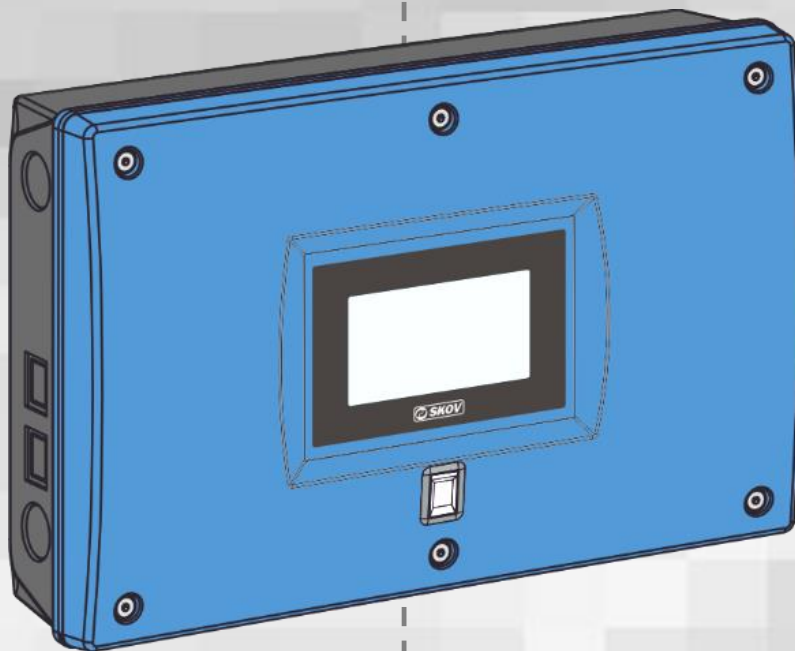


DOL 2400 • DOL 2300

Alarm System

Technical Info



1 Product Description

The DOL 2400 alarm system is primarily used for monitoring ventilation in livestock houses and can monitor the temperature in up to 20 house sections. The system can also be used for triggering alarms at equipment errors and other alarm situations such as fire. The DOL 2400 collects all the events such as alarms and service in a joint log, which can be used for analysis and statistics.

The DOL 2300 is a scaled-down version of DOL 2400. DOL 2300 differs from DOL 2400 by only having ON/OFF-inputs and not having climate backup and outputs.

The alarm system consists of the DOL 2400/DOL 2300 alarm unit, input providers such as sensors and house computers, and local alarm indicators such as horns or alarm lights. The unit comes with power supply and battery, and is connected to a 230 V AC output.

Some variants has a built-in GSM modem, and a fixed-line telephone modem is also available as an accessory for areas with poor mobile network coverage. DOL 2400/DOL 2300 can therefore call up and describe alarms in a clear voice or send alarms as an SMS message. The user can in the same way call or send an SMS to the unit for information regarding alarm status as well as acknowledging active alarms

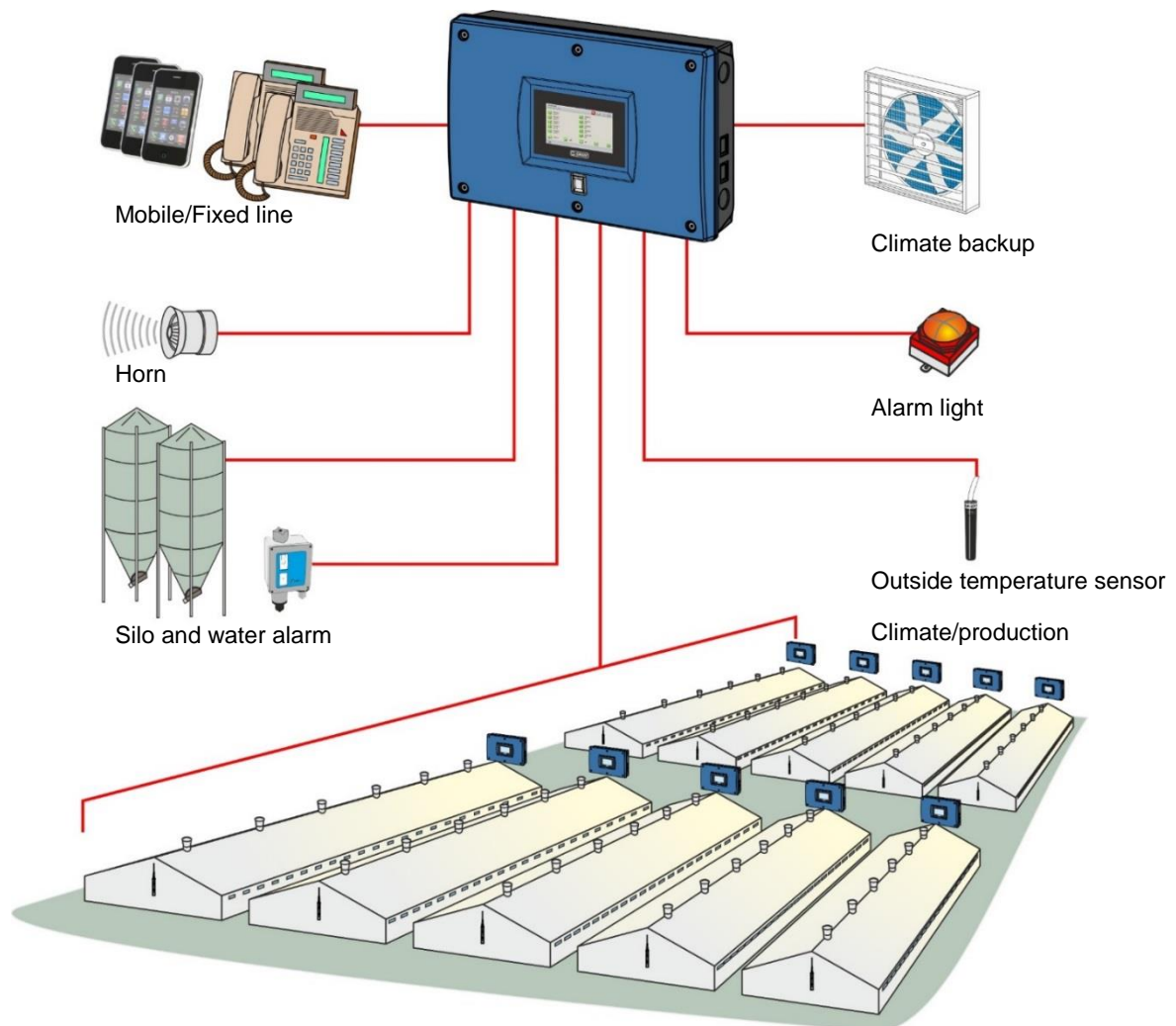


Figure 1: Connections to the DOL 2400 Alarm System

The DOL 2400/DOL 2300 has the following characteristics:

Supervision

- Of temperature, humidity, empty silo, water and fire etc (DOL 2400)
- Advanced temperature monitoring with outside temperature adjustment (DOL 2400).
- Of its own power supply and backup battery.
- Of its connection to external alarms.

Alarms

- Selecting alarm type: General alarms, silent alarms and silent alarms at night.
- Local: Horn, flash, speaker.
- External: Phone call and SMS message.

User Management/Safety

- Fingerprint reader.
- 6-digit PIN.
- Safe user identification.

- Service log.
- Central user management.

Overview and History

- One year log for all events.
- 30 day graphic log display of measurements.
- Sound recording during alarm.

Technical

- User-friendly touch screen with easily accessible overview menus.
- Voice computer reporting alarms.
- Up to nine extension boxes.
- Setup of the unit as master/slave.
- Can activate backup ventilation or other equipment in case of alarm (DOL 2400).
- Battery, supervised by the alarm unit.

Functions	DOL 2400	DOL 2300
10 (20) universal inputs:		
- temperature	Yes	No
- digital ON/OFF	Yes	Yes
- analogue	Yes	No
- other sensor types (see below)*	Yes	No
Outside temperature sensor	Yes	No
Phase breaking relay	Yes	Yes
Climate backup	Yes	No
Outputs	Yes	No
Master/slave	Yes	Yes

Table 1: Software Supported Functions for DOL 2400/2300

DOL 2400 Inputs

The following sensor types can be connected to the DOL 2400:

- Temperature
- ON/OFF
- Fire (temp.)
- Humidity
- CO₂
- Pressure
- NH₃
- O₂
- Air velocity
- Wind direction
- Light
- Analogue

Alternatively the inputs can be used to generate alarms for empty silos, jammed augers, defective oil burners etc.

Extension box

If more inputs are needed in the same location than the 10 or 20, which the unit already has, then the alarm system can be extended with up to nine extension boxes.

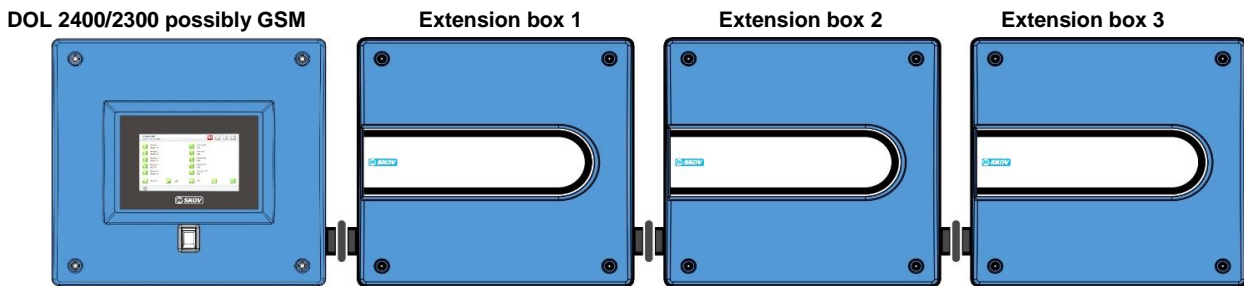


Figure 2: Schematic drawing for connection of extension boxes, which must be physically placed in the same location.

Master/slave system

Units can also be set up in a master/slave system for alarm systems for geographically widespread locations, for a total of up to 10 units.

All units function via the same telephone connection and with common alarms and user management. In this system only the one SIM card for the GSM connection is required. The SIM card must be mounted in the unit that is set up as master.

The master/slave system needs the units to be part of an LAN network.

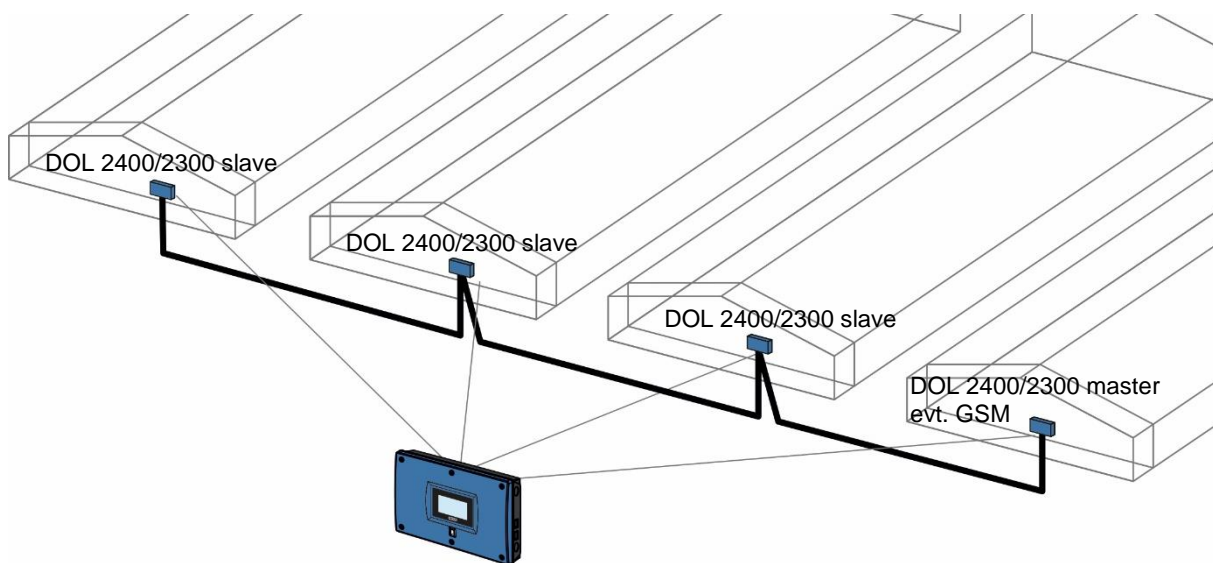


Figure 3: Example of master/slave system connected by means of an LAN network. The alarm units can be placed in different physical locations.

Two alarm units can be connected via an LAN cable. When using more than two units on a cable network, an LAN switch must be used with the necessary number of LAN ports.

DOL 2400 Outputs

The DOL 2400 outputs can be used for the functions Climate Backup and Relay.

Climate Backup

The DOL 2400 can activate set outputs such as emergency opening and cooling when a temperature input terminal records a temperature at a user-defined limit. If the limit is set slightly above the standard alarm limit, the function can be used as an extra backup for climate control.

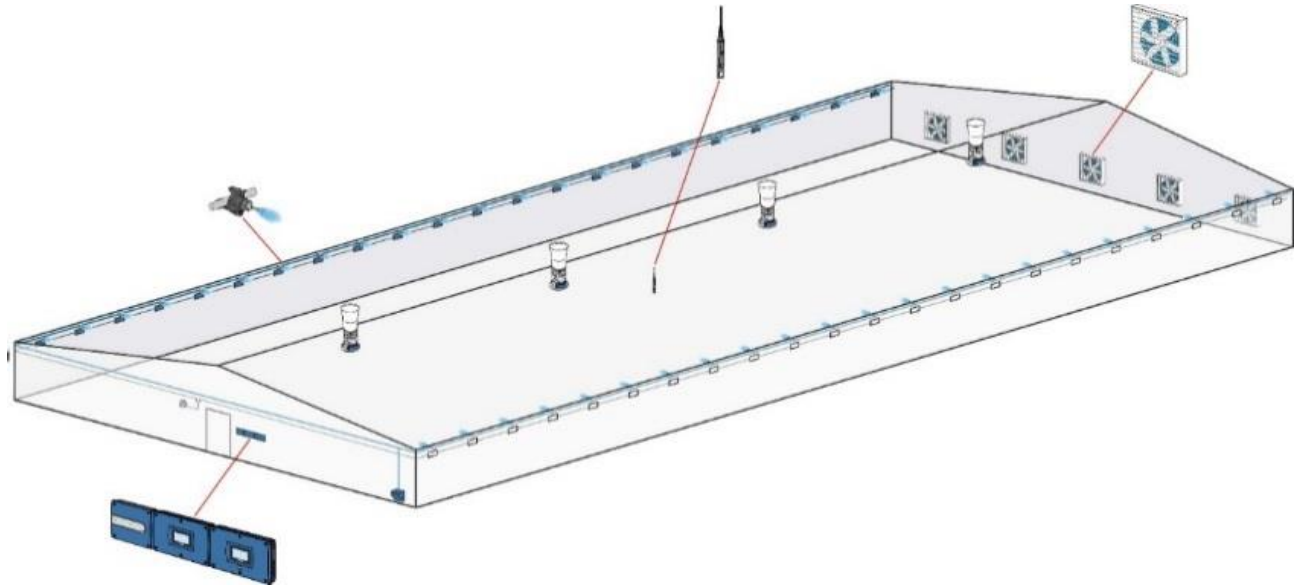


Figure 4: Example of climate backup:

A temperature sensor registers a too high temperature and activates the fans and high-pressure cooling

Relay

Each output terminal can be connected to up to 10 inputs.

If, for example, an output is connected to a temperature sensor to record rapid temperature increases (fire detection), the output can activate spraying or high-pressure cooling when one or several sensors detect fire. See also below.

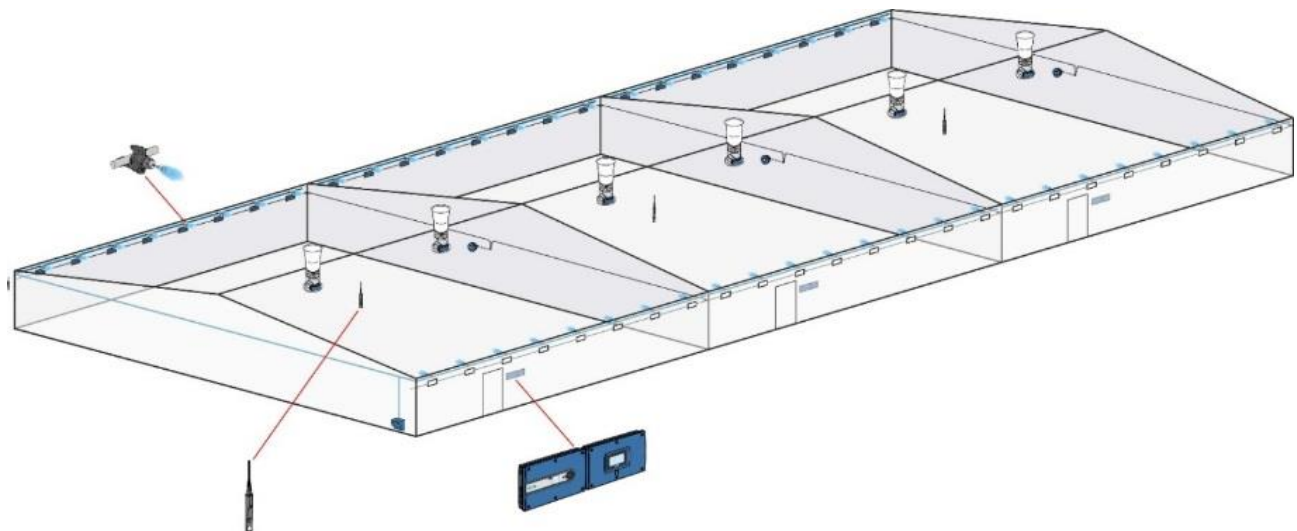





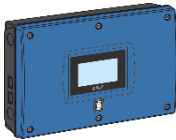











Figure 5: Example of relay:

Several temperature sensors can activate high-pressure cooling/sprinkler in case of fire.

2 Product Survey

Version names	FP	with Fingerprint Reader
DOL 2400		
    	134871	DOL 2400 Alarm GSM
	134877	DOL 2400 Alarm GSM FP
	Inputs: 10 universal inputs: ON/OFF / 0-10V / DOL 12 1 supervision from phase break relay 1 outside temperature sensor Outputs: 10 Output relays 1 Horn relay 1 Warning light relay 1 Alarm relay The DOL 2400 comes with battery, GSM alarm modem, resistances for cable monitoring, aerial adapter for existing 10 m aerial if necessary and an English manual package.	
    	134875	DOL 2400 Alarm GSM Large
	134881	DOL 2400 Alarm GSM FP Large
	Inputs: 20 universal inputs: ON/OFF / 0-10V / DOL 12 1 supervision from phase break relay 1 outside temperature sensor Outputs: 20 Output relays 1 Horn relay 1 Warning light relay 1 Alarm relay The DOL 2400 comes with battery, GSM alarm modem, resistances for cable monitoring, aerial adapter for existing 10 m aerial if necessary and an English manual package.	
    	134891	DOL 2400 Alarm
	Inputs: 10 universal inputs: ON/OFF / 0-10V / DOL 12 1 supervision from phase break relay 1 outside temperature sensor Outputs: 10 Output relays 1 Horn relay 1 Warning light relay 1 Alarm relay The DOL 2400 comes with battery, resistances for cable monitoring and an English manual package. In master/slave systems, this variant is used as a slave unit (software version 2.1 or later is required).	



134873 DOL 2400 Alarm WB

Inputs:

- 10 universal-inputs: ON/OFF / 0-10V / DOL 12
- 1 supervision from phase break relay
- 1 outside temperature sensor

Outputs:

- 10 Output relays
- 1 Horn relay
- 1 Warning light relay
- 1 Alarm relay

The DOL 2400 comes with battery, resistances for cable monitoring and an English DOL 2400/2300 manual package, Technical User Guide for DOL 2400 in Wiring Box and DOL 2400 Wiring Box Template.

DOL 2300



134870 DOL 2300 Alarm GSM

134876 DOL 2300 Alarm GSM FP

Inputs:

- 10 ON/OFF inputs
- 1 supervision from phase break relay

Outputs:

- 1 Horn relay
- 1 Warning light relay
- 1 Alarm relay

The DOL 2300 comes with battery, GSM alarm modem, resistances for cable monitoring, aerial adapter for existing 10 m aerial if necessary and an English manual package.



134874 DOL 2300 Alarm GSM Large

134880 DOL 2300 Alarm GSM FP Large

Inputs:

- 20 ON/OFF inputs
- 1 supervision from phase break relay

Outputs:

- 1 Horn relay
- 1 Warning light relay
- 1 Alarm relay

The DOL 2300 comes with battery, GSM alarm modem, resistances for cable monitoring, aerial adapter for existing 10 m aerial if necessary and an English manual package.



134890 DOL 2300 Alarm

Inputs:

- 10 universal inputs: ON/OFF
- 1 supervision from phase break relay

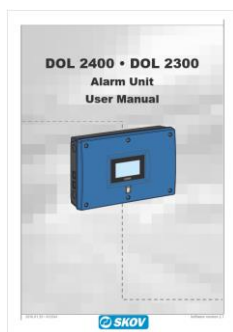
Outputs:

- 1 Horn relay
- 1 Warning light relay
- 1 Alarm relay

The DOL 2300 comes with battery, resistances for cable monitoring and an English manual package.

In master/slave systems, this variant is used as a slave unit (software version 2.1 or later is required).

Language

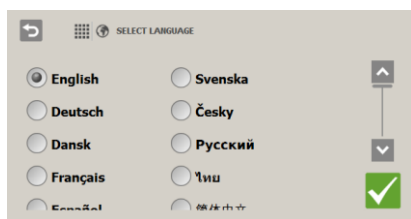


- 135140 DOL 2400/2300 Manual Package DA**
- 135141 DOL 2400/2300 Manual Package EN**
- 135142 DOL 2400/2300 Manual Package DE**
- 134144 DOL 2400/2300 Manual Package FR**
- 135147 DOL 2400/2300 Manual Package SV**
- 135151 DOL 2400/2300 Manual Package RU**

The manual package contains user manual in the selected language and an English technical manual.

Some language packages also include the technical documentation in the chosen language.

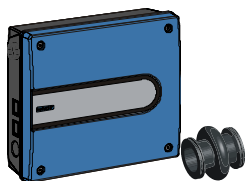
If several units are ordered it is not necessary to order a manual package for each.



Display Language

- | | |
|--------------|--------------|
| DA - Danish | SV – Swedish |
| EN - English | CS – Czech |
| DE - German | RU – Russian |
| FR – French | TH – Thai |
| ES - Spanish | ZH – Chinese |

Accessories



134889 DOL 2300/2400 Extension 10RL

The extension box used where there is a need for extra inputs and outputs. Up to nine extension boxes can be added to a standard alarm and up to eight to a large alarm.

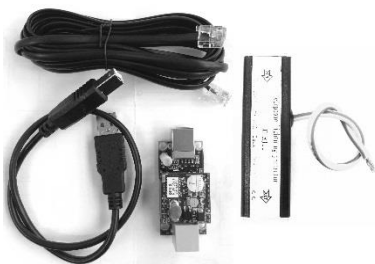
Inputs:

10 universal inputs: ON/OFF / 0-10V / DOL 12

Outputs:

10 Output relays

Comes with a lead-in bush and connection cable.



134883 Fixed-Line Alarm Modem

The Fixed-Line Alarm Modem is for retrofitting in DOL 2400/2300 cabinets. With a Fixed-Line Alarm Modem the DOL 2400/2300 can call out and be used via telephone.

Comes with a USB connection cable and telephone cable as well as lightning protection.

If using a DOL 2400/DOL 2300 as a slave unit, the telephone connection from the master unit can be used.



134680 DOL 2300/2400 External GSM Antenna - 10 m

An external GSM antenna is used where there is a need for better mobile reception than what is available with the built-in antenna. Comes with 10 metres cable.



Accessories



134882 Alarm Modem GSM

GSM Alarm Modem for retrofitting in DOL 2400/2300 cabinets. With a GSM Alarm Modem and a mobile subscription, the DOL 2400/2300 can call out and can be used via mobile telephone.

If using a DOL 2400/DOL 2300 as a slave unit, the telephone connection from the master unit can be used.



140200 DOL 12 Temperature Sensor, 1.4 m Cable

S140200A DOL 12 Temperature Sensor, 5 m Cable

The Temperature Sensor can be used both outdoors and indoors.

If a DOL 2400 is used as a slave unit, this can use the outside temperature registration from the master unit.



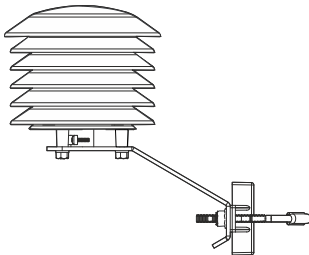
140252 DOL 114 Humidity and Temperature Sensor, 2 m cable

140253 DOL 114 Humidity and Temperature Sensor, 5 m cable

The DOL 114 is a dual-purpose temperature and humidity sensor that can be used for monitoring the livestock house relative air humidity and temperature.

The DOL 114 is a high-quality sensor which is especially useful under particularly harsh conditions and in areas of high air humidity, e.g. where Tunnel Ventilation is used.

The DOL 114 comes with a protective cap.



140245 Climate Sensor Radiation Shield

The radiation shield protects an outside temperature and/or humidity sensor from rain and radiant heat.

We recommend that the Climate Sensor Radiation Shield is positioned 2 m above the roof. Alternatively 2 m above the ground and 2 m from other building elements (walls etc.)

The radiation shield comes with mounting fittings.

It may be necessary to order a climate sensor with a long cable when using the radiation shield.



140231 DOL 19 CO₂ Sensor 0-10.000 ppm

The CO₂ sensor allows for monitoring the CO₂ contents of the housing air.



140268 DOL 16 Light Sensor 0-100/1000LUX 0-10V

Output 1: 0-100 lux. Output 2: 0-1000 lux.

140270 DOL 16 Light Sensor 0-50/1000LUX 0-10V

Output 1: 0-50 lux. Output 2: 0-1000 lux.

The sensor can be used for measuring light intensity.

Select the type of sensor that corresponds to the current brightness in the livestock house (measuring area).



413240 Pressure Sensor 0-100 Pa 24V AC/DC

The electronic pressure sensor can, for example, be used for monitoring house pressure.

Accessories



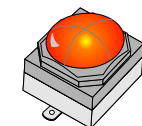
140008 Phase Break Relay PPB02cm48

140014 Socket, 11 Pins ZPD 11

3-phase / 3-phase + zero

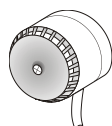
Monitoring relay for phase sequence, phase break and asymmetry with a built-in time delay function.

Remember to order the Socket (140014) for mounting the Phase Break Relay.



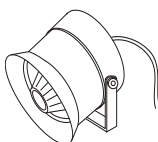
140007 Alarm Light 12 V

There are no limits to how many alarm lights you can connect to the same alarm system.



140010 Horn 12-24V DC 30mA 80-111dB

There are no limits to how many horns you can connect to the same alarm system.



140011 Horn 12V 0.8A 118dB

The alarm system battery is able to sustain this Horn for approximately 3 hours. If two horns are connected the capacity is 1½ hours, at four horns approximately 45 mins, etc.

If additional battery capacity is required, this can be bought separately, e.g. 140035 Battery ext. 12V 2x7Ah DOL 2200 w/cable or 140951 Battery 12V 7AH Alarm System.



140035 Battery ext. 12V 2x7Ah DOL 2200 w/cable

To be used where there is a need for further battery capacity, for example for five or more extra I/O modules.

3 Technical Data

DOL 2400/DOL 2300 Alarm Unit

Electrical

Voltage [V] 115 - 230 ± 20%

Frequency [Hz] 50 / 60

Power [W] 100

Current [A]
(for early fuse or emergency power supply plant dimensions) 0,7

Battery [V] 12
[AH] 7

Main Module inputs:

10 universal inputs: ON/OFF / 0-10V / DOL 12
A 100 Ω cable monitoring resistor is connected in series with the contact at ON/OFF inputs (records cable short circuit)
1 Supervision from Phase break relay
1 Key switch
1 Outside temperature sensor

I/O module (Type 16) inputs:

10 universal inputs: ON/OFF / 0-10V / DOL 12
A 100 Ω cable monitoring resistor is connected in series with the contact at ON/OFF inputs (records cable short circuit)

Main Module outputs:

10 Output relays	12-230 V AC/DC
1 Horn relay	5 A
1 Flash light relay	AC2
1 Alarm relay	Max. 24 V 2 A.



		Min. 12 V 10 mA AC1
I/O module (Type 16) outputs:	10 Output relays	12-230 V AC/DC 5 A AC2
Mechanical		
Fingerprint reader	Variation	
Cable knockouts	20 holes for metric cable flange M25	
Microphone	Built-in	
Speakers	Built-in, 3 W	
Mobile (GSM) module, [MHz]	900, 1800 and 1900	
Mobile (GSM) signal level, [dbm]	Minimum (minus) -95	
Network		
Network interface	10/100 BASE+TX RJ 45 3 USB 2.0 A type <ul style="list-style-type: none">- 2GB (formatting requirement: FAT16)- 2-32GB (formatting requirement: FAT32)	
Slave connection	LAN cable	Max. 100 m
	Fibre optic cable	Max. 2 km
Accessories		
Fixed line (PSTN) module	Analogue module, DTMF signalling	
Mobile (GSM) module, [MHz]	900, 1800 and 1900	
Mobile (GSM) signal level, [dbm]	Minimum (minus) -95	
Outdoor mobile antenna with 10 metre cable		
Extension box	With one type 16 I/O module	
Environment		
Temperature, operation	(-10 to +40 °C, +14 to 140 °F)	
Starting temperature		
Storage temperature	(-25 to +60°C, -13 to +140°F)	
Ambient humidity, operation	0-80 % RH	
Protection class	Splash proof IP54 It is assumed that the surface is flat, i.e. ≤ 1.5 mm height difference and that the front panel screws are tightened with at least 2 Nm.	
Shipment		
	Large	Small
Dimensions H x W x D [mm]	H x W x D: 381 x 568 x 170 mm	H x W x D: 381 x 400 x 170 mm
Packing dimensions H x W x D [mm]	H x W x D: 421 x 608 x 230 mm	H x W x D: 425 x 555 x 195 mm
Weight [g]	9500	8000
Shipping weight [g]	12000	9200

Table 2: Technical Data

