

## MSSD53 Suspended Solids Monitor

LTH Electronics are pleased to announce the latest addition to the MXD53 series of Process Control instruments the MSSD53 suspended solids Monitor. The MSSD53 has been designed to work with a series of sensors designed and built by one of our trading partners Quadbeam Technologies.



- Able to display in NTU's, FTU's, PPM, mg/l, g/l, %, EBC or OD
- Immersion and Hygienic style sensors available
- Single Isolated 4-20mA Current output
- Two fully configurable relay outputs
- Calibration in engineering units
- Quadbeam™ Sensors automatically compensate for sensor fouling and component ageing



The MSSD53 has been designed to work with Quadbeam Technologies suspended solids and turbidity sensors. The MSSD53 is able to display the measured values in NTU's, FTU's, PPM, mg/l, g/l, %, EBC or OD. There are four Quadbeam™ sensors available:

- Series 10 sensors for measurement to 25g/l
- Series 20 sensors for measurements to 10g/l
- Series 40 sensors for measurements to 2.5g/l
- Series 90 sensors for measurements to 1g/l

These figures are based on normal activated sludge and are indicative only as measurement range depends upon material in suspension

The principle aim of the Quadbeam™ Alternating Light Principle design is to improve the measurement reliability of optical turbidity and suspended solids instruments. This type of technology compensates for most sources of measurement error and provides unrivalled accuracy and reliability when compared with other competitive systems.

Quadbeam™ sensors incorporate engineering improvements to eliminate water ingress and also withstand the rapid temperature cycling (from 10°C to 80°C) which occurs during CIP cleaning cycles. By design, Quadbeam™ sensors automatically compensate for component ageing, sensor fouling and daylight interference.

The series 10,20 and 40 sensors are available as either an Immersion style sensor designed for continuous on line monitoring of suspended solids in industrial and municipal waste water treatment plants, mining and refining operations. They are also available as a hygienic style sensor, which can be installed directly into food product lines.

### Applications for the different styles of sensors are detailed below:

#### Immersion style

Return and waste sludge measurements

Mixed liquor suspended solids

Sludge blanket detection

Product loss in dairy washdown drains

White water solids concentration

Raw water turbidity measurement

Final effluent monitoring

Surface water monitoring

#### Hygienic style

Milk fat measurement in dairies

Percentage solids in fruit juice

Solids content in whey

Product breakthrough in heat recovery systems

Yeast concentration in breweries

## Programming made easy

The large backlit multi-function display guides the operator effortlessly through the structured programming procedure, reducing the need to refer to the handbook. The MSSD53 has been designed with two levels of programme complexity to cater for both novice and experienced instrument operators. An initial configuration has been pre-programmed into the MSSD53, minimising the number of parameters that will actually need to be changed for most users. Only the measurement range, probe signals, current output and alarm levels have to be specified for the unit to be commissioned. 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.

## One Instrument for all Applications

A universal power supply allows a connection to any supply between 80 to 260v, AC or DC. An option for low voltage operation between 18-36v AC or DC is also available. Multilingual text displays can be selected with a choice of English, French, Spanish and Italian.

### Flexible Control and Alarm Configuration

Up to 2 relay outputs offer on/off control with variable hysteresis and time delays if required.

### Current Output

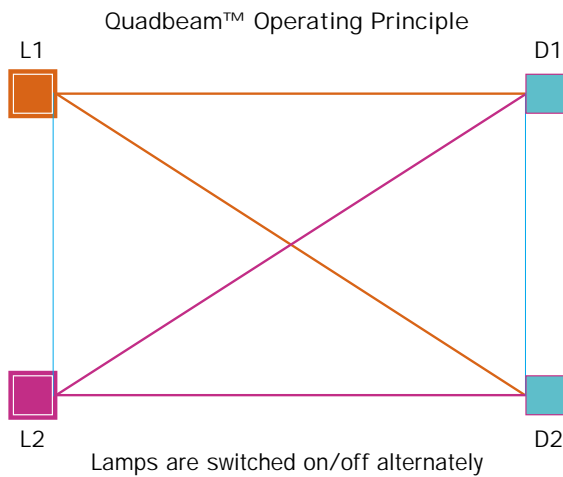
An industry standard isolated output provides retransmission of the measurement as a 0/4-20 mA signals and can be fully configured.

### Calibration

Both measurement inputs and current output can be individually calibrated from the front panel. An off-line facility allows the instrument to be adjusted without disturbing external processes.

### Off-Line and Sensor Cleaning

For applications, which require automatic sensor cleaning, either set point relays can be configured as a clean initiator. The clean duration, recovery time and interval period are all programmable. During the clean and recovery periods it is possible for the instrument to go off-line and hold the current outputs and disable the control relays. The clean cycle and off-line mode may also be initialised remotely via separate digital switch inputs.



The purpose of the Quadbeam™ Alternating light principle design is to improve the measurement reliability of optical turbidity and suspended solids instruments. The Quadbeam™ Alternating light

principle is based on a fundamental method of suspended solids measurement by shining a light of known intensity a fixed distance through a medium at a photocell detector. Suspended solids in the medium attenuate some of the light. The detector current gives a measure of the attenuation that corresponds to suspended solids and turbidity measurement.

The Quadbeam™ Alternating light principle compensates for variations in light intensity and detector sensitivity by using two detectors and two light sources switched on and off alternately.

The sensors are available with different sensitivity levels and measuring ranges by changing the distances between the light sources and detectors. Sensors with shorter path lengths can measure higher concentrations and have larger measuring ranges whereas sensors with longer path lengths are more sensitive to small changes in suspended solids concentration.

## Specification

<b>Sensor Input</b>	Series 10, 20, 40 or 90 Quadbeam™ sensors	<b>Operating Modes</b>	Relays 1 and 2, Configurable High or Low, On/Off, or Cleaning output modes selectable for each relay.
<b>Sensor Cable</b>	Up to 100 metres		Adjustable delay timers up to 10 mins, and hysteresis in the On/Off mode.
<b>Measurement Units</b>	NTU, FTU, ppm, mg/l, g/l, % can be selected and displayed		Adjustable dose alarm timer up to 15 mins in all modes.
<b>Accuracy</b>	1%		Adjustable duration, recovery and interval periods in the "Cleaning" mode.
<b>Linearity</b>	0.1% of range	<b>Off-Line Facility (for calibration and commissioning)</b>	Initiated by remote contact closure or software selection. Relays 1 and 2 are de-energised and the current output is held at the last on-line value.
<b>Repeatability</b>	0.1% of range	<b>EMC : Immunity</b>	BS EN 50082-2 1995
<b>Ambient Operating Temperature</b>	-20°C to +50°C (-4°F to +122°F) for full specification.	<b>EMC : Emissions</b>	BS EN 50081-1 1994
<b>User Interface</b>	Large 4 character 7 segment display for measured value, with alphanumeric dot matrix characters for units, information display and programming.  Easy to use four button user interface for instrument programming.	<b>Safety</b>	Designed and manufactured in accordance with BS EN 61010-1 1993
<b>Current output</b>	Single output, Selectable 0-20mA or 4-20mA operation into a 1000 ohms maximum load, fully isolated to 2kV. Software scalable within the operating range.	<b>Power Supply</b>	85 to 250V AC or DC 10W max.  Optional 18 to 36V AC or DC 15 W max.
<b>Operator adjustment</b>	±1mA zero and ±1mA span for remote monitor calibration.	<b>Surface Mount Housing</b>	Expanded polyurethane foam rated to IP66.
<b>Set Point Relays</b>	2 Fully configurable set point relays with volt free contacts. Rated at 5A 30V DC/5A 250VAC (non-inductive).	<b>Weight</b>	Less than 1.5kg.
		<b>Dimensions</b>	305mm x 200mm x 82mm (H x W x D), excluding mounting brackets.



## Sensor Specification

### SERIES 10

**Measuring Range** 0-25g/l , Normal activated sludge, Coal dust 4% (Immersion sensor).  
0-4 % Milk fat (Hygienic sensor).

### SERIES 20

**Measuring Range** 0-10g/l , Normal activated sludge, (Immersion sensor).  
0-20% Milk fat (Hygienic sensor).

### SERIES 40

**Measuring Range** 0-2.5g/l , Normal activated sludge, (Immersion sensor).  
0-1.5% Milk fat (Hygienic sensor).

### SERIES 90

**Measuring Range** 0-100 through to 0-4000 FTU /NTU (Immersion sensor available only).

## General Sensor Specification

**Accuracy** ± 2 % of reading.  
**Repeatability** ± 1 % of reading..  
**Operating Temperature** 0-85 °C, Series 90 - 0-60 °C only.  
**Operating Pressure** 0-10 Bar.  
**Body Material** Polypropylene, Series 90 - PVC.  
**Cable length** Immersions sensors - 10 Metres standard, Hygienic sensors 1 Metre as standard. (Other lengths available on request).  
**Connector** CA - Amphenol connector - fitted as standard on Hygienic sensors, usually used with extension cables.  
NC - No connector, wires stripped and tinned.  
CS - Schaltbau connector for use with old style BTG/ Zellweger transmitters.

## Order Codes

Part No	Model
1246	MSSD53SI Suspended solids monitor with 2 relay outputs and a single 4-20mA current output.
S10-IMM-880-PP-10-NC	Series 10 immersion style sensor with 10 Metre cable, no connector
S10-HY-880-PP-1-CA	Series 10 Hygienic style sensor with 1 Metre cable and Amphenol connector, 2" or 3" triclamp flange
S20-IMM-880-PP-10-NC	Series 20 immersion style sensor with 10 Metre cable, no connector
S20-HY-880-PP-1-CA	Series 20 Hygienic style sensor with 1 Metre cable and Amphenol connector, 3" triclamp flange
S40-IMM-880-PP-10-NC	Series 40 immersion style sensor with 10 Metre cable, no connector
S40-HY-880-PP-1-CA	Series 40 Hygienic style sensor with 1 Metre cable and Amphenol connector, 3" triclamp flange
S90-IMM-880-PP-10-NC	Series 90 immersion style sensor with 10 Metre cable, no connector

NOTE: Temperature, pressure and solution composition will influence the life expectancy of the measurement sensor.



These products comply with current European Directives

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