GE-INFRA4 MANUAL

**Infrared heating lamp control
for piglet crates**

Installation / User's guide

This section will inform the electrician on proper wiring and installation procedures for the GE-INFRA4.

The manufacturer recommends that the following installation instructions be followed to as closely as possible, and that all work be performed by a certified electrician. Failure to do so may void the warranty.

Description

The GE-INFRA4 controller has been designed to control infrared heat lamps cage for piglets' crates.

The GE-INFRA4 comes in a PVC non-corrosive enclosure that is protected from dust and humidity. The GE-INFRA4 is covered by a complete two years warranty.

Unpacking

Unpack the GE-INFRA4 module and inspect contents for damage. Should the contents appear to be damaged, contact your local distributor to return the equipment.

The package should contain the following standard items:
1 GE-INFRA4
4 IRS-1 infrared probes
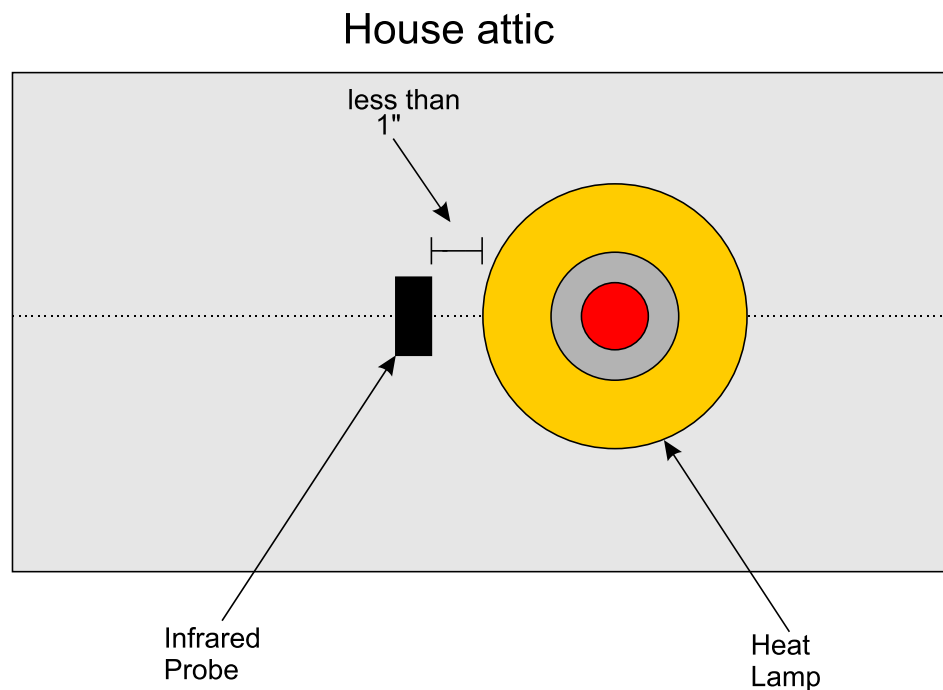1 Installation / User's guide

Mounting hardware required

This is the list of the mounting hardware needed, which is not included with the product:

Screws (to mount the module on the wall)
Screwdriver
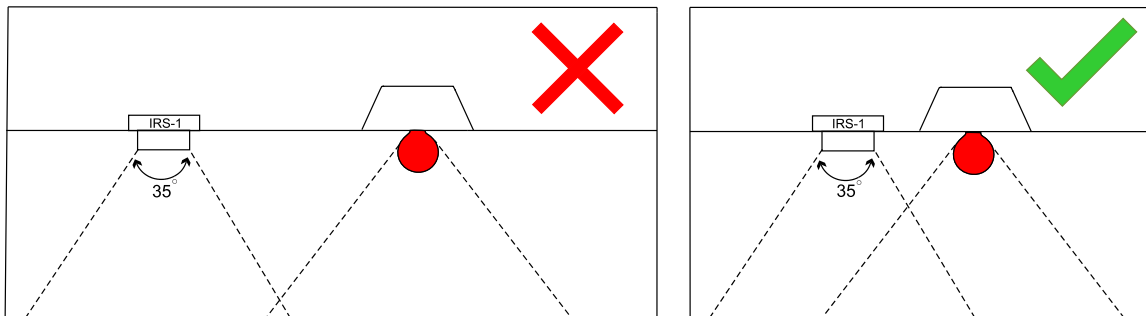Soldering iron kit or approved sealed connectors

General installation guidelines

- The GE-INFRA4 should be installed in easy-access location but away from damaging elements (heat, cold, water, direct sunlight…).
- Do not install the GE-INFRA4 near high-voltage equipment, power supply or transformer.

Recommended position for the infrared probe (IRS-1) and the heat lamp cage

House attic

less than 1"

Infrared Probe

Heat Lamp

Warning: If the IRS-1 is too far from the heat lamp, the temperature can be affected.
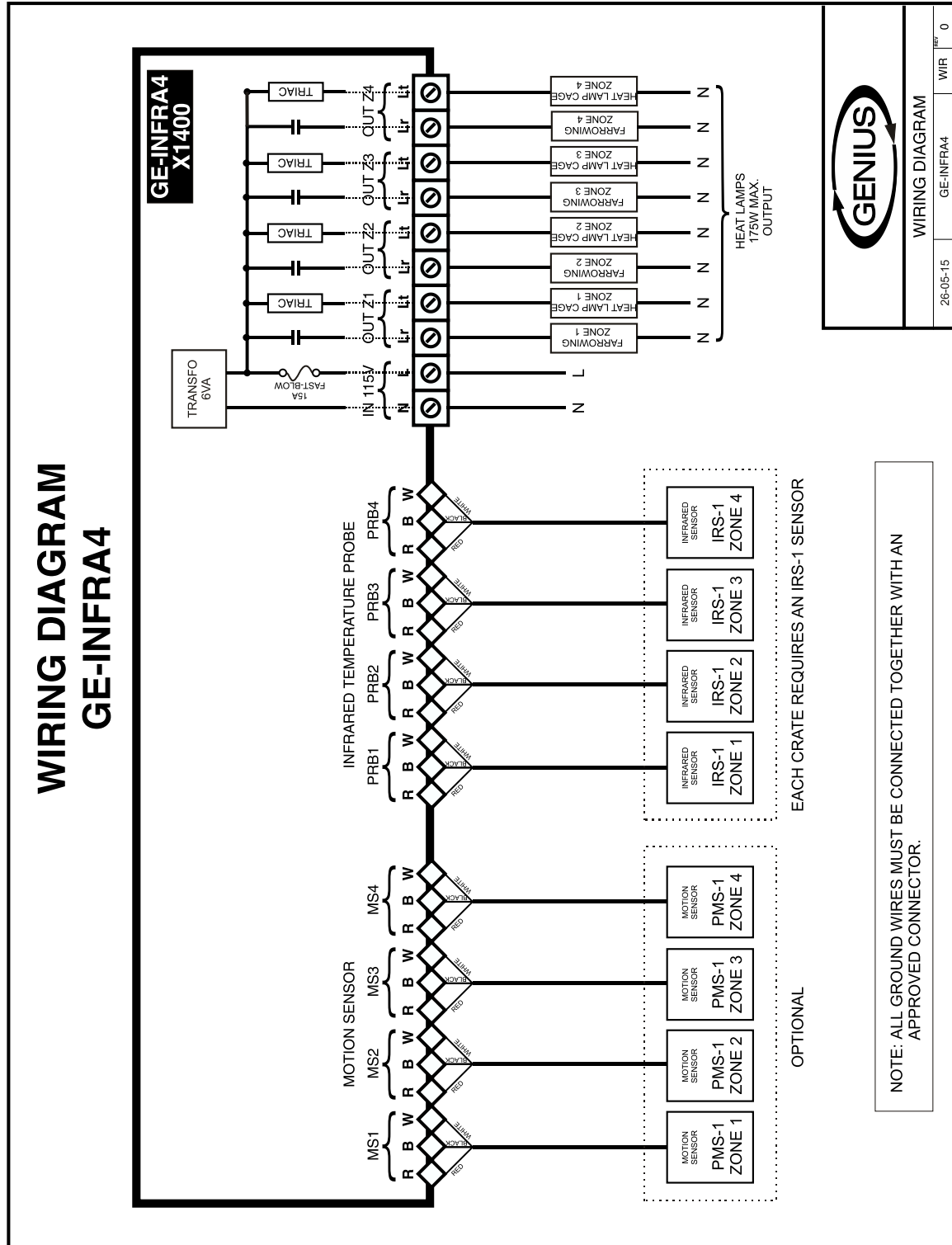

IRS-1

35°

IRS-1

35°

Wiring Procedure

1. Open the GE-INFRA4 enclosure.

2. Connect the heat lamps cage to the terminal blocks, as shown in figure 1.

3. Connect the IRS-1 infrared probes to the corresponding terminal blocks, as shown in figure 1.

4. Connect the PMS-1 motion sensors (if used) to the terminal blocks, as shown in figure 1.

5. Connect the power source to the identified IN 115V terminal blocks, as shown in figure 1.

   IMPORTANT: Low-voltage and high-voltage wire must be passed through different conducts at least 1 foot (30 cm) apart. If low-voltage and high-voltage conduits must be crossed, the crossing must be at a 90-degree angle.

6. Power up the GE-INFRA4 controller. Verify that the controller operates correctly

7. Close the GE-INFRA4 enclosure. Don't forget to put a security screw or a padlock.

Figure 1: Wiring diagram

WIRING DIAGRAM
GE-INFRA4

Using the GE-INFRA4

The GE-INFRA4 is a controller of infrared heat lamps cage for piglets' crates. The controller may control up to 4 crates equipped with 2 heat lamps cage each. The first variable intensity lamp, called "crate lamp", is used to control the thermal comfort. Using a timer, the second on/off lamp, called "farrowing lamp", is used to dry the piglets on the farrowing period.

On the farrowing period, the operation program of the crate lamp and the farrowing lamp can be manually activated, or automatically, with the PMS-1 motion sensor (optional). Regulated with the help of an infrared temperature probe (IRS-1), the crate's temperature is programmed to follow its growth curve according to the piglet's age, while the farrowing lamp is automatically turned off after a pre-established period of time, since the farrowing day.

Figure 2: Electronic Board and component location
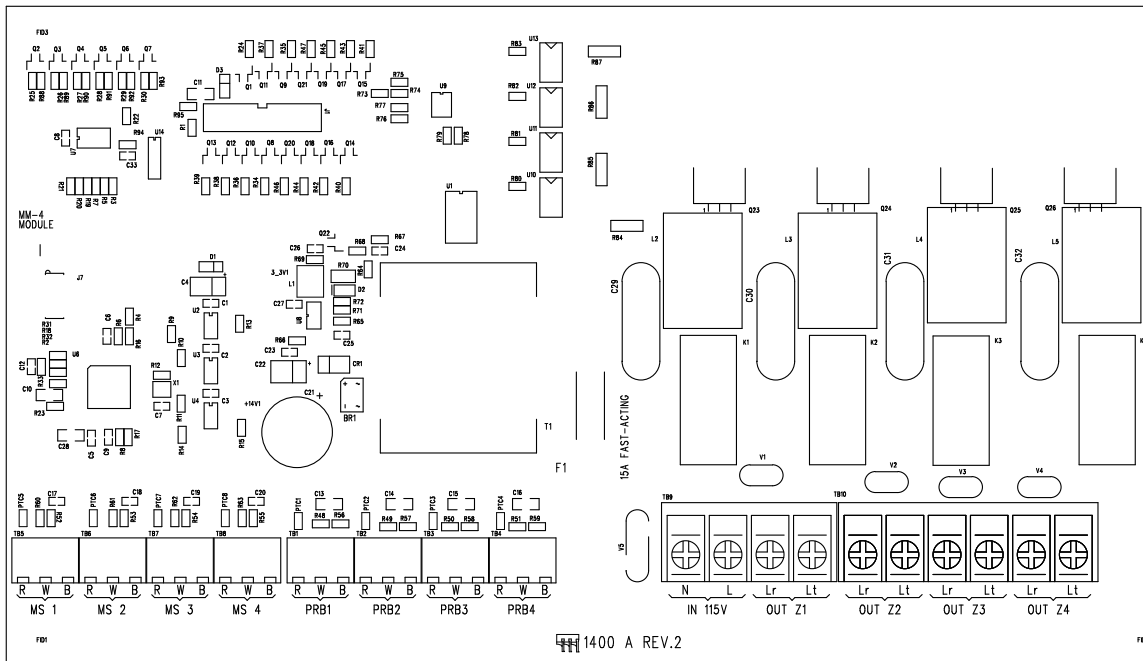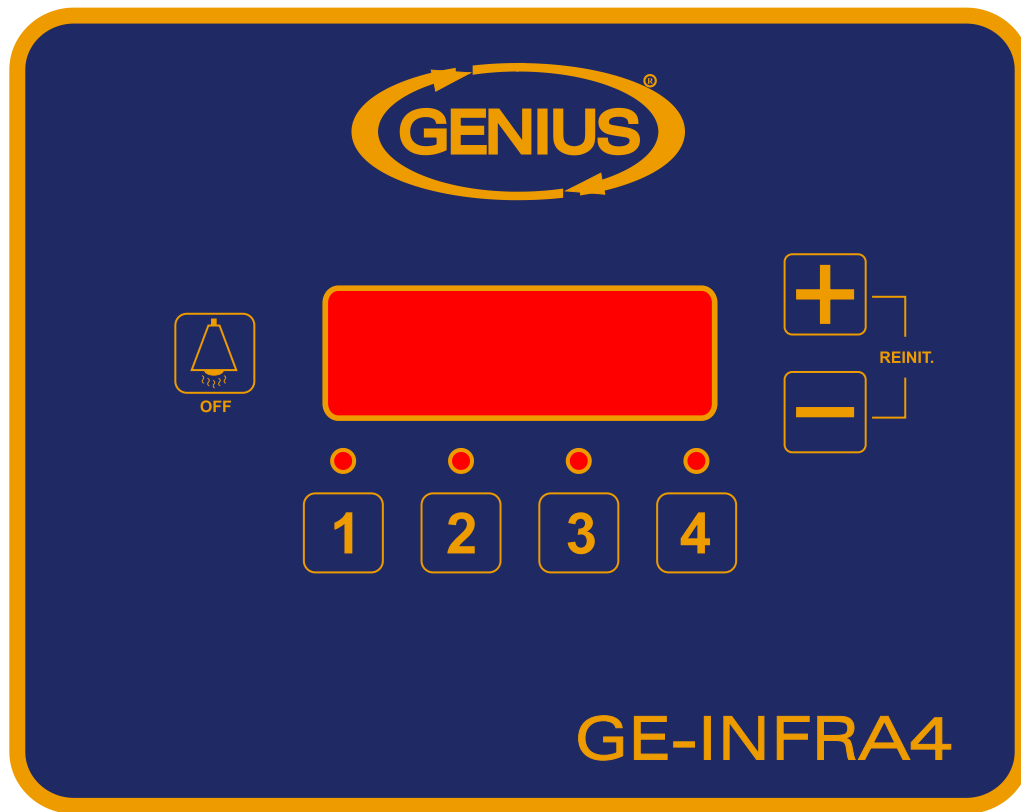
Figure 3: GE-INFRA4 Faceplate

The GE-INFRA4 faceplate is composed of 4 indicator lights, a digital display and 7 adjustment buttons (<OFF>, <+>, <->, <1>, <2>, <3>, <4>).

Except at the very moment of settings adjustments, the digital display will be shut down and the 4 indicators lights will indicate which crates are in use. The settings adjustment mode begins by pressing on a button number. At this moment, only the corresponding crate indicator light will remain ON. The digital display will quit the settings adjustment mode and will shut down 1 minute after the last action.

When the display is blank, press <OFF> to turn OFF all lamps.

Setting the heat lamps cage

For each crate, there are 3 settings:

1. **Lactation day**
   Values (can be set using <+> or <-> buttons) : OFF, *AUTO*, 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27.

   Note: The *AUTO* value is only available when the PMS-1 probe is used. A crate temperature is associated for each lactation day. This temperature will flash alternately with the lactation day. Refer to the following table. The lactation day is automatically increased until it reaches day 27. The day change is synchronized with the daily crate activation, or when the last lactation day modification occurred.

Table 1: Lactation day vs Crate temperature

| Lactation day | Values | Associated temperature | |
		°C	°F
	OFF	--	--
	AUTO	--	--
	0	36.0	96.8
	1	35.5	95.9
	2	35.0	95.0
	3	34.5	94.1
	4	34.0	93.2
	5	33.5	92.3
	6	33.0	91.4
	7	32.5	90.5
	8	32.0	89.6
	9	31.5	88.7
	10	31.0	87.8
	11	30.5	86.9
	12	30.0	86.0
	13	29.5	85.1
	14	29.0	84.2
	15	28.6	83.5
	16	28.1	82.6
	17	27.7	81.9
	18	27.3	81.1
	19	26.9	80.4
	20	26.4	79.5
	21	26.0	78.8
	22	25.6	78.1
	23	25.1	77.2
	24	24.7	76.5
	25	24.3	75.7
	26	23.9	75.0
	27	23.4	74.1

2. **Measured Temperature**
   It is the temperature measured by the IRS-1 probe. ERR means that there is a wiring problem or a defective probe.

3. **Countdown**
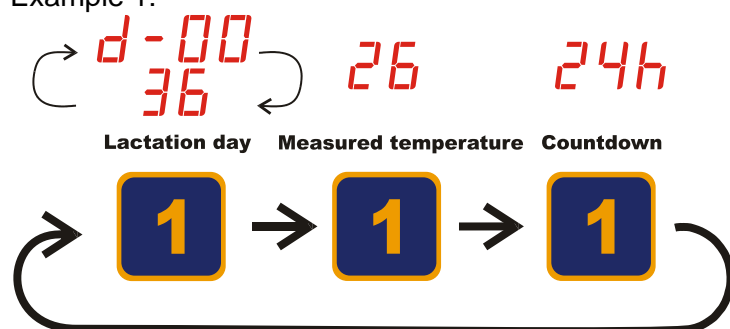   It is the run time countdown of farrowing lamp
   Values (can be set using <+> or <-> buttons) : 0h, 1h, 2h, 3h, 4h, 6h, 8h, 10h, 14h, 16h, 20h, 24h, 30 h, 36 h, 42 h, 48 h, 60 h, 72 h.

   When the crate is started, both farrowing lamp and countdown will be activated. At this point, the numerical value will be decreased until it reaches 0h and the farrowing lamp will shut down.

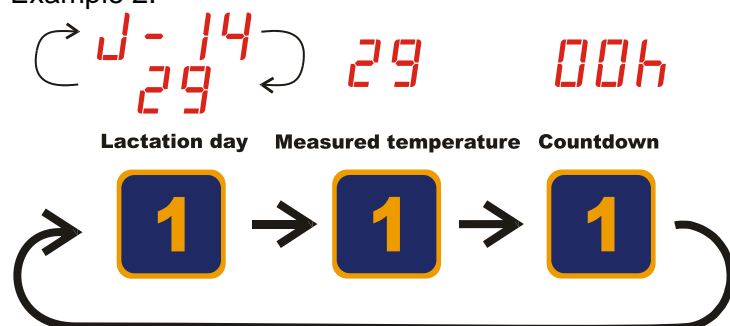These three parameters will appear consecutively each time the crate button is pressed.

Here are 3 examples of crate 1 settings:

Example 1:

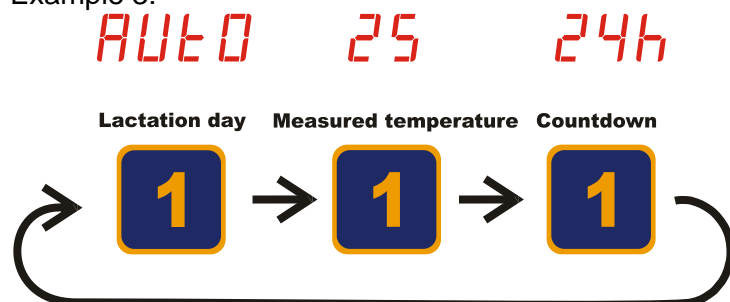The crate temperature is set according to the table, at day 0, 96.8 °F (36.0 °C). The farrowing lamp will be deactivated in 24 hours. The measurement temperature is 78.8°F (26.0 °C) and increase until 96.8°F (36.0 °C).

Example 2:

The crate temperature is at day 14. The farrowing lamp is deactivated because the countdown is at 0h.The temperature is at 84.2°F (29.0°C). The heat lamp is active to maintain this temperature.

Example 3:

Lactation day   Measured temperature   Countdown

On piglet presence detection, the crate temperature will be set at 96.8 °F (36.0 °C). In the above situation, the farrowing lamp will activate for 24 hours. According this example the measured temperature is 77°F (25°C) because the heat lamp is not yet light up.

Crate Stop (and the farrowing lamp): Press on the corresponding crate number and press on the <OFF> button. This automatically sets the lactation day to OFF. It is also possible to use the <-> button to decrease the lactation day and set it to OFF.

Crate Start (without the PMS-1 probe): Press on the corresponding crate number and press simultaneously on <+> and <-> buttons to reset the lactation day to 0, the gab with the curve to 0° and the Countdown to 24h. It is also possible to set the lactation day to 0 and the two others settings individually by using the <+> or <-> buttons.

Crate Start (with the PMS-1 probe): Press on the corresponding crate number and press simultaneously on <+> and <-> buttons to reset the lactation day to AUTO and the Countdown to 24h. It is also possible to set the lactation day to AUTO and the two others settings individually by using the <+> or <-> buttons.

Interrupt only the farrowing lamp: Press on the corresponding crate button 3 times to reveal the Countdown. Press on the <OFF> button. This automatically sets the Countdown to 0h. It is also possible to decrease the Countdown value to 0h by using the <-> button.

GE-INFRA4 system settings
The GE-INFRA4 is equipped with dip switches to set the temperature unit used and activate the advanced configuration mode (INSTALL).

- **Unit temperature** : °C or °F
- **Utilisation mode** : USER or INSTALL

In « INSTALL » mode, the interface works differently. The first parameter that appears by pressing one of the 1 to 4 numbers is corresponding to the activation or deactivation of PMS-1 motion sensor for each crate. Then, if you consecutively press on the group button, you can see different advanced settings. You can identify the setting with the help of the blinking message.

Group1

Row	Message	Description
1	AUTO	ON = PMS-1 probe USED for crate 1 OFF = PMS-1 probe UNUSED for crate 1
2	D-00	Used to configure the temperature for day 0
3	D-01	Used to configure the temperature for day 1
4	D-02	Used to configure the temperature for day 2
5	D-03	Used to configure the temperature for day 3
6	D-04	Used to configure the temperature for day 4
7	D-05	Used to configure the temperature for day 5
8	D-06	Used to configure the temperature for day 6
9	D-07	Used to configure the temperature for day 7
10	D-08	Used to configure the temperature for day 8
11	D-09	Used to configure the temperature for day 9
12	D-10	Used to configure the temperature for day 10
13	D-11	Used to configure the temperature for day 11
14	D-12	Used to configure the temperature for day 12
15	D-13	Used to configure the temperature for day 13
16	D-14	Used to configure the temperature for day 14
17	D-15	Used to configure the temperature for day 15
18	D-16	Used to configure the temperature for day 16
19	D-17	Used to configure the temperature for day 17
20	D-18	Used to configure the temperature for day 18
21	D-19	Used to configure the temperature for day 19
22	D-20	Used to configure the temperature for day 20
23	D-21	Used to configure the temperature for day 21
24	D-22	Used to configure the temperature for day 22
25	D-23	Used to configure the temperature for day 23
26	D-24	Used to configure the temperature for day 24
27	D-25	Used to configure the temperature for day 25
28	D-26	Used to configure the temperature for day 26
29	D-27	Used to configure the temperature for day 27

Group2

ROW	Message	Description
1	AUTO	ON = PMS-1 probe USED for crate 2 OFF = PMS-1 probe UNUSED for crate 2
2	RFADR	RF address of RF-IN connected on the GE-INFRA4
3	RFNET	RF network (press <OFF> to change the step increment to 1 or 100)
4	RFCH	RF channel
5	RFA01	RF Ext 1, allows to invite a RF access or RF ext on the network
6	RFA02	RF Ext 2, allows to invite a RF access or RF ext on the network
7	RFA03	RF Ext 3, allows to invite a RF access or RF ext on the network
8	RFA04	RF Ext 4, allows to invite a RF access or RF ext on the network
9	RFA05	RF Ext 5, allows to invite a RF access or RF ext on the network

Group 3

Row	Message	Description
1	AUTO	ON = PMS-1 probe USED for crate 3 OFF = PMS-1 probe UNUSED for crate 3
2	Ver	Configuration version of the GE-INFRA 4

Group 4

Row	Message	Description
1	AUTO	ON = PMS-1 probe USED for crate 4 OFF = PMS-1 probe UNUSED for crate 4
2	FR or EN	FR=French, EN=English, this parameter is used to configure the language used.

Error codes

When there is a problem on the GE-INFRA4, it is possible to see a message on the LED indicator

ERR P1: The temperature probe of the crate1 is disconnected or defective
ERR P2: The temperature probe of the crate2 is disconnected or defective
ERR P3: The temperature probe of the crate3 is disconnected or defective
ERR P4: The temperature probe of the crate4 is disconnected or defective

ERR L1: The crate1 fails to reach its temperature setpoint after 2 hours.
ERR L2: The crate2 fails to reach its temperature setpoint after 2 hours.
ERR L3: The crate3 fails to reach its temperature setpoint after 2 hours.
ERR L4: The crate4 fails to reach its temperature setpoint after 2 hours.

Compatible optional items with the controller

This is a list of the compatible optional items that can be used on the controller with a short description of their use.

- **PMS-1 Motion sensor**

This probe allows an automatic start of the heat lamps cage program.

- **RF-IN Communication module**

Module inserted into the controller for a wireless communication with the online FarmQuest monitoring system.

Specifications

DESCRIPTION	VALUE
Storage temperature	-4 °F to 131 °F (-20 °C to 55 °C)
Operating temperature	32 °F to 113 °F (0 °C to 45 °C)
Humidity	90% maximum Non-condensing
Weight	3,2 lb (1,4 kg)
Size	11 1/4" x 8" x 5" (28.5 cm x 20.25 cm x 13 cm)
Protection index	IP 66
Warranty	2 years
POWER SUPPLY	
Operational voltage	120VAC, 60 Hz
Power supply circuit consumption	11.7A
Fuse	FastBlow 15A, 250V
TEMPERATURE PROBES	
Model	IRS-1
Type	Infrared
MOTION SENSORS	
Model	PMS-1
VARIABLE OUTPUTS	
4 outputs	120V, 1.46A (175W max.)
ON/OFF OUTPUTS	
4 outputs	120V, 1.46A (175W max.)

Limited Warranty

The manufactured equipment and supplied components have gone through rigorous inspection to assure optimal quality of product and reliability. Individual controls are factory tested under load, however the possibility of equipment failure and/or malfunction may still exist.

For service, contact your local retailer or supplier. The warranty period shall be for two years from manufacturing date. Proof of purchase is required for warranty validation.

In all cases, the warranty shall apply only to defects in workmanship and specifically exclude any damage caused by over-voltage, short circuit, misuse, acts of vandalism, lightning, fortuitous events, acts of God, flood, fire, hail or any other natural disaster. Any unauthorized work, modification or repair on this product automatically voids the warranty and disclaims the manufacturer from all responsibility.

The manufacturer assumes only those obligations set forth herein, excluding all other warranties or obligations. This warranty stipulates that in all cases the manufacturer shall be liable only for the supply of replacement parts or goods and shall not be liable for any personal injury, damages, loss of profits, interrupted operations, fines for infringement of the law or damages to the production of the PURCHASER and the PURCHASER shall take up the defence and hold the manufacturer faultless regarding any legal or extra legal proceedings, notice, or claim by the customer or by a third party, and regarding any legal and extra legal expenses and fees brought forward on by such damages.