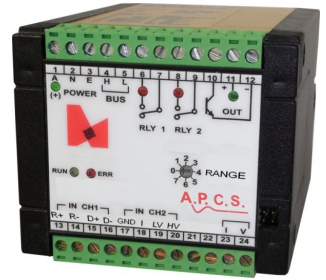



# Conductivity Transmitter v1 CDT728

## DESCRIPTION

The CDT728 conductivity transmitter combines measurement and control functions in a single instrument to provide user selectable solutions for most water treatment applications. Probe input is factory configured to the type of toroidal conductivity sensor while all other functionality is software selectable including temperature compensation (TEMP input), measurement range (sensitivity) and the function of the outputs. The front range switch is used to change sensitivity. All output and mathematical functions are identical to the USC701. The AM702 can also be used to configure the outputs and run HOTKEY branching. Application programs can be down loaded from [www.apcs.net.au](http://www.apcs.net.au) then selecting USC Centre > Applications > CDT728. Many of the applications written for the USC701 can also be adapted for use with the CDT728.



## General Specifications

Size: 80W x 70H x 110D mm.  
 Housing material: Polycarbonate, aluminium.  
 Mounting: DIN-Rail, gear plate.  
 Termination: Plug in screw terminals.  
 Weight: 0.3 kg.  
 Protection class: IP40 (IP65 Enclosure opt.)  
 Electromagnetic compatibility: AS/NZS 4251.1 (EN 50081.1)   
 Operating temp. range: 0...+70°C.  
 Storage temp. range: -20...+70°C.  
 Isolation: 1000Vac r.m.s. /1500Vdc.  
 Resolution: ±0.0025% of range  
 Update time: 16.6 msec minimum  
 Filtering/averaging: programmable  
 Power Supply -1: 80-300Vdc / 80-280Vac  
 Power Supply -2: 10 - 60Vdc / 16 - 42Vac  
 Power requirement: 4VA

## Probe Input (CH1)

Specification depends on probe (see ordering guide) and application  
 e.g. Range: 0- 1000mS/cm or 25-45 PPT (seawater)  
 Excitation: Sine wave of suitable frequency and amplitude e.g. 8kHz sine 3Vp-p  
 Temp. comp: Measured via CH2 and evaluated using equation.

## CH2 Programmable Input

Voltage dc: ±400, 100, 30, 10, 4.5, 1Vdc (4.4MΩ)  
 mV dc: ±300, 100, 30mV (15kΩ)  
 Current dc: ±75, 30, 10, 1mA (83Ω)  
 Resistance: 30, 10, 3, 1, 0.3kΩ (2 wire).  
 Potentiometer: 100Ω minimum  
 RTD: Pt100, Pt1000  
 Linearised to ±0.1°C  
 850°C ±0.2°C, 600°C ±0.1°C)  
 Thermocouple: linearised to ± 0.1°C types: B, E, J, K, N, R, S, T accuracy depends on Type & range cold junction comp ± 1°C ±0.05°C

## Auxiliary Excitation Output

Voltage source: 3V to 18V @ 50 mA max  
 Current source: 1 x 100µA external, 1 x 100µA internal.

## Mathematical functions

+, -, \*, /, absolute value, minimum, maximum, scaling, taring; plus logical functions

## Application Functions

Minimum and maximum hold, multiple one hundred and one point linearisation plus alarm functions. Pre-made application programs for control applications such as PID

## Two Relay Outputs

Contacts: N/O 8A/250Vac resistive, 3.5A/250Vac Inductive  
 Action: Programmable: direct, Reverse, window, latch  
 Dead band: Programmable.  
 Delays: on/off up to 1 hour  
 Contact isolation: 2kV.

## Isolated Analog/Open Collector Output

Open-collector: 45V, 150mA  
 Current dc: 0 to 22 mA (20V drive)  
 Voltage dc: 0 to 20V range (20mA drive)  
 Accuracy: 0.1% of range.  
 Linearity: 0.05% of range  
 Response time: 50msec  
 Load change effect: less than 0.2%

## Order Code

**CDT728-X XX X X**

## Supply:

1 = 80-300Vdc / 80-280Vac 50/60Hz  
 2 = 10V - 60Vdc / 16 - 42Vac 50/60Hz

## Probe:

01 = SENSOREX TCS-1000.  
 02 = LTH-ECS20T (with Pt1000)  
 03 = YOKOGAWA ISC40S (with 30k thermistor)  
 04 = LTH-ECS40 series (with Pt1000)

## Pulse Inputs:

0 = Used by range switch.  
 1 = Same as USC701. Terminals 21 and 22 can be used for control and measurement functions however range switch will not auto scale.

## Option:

0 = None  
 \*) 1 = Custom labelling (min order 50).

See additional information on next page when ordering

\*) Price Extra  
 In the interest of development and improvement, APCS reserve the right to amend, without notice, details contained in this publication. APCS will accept no legal liability for any errors, omissions or amendments.  
 Specifications are typical after 30-minute warm-up.

## Additional Information

When ordering if you wish the unit to work straight after connecting the power then also specify the user programmable settings.

Application: Specify the standard application number

Temperature sensor Specify  
Most probes have optional temperature sensor types, best results with long leads are obtained with Pt1000 or thermistor. CH2 is programmed to suit.

User Adjustments: A AM702 or a COA703 (with computer) are required to change calibration or functionality of outputs. If one of these components is not ordered then calibration of all components is also required.

## Accessories

Order Code	Unit Type
AM702-02	Access Module
COA703-01	Computer Adaptor

## Conductivity Range Switch

Correct operation of the range switch depends on the application program used. Refer to the application program when setting this switch.

Range	Sensitivity (typical)
2	0-5000 $\mu$ S/cm
3	0-100mS/cm
4	0-1000mS/cm

## Notes

- ◆ The CDT728 is a USC701 with a specialised input installed on CH1.
- ◆ The available settings for CH2 (usually used for temperature compensation), RLY1, RLY2, OUT and the user equation all operate normally.
- ◆ One section of the user equation **MUST** remain (documented in the application note) or the CDT728 will not function correctly.

## Standard Applications

No	Use	Description
UAP1089	Temperature compensated conductivity + PID	There are zero and scale factors for one range setting. The range switch is set on required sensitivity then transmitter is calibrated using test solutions. If ordered with "Pulse Inputs: 1 = Same as USC701" Terminals 21 and 22 can be used for control and measurement functions. PID algorithm is included and can be implemented with minimal changes. The PID control output can be OUT1 or either or both relays.
UAP1088	Temperature compensated salinity	There are zero and scale factors for one range setting. The range switch is set on required sensitivity then transmitter is calibrated using test solutions. If ordered with "Pulse Inputs: 1 = Same as USC701" Terminals 21 and 22 can be used for control and measurement functions. Algorithm included uses a K factor (slope of salinity versus conductivity at 15°C) and a TC factor for salt liquid type. OUT1 is preconfigured to transmit 4-20mA for 25 to 45PPT. The two relay outputs are preconfigured as direct acting set in PPT.
UAP1106	Temperature compensated conductivity	There are zero and scale factors for three range setting, when changing the range switch the required factors are selected. Must be ordered with "Pulse Inputs: 0 = Used by range switch".
UAP1122	Temperature compensated salinity	Zero and span scale factors for range 2 and 3. The range switch is set on required sensitivity then transmitter is calibrated using test solutions. Must be ordered with "Pulse Inputs: 0 = Used by range switch". Same Algorithm as UAP1088 but also includes hot-keys.

