AMCON

INSTRUCTION MANUAL OAE-SCOUT

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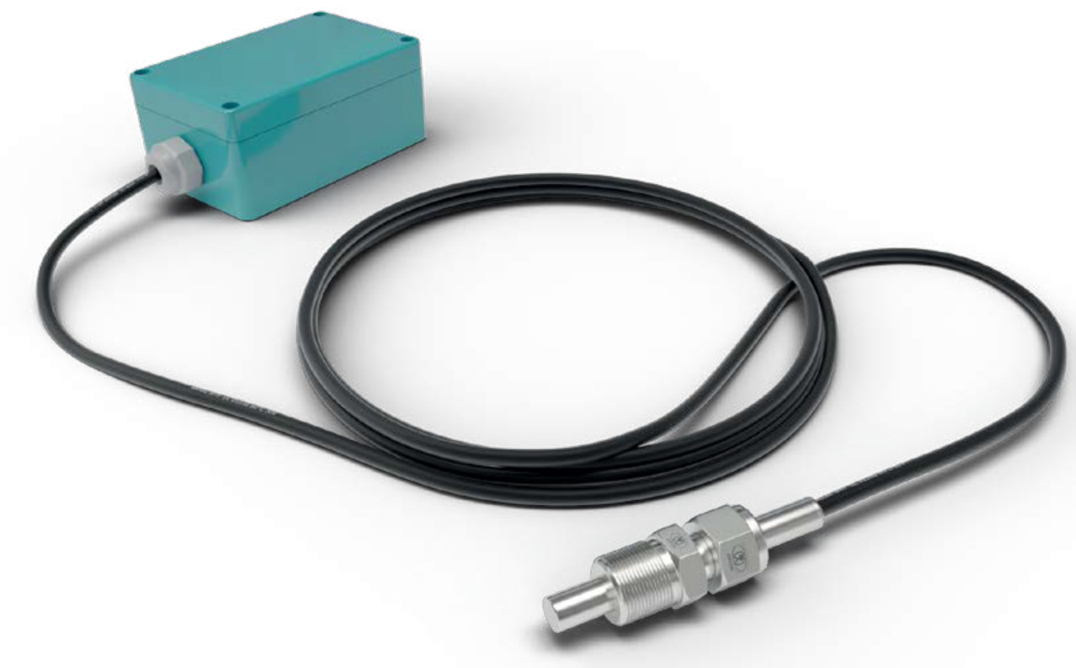
INTRODUCTION

Thank you for choosing the OAE-SCOUT Cake Dryness Sensor.
Please read this manual carefully before use and keep it for future reference.

Drawings and images are based on a standard product configuration. Your unit or installation may appear slightly different depending on the specific variant ordered.

For OAE-SCOUT installed on VOLUTE and VOLUTE DUO screw presses

Version 0.1 | 2026 | Firmware versions: 2509, 2510



01 QUICKSTART

This chapter provides the minimum steps required to install, connect, and obtain a measurement from the OAE-SCOUT sensor. For full details, refer to the relevant chapters.

1.1 COMPONENTS

The OAE-SCOUT consists of the following components:

- **Transducer** — Inserted into the dewatering cylinder; produces a signal proportional to cake dryness.
- **Control box** — Transforms the transducer signal into a 4–20 mA or Modbus RS485 signal.
- **10 mm to ½" BSP compression fitting** — Secures the transducer in position.
- **USB configuration cable** — Used for calibration, setting and direct sensor readout from a PC.
- **8-pin M12 A-coded female connector** — Connects the control box to a PLC or SCADA system. A mating 90° male connector is supplied with the unit; a cable is not included.
- **Threaded inspection port (optional)** — Enables installation or retrofitting of the transducer into ES/FS/GS dewatering cylinders.

1.2 INSTALLATION (SUMMARY)

- Screw the control box to its designated place. For retrofitting on ES/FS/GS; contact your supplier for detailed instructions.
- Install the compression fitting in the dedicated 1/2" socket: apply appropriate thread sealant or PTFE tape to prevent the thread from seizing.
- Fit the transducer into the compression fitting at the correct depth. The transducer window should be flush with the inner wall of the cylinder.

WARNING	Mounting the transducer too deep risks the screw contacting and breaking the transducer.

- Tighten the compression fitting without excessive force.

1.3 ELECTRICAL CONNECTION (SUMMARY)

Connect the control box to a PLC or PC via the 8-pin M12 A-coded female connector. Use the 4-wire 4–20 mA signal or Modbus.

Pin	Signal	Required for
1	**RS485 B**	Modbus RS485
2	**V+ (supply voltage 5.5–24 V DC)**	Always
3	**GND**	Always
4	**RS485 A**	Modbus RS485
5	**4–20 mA output GND**	4–20 mA analogue output
6	**4–20 mA output high**	4–20 mA analogue output
7	**GND**	Always
8	**Cable shield**	Recommended

1.4 COMMUNICATION (SUMMARY)

RS485 Modbus RTU: 9600 baud, 8 data bits, no parity, 1 stop bit. Default slave address: 73. Read measurement value from Input Register 0 (Modbus function code 4).
Value is %DSC × 100.
Defaults 4–20 mA analogue output: 4 mA = 0 %DS, 20 mA = 100 %DS (adjustable via calibration tool)

1.5 CALIBRATION (SUMMARY)

Sensor output is linear and can be used without calibration for automation purposes. For correct display of actual cake dryness, inline field calibration is required.

Connect a PC to the control box via the supplied USB configuration cable and use the OLPAS-AMCON online Calibration Tool accessible via URL and QR code below.

02 SAFETY

Observe all instructions in this chapter before installing, operating, or maintaining the OAE-SCOUT sensor.

2.1 GENERAL SAFETY INSTRUCTIONS

- This sensor is a subcomponent for integration into a system. The system integrator is responsible for the overall safety of the system, including risk assessment and documentation in accordance with applicable legal and normative requirements.
- The sensor must be suitable for the intended application and environmental conditions.
- Use the product only for its intended purpose.
- If the operating instructions or technical data are not followed, personal injury and/or equipment damage may occur.
- The manufacturer accepts no liability for damage caused by improper use or unauthorised modification of the product, or as a consequence of incorrect or inaccurate readings.
- The sensor has not been accredited for application in legal compliance. Verify legislation and possibilities locally before using the sensor for this purpose.

2.2 ELECTRICAL SAFETY

Electrical installation must be carried out by a qualified electrician in accordance with applicable national and international regulations.

Always de-energise the screw press before installing or removing the sensor.

- The sensor must not be connected to a DC distribution network as defined by IEC 61000-4-1.
- Use shielded cable; connect the cable shield to Pin 8 of the M12 connector.
- Ensure the control box enclosure and transducer are connected to local protective earth, or in direct contact with locally earthed metal.

2.3 MECHANICAL SAFETY

The sensor might be in an inconvenient place; ensure safe access and use a ladder or scaffold if required.

Always de-energise the screw press before installing or removing the sensor.

- Do not mount the transducer deeper than flush with the inner cylinder wall — contact with the screw will damage or destroy the transducer.
- Transducer lifetime depends on the abrasiveness of the sludge cake. If the sludge is atypically abrasive, consult your supplier before installation.
- Protect all cables against mechanical damage; ideally use flexible stainless steel conduits.

2.4 REPAIR AND HANDLING

- The unit contains no user-serviceable parts. Opening the control box is permitted only by authorised service personnel.
- Protect units and cables against impact, buckling, moisture ingress, and chemical exposure.

03 INTENDED USE

3.1 APPLICATION

The OAE-SCOUT measures the dryness of sludge cake discharged from a screw press in real time. It is intended for use in wastewater treatment and sludge dewatering applications. Typical applications include automatic optimization of dewatering settings, process monitoring, and internal data logging.

The sensor has not been accredited for application in legal compliance. Verify legislation and possibilities locally before using the sensor for this purpose.

3.2 OPERATING LIMITS

The sensor must only be operated within the limits specified in Chapter 4. Operation outside these limits may result in measurement errors or permanent damage.

04 SPECIFICATIONS

4.1 TECHNICAL SPECIFICATIONS

Parameter	Value
Measurement	Sludge Cake dry solids concentration (%DSC)
Measurement principle	Ultrasonic backscattering and impedance
Measurement range	10–80 %DS Below 10 %DS the sensor produces a useful measurement, but with reduced accuracy.
Accuracy (practical)	±0.25 %DSC (practical achievable in the field), ±0.1 %DS (theoretical)
Fouling resistance	Up to 2 mm of (bio)fouling without effect on measurement
Minimum sample depth	40 mm (measured from transducer tip)
Calibration	Inline 3-point calibration required for accurate %DSC readings. Recalibration not required unless sludge composition changes substantially; annual recalibration recommended.
Measurement rate	1 Hz (one result per second; configuration-dependent)

4.2 HARDWARE SPECIFICATIONS

Parameter	Value
Dimensions (control box)	125 × 80 × 57 mm
Transducer dimensions	90 mm length × 10 mm diameter
Material	Powder-coated aluminium (control box), SS316 (transducer), epoxy (transducer window)
Operating temperature	−10 to +55 °C (ice-free)
Storage temperature	−20 to +60 °C
Maximum operating pressure	10 bar
Ingress protection	IP67 (dependent on cable connection quality)
Connector	8-pin M12 A-coded female (on control box)
Communication	RS485 Modbus RTU; 4–20 mA analogue output
Power supply	5.5–24 V DC; 1.5 W average (at 5.5 V); 2 W peak
Mounting hardware	10 mm compression fitting to ½" BSP Customer inspection port with ½" socket (for ES/FS/GS)

05 OPERATING PRINCIPLE

5.1 MEASUREMENT PRINCIPLE

The OAE-SCOUT is an ultrasonic concentration meter for the measurement of dry solids concentration in sludge cake. The sensor operates on the backscattering and impedance of ultrasonic waves in a liquid, gel, or cake medium. Ultrasonic pulses are sent into the medium, and the returning signals are processed using OLPAS proprietary algorithms to calculate the dry solids concentration.

5.2 SAMPLE VOLUME

The sensor transmits and receives ultrasonic pulses using a single transducer. The measurement volume extends from a few millimetres in front of the transducer to approximately 30–40 mm depth. Because the measurement starts a short distance away from the transducer, the result is not influenced by material in direct contact with the transducer. This makes the sensor inherently tolerant of several millimetres of fouling on the transducer window.

5.3 EFFECT OF AIR BUBBLES

Air bubbles affect the ultrasonic measurement in two ways:

- A large air pocket in direct contact with the transducer will block transmission of the ultrasonic pulse and strongly disturb the measurement. For this reason, the sensor should be installed where at least a slight flow exists, so that air bubbles are continuously pushed away from the transducer face.
- Finely dispersed air bubbles carried by the flow can reflect or scatter ultrasonic waves. The OAE-SCOUT compensates for this effect. Where possible, ensure sufficient cake compression to minimise entrained air.

5.4 TEMPERATURE DEPENDENCE

OLPAS technology provides a measurement that is independent of the temperature of the sensor or the medium. However, rapid temperature transients may temporarily disturb the measurement until thermal equilibrium is re-established.

06 INSTALLATION

6.1 MECHANICAL INSTALLATION

Before installation, confirm that the installation environment complies with the limits in Chapter 4.

6.1.1 GENERAL REQUIREMENTS

- Install the transducer perpendicular to the dominant flow direction.
- Ensure at least 40 mm of free sample depth in front of the transducer window. Do not allow air pockets to form under the transducer window.
- Apply appropriate thread sealant or PTFE tape to the compression fitting to prevent seizing.
- Protect the transducer cable with ideally a flexible stainless steel conduit.

WARNING	Mounting the transducer too deep risks the screw contacting and breaking the transducer. The transducer tip must be flush with the inner cylinder wall - not protruding.

6.2.2 INSTALLATION ON VOLUTE DUO

The ½" compression fitting is located in the compression box at the end of the cylinder. Mount the transducer tip flush with the inside surface of the cylinder.
The control box is the 'tunnel' between the moving rings and the outlet box.

6.2.3 INSTALLATION ON VOLUTE SIZES 300, 350 AND 400

Replace the last inspection port of the cylinder by the custom inspection port that includes a ½" socket. The compression fitting is installed in this socket. As the inspection port diameter is smaller than the transducer diameter, **the fixed ring adjacent to the inspection port has been modified**.

Mount the transducer tip flush with the inside surface of the inspection port.

The control box is fitted to the end plate cover. The transducer cable requires a sealed cable entry through the cover to protect against spray water and mechanical damage.

VOLUTE 300/350/400 mounting detail.

6.2.4 INSTALLATION ON SMALLER VOLUTE SIZES

For VOLUTE sizes below 300, a custom fitting is required to ensure sufficient sample depth and clearance for the transducer. Contact your dealer for details.

6.2.5 RETROFITTING ON EXISTING VOLUTES

The OAE-SCOUT can be retrofitted on all VOLUTE DUO sizes without mechanical modification. For retrofitting on VOLUTE DUO sizes 300, 350, and 400, contact your dealer.

For all installations, a cable entry hole must be drilled in the housing. Deburr and protect all edges of the hole to prevent damage to the transducer and controller cables.

6.3 ELECTRICAL CONNECTION

Electrical installation must be carried out by a qualified electrician in accordance with applicable national and international regulations.

⚠ CAUTION	It is neither necessary nor recommended to open the control box for the electrical connection. Use the external 8-pin M12 connector instead.

The control box connects via an 8-pin M12 A-coded female connector. A mating 90° male connector is supplied with the unit; a cable is not included. The number of wires required depends on the output type used (see table below). Use a shielded cable with a minimum conductor cross-section of 0.1 mm².

Pin	Signal	Required for
1	**RS485 B**	Modbus RS485
2	**V+ (supply voltage 5.5–24 V DC)**	Always
3	**GND**	Always
4	**RS485 A**	Modbus RS485
5	**4–20 mA output GND**	4–20 mA analogue output
6	**4–20 mA output high**	4–20 mA analogue output
7	**GND**	Always
8	**Cable shield**	Recommended

Do not connect the cable shield directly to the enclosure — this can cause ground loops and potential sensor damage.

Ensure all enclosure covers and cable connectors are properly sealed to prevent water ingress.

6.3.1 POWER SUPPLY

Recommended supply voltage is 24VDC, allowed supply voltage is 5.5–24 V DC. Nominal power consumption is 1.5 W (at 5.5 V) and peak is 2 W. A measurement result is available approximately 3–4 seconds after power-up (exact timing depends on configuration).

6.3.2 USB CONFIGURATION CABLE CONNECTION

A USB-to-M12 converter cable is supplied for direct PC connection. This cable allows the sensor to be read and configured without an external power supply or Modbus master. It uses the FTDI FT232RQ USB-to-serial UART IC, which is supported on most common operating systems.

When connected, the sensor is powered via the USB port of the connected device. A battery-powered device (e.g. a laptop) is recommended to avoid ground loops.

To connect:

1. Connect the M12 plug of the USB cable to the control box connector.
2. Connect the USB plug to the PC.
3. The FTDI device is detected automatically. Install drivers if prompted (www.ftdi.com).
4. Access the sensor via the OLPAS-AMCON Calibration Tool (see Section 7.3) or any standard Modbus configuration software.

07 CALIBRATION

7.1 OVERVIEW

The OAE-SCOUT output is linear with respect to cake dryness. The relationship between the raw transducer signal and the output value is defined by an offset and a scale factor:

output = (transducer signal) × scale factor + offset

The factory calibration delivers a linear response that correlates with cake dryness. As such, it is already suitable to be used for automation. However, the absolute values will not correspond to the %DSC of cake dryness. An inline 3-point calibration is therefore recommended.

There is no inherent drift in the sensor output over time. Recalibration is not required unless the nature of the sludge changes substantially. Annual recalibration is nevertheless recommended as a precaution.

7.2 PREPARATION

- Run the screw press at stable settings for at least 1 hour before starting the calibration procedure. This ensures representative cake samples and stable sensor behaviour.
- Collect cake samples of at least 50g to ensure representativeness.
- At least 3 calibration points are required. More points improve accuracy. Points should span the widest practical range of cake dryness.

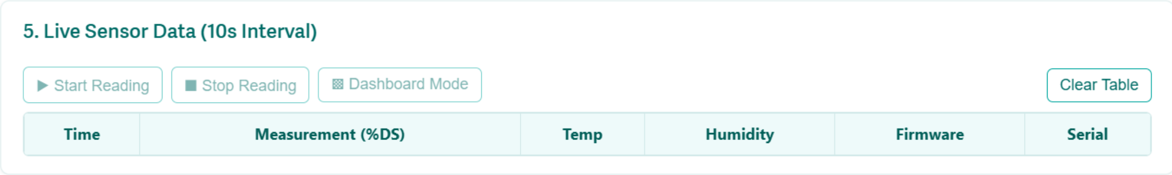
CAUTION	The accuracy of calibration is highly dependent on the quality of physical sampling and subsequent laboratory dryness measurement. Representative, well-mixed samples taken under stable process conditions give the best results.

7.3 CALIBRATION TOOL

Calibration and configuration are performed using the USB configuration cable and the OLPAS-AMCON Calibration Tool, a Progressive Web Application (PWA) accessible from most modern web browsers. The tool serves as a user-friendly interface to relevant data and settings. A broader set of data and settings is accessible via the OLPAS native calibration tool, available upon request.

7.4 CALIBRATION PROCEDURE — SAMPLING

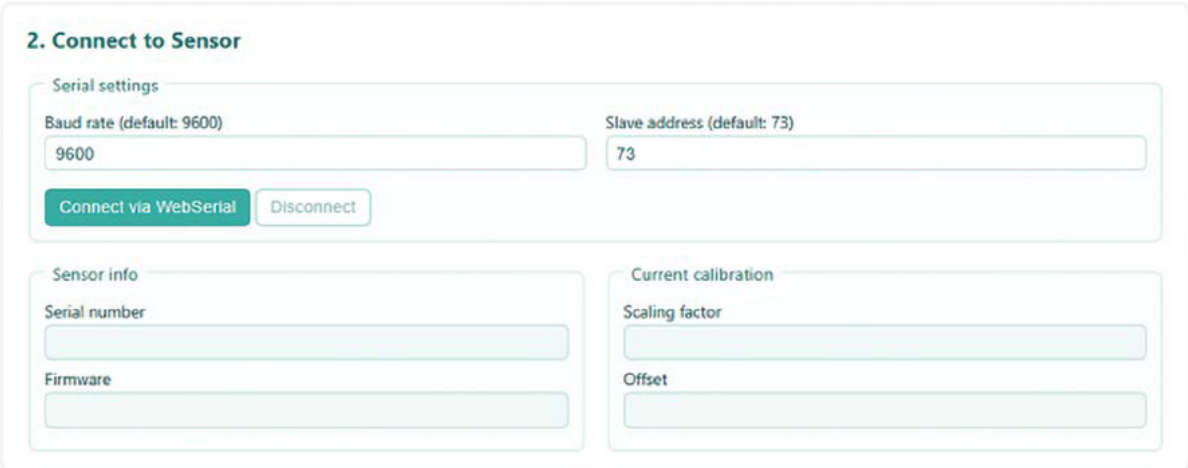
1. Run the screw press at stable settings for at least 1 hour.
2. Connect the sensor to a PLC or PC (via the USB configuration cable).
3. Record sensor measurement no. 1 and simultaneously take sludge cake sample no. 1.
   To read the sensor data directly from the sensor, press 'Start reading' in the calibration tool.



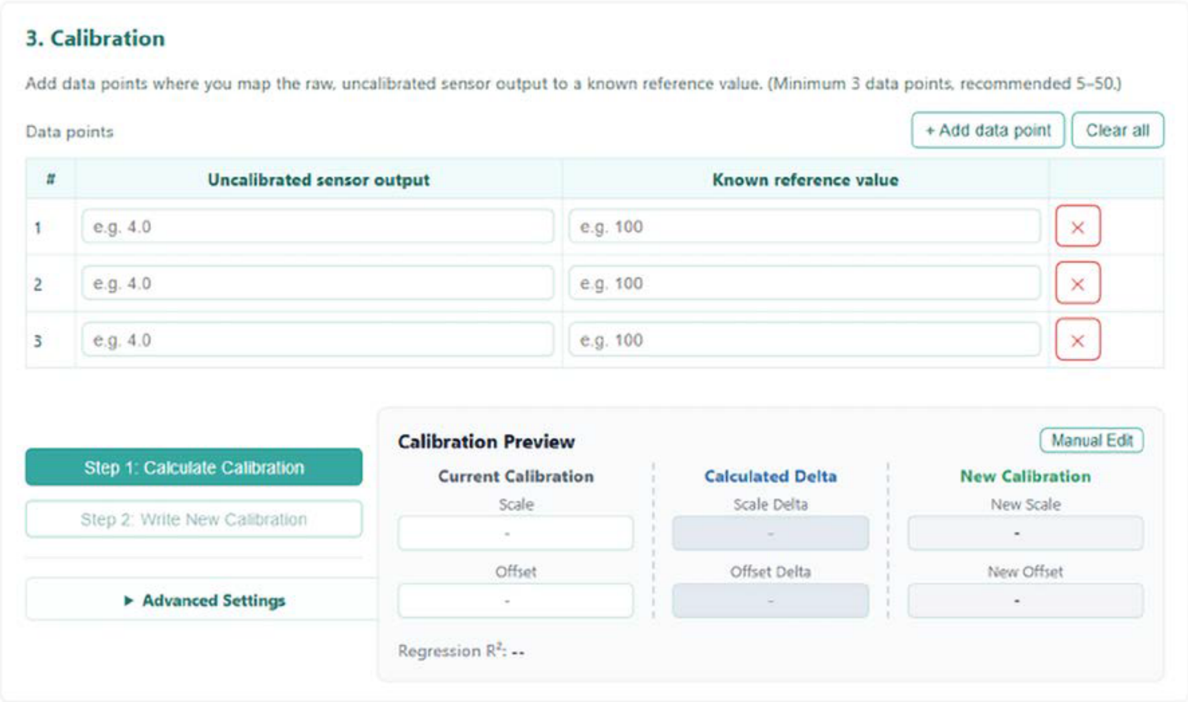
4. Adjust screw speed (e.g. increase by 1 rpm) and wait 20–30 minutes for performance to stabilise.
5. Record sensor measurement no. 2 and take cake sample no. 2.
6. Repeat until the required number of calibration points has been collected.
7. Switch off the screw press. Send cake samples to a laboratory for dry solids analysis.

7.5 CALIBRATION PROCEDURE — ENTERING DATA

1. Connect the USB configuration cable between the control box and a PC.
2. Open the OLPAS-AMCON Calibration Tool in a web browser and follow the instructions to connect via WebSerial.
3. Once connected, the tool displays the sensor serial number, firmware version, and current offset and scale factor values.



4. Enter the sensor output (in %DSC) and lab measurement (also in %DSC) for each calibration point.
5. Press "Step 1: Calculate Calibration". The tool calculates and displays proposed new values and an R^2 coefficient indicating calibration quality.



6. If required, manually adjust the proposed values using "Manual Edit".
7. Press "Step 2: Write New Calibration" to write the new values to the sensor.
8. Consider exporting the calibration data as a JSON file for convenient future recalibration. The sensor is now calibrated. The control box output represents actual cake dryness in %DSC.

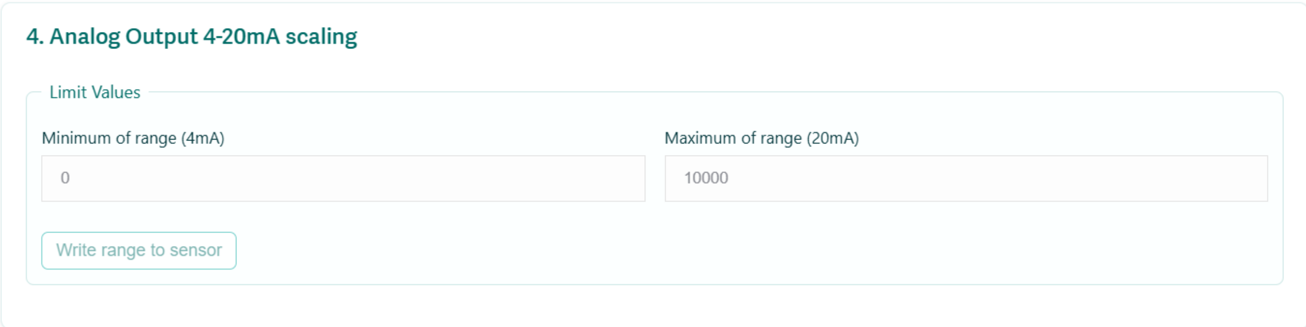
To reuse an existing calibration, press "Import Calibration JSON" and follow the on-screen instructions.

08 CONFIGURATION

8.1 4–20 mA ANALOGUE OUTPUT

By default, the 4–20 mA output represents 0–100 %DS (4 mA = 0 %DS; 20 mA = 100 %DS).
The output has 2620 steps across the 4–20 mA range (4095 steps across 0–25 mA), corresponding to a theoretical resolution of approximately 6 µA or 0.038 %DS. This resolution is without rescaling sufficient for all typical measurement applications.

The range can be adjusted in the calibration tool, by adjusting the maximum and minimum limits. Ensure that the limits set on the sensor and set in the Volute control panel are identical.



8.2 RS485 MODBUS CONFIGURATION

The OAE-SCOUT communicates via RS485 Modbus RTU with the following parameters:

Parameter	Value
Baud rate	9600 (adjustable in calibration tool)
Data bits	8
Parity	None
Stop bits	1
Default slave address	73 (adjustable in calibration tool)
Data format	Unsigned 16-bit integers

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8.2.1 INPUT REGISTERS (READ — FUNCTION CODE 4)

Measurement values are read from the sensor input registers:

Register Address	Parameter	Description
0	**Measurement Value**	Dry solids concentration in %DSC, scaled ×100 (e.g. 1500 = 15.00 %DSC)
1	**Temperature**	PCB temperature in K, scaled ×100 (e.g. 29815 = 298.15 K = 25.00 °C)
2	**Humidity**	PCB internal humidity in %, scaled ×100 (e.g. 4500 = 45.00 %)
3	**Serial Number**	Unique sensor serial number (0–65535)
4	**Firmware Version**	Firmware version number (0–65535)

Registers 1 and 2 return values multiplied by 100. The 16-bit output maximum is 65535, corresponding to 655.35 in physical units.

8.2.2 HOLDING REGISTERS (READ/WRITE — FUNCTION CODES 3 / 16)

Sensor configuration parameters are stored in holding registers and can be read (function code 3) or written (function code 16). All values are unsigned 16-bit integers.

WARNING

In normal operations, only the offset and scaling factors should be adjusted. The advanced parameters below the red line should only be changed after careful discussion with your supplier.

The full output calculation formula is:

$$output = \pm(O \times 10^{OP} \times 10^{-ON}) + M \times (\pm S) \times 10^{SP} \times 10^{-SN}$$

Where M is the raw measurement result. The sign of O and S is controlled by the Offset Sign (register 1) and Scale Factor Sign (register 5) respectively: 0 = positive, 1 = negative.

Address	Parameter	Default	Description
0	**Offset (O)**	0	Offset added to the measurement result
1	**Offset Sign**	0	0 = positive offset; 1 = negative offset
2	**Offset Positive Exponent (OP)**	0	Multiplies offset by 10^OP
3	**Offset Negative Exponent (ON)**	0	Multiplies offset by 10^–ON
4	**Scale Factor (S)**	1	Scale factor applied to the measurement result
5	**Scale Factor Sign**	0	0 = positive scale factor; 1 = negative scale factor
6	**Scale Positive Exponent (SP)**	0	Multiplies scale factor by 10^SP
7	**Scale Negative Exponent (SN)**	0	Multiplies scale factor by 10^–SN
8	**Alpha (smoothing)**	10	Temporal smoothing factor. Higher value = slower response, more stable reading.
9	**Number of Pulses**	25	Ultrasonic pulses per measurement. Higher value = more stable but slower measurement (~25 pulses/s).
10–14	**Frequency parameters**	—	Not user-adjustable
15	**Gain**	—	Signal amplification (1–250). Increase only if required accuracy is not achieved. Excessive gain causes signal saturation (see alarm coil 2).
16–21	**Internal DSP parameters**	—	Not user-adjustable

8.2.3 ALARM COILS (READ — FUNCTION CODE 1)

The sensor reports diagnostic alarms via Modbus coils:

Coil Address	Parameter	0 = OK	1 = Alarm
0	**General status**	OK	Fault present — check other coils
1	**Ultrasound module**	OK	Ultrasound module error
2	**Signal saturation**	OK	Signal saturated — reduce Gain (register 15)
3	**Signal quality**	OK	Poor signal quality — check installation and fouling
4	**Water ingress**	OK	Internal humidity ≥ 85 % — inspect enclosure seals immediately
5	**Temperature too high**	OK	Internal temperature > 60 °C — check environment
6	**Temperature too low**	OK	Internal temperature < −10 °C — check environment
7	**Output overflow**	OK	INT16 overflow — measurement value out of 16-bit range

09 INTERPRETING MEASUREMENTS

9.1 MEASUREMENT QUALITY

Depending on configuration, the measurement value is updated every 1–3 seconds.

The theoretical resolution of the sensor is ±0.1 %DS. In practice, agreement with lab reference data of ±0.25 %DS is achievable within the 10–80 %DS operating range, with proper calibration and representative sampling. Below 10 %DS the sensor continues to produce a useful measurement, but agreement with lab data is reduced.

Note that this figure reflects comparability with lab reference measurements, not absolute accuracy. Lab dry solids measurements are subject to the same sources of variation as the inline sensor: sludge cake non-homogeneity, cross-sectional variation across the press cylinder, and temporal changes in cake properties. The inline sensor and the lab method are therefore measuring the same inconsistent process — the ±0.25 %DS figure should be interpreted as the agreement between two imperfect methods, not as a limitation of the sensor itself.

9.2 CONDITIONS AFFECTING DATA VALIDITY

The following conditions affect the reliability of the sensor output and should be accounted for when interpreting data:

Condition	Effect on measurement	Action
Screw stops	Measurement value peaks and may plateau significantly above the normal operating value. This is normal behaviour and a consequence of the measurement principle.	Discard measurements taken while the screw is stopping and stopped. Exclude this data from logging and control.
Start after short stop, without emptying.	Approximately 20 minutes required for a representative cake to reform.	Exclude data for the first ~20 minutes after restart and/or delay reaction.
Start after long stop, with empty cylinder.	Up to 45 minutes required for a representative cake to reform.	Exclude data for up to ~45 minutes after restart and/or delay reaction.
Screw speed variation	Screw rotational speed does not influence the measurement in normal operation.	No action required.
Rapid temperature change	May temporarily disturb the measurement until thermal equilibrium is reached.	Allow sensor to stabilise before using data.

10 MAINTENANCE

10.1 ROUTINE MAINTENANCE

Perform a visual inspection of the control box, transducer, and all cables periodically. Check for signs of mechanical damage, corrosion, or degraded seals. If damage is found, contact your supplier before continuing operation.

10.2 CORRECTIVE MAINTENANCE

Check transducer fouling annually or whenever measurement data seems to be not representative anymore.

1. Mark on the transducer the installation depth to ensure remounting in the exact same depth.

2. Remove the transducer from the compression fitting.
3. Inspect the transducer window and clean it using a soft cloth and mild cleaning agent.
4. Reinsert the transducer at the correct installation depth (flush with the inner cylinder wall).
5. Perform a recalibration.

WARNING	Do not use abrasive cleaning methods. Abrasive tools or compounds will damage the transducer window and housing coating.

WARNING	Mounting the transducer too deep risks the screw contacting and breaking the transducer.

If the transducer window is physically damaged, attempt recalibration to restore predictable performance. If recalibration does not resolve the issue, contact your supplier for a replacement transducer.

10.3 REPLACEMENT PARTS

The following replacement parts are available via your supplier.

- Transducer (incl. cable to compression box)
- 10 mm to ½" BSP compression fitting
- Compression fitting ferrules
- USB Configuration cable

11 TROUBLESHOOTING

The following table lists common symptoms, probable causes, and recommended corrective actions.

Symptom	Probable Cause	Action
No Modbus response	No power; wiring error; wrong slave address	Check supply voltage on Pin 2/7. Verify RS485 A/B polarity (Pins 4/1). Confirm slave address is 73 (or as ordered).
4–20 mA signal absent or out of range	Wiring error; no power	Verify Pins 5/6 wiring. Check power supply.
Measurement value does not respond to changes in cake dryness	Sensor not calibrated; signal saturated (Gain too high); severe fouling	Clean transducer window. Connect via Modbus and check alarm coil 2 (saturation). Reduce Gain (register 15). Recalibrate.
Measurement value peaks when screw stops	Normal behaviour — see Section 9.2	Discard data collected while press is stopped.
Measurement value does not correspond to cake dryness at startup	Normal behaviour — see Section 9.2	Discard data collected while press is starting up, to allow a representative cake to form in front of the sensor.
Calibration produces low R^2 value	Insufficient calibration points; poor sample representativeness; unstable process during sampling	Increase number of calibration points. Ensure samples are taken under stable process conditions. See Section 7.2.
Measurement value is erratic or noisy	Air bubbles at transducer; vibration; poor signal quality	Connect via Modbus and check alarm coil 3. Ensure sufficient pressure and movement of the cake to eliminate effects of air bubbles. Check mechanical fixing.
Alarm coil 4 active (humidity ≥ 85 %)	Water ingress into control box	Inspect and reseal all cable entries and enclosure joints. Contact supplier if humidity does not decrease after resealing.
Alarm coil 5 active (temperature > 60 °C)	Excessive ambient temperature	Review installation environment. Add heat shielding or ventilation if necessary.
Alarm coil 6 active (temperature < −10 °C)	Excessive cold	Provide insulation or trace heating.

12 FACTORY DEFAULT SETTINGS

The following table lists all configurable parameters and their factory default values. Use this table as a reference when restoring default settings or commissioning a new sensor.

Register	Parameter	Factory Default	Notes
0	**Offset (O)**	0	
1	**Offset Sign**	0	0 = positive
2	**Offset Positive Exponent (OP)**	0	
3	**Offset Negative Exponent (ON)**	0	
4	**Scale Factor (S)**	1	
5	**Scale Factor Sign**	0	0 = positive
6	**Scale Positive Exponent (SP)**	0	
7	**Scale Negative Exponent (SN)**	0	
8	**Alpha (smoothing)**	10	
9	**Number of Pulses**	25	
15	**Gain**	—	Device-specific; see label
Modbus slave address	**Slave Address**	73	Other addresses available on request
Analogue output	**4 mA point**	0 %DS	
Analogue output	**20 mA point**	100 %DS	

13 DISPOSAL, REPAIR AND RETURN

- The unit contains no user-serviceable parts. Opening the control box is permitted only by authorised service personnel.
- For return shipments, ensure the unit is free from contamination, in particular from hazardous or toxic substances.
- Dispose of the product and its components in an environmentally responsible manner, in accordance with applicable national regulations.

14 WARRANTY

14.1 WARRANTY COVERAGE

AMCON Europe s.r.o. warrants the OAE-SCOUT sensor against defects in materials and workmanship under normal use and service conditions. The warranty period is 2 years, unless otherwise specified in the sales agreement or related documents.

14.2 WARRANTY EXCLUSIONS

The warranty does not cover damage resulting from:

- Improper installation, operation outside the specified limits.
- Use contrary to the instructions in this manual.
- Unauthorised modification, opening of the control box, or repair by non-authorised personnel.
- Normal wear of consumable parts, including the ultrasound transducer, O-rings, and compression fitting ferrules.
- Physical damage caused by impact, abrasion, chemical attack, or water ingress resulting from improper sealing.

A ANNEX A — CE / REGULATORY COMPLIANCE

EU Declaration of Conformity

Olpas bv
Slachthuisstraat 120 bus 17
2300 Turnhout
Belgium
Web: www.olpas.tech
E-mail: olpas@olpas.tech

Product Name	Real-time Cake Dryness sensor (Inline)
Type	OAE-SCOUT

Name and address of the manufacturer:

Olpas bv
Slachthuisstraat 120 bus 17
2300 Turnhout
Belgium

This declaration of conformity is issued under the sole responsibility of the manufacturer.

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

- **2014/30/EU** - Electromagnetic Compatibility Directive
- **2011/65/EU** - EU RoHS Directive (Restriction of Hazardous Substances) and its amendments (including (EU) 2015/863)

Harmonised standards applied:

- **EN IEC 61326-1:2021** - Electrical equipment for measurement, control and laboratory use — EMC requirements — Part 1: General requirements (Industrial electromagnetic environment)
- **EN IEC 63000:2018** - Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Signed for and on behalf of Olpas bv

Turnhout, Belgium
2025-12-01

Jo Wouters
Director, CEO

Olpas

CE

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