

DSE4I30 Moisture Meter - for bale handling cranes



New generation:

- **Measures up to 40% moisture**
- **Unique density compensation software**
- **Ready for HD bales**

DSE4130 Moisture Meter for cranes

DSE4130 is a new generation of microwave based moisture measuring system designed for industrial application on bale handling cranes. It is interface compatible with the DSE4100 system.

DSE4130 system provides fast and representative measurements during unloading of incoming bales and gives an easy overview of the moisture content that can be used for calculation of supplier payment and storage optimisation.

Measuring principle

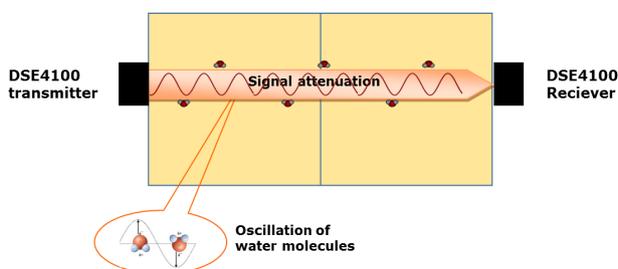
DSE4130 sensors are designed for mounting on crane claws for measuring through 2 bales simultaneously.

Each crane claw can be equipped with a minimum of 2 sets of DSE4130 sensors (spots). Each set containing a microwave transmitter and a microwave receiver to be installed across each other and a connection box.

When a measurement is activated by the operator or automatically, the transmitters send out a microwave beams through the bales.

Being exposed to microwaves, the water molecules in the test material start to oscillate, causing energy loss of the beam. The attenuation of the microwave signal is calculated into a moisture percentage and communicated to the local PC/PLC.

The signal attenuation increases with amount of moisture content .

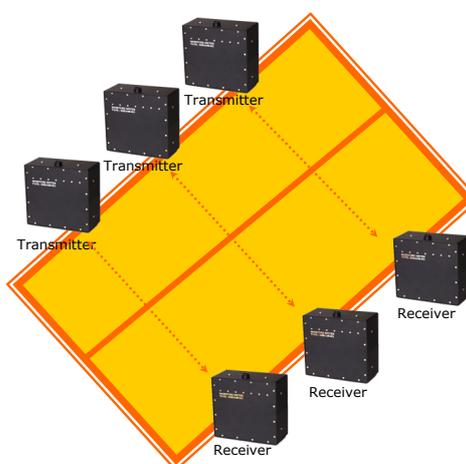


Advantages of DSE Microwave Technology

Microwave Technology has over time proven to be the most efficient moisture measuring method in industrial application setting, compared to other technologies.

✓ Representative measurements

The microwaves are transmitted through large quantities of material, providing valid, representative data about the moisture content. For optimal bale coverage and more extensive test data it is recommended to install at least 3 sets of DSE4130 sensors per claw.



✓ Fast and accurate data

Microwaves operate within an error range of +/-1% absolute moisture. In order to achieve the highest accuracy, taring is performed prior to each measurement, before the yoke is placed over the strawbales. With a measuring time of 250 mS per measuring spot, the total measuring time for each bale layer only lasts few seconds.

✓ Durability and reliability

DSE4130 is designed for tough industrial environments and meets the required performance standards. The non-contact technology ensures reliable, consistent measurements every time and requires minimal maintenance and service.

System description

DSE4130 is controlled by a PC based Windows software containing following features:

- Automatic test control
- Database
- Serial communication with crane
- Service displays including manually operated control functions

Technical data

Measuring range with default density setup: 6 - 35% moisture *)
Up to 40% with the DSE4140 variant.

When the density setting changes the measurement range will be as follows

Dry weight density	DSE4130	DSE4140
120 kg/m ³	35,0%	40.0%
130 kg/m ³	32,7%	37.3%
140 kg/m ³	30,7%	35.0%
150 kg/m ³	29,0%	33.0%
160 kg/m ³	27,5%	31.3%
170 kg/m ³	26,2%	29.7%
180 kg/m ³	25,0%	28.3%
190 kg/m ³	23,9%	27.1%
200 kg/m ³	23,0%	26.0%

*)Bale 500 kg, format: 1.2 m x 2.4 m x 1.3 m containing 14 % moisture. DSE4100 Moisture Meter is applicable to large square bales of any format, varying in height from 0.7 m—1.3 m. Tare distance 2.5 m.

Measuring accuracy

+/- 1 % absolute moisture.

Measuring time per spot

250 mS for zeroing / Tara
250 mS for measuring
incl. data handling.

Size of sensor units

L x 220 mm x W 220 mm x H 110 mm

Weight of sensor units

TX: 2.5 kg RX: 2.5 kg

Ambient temperature

-15°C to + 50°C for transmitter, receiver and connection box.

Ingress Protection

IP 65

Power

230 VAC/50 Hz for connection box,
120 W (option: 110 VAC/60 Hz)

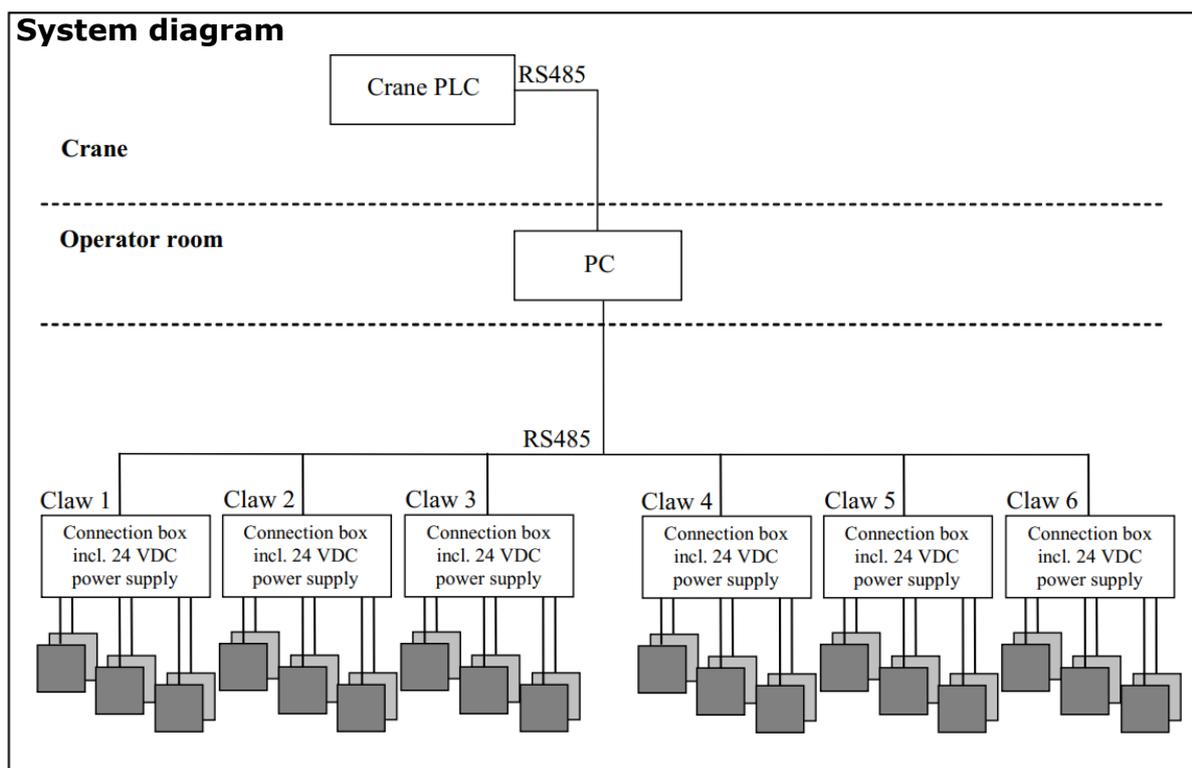
Radiated power

DSE4130 0.25W / 24dBm

DSE4140 0.25W / 24dBm *)

*) by low moisture, will raise to 10W / 40dBm by high moisture, but only radiated into the bale, which will absorb most of the reradiated microwaves.

CE compliance





About DSE Test Solutions

DSE Test Solutions is a Danish knowledge based company that develops and manufactures high tech test- and measurement solutions for various industries. Today we are the leading supplier of moisture meters for straw driven thermolectric plants worldwide. Our Microwave Technology is known for precision and durability, and has become the preferred technology in the Bio-energy sector. We strive for understanding our customers' needs and adapt our product offering accordingly.

DSE4130 scope of supply

A complete DSE4130 system for standard 18 spot configuration includes:

- 18 spots—for 6 claw crane with 3 spots on each claw
- 6 connection boxes, one for each claw
- Cables from connection boxes to sensors
- 1 PC controlling software package
- 1 set of documentation for installation and operation in English

Software options:

5 fixed bale classes

The 5 bale classes can be defined by different width or density, to be configured by DSE on request.

From the crane control the bale type is selected for the measurements.

Variable density compensation (DSE4100VD)

With this option the system is able to calculate the moisture value based on information from the crane about the weight, length and type of bales and based on this information make a dynamic density compensation

To define the bale density, the crane must deliver information about:

- The average weight of the bales in the yoke
- The bale type
- The length of the bales. If not available from the crane, then a standard length can be defined for each bale type e.g. 245 cm

For more information see DSE4100VD datasheet.

DSE4140 extended range version

Extends the measurement to 40% moisture @ Hesston bales / DM 120kg / M³

DSE4130 Spare parts package

- 3 pcs. DSE4130-TX
- 3 pcs. DSE4130-RX
- 6 pcs. 4 m cables from connection box to sensors. With crimp connector

DSE41XX Verification plates

1 set of verification plates with an approximate attenuation of 10 %, 17 % and 24 % relative moisture (500 kg weight class). Accuracy: ± 2 % moisture.

Installation

DSE can offer installation, test and verification on-site on request.

Further information

For further information, please contact our sales department by phone +45 75 61 88 11 or by e-mail dse@dse.dk.