Temptron 616

22/12/2009 Version 9440

TEMPTRON 616
OPERATION MANUAL

The **Temptron 616** is a standalone climate controller that can control one heater, 11 groups of fans, minimum ventilation system, 1 cooling system, 1 inlet motor, and 1 relay to be used for an alarm output.

The **Temptron 616** has a built in automatic temperature reduction table and automatic weight increase table for ventilation

The first fan group is working as minimum ventilation.

It is optional to connect the **Temptron 616** to a PC for central management with the help of the ChickPro software package.

Installation

Open the front panel

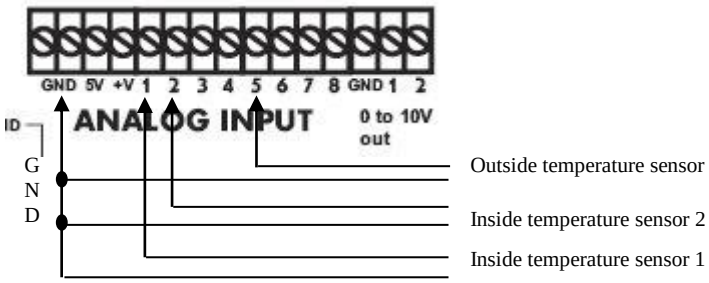
Temperature sensors

Input 1 is used for inside temperature sensor 1. Use a two wire cable. Connect one wire to analog input 1 and the second wire to the GND input. See diagram 1.

Input 2 is used for inside temperature sensor 2. Use a two wire cable. Connect one wire to analog input 2 and the second wire to the GND input. See diagram 1.

Input 5 is used for the outside temperature sensor. Use a two wire cable. Connect one wire to analog input 5 and the second wire to the GND input. See diagram 1.
The sensors can be placed up to 100 meter from the main unit with an ordinary two-wire cable. The sensor has no polarity.

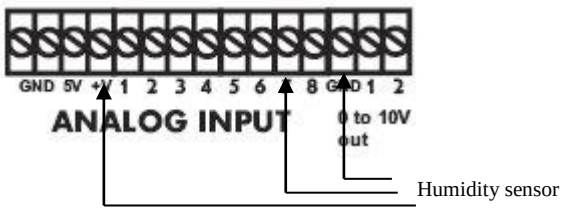
Diagram 1- Temperature Sensors



Humidity sensors

Input 7 is used for the humidity sensor. Use a three wire cable. Brown to input +V; Blue to GND and Yellow to input 7. See diagram 2.

Diagram 2- Humidity and Pressure Sensor



Digital Inputs

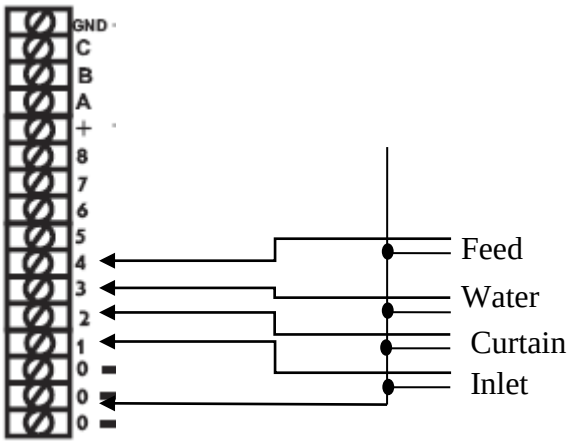
Input 1 is used for the inlet flap dry contact signal. Use a two wire cable. Connect one wire to Digital Input 1 and the second wire to 0(zero). The signal from the flap should be wired in such a way that when the flap moves, the dry contact will be in a normally closed state (shorted). See diagram 3. This feedback is necessary in order for the control unit to be able to know where what the current position of the inlet is.

Input 2 is used for the tunnel curtain dry contact signal. Use a two wire cable. Connect one wire to Digital Input 2 and the second wire to 0(zero). The signal from the curtain should be wired in such a way that when the curtain is open, the dry contact will be in a normally closed state (shorted). See diagram 3. This feedback is needed so the control unit will know if the tunnel curtain is open or closed.

Input 3 is used for the water clock dry contact signal. Use a two wire cable. Connect one wire to Digital Input 3 and the second wire to 0(zero). The signal from the water clock should be wired in such a way that when the water clock sends a pulse, the dry contact will be in a normally closed state (shorted). See diagram 3.

Input 4 is used for the feed dry contact signal. Use a two wire cable. Connect one wire to Digital Input 7 and the second wire to 0(zero). The signal from the feed contactor should be wired in such a way that when the feed contactor is closed, the dry contact will be in a normally closed state (shorted). See diagram 3.

Diagram 3- Dry Contact Signals



Relays

Connect the relay outputs to the various systems. All outputs are dry contacts, maximum 2 Amp/220V NO/NC.

Relay 1 = Alarm (bottom left side of relay box)	Relay 9 = Fan group 4 (bottom right side of relay box)
Relay 2 = Heating system	Relay 10 = Fan group 5
Relay 3 = Cooling system	Relay 11 = Fan group 6
Relay 4 = Open inlet	Relay 12 = Fan group 7
Relay 5 = Close inlet	Relay 13 = Fan group 8
Relay 6 = Fan group 1	Relay 14 = Fan group 9
Relay 7 = Fan group 2	Relay 15 = Fan group 10
Relay 8 = Fan group 3	Relay 16 = Fan group 11

Connect a 220V cable to the unit.

Close the panel with the two screws.

Operation

The **Temptron 616** will display the average temperature of the connected temperature Sensors. It is possible to display each sensor separately.

Turn on power.
1. Each time power is connected to the unit “Agro Lo” will appear on the display. The **Temptron 616** is calibrating its connected sensors.
2. After 20 Seconds the average temperature will appear on the left display.

Recalling set point

It is possible to read all the information on the **Temptron 616** display.
The right display indicates the function number. The left display shows the set point for each function.
Each set point has a code number (see menu on the front panel). It is possible to go into the code in two ways:
1. By pressing on the ***DATA*** button the code number display on the right side of the panel will increase. The preset information will appear on the data display on the left side of the panel.
2. By pressing on the “0” button, two lines will appear on the code display and “FUNC” on the data display.

Example:
If you would like to see code no.8;
a) Push on the “0” button.
b) Push on “0” and then on “8” button.
On the code display will appear 08 and on the data display the information.
If a code numbers are higher than 10, push on “0” and then enter the code number.
It is possible to continue from code “12” by pushing on the ***DATA*** button to the next code.

Temperature and humidity sensor displays

To view each sensor reading separately;

To display the temperature reading for Sensor 1, press on number 1.

To display the temperature reading for Sensor 2, press on number 2.

To display the temperature reading for outside sensor, press on number 5.

To display the humidity sensor reading, press on number 7.

Changing set points

It is possible to change each set point.
1. Go into the desired code as explained above.
2. Push on ***PROG*** button. The code display will start to flash.
3. Use the keyboard to enter the desired data. The new data will appear on the data display.
4. Check the display to see if the information is correct. If yes, push on the ***Enter*** button. The code display will stop flashing to indicate that the new information has been stored into the unit’s memory.

Lock Code

It is possible to enter a 4-digit code, which will lock the **Temptron 616** to prevent unauthorized personnel form making changes in the unit.
It is possible to see all the information in the unit, but not possible to make any changes.
The unit is factory set in an unlocked manner, without a code. If a code is needed see the hidden functions section for an explanation of how to program the code (function 81).
Once a code has been programmed, in order to unlock the unit to change values, enter the programmed 4 digit code while the display is showing the average temperature. There is no need to press PROG for this.

Once the code has been entered, after a ten minute period from the last value change, the unit will relock.
If no code is desired enter 0000 for the lock code.

Set points

Functions

01. Time (not shown on front panel menu)
This is a reading of the current time setting. It is possible here to adjust the time reading.

02. Required Temperature
The required temperature is the required temperature in the house. All set points (except the cool temperature set point) are set as a differential above or below the required room temperature. The required temperature will be reduced daily according to the *Temperature Reduction Table* (see functions 55-64).

Heating system

03 Heat
Heat set point is the temperature differential **below** the Required temperature that the heating system will turn on.
Example: Heat set point = 1.0
If the room temperature should drop 1.0° below the Required temperature, the heating system will start to run.

Fan Set points

Theory of operation for ventilation program

Your ventilation program has several stages. Stage one is called minimum ventilation. Minimum ventilation is used to supply the minimum amount of air needed per kilo per hour. This minimum amount of air is called *Min air low kg* (see function 29). The fans used in the minimum ventilation stage (see *Min fan group*, function 80) and the amount of air that they supply (see *Max air hour*, function 28), are fans bringing air into the house through the side inlets. The fans are running in a cycle mode (see *Fan min duty* and *Fan duty cycle*, functions 26 and 32) as calculated according to the *Current bird weight* (see function 65-74), current amount of birds in the house (see function 30). Before the ventilation cycle starts the unit will open the inlets to the preset percentage according to which fan groups are to run (see Flap positions, functions 15-25). Once the inlet has opened the fans will come into operation. Between cycles the inlet will be closed. Minimum ventilation generally does not reduce the temperature in the house.
If the house temperature rises to the set point of one of the minimum ventilation fan groups, that fan group will start to run continuously and the cycle mode will stop.

When the fan group that is programmed to be the first tunnel group fan (see *Tunnel on group*, function 79) comes into operation, the unit goes into the tunnel ventilation stage.
There are two modes for tunnel ventilation. In mode 1the minimum ventilation fans stop running when the first tunnel fan group comes into operation.
In mode 2 the minimum ventilation fans continue to run while in tunnel ventilation.
To choose mode 1 or 2 see Min fan off, function 86.

*Once the unit goes into tunnel ventilation stage, the inlets will close and the fans will bring air in through the tunnel curtain. At this point the tunnel curtain should be open, If the tunnel curtain is not open, the inlets will not close.

04. Fan 1
Fan 1 set point is the temperature differential above the required temperature at which time fan 1 will run nonstop.
Each time fan group 1 comes into operation the inlet will open to the set opening (in percentage) as setup in function 15. The fan group will start to run after approximately 5 seconds. This waiting time is needed to prevent a buildup of high negative pressure in the house.

05. Fan 2
Fan 2 set point is the temperature differential above the requested room temperature that fan 2 will turn on. When fan group 2 comes into operation the inlet/curtain will open to its preset opening as set in function 16.

06. Fan 3
Fan 3 set point is the temperature differential above the requested room temperature that fan group 3 will turn on. When fan group 3 comes into operation the inlet/curtain will open to its preset opening as set in function 17.

07. Fan 4
Fan 4 set point is the temperature differential above the requested room temperature that fan group 4 will turn on. When fan group 4 comes into operation the inlet/curtain will open to its preset opening as set in function 18.

08. Fan 5
Fan 5 set point is the temperature differential above the requested room temperature that fan group 4 will turn on. When fan group 5 comes into operation the inlet/curtain will open to its preset opening as set in function 19.

09. Fan 6
Fan 6 set point is the temperature differential above the requested room temperature that fan group 6 will turn on. When fan group 6 comes into operation the inlet/curtain will open to its preset opening as set in function 20.

10. Fan 7
Fan 7 set point is the temperature differential above the requested room temperature that fan group 7 will turn on. When fan group 7 comes into operation the inlet/curtain will open to its preset opening as set in function 21.

11. Fan 8
Fan 8 set point is the temperature differential above the requested room temperature that fan group 8 will turn on. When fan group 8 comes into operation the inlet/curtain will open to its preset opening as set in function 22.

12. Fan 9
Fan 9 set point is the temperature differential above the requested room temperature that fan group 9 will turn on. When fan group 9 comes into operation the inlet/curtain will open to its preset opening as set in function 23.

13. Fan 10
Fan 10 set point is the temperature differential above the requested room temperature that fan group 10 will turn on. When fan group 10 comes into operation the inlet/curtain will open to its preset opening as set in function 24.

14. Fan 11
Fan 11 set point is the temperature differential above the requested room temperature that fan group 11 will turn on. When fan group 11 comes into operation the inlet/curtain will open to its preset opening as set in function 25.

Inlet Position

Each time a fan group comes into operation the inlet will open according to the set percentage for each group. If more than one group is set to come into operation the higher group number will determine the inlet opening.
Be sure to increase the inlet opening percentage as more fan groups are added.

Example: In minimum ventilation, fan groups 1, 2 and 3 are chosen to run. Before the cycle mode comes on the inlet will open to the percentage set for fan flap position for fan group 3.

15. Flap Position 1 %
Enter here the percentage that the inlet will open each time the corresponding fan group comes into operation.
Example; Fan group 1 = Position 1= 10%

16. Flap Position 2 %
Enter here the percentage that the inlet will open each time the corresponding fan group comes into operation.
Fan group 2 = Position 2

17. Flap Position 3 %
Enter here the percentage that the inlet will open each time the corresponding fan group comes into operation.
Fan group 3 = Position 3

18. Flap Position 4 %
Enter here the percentage that the inlet will open each time the corresponding fan group comes into operation.
Fan group 4 = Position 4

19. Flap Position 5 %
Enter here the percentage that the inlet will open each time the corresponding fan group comes into operation.
Fan group 5 = Position 5

20. Flap Position 6 %
Enter here the percentage that the inlet will open each time the corresponding fan group comes into operation.
Fan group 6 = Position 6

21. Flap Position 7 %
Enter here the percentage that the inlet will open each time the corresponding fan group comes into operation.
Fan group 7 = Position 7

22. Flap Position 8 %
Enter here the percentage that the inlet will open each time the corresponding fan group comes into operation.
Fan group 8 = Position 8

23. Flap Position 9 %
Enter here the percentage that the inlet will open each time the corresponding fan group comes into operation.
Fan group 9 = Position 9

24. Flap Position 10 %
Enter here the percentage that the inlet will open each time the corresponding fan group comes into operation.
Fan group 10 = Position 10

25. Flap Position 11 %
Enter here the percentage that the inlet will open each time the corresponding fan group comes into operation.
Fan group 11 = Position 11

Minimum ventilation Setup

26. Fan Minimum Duty
A value set in percent. This is the minimum amount of time the minimum fan groups will run out of the Fan cycle time (see next function) during minimum ventilation.

27. Fan Cycle Time
This is a time period set in minutes and seconds. This is the time frame that the minimum ventilation cycle will use.

28. Maximum Air Per Hour.
Enter here the total amount of cubic air per hour that minimum ventilation fan groups can supply. Take the total amount and divide it by 1000. Example: If fan group 1 can supply 20,000 cubic meters of air per minute then enter the value 20.

29. Minimum Air Per Kg
Enter here the minimum amount of cubic air per kg wanted in the house.

30. Number Of Birds
Enter here the total number of birds in the house.
Example: 20,000 birds will appear as 20.00

31. Current Weight.
This is the current weight of one bird as calculated in the automatic weight increase table (function 65-74).
This weight can be adjusted as needed.

32. Fan Duty Cycle
This is the calculated duty cycle (percent) of the Fan Cycle Time according to the minimum ventilation mode as explained later. If this number is larger than the minimum duty cycle time then the minimum ventilation fan groups will run this amount out of the fan cycle time. If the minimum duty cycle time is larger than the calculated duty cycle time the fans will run according to the minimum.

33. Cycle Timer
This is a display in seconds of the minimum ventilation timer.
The timer shows the time left of the Fan Cycle Time (function 19).

Minimum ventilation calculation is made as follows.
The unit multiplies the total number of birds by the current weight to get the total weight in Kg for the house. This number is then multiplied by the minimum amount of cubic air per kg per hour. This gives us the total amount of cubic air per hour needed to supply a minimum amount of air to the birds. Next we take into account the maximum amount of air that the minimum ventilation groups can supply while per hour.
We can now calculate the length of the fan duty cycle for the minimum ventilation fans out of the fan cycle time.
As the bird weight increases, the fan duty cycle will also increase. Once the duty cycle reaches 100 percent the minimum ventilation fans will run continuously.

If more than one group of fans is to be used there will be a 5 second delay between the start of each fan group. The same delay time will be used when the fan groups go off.

Cooling System

34. Cool Temp
Enter here the temperature that when reached in the house the cooling system will start to run in its cycle mode as setup in functions 35 and 36.
This temperature is set as an absolute temperature.

35. Cool On Time mm:ss
This is the running time for the cooling system, set in minutes and seconds, which the cooling system will run when the cool cycle starts.

36. Cool Off Time mm:ss
This is the off time for the cooling system, set in minutes and seconds, which the cooling system will be off between cycle times.

37.Cool Humidity Set Point
Enter here the maximum humidity in percentage. If the humidity in the house reaches this level then the cooling system will turn off.

*If no humidity sensor is connected to the unit then the value 100 must be entered here.

38. Cool Timer Display
This is a display in seconds of the time cycles for the cooling system.

Alarm

39. Alarm Low set
Enter the number of degrees **below** the required house temperature that if reached the unit will activate the alarm relay.
Example: Required temperature 25.0
Alarm Low: 5.0
If the house temperature drops to 20.0 then the alarm relay will be activated.

40. Alarm High set
Enter the number of degrees **above** the required house temperature that if reached the unit will activate the alarm relay.
Example: Required temperature 25.0
Alarm High: 5.0
If the house temperature rises to 30.0 then the alarm relay will be activated.

41. Alarm Type
Shown here is the current alarm in digital form
The unit has 8 alarms
1. Cold
2. Hot
3. Memory- represents a problem with the unit's memory.
4. Sensors- all temperature malfunctioning.
5. Sensor- one sensor is malfunctioning.
6. Inlet- the unit has detected a problem with the inlet motor feedback.

42. Alarm Disable
It is possible to disable alarms 5-6.
To disable an alarm enter the corresponding number.
Example: In order to disable alarm number 5 (bad sensor) enter the value 5.
Note: If an alarm is disabled then the alarm relay will not be activated when there is a problem.

24-hour data

43. Min Temperature
A display of the minimum temperature recorded over the last 24 hours. This will be updated according to the reset time (function 76).

44. Minimum Temperature Time
A display of the time that the minimum temperature occurred in the house.

45. Maximum Temperature
A display of the maximum temperature recorded over the last 24 hours. This will be updated according to the reset time (function 76).

46. Maximum Temperature Time
A display of the time that the maximum temperature occurred in the house.

47. Minimum Humidity
A display of the minimum humidity recorded over the last 24 hours. This will be updated according to the reset time (function 76).

48. Minimum Humidity Time
A display of the time that the minimum humidity occurred in the house.

49. Maximum Humidity
A display of the maximum humidity recorded over the last 24 hours. This will be updated according to the reset time (function 76).

50. Maximum Humidity Time
A display of the time that the maximum humidity occurred in the house.

51.Water Clock
If a water measuring clock has been connected to the Temptron 616 then in this function will be displayed the amount of water consumed over a 24 hour period. This 24 hour time period is from Reset time to Reset time (function 76).

52.Feed Clock
If a dry contact has been connected to the Temptron 616 from the feed auger contactor. then in this function the amount of feed consumed over a 24 hour period will be displayed. The 24 hour time period is from Reset time to Reset time.

53.Feed Mult
Feed multiply is the total amount for feed in kilograms that is duped from the feed auger over a one minute time period.
If a dry contact has been connected to the Temptron 616 from the feed auger contactor and a Feed multiply is entered then the Temptron 616 will convert the feed augers motor running time into kilogram and display this amount in function 52.
Example:
Over a one minute time period 25 kilogram comes out of the feed auger.
The Temptron 616 will calculate feed consumption using this value.
If the feed auger runs for 10 minutes then the Temptron will assume that 250 kilogram of feed was consumed. Since different types of feed will cause a change in the amount of feed, this is only an approximant calculation of consumed feed..

54. Average 24- Hour Temperature
A display of the average temperature over the last 24 hours. This is updated at reset time.

Temperature Reduction Table

It is possible to enter a automatic temperature reduction table for the required house temperature.

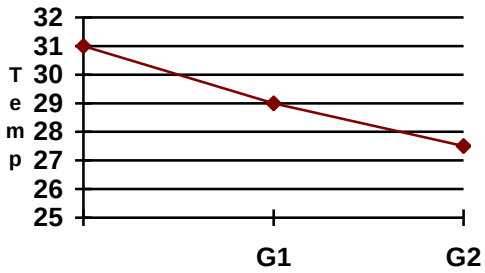
55.Day 1 Temp

Day 1 temperature is the starting temperature for the first day grow day. It is the temperature that will appear as required temperature (function 02) when 1 is entered here. The room temp will be reduced according to the following table.
Important: When Day is equal to 1 it is not possible to change Required Temperature (function 02).

56- 64 Temperature Graph 1

It is possible to set a temperature graph to reduce automatically the room temperature each day during the raising period. It is possible to set up to 9 Groups. Length of each Group can be up to 9 days. Each Group can be reduced up to 9.9° C.
Example:
Day 1 temperature 31°C (function 55).
Growth day 1 (function 75)
Room temperature will be 31°C.
Group 1 - 7 days reducing of 2.1°C.

Each day the room temperature will be reduced by 0.3°C. At day 7 - the room temperature will be 29°C.
Group 2-3 days reducing of 1.5°C. Each day the room temperature will be reduced by 0.5°C. At day 10 the room temperature will be 27.5°C. and so on.
Example:



To Enter temperature reduction of 2°C in 7 days, press on 7 and than on 2 than on 0 and than on enter. On the display will appear : 7 2.0 G1
Press on data key, next group will appear.
To enter temperature reduction of 1.5°C in 3 days, press on 3 than on 1 than on 5 then on enter. On the display will appear: 3 1.5 G2.

It is **important** to enter data in all 9 groups. If a group is not in use than put one day and 0°C. as a reduction temperature

65. Day 1 Weight

It is possible to enter an automatic weight increase table to be used by the minimum ventilation system.
Enter here the weight of one bird at one day old.
Each time day one is entered at *Grow Day*, the *Current Weight* will be updated to this weight
Important: When Day is equal to 1 it is not possible to change current weight.

Weight increase table

66-74. Weight Graph

The weight increase graph (table) works as follows:
The table has 9 groups. Each group contains two settings.
The first setting represents the number of days that the weight increase will take place over. The maximum number of days is 9.
The second setting is the actual weight increase over the set number of days. The maximum weight increase is 990 grams

Example 1

Enter the first table of the weight increase graph.
To enter a weight increase of 80 grams over 7 days, press on number 7, number 0 and number 8. Next press on enter.
On the display will appear: 7 08 G1

Example 2

Press on the data button to go to the next table in the weight increase graph.
To enter a weight increase of 200 grams over the next 9 days, press on number 9, number 2 and number 0. Next press on enter.
On the display will appear: 9 20 G2.

It is **important** to enter data in all 9 groups. If a group is not in use, than put one day and 0 as weight increase.

75. Grow Day

This is the current grow day of the flock. At the beginning of the flock enter here 1. The *Required Temperature* will automatically receive the value as entered in *Grow Day1 Temp*.
The Current weight function will automatically receive the value as entered in *Day 1 Weight*.

76. Reset Time

The control unit collects all its information on a 24 hours basis. It is possible to set the *Reset Time*. The grow day also changes after this time is passed. All information, temperature, humidity, water count and feed consumption will reset at this time.

77. Flap 1 Position%
A display of the current position of the inlet in percent.

Hidden functions.

Hidden functions are functions that are normally set up once and are not used on a daily basis.
There are 8 hidden functions.
In order to reach the hidden function (78-87) you must first unlock them.
To unlock the hidden functions follow these steps.
A. Enter the time function (01).
B. Push on "PROG"
C. Enter **3331** and press enter.
The hidden functions are now unlocked
To relock the hidden functions manually enter function 01 and enter 3330 and enter.
If no information is enter for a period of 10 minutes the unit will automatically lock the hidden functions.

Hidden functions:
78. Flap 1 current state.
This is for Agrologic technical staff.

79. Tunnel on group
Enter here the fan group that is used as the first tunnel ventilation group.

80. Minimum ventilation groups
Enter here the group or groups of fans that are used for minimum ventilation.

81. Lock code.
Enter here the 4-digit code for locking/unlocking the unit. If the value 0000 is entered then the lock code is disabled.

82. Number of sensors
Number of sensors for average. Enter here up to 4 sensors that are to be used for calculating the average temperature.

83.Net Name
It is possible to connect the **Temptron 616** to a PC computer with the help of the "ChickPro" software package. Each unit needs an individual net name.

84.Digital Input reading:
This is a display of the current digital input in use. This readout is a binary number.

85.Op Mode:
Enter here 3

86. Minimum ventilation off
Enter 0 (zero) to leave minimum ventilation fans on in tunnel ventilation.
Enter 1 to shut minimum ventilation while in tunnel ventilation.

87. Version Number
This is the version number of the unit.

Flap Calibration

Flap 1 Calibration (inlet)

It will be necessary to calibrate the inlets / curtains before the start of each flock.

A. Go to the time function (code 01)

B. Push on “PROG”

C. Enter “4441” and press "Enter".

This will start the calibration process. The flap will first close to 0 percent and then open to 100 percent. The flap will then go to its required position.

TROUBLE-SHOOTING

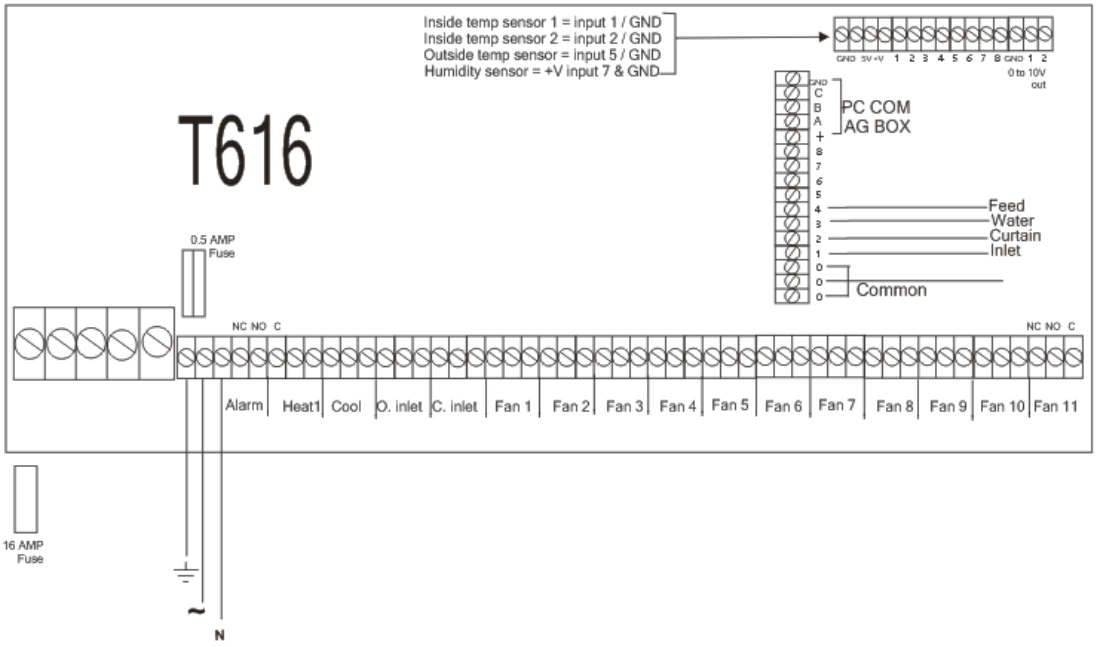
1. If a temperature sensor or its cable is disconnected, the sensor reading will show **Open.**

2. If a temperature sensor or its cable is shorted, the sensor reading will show **Short.**

3. If all sensors are disconnected, the unit will show open as average and activate the alarm.

If one sensor is disconnected, the system will automatically work on the remaining sensor.

Diagram


Inside temp sensor 1 = input 1 / GND
Inside temp sensor 2 = input 2 / GND
Outside temp sensor = input 5 / GND
Humidity sensor = +V input 7 & GND
T616
PC COM
AG BOX
Feed
Water
Curtain
Inlet
Common
0.5 AMP
Fuse
16 AMP
Fuse
NC NO C
Alarm
Heat1
Cool
O. inlet
C. inlet
Fan 1
Fan 2
Fan 3
Fan 4
Fan 5
Fan 6
Fan 7
Fan 8
Fan 9
Fan 10
Fan 11
N