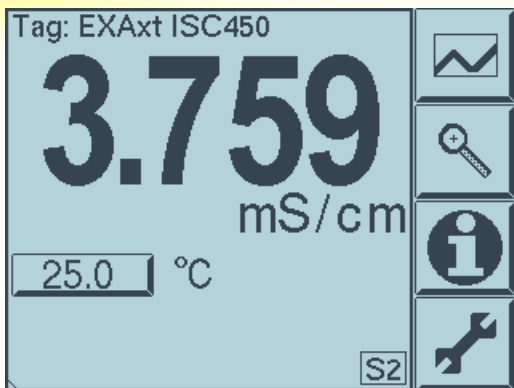# ISC450 – Programming Temperature Compensation Percent Concentration Custom Curves
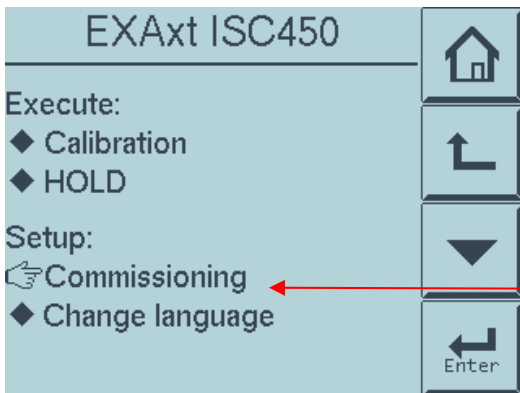
This Tech Note is designed as a guide for programming Custom curves into the ISC450. Below are the steps required for programming a temperature compensated percent concentration curve. For this type of customer curve you will need to collect the conductivity data for 10 different % Concentration solutions at 10 different temperature values. The chart below is a good tool for collecting data to ensure you have not forgotten anything.

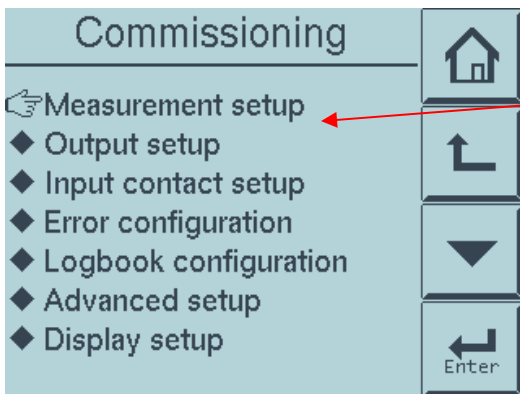|		Percent Concentration Solution Mixtures								
		Solut. Min. %	Solut. Max. %	Solution 2	Solution 3	Solution 4	Solution 5	Solution 6	Solution 7	Solution 8	Solution 9
Temp											
Tref.											
Tmin.											
Tmax.											
T2.											
T3.											
T4											
T5.											
T6.											
T7.											
T8.											
T9.											

For this example our values were from 1% to 10% and the temperatures were from 5°C to 50°C in increments of 5°.

Tag: EXAxt ISC450
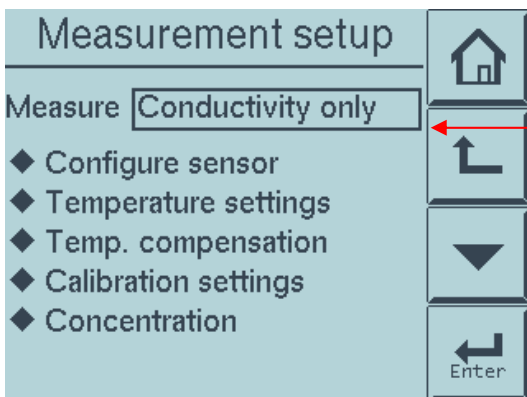
3.759

mS/cm

25.0 ℃

S2

At the opening Screen – **Press the WRENCH Key**

EXAxt ISC450

Execute:
- ◆ Calibration
- ◆ HOLD

Setup:
- ☞Commissioning
- ◆ Change language

Press the **Commissioning** diamond

Commissioning

- ☞Measurement setup
- ◆ Output setup
- ◆ Input contact setup
- ◆ Error configuration
- ◆ Logbook configuration
- ◆ Advanced setup
- ◆ Display setup

Press the **Measurement setup** diamond

Measurement setup

Measure Conductivity only

- ◆ Configure sensor
- ◆ Temperature settings
- ◆ Temp. compensation
- ◆ Calibration settings
- ◆ Concentration

At the Measurement setup screen you will see that **Conductivity only** is displayed. Press the dropdown box to reveal the other options.

Measurement setup

Measure:
- Conductivity only
- **Concentration only**
- Conduct.+Concentr.

◆ Config
◆ Temp
◆ Temp. compensation
◆ Calibration settings
◆ Concentration
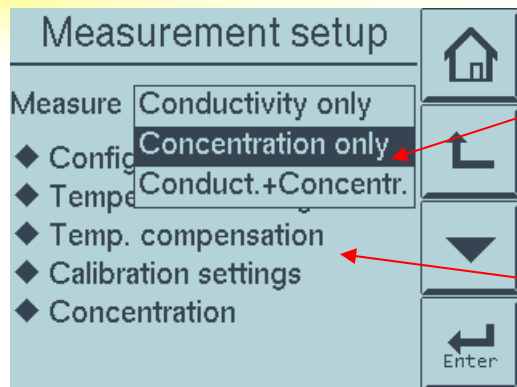
Using the Down Key, select **Concentration only**

THEN . . .

Press the **Temp. compensation** diamond

Temp. comp.

Compensation   Automatic
Reference temp.   25.0 °C

Method:
Concentration 1   Matrix ▶
Concentration 2   None
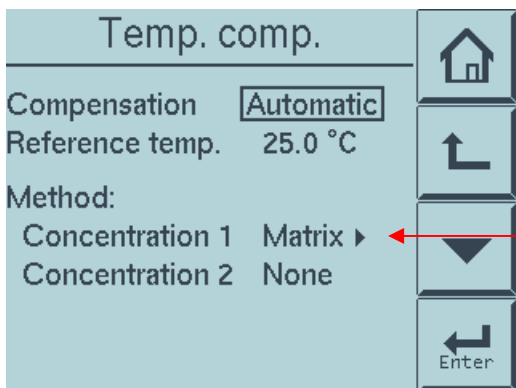
Press the dropdown box next to **Concentration 1** and select **Matrix**

Matrix 1

Select matrix
NaOH   0..15%

Define matrix:
◆ User defined 1
◆ User defined 2
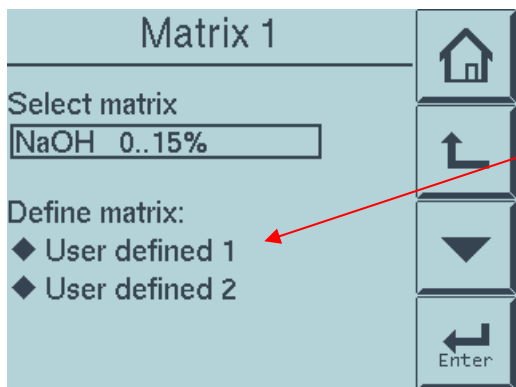
Press the diamond next to **User Defined 1**

User defined 1

Concentration unit   %

Clear matrix?   No action
Check values?   No action
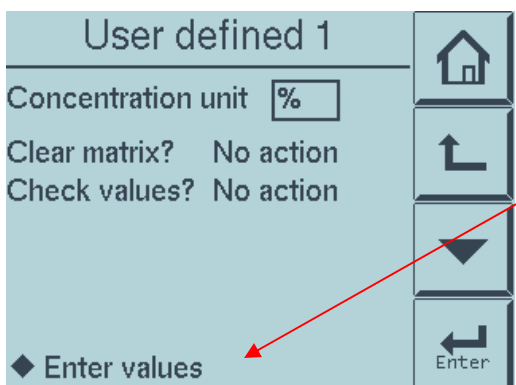
◆ Enter values

Select the diamond next to **Enter values**

Solutions

Min.* [1.000 %]
Max.* 10.00 %

2. 2.000 %   6. 6.000 %
3. 3.000 %   7. 7.000 %
4. 4.000 %   8. 8.000 %
5. 5.000 %   9. 9.000 %

◆ Next   * = mandatory

On the **Solutions** screen you will enter all of the different concentration values of the solutions that you have chosen for your matrix. If you used the table template from above for collection data, these would be all of the concentration values across the top row. *As stated above for our example we have chosen 1-10%, as shown entered here*

Select the diamond next to **Next** once complete

Temp. ranges

Tmin.*   5.0 °C
Tmax.* [50.0 °C]

2. 10.0 °C   6. 30.0 °C
3. 15.0 °C   7. 35.0 °C
4. 20.0 °C   8. 40.0 °C
5. 25.0 °C   9. 45.0 °C

◆ Next   * = mandatory

On the **Temp. ranges** screen you will enter all of the different temperature values that were chosen to test your solutions to build your matrix. . If you used the table template from above for collection data, these would be the values used down the left hand side. *As stated above for our example we have chosen 5°C to 50°C in increments of 5°, as shown entered here*

Select the diamond next to **Next** once complete

Solut. Min.   . %

Tref.*   . S/cm
Tmin.*   . S/cm
Tmax.*   . S/cm

        . S/cm   . S/cm
        . S/cm   . S/cm
        . S/cm   . S/cm
        . S/cm   . S/cm

☞Next   * = mandatory

In the next pages you will enter your collected matrix conductivity values for the different concentrations at the various temperatures. The First screen will be the Min % Concentration solution that was selected and the corresponding conductivity values for that % solution at the various temperatures.

Select the diamond next to **Next** once complete

Solut. Max.   . %

Tref.*   . S/cm
Tmin.*   . S/cm
Tmax.*   . S/cm

        . S/cm   . S/cm
        . S/cm   . S/cm
        . S/cm   . S/cm
        . S/cm   . S/cm

☞Next   * = mandatory

The Second screen will be the Max % Concentration solution that was selected and the corresponding conductivity values for that % solution at the various temperatures.

Select the diamond next to **Next** once complete

```
Solution 2          . %        🏠
Tref.      . S/cm
Tmin.      . S/cm              ↰
Tmax.      . S/cm
    . S/cm       . S/cm
    . S/cm       . S/cm        ▼
    . S/cm       . S/cm
    . S/cm       . S/cm        ↵
☞Next    none mandatory       Enter
```

The next Screens are programmed the same way for solutions #2-9. These are the 8 remaining concentration values that were selected that fall in-between the Min and Max % Concentration range.

*Remember all values have entered must be continually increasing in value.

```
New value:        S/cm         🏠

Units                          ↰
0-9     7    8    9

 ·      4    5    6            ◀

 0      1    2    3            ↵
                              Enter
```

To change the unit of measure for the conductivity value, when you are in the number key pad select the **Units** key.

```
New value:_       S/cm         🏠

0-9                            ↰
Units      nS/cm  µS/cm

     mS/cm  S/cm               ◀

 -                             ↵
                              Enter
```

This screen will appear allowing selection of the appropriate conductivity unit of measure, micro, mili or Siemens.

Select **Enter,** once complete to return to the Solution screen.

```
Solution 2          . %        🏠
Tref.      . S/cm
Tmin.      . S/cm              ↰
Tmax.      . S/cm
    . S/cm       . S/cm
    . S/cm       . S/cm        ▼
    . S/cm       . S/cm
    . S/cm       . S/cm        ↵
☞Next    none mandatory       Enter
```

Once all values are entered select the diamond next to **Next** to move to the next solution once complete.

Select **Finished** once you have entered all the values through solution #9

Once you have selected "Finish", you will be returned to this original screen. From here select the drop down box next to Check values and select yes.

If any errors exist in the matrix, the instrument will tell you where to look. This is just an example of *"missing fields"*. However, if you values are not increasing thru out, it will indicate the screen page, and which location spot on the page the problems can be found. It will say something like Solution 2 , 7. Meaning the Page titled Solution 2 and the 7th value entered.

If No Errors are found the message will read **No Errors Found.** Select the **Home** icon to return to normal measuring mode.