IDeal System

FCC ID: JERAFIID

Livestock identification system

Overview

The "*IDeal*" controller is the unit responsible for active identification sequence in *Afi* systems such as "*AfiAct*", "*AfiMilk*", "*AfiSort*", and other dairy systems from S.A.E. Afikim.

The "*IDeal*" interfaces between the AFI system in which it is installed and the identification system's sensors - the antennas.

The main operations of this unit are:

Receiving an identification request from the computer.

Selecting the appropriate antenna to activate.

Sending power and frequency signals to activate the antenna.

Receiving the identification response from the cow tag.

Translating the analog data to a digital sequence.

Sending the identification data to the computer.

Power supply

120/24 v ac 60 HZ 50 VA

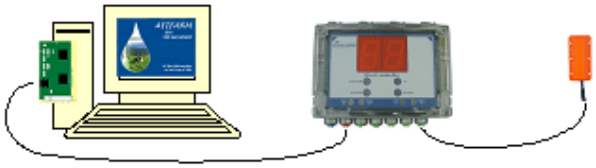
***The IDeal* system shipped to the USA (orange antennas and tags) is model no. 4022900H. It operates on the following frequencies:**

- **Transmit: 358 kHz**
- **Receive: 200 kHz**

IDeal Components

The "*IDeal*" identification system consists of an *IDeal* box (the controller box) and antenna input to the box. The system is connected to a computer, through an *AfiCom1* or *AfiCom* communication card, to *AfiFarm* herd management software. Antenna input may consist of:

One or two antennas connected directly to the *IDeal* box (a "2 Antenna" system).



If three or more antennas are used in the system, antennas are connected to the *IDeal* box by way of one or more antenna switching boxes (a "Switching box" system). Each antenna switching box may be connected to up to 16 antennas. Up to 3 switching boxes may be connected to each *IDeal* box.

IDeal Controller

The *IDeal* controller unit is a plastic box containing a printed circuit board (PCB). A display panel is on the front cover of the box, as pictured. Box dimensions are:

- Width: 28 cm (11”) long.
- Height: 19 cm (7½”).
  Including hinges and grommets height is 22 cm (8¾”),
- Depth: 8.5 cm (3½”) thick.
- Net weight: 1.7 Kg. (3 lb. 12 oz.)
  Shipping weight: 2.7 Kg. (5 lb. 15 oz.)

The *IDeal* controller (P/N 4022900H)* consists of:

A plastic enclosure (P/N 7000070).

Top (P/N 7000011).

Back (P/N 7000012).

7 grommets. Each grommet has 3 inlets.
21 cable inlets are in grommets as follows:

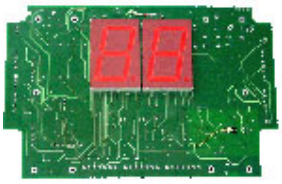
5 grommets for 6.5 mm (¼”) cables (P/N5001764).

1 grommet for 7.0 mm (¼”) cables (P/N5001763).

1 grommet for 5.0 mm ($^{3}/_{16}$”) cables (P/N5001762).

7 Grommet nuts (P/N 9020726).

A PCB (P/N 4022800H/L). The seven-segment display is on the back side of the PCB.



2 mounting plates (P/N 4088016), 4 Allen bolts (M6) and 8 nuts.

A “P3” communication cable (P/N 4088435), for connecting the *IDeal* box to the computer.

An open *IDeal* box, with mounting plates attached.

Cable Requirements

This section describes the cables that are needed for the installation of the *IDeal* system.

Communication Cable

A 4-wire shielded cable 22 AWG (0.3 mm²) carries the communication signal between the *IDeal* box and the computer. Maximum communication cable length is 400 meters.

Power Cable

A 3-wire, 18 AWG (0.75 mm²) cable is required to supply power to the *IDeal* box.

Antenna *Select* Cables (only in systems with switching boxes)

A 7-wire, 22 AWG (0.3 mm²) cable carries antenna select signals between the *IDeal* main board and antenna switching boxes. This cable also carries a 5 V DC power supply to the antenna. Wire colors of this cable are red, white, black, brown, green, orange, and yellow. Maximum length of this cable is 15 meters.

Tx and Rx Antenna Signal Cables (only in systems with switching boxes)

A 6-wire shielded cable 22 AWG (0.3 mm²) carries Tx and Rx antenna signals between the *IDeal* box and switching boxes. This cable extends from the *IDeal*, cascading to the switching units (connecting one switching unit to the next).

The drawing on page 3 depicts connections between the *IDeal* box and switching boxes.

Antenna Cables

Antennas are provided with cables attached. The Tx and Rx antenna signal cable, described above, can be used to extend antenna cables.
Each Tx antenna is located in a separate case and comprises the balun (balance to unbalance) type transformer, wound on a ferrite core. The capacitors adjust the transformer coil to parallel resonance at 358 kHz carrier frequency. The diode protects current circulation through the Rx antenna.

The *IDeal* PCB

This section describes the printed circuit board (PCB) of the *IDeal* controller. It consists of three electrical circuits - a power supply circuit, a micro-controller circuit and an RF transmission/reception unit.

The power supply circuit is fed by 24 ±2.4 VAC, supplying 5 and 12 volts for the micro-controller circuit, as well as by Tx (Transmission) power and frequency. The Tx power level determines the effective identification range of the system. Tx power can be adjusted by a potentiometer on the PCB (P2). Voltages can be measured at test points on the PCB.

The micro-controller circuit directs the digital data flowing between the antenna and the computer. It is connected to the controller by a four-wire communication cable, and sends data in response to the controller's request. The micro-controller activates the antenna that needs to transmit an identification request. It also temporarily stores some digital data (the identification and step counter of the I.D. tag), until communication is initiated by the computer.

The RF transmission/reception circuit is the direct connection between the micro-controller and the antenna. It converts digital data into an analog signal sent to the antenna and vice versa.

A few means of adjustments (DIP switches, jumpers and potentiometers), as well as some connectors (to which cables are connected), are on the board. The drawing below displays the PCB's main components, connectors, and means of adjustments. Verify that settings meet requirements of the system you are installing.

The following variables must be defined in each *IDeal* controller:

Type of system:

- "2 Antenna" (only one or two antennas are connected directly to the *IDeal*),
- "Switch Boxes" (three or more antennas are connected indirectly, through one two or three switching boxes. Up to 16 antennas can be connected to each switching box.)

Communication *type* – The *IDeal* box supports Current Loop communication as well as RS232 communication. C.L. is the communication type used in *Afi* systems.

Communication *protocol* – Digital communication is in one of two "languages:" the "old" communication protocol, or the "new" communication protocol (also referred to as protocol C2000). The new protocol supports tag numbers up to 65,536. (The old protocol is limited to a highest tag number of 4095.)

Antenna transmission range – Antenna transmission is determined by adjusting the transmission power potentiometer.