ConLAB

USD-2

Universal Smart Transmitter + Display

Operating Manual

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1. Prelude :

The CONCAL software provides communication with the USD-2/USE-2 transmitters for setting its configuration in the means of sensor type and its measurement range.

CONCAL is operating with Windows 7 and up.

2. Establishing the Communication :

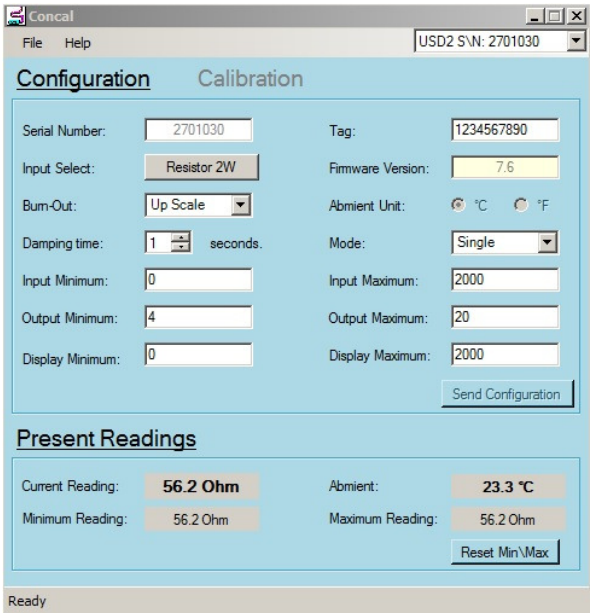
Call the CON-CAL application by double clicking its icon.

The following is displayed:

Connect the CON-USB cable to the PC and to the USD-2 unit. At the bottom line can be seen "Searching Com Port". It might take a while until the PC finds the proper COM port.

When found the following screen is displayed:

3. The Main Pannel



The main panel shows the connected unit's parameters, the configuration buttons and the current reading section.

Most of the fields are user configurable (besides serial number and software version).

3.1 Serial Number: At the right upper corner the serial number is displayed.

3.2 File: At the left top, under the "File" there are "Save" and "Load" features.

3.2.1 Save: For repeating configurations, it is easy to store all the parameters and call them (Load) each new setting.

3.2.2 Load: Provides selecting any stored configuration and with one click sending it to the USD-2

3.3 Configuration/ Calibration

The "Configuration" provides setting of the transmitter, While the "Calibration" provides compensating for the sensor inherent errors.

3.4 Tag: This field allows up to 19 alpha numeric characters

3.5 Input Select Provides selection of the input sensor and its parameters

3.6 Burn-Out Provides selection between Up/Down

3.7 ℃/℉ Provides selection of the temperature units

3.8 Damping — Provides selection of 1-12 seconds integration for reducing noises

3.9 Mode — Provides selection of single sensor or double sensors measuring the difference between them

3.10 Input Minimum — Minimum measured value for which the output is as set in the "Output Minimum" window

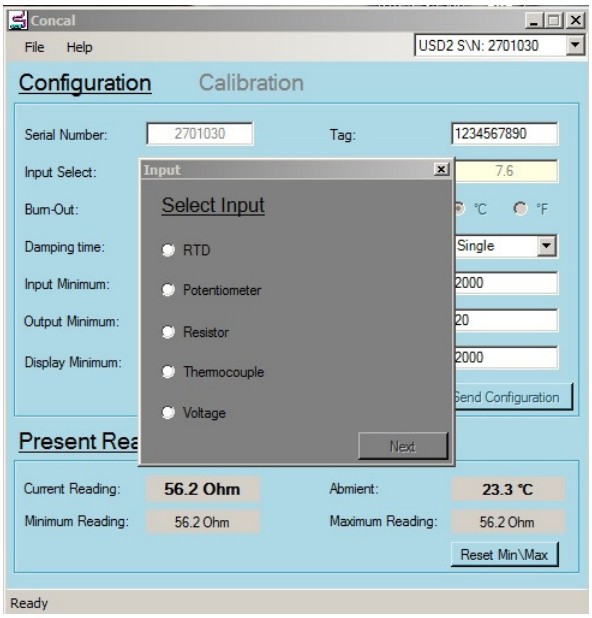
3.11 Input Maximum — Maximum measured value for which the output is as set in the "Output Maximum" window

3.12 Display Minimum — The value which will be displayed when the "Input Minimum" is measured. The display can show different scale, provided linearity between the two.

3.13 Display Maximum — The value which will be displayed when the "Input Maximum" is measured. The display can show different scale, provided linearity between the two.

3.14 Send Configuration — This button updates the USD-2 with the new configuration.

4. Configuration



4.1 Input Select:

4.1.1 RTD — Incorporates Platinum, Nickel and Copper sensors.

4.1.2 Potentiometer — Any potentiometer value can be connected.

The USD-2 provides output current at levels that equals to the state of the shaft relative to the total resistance.

4.1.3 Resistor — Measures connected resistor and show the value in ohms

4.1.4 Thermocouple — Provides selection among: K, J, T, E, B, R, S, N,C, L, U, W, W3,W5 thermocouples.

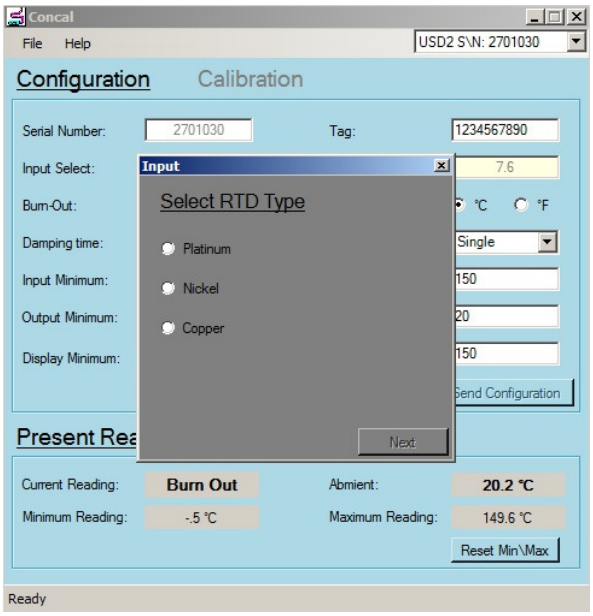
4.1.5 Voltage — Provides measuring of DC voltages at ±150mV range at very high input impedance.

Note:

All the resistive inputs as "RTD", "Potentiometer" or "Resistor" provides selection of 2,3 or 4 wire connection.

4.2 RTD

Selecting RTD – the 3 RTD types are displayed: Platinum, Nickel and Copper



4.2.1 Platinum options

The USD-2 supports:Pt-50, Pt-100, Pt-500, Pt-1000 at two standards (alpha): a=0.00385/ 0.00392

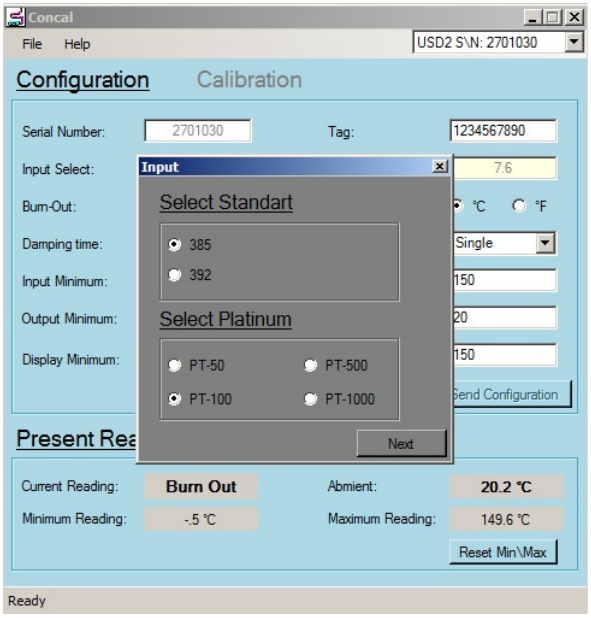
4.2.2 Nickel options

The USD-2 supports: Ni-120, Ni-1000, Ni-Fe sensors

4.2.3 Copper options

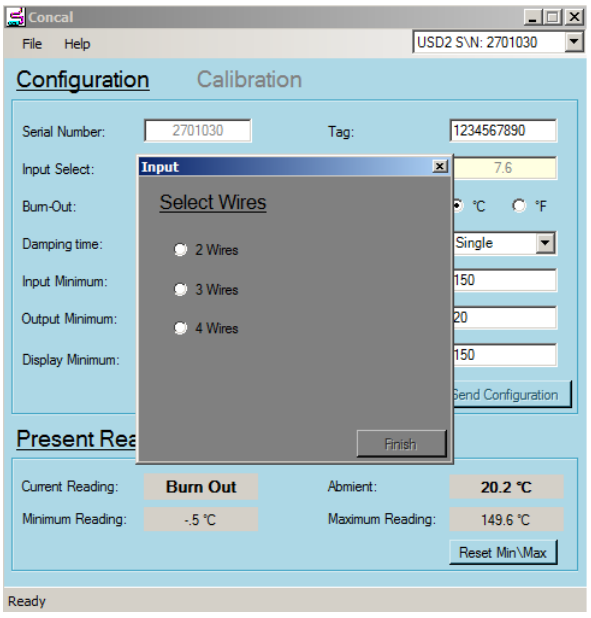
The USD-2 supports Cu-10

4.3 Platinum



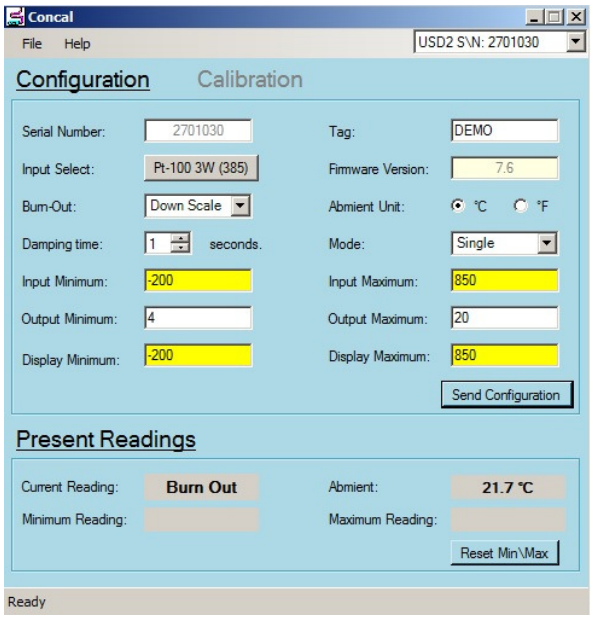
The Platinum type should be selected as well as theStandard

By clicking "Next":



Selection between 2,3 or 4 wire connection is provided.

By clicking "Next":



This screen shows in yellow the allowed limit ranges for the selected sensor. The yellow color remains until the USD-2 is updated.

Enter the limits required (Input minimum and maximum).
If the required display is in the same units as the range, go directly to "Send Configuration".

If the display should be in different scale – enter display minimum/ maximum. The new scale must be linear with the sensor range.

4.4 Potentiometer

USD-2 is designed to measure the ratio between the center and the whole resistance of any connected potentiometer. The display shows scale of 0-100%. Many times the potentiometer shaft does not reach the ends hence the display limits are not 0 or 100%.

4.5 Resistor

The USD-2 measures the connected resistor at 2,3 and 4 wire modes. The resistor value is displayed.

4.6 Thermocouple

The USD-2 supports 14 thermocouples.

4.7 Voltage

Voltages at range of -150 to +150mV can be measured. The display can be configured to any physical linear scale.

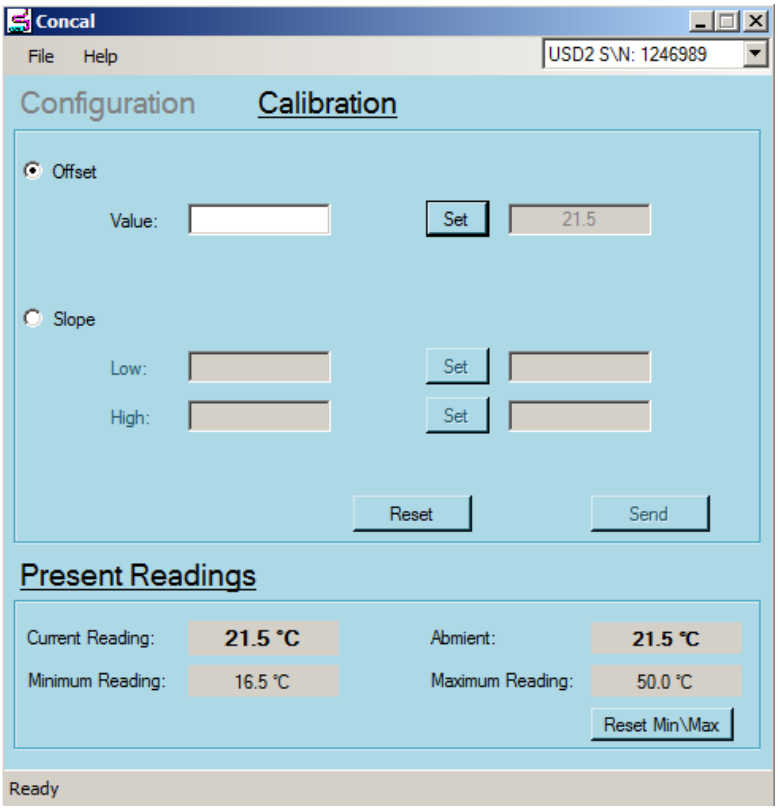
5. **Output setting**:

By the "Output Minimum/ Maximum" windows it is possible to set any combination of output current provided that they are within the 4-20mA limits.

6. **Display**

By default the "Input" values are displayed. It is possible to change the input scale, for example for mV input expressing PH, provided that the scales are linear..

7. **Calibration**



Calibration is a tool to compensate the sensor errors.
The USD-2 provides Offset change when same value is added/subtracted from each measured value, and Slope change which allows correction of the sensor slope.

7.1 Offset Change

When selected, two windows are available. When the Set button is pressed, the current measure is copied to the right one. In the left

window (Value) the corrected value should be entered. Pressing "Send" will update the USD-2.

7.2 Slope Correction

Same as Offset, but it has low and high settings.
Placing the sensor in the low desired temperature and press Set.
Enter the correct new value.
Place the sensor around the upper required temperature and press Set. Enter the new corrected value.
Press Send to complete the procedure.

7.3 Reset

Clicking the "Reset" will erase all the parameters placed in the "Calibration" procedure,

8. Present Reading section

At this section, the current reading, the ambient temperature, minimum and maximum readings are displayed.

8.1 Current reading

The current readings exhibits the present dynamic reading

8.2 Ambient

The ambient as measured by the Cold Junction internal sensor measures

8.3 Minimum/ Maximum readings

The Minimum/ Maximum values are the extreme values measured from the instant the USD-2 was first turned on.
To start monitoring these valued, press "Reset Min/Max".