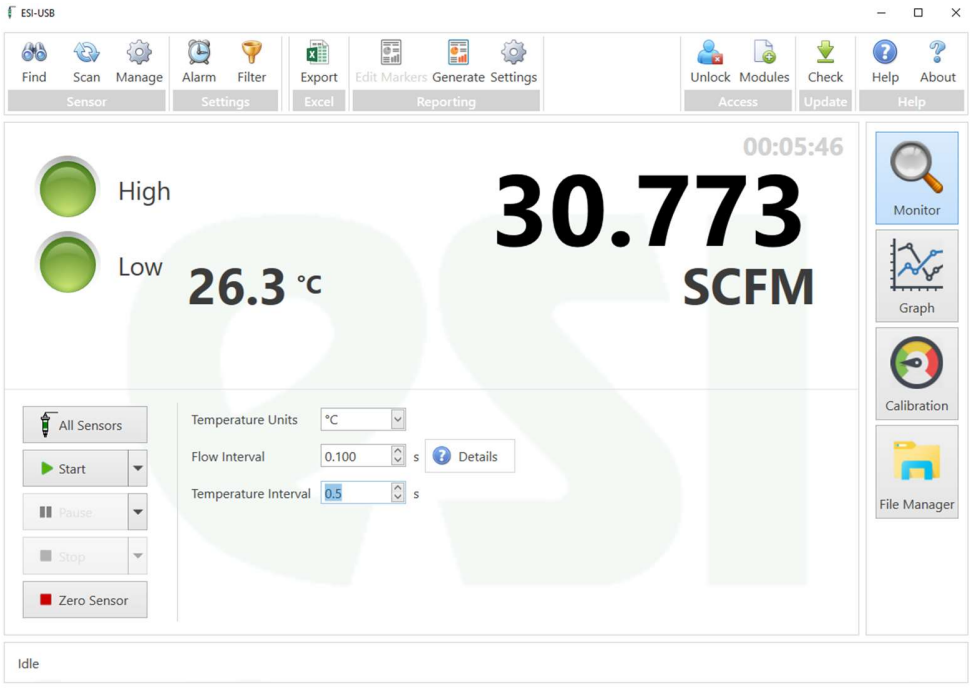
5. Platinum thermometer Pt100 4-wire
    a. Remove a “3-wire” link from J4,
    b. Connect Pt100 to terminal J11:
        i. Positive excitation wire to “IN+”,
        ii. Negative excitation wire to “IN-”,
        iii. Positive side of PT100 to “SENSE+”,
        iv. Negative side of PT100 to “SENSE-”,



4. *ESU-USB Software*

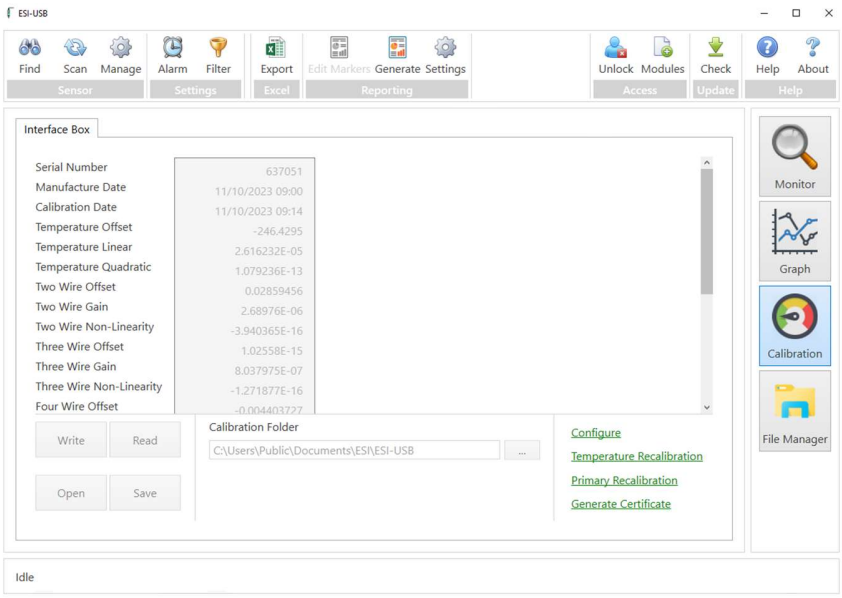
4.1. Starting the software

- Connect equipment according to Section 3, switch the power supply On.
- Start ESI-USB.exe
- The program starts with checking the available software updates and scanning PC USB and virtual USB ports looking for connected transmitters and USB boxes.
- When a connected USB box is found, temperature, main value and units may be displayed incorrectly, as the software has not been configured for this sensor yet.

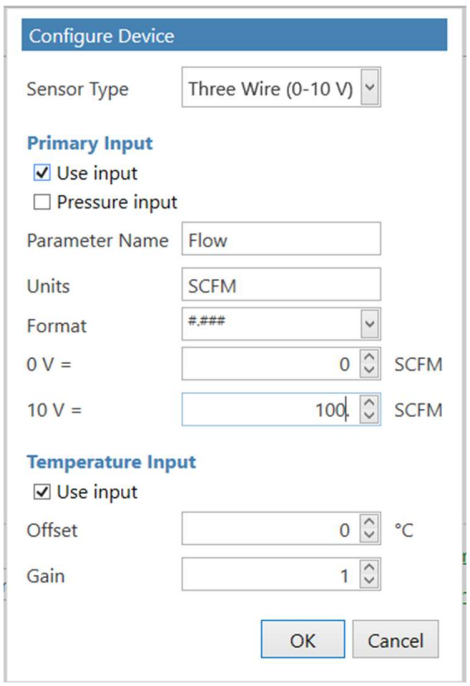


4.2 USB Box configuration

- Click  to open Calibration page.



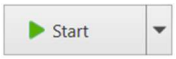
- Click Configure to open Configuration dialog.



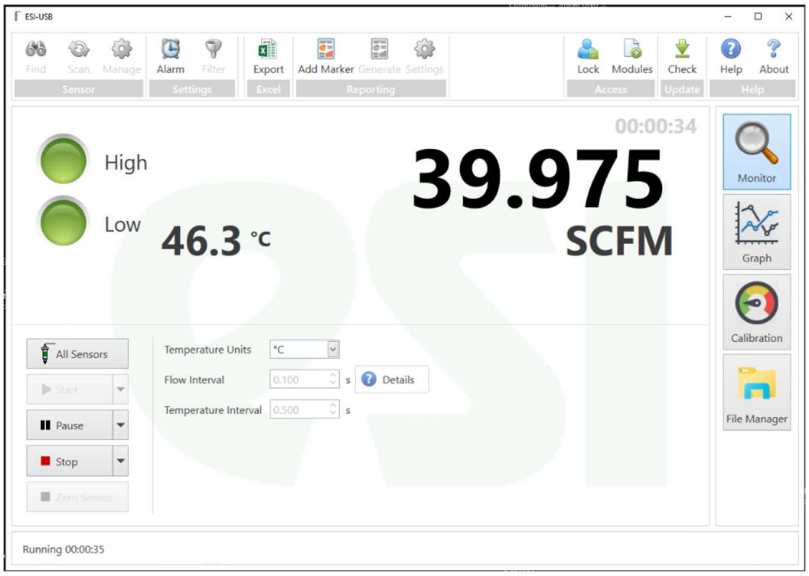
- Select Sensor type (4-20mA or 3/4wire 0-10V), check Use input to use Primary Input, enter Parameter Name and Units, select Format,
- Enter lower and upper parameter values, corresponding to 0 and full scale (10V in this case) input,
- Configure Temperature input if necessary. At this stage Offset = 0, Gain = 1.
- Click OK to save configuration.

4.3 Taking Measurements.

- Click 

to return to the main screen,
- Enter required main parameter recording interval (Flow in this case, recorded every 100mS)
- Enter Temperature interval (here 0.5sec)
- Click 

to start recording.



- To view graph of the process being recorded, click 

- Click Stop to stop recording.
- On closing the software will ask whether you want to save recorded files.