

HCT63

Contacting Conductivity Transmitters

The HCT63 Contacting conductivity transmitters combine modern technology with over 38 years of experience in building high quality sensors for liquid analysis to provide a range of competitively priced transmitters to cover a wide range of process applications.



Features

- Custom IP66 enclosure
- Available as head mounted or Wall mounted versions
- Large back lit multifunction display
- Displays conductivity, resistivity, ppm and temperature units
- Dual isolated 4-20mA & relay outputs
- Relays can be configured for on/off, time & pulse proportional
- 3 digital inputs to control specific functions
- Supplied complete with sensor & 'T' piece. (Headmount version only)
- Purpose built detachable sensors for easy maintenance
- Measured process & temperature can be displayed together
- Meets current USP requirements
- Full ultra pure water temperature compensation
- Cable termination via detachable connectors, no need to open enclosure
- Low voltage operation 15-30vDC
- Simple intuitive programming
- On Line multilingual help with text error messages

Two different options of the HCT63 transmitter will be available with the base model offering a single industry standard 4-20mA output.

The Advanced HCT63 will offer two 4-20mA outputs enabling the process temperature to be measured and transmitted as well as either the conductivity or resistivity value.

The Advanced HCT63 model will also have 2 relay outputs for process control and also has 3 digital inputs for remote range changing via a plc.

Both of the HCT versions are available as head mounted transmitters with purpose built cells which offer cell constants of $K=0.01$ or 1.0 as well as being available as a wall mounting version. The wall mounting version of the HCT63 can be used with a detachable cable & separate LTH contacting conductivity cells with a cell constant of $K=0.01$, 0.1 and 1.0 . This offers a wide operating range of conductivity measurement from ultra pure water ($0.055\mu\text{S}$) to solution concentration measurements (100mS). The transmitter can be set for single range, auto range or remote ranging via external digital inputs.

The 2 off independent relay outputs that can be allocated to process measurement or temperature offer on/off control with variable hysteresis and time delays along with time and pulse proportional relay operation that is all configurable from the user menu.

Relays can also be programmed to energise on a variety of different functions including errors, instrument status, e.g. off-line or calibration mode, or if a dose alarm time has been exceeded. The relays can be configured for USP operation, which allows the transmitter to alarm when water is non-compliant.

Up to 2 industry standard, isolated outputs provide retransmission of the measurement as 0/4-20 mA signals and can be configured to represent process measurement or temperature.

Automatic temperature compensation is available as standard on all versions.

For applications where temperature compensation needs to be applied to the measurement the linear slope is adjustable for changes due to dissolved salts and a fixed curve for the pure water contribution.

The HCT63 is able to display the measured value either in conductivity, resistivity or total dissolved solids as well as displaying the process temperature.

The HCT63 has been designed with two levels of programme complexity to cater for both novice and experienced instrument operators.

All cable connections to the HCT63 are by IP67 detachable connectors with no need to open the HCT63 enclosure.

On-line HELP facilities consist of a series of text error messages which are displayed when programming is incorrect, or if a sensor is not reading a sensible value for the instrument set-up.

A further enhancement is multi-level security, where day to day operator access can be limited to viewing data and settings only, while allowing full access to the instrument programmer.

Configuration data can be saved in one of two independent back-up locations, which can be used for fast reconfiguration, emergency restoration of settings, recovery after tampering by unauthorised operators, etc.

Multilingual text displays can be selected with a choice of English, French, Spanish and Italian.

The HCT63 can also display the current outputs as a bar graph as an alternative to showing a digital displayed value. It is possible to display either current output A, current output B, either current outputs alternating in the bar graph mode. The mode of display can be changed under the configuration menu.

Both measurement inputs and current outputs can be individually calibrated from the front panel. For applications requiring accurate measurements it is possible to calibrate the instrument and sensor to either the process conductivity or traceable solution.

An off-line facility allows the instrument to be adjusted without disturbing external processes by de-energising the set point relays & holding the current output(s) at the last measured value.

The HCT63 also has a simulate mode to enabling the user to test the operation of the set point & current outputs.

Specification conductivity sensor

Two LTH conductivity cells are available for head-mounting the instrument:

CMC64/10/PT43

This has a cell constant of 1.0 and is typically used in wastewater measurement.

CMC68/001/PT43

This has a cell constant of 0.01 and is typically used for ultra-pure water measurement.

Ranges of measurement

0-0.999 μ S/cm to 0-99.99 mS/cm (K= 0.01 to 1.0)

0-99.99 K.cm to 0-99.99 M.cm (K= 0.01 to 1.0).

0-0.999 ppm to 0-99.99 ppt. (parts per thousand).

See the following range/cell constant table.

Conductivity accuracy

0.5% of range

Linearity

0.1% of range

Repeatability

0.1 % of range

Operator adjustment (conductivity)

\pm 10% slope (gain) adjustment for solution calibration.

Temperature sensor

Pt 1000 RTD.

Range of temperature measurement

-50°C to +300°C (-58°F to 572°F) for full specification.

Temperature accuracy

0.2°C

Operator adjustment (temperature)

\pm 50°C or \pm 122°F

Range of temperature compensation

-10°C to +130°C (14°F to 266°F) for full specification.

Temperature compensation type

Fixed UPW curve plus variable slope 0-3.9% / °C over -10 to +110°C. Selectable In or Out.

Temperature compensation base

Selectable at 20°C or 25°C.

Cell constant adjustment

Fully adjustable from 0.01-19.99.

Cell constant calibration

Only available on K = 0.1 and 0.01 \pm 50%

Remote range changing

Using a 3-pole 8 way remote mounted switch. Connection by up to 100 metres of cable.

Off-line facility (for calibration and commissioning)

The relays are de-energised and the current output is held at the last on-line value.

Ambient operating temperature

-20°C to +50°C (-4°F to 12°F) for full specification.

Ambient temperature variation

0.01% of range/°C (typical)

Display

Custom back lit LCD module. 4 character (& sign) 7 segment (20 mm high) for measure value; 2x3 dot matrix for unit's indication; and 1x16 dot matrix for information and programming.

Digital inputs

Three digital inputs (contact closure) for remote selection of measurement range.

Current output(s)

Each selectable 0-20 mA or 4-20 mA into 750 ohms max., fully isolated to 2kV. Expandable up to 5% of any operating range and offset anywhere in that range.

Operator adjustment (Current output)

\pm 1mA zero and \pm 1mA span for remote monitor calibration.

Set points and control relays (advanced model only)

Fully configurable set points (mS, ppm, mS, M, °C) with volt free contacts for each relay. Rated at 5A 30vDC / 5A 250v AC (non-inductive). Red LED's indicate relay energised.

Operating modes

On/Off, Time proportioning, Pulse proportioning and Band modes selectable for each relay.

Adjustable delay timer up to 10:00 mm:ss in the On/Off mode.

Hysteresis 0 to 9.9% in the On/Off mode.

Adjustable dose alarm timer up to 15:00 mm:ss in all modes.

Adjustable cycle time and proportional band in the proportional modes.

USP26 settings with optional pre-trigger.

Alarm mode

Either relay can be set to energise on any of the following instrument conditions:

Sensor alarm, Dose alarm, Calibration, Off line, Any error.

Switches

Four tactile-feedback push buttons.

EMC: Immunity

BS EN 50082-2:1995.

EMC: Emissions

BS EN 50081-1:1992.

LVD: Safety standard

BS EN 61010-1:1993.

Power supply

15-30vDC @ 200mA.

Head mount housing

Conductive ABS blue plastic, rated IP66.

Weight

600 grams (instrument only).

Dimensions

110 x 116 x 145 mm (H, W, D) excluding connectors.

		Nominal cell constant		
		0.010	0.100	1.000
Conductivity range	0 to 0.999 $\mu\text{S/cm}$	✓	✗	✗
	0 to 9.999 $\mu\text{S/cm}$	✓	✓	✗
	0 to 99.99 $\mu\text{S/cm}$	✓	✓	✓
	0 to 999.9 $\mu\text{S/cm}$	✗	✓	✓
	0 to 9.999 mS/cm	✗	✗	✓
	0 to 99.99 mS/cm	✗	✗	Note 1
Resistivity range	0 to 99.99 k-cm	✗	✓	✓
	0 to 999.9 k-cm	✓	✓	✗
	0 to 9.999 M-cm	✓	✓	✗
	0 to 99.99 M-cm	✓	✗	✗
Total dissolved solids range	0 to 0.999 ppm	✓	✗	✗
	0 to 9.999 ppm	✓	✓	✗
	0 to 99.99 ppm	✓	✓	✓
	0 to 999.9 ppm	✗	✓	✓
	0 to 9999 ppm	✗	✗	✓
	0 to 99.99 ppt	✗	✗	✓

Note 1: Maximum measurement range will be limited by solution temperature. With temperature compensation slope set to 2%/°C derate linearly from full scale at 25°C to 50% of scale at 100°C.

Note 2: Total dissolved solids in ppm = $\mu\text{S/cm} * F$, where F = TDS Factor (0.50 - 0.90)

Order Codes

Part No	Model
1140	HCT63 Wall mounting transmitter complete with mounting kit, single 4-20mA output.
1141	HCT63 Advanced wall mounting transmitter complete with mounting kit, 2 x 4-20mA outputs & 2 x relay outputs.
1134	HCT63 Head mounting transmitter complete with CMC64/10/PT43 conductivity cell & PVC tee piece. Single 4-20mA output.
1136	HCT63 Head mounting transmitter complete with CMC68/001/PT43 conductivity cell & PVC tee piece. Single 4-20mA output.
1135	HCT63 Advanced head mounting transmitter complete with CMC64/10/PT43 conductivity cell & PVC tee piece. 2 x 4-20mA outputs & 2 x relay outputs.

Part No	Model
1137	HCT63 Advanced head mounting transmitter complete with CMC68/001/PT43 conductivity cell & PVC tee piece. 2 x 4-20mA outputs & 2 x relay outputs.
1134/004	CMC64/10/PT43 Spare conductivity cell assembly
1136/004	CMC68/001/PT43 Spare conductivity cell assembly
138/330	5 Metre sensor connection cable fitted with C16 connectors for use with wall mount HCT63
138/331	10 Metre sensor connection cable fitted with C16 connectors for use with wall mount HCT63
134/002	Spare pair of wall mounting brackets

For separate conductivity cells and connection cables please contact LTH Electronics' sales department for details and prices.

Note: Temperature, pressure & solution composition will influence the life expectancy of the measurement sensor.



These products comply with current European Directives

LTH Electronics Ltd reserves the right to make changes to this data sheet or the product without notice, as part of our policy of continued developments and improvements. All care has been taken to ensure the accuracy of information contained in this data sheet. However we cannot accept responsibility for any errors or damages resulting from errors or inaccuracies of information contained herein.

