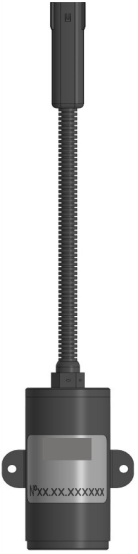


Ultrasonic proximity sensor

Escort “DGV-200”

Datasheet

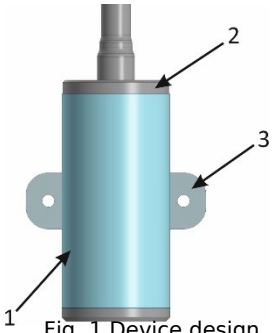
Serial number S

Date D

1. **GENERAL INFORMATION**

1.1 The ultrasonic proximity sensor Escort DGV-200 (hereinafter - ‘Sensor’, ‘Device’, ‘DGV-200’) is designed to measure the distance between itself and any objects that reflect the ultrasonic waves the sensor emits back at it (ground, snow cover, water, ice).

1.2 The DGV-200 can be used to monitor the position of movable parts of vehicles, machinery units’ mechanisms as well as the depth of tillage (applicable along with systems for monitoring efficiency of farming).



1 - main body
2 – cable
3 - fitting pad

Fig. 1 Device design Escort DGV-200

1.2 Application - measuring distance towards surfaces.

1.3 Measurement method - ultrasonic. Escort DGV-200 transmits its readings - the distance between the sensor and the object it is pointed at - to an external device by means of the RS-485 interface and in accordance with the LLS and Modbus RTU data communication protocols.

ATTENTION!

1.4 It is prohibited to attempt to disassemble the Device as it is a single unit and is not subject to repair.

1.5 It is prohibited to use the Device in conditions excelling the operating conditions stated in this Datasheet.

1.6 Avoid any damage to the Device, its parts, wires and cables.

2. DATASHEET

Table 1. Technical specs

Item	Value
Measurement range, m	from 0.2 to 4
Margin of error, cm	±1
Communication interface(s)	RS485
Data exchange protocol(s)	LLS, Modbus - RTU
Blind zone, cm	from 0 to 20
Operating mode	Digital
Power supply voltage, V	from 10 to 30
Power consumption, not more than, mA	30
Operating temperatures, ˚C	- from -40 °C to 50 °C
Ingress protection marking	IP67
Weight, not more than (kg)	0.85
Dimensions, not more than (mm)	107x78x895

3. SCOPE OF DELIVERY

Table 2. Scope of delivery

Item	Qty	S/ Nr.	Notes:
Ultrasonic proximity sensor Escort DGV-200 TEMG.407632.005	1		
Installation kit TEMG.416931.007	1		
Seal-tech plastic seal with unique number	1		
Sealing wire (L= 0.3 m)	1		
DATASHEET TEMG.407632.005 DS	1		in electronic form
Packaging	1		

The Manufacturer reserves the right to make changes to the scope of delivery without prior notification of the Customer.

4 SERVICE AND SHELF LIFE, WARRANTY

4.1 Guaranteed service and shelf life is 12 months after the Device is shipped from the manufacturer's warehouse.

4.2 Service life – 6 years.

4 .3 The manufacturer guarantees that the Device meets all specifications and requirements if the user adheres to transportation, storage and operation requirements.

4.4 The warranty does not cover any defects caused by the customer’s failure to meet the operation, storage and transportation requirements.

4.5 The manufacturer reserves the right to make changes in the product’s design and in its scope of delivery without prior notice to the customer.

5 DATE OF MANUFACTURE AND ACCEPTANCE CERTIFICATE

DGV-200 is manufactured in accordance with the current technical documentation and is approved for used.

6 PACKING CERTIFICATE

Ultrasonic proximity sensor Escort DGV-200 № ___S___ packed _____ in accordance with the requirements stated in the current technical specifications, datasheets and other regulatory documents.

7 ASSEMBLY, INSTALLATION PROCEDURE

7.1 Installing the Device on a plough.

7.2 The Device must be placed closer to the plough's center to avoid the oscillations in readings caused by the interference of the moving part of the plough during the work.

7.3 To fix the DGV-200 onto the plough's frame, drill two 3mm orifice at 60 mm from each other. The sensor must be oriented at 90° to the ground.

7.4 Next, fix the sensor using the installation kit's parts while ensuring that it's emitter is directed straight at the ground. Mount the extension-cable fixing it with plastic straps to the plough's parts that do not move.

7.5 If changing the network address is necessarybe sure to connect the DGV-200 to a laptop or PC by means of the USB-RS485 converter (not included in the scope of delivery of the Device). Download and fire up the 'DR-800 and DGV-200 configurator 2.6.4' software tool (hereinafter - 'Configurator') used to configure the Sensor.

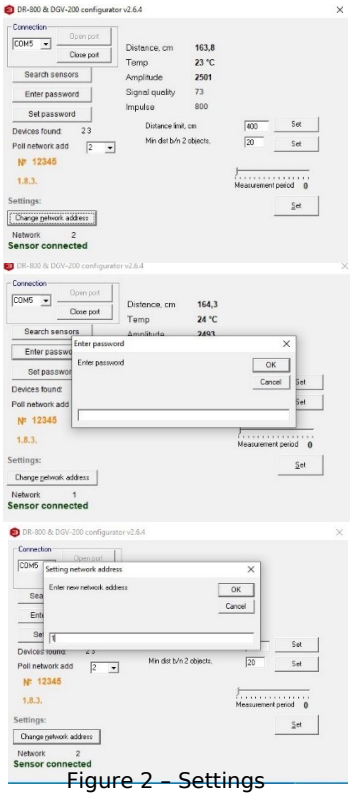


Figure 2 – Settings

Once the Configurator is fired up, click Open port (1), then click Search sensors (2), wait for the sensor to connect (3).

In case you need to change the network address of the Sensor (Fig. 2, 4), click Change network address, enter a different network address and click Ok. The network addresses can be 0...254. To reestablish the connection with the Sensor after its network address was changed, click ‘Search for sensors’ again (Fig. 2, 5). Click Set password (Fig 2, 5) in case you need to set up a password to protect the sensor from any attempts to tamper with its settings by any unauthorized third party. Enter the password (digits only) and confirm your action to set up and save the password.

Input and output boxes’ description:

- Distance - the distance measured by the sensor to the object(s) at which the sensor’s acoustic horn is directed;
- Temperature - the temperature inside the Sensor;
- Amplitude - the magnitude of the ultrasonic wave as reflected back at the sensor;
- Signal quality - the magnitude of the reflected ultrasonic wave compared against interferences «Min dist b/n 2 objects» - this setting determines what must a distance between two objects be for the sensor to

recognize them as two separate objects; if the actual distance between two objects is less than the value in that box, such objects will be treated as one;

- Distance limit - this setting sets up a limit for the operating range of the Sensor, in other words, any objects that are situated at a distance larger than the value established in thatbox will be ignored;
- Measurement period - the interval at which the distance measurements are made;

«First» - operating mode that allows the sensor to measure the distance to the closest object; **«Last»** - operating mode that allows the sensor to measure the distance to the farthest object. **«First and last»** - operating mode that allows the sensor to measure the distance to both the closest and the farthest objects simultaneously and transmit two readings via two different network addresses (7), for example, if network address 10 is set as the main one in the Device, the distance towards the closes object will be transmitted via the network address 10 itself and the distance towards the farthest object will be transmitted via the network address 11.

7.1.6 Connect the sensor to the GPS tracker of the unit as per the wiring diagram in Figure 3.

Table 3 DGV-200’s power and RS-485 pinout

Nr	Line/wire
1	+12V
2	RS-485 A
4	GND
5	RS-485 B

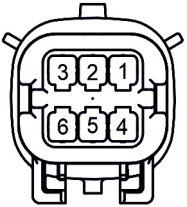


Fig. 3 Escort DGV-200: MOLEX Pinout

7.1.7 Next, measure the distance between the Device’s emitter and the ground while the plough’s blades are in contact with the ground.

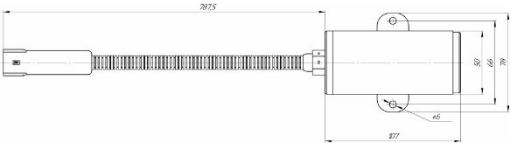
To calculate the depth of tillage, you need to subtract the subsequent readings of the sensor from the distance you measured earlier. This can be done in your monitoring platform.

7.1.8 The Device is installed, configured and ready for use.

8 DISPOSAL

The Device does not contain precious metals in the amount to be declared and accounted for.

Annex A Device design and dimensions



For notes