

## UAP1088 - Salinity Transmitter / Alarm CDT728

The CDT728 is a special version of the USC701, this application is specifically designed for salinity measurements.

### Programming

1. Load application program into 'USC Config 106', select channel 2 and ensure it is configured to correct temperature sensor type for probe.
2. Adjust trip points of RLY1 and RLY2 as required.
3. Adjust range of OUT, default is 4-20mA = 25-45 PPT.
4. Program the CDT728

### Notes

Salinity input range is 25-45 PPT (seawater)

The **RANGE** switch **MUST** be in position **3**.

Programming can be done by APCS if all values are supplied.

Calibration can be done by APCS using a test resistor

### Calibration

1. Connect probe using provided APCS diagram for probe type and power to CDT728
2. Plug a AM702 into the top of the CDT728 and wait a few minutes for warm up.
3. With the probe in free air press the 'UP' key, the bottom line will display 'PROBE mA', record the value on the top line.
4. Press 'ENTER' then press the 'DOWN' key until 'Trim Constant' is displayed.
5. Press 'NEXT' until the top line will displays 'Offset' then press 'ENTER' and change the value to the number recorded in step 1. Return to run mode after changes are saved by pressing 'BACK' then

'ENTER'

6. Press the 'DOWN' key, the temperature of the probe should be displayed.

7. Lower the probe into the test liquid with a known salinity. Be careful to ensure that the probe is not within 40mm of the edge of the container as incorrect readings will be obtained.

8. Press the 'BACK' to display measured result in PPT.

9. Use the trim menu as above and adjust 'GainFact' to correct PPT reading.

### Important Equation Variables

Constant	Label	Use
Con_d	K	K = 0.916. Slope of salinity versus conductivity at 15 decC.
Con_e	Offset	(values usually range from 0.006 to 0.008) This is the residual reading from the probe interface when the probe is in air.
Con_f	GainFact	(values usually range from 94 to 96) This gain factor is used to make the output reading correct when probe is in test solution.
Con_h	TC	TC = 2.085 (Value for salt liquid type)

### Salinity Program List (the important bits)

Command	Comment	Command	Comment (continued)
Read Ch1	Read probe interface	Read V01	1
Con_e	Read offset	Add	Add to result so far
Subtract	Subtract from reading	1/x	Get one over the value
Con_f	Read Gain factor	Multiply	Combine probe value and temperature reading
Multiply	Scale reading for correct PPT reading at reference temperature of 15 deg.	Con_i	Read conductivity of reference 36PPT solution at 15 deg = 43.65.
Read Ch2	Read measured temperature	Subtract	
Con_j	Read reference temperature at which no compensation is required =15	Con_d	Read K
Subtract	Get difference between temperature and reference temperature	Multiply	
Con_h	Read TC	Con_g	Read reference PPT value = 36
Read V05	100	Add	
Divide		Read V00	Read 0
Multiply		MAX	Stop values lower than 0 from being saved
		Save M4	