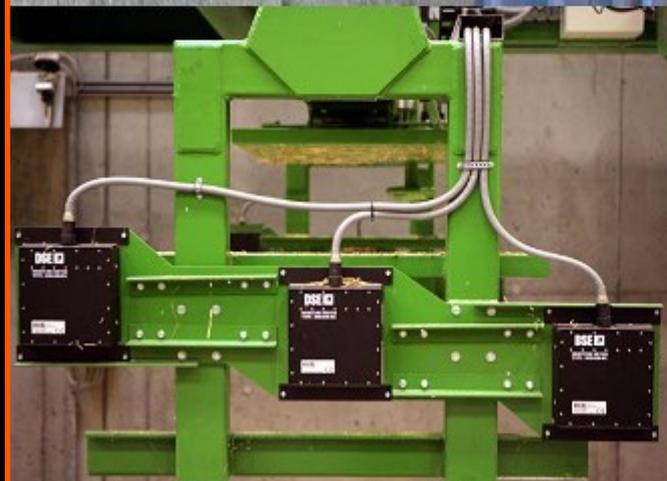


DSE4100 Moisture Meter - for Bales of Biomass



DSE4100 Moisture Meter for bales of biomass

The advanced technology—designed for 24 hours operation in tough industrial environments—has a well proven record for accuracy and reliability in many installations throughout Europe and America.

The DSE4100 Moisture Meter is capable of measuring moisture content up to 30%.

The measuring principles are based on microwave technology.

Why microwave-based measuring?

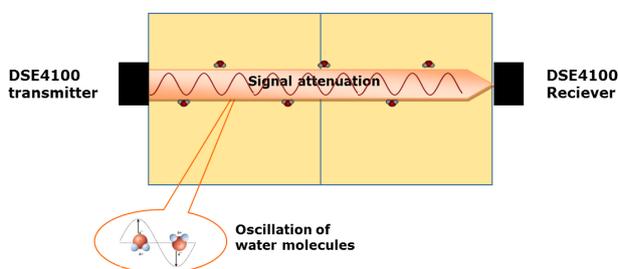
- More useful

Microwave technology is more useful than other alternative methods, because it measures a larger quantity of materials rather than just the surface moisture content or a material sample.

- Travels through nonconductive materials

Microwaves are able to travel through nonconductive materials. In materials with a polar structure, as for example water, the electrical field of microwaves can induce quantum oscillations whilst travelling through the medium.

During this process, the microwaves lose some of their energy, resulting in less energy reaching the other side of the bale. The energy loss increases with the amount of moisture that the bale contains.



No contact with test material

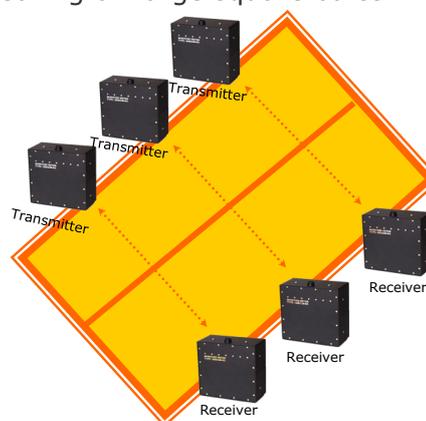
The DSE4100 Moisture Meter does not need to be in contact with the bales. Therefore, the system can measure a larger quantity of material than the contact-based systems such as a measuring spear, which only measures in the area of contact.

How to measure

The principle is to place a transmitter and a receiver on each side of the bales.

The transmitter transmits the microwaves through the material, and the receiver measures the strength of the signal passing through.

Measuring on large square bales:



To get correct measurement a zero measurement must be performed without bales, followed by a measuring with bales. The difference between these two results is converted to attenuation, which again is calculated into a moisture percentage.

Designed for cranes

The DSE4100 is designed for mounting on a crane yoke.

The system can be configured for a variable number of measuring spots, depending on the requirements.

Since the moisture content is not uniformly spread inside the bale, it is advantageous with several measuring spots on each bale to obtain the best results.

Experience shows that a minimum of three spots per set of bales provide an acceptable representation of the average moisture of the bales.

System description

The DSE4100 is controlled by a Windows-based software with the following features.

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

Technical data

Measuring range with default setup

6-30% for 500kg large square bales *)

Measuring range with other weight classes:

600kg: 6-27% *)

700kg: 6-26% *)

All data are based on a test made through two large square bales (total 2.4m).

*) Bale format: 1.2m x 2.4m x 1.3m with 14% moisture

The DSE4100 Moisture Meter is usable for any large square bale format, varying in height from 0.7–1.3m.

Measuring accuracy

+/- 1% absolute moisture.

Measuring time

500 ms per measuring point (250 ms zero measurement and 250 ms moisture test) incl. data handling.

Size of sensor units

L x 220 x W 220 x H 110 mm

Weight of sensor units

TX: 2.2Kg. RX: 2.5Kg.

Ambient temperature

-15 to + 40°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).

CE approval

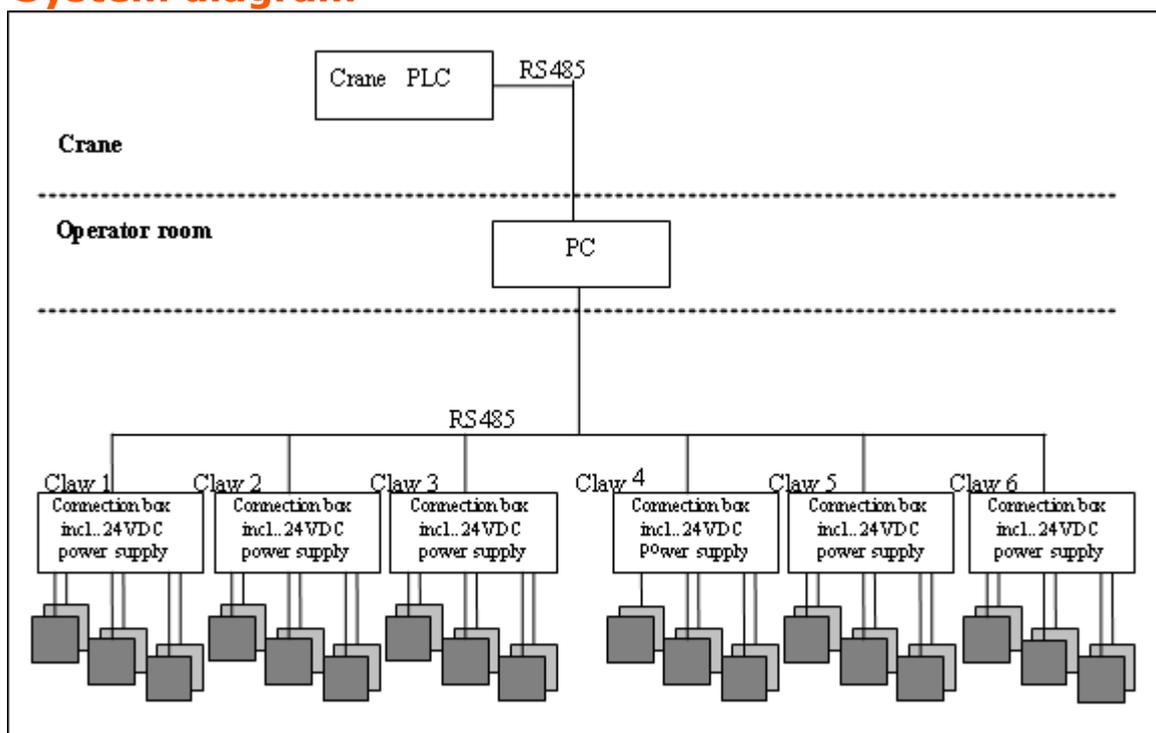
EN 55011 for emission

EN 50082 for immunity

EN 60204-1



System diagram



Ordering information's

A full DSE4100 system includes.

The standard configuration consists of the following:

- 18 spots (1 crane, 12 bales)
- 6 Connection boxes, one for each claw with 3 spots.
- Cables from connection box to each spot.
- 1 PC controlling software package.
- 1 set of documentation for operation and installation in English.

The DSE4100 can be ordered with following options:

DSE4100, software option for different density classes setups.

This software option will compensate for different bale density.

The crane control system will send a command with the actual density class. Then the PC controlling software will use the setup for this density class.

3 different density class:

- 500 kg. *)
- 600 kg. *)
- 700 kg. *)

Others are available on request.

*)Bale format:1.2m x :2.4m x 1.3m with 14% moisture.

DSE4100 Spare parts package:

The spare parts package consists of:

- 3 pcs. DSE4100-TX.
- 3 pcs. DSE4100-RX.
- 6 pcs. Cables, 4 meters from connection box to each unit. With crimp connector.

DSE4100 Verification plates.

This option consists of:

1 set of verification plates, with an attenuation equal to approximately 10, 17 and 24 % moisture (500kg class).

Precision: \pm 2% moisture.

DSE4100 Metallic conduit.

This option consists of:

- 144m metallic conduit for the cables from connection boxes and to the spots.
- 72 pcs. PG16 for metallic conduit.

Installation.

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

Further information

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

The history of DSE Test Solutions A/S

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 thermoelectric plants worldwide. Our Microwave Technology is known for it's precision and has become the preferred technology in the Bio-energy sector. We strive for understanding our customers' needs and adapt our product offering accordingly.

DSE Test Solutions A/S

Sverigesvej 19
DK-8700 Horsens
Denmark

Tel: +45 75618811

Fax: +45 75615895

Web: www.dse.dk

Mail: dse@dse.dk

