LTH Electronics

www.lth.co.uk

MTD75

Comprehensive cooling tower controller with all the functions required for dosing and control of cooling water

Features

- Real time clock for accurate timed dosing
- Water meter input for volumetric/proportional dosing
- Inductive conductivity measurement for bleed control
- Redox measurement for Bromine addition
- Independent pH measurement and control
- Bleed inhibit during and after the dosing cycle
- Individual fuses for each control relay output
- IP66 Custom enclosure
- Full data logging and live trending to SD card

The MTD75 controller

The MTD75 is a microprocessor controlled cooling tower controller, designed to provide timed or measured control of dosing pumps or solenoid valves for inhibitor, biocide, bleed and pH control operations in a cooling tower system. The efficiency of the MTD75 to control the cooling water can be greatly increased by using sensors to control the dosing and bleeding of the water instead of just relying on fixed time and water meter controls. The unit can be optionally equipped to measure Conductivity, pH, Redox and Temperature levels in the cooling tower.

The MTD75 controller

is designed for fixing to a wall or other flat surface. There is an optional handrail & pipe-mounting kit is designed for fixing to a vertical or horizontal handrail or pipe, of 25 to 70mm outside diameter.

The MTD75 is designed to be expandable by the use of add-in cards; these add-in cards can take the form of either sensor input add-in cards or output option add-in cards. The MTD75 can be fitted with up to 3 sensor input cards and 1 output option card. Utilising a multifunction easy to read QVGA LCD the controller displays readings and provides feedback to the operator on the status of the sensors and the controller's outputs.

Six sets of relay contacts are provided for the pump/solenoid connections and an alarm output. For the Biocide, Inhibitor and Bleed Connections, the pump relay contacts are normally open; volts free contacts, and are isolated from the rest of the controller. The contacts are rated at 250vAC/30vDC @ 5A.

In addition to the two relay contacts, the terminals for each of the pumps or solenoids provide connections to the Live and Neutral lines. The Live terminals are fused via the front panel fuses, at 2A. The alarm relay contacts are normally open; volt free contacts, and are isolated form the rest of the instrument. The contacts are rated at 250vAC/30vDC @ 5A.

The MTD75 can be supplied with 4 current outputs designated A to D, which can terminate into a load resistance not exceeding 750Ω and can be allocated to the Conductivity, pH, Redox or temperature measurement. There is also an optional RS485 Modbus interface to allow for remote access, configuration and control of the controller and integration with building energy management and SCADA systems.

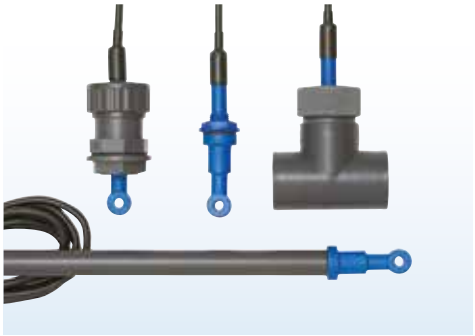
The MTD75 controller also features an SD card interface which enables the user to backup and restore controller settings, copy settings between controllers, and to upgrade the controller's software. The Data logging additional software function expands the capabilities of the MTD75 by allowing the user to record over time the status of the instrument. It consists of two separate sections, Live Trending and SD Card Data Logging, which together help the user to analyse and improve the performance of their application.

Live Trending provides the user with three separate live trend screens adjacent to the front screen with each showing two readings. This enables the user to instantly view the last 50 samples of each reading. The live trend screen also features a review mode where by the user can further analyse the last 200 samples of each reading, If the user finds something of note the software provides the facility to save these 200 readings to an excel compatible file on the SD card.

The MTD75 features optional software functions which when purchased will expand the instrument's capabilities. These functions are locked by default. They can be unlocked by LTH or your local distributor at the time of order. Alternatively the functions may be ordered after purchase by supplying LTH or your local distributor the serial number of your instrument. In return they will supply you with an 8 digit unlock code that is unique to the instrument and the required function to be unlocked.

The MTD75 features 5 digital inputs, the instrument can be configured to initiate the appropriate action when the contact either closes or opens between the input terminal and the reference terminal. The terminal marked "1" is provided for contact to a standard water meter where contact activation indicates the flow of water. The 'K' factor for the water meter can be set in the Configuration menu, The terminal marked "2" is provided for connection to a flow switch in the process loop to indicate when there is no water flow past the sensors. When activated this will flag an error message on the main display and inhibit any dosing or bleed relays. The polarity of this input (NO/NC) can be set in the digital input 2 menu. Digital inputs 3 to 5 provide a user configured system to set the associated relay to either Offline or Interlock, to indicate that there is a chemical Tank Level issue, or to activate a remote Dose or Bleed of the relay.

The MTD75 can also be supplied as a bespoke Control and dosing package complete with sensors, pipework, valves and pumps on a backplate assembly prefabricated to suit a customer's requirements.



Contact our sales department with your requirements.

MTD75 Controller Specification

Biocide A Output
User defined Biocide A dose duration, triggered from one of the user selectable sources:

Water Volume (From Water Meter Input), Timed (Per week/day/hour)
Redox (when greater than the set level), Division of the Water Meter Input (X input pulses give one output pulse), Multiply by the Water Meter Input (One input pulse gives X output pulses), External Input (Contact Closure)

User selectable On/Off, Pulsed or Time Proportional output.
Contact closure and 250vAC* supply terminals provided (fused to 2A, accessible on the front panel).

The Biocide A output can be initiated manually through the menu system to permit testing and priming of the system.

Biocide B Output
User defined Biocide B dose duration, triggered from one of the user selectable sources:

Water Volume (From Water Meter Input), Timed (Per week/day/hour) Division of the Water Meter Input (X input pulses give one output pulse) Multiply by the Water Meter Input (One input pulse gives X output pulses) Ratio (Biocide A : Biocide B), External Input (Contact Closure).

User selectable On/Off, Pulsed or Time Proportional output.
Contact closure and 250vAC* supply terminals provided (fused to 2A, accessible on the front panel).

The Biocide B output can be initiated manually through the menu system to permit testing and priming of the system.

Bleed Output
User defined Bleed duration, triggered from one of the user selectable sources:

Water Volume (From water Meter Input), Timed (Per week/day/hour) Conductivity (when > set level), External Input (Contact Closure) On/Off output at 250vAC* fused to 2A (accessible on the front panel).

The Bleed output can be initiated manually through the menu system to permit testing of the Bleed system.

Inhibitor Output
User defined Inhibitor dose duration, triggered from one of the user selectable sources:

Water Input (From water Meter Input), Timed (Per week/day/hour)

Bleed (After accumulated Bleed Time), Division of the Water Meter Input

(X input pulses give one output pulse), Multiply by the Water Meter Input (One input pulse gives X output pulses), External Input (Contact Closure)

User selectable On/Off or Pulsed output. Contact closure and 250vAC* supply terminals provided (fused to 2A, accessible on the front panel).

The Inhibitor output can be initiated manually through the menu system to permit testing and priming of the system.

pH Control
User defined pH Control dose duration, triggered from one of the user selectable sources:

Water Volume (From Water Meter Input), Timed (Per week/day/hour)

pH (user selectable < or > level), Division of the Water Meter (X input pulses give one output pulse), Multiply by the Water Meter Input (One input pulse gives X output pulses), External Input (Contact Closure)

User selectable On/Off, Pulsed or Time Proportional output.

Contact closure and 250vAC* supply terminals provided (fused to 2A, accessible on the front panel).

The pH Control output can be initiated manually through the menu system to permit testing and priming of the system.

Alarm Relay
A volt free normally open contact, rated at 5A 30vDC / 5A 250vAC (non-inductive).

User configurable to energise on:
Power On Input Error, Dose Alarm Timeout, Water Meter Timeout, Flow Switch Tank Level Alarm, Any Error

Redox Input
Optional, Single ended or differential with solution ground, Up to 100 metres cable.

Separate glass and reference electrode pair. Combination electrode.

Range of Measurement: -1999mV to +1999mV, Accuracy ± 3mV

Electrodeless Conductivity Input
Optional ECS20 or ECS40 Series Electrodeless conductivity sensor up to 100 metres LTH 54E connection cable Range of Measurement 0 to 0-9999µS/cm 0-9999ppm Accuracy: ± 1% of range

pH Input
Optional, Single ended or differential with solution ground. Up to 100 metres cable. Separate glass and reference electrode pair. Combination electrode.

Range of Measurement: 0.00 to 14.00pH. Accuracy ± 0.05pH

Temperature
Electrodeless Conductivity Input PT1000, pH Input PT100 or PT1000 Range of Measurement: -50 °C to +160 °C Accuracy ± 0.2 °C (When using a 4 wire PT1000)

Linearity
± 0.1% of range

Repeatability
± 0.1% of range

EMC
2004/108/EC using BS EN 61326-1: 2013

Low Voltage Directive
2006/95/EC using BS EN 61010-1: 2010

Power Supply
Universal 80-265V AC or DC, 15W max

Instrument Housing
UL 94-V0 PC/ABS

Ingress Protection Rating
IP66

Ambient Operating Temperature
-20°C to +50°C (-4°F to +122°F)
for full specification

Weight
Maximum 2.7 kilograms (instrument only)

Dimensions
331 x 242 x 110 mm (H, W, D) excluding mounting brackets

Operator Adjustment

	Slope	Offset
Redox	NA	± 400mV
Electrodeless Conductivity	± 10%	NA
pH	60-120%	3 to 11pH
Temperature	NA	± 50 °C

Current Outputs

Optional, 4 Current Outputs, each selectable 0-20mA or 4-20mA into 750 ohms maximum load. Fully isolated to 2Kv. Expandable up to 5% of any operating range and offset anywhere in that range.

Current Output Adjustment: ±0.01mA, 3 point 0-4-20 mA for remote monitor calibration

Digital Inputs

5 contact closures for remote activation of user defined operations. Can be configured to operate in either normally open or normally closed modes

Digital Input Functions:

1. Water Meter Input.
2. Flow Switch Input

3-5. Off-Line, Interlock, Tank Level, Remote Dose

Modbus RS485 Interface

Optional, Supports RTU and ASCII formats, Node Address: 1 to 247

Baud Rates (Bits Per Second) : 300, 600, 1200, 2400, 4800, 9600, 19200, 31250, 38400. Parity Options: Even, Odd, None.

SD Card Interface

Enables backing up and restoring of instrument configuration, log the sensor readings (optional extra) and on site upgrading of instrument software.

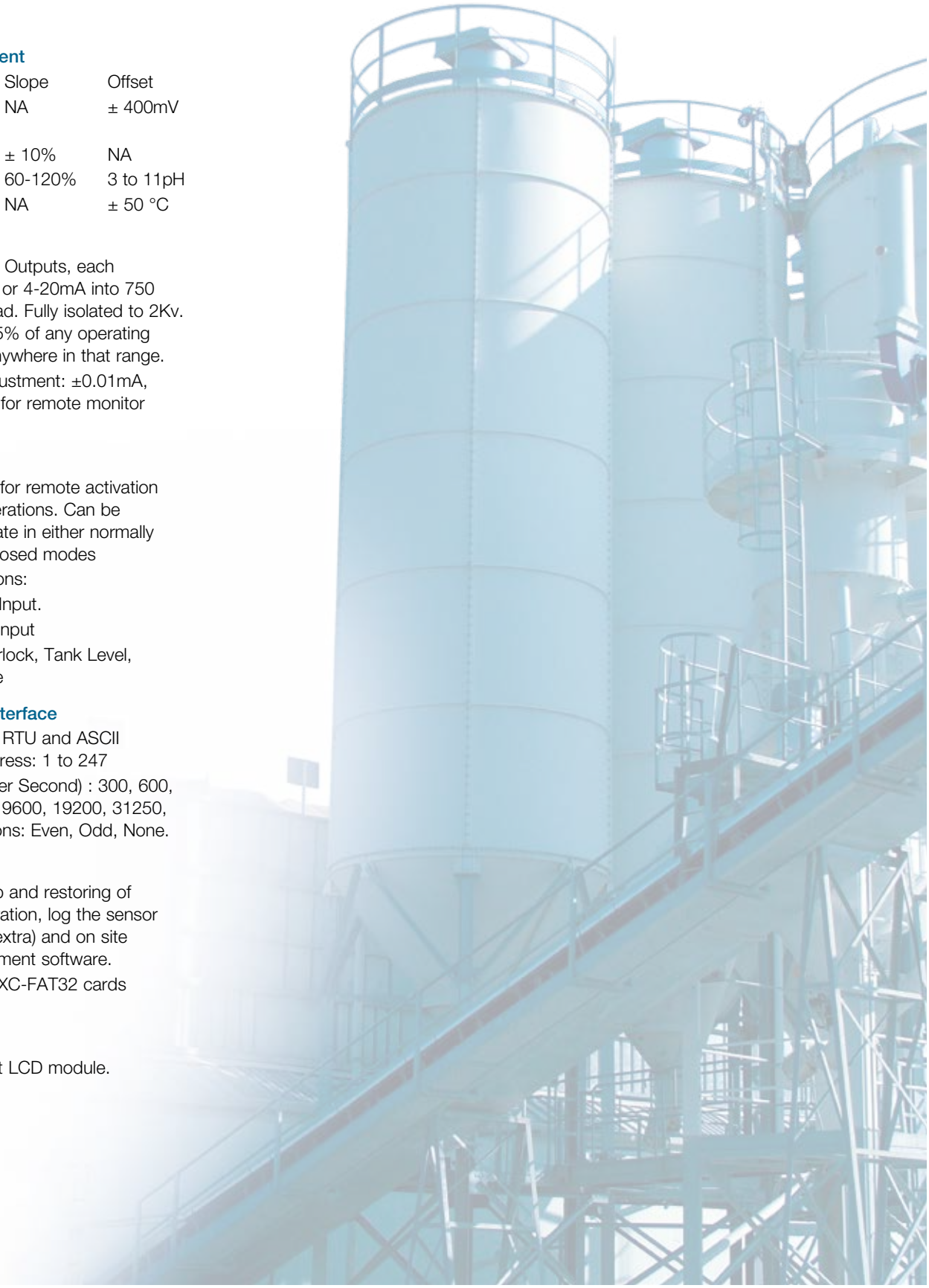
SD, SDHC and SDXC-FAT32 cards supported.

Display

3 ¾" QVGA back lit LCD module.

Buttons

5 tactile feedback, micro-switched, silicone rubber.



- IP66 Surface mount enclosure with optional pipe mount kit.
- 3¾" QVGA Backlit LCD display for clear indication.
- Parameters measured include: Electrodeless Conductivity, pH, Redox, temperature.
- Up to 3 measured parameters can be displayed together plus temperature.
- User selectable bar graph display option.
- Plug and play card detection for simple measurement and output expansion upgrades.
- SD card interface allows trouble free saving of configuration and simplifies software updates.
- SD Card data logging.
- Three separate live trend screens.
- 4 Optional isolated 4-20mA current outputs for re-transmission of conductivity, Redox, pH and temperature.
- Optional RS485 Modbus for integration with external process management and SCADA systems.
- Dosing relays are fully configurable including on/off, time or pulse proportional operation.
- 5 Independent digital inputs.
- Direct connection of pumps and valves.
- Dedicated error page provides up to date controller status.
- 85-265v supply (AC or DC).
- User configurable measurement channel identification tag.
- Bespoke Control and dosing packages with controller, sensors, pipework, valves and pumps prefabricated to suit customer's requirements can be supplied.

A closer look

Alarm LED's

2 Yellow LED's located above the main display area for the controller's alarm status, Relays are active when the LED's are lit.

Dosing and Control Relay LED's

6 Red LED's located above the main display area indicate the status of the dosing and control relays, Relays are active when the LED's are lit.

Ambient Operating Temperature

-20°C to +50°C
(-4°F to +122°F)
for full specification

EMC

2004/108/EC using BS EN 61326-1: 2013, Low Voltage Directive 2006/95/EC using BS EN 61010-1: 2010

Power Supply

Universal 80-265v AC or DC, 15W max (fused to 1A, accessible on the front panel)

Controller Housing

UL 94-V0 PC/ABS. Ingress Protection IP66 to IEC 60529 Weight Maximum 2.7 kilograms (controller only).
Dimensions 331 x 242 x 117 mm (H, W, D) excluding mounting brackets.

* Dependant on input supply levels

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LTH Electronics

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Order Codes

Type	Stock No	Description
MTD75	7510	IP66 Surface mounted cooling tower monitor with outputs for Bleed, Biocide A & B and Inhibitor. 85-265v supply. Input and output expansion cards to be ordered separately

Input Card Options (To be ordered separately from MXD73 and MXD75 chassis)		
MXD70EC	1201	Electrodeless conductivity input PCB.
MXD70PR	2001	pH / ORP (Redox) input PCB.

Expansion Card Options (To be ordered separately from MXD73 and MXD75 chassis)		
MXD704I	7040	4 x 4-20mA output expansion PCB for use with the MTD75 Cooling tower monitor.
Modbus	7520	MTD75 Modbus Unlock code

Data Logging and Live Trending		
DATALOG	7000	Data logging and Live trending software (Unlock code)

Expansion Kits for use with MXD75 Surface Mount chassis		
MTD75EK1	7511	MTD75 Expansion kit 1 for use with Electrodeless Conductivity and Redox Input PCB's.
MTD75EK2	7512	MTD75 Expansion kit 2 for use with the pH Input PCB and current output PCB.

Sensors

ECS20 Series Electrodeless Conductivity Sensors

Temperatures Up to 60°C, manufactured from Glass filled polypropylene, fitted with PT1000 temperature compensation

Type	Stock No	Description
ECS20T	8480	Moulded Electrodeless conductivity sensor with 5 metre cable.
ECS22T	8481	600 mm PVC dip assembly with ECS20T sensor.
ECS24T	8489	In-line 1.5" plain PVC tee assembly with ECS20T sensor
ECS24T	8490	As 8489 but with 0.5" BSP galvanised connections

S400 pH and Redox Electrodes

Type	Stock No	Description
S400	138/028	"0.75" NPT insertion pH electrode, no temperature compensation, 6 metre cable. S400-RT330-M20FF"
S400	138/064	"0.75" NPT insertion Redox electrode with guarded bulb. 6 metre cable and solution ground. S400-GTPB0-N20FF"
Tee	2140	S400 1.5" Quick release PVC tee assembly. 0-60°C

Please contact our sales team to discuss any bespoke dosing and control packages required.

CE These products comply with current European Directives

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