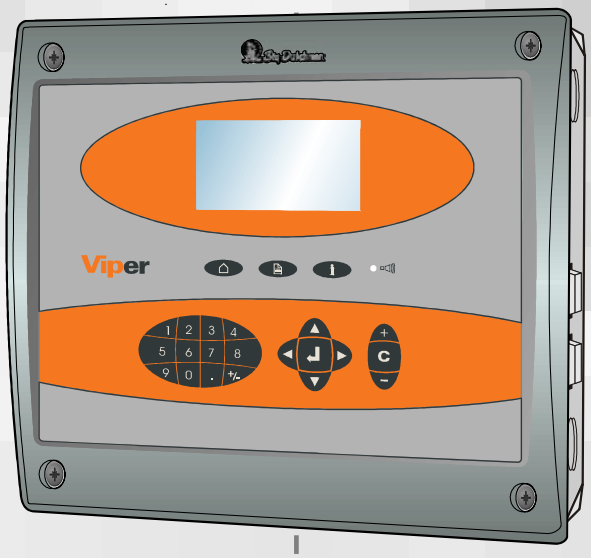
99-97-1961
(V 5.4)

# Viper Climate and Production Computer

## Technical Manual




99

Big Dutchman

## Program Version

The product described in this manual is computer based, and most functions are realised by software. This manual corresponds to:

- Software Version CPU 5.4

It was released in May, 2006.

## Product and Documentation Changes

Big Dutchman reserve the right to change this document and the product herein described without further notice. In case of doubt, please contact Big Dutchman.

Latest date of change appears from the back page.

### NOTE



## IMPORTANT

## NOTES CONCERNING THE ALARM SYSTEM

Where climatic control is used in livestock buildings, breakdowns, malfunctions or faulty settings may cause substantial damage and financial losses. It is therefore most important to install a separate, independent alarm system, which monitors the house concurrently with the climate computer. According to EU-directive No. 91/629/EØF and 91/630/EØF an alarm system must be installed in any house that is mechanically ventilated.

Please note that the product liability clause of Big Dutchman's general terms and conditions of sale and delivery specify that an alarm system must be installed.

In case of misoperation or improper use, ventilation systems can result in production loss or cause loss of lives among animals.

Big Dutchman recommend that ventilation systems should be mounted, operated and serviced only by trained staff and that a separate emergency opening unit and an alarm system be installed as well as maintained and tested at regular intervals, according to Big Dutchman's terms and conditions of sale and delivery.

# 1 INTRODUCTION

This technical manual deals with installation and service of the Viper climate and production computer. The first section of the manual is primarily aimed at electricians who are to mount, install and test Viper. The sections concerning adjustment and service, however, may be relevant to the electrician, the service engineer and the daily user.

The manual is built up to follow the working routine, which the setup of Viper climate and production computer requires. By following the instructions of the manual, you will go through all steps in the correct order.

Big Dutchman congratulate you on your new

Viper climate and production computer

# 2 MOUNTING GUIDE

## 2.1 Mounting of Viper together with MC 278CT and wiring box

When you want to… mount Viper together with MC 278 and wiring box they must be placed like this:

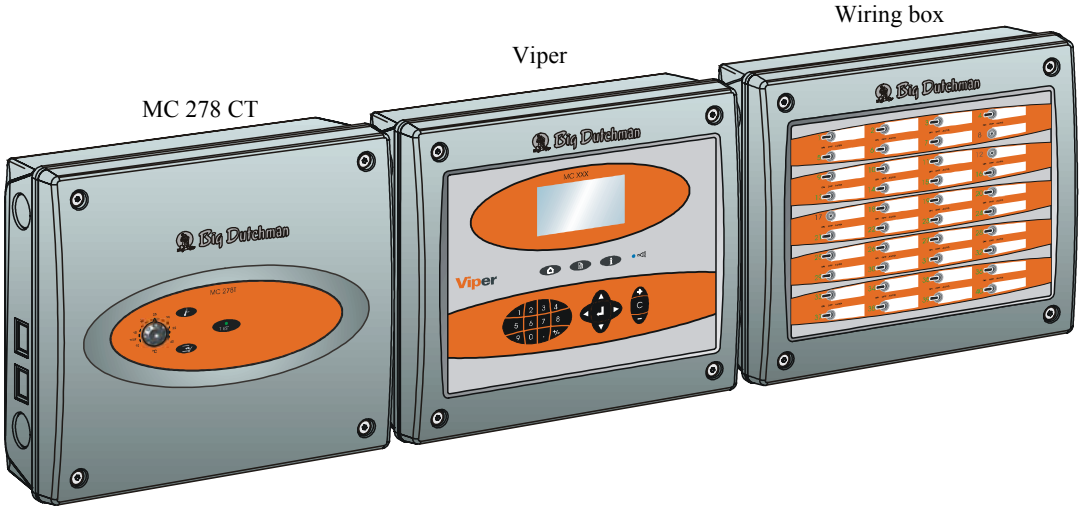



**Figure 1: Mounting of Viper together with MC 278 CT and wiring box**

## 2.2 Mounting of Viper

When you want to… mount the Viper climate and production computer, you must:

1) Remove the front panel with the front panel screws and the flat cable plug (**A**)
2) Prick/drill holes for the four screws (**B**) in the bottom of the cabinet
3) Hold the bottom against the wall with the display (**C**) at eye level for the daily user
4) Remember free space around the cabinet:
   - 43 cm (**D**) so that the front panel can be placed on top of the cabinet base during service
   - 10 cm (**E**) below the cabinet base for air cooling
   - 10 cm (**F**) at the right side for operation of the AUT/MAN (Auto/Manual) change-over switches
5) Mark out for the four fastening screws through the new holes (**B**) when mounting on a brick and concrete wall. On a wood and panel wall the computer can be fastened directly
6) Correct the four marks to horizontal and drill four 8 mm holes
7) Mount the cabinet base using the enclosed wall dowels
8) Place one or more washers under one of the bottom feet if the wall is not level

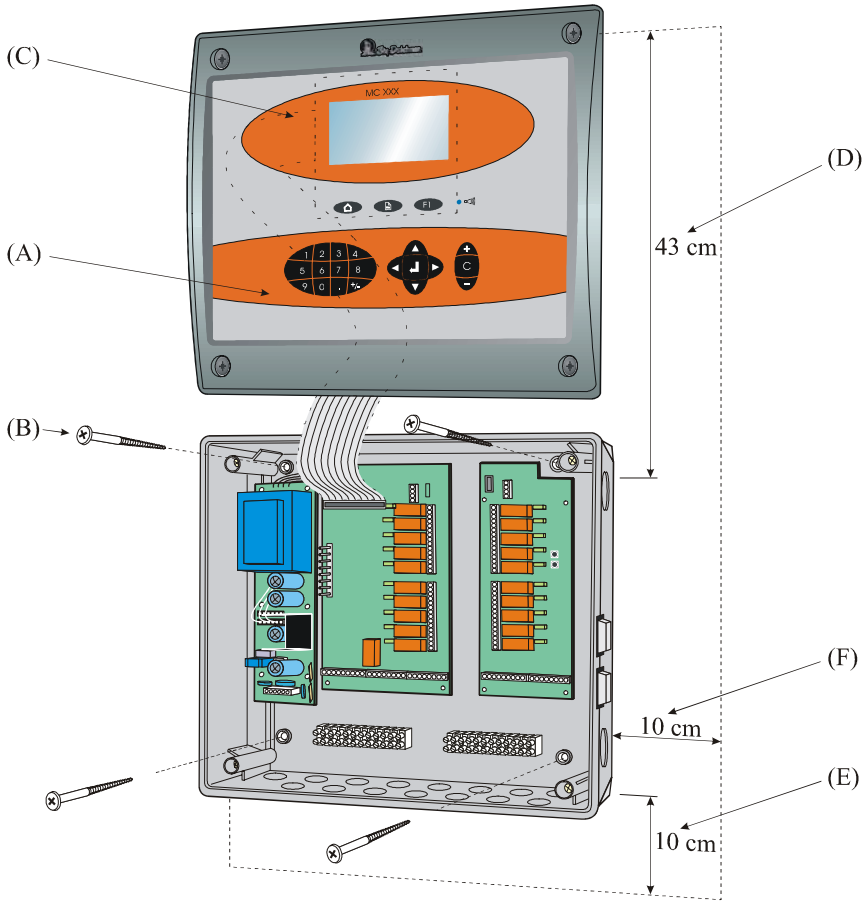



**Figure 2: Mounting of Viper climate and production computer**

## 2.2.1 Mounting of I/O Module

When you want to… mount the I/O module, you must:

1) Fasten the module (**A**) using the enclosed screws
2) Connect the plug (**B**) to the basis module
3) Set the change-over switch (**C**) at ”1”
4) Set the jumpers (**D**) as shown in the installation menu

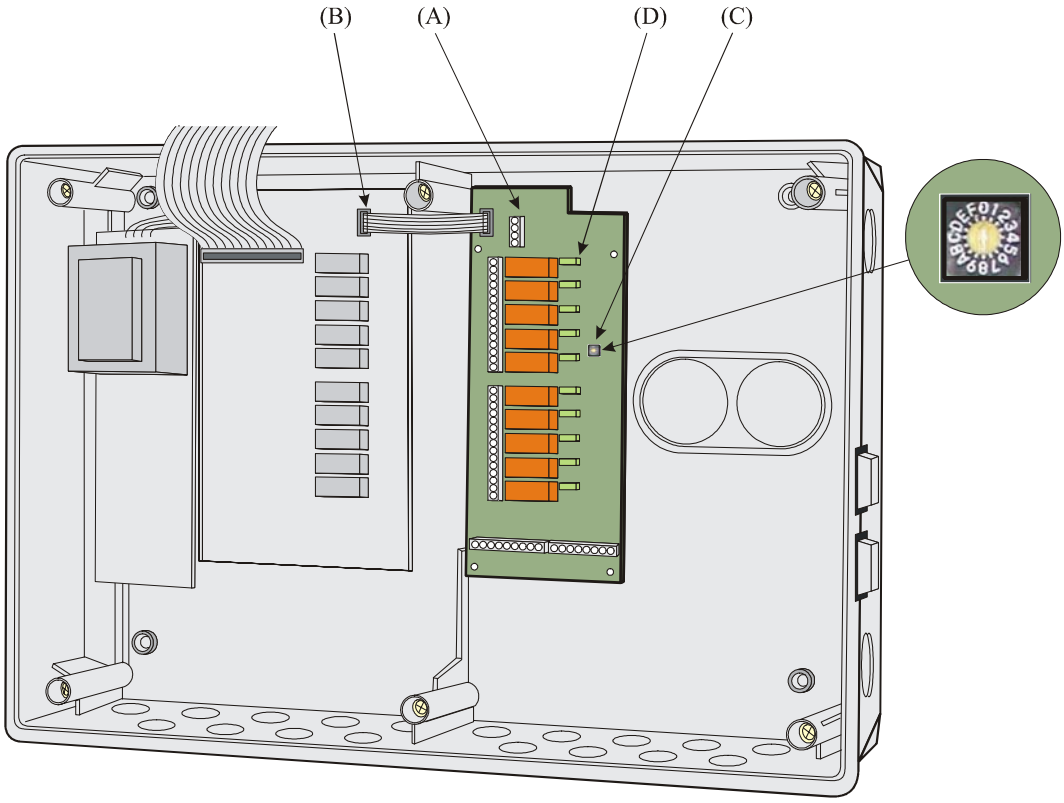



**Figure 3: Mounting of I/O module**

## 2.2.2 Mounting of Cooling Plate and Fan Speed Controller

One or two fan speed controllers can be mounted.

When you want to… mount a fan speed controller, you must

- make holes and mount the cooling plate:

1) Drill one or two holes (**A**) from the outside or the back using an approx. 38 mm spoon bit. Remove any roughness from the edge
2) Mount the packing line (**B**) carefully in the notch on the back so that the joint turns downwards
3) Fasten the cooling plate (**C**) on the back using eight (countersunk) screws (**D**)

- mount the fan speed controller:

1) Smear a little cooling paste on the back of the fan speed controller (**E**)
2) Fasten the fan speed controller with four screws (**F**) (coarse threads)
3) Fasten the earth wire (**G**) (fine thread). Remember the toothed disk
4) Connect the other end of the earth wire (**H**) to the looped terminal Q31
5) Fasten the fan speed controller well with the (smallest) screw (**I**). Do not twist the pins
6) Connect the plug (**J**) to the basis module

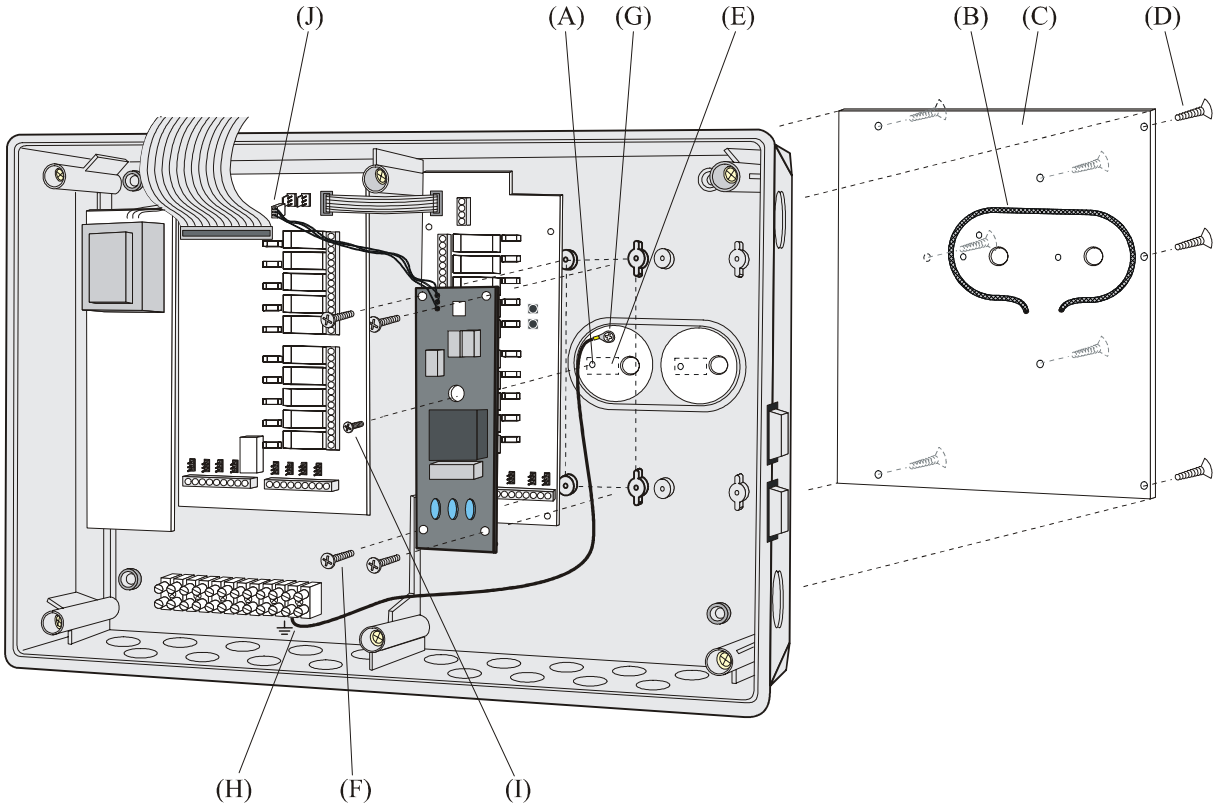



**Figure 4: Mounting of cooling plate and fan speed controller**

### 2.2.3 Mounting of AUT/MAN Change-over Switch

When you want to… mount an AUT/MAN change-over switch, you must:

1) Knock or drill and file one or two knock-out pieces for the AUT/MAN change-over switch (**A**)
2) Mount the AUT/MAN change-over switch (**B**) in the hole (remember packing (**C**))
3) Connect the wires (**D**) to the change-over switch. Hold the change-over switch so that it is not pressed out of the hole again. The wires cannot be mixed up

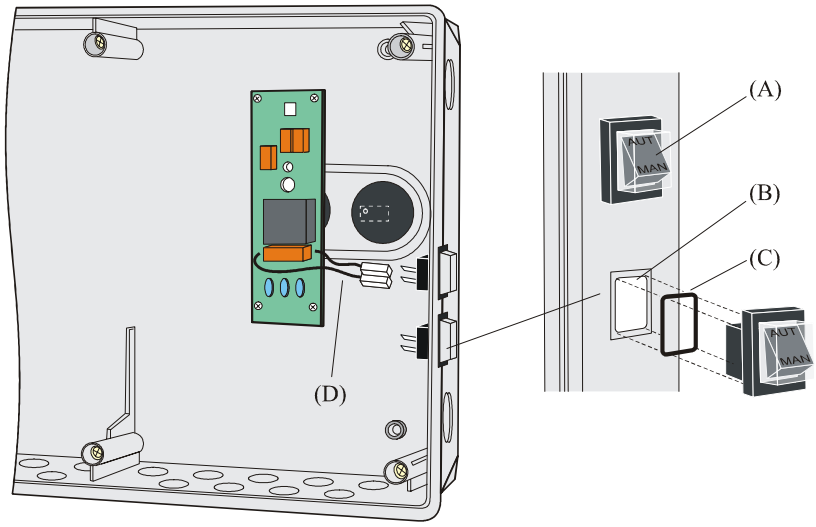



**Figure 5: Mounting of AUT/MAN change-over switch**

### 2.2.4 Mounting of Climate Sensors

Always use reinforced house wiring cable, minimum 1 mm2, to avoid rodent attack.

When you want to… mount climate sensors, you must

- place the DOL 12 temperature sensors and DOL 14 humidity sensor inside the house:

- One metre above the animals, approx. in the middle of the pen (ensuring the animals cannot reach the sensors)
- In a draught-free zone. Not opposite an air inlet
- Not directly in a heating jet
- Not where sunrays can shine on the sensor through windows. Take into account that the altitude of the sun varies with the season/time of day
- Not where spraying can hit the sensor

A plug on the DOL 14 humidity sensor is preferable so it can be removed during cleaning.

Never use a plug on the DOL 12 temperature sensor as a bad connection here could have disastrous results. Never use shrink-on sleeves.

- place the DOL 12 temperature sensor outside:

- On the shady side of the house to avoid the sun. Take into account that the altitude of the sun varies with the seasons
- As much in the open as possible, but protected from rain and snow

## 2.3 Mounting of Wiring Box

When you want to… mount the Viper climate and production computer, you must:

1) Remove the front panel with the front panel screws and the flat cable plug (**A**)
2) Prick/drill holes for the four screws (**B**) in the bottom of the cabinet
3) Hold the bottom against the wall with the panel (**C**) at eye level for the daily user
4) Remember free space around the cabinet:
   - 43 cm (**D**) so that the front panel can be placed on top of the cabinet base during service
   - 10 cm (**E**) below the cabinet base for air cooling
   - 10 cm (**F**) at the right side for operation of the AUT/MAN (Auto/Manual) change-over switches
5) Mark out for the four fastening screws through the new holes (**B**) when mounting on a brick and concrete wall. On a wood and panel wall the computer can be fastened directly
6) Correct the four marks to horizontal and drill four 8 mm holes
7) Mount the cabinet base using the enclosed wall dowels
8) Place one or more washers under one of the bottom feet if the wall is not level

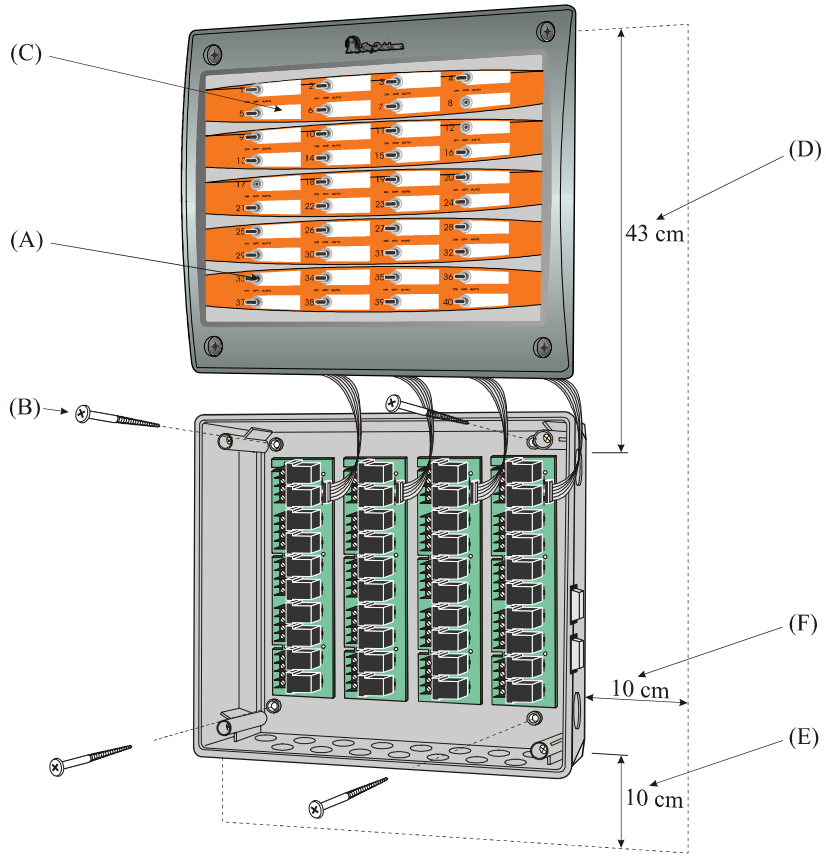



**Figure 6: Mounting of wiring box**

# 3 INSTALLATION GUIDE

## 3.1 Technical Menus

| Main menu | Sub-menu | |
|---|---|---|
| Technical | Setup | Installation |
| | | Adjustment |
| | | Show installation |
| | User setup | Language |
| | | Password |
| | | Display |
| | | CPU module |
| | | Main I/O |
| | | General I/O |
| | | Weighing modules |
| | | Calibrate sensors |
| | Service | Manual/auto |
| | | Setting |
| | | Memory |
| | | Control parameters |
| | | Adjust neg. pressure |
| | | Adjust stepless A |
| | | Adjust stepless B |
| | | Diagnostics |

**Table 1: Survey of technical menus**

## 3.2 Setup

This section describes the connection of mains voltage and components, setting of the climate computer and connection of other components.

When you want to… make electric installation, you must:

1) Connect cables according to that particular basis wiring diagram, which corresponds to the emergency opening of the system
2) Connect mains voltage
3) Set up the relevant ventilation components in the climate computer
4) Connect the individual components by means of the wiring diagrams
5) Adjust the system
6) Test the system

## 3.2.1 Connection of Mains Voltage

**IMPORTANT** Before you connect mains voltage, it is important to set the voltage in the computer so that it corresponds to the voltage level in the local house.

You have the following options:

- 230/240 V Leave the plug in (factory setting)
- 200 V Move the plug to 200 V
- 115 V Move the plug to 115 V

**NB** Fan speed controller modules can only operate at 230/240 V.

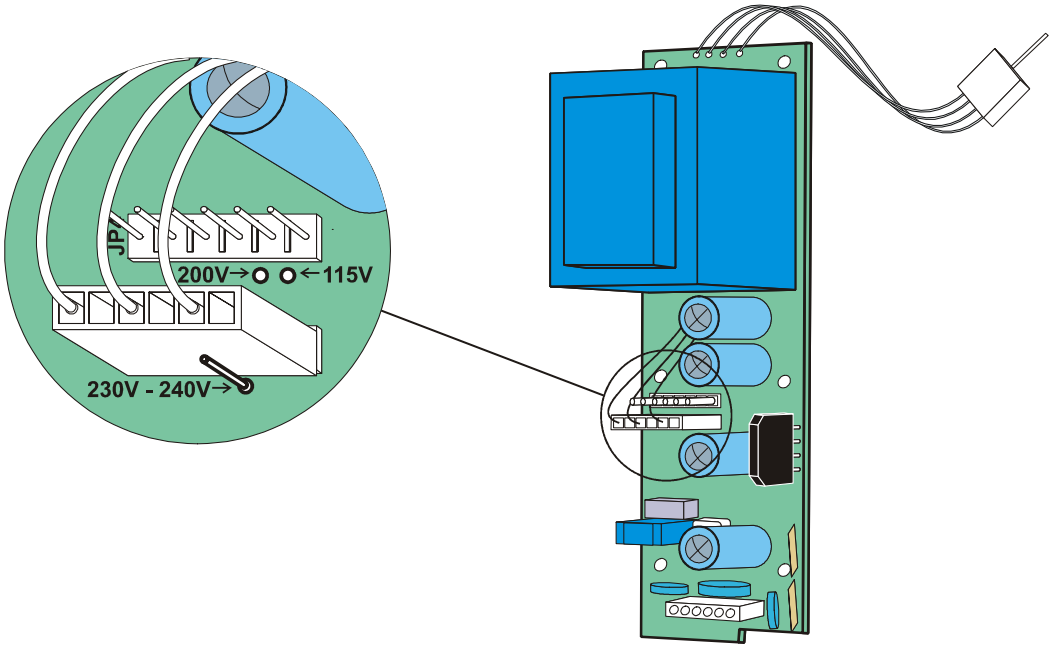



**Figure 7: Setting of mains voltage**

## 3.2.2 Menu for Installation

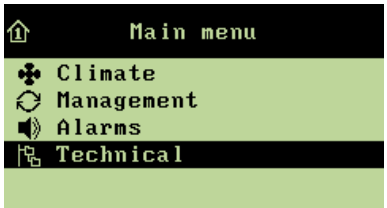
| Setup: Installation | Menu items | Sub-menus | Options under the individual menu items | |
|---|---|---|---|---|
| | I/O modules | General modules | Module 1 - 6 | None<br>Type 1 10 RL<br>Type 3 10 RL<br>Type 4 0RL<br>Type 6 10 HP<br>Type 7 10 LP |
| | | Weighing modules | Module 1-2 | None<br>Type 5W |
| | Climate | Number of temperature sensors | 1-8 | |
| | | Air inlet | Side inlet 1 - 6 | No<br>With feedback – no M.O.<br>With feedback – with M.<br>No feedback – no M.O.sw<br>No feedback – with M.O. |
| | | | Tunnel inlet 1 - 2 | No<br>With feedback – no M.O.<br>With feedback – with M.<br>No feedback – no M.O.sw<br>No feedback – with M.O. |
| | | | Manual tunnel input | |
| | | Air outlet | Stage/MultiStep | Stage<br>MultiStep |
| | | | Stepless 1 | Air outlet 1<br>Fan speed control 1 |
| | | | Stepless 2 | Air outlet 2<br>Fan speed control 2 |
| | | | No. of side MultiStep | 0 – 8 |
| | | | No. of tunnel MultiStep | 0 – 8 |
| | | | No. of side fans stages | 0 – 16 |
| | | | No. of tunnel fans stages | 0 – 16 |
| | | | Flap control side-MS | MultiStep 1 - 8 |
| | | Emergency opening | 278CT | |
| | | Heaters | **Number of house heaters** | 0-6 |
| | | | **Number of brooding heaters** | 0-4 |
| | | | **Heater setup** | **Heater 1 - 6**<br>**Brooding heater 1 - 4** |
| | | Humidity sensor | None<br>One humidity sensor<br>Two humidity sensors | |
| | | Cooling | No<br>1<br>2 | |
| | | Pad cooling | No | |

| Setup: Installation | Menu items | Sub-menus | Options under the individual menu items | |
|---|---|---|---|---|
| | | | One pump<br>Two pumps | |
| | | ☐ **Pad sensor** | | |
| | | **Humidification** | No<br>1<br>2 | |
| | | ☐ **Humidification** | | |
| | | **Soaking** | No<br>1<br>2 | |
| | | ☐ **Pressure control** | | |
| | | **Aux. sensors** | Aux. sensor 1 - 4 | No<br>CO2 sensor<br>Press. sensor<br>NH3 sensor<br>O2 sensor |
| | | ☐ **$CO_2$-sensor** | | |
| | **Production** | **Feed** | ☐ Feed control<br>Feed weigher<br>Number of silos | None<br>Time controlled<br>Tip weigher<br>Electronic silo weigher<br>One silo<br>Two silos |
| | | **Water meter** | ☐ Water meter installed<br>☐ Active alarm relay | |
| | | **Bird scales** | Bird scale 1 - 2 | None<br>Manual<br>5 kg weight<br>10 kg weight<br>30 kg weight<br>Other scale<br>Electronic scale |
| | | **24-hour clock** | ☐ 24-hour clock A - D | |
| | | ☐ **Light control** | | |
| | ☑ **Info Matic** | | | |

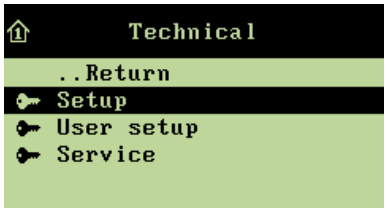
**Table 2: Survey of the installation menu**

When you want to… set the climate and production computer,

→ press 

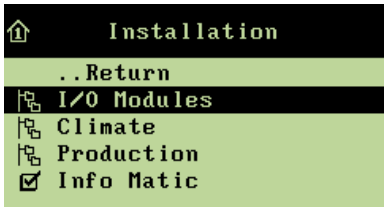



→ select **Technical**, and press

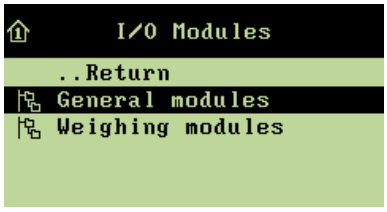



→ select **Setup**, and press

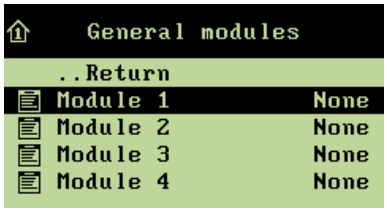

→ select **Installation**, and press



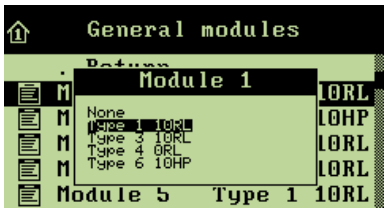

→ select **I/O modules**, and press



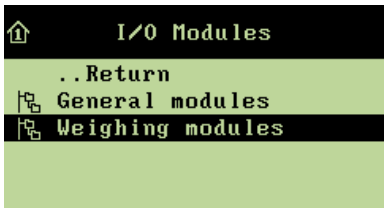

→ select **General modules**, and press



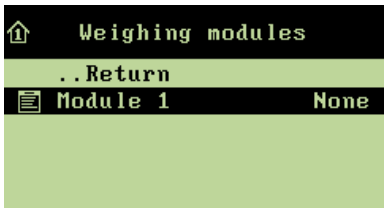

→ select a component, and press to gain access to choosing or cancelling it



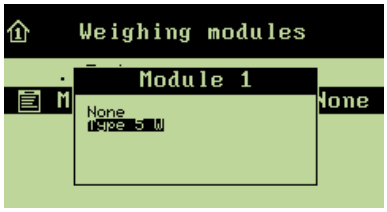

→ select to change the setting, and press to choose a setting



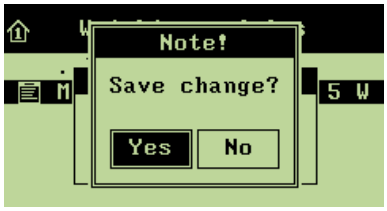

→ select **Weighing modules**, and press




→ select a component, and press to gain access to choosing or cancelling it




→ select to change setting, and press to choose a setting




→ when **Yes** is highlighted, press to save the change

It is not possible to select more components than practically possible. Therefore, you must note whether the computer accepts your wish to connect a component.


→ during installation the computer will inform you if a component cannot be connected

## 3.2.3 Connection of Components: Show Installation

The climate and production computer will inform you *where* to connect the components when you have answered all questions of the installation menu (e.g. Water meter: **Yes**/**No**). Therefore, when it says **See Show installation** in a wiring diagram, it refers to the connections that the climate and production computer gives you during the setting of the computer.

The main part of the connection terminals is universal. Thus, it is possible to install various components for the individual terminals.

When you install a component, which requires the allocation of I/O, the following happens.

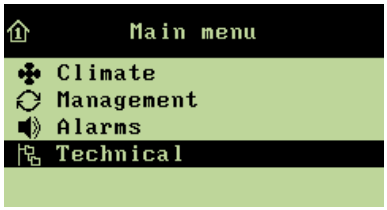
All I/Os are allocated according to a prioritized list. This means that if priority 1 I/O is free, priority 1 I/O will be selected. On the other hand, if priority 1 I/O is already being used by another component, the computer will try priority 2 I/O etc.

Many components use the same prioritized list to get the I/O. This means that if you install component 1 first and then component 2, component 1 will have priority 1 I/O and component 2 will have priority 2 I/O. On the other hand, if you install component 2 first, it will have priority 1 I/O and component 1 will have priority 2 I/O. If you want the same I/O allocation in two computers, it is therefore important to make the installation in the same order.

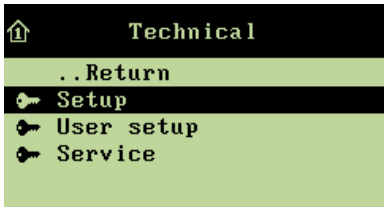
Another way of having the same I/O allocation is by installing all components on one of the computers first. Then save the setup on a CF-card and enter the setup in the other computers. These two computers now have the same I/O allocation.

When you want to… see **Show installation**, you must

→ press

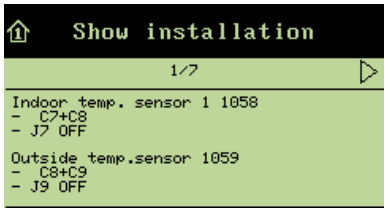



→ select **Technical**, and press




→ select **Setup**, and press


→ select **Show installation**, and press

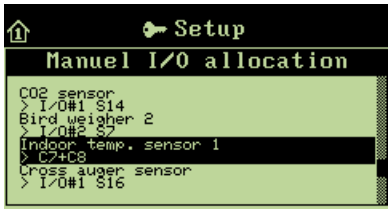



→ scroll to see the other connected components and press to exit the menu

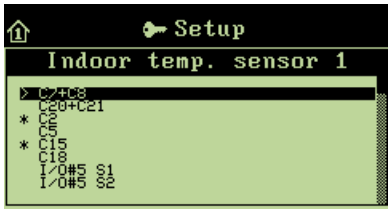
### 3.2.3.1 Manual I/O-allocation

If you want to decide the I/O-allocation for one or more components yourself, you can change it manually under the menu item **Manual I/O allocation**.

When you want to... change the I/O-allocation,
open the **Technical** / **Setup** / **Manual I/O allocation** menu, and




→ select the component that you wish to change, and press




> Shows the current I/O-allocation

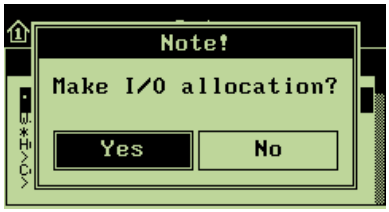
Choose between the listed terminals:

* The terminal is currently allocated to another function

The terminal is not in use

Select the required terminal and press Enter

If you use a terminal that is currently used by another function (indicated by *), Viper will automatically change the I/O-allocation for this function.

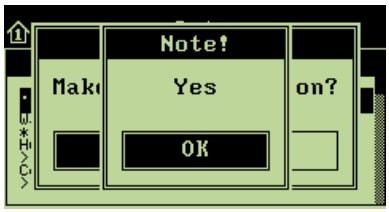



Press the menu key to accept the change

or

Select **Return** at the top of the menu and press Enter.

Viper will not make the change of the I/O-allocation until you accept it.




If the change of the I/O-allocation is possible, Viper will accept it.

If the change is not possible, Viper will reject, and the I/O-allocation will continue as previously.

Viper rejects the change of the I/O-allocation if:

- you have manually used all DOL 12 inputs for other analog inputs
- you have manually used relays so that there are no free relays for the relay-controlled shutters

Instead, manually select terminal for all temperature sensors and subsequently for all relay-controlled shutters.

### 3.2.3.2 Connection of MC 278CT Temperature Controlled Emergency Opening

When you want to… connect MC 278CT temperature controlled emergency opening, you must

1) Remove the jumper plug (**A**) (place it at the bottom of the cabinet)
2) Connect the enclosed MC 278CT connection cable (**B**)
3) Fasten three conductors in the terminal strip (**C**) Q1-Q5 in the climate computer
4) Connect the 12-conductor cable in MC 278CT (**D**) to the T1-T12 terminal strip (this cable can be replaced by a longer cable, if required)
5) Set the jumpers (**E**) of the basis and I/O modules, which decide which relays are activated by the emergency opening. See jumper placement under **`Show installation`**
6) Set the jumpers (**F**) on the LO-power relay module
   - ON = the relay is overridden by the MC 278CT temperature controlled emergency opening
   - OFF = the relay is not overridden

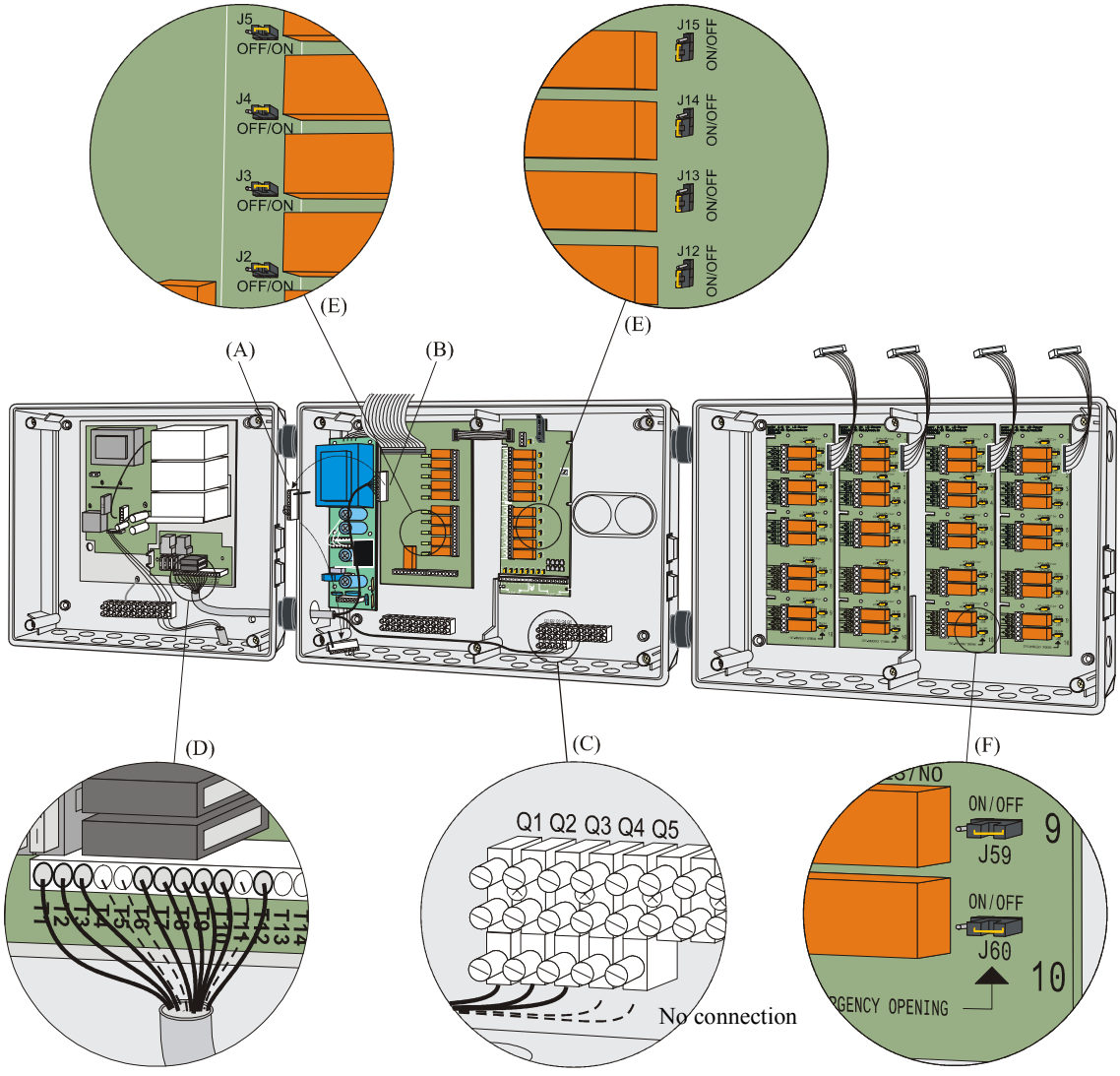



**Figure 8: Connection of MC 278CT temperature controlled emergency opening and setting of the jumpers of the basis module and the I/O module**

### 3.2.3.3 Settings for Winch Motor

When you connect winch motors, the following must be set as shown in: **`Technical/Setup/Show installation`**

**(A) LO-power relay module:**

Winch motor YES / NO, jumpers W1 - W5:

- YES = Inverts one of the relays in the pair of relays so that it matches winch motor and emergency opening
- NO = The relay matches e.g. heating and fans

**(B) Override switch modules:**

WINCH-MOTOR BLOCKED: slide switch: S1 - S5

- ON = For winch motor. Prevents paired activation of relays and quick changes in direction out of consideration for the lifetime of the relay contacts
- OFF = For e.g. heating and gable fans. The relays can be activated unobstructed
- A winch motor must always be installed on one of the following pairs of relays: 1st + 2nd relay, 3rd + 4th relay, 5th + 6th relay, 7th + 8th relay or 9th + 10th relay
- The HI-power relay module with make contacts can control e.g. fan, heating and a 230 V winch motor
- The LO-power relay module with make contacts can control e.g. fan, heating, a 230 V winch motor and a 24 V DC winch motor with emergency opening
- The switch module is used together with both the HI-power relay module and the LO-power relay module

**Example:**

If a 24 V winch motor is installed on 9th and 10th relay, the following must be set:

- Set the W5 jumper on the LO-power relay module to YES
- Set the S5 slide switch on the override switch module to ON

There are no settings on the HI-power relay module and it cannot control 24 V winch motors either.

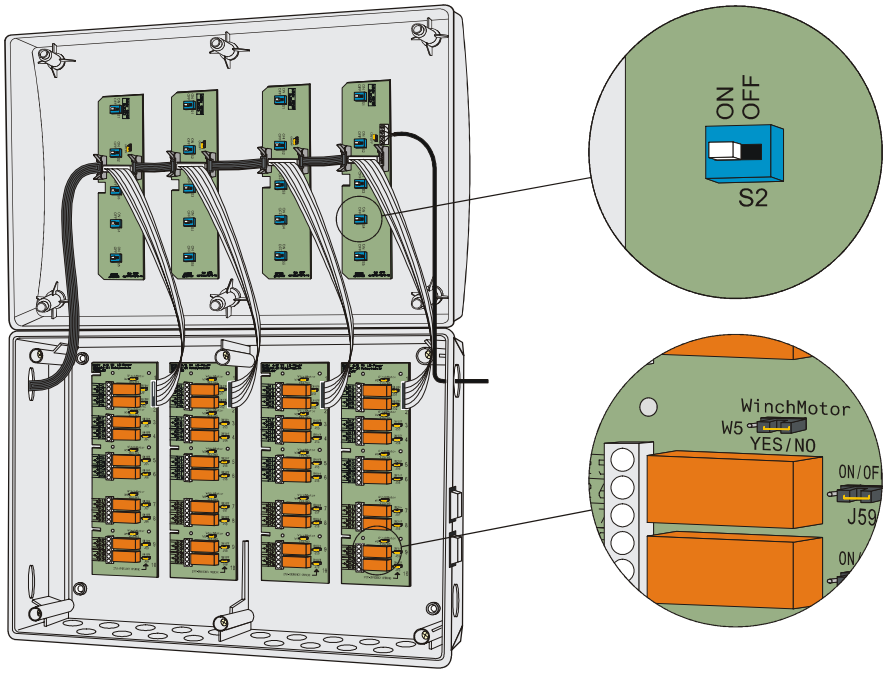


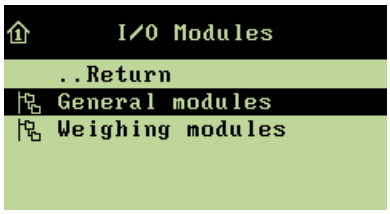

**Figure 9: Settings for winch motor**

### 3.2.3.4 Setting of CAN Addresses

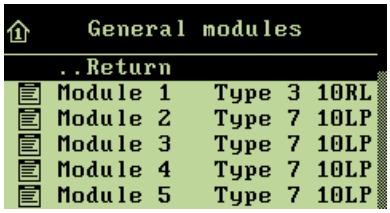
Each individual module on the CAN bus must have a certain address so that the computer can communicate with it.

Set the addresses on a small rotary switch with a number: 0 – 9

When you want to... set module types for **`General modules`**,
open the **`Technical/Installation/I/O modules`** menu, and




→ select **`General modules`**, and press

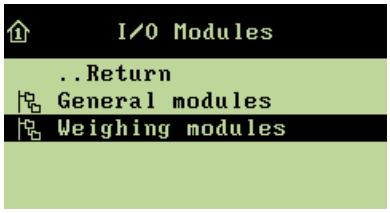



Make sure that the address switch is always the same as the module number.

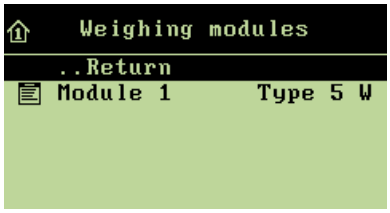
In the example, the **`General modules`** must be set as follows:

| | | |
|---|---|---|
| Module 1 | Type 3 10 RL | Address = 1 |
| Module 2 | Type 7 10 LP | Address = 2 |
| Module 3 | Type 7 10 LP | Address = 3 |
| Module 4 | Type 7 10 LP | Address = 4 |
| Module 5 | Type 7 10 LP | Address = 5 |

When you want to... set module types for **`Weighing modules`**,
open the **`Technical/Installation/I/O modules`** menu, and




→ select **`Weighing modules`**, and press




In the example, the **`Weighing modules`** must be set as follows:

Module 1 Type 5 W Address = 1

The two address rotary switches X10 and X1 must then be set as follows:

| Weighing module no. | X10 | X1 |
|---|---|---|
| 1st module | 0 | 1 |

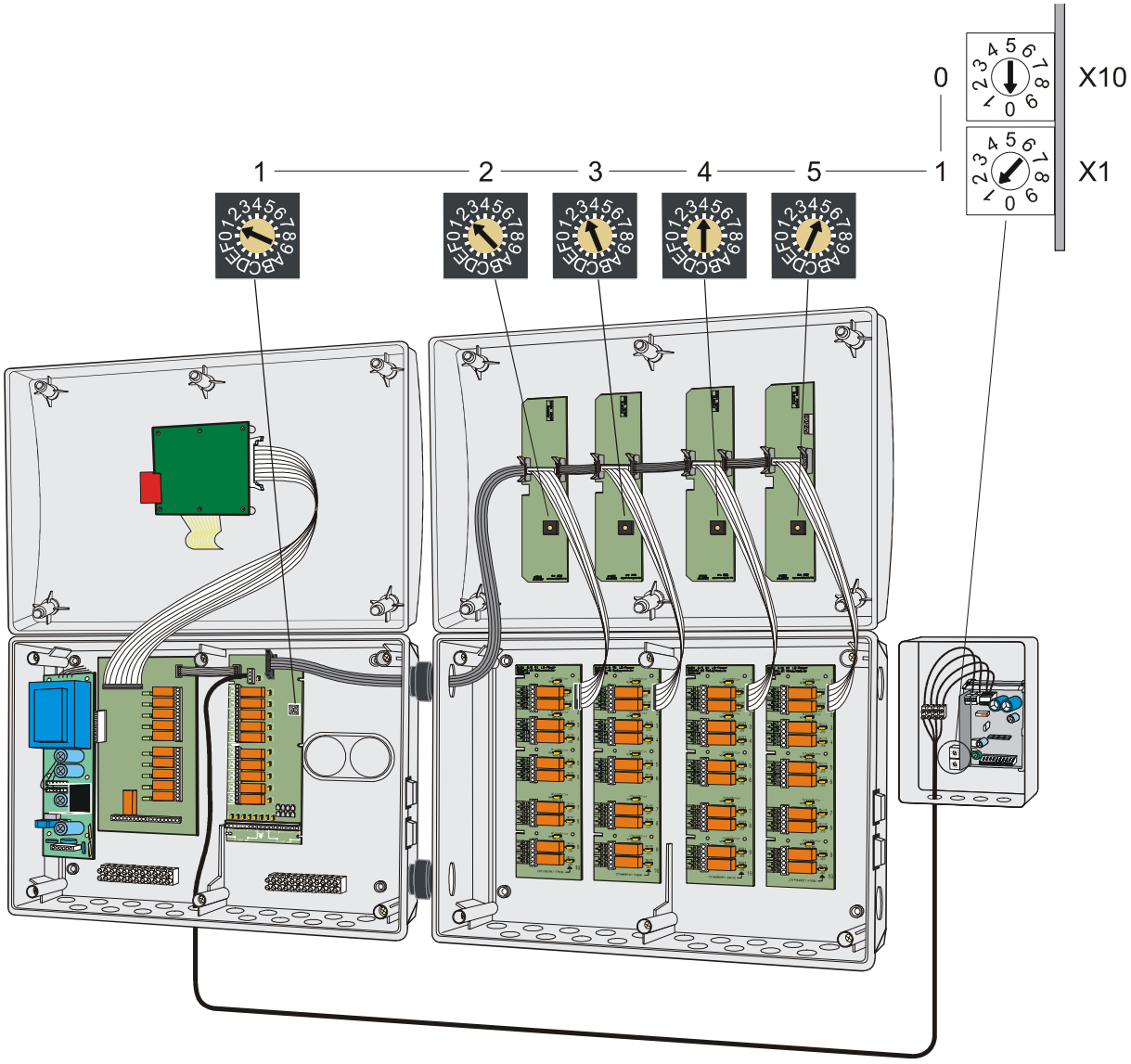



**Figure 10: Setting of CAN addresses**

### 3.2.3.5 Setting of Jumpers for Water Meter, Humidity Sensor or DOL 12

When installing the water meter (DI), humidity sensor 0-10 V (AI) or the DOL 12 temperature sensor, the jumpers of the basic module and the I/O module must be set as shown in the menu: **`Technical/Setup/Show installation`**.

#### I/O-module

The analog inputs on the I/O module can be set:

- DOL 12 (temp.) = Temperature sensor input for DOL 12
- ON (DI) (Pull down) = E.g. water meter (digital input) (pull down resistance = ON)
- OFF (AI) (0-10V) = E.g. humidity sensor (analog input) (pull down resistance = OFF) (remove the jumper completely or place it on one pin only)

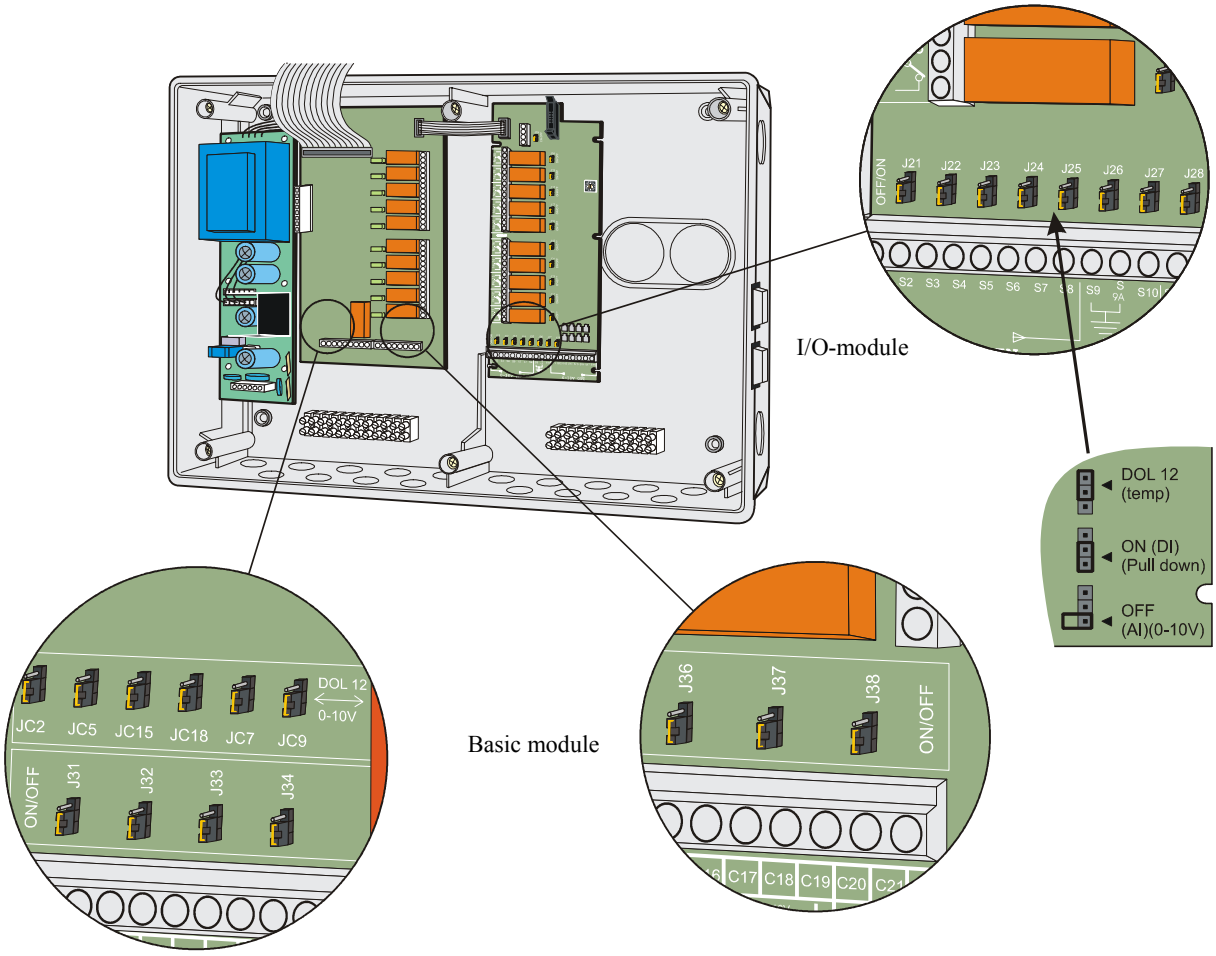



**Figure 11: The basic module and the I/O-module jumpers for water meter, humidity sensor or DOL 12 temperature sensor**

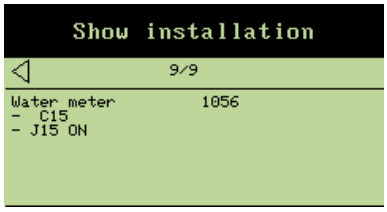
#### Basic Module

The analog inputs of the basic module can be set to ON/OFF.

For the inputs C2, C5, C7, C9, C 15 and C 18 you must also set:

- DOL 12 (temp.) = Temperature sensor input for DOL 12
- 0-10V = E.g. humidity sensor (analog input)

When you want to… set the jumpers,
open the Technical **/Setup/Show installation** menu, and




→ scroll to display the setting of jumpers, and press to return to the menu

## 3.2.4 Setting of CAN Termination Jumpers (max. 1 metre)

See section 3.2.5 if the silo-weighing module is installed with a long CAN cable.

The various modules are controlled by CAN-bus communication. To obtain a safe communication between the modules, it is important that the CAN termination jumpers are set correctly.

- (**1**) Set the ”ON/OFF CAN TERM” jumper to ON (only the last module that is placed at the end of the CAN-bus, in this case the manual override switch module)
- (**2**) Set the ”ON/OFF TERMINATE” jumper to OFF (all other modules that are connected with the CAN-bus: (I/O-modules, override switch modules and silo-weighing module)

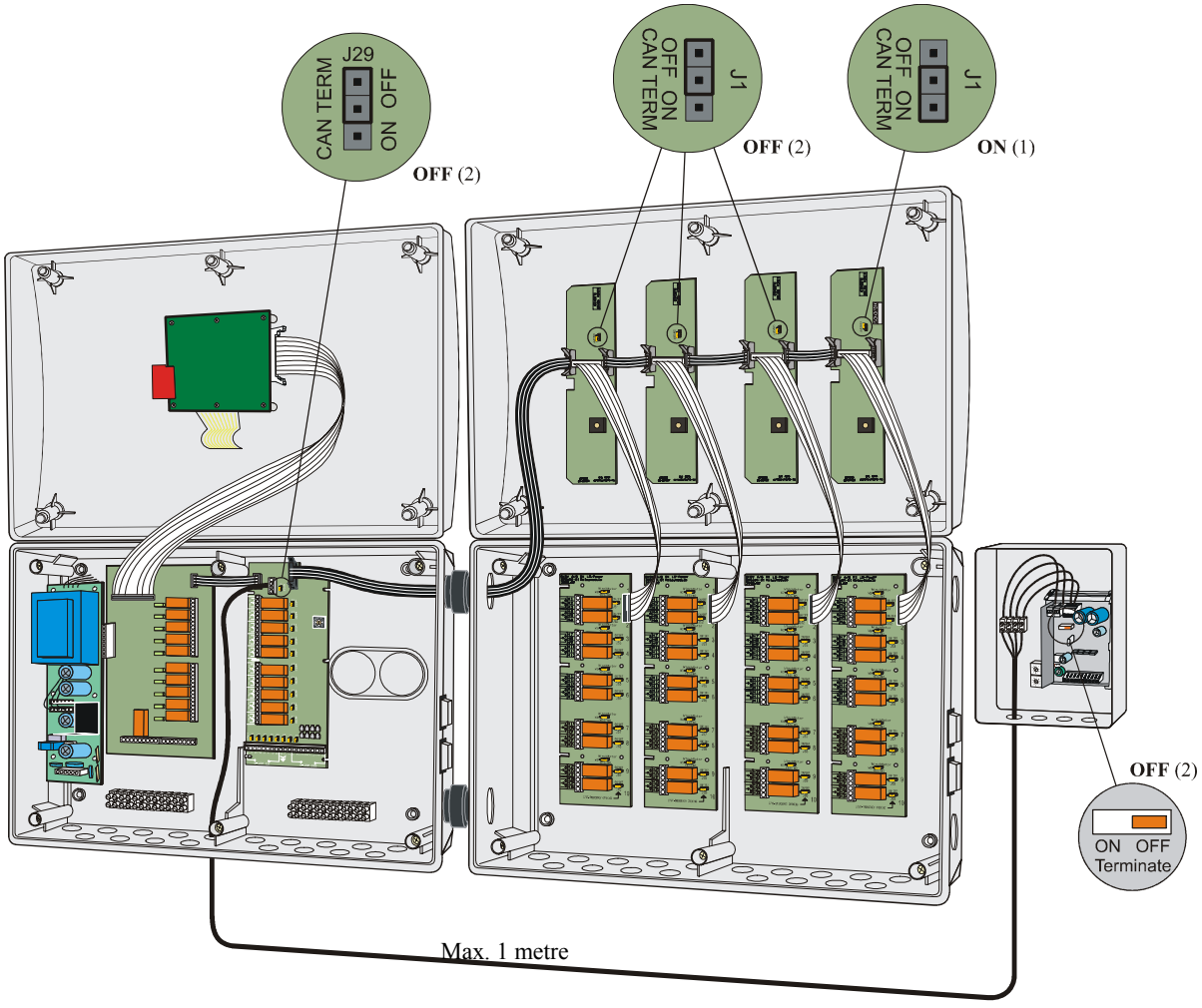



**Figure 12: Setting of CAN termination jumpers - max. 1 m cable**

## 3.2.5 Setting of CAN Termination Jumpers (max. 200 metres)

See section 3.2.4 if the silo-weighing module is installed with a short CAN cable.

The various modules are controlled by CAN-bus communication. To obtain a safe communication between the modules, it is important that the CAN termination jumpers are set correctly.

- (**1**) Set the ”ON/OFF CAN TERM” jumper to ON (only the last module that is placed at the end of the CAN-bus, in this case the manual override switch module)
- (**2**) Set the ”ON/OFF CAN TERM” jumpers to OFF (all other I/O modules and override switch modules)
- (**3**) Set the ”ON/OFF TERMINATE” jumper to ON (silo-weighing module)
- (**4**) Set the ”ON/OFF INT-TERM CAN” jumper to OFF (data network module RS485/CAN)
- (**5**) Set the ”ON/OFF EXT-TERM CAN” jumper to ON (data network module RS485/CAN)

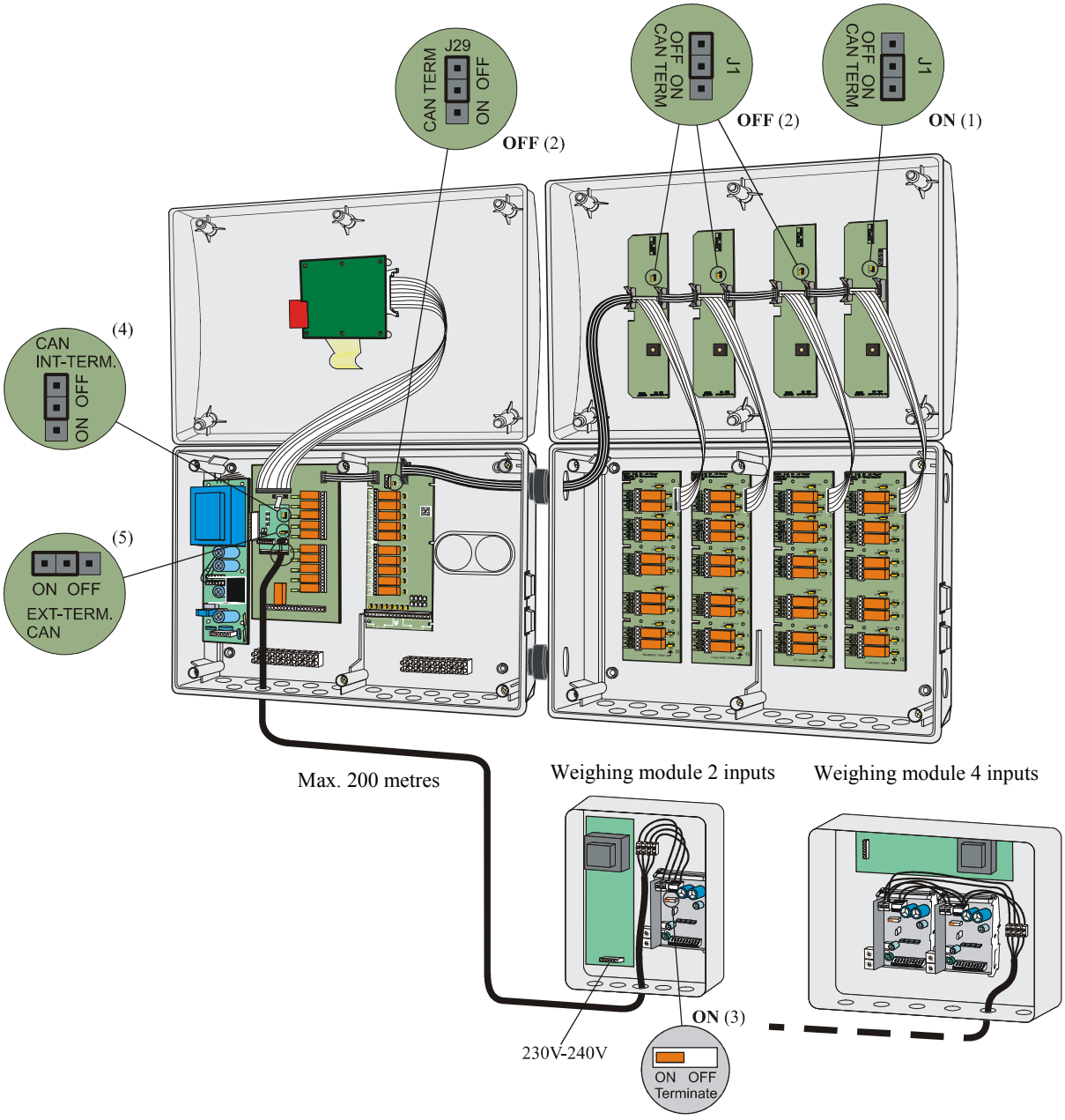



**Figure 13: Setting of CAN termination jumpers - max. 200 metres cable**

### 3.2.5.1 Calibration of Weighing Module

The module has the following settings:

- (**1**) ”ON/OFF TERMINATE” small slide switch/DIL-switch
- (**2**) Module address (is set on two small rotary switches/HEX-switch address)

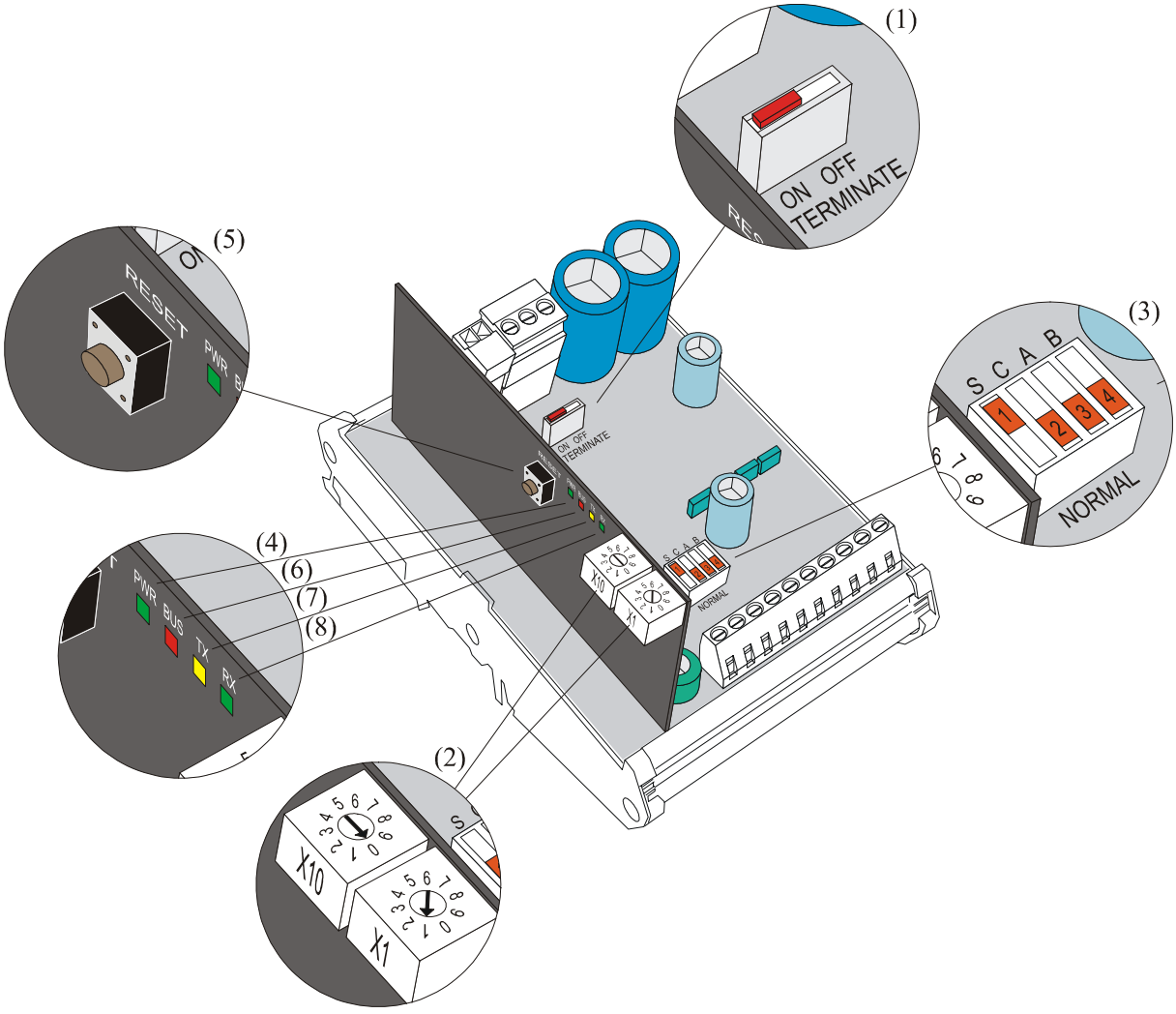



**Figure 14: Calibration of weighing module**

When you want to… calibrate the weighing module, you must

- make sure that the green PWR-lamp (**4**) shines constantly (must not flash)
- set switch (**3**) (NORMAL- S) to ”S” = setup (and C, A and B to NORMAL)
- press the RESET-button (**5**)
- wait until the red lamp (**6**) switches on*
- select the weight channel to be calibrated (only one at a time):

  Weigher#1: Set switch (**3**) (NORMAL – A) to “A” or
  Weigher#2: Set switch (**3**) (NORMAL – B) to “B”
- make sure that the load on the weigher corresponds to empty silo (TARE)
- set switch (**3**) (NORMAL – C) to “C” = CAL position
- wait until the yellow lamp switches on*
- load the silo with a known test load
- wait a few seconds until the weigher is calm
- return switch (**3**) (NORMAL – C) to “NORMAL” position

If the green lamp switches on the calibration is accomplished OK*

- return switch (**3**) S and A or B to NORMAL
- press the RESET-button (**5**)

This routine saves the TARE and TEST calibration values in the weighing module.

To finish the calibration of the weigher, the test load must be entered in the menu, see section 3.6.3.2 Setting of Silo Calibration.

*) In case of an error, the RED+YELLOW+GREEN lamp will flash. The error can be remedied by setting switch (**3**) S, C A and B to NORMAL and repeat the calibration.

The calibration can fail

- if switch (**3**) A or B is not set correctly
- if the weigher is defective or if there is no connection to the weigher
- if the value with the test load (calibration plumb) is too light. The test load must be min. 1 per mille and max. 10 per cent of full load. Full load is 2 mV/V
  *Example: If the load amplifier is e.g. connected to four load cells, which give 2 mV/V at 2000 kg, the calibration plumb must weigh min. 8 kg and max. 800 kg*
- if errors occur when data are saved

### 3.2.5.2 Extra Supply to HI-power Relay Modules/Switch Modules

When installing three or more HI-power relay modules, an extra wire must be connected from the +24 V wire terminal module of the power module to the +24 V wire terminal module of the third override switch module. This is necessary because the flat cable cannot bear the 24 V power consumption to 30 or 40 HI-power relays alone.

Do not install more than two HI-power relay modules or four LO-power relay modules without installing an extra wire.

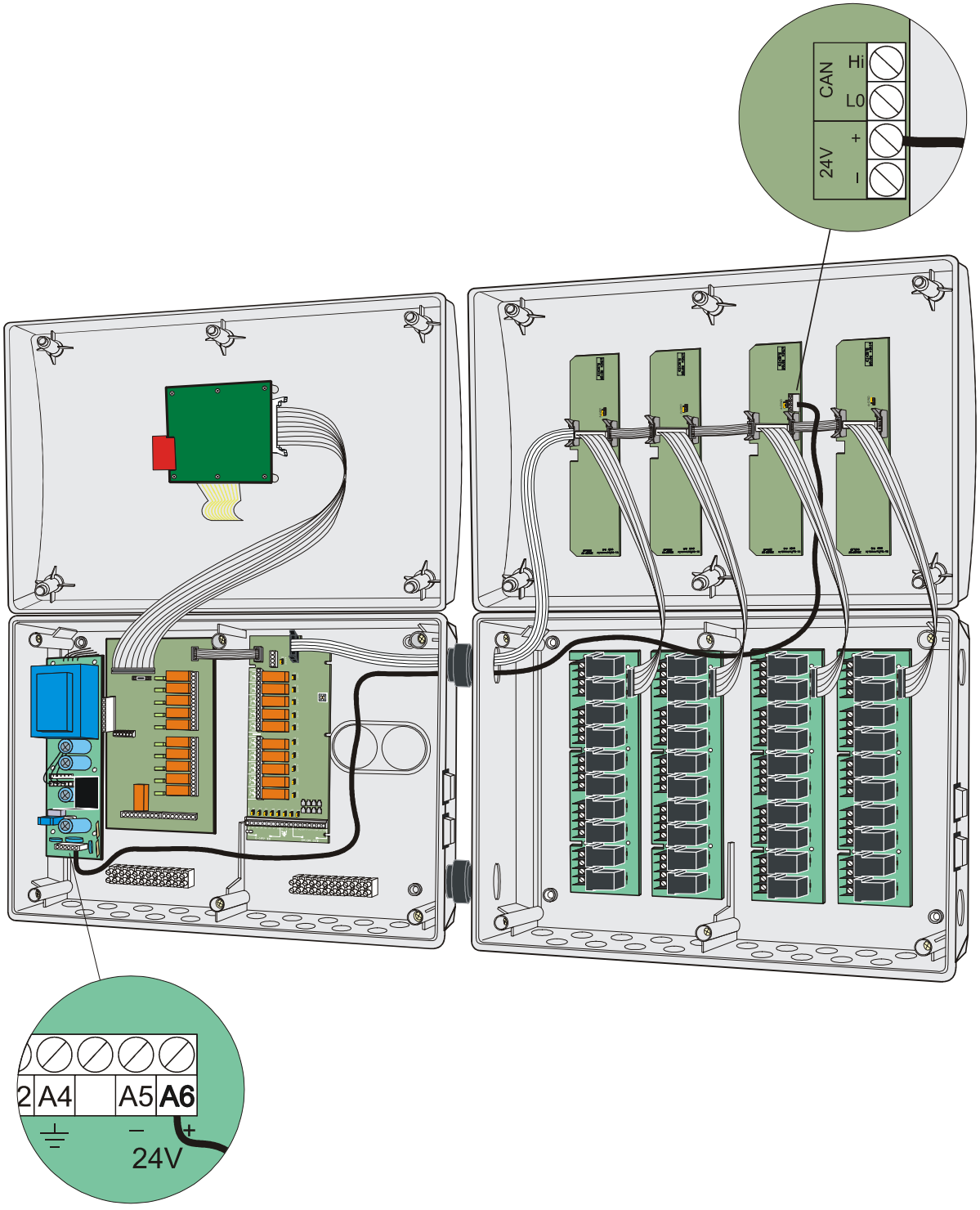



**Figure 15: Extra supply to HI-power relay modules**

## 3.3 Adjustment

This section describes the adjustment of the system for the individual house sections. However, the temperature display (°C) is common for the houses.

### *3.3.1 Menu for Adjustment*

| Setup: Adjustment | Menu items | Options under the individual menu items | | |
|---|---|---|---|---|
| | Climate | Configuration | Control mode | Basic-step<br>Flex-step<br>UltiMatic |
| | | | Flex mode init | Maximum level<br>Control<br>Matrix completed |
| | | | Sectional cross area | 10 $m^2$ – 1000 $m^2$ |
| | | | Grow zones | 1<br>2<br>3 |
| | | | Temperature sensors setup | Grow zone sensors<br>Heating zone sensors |
| | | | Zone setup | Zone inlets<br>Air inlet<br>Temp. sensors for inlets<br>Stepless<br>Stage fans<br>MultiStep<br>2-zone outlet<br>Temp. sensors for 2-zone<br>Setup 2-zone |
| | | | Heater setup | Activate inactive grow zone heating<br>Inactive grow zone temperature offset<br>Heater selection<br>Brooding zone selection |
| | | | Humidity sensor setup | |
| | | | Cooling | |
| | | | Pad cooling | |
| | | | Humidification | |
| | | Min. vent. | Real air<br>Percent | |

| Setup: Adjustment | Menu items | Options under the individual menu items | | |
|---|---|---|---|---|
| | **Production** | **Kg per impulse** | 0.500 – 50.000 kg | |
| | | **Feed per second** | 0.100 – 100.000 kg | |
| | | **Water meter** | 0.10 – 50.00 L | |
| | | **Production form** | Broiler<br>Breeder | |
| | **1 or 2 types of animals** | Mixed animals<br>Sexed animals | | |
| | **Operation form** | Continuous<br>Batch prod. | | |
| | **Unit definition** | Metric (°C)<br>US mode (°F) | | |

**Table 3: Survey of adjustment menu**

This adjustment is typically only made once and it determines how the Viper Climate and Production Computer controls the climate.

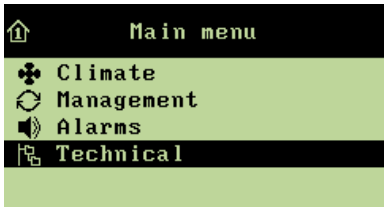
When you want to… adjust the computer under the setup menu item **`Adjustment`**, you must

1) Connect power to the climate computer

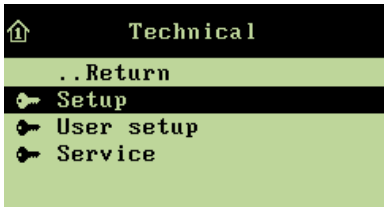
After a few seconds, the Viper display shows the current inside temperature, and you can carry out the adjustment.

All menu items in the **`Adjustment`** menu can be set by

→ pressing 




→ selecting **`Technical`**, and pressing



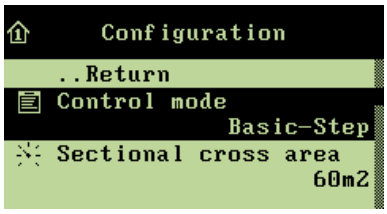

→ selecting **`Setup`**, and pressing


→ selecting **`Adjustment`**, and pressing

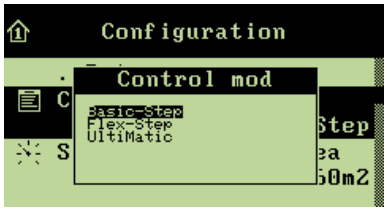
## 3.3.1.1 Configuration

### 3.3.1.1.1 Selecting Control Mode

When you want to… select Control mode,
open the **Technical/Setup/Adjustment/Climate/Configuration** menu, and




→ select **Control mode**, and press

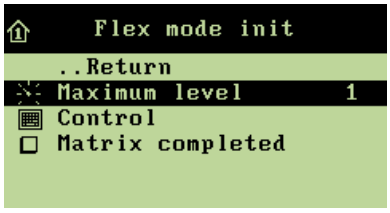



→ select the required setting (**Basic-step/Flex-step/Ultimatic**), and press to select it

**Flex-Step** cannot be selected until after setting the functions in **Flex mode init** and after having selected **Matrix completed**.

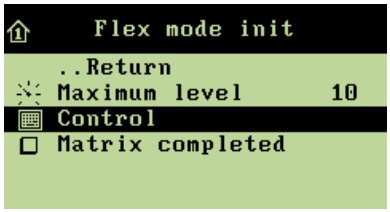
### 3.3.1.1.2 Setting of Flex Mode Init

When you want to … set **Flex mode init**, open the
**Technical/Setup/Adjustment/Climate/Configuration/Flex mode init** menu, and

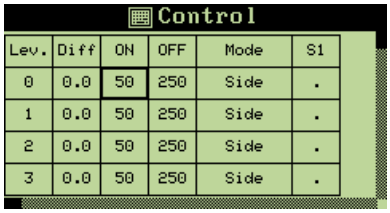



→ select **Maximum level**, and press

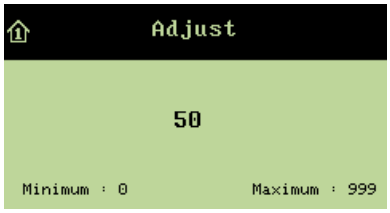

→ set maximum ventilation level, and when **Yes** is highlighted, press to save the change




→ select **Control**, and press

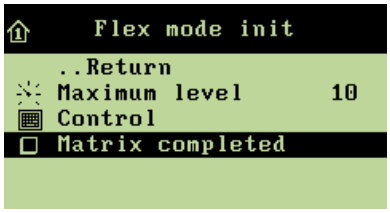



→ select the required field, and press
see perhaps the User's Manual section dealing with the Flex-Steps **Control** menu to get an explanation of the functions




→ set the function, and press

→ press to return to the menu



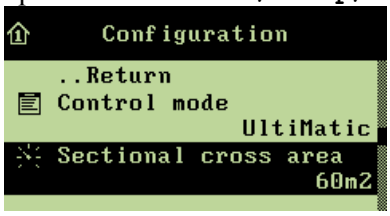

→ select **Matrix completed**, and press to confirm that the setting of the matrix is completed

**`Flex-Step`** can now be selected in the **`Control mode`** menu item of the configuration menu.

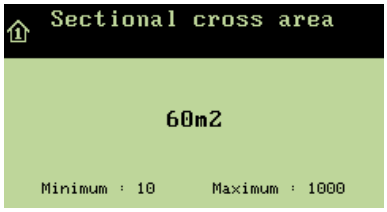
When setting the control table, note the placement of the fans in relation to the division of the house into **grow zones**. Thus, the settings of a grow zone will a determining factor to the fans (see section 3.3.1.1.6).
For instance, a fan in a grow zone, which is not active, will not run even if it belongs to the current ventilation level in the control table.

### 3.3.1.1.3 Setting of Area

When you want to… set area,
open the **`Technical/Setup/Adjustment/Climate/Configuration`** menu, and




→ select **`Sectional cross area`**, and press

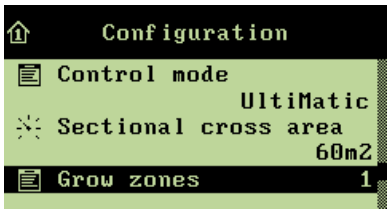



→ enter the required area, and when **`Yes`** is highlighted, press to save the change

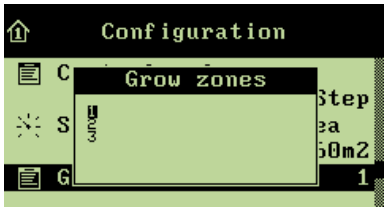
### 3.3.1.1.4 Selection of Number of Grow Zones

With Viper, you can divide the house up into three grow zones. According to the age and size of the animals, Viper will activate the grow zones.

When you want to… set Grow zones,
open the **Technical/Setup/Adjustment/Climate/Configuration** menu, and




→ select **Grow zones**, and press

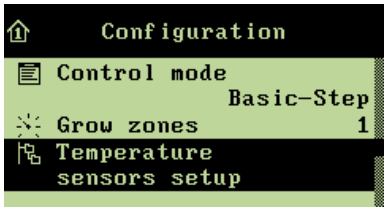



→ select 1, 2 or 3 zones, and press to save the change

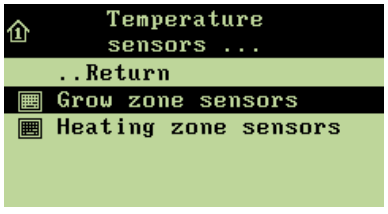
### 3.3.1.1.5 Setting of Temperature Sensor

You must assign a number of temperature sensors to each individual grow zone, which register the temperature in the zone. The individual temperature sensor is only active when the zone to which it belongs, is active. Thus, the temperature display of Viper depends on which grow zone is active.

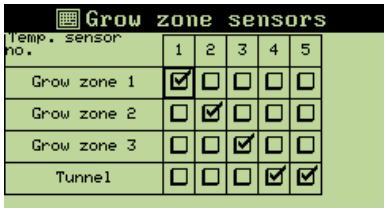
When you want to… set the temperature sensors,
open the **Technical/Setup/Adjustment/Climate/Configuration** menu, and




→ select **Temperature sensors setup**, and press




→ select **Grow zone sensors**, and press



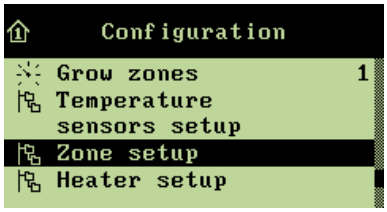

→ select a **Grow zone/Tunnel zone** for each temperature sensor, and press to save the change

→ press to return to the menu

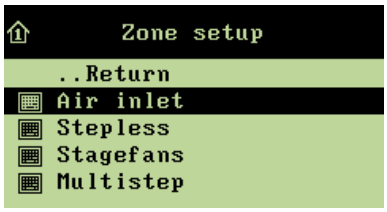
**Heating zone sensors** are set in the same way.

### 3.3.1.1.6 Setting of Zone Setup

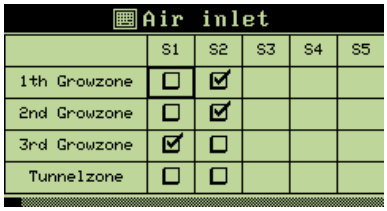
When you want to… set Zone setup,
open the **Technical/Setup/Adjustment/Climate/Configuration** menu, and




→ select **Zone setup**, and press




→ select **Air inlet**, and press




→ select **Grow zone/Tunnel zone** for each side inlet/tunnel inlet, and press to save the change

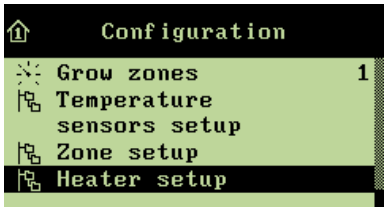
→ press to return to the menu

If no check boxes are displayed in the column, no side inlet/tunnel inlet is installed.

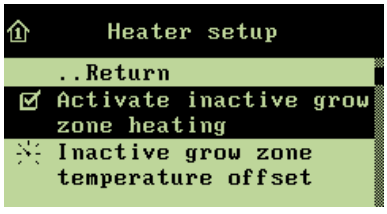
**Stepless**, **Stagefan** and **MultiStep** are set in the same way.

### 3.3.1.1.7 Setting of Heater Setup

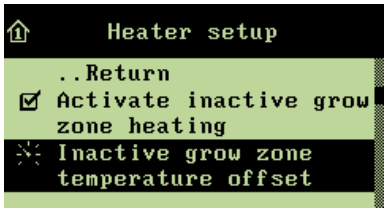
When you want to… set Heater setup,
open the **Technical/Setup/Adjustment/Configuration** menu, and



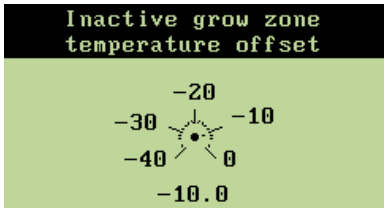

→ select **Heater setup**, and press



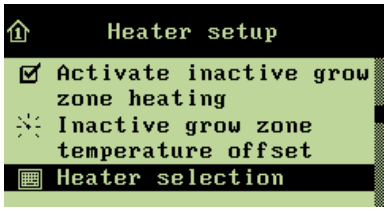

→ select **Activate inactive grow zone heating**, and when **Yes** is highlighted, press to save the change



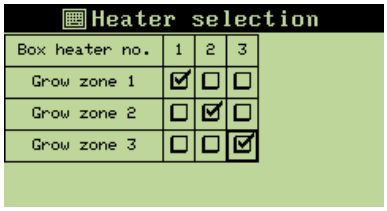

→ select **Inactive grow zone temperature offset**, and press




→ change the setting, and when **Yes** is highlighted, press to save the change

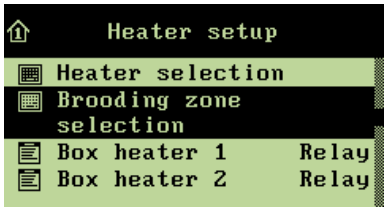



→ select **Heater selection**, and press

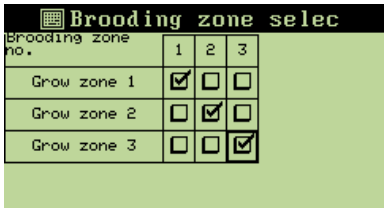



→ select a **Grow zone** for each **Box heater**, and press to save the change

→ press to return to the menu




→ select **Brooding zone selection**, and press



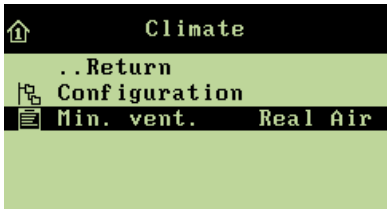

→ select a **Grow zone** for each **Brooding zone no.**, and press to save the change

→ press to return to the menu

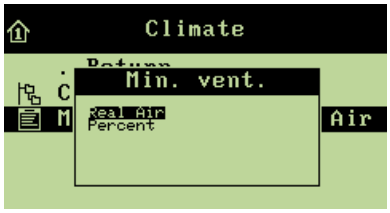
### 3.3.1.2 Setting of Indication of Minimum Ventilation

You can set **Minimum ventilation** to be indicated either as a percentage of the nominal ventilation output or real air.

When you want to… set the indication of minimum ventilation,
open the **Technical/Setup/Adjustment/Climate** menu, and



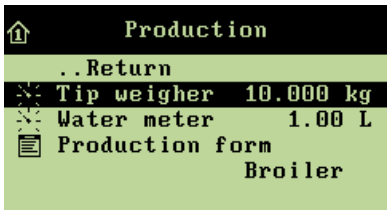

→ select **Minimum ventilation**, and press



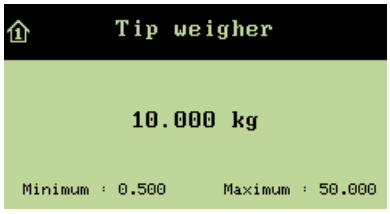

→ select the required setting (**Real air/Percent**), and press to choose it

### 3.3.1.3 Setting of Feed

When you want to… set kg feed per impulse,
open the **Technical/Setup/Adjustment/Production** menu, and

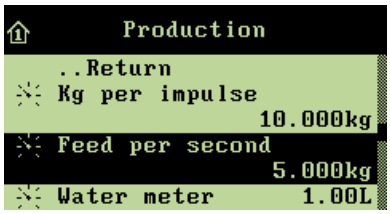



→ select **Tip weigher**, and press

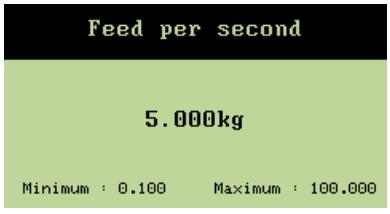



→ set the required quantity, and press to save the change

When you want to… set kg feed per second,
open the **Technical/Setup/Adjustment/Production** menu, and




→ select **Feed per second**, and press

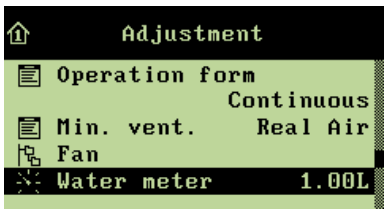



→ set the required quantity, and press to save the change

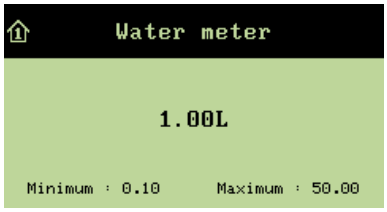
### 3.3.1.4 Setting of Water Meter

To obtain correct calculation of the water consumption, it is necessary to enter how many litres of water per pulse the installed water meter gives.

When you want to… set the water meter,
open the **Technical/Setup/Adjustment** menu, and



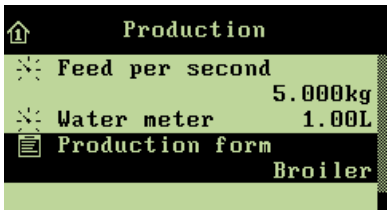

→ select **Water meter**, and press



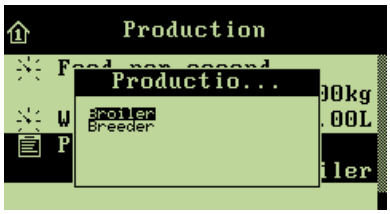

→ enter a value, and press to save the change

### 3.3.1.5 Selection of Production Form

When you want to… select production form,
open the **Technical/Setup/Adjustment/Production** menu, and



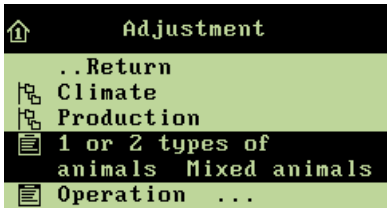

→ select **Production form**, and press



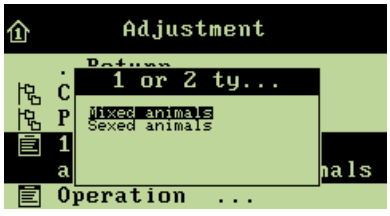

→ select the required setting (**Broiler/Breeder**), and press to choose it

### 3.3.1.6 Setting of 1 or 2 Types of Animals

When you want to… select 1 or 2 types of animals,
open the **Technical/Setup/Adjustment** menu, and



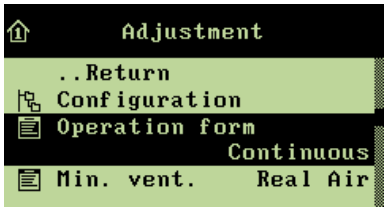

→ select **1 or 2 types of animals**, and press




→ select the required setting (**Mixed animals/Sexed animals**), and press to choose it

### 3.3.1.7 Selection of Operation Form

When you want to… select operation form,
open the **Technical/Setup/Adjustment** menu, and



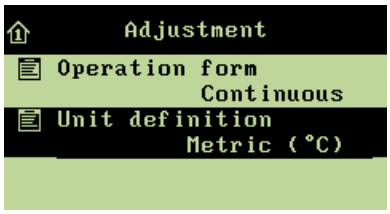

→ select **Operation form**, and press


→ select the required setting (**Continuous/Batch prod.**), and press to choose it

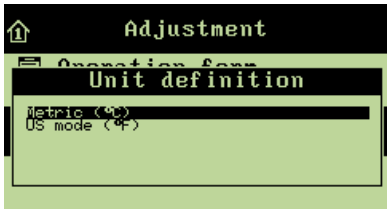
### 3.3.1.8 Select Measuring Unit

To obtain the correct climate control, it is necessary to indicate, which measuring unit Viper is to use.

When you want to… select measuring unit,
open the **Technical/Setup/Adjustment** menu, and




→ turn until **Unit definition** is selected, and press




→ turn to select the required setting (**Metric (°C)** / **US-mode (°F)**), and press to select it

# 3.4 User Setup

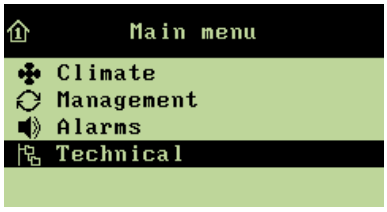
## 3.4.1 Menu for User Setup

| User setup | Menu items | Options under the individual menu items | |
|---|---|---|---|
| | **Language** | Dansk<br>English<br>Deutsch | |
| | **Password** | **Use password 1 - 3**<br>**New password 1 -3** | |
| | **Display** | **Set brightness**<br>**Set contrast** | |
| | **CPU module** | Type<br>Software version<br>Serial no. | |
| | **Main I/O** | Type<br>Serial no. | |
| | **General I/O** | **Module 1 - 3**<br>**Module 4 - 6** | Type<br>Software version<br>Serial no.<br>Type<br>Software version<br>Serial no. |
| | **Weighing modules** | **Module 1 - 2** | Type<br>Software version<br>Serial no. |
| | **Calibrate sensors** | **Temperature sensor 1 - 8** | |

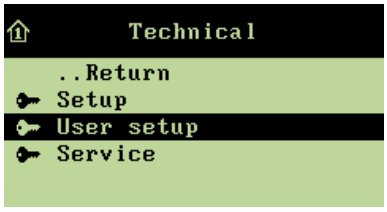
**Table 4: Survey of user setup**

All menu items... in the **`User setup`** menu can be set by

→ pressing 




→ selecting **`Technical`**, and pressing




→ selecting **`User setup`**, and pressing

### 3.4.1.1 Selection of Language

When you want to… select language,
open the **Technical/User setup** menu, and

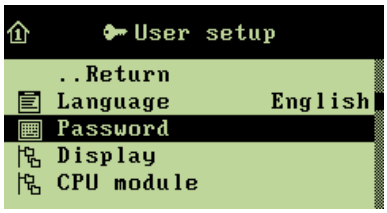

→ select **Language**, and press


→ select the required language, and press

### 3.4.1.2 Setting of Password

The functions of the computer are on three access levels that can be activated individually. When an access level is active, you can also change the four-digit password.

When you want to… code protect an access level,
open the **Technical/User setup** menu, and

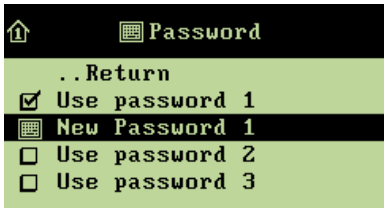



→ select **Password**, and press


→ select **Use password 1**, and press to activate it

You must activate the access levels 2 and 3 in the same way.

When you want to… change the password, the password must be active, and you must
open the **Technical/User setup/Password** menu, and




→ select **New password 1**, and press


→ enter a new password by selecting the first digit in the new password, and press
An asterisk (*) in the black box indicates that you have selected a digit

→ repeat for the last three digits

→ to correct a wrong, entered digit, select (←), and press

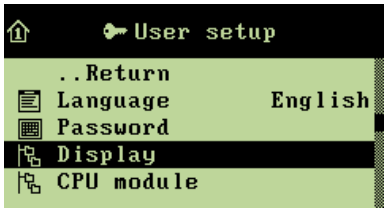

→ go to the end of the digit string, and when **OK** appears, press to approve


→ repeat the entry of the new code to execute the change

### 3.4.1.3 Setting of Display

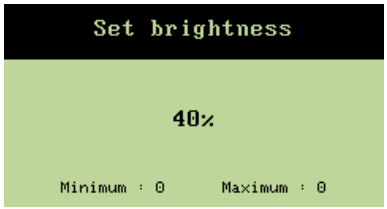
You can set the brightness and the contrast of the Viper display for optimum reading in relation to the actual placement of the computer.

When you want to… set the display,
open the **Technical/User setup** menu, and




→ select **Display**, and press


→ select **Set brightness**, and press




→ change the setting, and press


→ select **Set contrast**, and press


→ change the setting, and press

### 3.4.1.4 CPU Module

Under the **Technical/User setup** menu, you can read which type of **CPU module** the computer has and the serial number and software version of the module.

### 3.4.1.5 Main I/O

Under the **Technical/User setup** menu, you can read which type of **Main I/O** the computer has and the serial number of the module.

### 3.4.1.6 General I/O

Under the **Technical/User setup** menu, you can read which type of **General I/O** the computer has and the serial number of the software version of the module.

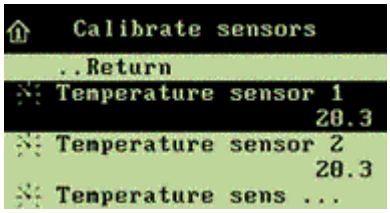
### 3.4.1.7 Weighing Modules

Under the Technical/User setup menu, you can read which type of **Weighing modules** the computer has and the serial number and software version of the module.

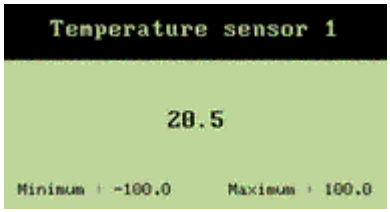
### 3.4.1.8 Calibrating Temperature Sensors

If, in connection with manual temperature measurements, you measure the current house temperature to a level that differs from Viper's registrations from the installed temperature sensors, you can adjust the temperature in the **Calibrate sensors** menu so that it matches your observations.

When you want to … calibrate temperature sensors, open the **Technical/User setup/Calibrate sensors** menu, and




→ select **Temperature sensor 1**, and press




→ set a value, and when **Yes** is highlighted, press to save the change

Repeat the setting for the installed number of temperature sensors.

## 3.5 Testing

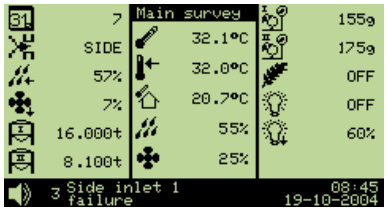
After installing the system you **must make a thorough test** to make sure that the system works as intended.

### *3.5.1 Testing Basis Components*

#### 3.5.1.1 Testing Inside Temperature and Air Humidity Sensors

When you want to… test inside temperature and humidity sensors,

→ press the survey key




→ read the current inside temperature and humidity

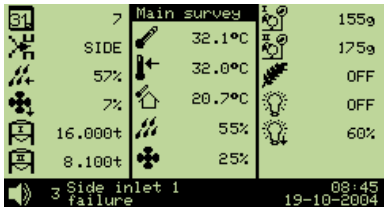
Check…

1) that the temperature indicated corresponds to the result that can be measured in the house
2) that the temperature rises in the display when the sensor is warmed in your hand
3) that the humidity indicated corresponds to the result that can be measured in the house

#### 3.5.1.2 Testing Outside Temperature Sensor

When you want to… test the outside temperature sensor,

→ press the survey key




→ read the current outside temperature

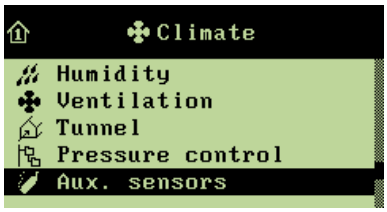
Check…

1) that the temperature shown corresponds to the current outside temperature
2) that the outside temperature rises in the display when the outdoor sensor is warmed in your hand

### 3.5.1.3 Testing Auxiliary Sensor

This section is only relevant to houses where auxiliary sensors are installed.

When you want to… check that the auxiliary sensor works,
open the **Technical/Service/Manual/Auto** menu, set the computer to **Manual**,
and in **Main menu/Climate**



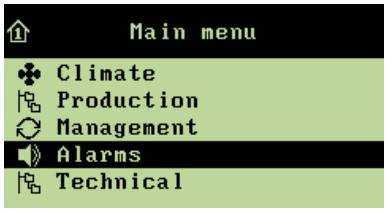

→ select **Aux. sensors**, and read the current voltage

Compare the reading with what you can measure on the sensor or the connection terminals with a multimeter.

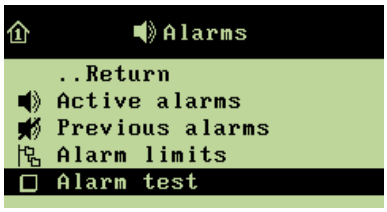
### 3.5.1.4 Testing Alarm

When you want to… test the alarm,

→ press 




→ select **Alarms**, and press




→ select **Alarm test**, and press to start the test


→ press to end the test

Check…

1) that the alarm lamp for the relevant house is flashing
2) that the alarm system works as intended

Make the test in all houses.

The test should then be made every week.

### 3.5.1.5 Testing MC 278M Emergency Opening

When you want to… test the emergency opening, you must

1) disconnect the mains voltage to Viper and MC 278M on the common external TEST mains switch
2) check that:
   - The inlets open completely
   - The green TEST lamp remains on during the entire test which indicates that battery voltage is sufficient (i.e. > 16 V)
3) Reconnect mains voltage.
   The inlets should close again

### 3.5.1.6 Testing MC 278CT Temperature Controlled Emergency Opening

When you want to… test the temperature controlled emergency opening, you must

1) Connect the panel and the power supply. The TEST lamp must be green indicating that the 24 V on the N6-N7 terminal is OK>16 V. See the Troubleshooting Instructions if the TEST lamp is off
2) Connect the battery if the TEST lamp lights up. Connect the red battery wire to the red battery connector and the black battery wire to the black battery connector. (The battery should be charged for at least ten minutes before the first test)
3) Turn the temperature knob on MC 278CT. The display of the climate computer should then automatically show the setting of the knob together with the setpoint of the house, i.e. the required house temperature
4) Check the battery voltage; see emergency opening alarms in Viper.
   The voltage in a partly charged battery should be between 20.0 and 20.5 V

Side mode:

5) Check if the system runs side mode. The side mode icon must be shown in the survey menu of Viper. If the system runs tunnel mode , it is possible to force the system to run side mode by increasing the **`Temperature setpoint`**
6) Turn the emergency temperature knob to TEST
7) Check if the red and the yellow lamps turn on
8) Check if the system opens in the house
9) Check if all fans are still operating
10) Turn the emergency temperature knob up slowly until the red lamp just turns off and continue approx. 1-2 degrees higher. The red and the yellow lamp should now be turned off
11) Warm the MC 278CT emergency temperature sensor in your hand for a couple of minutes. (Do not mistake the sensor for the inside temperature sensor of the climate computer). Check if the red lamp turns on in the same side as under item 6. The yellow lamp will also turn on for some seconds every three minutes when the house opens a little, but it may be difficult to reach seeing it
12) The red lamp must turn off again when the DOL 12 emergency temperature sensor has cooled off again

Tunnel mode:

13) Turn the emergency temperature knob to 40 °C. The red lamp must turn off
14) Set the system to tunnel mode by changing the setting of the CL 75CT curtain motor from AUT (automatic) to MAN (manual) and pressing ↑ - and let the curtain open completely
15) Turn the emergency temperature knob slowly to 10 °C, the yellow lamp must turn on before the knob is turned to approx. 12.5 °C
16) **IMPORTANT** – remember to change the setting of CL 75CT to AUT (automatic) again

## 3.5.2 Testing Optional Components: Manual Control

During testing, and in a service situation, you can switch the climate computer from automatic to manual control. Thus, you can easily test the optional components such as winch motors, heating etc.

## 3.5.3 Menu for Manual/Auto

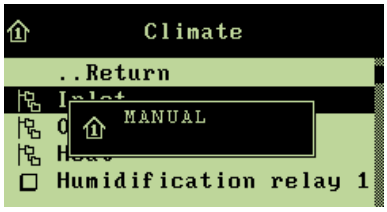
| Service: Manual/auto | Components | Menu in manual control | | |
|---|---|---|---|---|
| | **Manual/auto** | **Manual**<br>**Auto** | | |
| | **Climate** | **Temperature sensors** | Temperature sensor 1-8<br>**Calibration offset 1-8** | |
| | | **Air inlet** | **Side inlet 1-6** | **Side inlet 1-6 required**<br>Side inlet 1-6 required<br>Side inlet 1-6 position |
| | | | **Tunnel inlet 1-2** | **Tunnel inlet 1-2 required**<br>Tunnel inlet 1-2 required<br>Tunnel inlet 1-2 position |
| | | **Air outlet** | **Stepless 1** | **Air outlet required**<br>Air outlet required<br>Air outlet position<br>**Fan speed control 1**<br>Fan speed control 1 |
| | | | **Stepless 2** | **Air outlet required**<br>Air outlet required<br>Air outlet position<br>**Fan speed control 2**<br>Fan speed control 2 |
| | | | **Side stage fan** | Side stage fan 1 - 16<br>Side stage fan 1 - 16 |
| | | | **Tunnel stage fan** | Tunnel stage fan 1-16<br>Tunnel stage fan 1-16 |
| | | | **MultiStep** | MultiStep 1 - 8<br>MultiStep 1 - 8 |
| | | | **Tunnel MultiStep** | MultiStep 1 -8<br>MultiStep 1 - 8 |

| Service: Manual/auto | Components | Menu in manual control | | |
|---|---|---|---|---|
| | | **Heaters** | **House heaters** | Heater 1 - 6<br>**Heater 1 - 6** |
| | | | **Brooding heaters** | Brooding heater 1-4<br>**Brooding heater 1-4** |
| | | **Humidity sensors** | Humidity sensor 1<br>Humidity sensor 2 | |
| | | **Cooling** | **Cooling relay 1-2** | |
| | | **Pad cooling** | **Pad cooling 1-2** | |
| | | Pad sensor | | |
| | | **Humidification** | **Humidification relay 1-2** | |
| | | **Soaking relay** | | |
| | | **Pressure regulator** | Sensor signal<br>Actual value | |
| | | **CO2 sensor** | CO2 sensor | |
| | | **Aux. sensors** | Aux. sensor 1-4 | |
| | **Production** | **Feed relay** | | |
| | | Tip weigher impulse | | |
| | | Feed demand sensor | | |
| | | Cross auger sensor | | |
| | | **Cross auger relay** | | |
| | | **Electronic silo weigher** | Silo 1-2 current value<br>Silo 1-2 tare value<br>Silo 1-2 calibration value | |
| | | **Silo 1-2 relay** | | |
| | | **Bird scale 1-2 signal** | Voltage<br>Grams | |
| | | **Light relay** | | |
| | | **Light dimmer** | | |
| | | Light dimmer | | |
| | | **24-hour clock** | **24-hour clock A-D** | |
| | **Info Matic test** | Received telegrams<br>Received percentage | | |

**Table 5: Survey of the menu Manual/auto (you can change the values highlighted in bold)**

In the **Manual/auto** menu, the Viper climate and production computer shows you the components, which are selected under the **Installation** menu. You must test the components one at a time.

After testing the components, you must set the climate computer back to automatic control so that the computer continues to control as previous



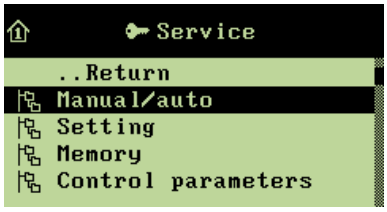

→ The computer indicates when it is set to manual control by letting **MANUAL** flash in the display

When the house is set to manual control, the climate and production computer does not control according to **Temperature setpoint** and **Humidity**, but the alarm function is still active.

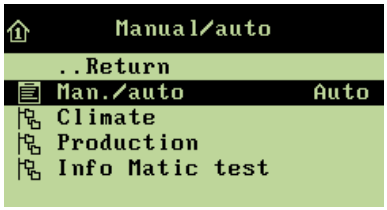
## 3.5.4 Automatic/Manual Control

Normally the computer must be set to automatic control. During start, or in a service situation, it may be convenient to control the individual functions manually.

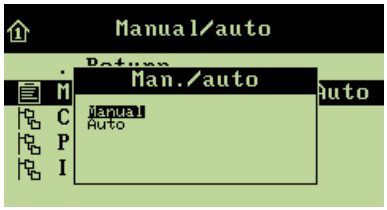
When you want to… set the computer to manual control,
open the **Technical/Service** menu, and




→ select **Manual/auto**, and press




→ select **Man./auto**, and press



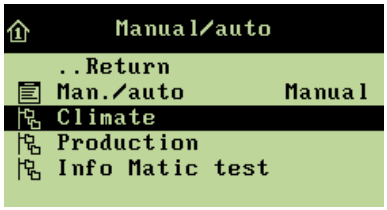

→ select **Manual**, and press

## 3.5.5 Testing Climate Functions

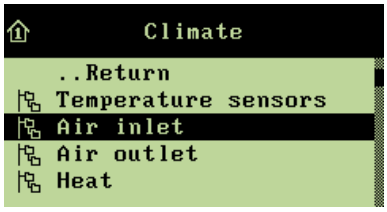
### 3.5.5.1 Testing Air Intake and Air Outlet

The test is to show whether air intake and air outlet can open and close completely. Air intake and air outlet must be tested in the same way.

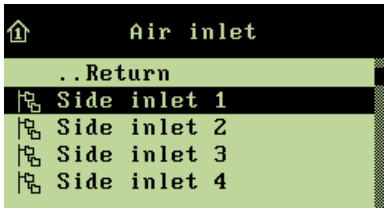
When you want to… test air inlet and outlet,
open the **Technical/Service/Manual/Auto** menu, set the computer to **Manual**, and



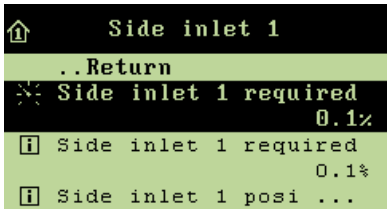

→ select **Climate**, and press



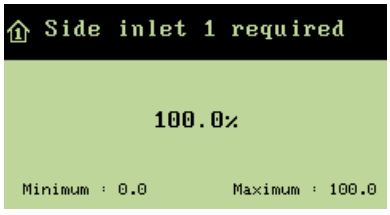

→ select **Air inlet**, and press




→ select **Side inlet 1**, and press

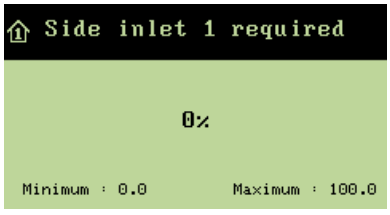



→ select **Side inlet 1 required**, and press




→ set to 100 %, and when **Yes** is highlighted, press to save the change

→ check that the correct air intakes open completely




→ set to 0 %, and when Yes is highlighted, press to save the change

→ check that the correct air inlets close completely

→ set the air intake to the required position

Repeat the test for the installed air inlets and outlets.

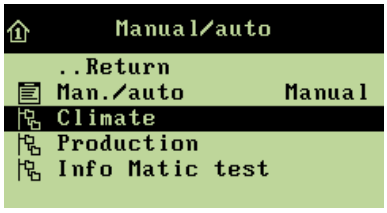
## 3.5.5.2 Testing Stepless Fans

### 3.5.5.2.1 Testing Setting and Placement of Stepless Fans

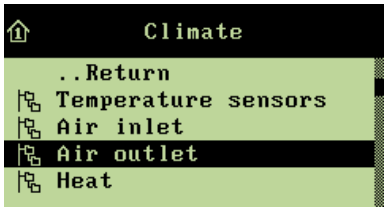
The test is to show if the connected stepless fans are set correctly, i.e. if they can run at minimum and maximum velocity, and if they are placed correctly.

With an internal fan speed controller the emergency change-over switch AUT/MAN (automatic/manual) on the side of the Viper must be set to AUT.

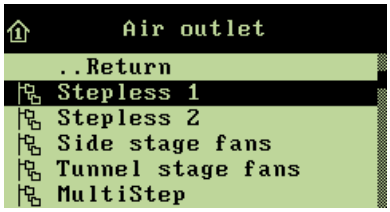
When you want to… test maximum revolutions,
open the **Technical/Service/Manuel/Auto/** menu, set the computer to **Manual**, and



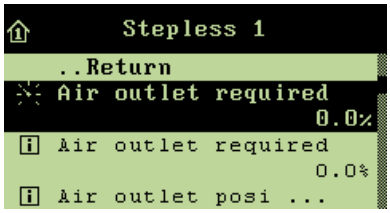

→ select **Climate**, and press



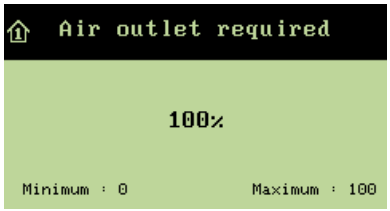

→ select **Air outlet**, and press




→ select **Fan A**, and press




→ select **Air outlet required**, and press



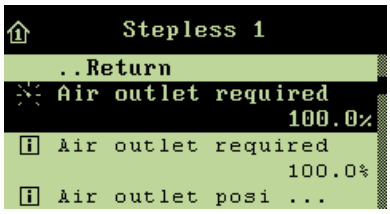

→ set to 100 %, and when **Yes** is highlighted, press to save the change

→ check that the fan is placed in the correct house

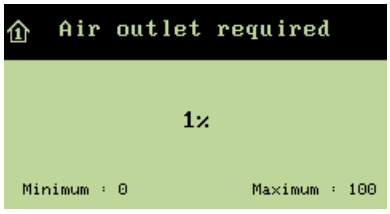
→ check that the fan is running in the right direction and sucks air out of the house (possibly by means of a smoke test)

→ check that the fan runs at maximum revolutions

When you want to… test minimum revolutions, open the **Technical/Service/Manual/Auto** menu, set the computer to **Manual**, select the **Climate/Air outlet/Stepless 1** menu, and




→ select **Air outlet required**, and press

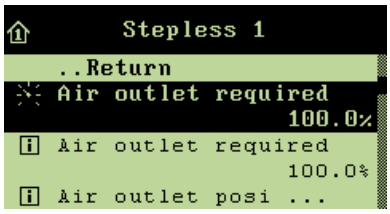



→ set to 1 %, and when Yes is highlighted, press to save the change

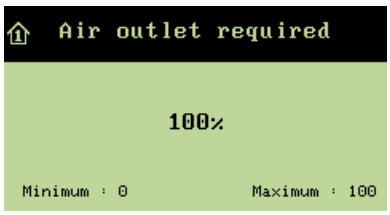
→ check that the fan is running in the right direction and sucks air out of the house (possibly by means of a smoke test)

→ check that the fan is running at minimum revolutions

When you want to… test whether the fan can stop, open the **Technical/Service/Manual/Auto** menu, set the computer to **Manual**, select the **Climate/Air outlet/Stepless 1** menu, and




→ select **Air outlet required**, and press




→ set to 0 %, and when Yes is highlighted, press to save the change

→ check that the fan stops completely

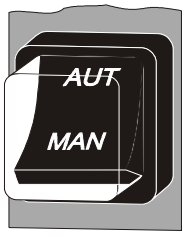
→ If the fans are connected as 3-wire, they should not stop completely, but instead run at minimum speed

Repeat the test for **Stepless 2**.

An external stepless fan speed controller (e.g. MC 23U or MC 37) must be tested in the same way as an internal fan speed controller.

### 3.5.5.3 Testing Emergency Change-over Switch AUT/MAN

When you want to… test the emergency change-over switch AUT/MAN,




→ set the change-over switch to **MAN** (manual)

→ check that the stepless fan(s) run(s) run at maximum revolutions

→ set the change-over switch to **AUT** (automatic)

→ check that the stepless fan(s) reduce(s) the revolutions

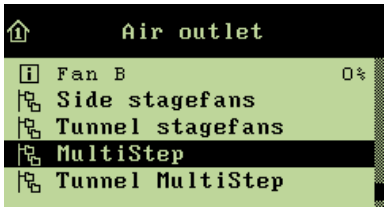
**Figure 16: AUT/MAN emergency change-over switch on the side of Viper**

### 3.5.5.4 Testing MultiStep®, Tunnel MultiStep®, Side Stagefans and Tunnel Stagefans

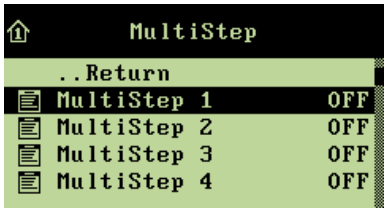
The test is to show whether shutters and fans in the chimneys work in relation to each other.

Testing of the eight MultiStep® is to be made in the same way for each step, as you must check the exhaust units individually.

When you want to… test MultiStep®, open the **Technical/Service/Manual/Auto** menu, set the computer to **Manual**, select the **Climate/Air outlet** menu, and




→ select **MultiStep**, and press




→ select **MultiStep 1**, and press


→ select **ON**, and press to activate it

→ check that the swivel shutter in the chimneys open completely

→ When the shutter is approx. 15 % open, the MultiStep 1 fan must start at full speed

→ check that the fan sucks air out of the house (possibly by means of a smoke test)


→ select **MultiStep 1**, and press


→ select **OFF**, and press to disconnect

→ check that the swivel shutter in the chimneys closes again

→ When the shutter is less than approx. 15 % open, the fan must stop

Repeat the above procedure for each MultiStep® and for each stagefan.

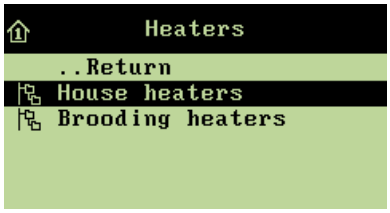
### 3.5.5.5 Testing Heating

This section is only relevant to houses where heating is installed.

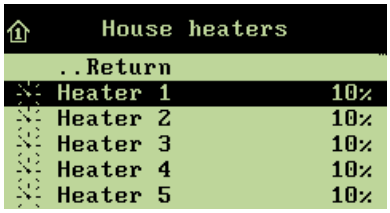
The test is to show whether the heating systems can connect and disconnect.

The test of the systems takes place in the same way, as every system must be checked individually.

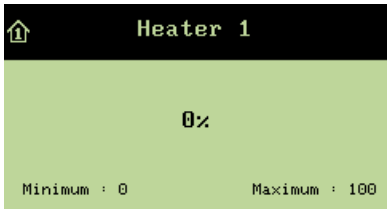
When you want to… test the heating system, open the **Technical/Service/Manual/Auto** menu, set the computer to **Manual**, select the **Climate/Heaters** menu, and




→ select **House heaters**, and press

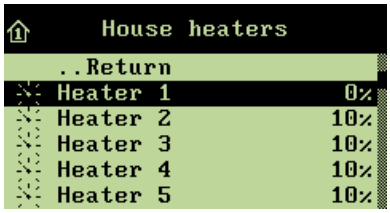



→ select **Heater 1**, and press

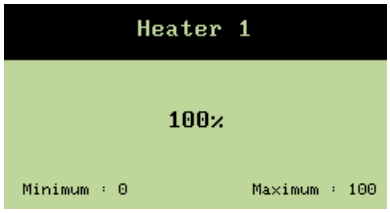



→ set to 0 %, and when **Yes** is highlighted, press to save the change

→ check that heat source 1 does not supply heating




→ select **Heater 1**, and press




→ set to 100 %, and when **Yes** is highlighted, press to save the change

→ check that heat source 1 supplies heating constantly

Repeat the procedure for each system to check that it can connect and disconnect heating.

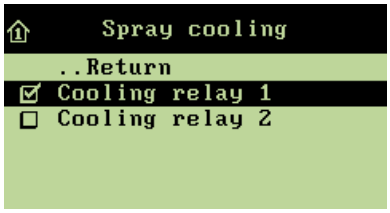
#### 3.5.5.6 Testing Relay for Cooling, PAD-cooling, Humidification, Soaking and 24-hour Clock

This section is only relevant to houses where the concerned systems are installed.

The test is to show whether the systems can start and stop.

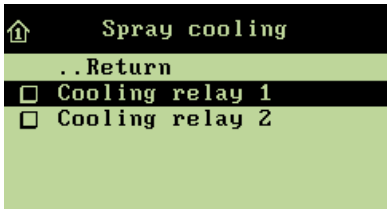
The test of the systems takes place in the same way as every system must be checked individually.

When you want to… test a system, open the **Technical/Service/Manual/Auto** menu, set the computer to **Manual**, select the **Climate/e.g. Cooling** menu, and




→ select **Cooling relay 1**, and press to connect it

→ check that the system (cooling) is on




→ select the system (**Cooling relay 1**) to disconnect it

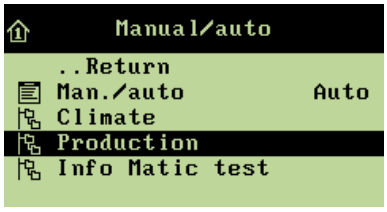
→ check that the system (cooling) is off

Repeat the procedure for each system to check that it can start and stop.

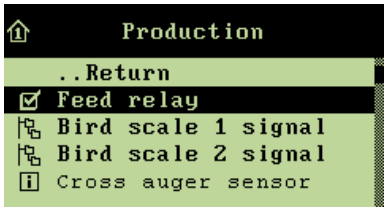
### *3.5.6 Testing Production Functions*

#### 3.5.6.1 Testing Feed Relay, Silo Relay, Light Relay and 24-hour Clock

When you want to… test a system, open the **Technical/Service/Manual/Auto** menu, set the computer to **Manual**, select the **Production/Feed relay** menu, and

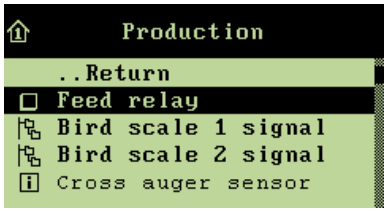



→ select **Production**, and press




→ select **Feed relay**, and press to connect it

→ check that the system is on



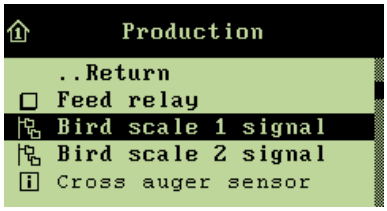

→ select the system (**Feed relay**) to disconnect it

→ check that the system is off

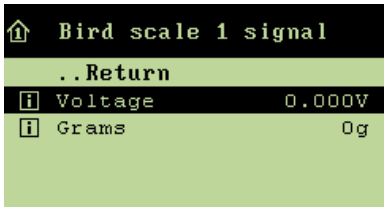
Repeat the procedure for each system to check that it can start and stop.

### 3.5.6.2 Testing the Bird Scales

When you want to… test the bird scales, open the **Technical/Service/Manual/Auto** menu, set the computer to **Manual**, select the **Production/Bird scale 1 signal** menu, and




→ select **Bird scale 1 signal**, and press




→ read the voltage and check the value in the table

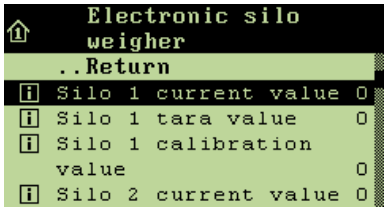
| Bird scales | |
|---|---|
| 5 kg | 0 kg = 0.5 V<br>5 kg = 10.0 V |
| 10 kg | 0 kg = 0.5 V<br>10 kg = 10.0 V |
| 30 kg | 0 kg = 0.5 V<br>30 kg = 10.0 V |

Repeat the test procedure for **Bird scale 2 signal**.

### 3.5.6.3 Testing the Electronic Silo Weigher

When you want to… test the silo weigher, open the **Technical/Service/Manual/Auto** menu, set the computer to **Manual**, select the **Production** menu, and


→ select **Electronic silo weigher**, and press




→ read the values to check whether the weigher is connected and calibrated

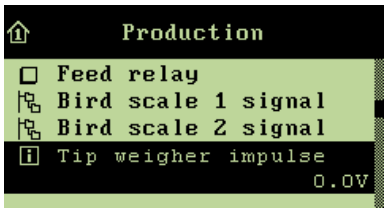
→ If **Silo current value** shows a value that is higher than 0, the weigher is connected.

→ If **Silo tare value** and **Silo calibration value** are both 0, the silo weigher has not been calibrated. If the silo weigher has not been calibrated, the **Silo current value** will always be 0.000 t.

→ See section 3.2.5.1 Calibration of Weighing .

### 3.5.6.4 Testing the Tip Weigher

When you want to… test the tip weigher, open the **Technical/Service/Manual/Auto** menu, set the computer to **Manual**, select the **Production/Tip weigher impulse** menu, and



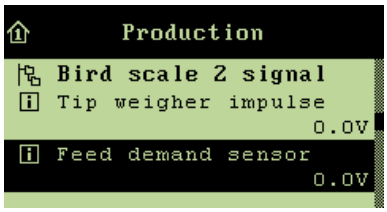

→ read the voltage and check the feedback switch on the tip weigher

The feedback switch is operated manually on the tip weigher; check the voltage at the same time.

10 kg = 0.0 V
0 kg = 10.0 V

### 3.5.6.5 Testing the Feed Demand Sensor and Cross Auger Sensor

When you want to… test the feed demand sensor, open the **Technical/Service/Manual/Auto** menu, set the computer to **Manual**, select the **Production/Feed demand sensor** menu, and




→ select **Feed demand sensor**, and press

→ read the voltage and check the value

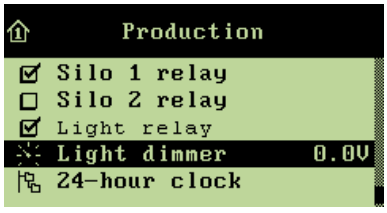
Feed demand sensor: 0.0 V = feed demand
10.0 V = no feed demand

Repeat the test procedure for **Cross auger sensor**. The values are the same as for the cross auger sensor.

### 3.5.6.6 Testing the Light Dimmer

The test is to show whether the connected light dimmer can increase and reduce the light intensity.

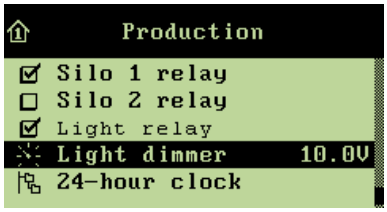
When you want to… test the light dimmer, open the **Technical/Service/Manuel/Auto/** menu, set the computer to **Manual**, select the **Production/Light dimmer** menu, and




→ select **Light dimmer**, and press


→ set to 10.0 V, and when **Yes** is highlighted, press to save the change

→ check for maximum light in the house



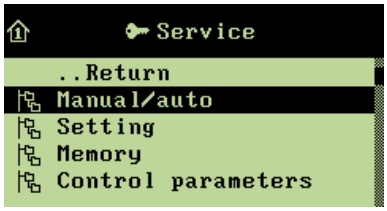

→ select **Light dimmer**, and press


→ set to 1.0 V, and when **Yes** is highlighted, press to save the change

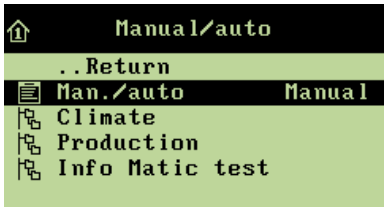
→ check that the ligth is dimmed in the house

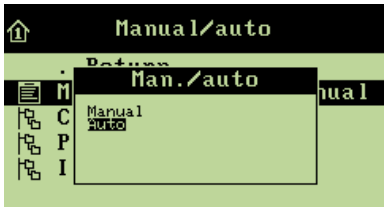
## 3.5.7 End of Component Testing

When you want to… set Viper back to automatic control,
open the **Technical/Service** menu, and




→ select **Manual/auto**, and press




→ select **Auto**, and when **Yes** is highlighted, press to save the change

# 3.6 System Setting

## *3.6.1 Menu for System Setting*

| Service: Setting | | Menu items | Options under the individual menu items | |
|---|---|---|---|---|
| | Climate | Air output | Output in $m^3/h*1000$ | |
| | | | **Nominal** | 0 – 999,900 $m^3/h$ |
| | | | **Stepless 1-2** | 0 – 999,900 $m^3/h$ |
| | | | **MultiStep 1 - 8** | 0 – 999,900 $m^3/h$ |
| | | | **MultiStep tunnel 1 - 8** | 0 – 999,900 $m^3/h$ |
| | | | **Side stage 1 - 16** | 0 – 999,900 $m^3/h$ |
| | | | **Tunnel stage 1 -16** | 0 – 999,900 $m^3/h$ |
| | | | **Rotate** | |
| | | | Max. output | |
| | | Calibration | **Calibrate side inlet 1 - 6** | Side inlet 1 |
| | | | | **Calibration** |
| | | | **Calibrate tunnel inlet 1-2** | Tunnel inlet 1 |
| | | | | **Calibration** |
| | | | **Calibrate air outlet 1-2** | Air outlet 1 |
| | | | | **Calibration** |
| | | Ventilation | **Max. flap** | 0 – 100 % |
| | | | **Outs. temp. limit** | 0 – 100 °C |
| | | | **Gradual limit** | 0 – 100 °C |
| | | Fan speed controller | **Power supply** | 200<br>210<br>220<br>230<br>240 |
| | | | **Wire type** | 2-wire<br>3-wire |
| | | | **Min. voltage** | 0 – 10 V |
| | | | **Max. voltage** | 0 - 10 V |
| | | Heating | **Heaters** | **Pre runtime** |
| | | | | **Adjust analog heater** |
| | | | **Brooding heaters** | **Pre runtime** |
| | | | | **Adjust analog heater** |
| | | Cooling | **Cooling mode** | Sequential<br>Parallel |
| | | | **Cooling 1/2 ratio** | 2 - 98 |
| | | Pad cooling | **Pad cooling mode with 2 pumps** | Sequential<br>Parallel |
| | | | **Pump 1/2 ratio** | 1 - 99 |
| | | Humidification | **Humidification mode** | Sequential<br>Parallel |
| | | | **Humidifier 1/2 ratio** | 0 -100 % |
| | | Pressure control | **Min. voltage** | 0 – 10 V |

| Service: Setting | | Menu items | Options under the individual menu items | |
|---|---|---|---|---|
| | | | Max. voltage | 0 – 10 V |
| | | | Min. value | -200 – 200 Pa |
| | | | Max. value | -200 – 200 Pa |
| | | Adjust CO2 sensor | Min. voltage | 0 – 10 V |
| | | | Max. voltage | 0 – 10 V |
| | | | Min. value | 0 – 30000 ppm |
| | | | Max. value | 0 – 30000 ppm |
| | | Adjust aux. sensors | Aux. sensor 1-4 | Min. voltage |
| | | | | Max. voltage |
| | | | | Min. value |
| | | | | Max. value |
| | | Night setback | Night setback | |
| | | | Adaptation period | 01:00 |
| | | | Return period | 00:30 |
| | Production | Bird scale 1 - 2setup | Search limit | 0 – 50 % |
| | | | Min. voltage | 0 – 10 V |
| | | | Max. voltage | 0 – 10 V |
| | | | Min. value | 0 – 30000 |
| | | | Max. value | 0 – 30000 |
| | | Silo | Silo 1-2 calibrate | 0.1000 – 1000.000 t |
| | | | Silo 1-2 offset | -10.000 – 10.000 t |
| | | Light dimmer | Time for dawn | 00:24 |
| | | | Time for dusk | 00:24 |
| | | | Light dimmer voltage at 0 % | 0 – 10 V |
| | | | Light dimmer voltage at 20 % | 0 – 10 V |
| | | | Light dimmer voltage at 40 % | 0 – 10 V |
| | | | Light dimmer voltage at 60 % | 0 – 10 V |
| | | | Light dimmer voltage at 80 % | 0 – 10 V |
| | | | Light dimmer voltage at 100 % | 0 – 10 V |
| | Info Matic | Network address | 0 - 250 | |
| | | System codes | Read+write access | |
| | | | Read access | |
| | | Baud rate | 1200<br>2400<br>4800<br>9600<br>19200<br>38400 | |

**Table 6: Survey of the setting menu (you can change the values highlighted in bold)**

## 3.6.2 Climate

### 3.6.2.1 Setting of Exhaustion (MultiStep®)

MultiStep® is a method for controlling one or more exhaust units in steps, so that the exhaustion becomes stepless. The computer controls one or two exhaust units stepless from zero to 100 %, while the rest of the exhaust units are switched on in steps as required.

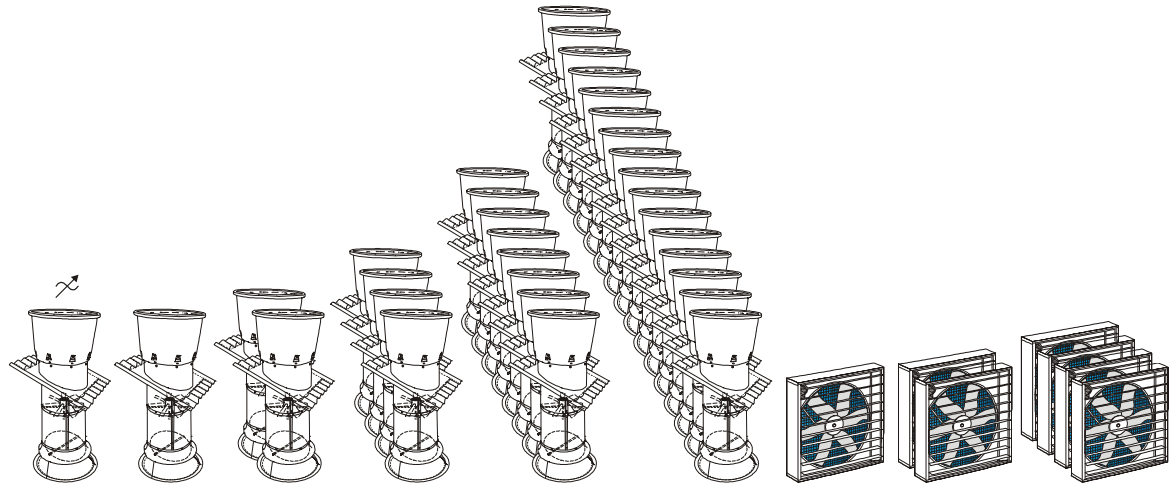
Every exhaust unit is equipped with a CL 74A winch motor, which can open and close the swivel shutter.

The CL 74AV is used for the stepless exhaust unit(s). The internal fan speed controller in the Viper climate and production computer or an external fan speed controller controls the fan revolutions. The fan must always be single-phase, or else an external MC 23U must be used.

CL 74A ON/OFF is used for the other exhaust units. When the shutters open, the fans start via an integrated switch. These fans will then run at their maximum. The fans can be single-phase or three-phase. If three-phase fans are used, the CL 74A ON/OFF winch motors must be equipped with contactors, which are controlled by an integrated switch.

The system can also handle an air-operated shutter (gable fan).

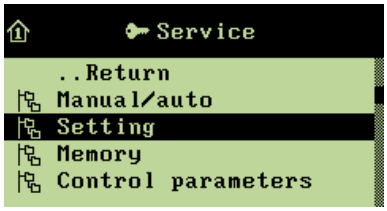
***Example 1: MultiStep® exhaustion***



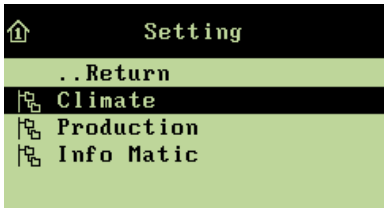

In order to obtain correct adjustment of the house climate with MultiStep® you must adjust the climate computer using the ventilation system data:

1) Nominal air output of the system in $m^3/h$ (air requirement of the animals)
2) Exhaustion capacity of the stepless exhaustion unit(s)
3) Exhaustion capacity of the various steps, MultiStep® 1-8

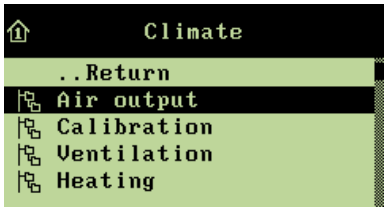
When you want to… adjust the exhaustion,
open the **Technical/Service** menu, and



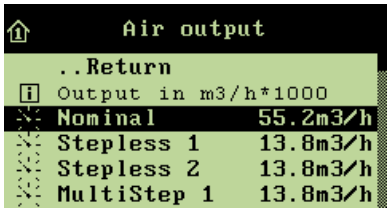

→ select **Setting**, and press



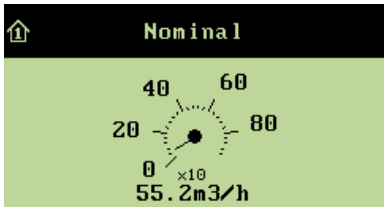

→ select **Climate**, and press




→ select **Air output**, and press



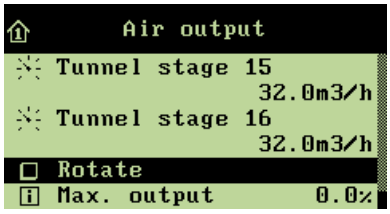

→ select **Nominal**, and press




→ set a value, and when **Yes** is highlighted, press to save the change

**Stepless**, **MultiStep**, **MultiStep tunnel**, **Side stage** and **Tunnel stage** should be set in the same way.

When you want to… connect and disconnect the rotate function, open the **Technical/Service/Setting/Climate/Air output** menu, and




→ select **Rotate**, and when **Yes** is highlighted, press to save the change

The rotate function makes it possible to switch between fans with the same output.

Max. output is the max. output in percentage of the ventilation system.

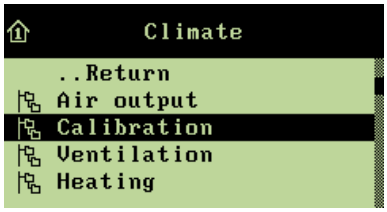
### 3.6.2.2 Calibration of Air Intake and Air Outlet

After installation, the Viper must be adapted to the winch motor. During this automatic calibration, the shutters are opened briefly and shut completely.

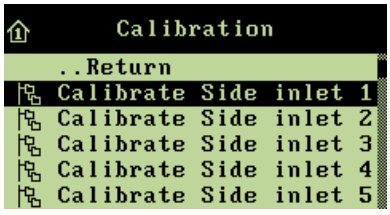
When the air inlets or air outlets are analog controlled, you can adjust the output voltage via Min. voltage and Max. voltage.

With a CL 75A winch motor, the change-over switch on the winch motor must be set to AUT.

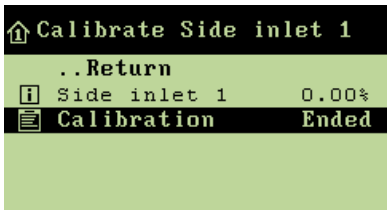
When you want to… calibrate air intake and air outlet,
open the **Technical/Service/Setting/Climate** menu, and



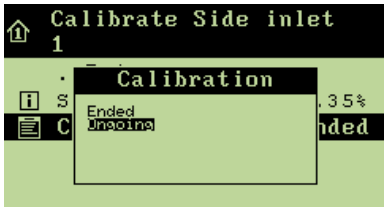

→ select **Calibration**, and press




→ select **Calibrate side inlet 1**, and press




→ select **Calibration**, and press




→ select **Ongoing**, and press to start calibration

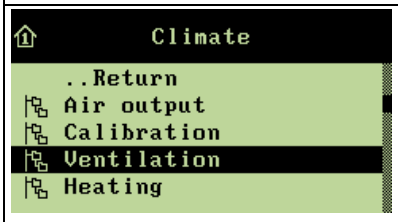
→ check for proper opening and closing of the correct outlet(s)

1) Wait until the calibration is finished and the display shows **Calibration ended** again
2) Carry out the calibration in the same way for air intake B and air outlets A and B

### 3.6.2.3 Calibration of Tunnel Air Intake and Tunnel Air Outlet

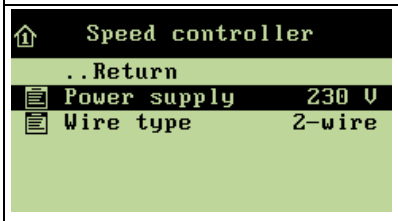
The tunnel air intake and the tunnel air outlet are calibrated in the same way as air intake and air outlet.

### 3.6.2.4 Setting of Ventilation

| Ventilation | Display shows | | Function explanation |
|---|---|---|---|
|  | Max. flap | 100 % | The maximum opening of the air intake as long as the outside temperature is below **Outside temperature** limitation (15 °C) |
| | Outs. temp. limit | 15 °C | Below this outside temperature, the flaps will not open more than **Maximum flap** |
| | Gradual limit | 5 °C | Temperature area (P-band) where the limitation is switched on |

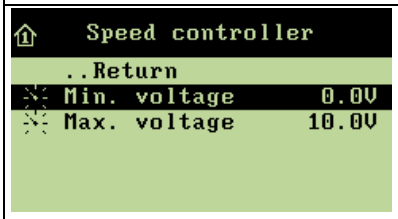
### 3.6.2.5 Setting of Fan with Internal Fan Speed Controller

With an internal fan speed controller, it is necessary to enter the typical voltage of the mains supply to obtain the correct control of the fan. Measure the voltage by means of a voltmeter or possibly contact an electrician.

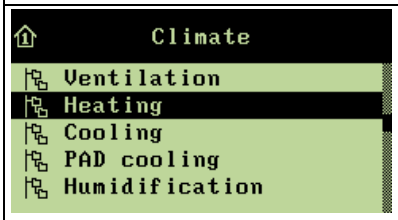
| Internal fan speed controller | Display shows | | Function explanation |
|---|---|---|---|
|  | Power supply | 200<br>210<br>220<br>230<br>240 | Enter the typical mains supply voltage to obtain correct control of the fan. |
| | Wire type | 2-wire<br>3-wire | Enter the type of wire to be used. |

### 3.6.2.6 Setting of Fan with External Fan Speed Controller

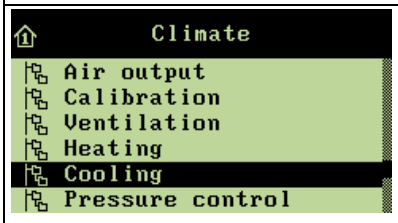
When the fan is regulated by an external fan speed controller, a minimum and a maximum voltage are set depending on which type of fan speed controller it concerns.

| External fan speed controller | Display shows | | Function explanation |
|---|---|---|---|
|  | Min. voltage | 0.0 V | Voltage at 0 % fan output. |
| | Max. voltage | 10.0 V | Voltage at 100 % fan output. |

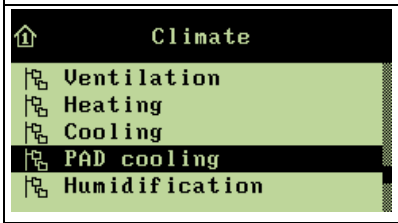
## 3.6.2.7 Setting of Heating

| Heat | Display shows | | Function explanation |
|---|---|---|---|
|  | **Box heaters** | | |
| | Pre runtime | 0 s | Time from the heating relay is picked up till heating is physically supplied (flush time) |
| | **Adjust analog heater** | | |
| | Min. voltage | 3.0 V | At heating requirement, the analog voltage will never be lower than **`Min. voltage`** |
| | Max. voltage | 7.5 V | The heating shunt works at maximum output at this voltage |
| | **Brooding heaters** | | |
| | Pre runtime | 0 s | Time from the heating relay is picked up till heating is physically supplied (flush time) |
| | **Adjust analog heater** | | |
| | Min. voltage | 3.0 V | At heating requirement, the analog voltage will never be lower than **`Min. voltage`** |
| | Max. voltage | 7.5 V | The heating shunt works at maximum output at this voltage |

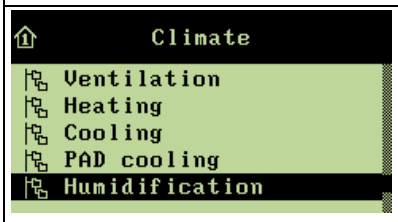
## 3.6.2.8 Setting of Cooling

| Cooling | Display shows | | Function explanation |
|---|---|---|---|
|  | Cooling mode | Sequential<br>Parallel | If there are more cooling pumps, they can be set to running either sequentially or in parallel. |
| | Cooling 1/2 ratio | 50 | The distribution between two cooling pumps running sequentially. |

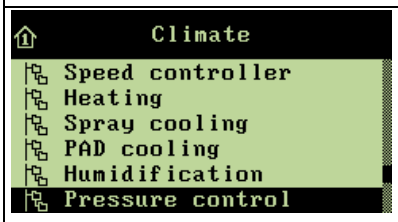
## 3.6.2.9 Setting of PAD Cooling

| PAD cooling | Display shows | | Function explanation |
|---|---|---|---|
|  | PAD cooling mode with 2 pumps | Sequential<br>Parallel | If there are more cooling pumps, they can be set to running either sequentially or in parallel. |
| | Pump 1/2 ratio | 50 | The distribution between two cooling pumps running sequentially. |

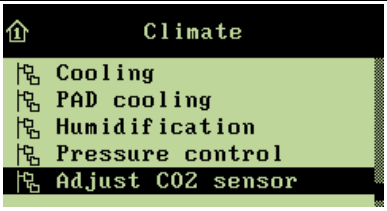
## 3.6.2.10 Setting of Humidification

| Humidification | Display shows | | Function explanation |
|---|---|---|---|
|  | Humidification mode | Sequential<br>Parallel | If there are more humidifiers, they can be set to running either sequentially or in parallel. |
| | Humidifier 1/2 ratio | 50 | The distribution between two humidifiers running sequentially. |

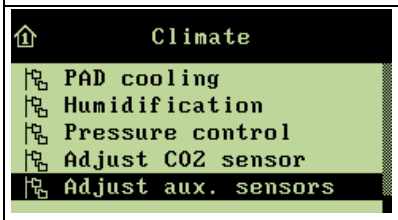
### 3.6.2.11 Setting of Pressure Control

| Pressure control | Display shows | | Function explanation |
|---|---|---|---|
|  | Min. voltage | 1.0 V | The menu defines the pressure sensor. Enter a voltage for the min. value of the sensor. |
| | Max. voltage | 10.0 V | Enter a value for the max. value of the sensor. |
| | Min. value | 10 Pa | The lowest measured value. |
| | Max. value | 100 Pa | The highest measured value. |

### 3.6.2.12 Adjustment of $CO_2$ sensor

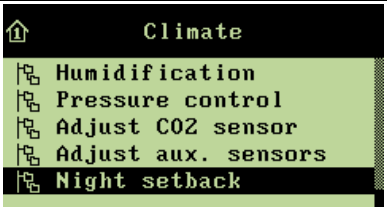
| $CO_2$ sensor | Display shows | | Function explanation |
|---|---|---|---|
|  | Min. voltage | 0.0 V | When a sensor is analog controlled, you can adjust the voltage. Enter a voltage for the min. value of the sensor. |
| | Max. voltage | 10.0 V | Enter a value for the max. value of the sensor. |
| | Min. value | 0 ppm | The lowest measured value. |
| | Max. value | 10000 ppm | The highest measured value. |

### 3.6.2.13 Adjustment of Auxiliary Sensor

| Auxiliary sensor | Display shows | | Function explanation |
|---|---|---|---|
|  | Min. voltage | 1.0 V | When a sensor is analog controlled, you can adjust the output voltage via `Min. voltage` and `Max. voltage`. |
| | Max. voltage | 9.0 V | |
| | Min. value | 1000 ppm | When a `Min. value` and a `Max. value` are set, you should also indicate the range within which the sensor can measure |
| | Max. value | 9000 ppm | |

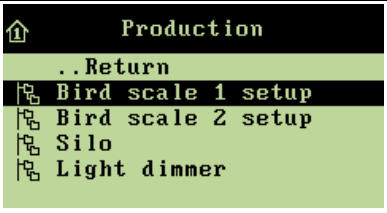
The units for **`Min. value`** and **`Max. value`** will depend on which auxiliary sensors have been selected. Besides ppm, the units can be Pa, °C, % and m/s.

### 3.6.2.14 Setting of Night Setback

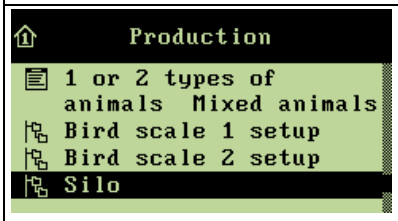
| Night setback | Display shows | | Function explanation |
|---|---|---|---|
|  | Adaption period | 01:00 | P-band. When the function is activated, the temperature setback will be reached after this period. |
| | Return period | 00:30 | P-band. When the function is ended, the temperature setback will be ended after this period. |

## 3.6.3 Production

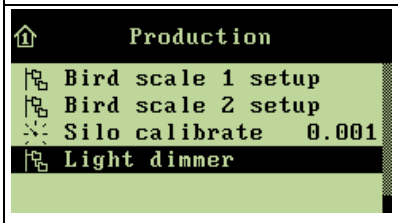
### 3.6.3.1 Setting of Bird Scales

| Bird scales | Display shows | | Function explanation |
|---|---|---|---|
|  | Search limit | 30 % | The search limit is an accepted deviation. The search limit is used to sort out incorrect weighings, for example when two animals are standing on the scales at the same time. |
| | Min. voltage | 0.500 V | The menu defines the scales. Two values are entered at two voltages. Voltage/signal at 0 kg. |
| | Max. voltage | 10.000 V | Voltage/signal at max. weight |
| | Min. value | 0 g | Lowest registration of the weigher |
| | Max. value | 5000 g | Highest registration/load of the weigher. |

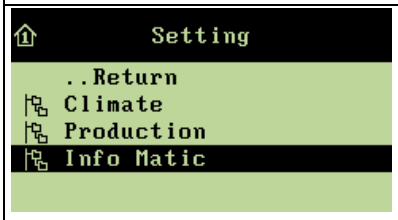
### 3.6.3.2 Setting of Silo Calibration

| Silo calibration | Display shows | | Function explanation |
|---|---|---|---|
|  | Silo 1 calibrate | 10.0000 t | Indicates the number of tonnes at which the silo is calibrated. |
| | Silo 1 offset | 0.000 t | It is possible to make an offset so that the current indication from the silo is correct (tare weight of the silo). |
| | Silo 2 calibrate | 10.0000 t | Indicates the number of tonnes at which the silo is calibrated. |
| | Silo 2 offset | 0.000 t | It is possible to make an offset so that the current indication from the silo is correct (tare weight of the silo). |

### 3.6.3.3 Setting of Light Dimmer

| Light dimmer | Display shows | | Function explanation |
|---|---|---|---|
|  | Time for dawn | 00:20 | The time for dawn indicates the period where the light is changed from ”Day” to ”Night”. |
| | Time for dusk | 00:20 | Time for dusk indicates the period where the light is changed from ”Night” to ”Day”. |
| | Light dimmer voltage at 0 % | 0.0 V | Defines the mode of the light dimmer in relation to the light intensity. Indicates how to activate the light dimmer |
| | Light dimmer voltage at 20 % | 2.0 V | |
| | Light dimmer voltage at 40 % | 4.0 V | |
| | Light dimmer voltage at 60 % | 6.0 V | |
| | Light dimmer voltage at 80 % | 8.0 V | |
| | Light dimmer voltage at 100 % | 10.0 V | |

## 3.6.4 Info Matic

| Info Matic | Display shows | | Function explanation |
|---|---|---|---|
|  | Network address | 0 | Control code on the data network. Climate computers in different houses must have alternative network addresses<br>The network address can be set from 1 to 249. It is recommended to use the lowest possible addresses |
| | System codes | Read+write access | Read and write access: Full access<br>When a PC is connected to the climate computer, the computer executes an access control. The PC must have “full access” or just “read access”<br>If a modem is connected to the data network, the system codes for access control must always be entered. In this way, it is ensured that only authorized personnel can call the computer. If a modem is not connected, the system codes / passwords can be 0 both in the climate computer and in the PC<br>Full access can be obtained when the PC has the same system code / password as the code for full access in the climate computer. The code is a four-digit number (value: 0-9999) |
| | | Read access | Read access: Read access only<br>Read access can be obtained when the PC has the same system code / password as the code for read access in the climate computer. The code is a four-digit number (value: 0-9999) |
| | Baud rate | 1200<br>2400<br>4800<br>9600<br>19200<br>38400 | The speed with which the computers transfer data.<br>The climate computer must have the same baud rate as all the other computers on the data network<br>The setting for Euro Matic and Uni Matic house computers must be 2400 baud |

# 3.7 Memory

## *3.7.1 Menu for Memory*

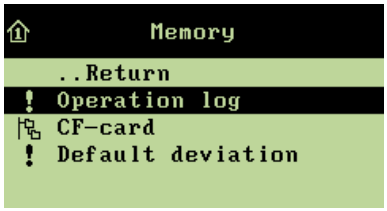
| Service: Memory | Menu items | Options under the individual menu items | |
|---|---|---|---|
| | Operation log | Value | 74 |
| | | Time | 2004.09.23 09:05 |
| | | Now | 12.0 |
| | | Previous | 10.0 |
| | | Editor | 0 |
| | **CF-card** | **Program upload** | |
| | | **Copy to CF-card** | |
| | | **Copy from CF-card** | |
| | | **Delete on CF-card** | |
| | | **Save alarm log** | |
| | | **Save operation log** | |
| | | **Save present setup** | |
| | Default deviation | | |

**Table 7: Survey of memory menu (you can change the values highlighted in bold)**

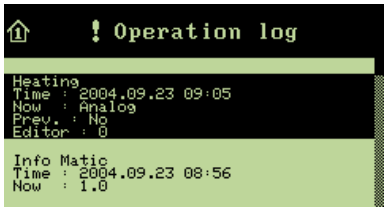
### 3.7.1.1 Operation Log

The operation log saves the latest 35 changes of settings and the time of the change.

When you want to… read the operation log,
open the **`Technical/Service/Memory`** menu, and




→ select **`Operation log`**, and press




→ scroll to see changes

→ press to return to the menu

When all 35 storage locations are used, the oldest change will disappear.

### 3.7.1.2 Compact Flash Card

When using a CF-card it is possible to copy the current setting of the computer to a CF-card. This makes it possible partly to save a backup copy of the setup, partly to copy the setup to other climate computers. It is also possible to save data from a CF-card in the computer. The **`Program upload`** function enables you to update the computer program while all settings are maintained.

When you want to… insert a CF-card, you must

1) Dismount the front panel by loosening the front panel screws
2) Tilt the front panel outwards and insert the CF-card at the top of the CPU on the rear of the front panel

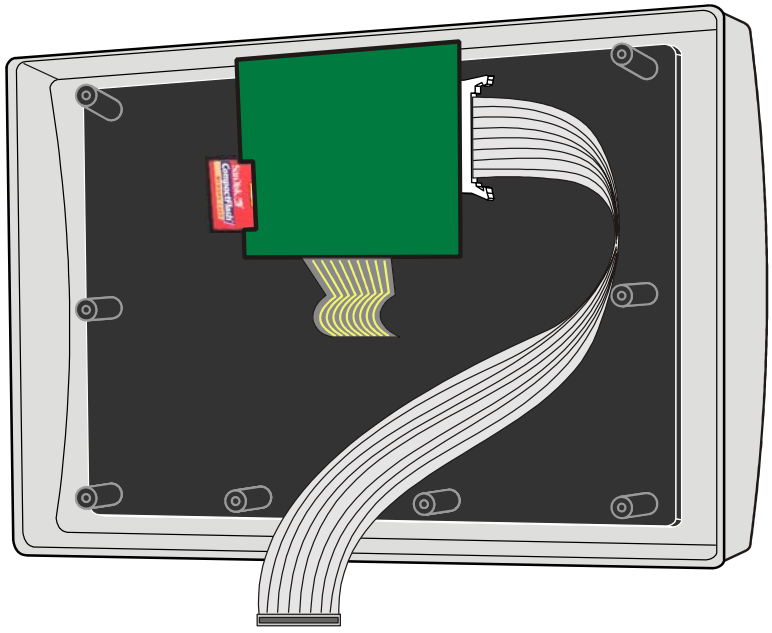
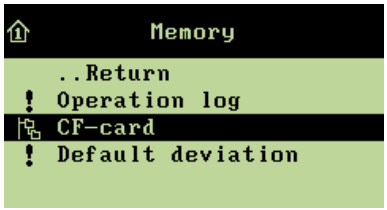


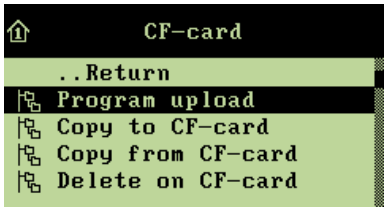
**Figure 17: Insertion of CF-card**

If you want to remove the CF-card again immediately after operation, you can place the "loosened" front panel on top of the cabinet by screwing the bottom front panel screws into the top screw holes of the cabinet while operating the computer.

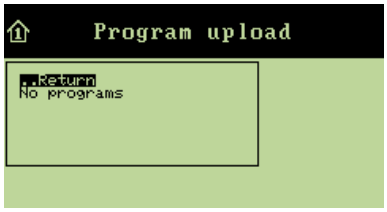
When you want to… save data on or retrieve data from a CF-card,
open the **`Technical/Service/Memory`** menu, and




→ select **`CF-card`**, and press




→ select the required menu item (**`Program opload/Copy to CF-card/Copy from CF-card/Delete on CF-card/Save alarm log/Save operation log/Save present setup`**), and press

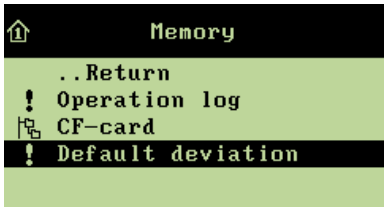



→ select the required file, and press

### 3.7.1.3 Default Deviation

Under **Default deviation**, you can read out the changes that have been made compared to the default values.

When you want to… read the default deviation,
open the **Technical/Service/Memory** menu, and




→ select **Default deviation**, and press


→ scroll to see more items

→ press to return to the menu

# 3.8 Control Parameters

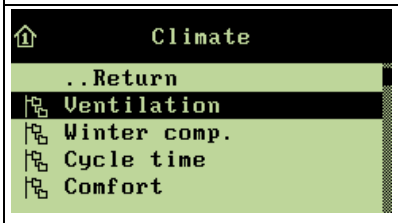
## *3.8.1 Menu for Control Parameters*

| Service: Control parameters | | Menu items | Settings | |
|---|---|---|---|---|
| | Climate | Ventilation | Winter factor | 0.1 – 1.0 |
| | | Flex mode | ☐ Cycle inlets | |
| | | | Open delay | |
| | | | Close delay | |
| | | Inlets without feedback | Inlet running time | 30.0 – 1800.0 |
| | | | Tunnel inlet running time | 30.0 – 1800.0 |
| | | | Calibration count | 5.0 – 99.0 |
| | | | Tunnel calibration count | 5.0 – 99.0 |
| | | | Stop fans if inlet 1-6 below | 0.0 – 50.0 |
| | | | Stop fans if tunnel inlet 1-2 below | 0.0 – 50.0 |
| | | | Inlet 1 – 6 dead band | 1.0 – 20.0 |
| | | | Tunnel inlet 1 - 2 dead band | 1.0 – 20.0 |
| | | Winter compensation | ☐ Activate | 1.00 – 2.00 |
| | | | Adjustment | |
| | | Cycle time ventilation | Stop modulation | 0 - 500 |
| | | | ☐ Air inlet modulation | |
| | | | Cycle time | 0 - 1000 |
| | | | Min. ON-/OFF time | 0 - 1000 |
| | | | Air inlet delay | Air inlet open delay 0 s |
| | | | | Air inlet open delay -10 s |
| | | Comfort | Start ventilation | 0.0 – 0.1 |
| | | | Max. ventilation | 0 - 200 |
| | | Heating | Heaters | Cycle time |
| | | | | Min. run-time |
| | | | | Min. OFF-time |
| | | | Brooding heaters | Cycle time |
| | | | | Min. run-time |
| | | | | Min. OFF-time |
| | | Pad cooling | ☐ Cycle timer | |
| | | | Cycle time | 0 – 100 min |
| | | | Min. ON-time | 0 - 300 |
| | | | Pre run-time | 0 - 60 |
| | | Humidity control | Max. humidity vent. | 0 - 100 s |
| | | | Max. temperature reduc. | -9.0 – 0.0s |
| | | Humidification | Cycle time 180 s. | |

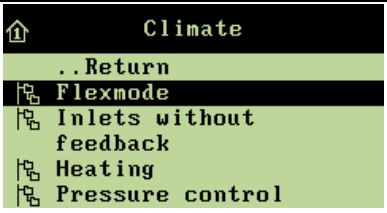
| Service: Control parameters | | Menu items | Settings | |
|---|---|---|---|---|
| | | | Min. run-time 10 s. | |
| | | Pressure control | Sample rate | 10 – 1200 s |
| | | | Accept band | 0 – 20 Pa |
| | | | Delta demand | 0 - 20 |
| | | CO2 regulator | P-band | 0 – 50000 ppm |
| | | | Int. time | 0 – 99 min |

Table 8: Survey of control parameters

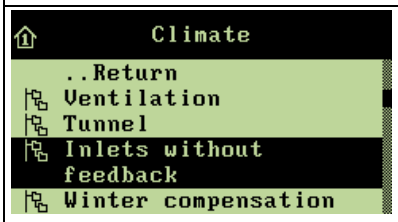
### 3.8.1.1 Ventilation

| Ventilation | Display shows | Function explanation |
|---|---|---|
|  | Winter factor 0,7 | The increase is gradually limited with this factor under winter conditions. Factor 1 gives no limitation. Factor 0.5 halves the increase. |

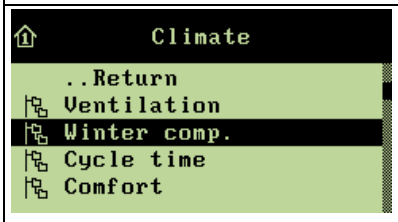
### 3.8.1.2 Flex Mode

| Flex mode | Display shows | Function explanation |
|---|---|---|
|  | Cycle inlets | Connection and disconnection of cycle on the air inlets. |
| | Open delay | Delayed opening of air inlets at **Cycle time** in Flex mode. |
| | Close delay | Delayed closing of air inlets at **Cycle time** in Flex mode. |

### 3.8.1.3 Air Intake

| Air Intake | Display shows | Function explanation |
|---|---|---|
|  | Inlet running time 60 s | The running time of the inlet. |
| | Tunnel inlet running time 60 s | The running time of the tunnel inlet. |
| | Calibration count 20 | Shows the number of changes of the flap opening that is allowed between fully open or closed position. During calibration, the flap goes to either fully open or closed position and thereafter it goes to the current position. |
| | Tunnel calibration count 20 | |
| | Stop fans if inlet 1 - 6 below 0 % | In houses with curtain openings, it can be difficult to change the curtain position due to the negative pressure when the fans run. It is possible to stop the fans temporarily while the curtain run at smaller curtain openings that stated here. |
| | Stop fans if tunnel inlet 1 - 2 below 0 % | |
| | Inlet 1 – 6 dead band 10 % | Side inlet dead band. |
| | Tunnel inlet 1 – 2 dead band 10 % | Tunnel inlet dead band. |

### 3.8.1.4 Winter Compensation

| Winter compensation | Display shows | | Function explanation |
|---|---|---|---|
|  | Winter comp. | OFF | The function can be connected and disconnected. |
| | Winter comp.<br>The menu is only visible when Winter comp. is ON. | 1.2 | The factor is multiplied by the values, which are entered under exhaustion in the adjustment of negative pressure. When the factor is set to 1.0, there is no winter compensation. |

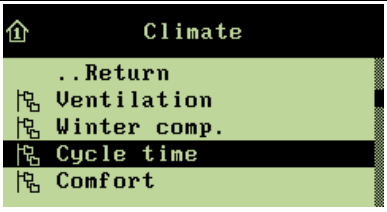
The winter compensation factor makes it possible to increase the negative pressure during cold periods and thus avoid a down draught in the house. The increase happens gradually from a warm to a cold period.

If, for example, you set the factor to 1.5, the computer increases the negative pressure by max. 50 % under winter conditions.

The increase of the negative pressure goes down gradually from zero to 35 % air output. From 35 to 100 % air output the winter compensation is inactive.

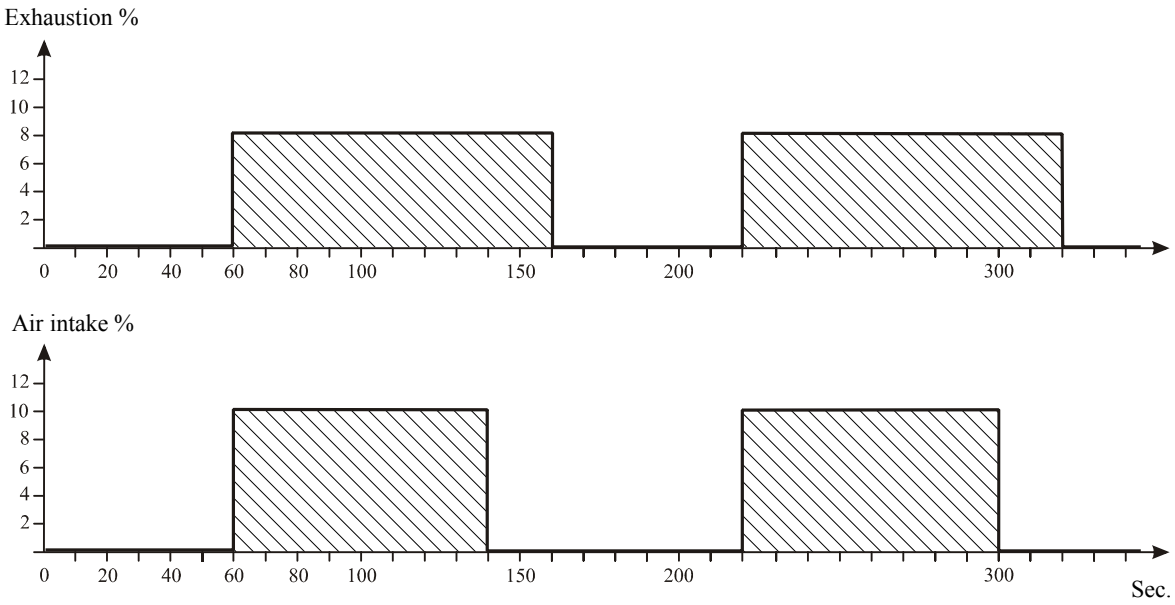
**The function should be used with caution**.

### 3.8.1.5 Cycle Time

| Cycle time | Display shows | | Function explanation |
|---|---|---|---|
|  | Stop intake modulation | 30 % | If the exhaustion requirement exceeds the value for **`Stop intake modulation`** the time modulation is stopped and the closest MultiStep-step runs constantly |
| | Air intake modulation | ON | Decides if air intake should be modulated at the same time<br>ON: Modulation on air intake<br>OFF: Air intake runs stepless |
| | Cycle time | 300 s | The total running time for steps, which modulate (ON + OFF time) or with **`Cycle Time`** |
| | Min. ON-/OFF time | 30 s | When a step is activated, it will be ON/OFF for at least this time. ON/OFF with **`Cycle Time`** |
| | Air inlet delay | | |
| | Air intake open delay | 0 s | Delay opening of air intake with **`Cycle Time`** |
| | Air intake close delay | - 10 s | Delay closing of air intake with **`Cycle Time`** |

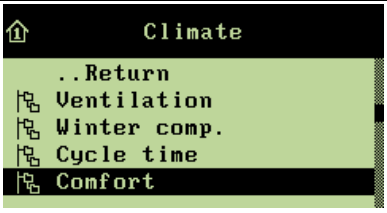
The objective of the Cycle Time function is to enable the control of air currents in the house at a very limited ventilation requirement. The function opens and closes the air inlets alternately thus sending a more powerful air current through the house. This ensures a thorough change of the house air.

***Example 2: Cycle time***



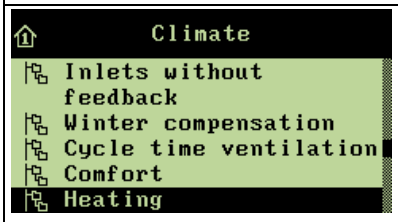

*When the ventilation requirement becomes higher than what the Cycle Time function can perform, the Viper controls the ventilation again in relation to inside temperature and air humidity.*

## 3.8.1.6 Comfort

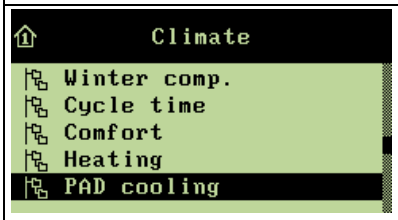
| Comfort | Display shows | | Function explanation |
|---|---|---|---|
|  | Start ventilation | 50 % | Ventilation degree at which comfort is activated |
| | Max. ventilation | 100 % | Ventilation degree at which maximum **Comfort temperature** is reached |



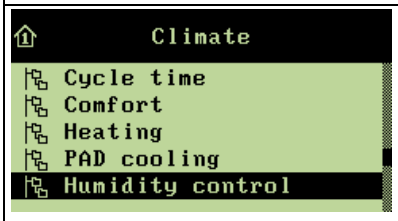
## 3.8.1.7 Heating

| Heating | Display shows | | Function explanation |
|---|---|---|---|
|  | **Heaters** | | |
| | Cycle time | 180 s | ON + OFF time of the heating relay |
| | Min. run time | 10 s | At heating requirement: The heating relay is ON for minimum this time. |
| | Min. OFF time | 6 s | When the heating relay is released, it is OFF for minimum this time. |
| | **Brooding heaters** | | |
| | Cycle time | 180 s | ON + OFF time of the heating relay |
| | Min. run time | 10 s | At heating requirement: The heating relay is ON for minimum this time. |
| | Min. OFF time | 6 s | When the heating relay is released, it is OFF for minimum this time. |

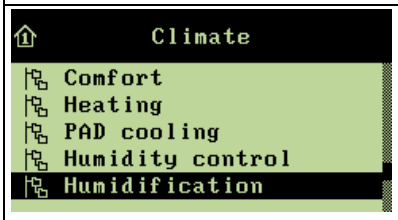
### 3.8.1.8 PAD Cooling

| PAD cooling | Display shows | | Function explanation |
|---|---|---|---|
|  | Cycle time | 10 min | ON- + OFF time of the cooling relay. |
| | Min. ON time | 60 s | At cooling requirement: The cooling relay is ON for minimum this time. |
| | Pre runtime | 0 s | Time from the cooling relay is picked up until cooling is physically added (flush time). |

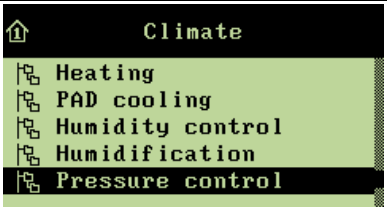
### 3.8.1.9 Humidity Control

| Humidity control | Display shows | | Function explanation |
|---|---|---|---|
|  | Max. humidity vent. | 35 % | Ventilation degree at which humidity ventilation is stopped |
| | Max. temperature reduc. | - 2.0 °C | Maximum reduction from **Temperature setpoint** when humidity ventilation is used |

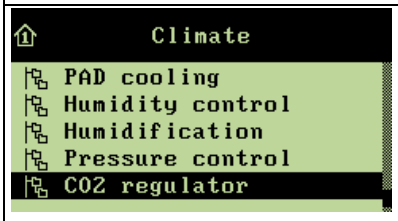
### 3.8.1.10 Humidification

| Humidification | Display shows | | Function explanation |
|---|---|---|---|
|  | Cycle time | 180 s | ON + OFF time of the humidification relay. |
| | Min. runtime | 10 s | The humidification relay is picked up for at least this time. |

### 3.8.1.11 Pressure Control

| Pressure control | Display shows | | Function explanation |
|---|---|---|---|
|  | Sample rate | 180 sek. | Sample rate indicates how often a new calculation is to be made. |
| | Acceptband | 2 Pa | When the pressure is within this range, the requirement is not changed, i.e. no new calculation is made. |
| | Delta demand | 2.5 | Requirement changes if the pressure is outside the acceptband. |

### 3.8.1.12 $CO_2$ Regulator

| $CO_2$ regulator | Display shows | | Function explanation |
|---|---|---|---|
|  | P-band | 50000 ppm | Working range for $CO_2$ regulator. |
| | Int. time | 30 min. | Integration time for $CO_2$ regulator. |

# 3.9 Adjustment of Negative Pressure and Stepless Units

| Service: | Menu items | Settings | | | |
|---|---|---|---|---|---|
| | **Adjust negative pressure** | Adjust LPV curve | Output | Side | Tunnel |
| | | | 0.0 | 0.0 | 0.0 |
| | | | 1.0 | 5.0 | 0.0 |
| | | | 8.0 | 10.0 | 0.0 |
| | | | 16.0 | 15.0 | 0.0 |
| | | | 20.0 | 27.0 | 0.0 |
| | | | 28.0 | 33.0 | 0.0 |
| | | | 50.0 | 50.0 | 0.0 |
| | | | 60.0 | 60.0 | 0.0 |
| | | | 90.0 | 90.0 | 0.0 |
| | | | 100.0 | 100.0 | 0.0 |
| | | Adjust tunnel curve | Speed | Side | Tunnel |
| | | | 0.6 | 0.0 | 20.0 |
| | | | 0.8 | 0.0 | 30.0 |
| | | | 1.0 | 0.0 | 40.0 |
| | | | 1.2 | 0.0 | 50.0 |
| | | | 1.4 | 0.0 | 60.0 |
| | | | 1.6 | 0.0 | 70.0 |
| | | | 1.8 | 0.0 | 80.0 |
| | | | 2.0 | 0.0 | 90.0 |
| | | | 2.3 | 0.0 | 100.0 |
| | | | 2.5 | 0.0 | 100.0 |
| | | Side pressure curve | Output | Press. | |
| | | | 0.0 | 0.0 | |
| | | | 1.0 | 25.0 | |
| | | | 8.0 | 35.0 | |
| | | | 16.0 | 30.0 | |
| | | | 20.0 | 25.0 | |
| | | | 28.0 | 25.0 | |
| | | | 50.0 | 20.0 | |
| | | | 60.0 | 20.0 | |
| | | | 90.0 | 20.0 | |
| | | | 100.0 | 20.0 | |
| | | Tunnel pressure curve | Speed | Press. | |
| | | | 0.6 | 0.0 | |
| | | | 0.8 | 25.0 | |
| | | | 1.0 | 35.0 | |
| | | | 1.2 | 30.0 | |
| | | | 1.4 | 25.0 | |
| | | | 1.6 | 25.0 | |
| | | | 1.8 | 20.0 | |
| | | | 2.0 | 20.0 | |
| | | | 2.3 | 20.0 | |
| | | | 2.5 | 20.0 | |
| | | Adjust point | 0 - 10 | | |
| | | Minimum air inlet | 0 - 100 | | |
| | **Adjust stepless 1** | | Fan A | Capac. | Flap |
| | | | 0.0 | 0.0 | 0.0 |
| | | | 58.0 | 15.0 | 32.0 |
| | | | 58.0 | 25.0 | 41.0 |
| | | | 54.0 | 45.0 | 58.0 |
| | | | 55.0 | 55.0 | 66.0 |
| | | | 55.0 | 85.0 | 86.0 |
| | | | 100.0 | 90.0 | 85.0 |
| | | | 100.0 | 100.0 | 100.0 |
| | **Adjust stepless 2** | | Fan B | Capac. | Flap |
| | | | 0.0 | 0.0 | 0.0 |
| | | | 58.0 | 15.0 | 32.0 |
| | | | 58.0 | 25.0 | 41.0 |
| | | | 54.0 | 45.0 | 58.0 |
| | | | 55.0 | 55.0 | 66.0 |
| | | | 55.0 | 85.0 | 86.0 |
| | | | 100.0 | 90.0 | 85.0 |
| | | | 100.0 | 100.0 | 100.0 |

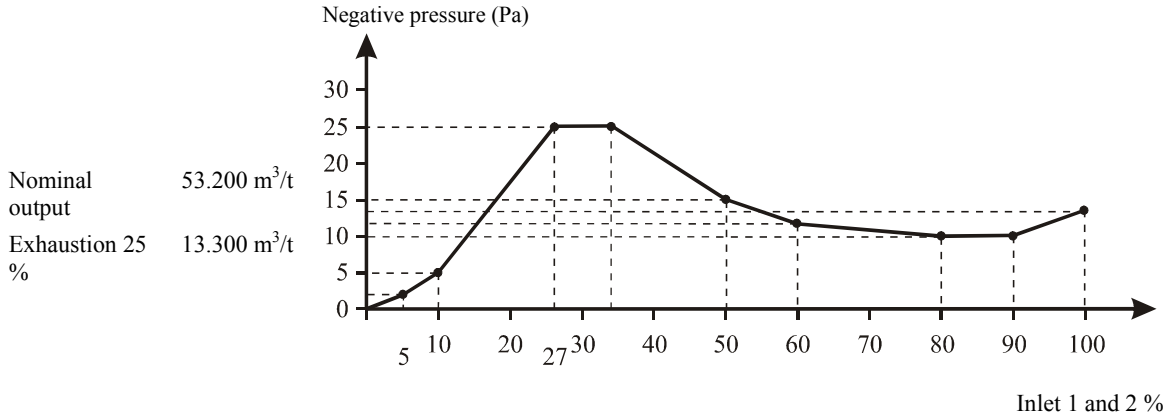
**Table 9: Survey of menus for adjustment of negative pressure and stepless units**

There are ten available curve points for adjustment of negative pressure.

To begin with you must select the curve point that you wish to set, and thereafter you must first set the flap opening of the air intake (air 1 and 2), which can be regulated from 0 to 100 %. Then you can set the required exhaustion as a percentage of the nominal output.

Thus, both exhaustion and air intake are adjustable at each curve point.

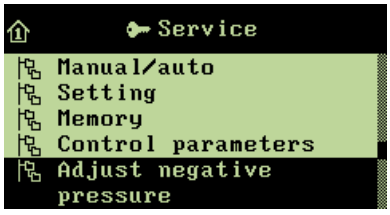
***Example 3: Adjustment of negative pressure 1: Inlet 1 and 2 (flap opening)***



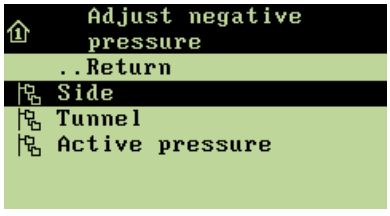

*Depending on the type of winch motor utilised this negative pressure curve will be ideal for a given system.*

When the Cycle Time function is used, it is the position of air intake 1, which is entered as minimum air intake.

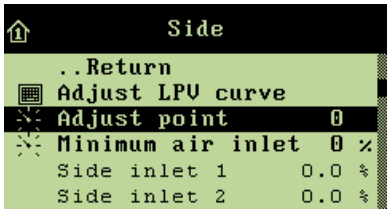
When you want to… adjust the negative pressure,
open the **Technical/Service** menu, and



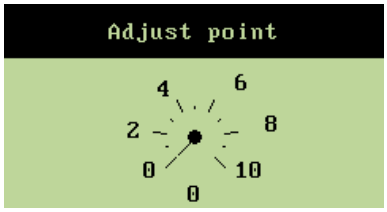

→ select **Adjust negative pressure**, and press




→ select **Side**, and press

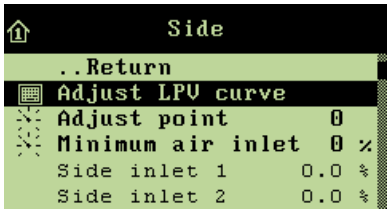



→ select **Adjust point**, and press

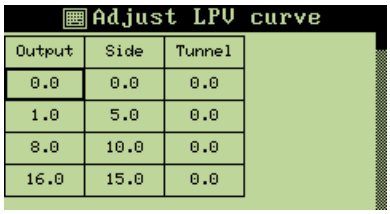



→ select the required curve point, and press

→ when **Yes** is highlighted, press to save the change

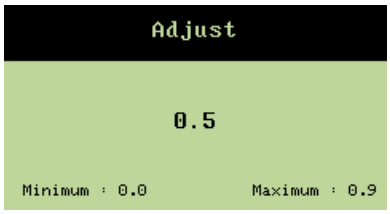



→ select **Adjust LPV curve**, and press




→ three vertical number series show you the curve values for **Output**, **Side** and **Tunnel**, respectively.

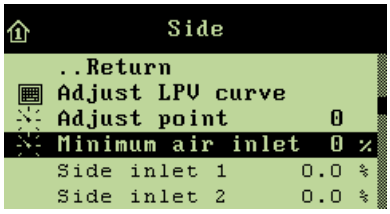
→ select the value that you want to change, and press



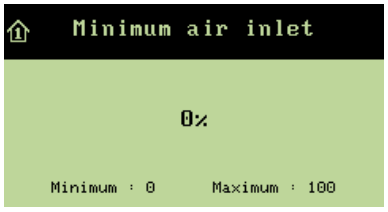

→ press to change the setting, and press to return

→ press to return to the **Adjust LPV curve** menu

Change the curve values for **tunnel**, **side pressure** and **tunnel pressure** in the same way.



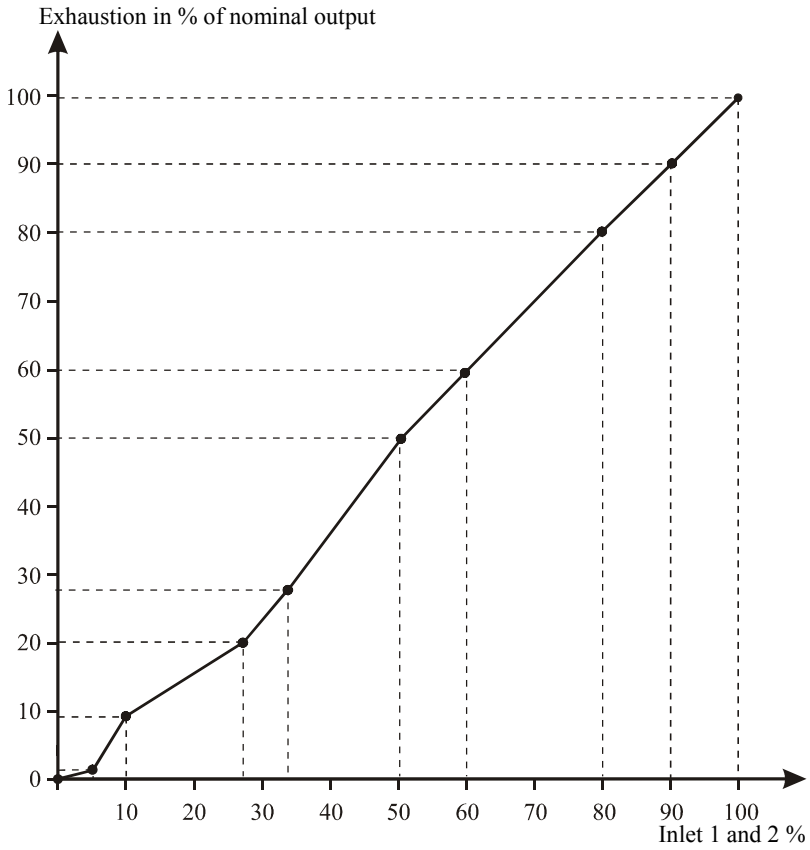

→ select **Minimum air inlet**, and press




→ set the required value

***Example 4: Adjustment of negative pressure 2: Air outlet***

| Exhaust. % | Inlet 1 | Inlet 2 |
|---|---|---|
| 0 | 0 | 0 |
| 4 | 5 | 5 |
| 8 | 10 | 10 |
| 20 | 27 | 27 |
| 28 | 33 | 33 |
| 50 | 50 | 50 |
| 60 | 60 | 60 |
| 80 | 80 | 80 |
| 90 | 90 | 90 |
| 100 | 100 | 100 |




*To obtain this negative pressure curve the relation between exhaustion and inlet 1 and 2 (flap opening of the air intake) could be as follows.*

When the Cycle Time function is used, it is the position of air intake 1, which is entered as minimum air intake.

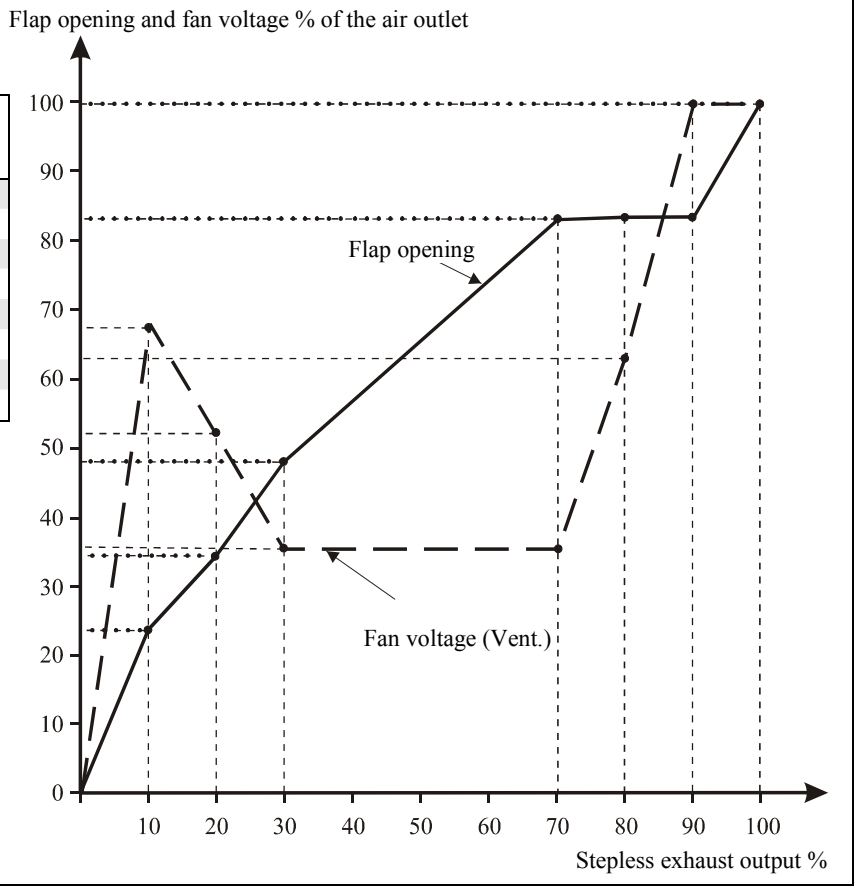
## 3.9.1 Adjustment of Stepless 1 and 2

The adjustment of the stepless units is important to make the computer ascertain the correct relation, and thus the correct ventilation output between the fan voltage and flap opening of the air outlet. This is also important to maintain the pressure stability.

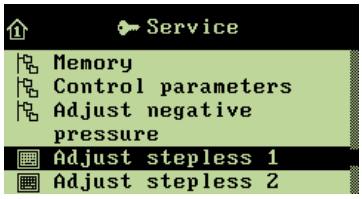
***Example 5: Adjustment of stepless unit***

| Fan voltage % (*) | Stepless output % | Flap opening % (*) |
|---|---|---|
| 0 | 0 | 0 |
| 68 | 10 | 23 |
| 52 | 20 | 34 |
| 36 | 30 | 48 |
| 36 | 70 | 83 |
| 62 | 80 | 84 |
| 100 | 90 | 84 |
| 100 | 100 | 100 |

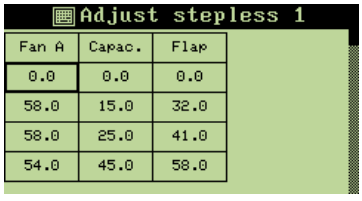
(*) This information may be obtained from the fan manufacturer. You can also measure it




When you want to… adjust the exhaust output of the stepless units,
open the **Technical/Service** menu, and

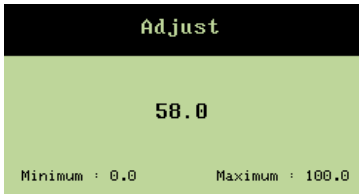



→ select **Adjust stepless 1**, and press




→ three vertical number series show you the curve values for **Fan A**, **Capac.**, **Flap,** respectively

→ select the curve point that you want to change, and press




→ change the setting, and press to return

→ press to return to the **Adjust stepless 1** menu

# 4 TROUBLE SHOOTING INSTRUCTIONS

1) Is there 230 V current on terminals A1+ A3 (if not, check installation fuses and fault current relay)
2) Is the change-over switch of the fan speed controller MAN/AUT set on AUT?
3) Is the computer set to automatic control?
4) Are the temperature sensors OK?
5) Is the motor relay/switch of the fan OK?
6) Is the source of heating and its supply OK?
7) Is the winch motor and its change-over switches OK?
8) Is the electrical connection of the winch motors correct? See the electrical diagrams; please pay extra attention to the supply voltage via the relays
9) Is the potentiometer of the winch motor adjusted?
10) Is the computer installed correctly?

## 4.1 Temperature Sensor Control Table

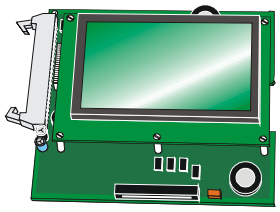
| Temp. | | DOL 12 | Volt |
|---|---|---|---|
| °C | °F | kOhm | V |
| - 10 | 14,0 | 44,02 | 7,12 |
| - 9 | 15,8 | 42,80 | 7,06 |
| - 8 | 17,6 | 41,61 | 7,00 |
| - 7 | 19,4 | 40,43 | 6,94 |
| - 6 | 21,2 | 39,28 | 6,88 |
| - 5 | 23,0 | 38,15 | 6,82 |
| -4 | 24,8 | 37,05 | 6,75 |
| - 3 | 26,6 | 35,96 | 6,69 |
| - 2 | 28,4 | 34,91 | 6,62 |
| - 1 | 30,2 | 33,87 | 6,56 |
| 0 | 32,0 | 32,86 | 6,49 |
| 1 | 33,8 | 31,88 | 6,42 |
| 2 | 35,6 | 30,92 | 6,35 |
| 3 | 37,4 | 29,99 | 6,28 |
| 4 | 39,2 | 29,08 | 6,20 |
| 5 | 41,0 | 28,20 | 6,13 |
| 6 | 42,8 | 27,34 | 6,06 |

| Temp. | | DOL 12 | Volt |
|---|---|---|---|
| °C | °F | kOhm | V |
| 7 | 44,6 | 26,51 | 5,98 |
| 8 | 46,4 | 25,70 | 5,91 |
| 9 | 48,2 | 24,91 | 5,83 |
| 10 | 50,0 | 24,15 | 5,76 |
| 11 | 51,8 | 23,42 | 5,68 |
| 12 | 53,6 | 22,70 | 5,61 |
| 13 | 55,4 | 22,01 | 5,53 |
| 14 | 57,2 | 21,35 | 5,45 |
| 15 | 59,0 | 20,70 | 5,38 |
| 16 | 60,8 | 20,08 | 5,30 |
| 17 | 62,6 | 19,47 | 5,22 |
| 18 | 64,4 | 18,89 | 5,15 |
| 19 | 66,2 | 18,33 | 5,07 |
| 20 | 68,0 | 17,78 | 5,00 |
| 21 | 69,8 | 17,26 | 4,92 |
| 22 | 71,6 | 16,75 | 4,85 |
| 23 | 73,4 | 16,26 | 4,77 |

| Temp. | | DOL 12 | Volt |
|---|---|---|---|
| °C | °F | kOhm | V |
| 24 | 75,2 | 15,79 | 4,70 |
| 25 | 77,0 | 15,34 | 4,63 |
| 26 | 78,8 | 14,90 | 4,56 |
| 27 | 80,6 | 14,48 | 4,49 |
| 28 | 82,4 | 14,07 | 4,41 |
| 29 | 84,2 | 13,68 | 4,35 |
| 30 | 86,0 | 13,30 | 4,28 |
| 31 | 87,8 | 12,94 | 4,21 |
| 32 | 89,6 | 12,58 | 4,14 |
| 33 | 91,4 | 12,25 | 4,08 |
| 34 | 93,2 | 11,92 | 4,01 |
| 35 | 95,0 | 11,61 | 3,95 |
| 36 | 96,8 | 11,31 | 3,88 |
| 37 | 98,6 | 11,01 | 3,82 |
| 38 | 100,4 | 10,73 | 3,76 |
| 39 | 102,2 | 10,46 | 3,70 |
| 40 | 104,0 | 10,21 | 3,64 |

# 5 SPARE PARTS

## Viper Climate/Production Computer



**134936 Viper CPU module incl. display**

BD no. 61-00-0219

Spare part for alle Viper models.

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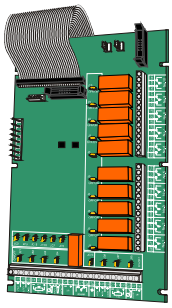

**134933 Basic module 10RL MK2**

BD no. 60-43-4901

Spare part for:

135622 Viper 2330 EN
135623 Viper 1520 EN
135635 Viper 2330 flex EN
135636 Viper 1520 flex EN

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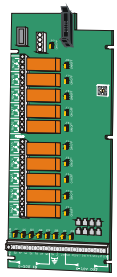

**134714 I/O module 10RL 8AI 8AO, type 3**

Spare part for:

135622 Viper 2330 EN
135623 Viper 1520 EN
135635 Viper 2330 flex EN
135636 Viper 1520 flex EN

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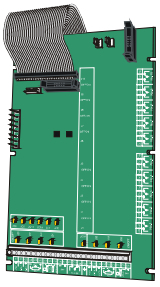

**134943 Basic module 0RL MK2**

BD no. 61-00-0213

Spare part for:

135629 Viper 2300 EN
135630 Viper 1500 EN
135633 Viper 2300 flex EN
135634 Viper 1500 flex EN

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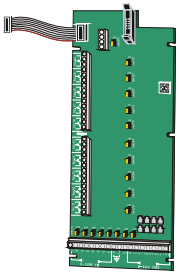

**135701 I/O module 0RL 8AI 8AO, type 4**

BD no. 61-00-0212

Spare part for:

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135630 Viper 1500 EN
135633 Viper 2300 flex EN
135634 Viper 1500 flex EN

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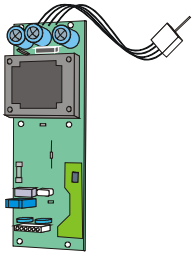
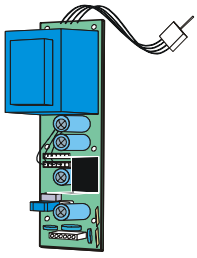
## Viper Climate/Production Computer



**134701 DOL 234 power supply 24 V 1A**

Spare part for:

135623 Viper 1520 EN
135636 Viper 1520 flex EN



**135703 DOL 339 power supply 24 V 3A**

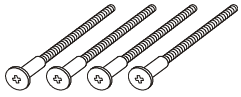
BD no. 61-00-0210

Spare part for:

135622 Viper 2330 EN
135629 Viper 2300 EN
135630 Viper 1500 EN
135633 Viper 2300 flex EN
135634 Viper 1500 flex EN
135635 Viper 2330 flex EN

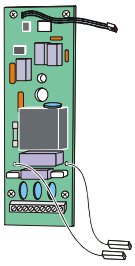
**347330 Keyboard foil ViperCompu 264x330mm**

Spare part for all Viper models.



**134729 4 screws f. top part - front**

Spare part for all Viper models.



**134702 DOL 234/339 speed controller 6.8A**

Spare part for:

135622 Viper 2330 EN
135623 Viper 1520 EN

**280008 Fuse 5x20 mm. T8A**

BD no. 60-42-0008

Spare part for all Viper models.

## Viper Climate/Production Computer

**132233 Euro Matic data net module**

BD no. 60-40-2233

Spare part for all Viper models.

**313035 Flat cable 5cm 10p Gold DOL 440 switch-sw**

Spare part for:

135623 Viper 1520 EN

**313037 Flat cable 49.5cm 10p Viper switch**

Spare part for:

135622 Viper 2330 EN

135623 Viper 1520 EN

**313038 Flat cable 69.5cm 10p DOL 440 switch**

Spare part for:

135622 Viper 2330 EN

# 6 TECHNICAL DATA

| Technical Data Viper | |
|---|---|
| **Electric** | |
| Supply voltage | 115 V*, 200 V* and 230 V/240 V AC +/- 10 % (*not fan speed controller) |
| Supply frequency | 50/60 Hz |
| Max. power consumption | 75 VA |
| Inputs | 4 analog in, 0-10 V DC. Input impedance 2.2 MOhm |
| | 1 inside temperature sensor DOL 12 (-10 °C to +40 °C) |
| | 1 outside temperature sensor DOL 12 (-10 °C to +40 °C) |
| Outputs | 2 sensor supplies 15 V DC +/- 10 % max. 40 mA |
| | 1 analog out, 0-10 V DC. Output impedance 1.5 KOhm |
| | 1 supply for winch motor potentiometer 10 V DC, max. 40 mA |
| | 1 motor supply 24 V DC +/- 20 %. Max. 0.4 A in all |
| | 10 relays NO/NC potential free max. 250 V AC, 5 A resistive load |
| Output | 1 alarm relay NC, max. 24 V 2 A. Min. 12 V 10 mA |
| **Auxiliary modules/extra options** | |
| Viper I/O module (type 3) (8In/8Out) | 8 analog in, 0-10 V DC. Input impedance 2.2 MOhm |
| | 8 analog out, 0-10 V DC. Output impedance 1.5 KOhm |
| | 10 relays NO/NC potential free max. 250 V AC 5 A resistive load |
| | 1 motor supply 24 V DC +/- 20 %, 0.4 A |
| Hi-power relay modules (output) | 10 relays NO potential free max. 250 V AC 30 A resistive load |
| Override switch module (input) | 10 ON-OFF-AUTO mechanic override switches |
| (output) | 10 ON-lamps |
| Adjustment | 230 V winch motor blocking ON/OFF |
| Lo-power relay modules 24 V/230 V motor | 5 A (resistive load) |
| Adjustment | Emergency opening ON/OFF |
| Weighing module | 2 and 4 input silo load cells |
| Fan speed controller (output) | Motor load, max. 6.8 A 230-240 V AC/min. 150 W |
| **Mechanic** | |
| Cable knock-out punches | 30 for metric cable flange M25 ×1.5 (Note: PG 16 does not fit!) |
| **Environment** | |
| Ambient temperature, operation | -10 to +45 °C (+14 to 140 °F) |
| Ambient temperature, storage | -25 to +60 °C (-13 to +140 °F) |
| Ambient humidity, operation | 0-80 % RH |
| Density class | Splashproof IP 54 |
| **Shipping** | |
| Dimensions Viper | H x W x D: 381 x 568 x 170 mm |
| Dimensions Viper crated | H x W x D: 421 x 608 x 230 mm |
| Shipment weight Viper | 8.8 kg |

# 7 INDEX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BIG DUTCHMAN International GmbH • Calveslage • Auf der Lage 2 • 49377 Vechta
Tel. 04447/801-0 • Fax 04447/801-237