

BinMinder 9300 Manual Addendum for use with 9306-ETS Sensor

12.1 Sludge Level and Effluent Turbidity Sensor (Part No. 9306-ETS)

The 9306-ETS sensor combines ultrasonic sludge level and scattered light turbidity measurement technologies in a single sensor when used with a BinMinder 9300 analyzer.

12.1.1 Application

This sensor is recommended for use in applications in which there is the combined need for sludge level and low range turbidity measurement at the location of the dual-purpose sensor. It is specifically recommended for use in water and wastewater treatment clarifiers and thickeners to continuously monitor sludge level and provide an indication of turbidity at the location of the sensor – typically near the supernatant effluent weir.

12.1.2 Principle of Operation

Sludge level measurements are provided by an ultrasonic sensor element that is fully integrated with the standard BinMinder 9300 analyzer. Power is provided by the analyzer; and the analyzer processes signal responses, calculates measurement values, and displays and outputs measured values via the analyzer signal outputs. Refer to the Operations and Installation Manual for additional information regarding installation, setup and operation of the ultrasonic sludge level analyzer.

Turbidity measurements are provided by an independent, 90° scattered-light turbidity sensor that is fully self-contained in the combined sensor housing. Sensors are factory spanned to: 0-50 NTU or 0-200 NTU. Power to the sensor is provided by the analyzer. The measurement indication is a proportional 4-20mA signal that is supplied to a user supplied device capable of interpreting the analog signal.

12.1.3 Sensor Cleaning

Sensing surfaces of the sludge level and effluent turbidity sensor are automatically cleaned by a fully integrated wiper system with replaceable rubber wiper blades. The wiper is operated by a 12VDC motor that is powered by the analyzer. An integrated circuit located in the transducer housing controls the wiper timing and operation sequence. Wiper blades are reverse threaded for secure operation and ease of replacement.

12.1.4 Installation

The transducer has a ¾ in. NPT female thread connection to provide simple attachment to a user supplied mounting pipe or conduit. The connection is a direct replacement for the standard 9306-49 transducer. In general, locate the sensor in accordance with instructions for ultrasonic sensors as otherwise described in the

Operation and Installation Manual. Additionally, the sensor may be located near an effluent weir to optimize the effluent turbidity measurement without adversely affecting sludge level measurements.

12.1.5 Connections

The sensor interconnect cable consists of three conductor pairs, each with a bare wire shield. The Green/Black pair and shield connect to the analyzer Transmit/Receive (TX/RX) board, and the Black/White pair connect to the turbidity sensor terminal strip – as indicated on Customer Connections With ETS Sensor drawing – in this Addendum. The third pair is not utilized in this instrument configuration.

12.1.6 Sludge Level Setup and Calibration

The ultrasonic sludge level sensor is configured and operated with the BinMinder 9300 analyzer in the same manner as other sensors designed for use with the instrument. Refer to the BinMinder 9300 Operations and Installation Manual for complete details.

12.1.7 Turbidity Sensor Calibration

The 9300-ETS sensor is factory calibrated using a resin emulsion turbidity conforming solution. It may be field or bench recalibrated, if required, by means of internal magnetic HIGH/LOW reed switches. Calibration “target points” are stamped on opposing sides of the sensor housing. To calibrate, submerge the sensor in 0 NTU solution and contact the **L** position on the sensor with the included magnet. Next place the sensor in 50 NTU solution and contact the **H** position on the sensor with the magnet. Hold the sensor level and a minimum of 4 in. from the bottom of the solution container while calibrating. Avoid calibrating the sensor in the proximity of fluorescent lighting.

**9306-ETS TURBIDITY CALIBRATION
4-20Ma CALIBRATION TARGETS**



9306-ETS TURBIDITY CALIBRATION SETPOINT CALIBRATION

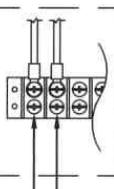




BINMINDER TX/RX BOARD, SEE BINMINDER 9300 INSTALLATION MANUAL, SECTION 6.3.1

GREEN SONAR SENSOR+
BARE SHIELD
BLACK SONAR SENSOR-

GREEN/BLACK PAIR.



BLACK 4-20mA+
WHITE 4-20mA-
BARE SHIELD

WHITE/BLACK PAIR.

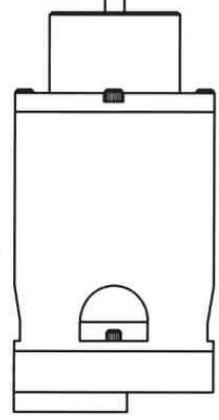
TO CUSTOMER CONTROL SYSTEM.

ETS SENSOR TERMINAL STRIP.
MOUNTED INSIDE BINMINDER
PROCESSOR ENCLOSURE.

RED
BLACK
BARE SHIELD

NOT USED. LEAVE
DISCONNECTED

RED/BLACK PAIR.



9306-ETS SENSOR

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SCALE: N/A	DRAWN BY: TODD McCLENDON
DATE: 4-12-04	
ETS SENSOR CONNECTION DIAGRAM	
BINMINDER 9300	
DRAWING NO. 9306-66-05	
REVISIONS	

CUSTOMER CONNECTIONS WITH ETS SENSOR

