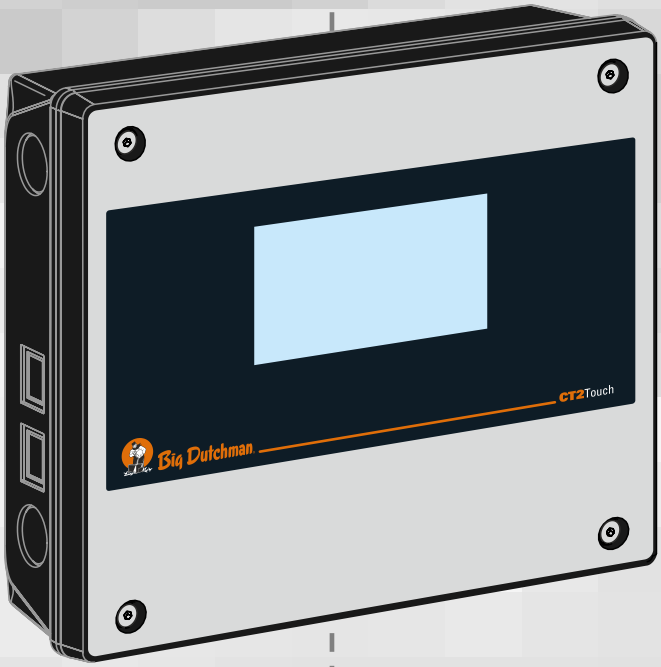
CT2 Touch

Climate Computer

Circuit Diagrams and Cable Plans



Code no. 99-97-5110 GB
Edition: 09/2014

Big Dutchman

Program Version

The product described in this manual contains software. This manual corresponds to:

- Software version 2.0
- It was released in 2014.

Product and Documentation Changes

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

Latest date of change appears from the back page.

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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 essential to install a separate, independent alarm system, which monitors the house concurrently with the house computer. According to EU directive 98/58/EEC, an alarm system must be installed in any house that is mechanically ventilated.

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

In case of maloperation or improper use, ventilation systems can result in production loss or cause loss of lives among animals.Big Dutchman. recommend that ventilation systems 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 terms and conditions of sale and delivery..

INTRODUCTION

This document contains a collection of examples of cable plans and circuit diagrams to be used for the installation of a CT2 Touch. The document may contain sections that are irrelevant to the house in question.

MOUNTING GUIDE

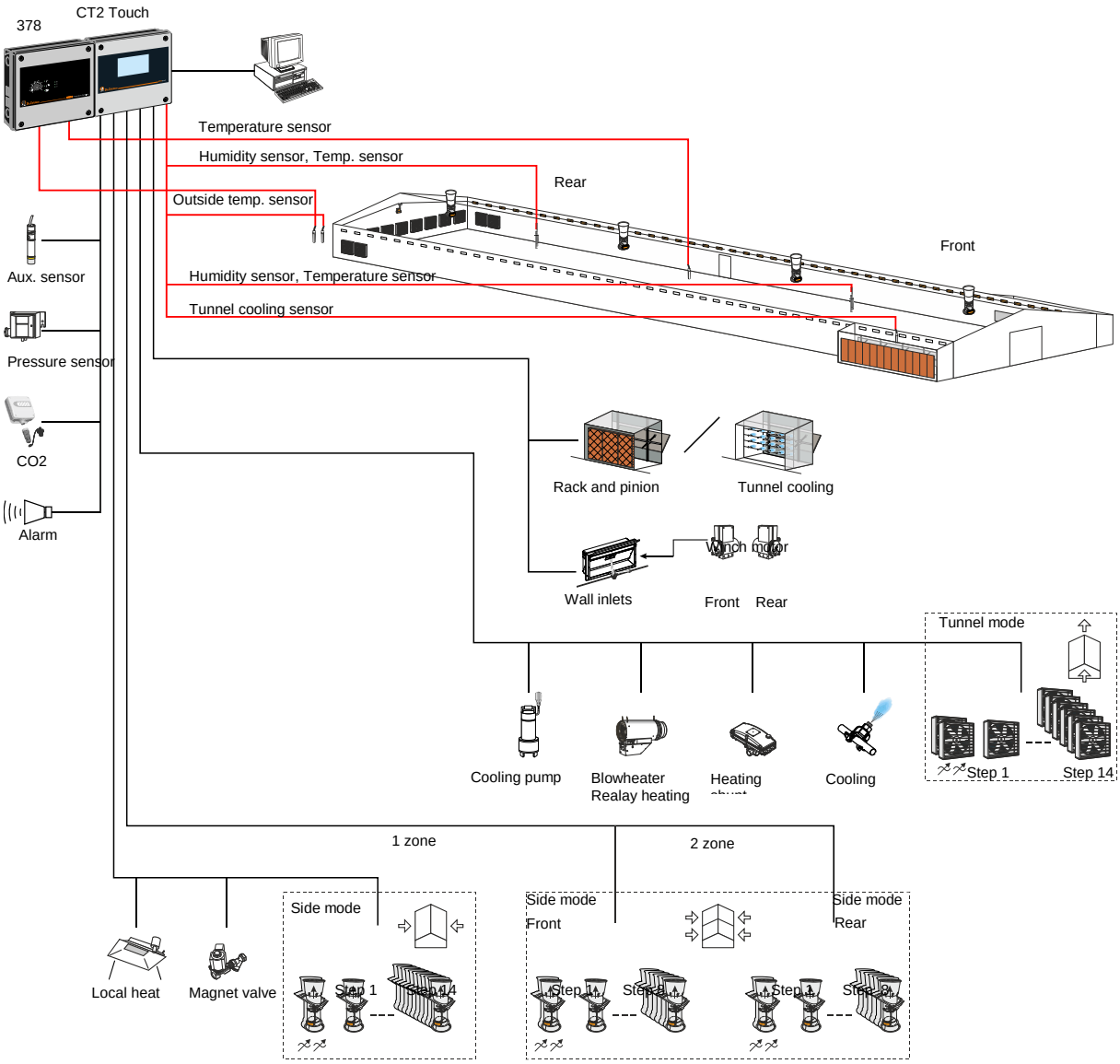


Figure 1:Outline of connections CT2 Touch Combi-Tunnel

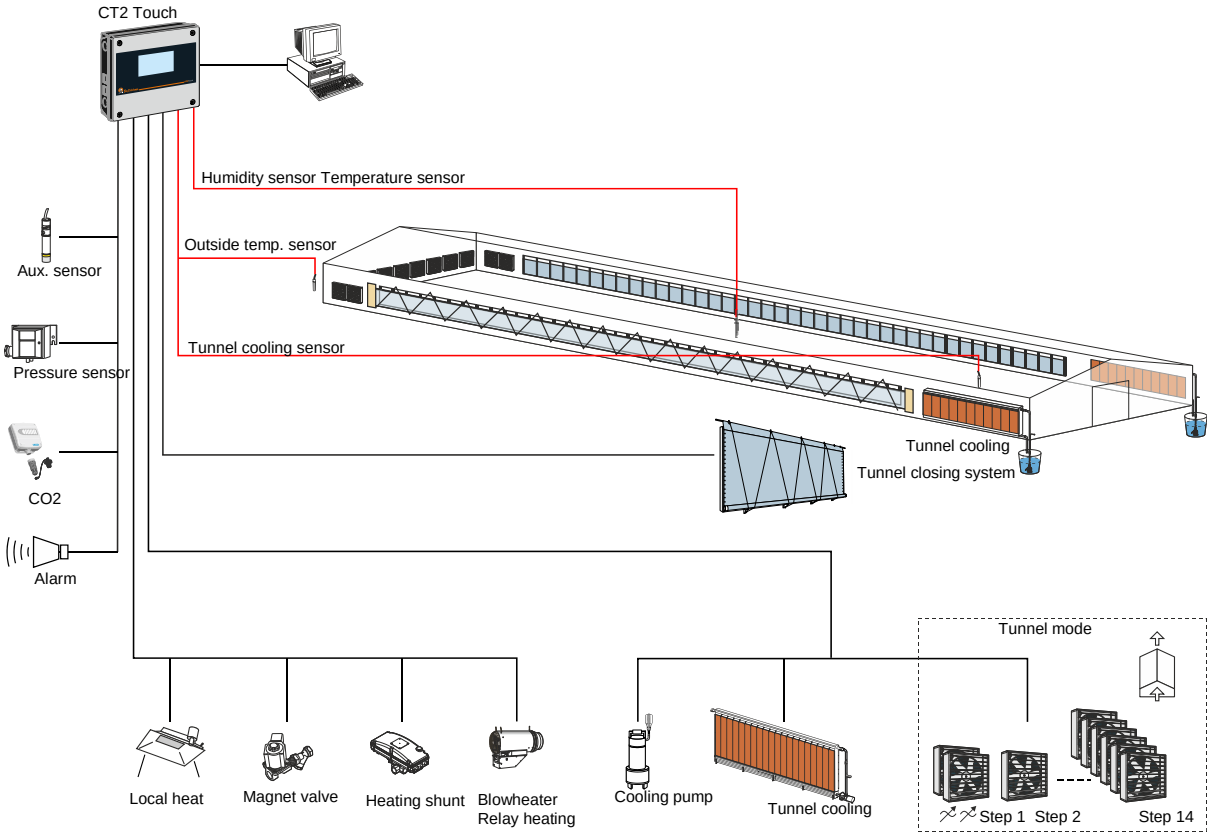


Figure 2: Outline of connections CT2 Touch Tunnel

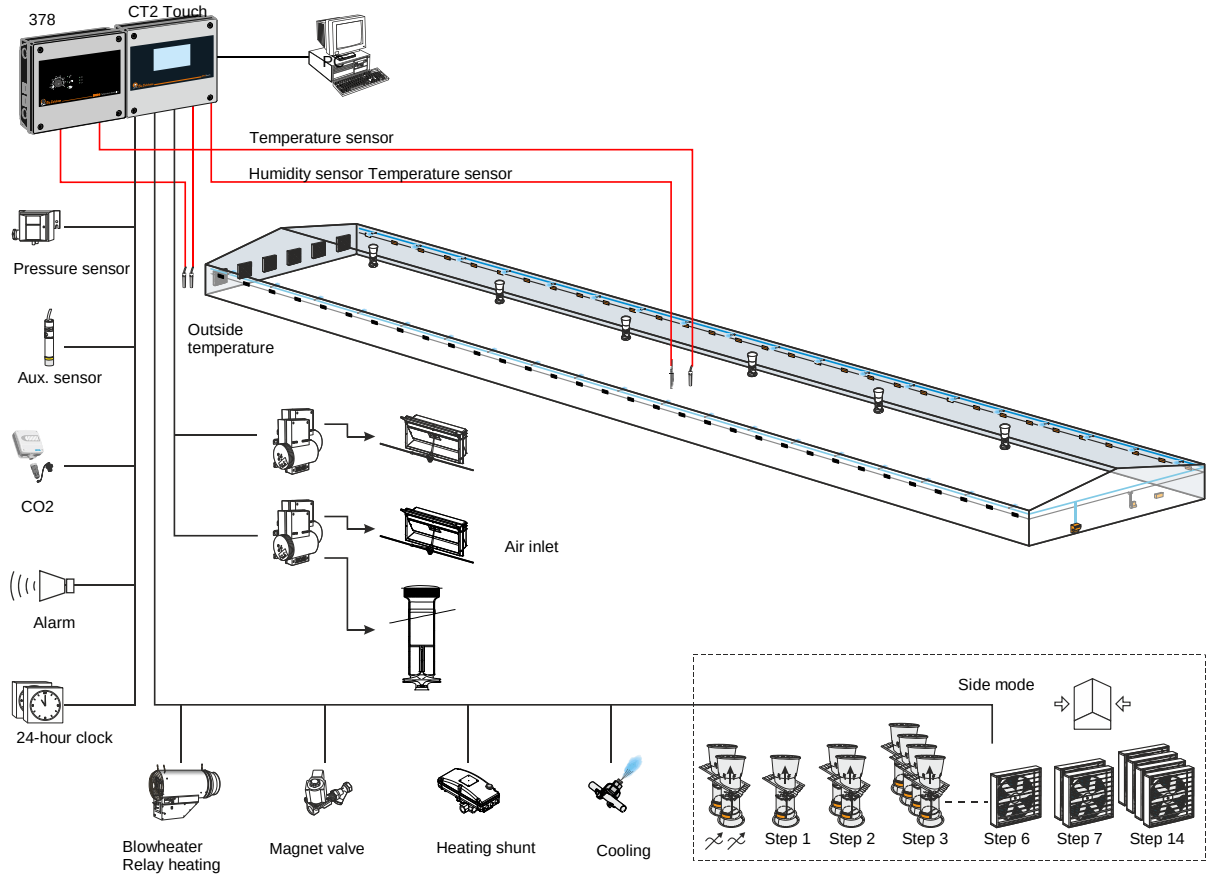


Figure 3: Outline of connections CT2 Touch LPV

1 Mounting of CT2 Touch together with 378

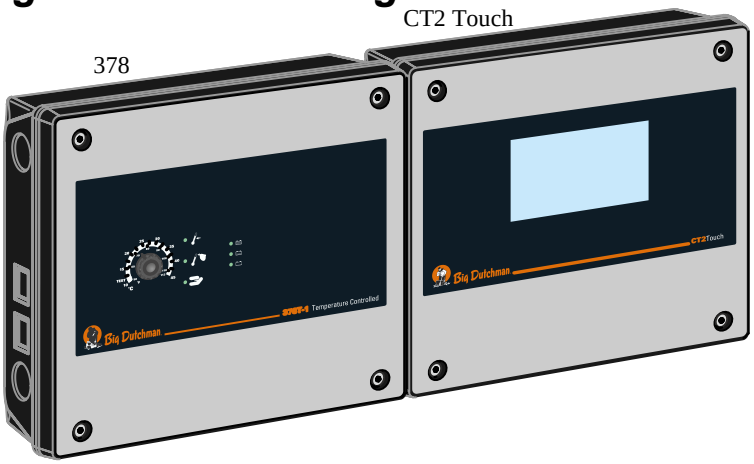


Figure 4: Mounting of CT2 Touch together with 378

2 Mounting of CT2 Touch

1) Place the computer with the display (**A**) at eye level for the daily user.
2) Remember free space around the cabinet:
   - 43 cm (16.9”) (**B**) so that the front panel can be placed on top of the cabinet base during service.
   - 10 cm (3.9”) (**C**) below the cabinet base for air cooling.
   - 10 cm (3.9”) (**D**) on the right side for operation of the AUT/MAN (Auto/Manual) change-over switches.

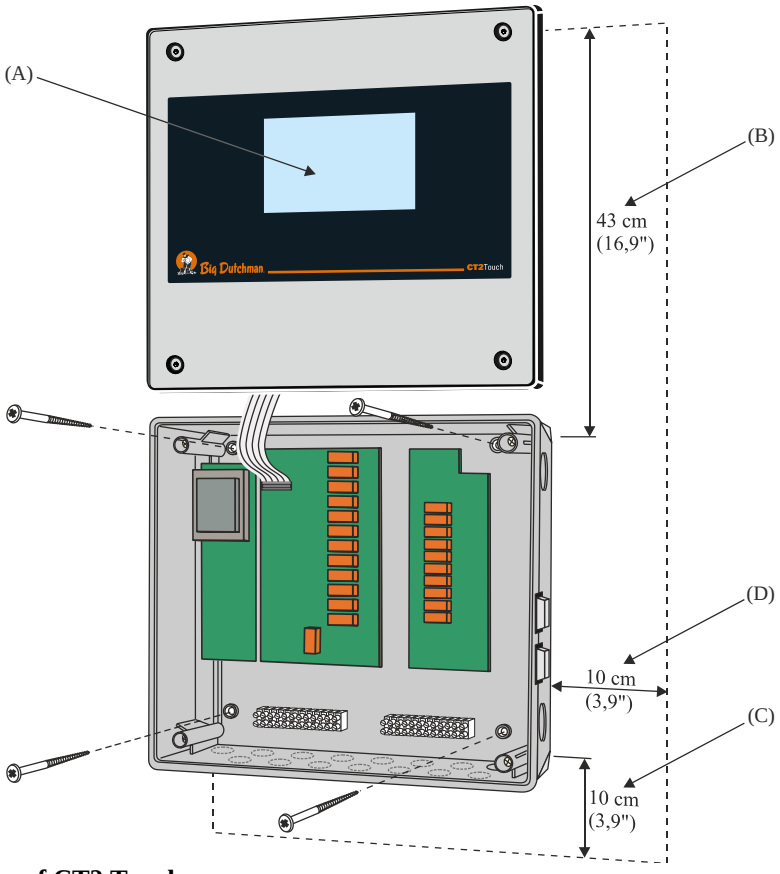


Figure 5: Mounting of CT2 Touch

3 Mounting of Auxiliary Contactor

Do not place the contactors in the climate computer. The contactors cause electrical disturbance which can make the computer reset/restart.

Place the contactors in an external box next to the climate computer.

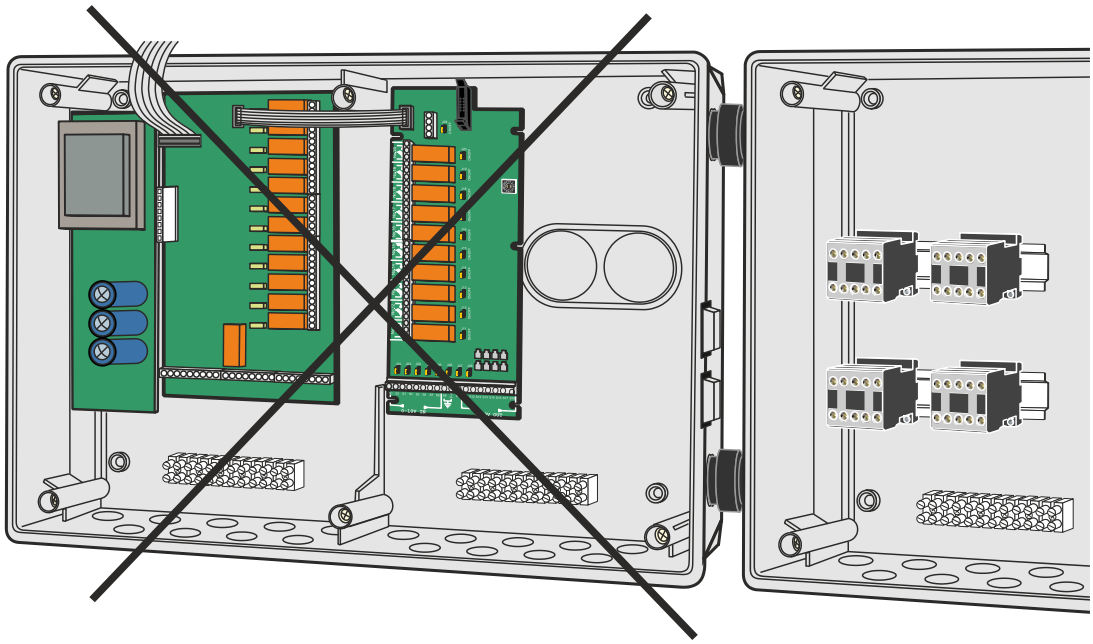


Figure 6:Mounting of auxiliary contactor

Do <u>not</u> place contactors in the climate computer as this causes electrical disturbance which will make the computer reset/restart.

4 Mounting of Emergency Opening

See *Technical Manual* regarding the emergency opening.

5 Mounting of Climate Sensors

- Never use a plug on the DOL 12 temperature sensor as a bad connection here could have disastrous results.
- Always use reinforced house wiring cable, minimum 1 mm^2, to avoid rodent attack.
- Never use shrink-on sleeves when splicing wires inside the livestock house. Use a contact box.

Placement of sensors inside the house

- Place the sensor in the centre of the house. the house).
- One metre above the animals (ensuring the animals cannot reach the sensors).
- Remember that temperature, humidity, alarm and emergency sensor should be placed together if possible use house board for sensors..

The sensor is not to be placed	Reason
Above penning equipment.	The animals may be able to reach them.
At feed dispenser/feed trough/transponder station.	Heat and humidity will rise to the position of the sensors.
Near covering.	Heat from the covered area will rise to the position of the sensors.
Near spraying system.	Water and humidity will affect the sensors.
Near cooling system.	Water and humidity will affect the sensors.
In a draughty area. The sensor is not to be directly affected by the air intake.	Measures the wrong temperature in the house.
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.	Measures a too high temperature. Too much ventilation.
Above electric heater in the section.	The heat rises to the position of the sensors.
Above or in a position where it in some way will be affected by the heating system/heating pipes.	The heat rises to the position of the sensors.

Placement of sensors outside the house

- 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.

INSTALLATION GUIDE

6 Electric Connection

The installation, service and troubleshooting in connection with electrical equipment must be carried out by specialists in accordance with applicable national rules - in Europe in accordance with EN 60204-1 and other applicable EU rules

The installation of a supply isolator is required for each motor and power supply, so maintenance of electrical equipment can be carried out in a dead environment. Supply isolator is not supplied by Big Dutchman.

In case of doubt, please contact Big Dutchman Service or your dealer.

6.1 Connecting Cables

Connect cables according to the three basic wiring diagrams which correspond to the emergency opening of the system.

6.2 Setting of Mains Voltage

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

CT2 Touch can be installed with one of these two power supplies.

- 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

- 200-230 V Leave the plug in (factory setting)
- 100-115 V Move the plug to 100-115 V

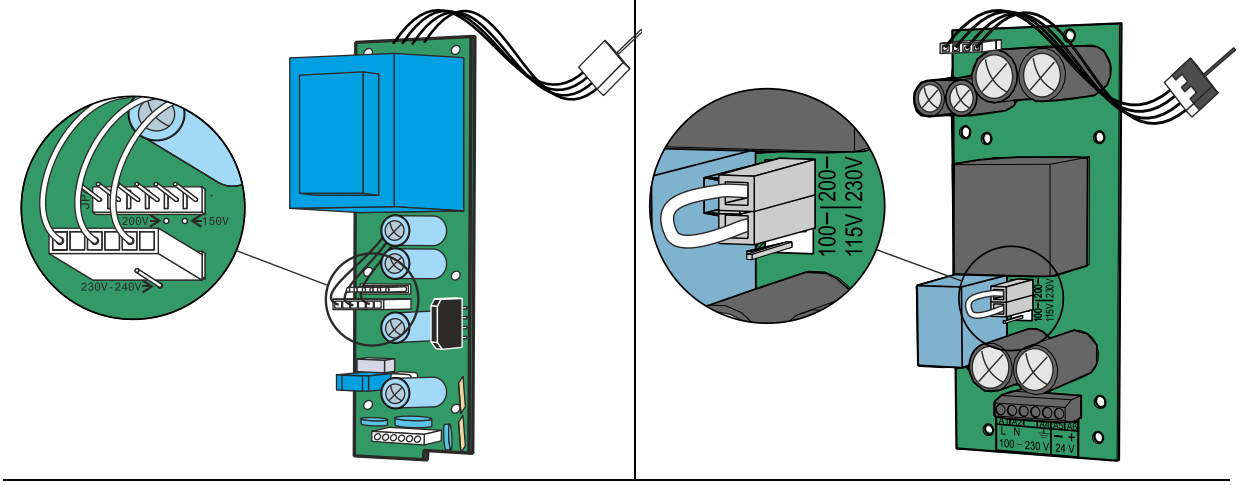


Figure 7: Power supply: Setting of mains voltage

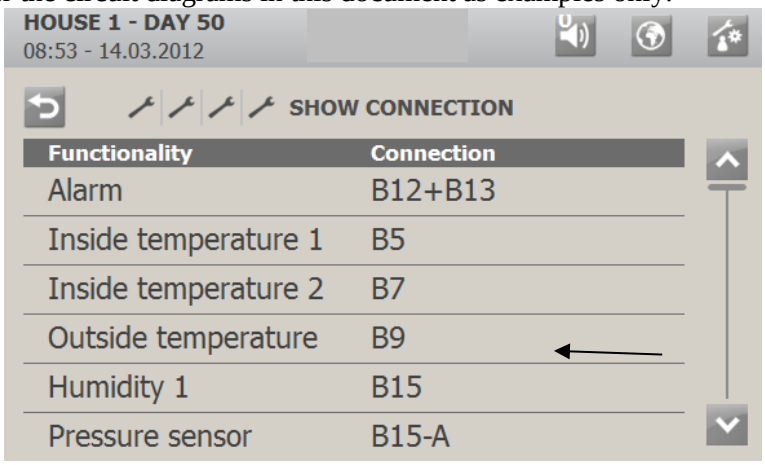
NB Fan speed controller modules can only operate at 230 V.

Connect the mains voltage. After a few minutes, the computer is ready to be set

7 Connection through Installation Menu of the House Computer

The connection terminals in the CT2 Touch computer are universal, allowing different components to be connected to the individual terminals.

Therefore, consider the circuit diagrams in this document as examples only.



The CT2 Touch computer's installation menu (**`Setup`**/**`Installation`**) shows precisely the terminals to which components should be connected.

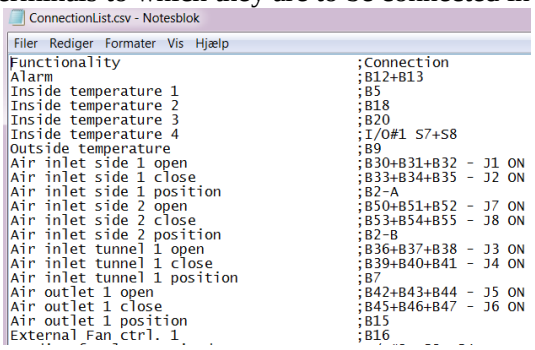
Note Ground terminal/minus terminal clamp for sensor and feedback is not displayed

When wiring diagrams say "See connection in CT2 Touch menu: **`Technical/Setup/Climate/Show connection`**", they refer to the computer indications. See also *Technical Manual*.

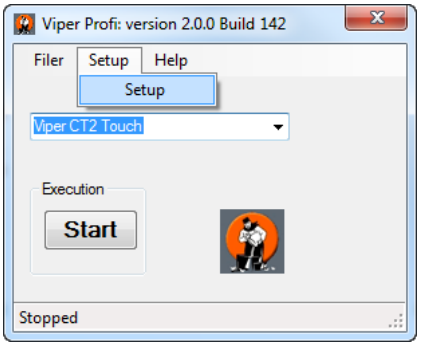
7.1 Printing the Installation Setup via the PC Simulator

The software for the CT2 Touch house computer is also available as a simulator variant for installation on a PC.

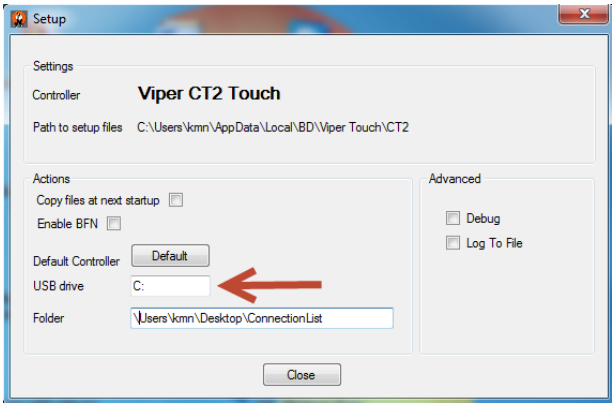
Having set up the installation menu using the PC simulator, the setup can be saved as a semicolon delimited file on the PC. The file thus contains a list of the installed components and the connection terminals to which they are to be connected in the house computer.

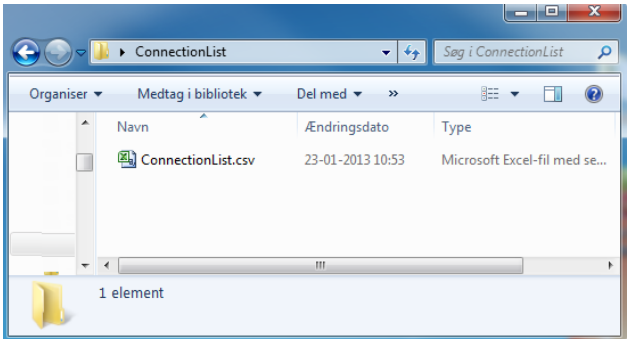


The file can be opened using MS Excel or a text editor and be printed in the usual way.



Open the PC simulator and select the **`Setup`** menu.





Choose where to file the setup file.

`USB drive:`
Corresponds to the house computer's filing of e.g. log files and setup files on a USB flash drive.

Can be set in the PC simulator to save on a USB flash drive or locally on the PC.

`Folder:`
You can also choose to save the file in a folder.

Save the file using the name: **`ConnectionList.csv`**.

Each time the user enters the **`Technical/Setup/Show connections`** menu, the PC sim saves a version of the current setup on the file. If the file already exists, it will be overwritten.

8 General Information about Wiring Diagrams

Symbols are in accordance with the IEC/EN 60617 standard.

The classification of the symbols ("letter codes") on the symbols is in accordance with the IEC/EN 81346-2 standard

Reference designations are in accordance with IEC/EN 81346-1:2001structuring principles and reference designations. This standard indicates structured methods for naming electrotechnical systems.

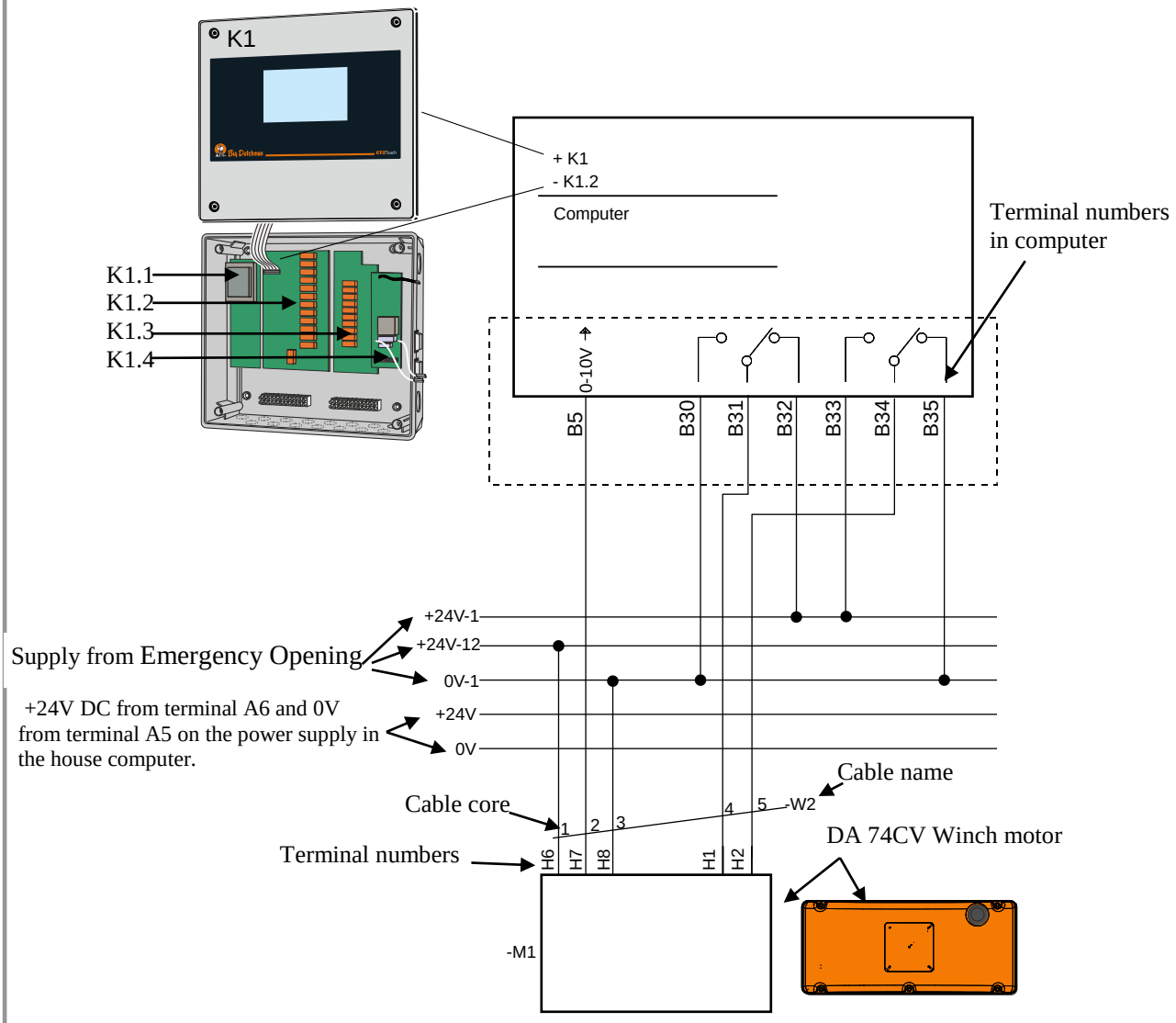
8.1 Colour Code

Colour code on the wires in appliance with the IEC 60757 standard: Alphabetic codes for identification of colours used on drawings, diagrams, marking, etc.:

Letter code	Colour
BK	Black
BN	Brown
RD	Red
OG	Orange
YE	Yellow
GN	Green
BU	Blue (incl. light blue)
VT	Violet (purple red)
GY	Grey (slate)
WH	White
PK	Pink
GD	Gold
TQ	Turquoise
SR	Silver
GNYE	Green-and-yellow

8.2 Example of connection

Example: Connection of a CL 74CV winch motor to house computer K1.



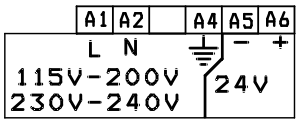
Supply from emergency opening 0V-1 = Q1 terminal in Computer

Supply from emergency opening 24V-1 = Q2, Q3, Q4 and Q5 terminal in Computer

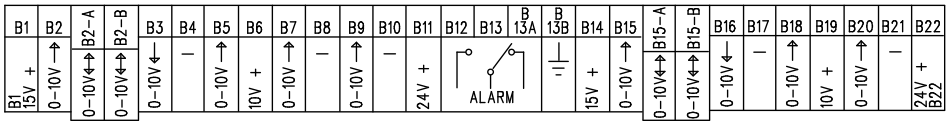
Supply from emergency opening 24V-12 = F6 terminal in emergency opening.

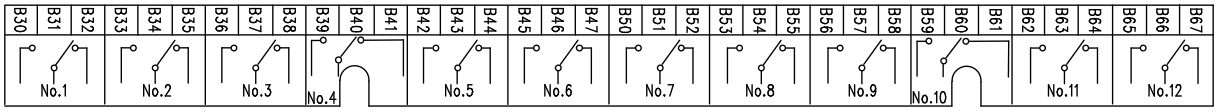
9 Outline of connection terminals

9.1 Power supply (K1.1)



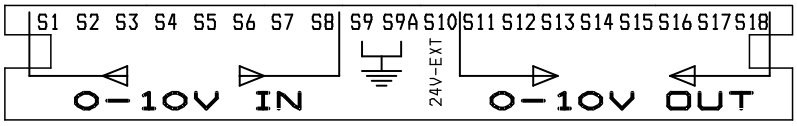
9.2 Main module (K1.2)

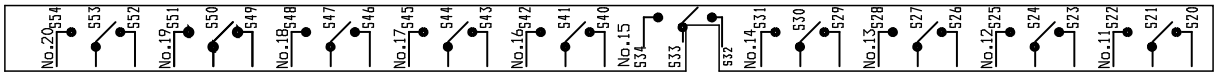




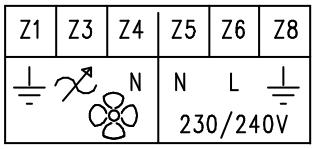
9.3 I/O module (K1.3)

Type 3/15





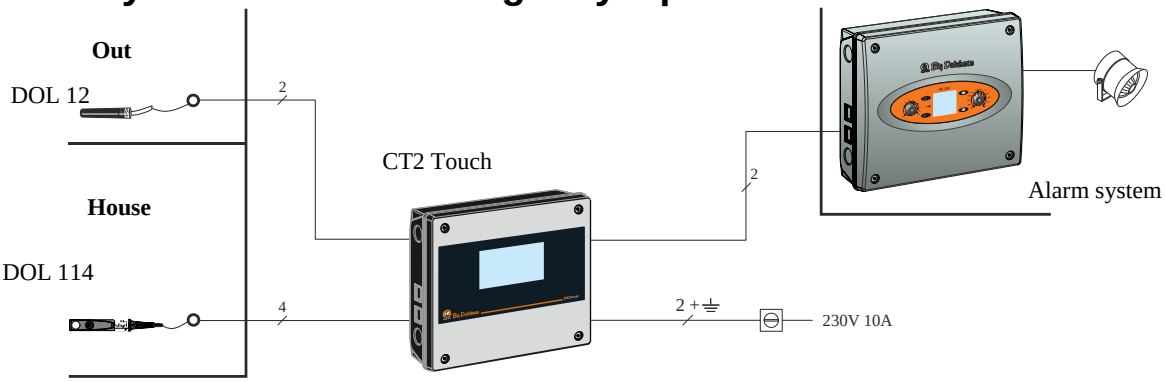
9.4 Triac module (K1.4)



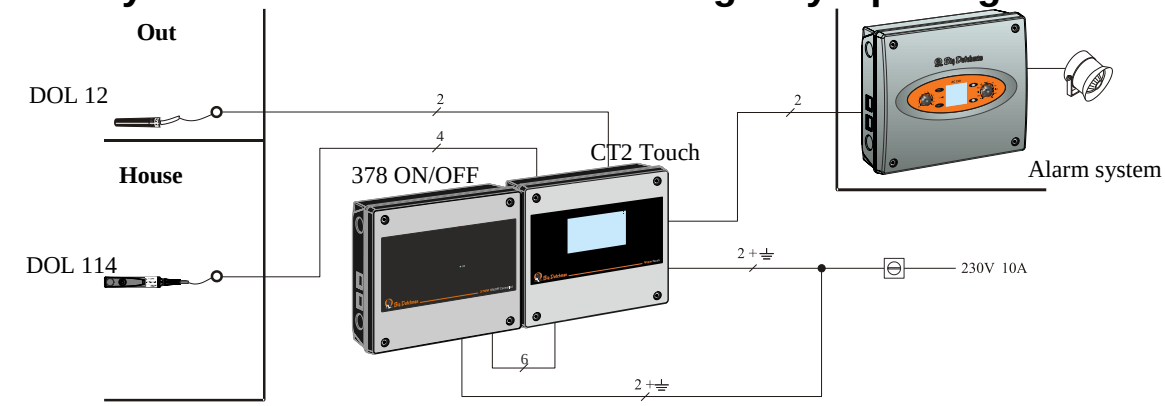
10 BASIC CABLE PLANS

1) Choose the basic cable plan of three options, which is suited for the emergency opening of the system.
2) Choose cables for the remaining components based on the other circuit diagrams.

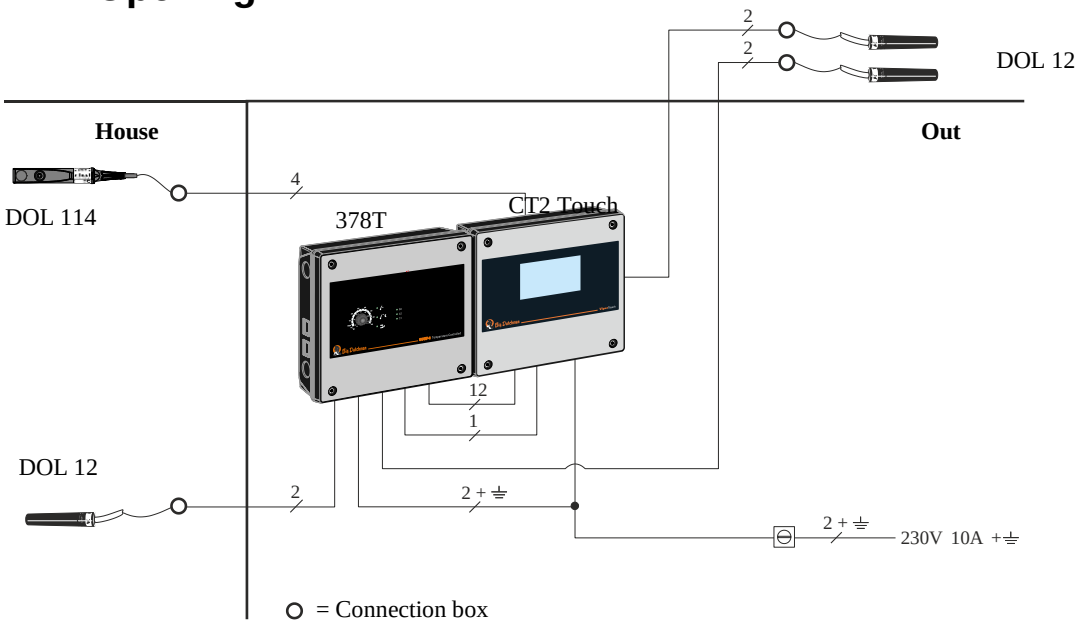
10.1 System without Emergency Openin



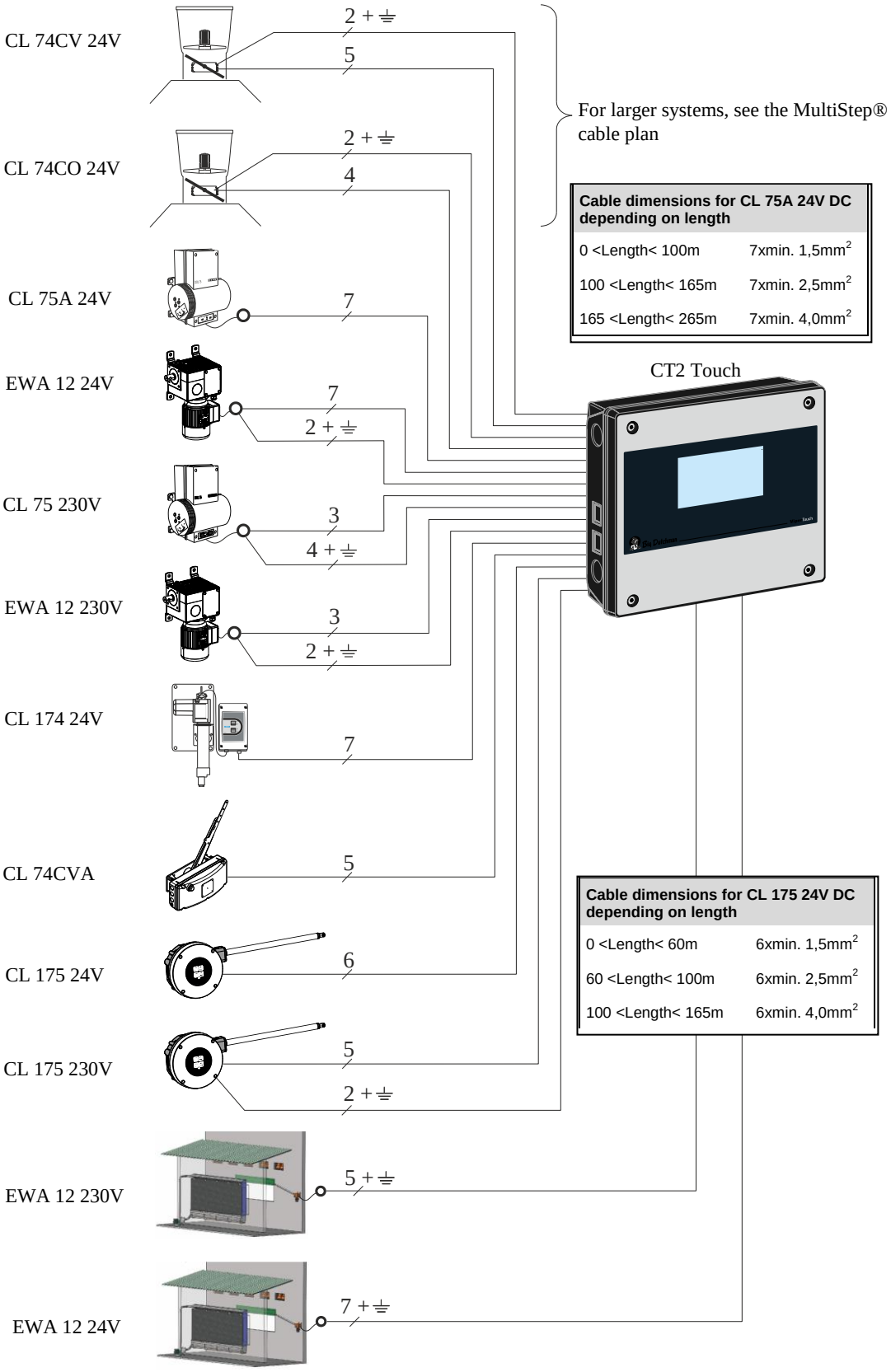
10.2 System with 378M ON/OFF Emergency Opening



10.3 System with 378T Temperature-controlled Emergency Opening



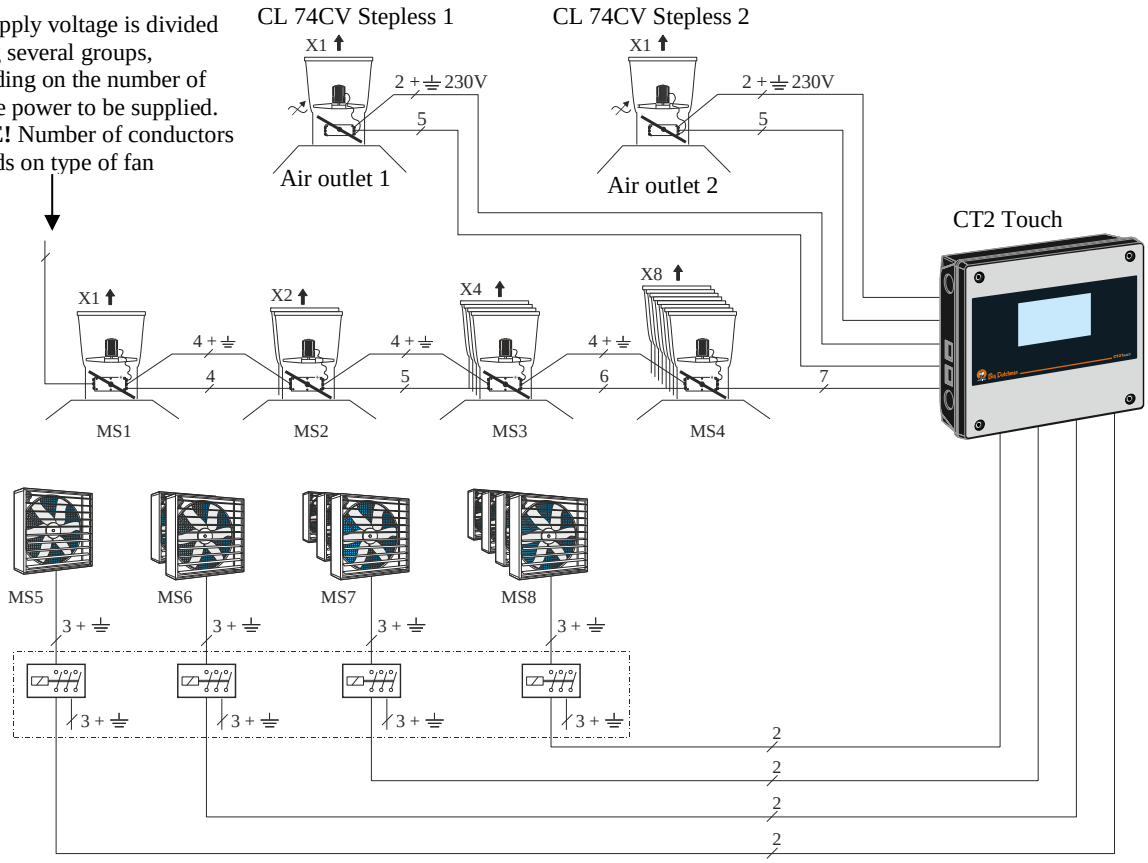
10.4 Winch Motors



NB: 230V winch motors for air inlet and air outlet cannot be connected in parallel. They must be separated by means of two contactors. . See diagram 11.3.3 Connection of more than two CL 75 230 V

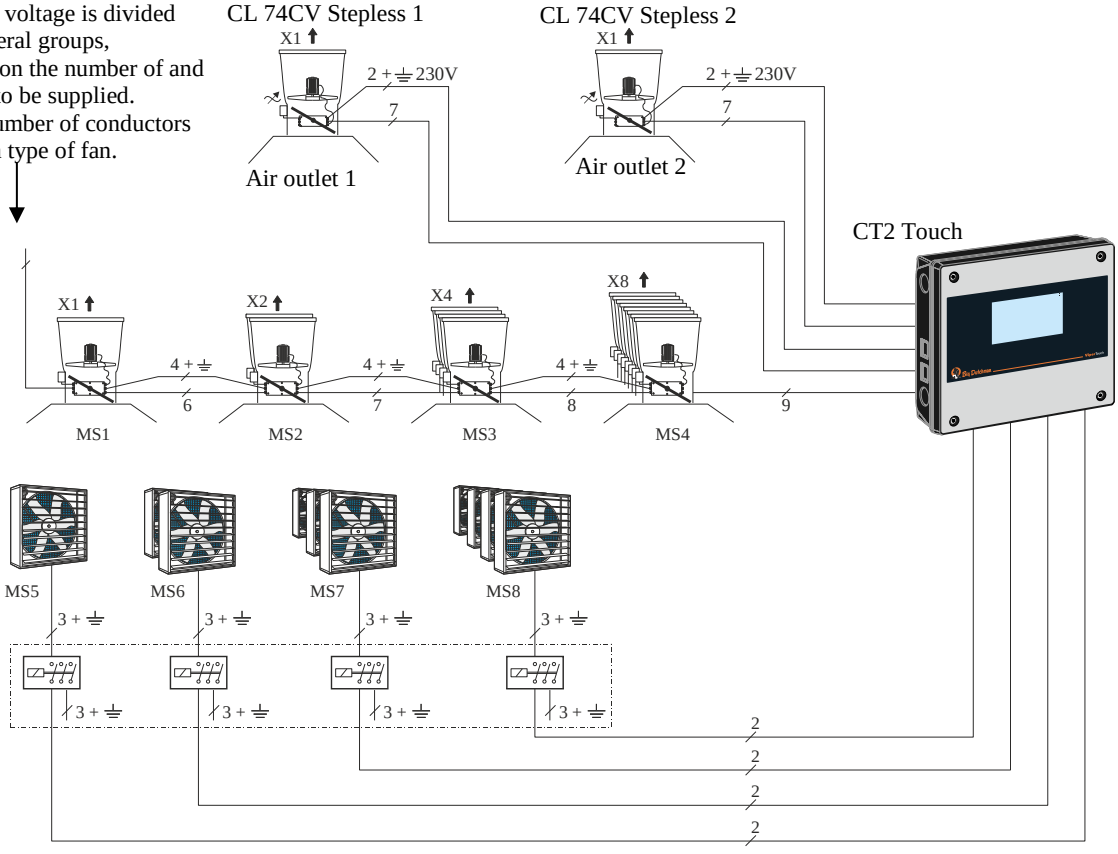
10.5 MultiStep® (with Internal Speed Control)

Fan supply voltage is divided among several groups, depending on the number of and the power to be supplied.
NOTE! Number of conductors depends on type of fan



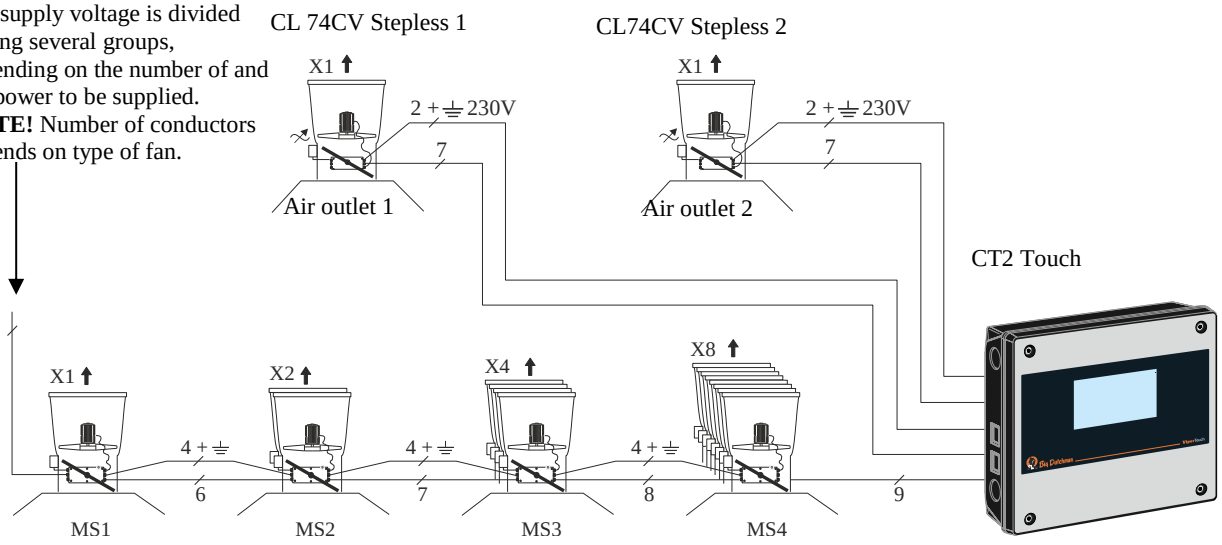
10.6 Dynamic MultiStep (with LPC)

Fan supply voltage is divided among several groups, depending on the number of and the power to be supplied.
NOTE! Number of conductors depends on type of fan.



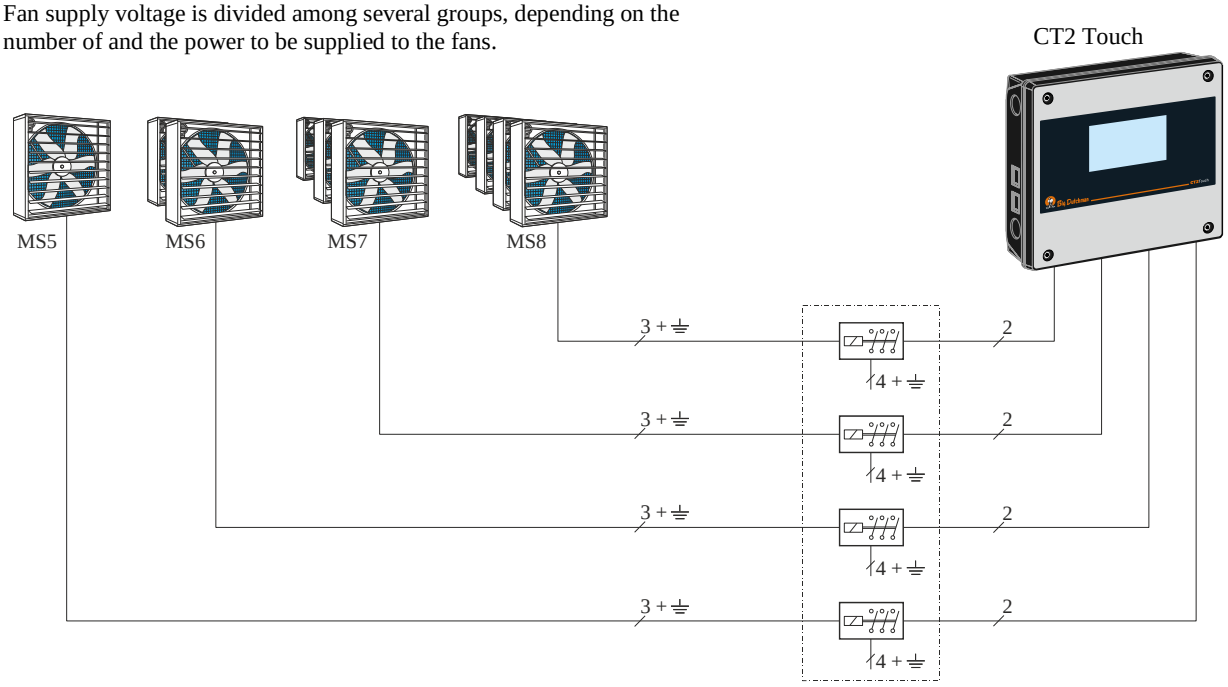
10.7 Dynamic MultiStep, DualSpeed (with LPC)

Fan supply voltage is divided among several groups, depending on the number of and the power to be supplied.
NOTE! Number of conductors depends on type of fan.



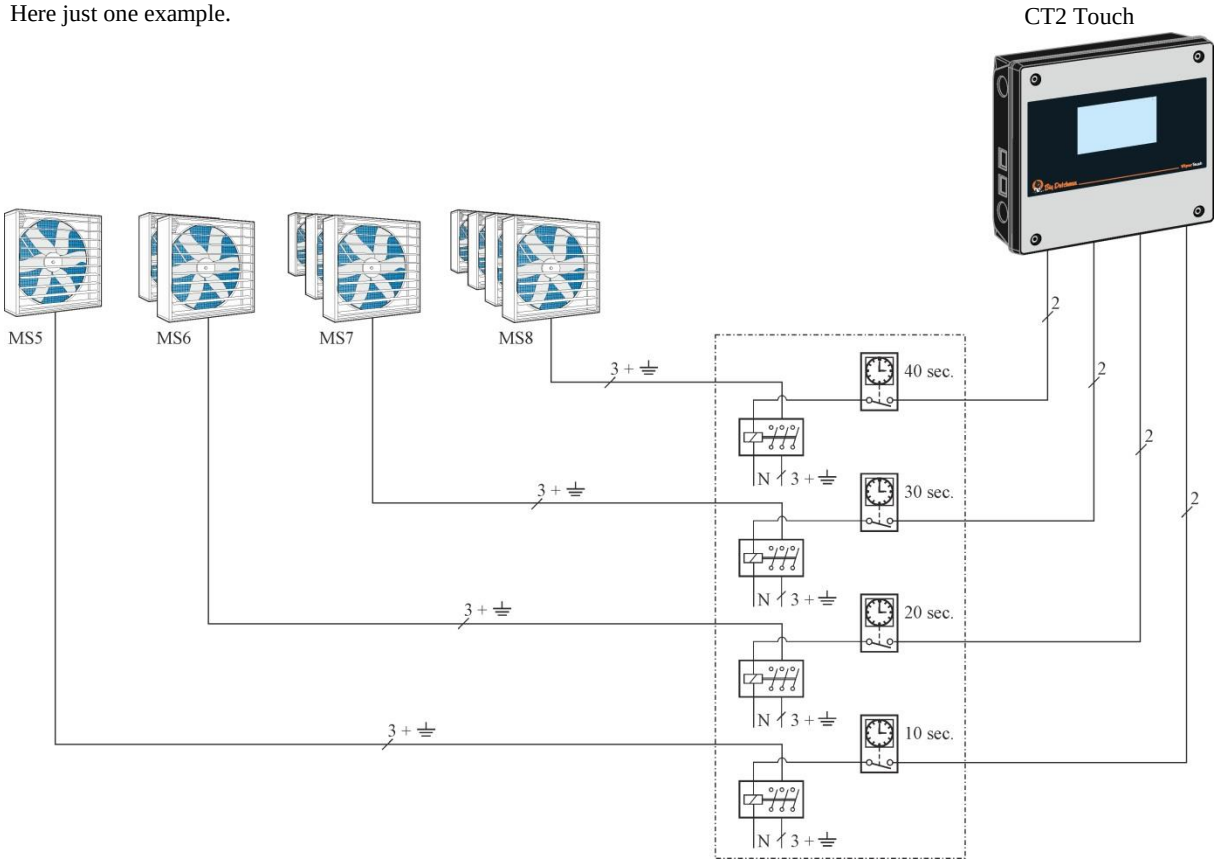
10.8 Fans three-phase

Fan supply voltage is divided among several groups, depending on the number of and the power to be supplied to the fans.



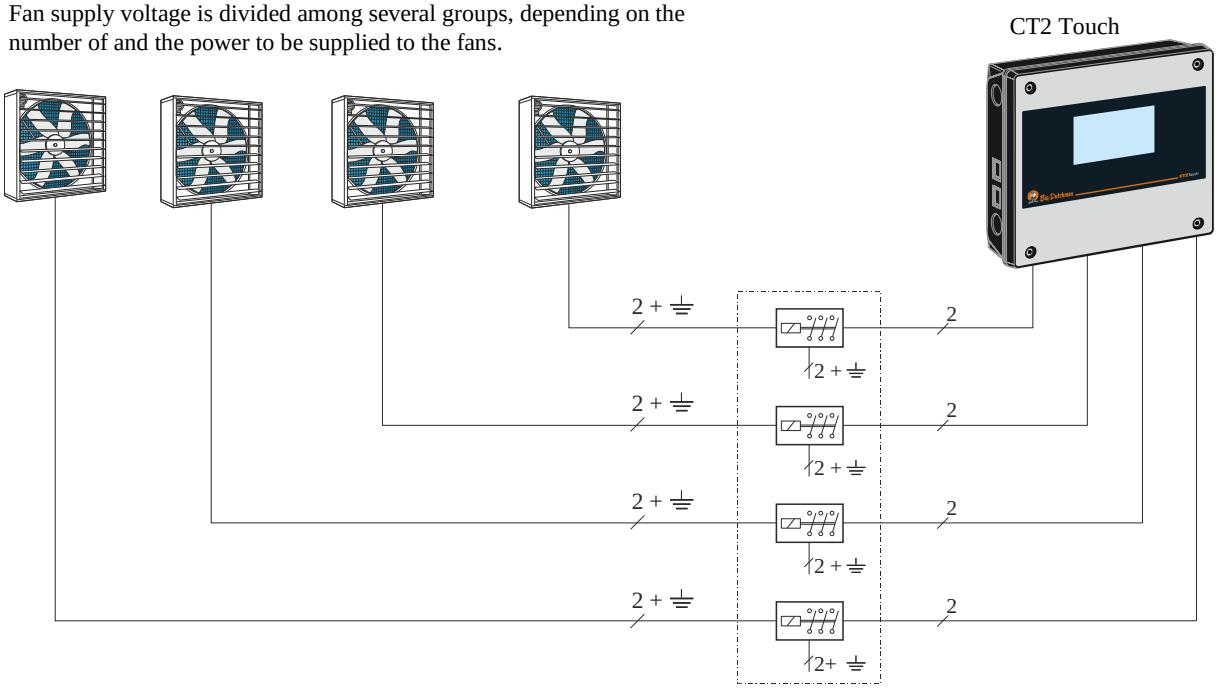
10.9 Fans three-phase with ON-Delay Timers

ON-Delay-timer comes in many variants.
Here just one example.

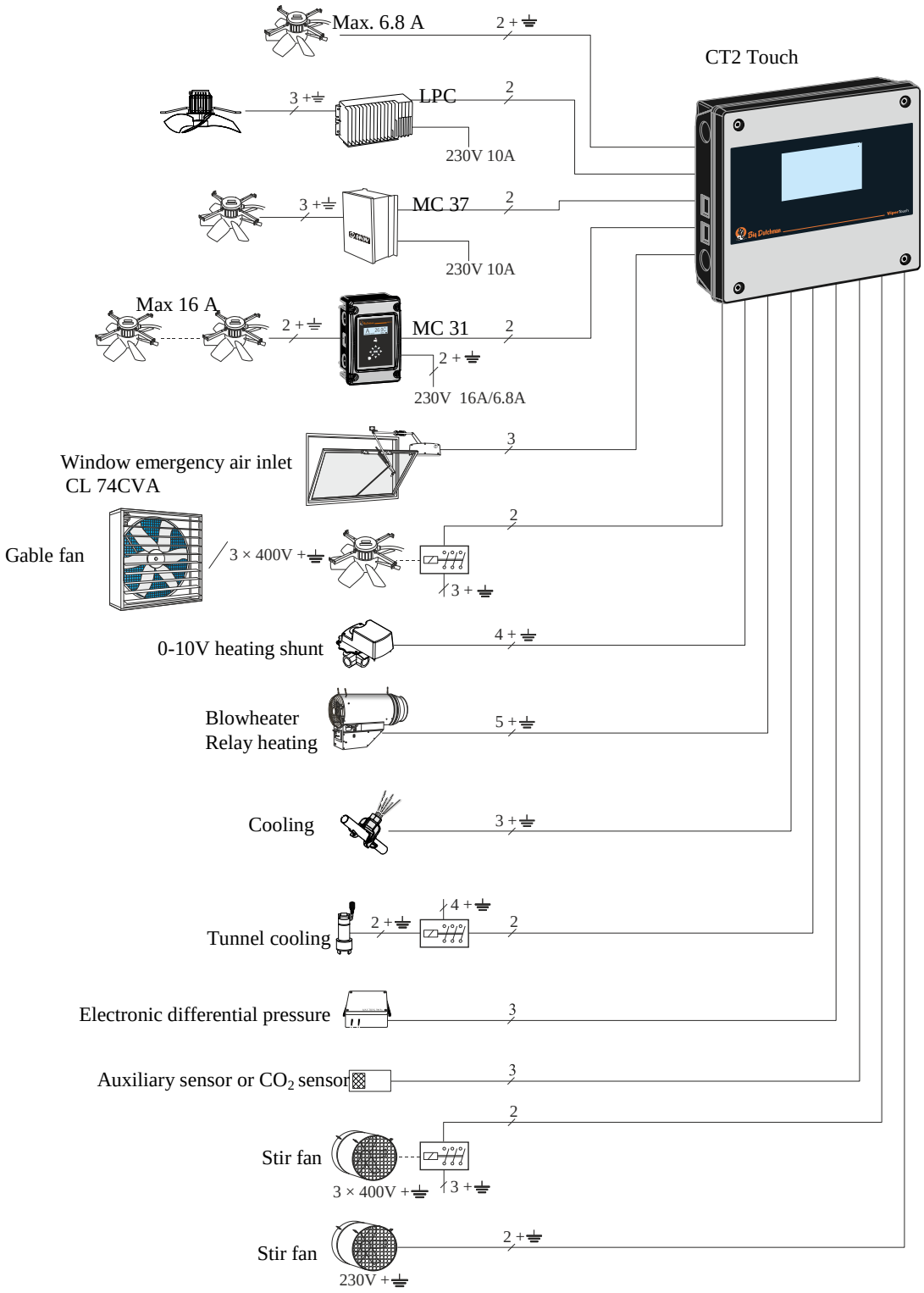


10.10 Fans one-phase

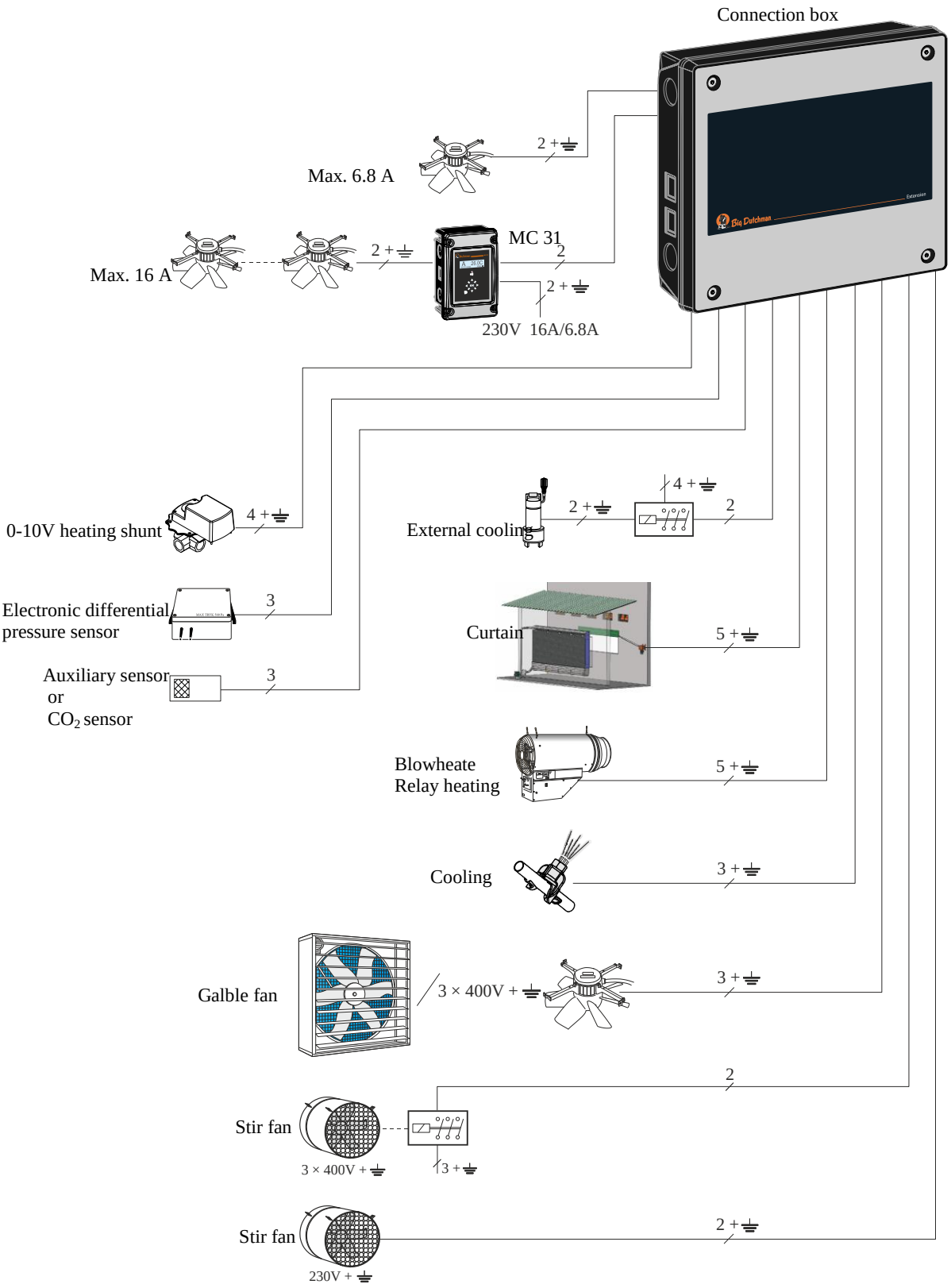
Fan supply voltage is divided among several groups, depending on the number of and the power to be supplied to the fans.



10.11 Fans, Heating, Cooling, Auxiliary Sensor, CO_2 Sensor, Differential Pressure Sensor and Stir Fan

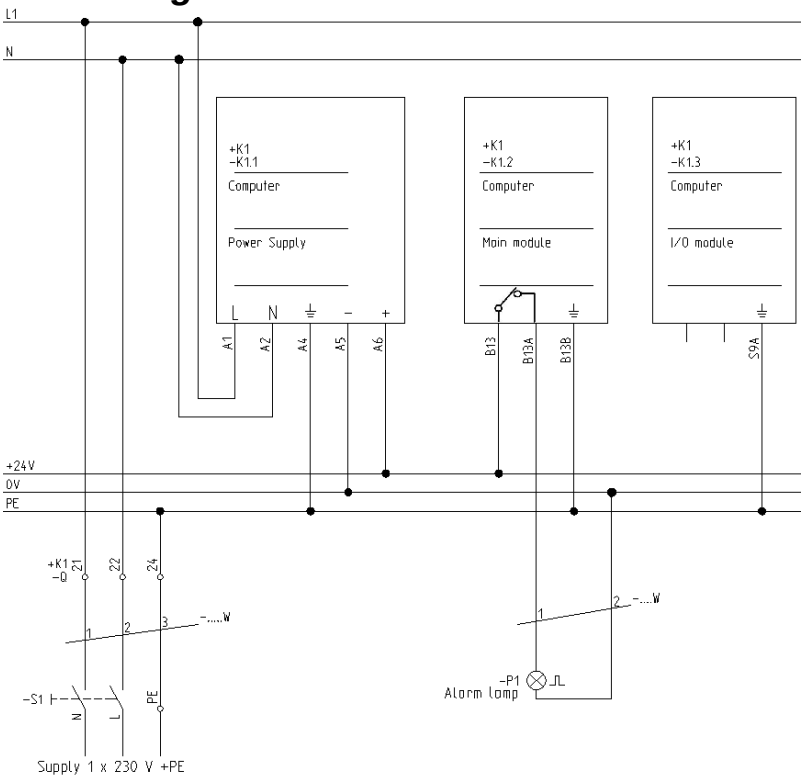


10.12 Connection Box, Fans, Heating, Cooling, Auxiliary Sensor, CO_2 Sensor, Differential Pressure Sensor and Stir Fan



11 Circuit Diagrams

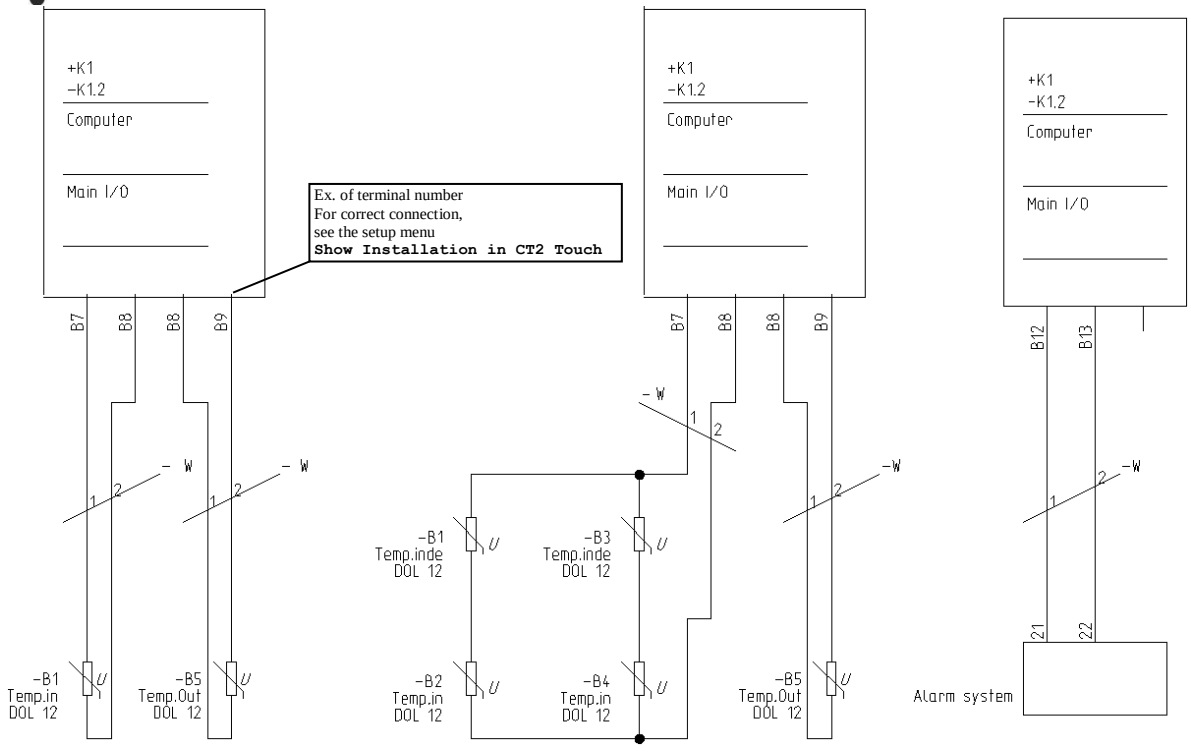
11.1.1 Mains Voltage for I/O Module and Main Modulel



Installation in accordance with applicable national rules; supply cable, however, min. 1.5 mm^2.

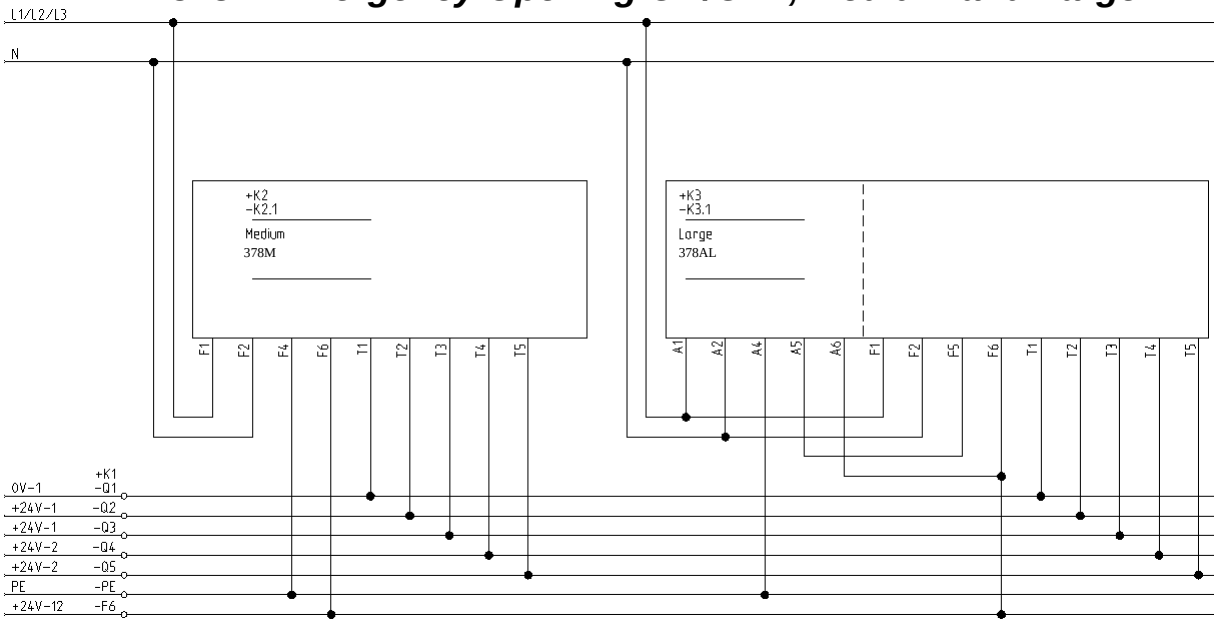
11.1.2 Connecting Temperature Sensors and Alarm

See section 5 for correct mounting and positioning of climate sensors

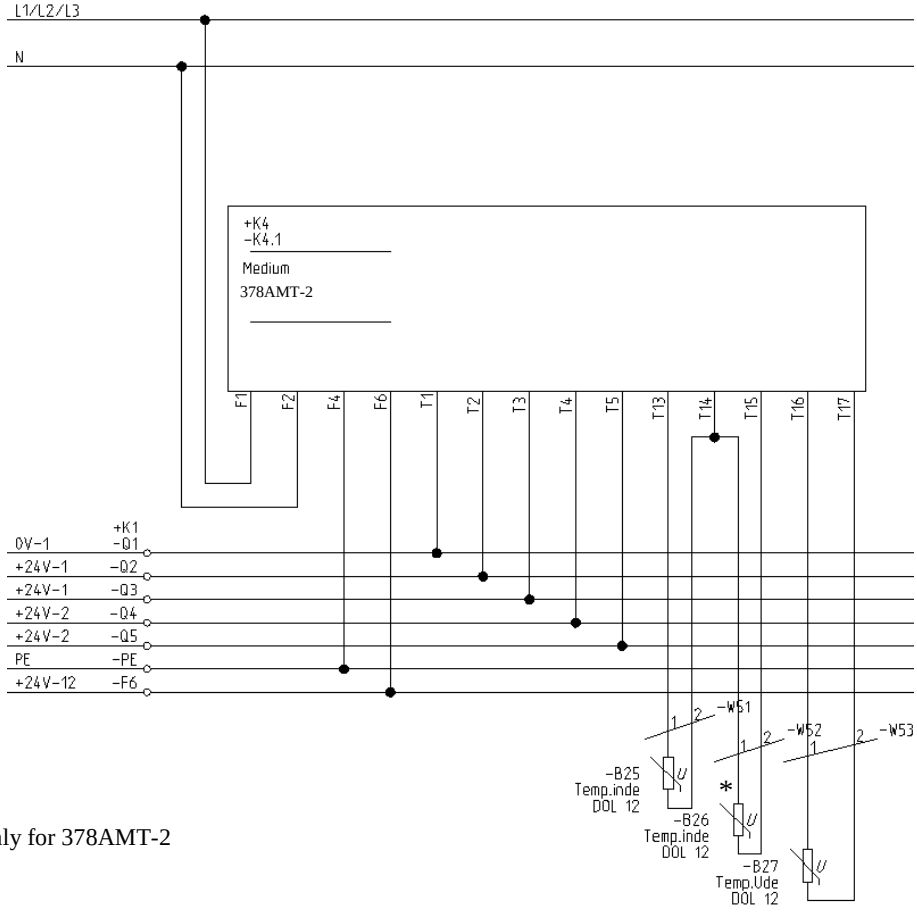


11.2 Emergency Opening

11.2.1 378M Emergency Opening ON/OFF, Medium and Large

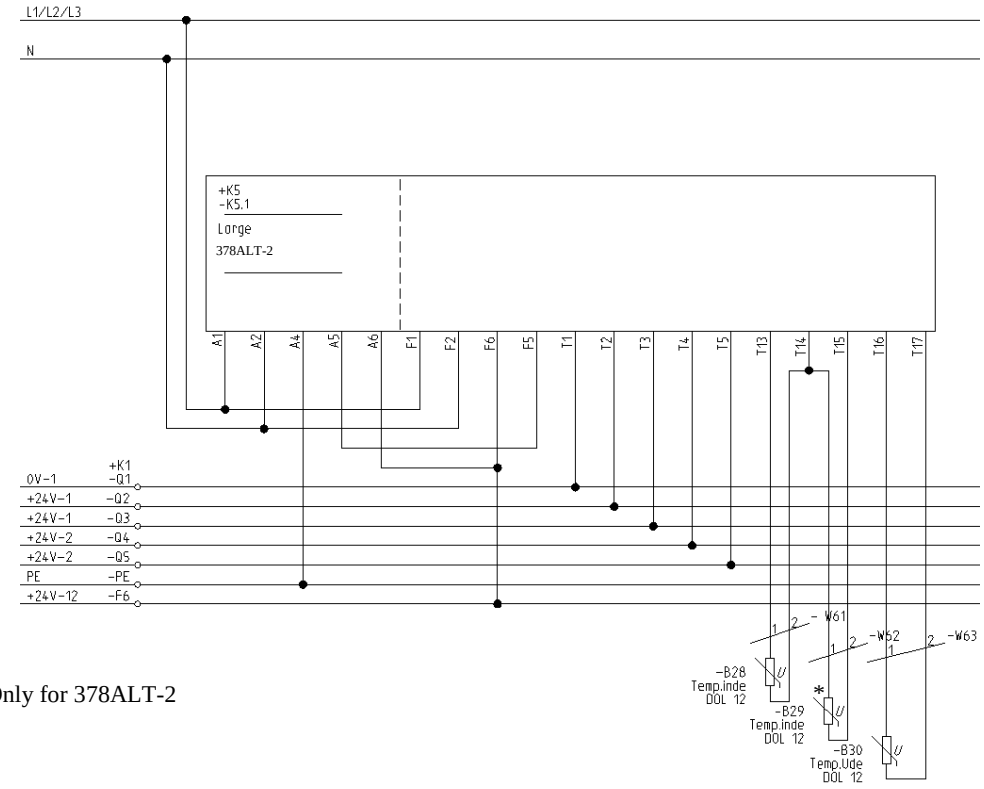


11.2.2 378AMT Emergency Opening Temperature-controlled, Medium



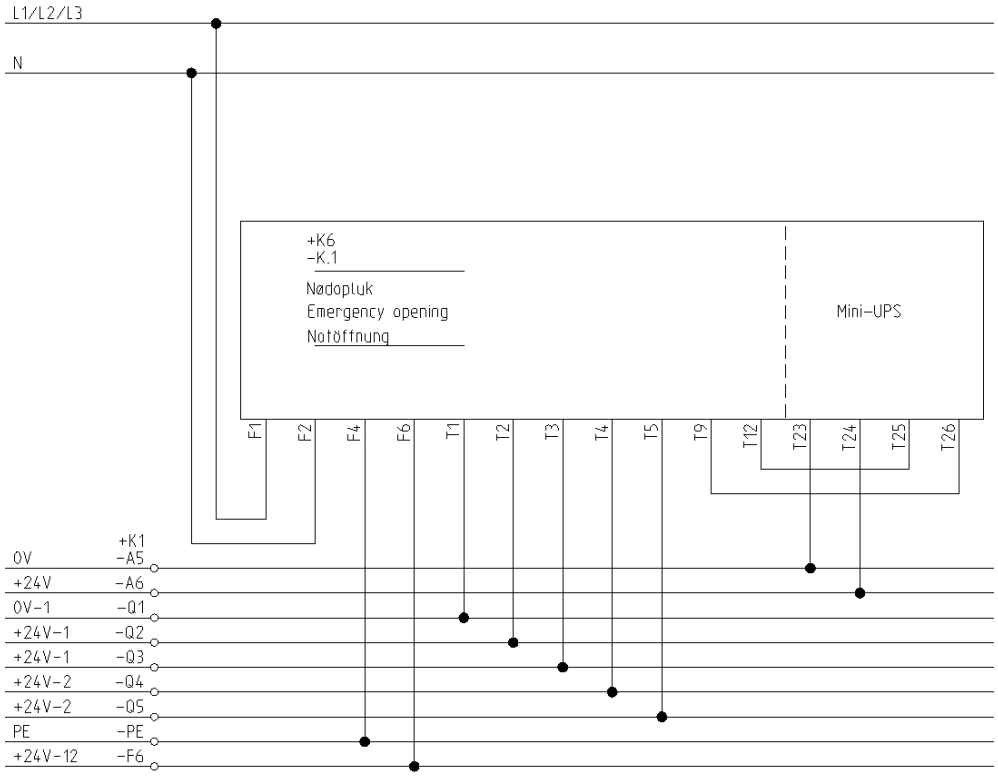
* Only for 378AMT-2

11.2.3 378ALT Emergency Opening Temperature-controlled, Large



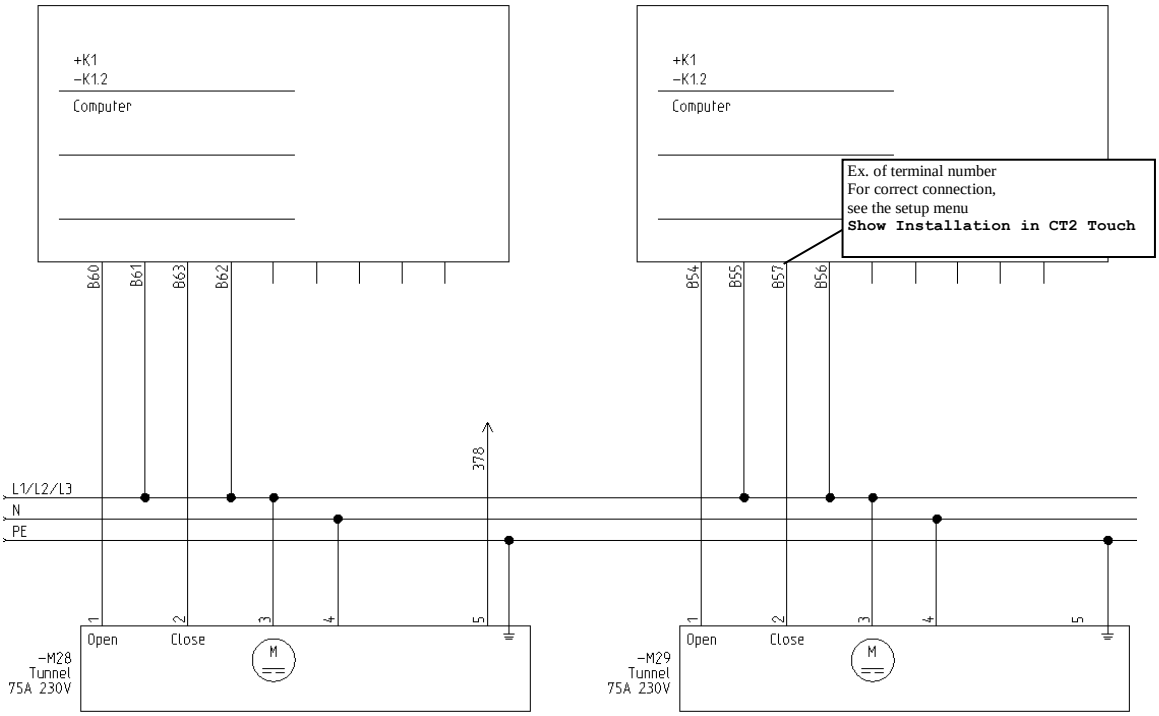
* Only for 378ALT-2

11.2.4 Emergency Opening with Mini-UPS



11.3 Tunnel

11.3.1 Tunnel Motor

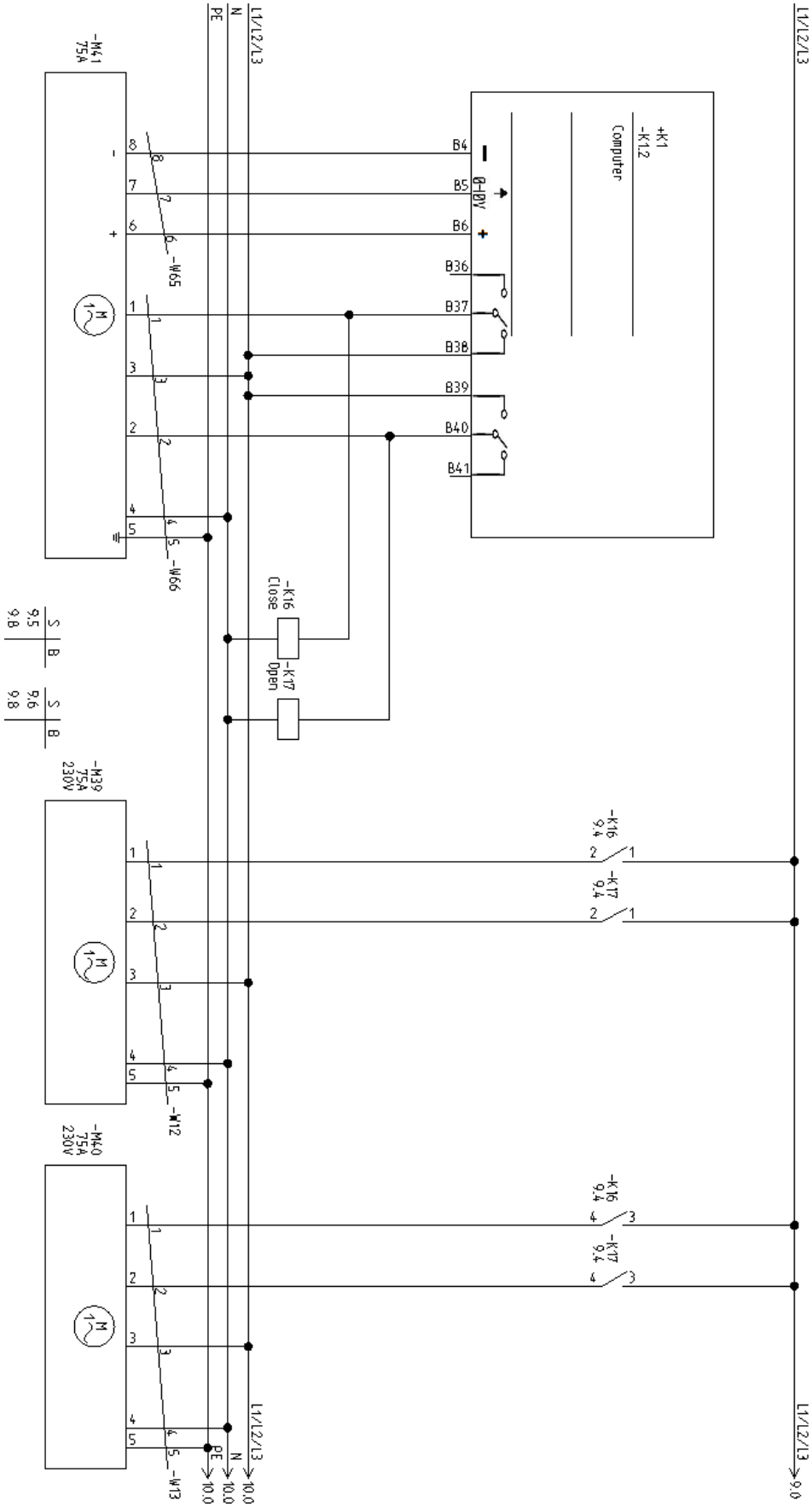


11.3.2 EWA 12

See diagram **11.7.4 EWA 12 24V**

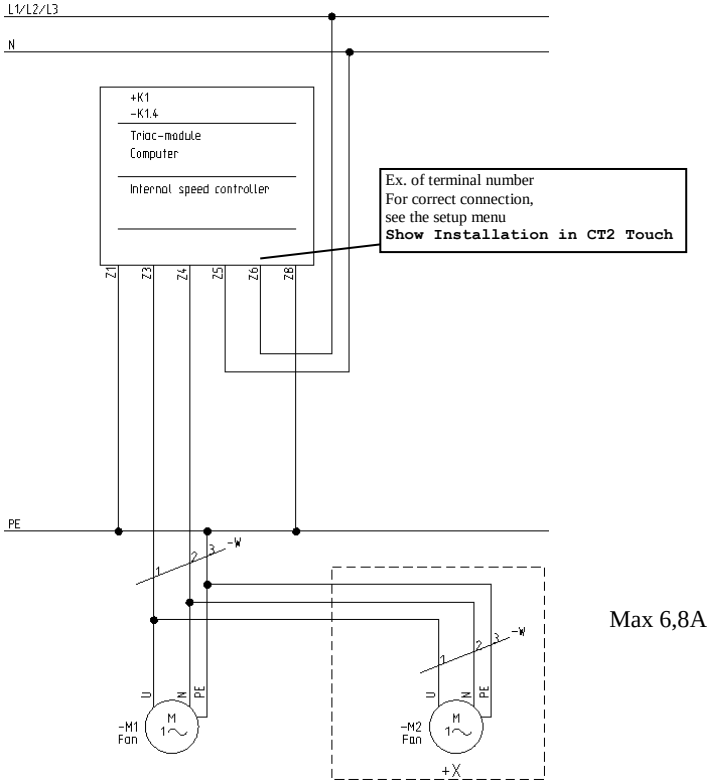
See diagram **11.7.7 EWA 12 230 V**

11.3.3 Connection of more than two CL 75 230 V



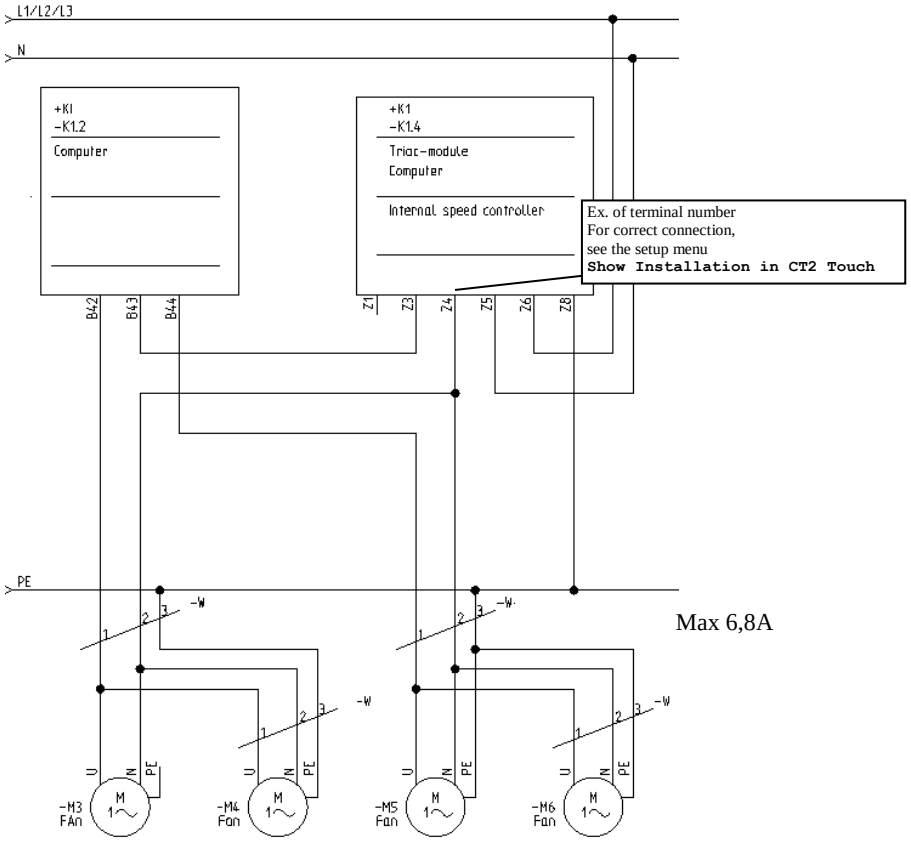
11.4 Internal Speed Control

11.4.1 Two Parallel Fans



Max 6,8A

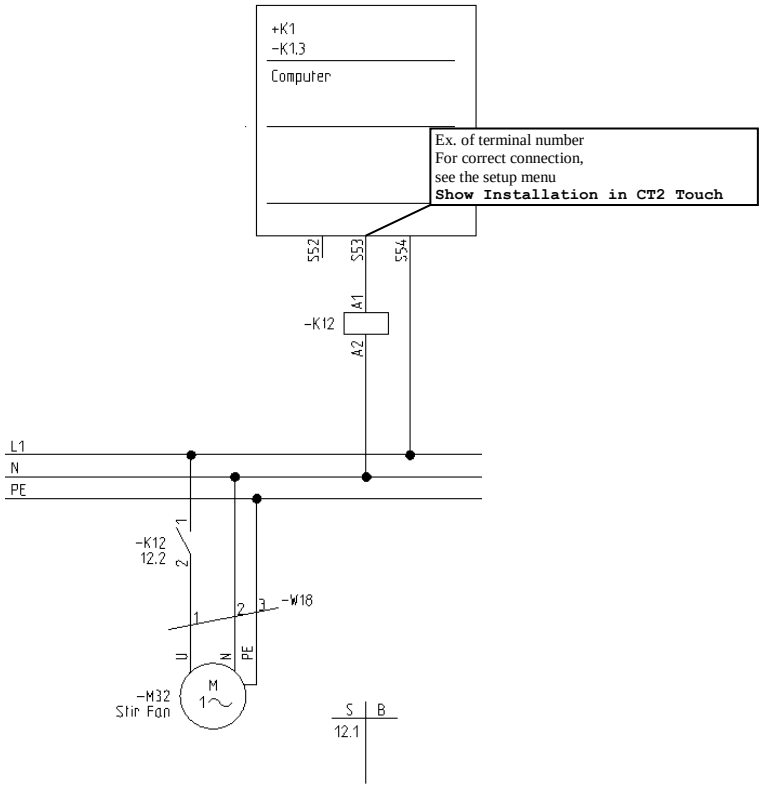
11.4.2 Two Sequentially Controlled Fans



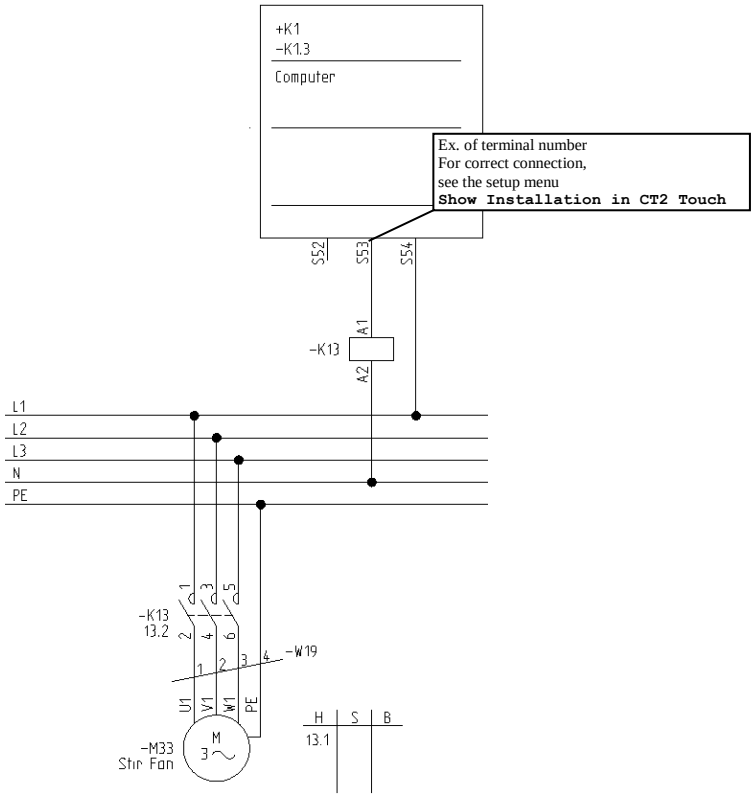
Max 6,8A

11.5 Stir Fan

11.5.1 Two-wire

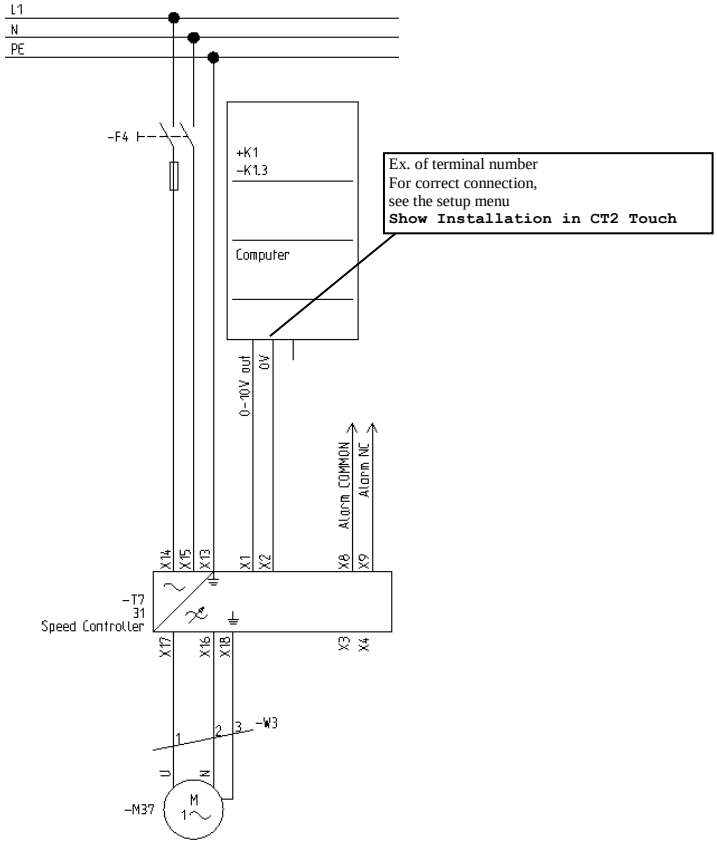


11.5.2 Three-wire

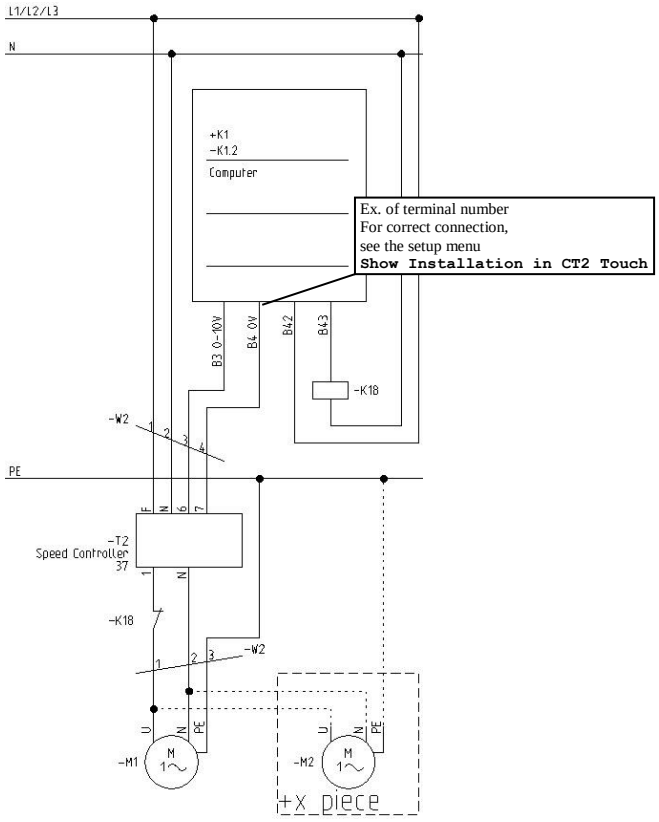


11.6 External Speed Controller

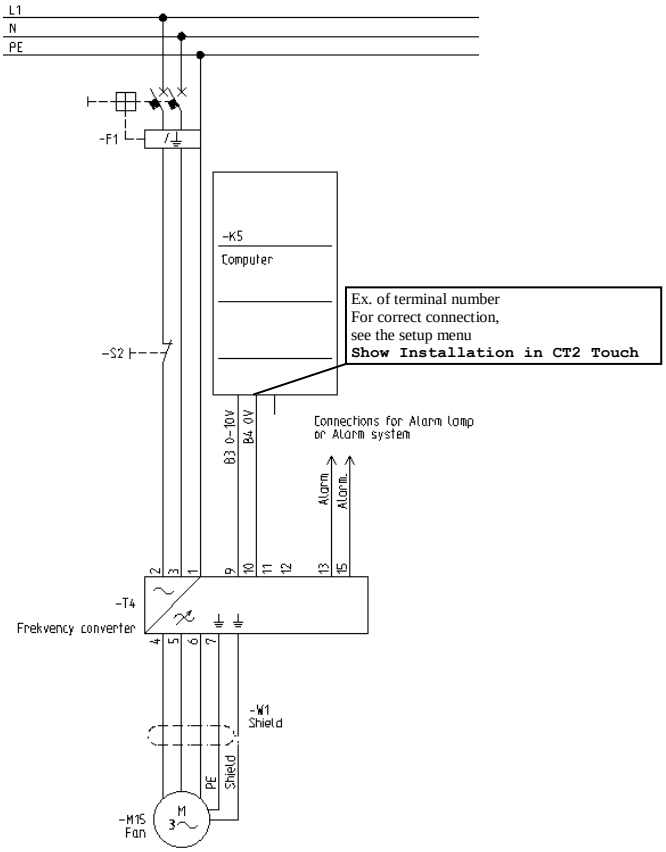
11.6.1 MC 31



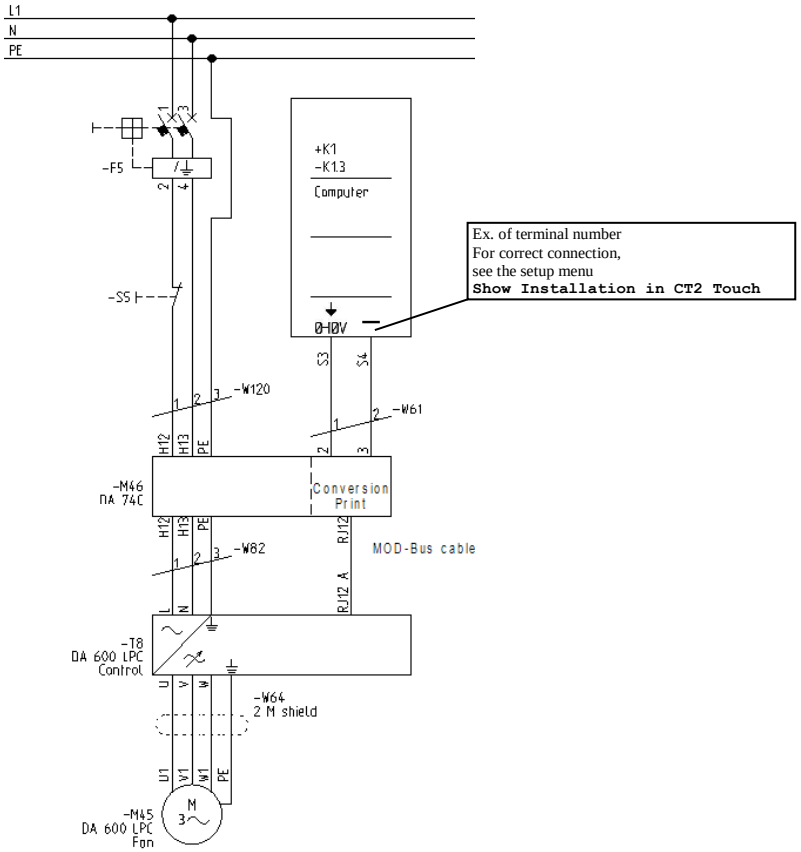
11.6.2 MC 37



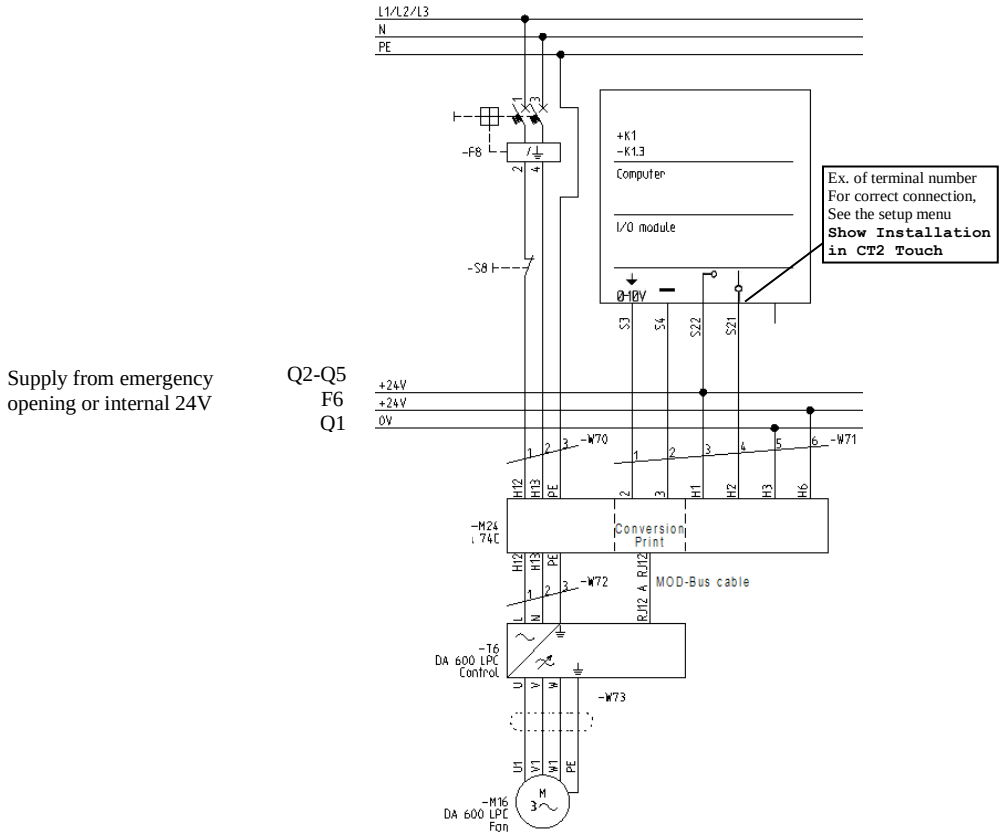
11.6.3 External Frequency Converter



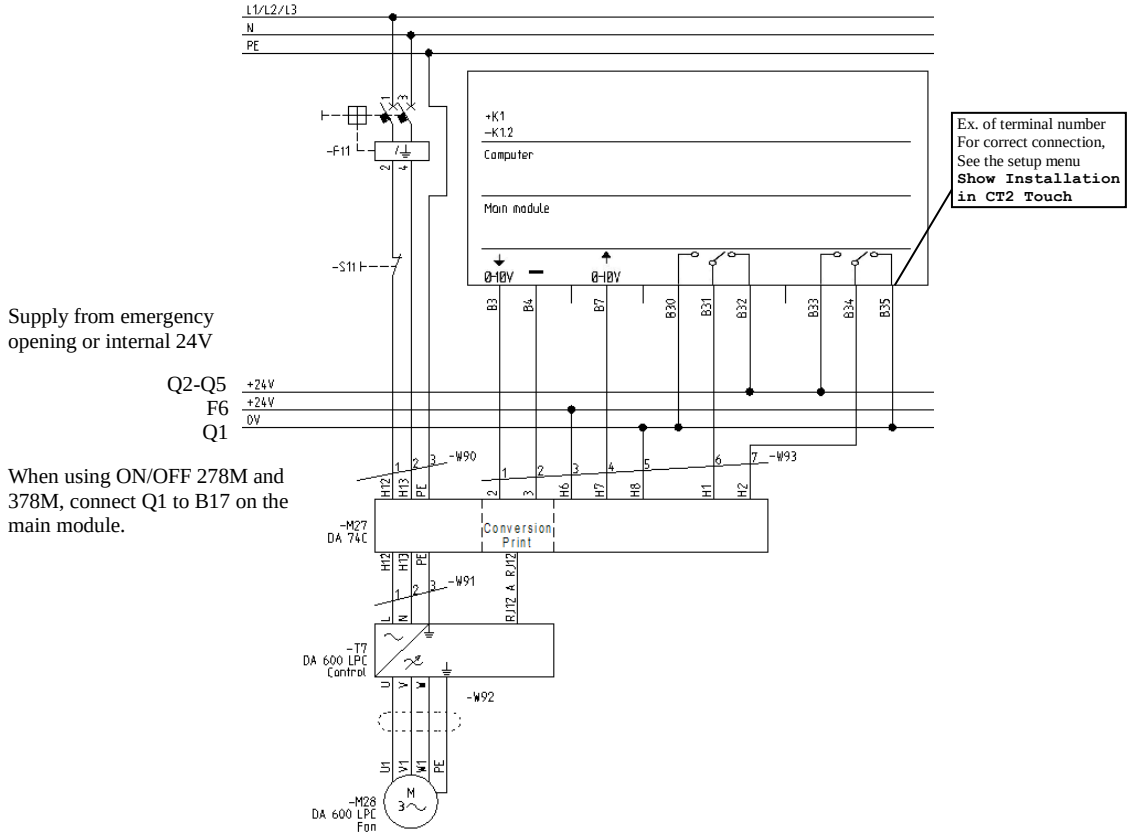
11.6.4 DA 600 LPC-motorcontroller



11.6.5 DA 600 LPC to CL 74CO ON/OFF

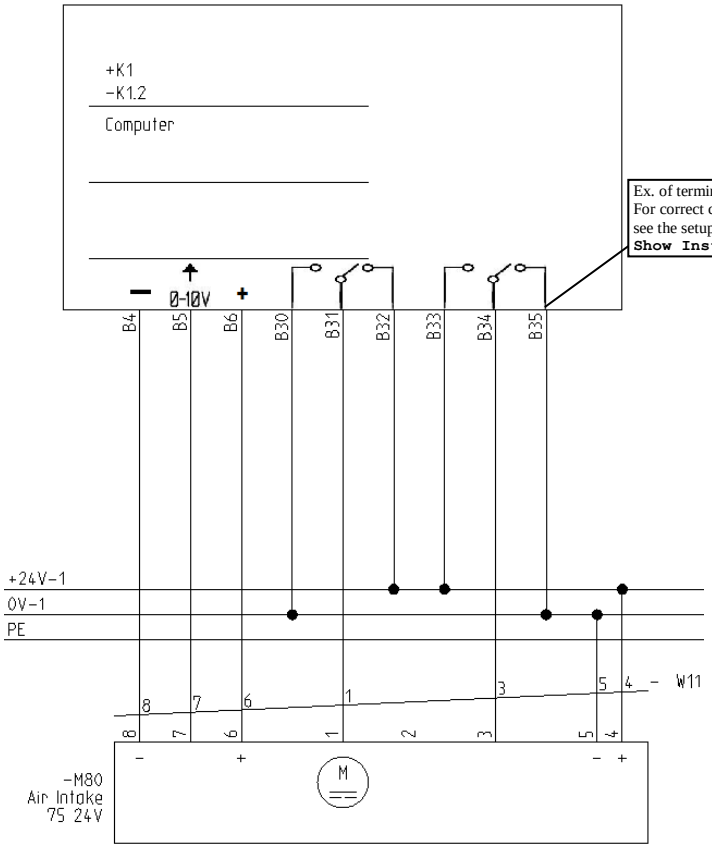


11.6.6 DA 600 LPC to DA 74CV Stepless



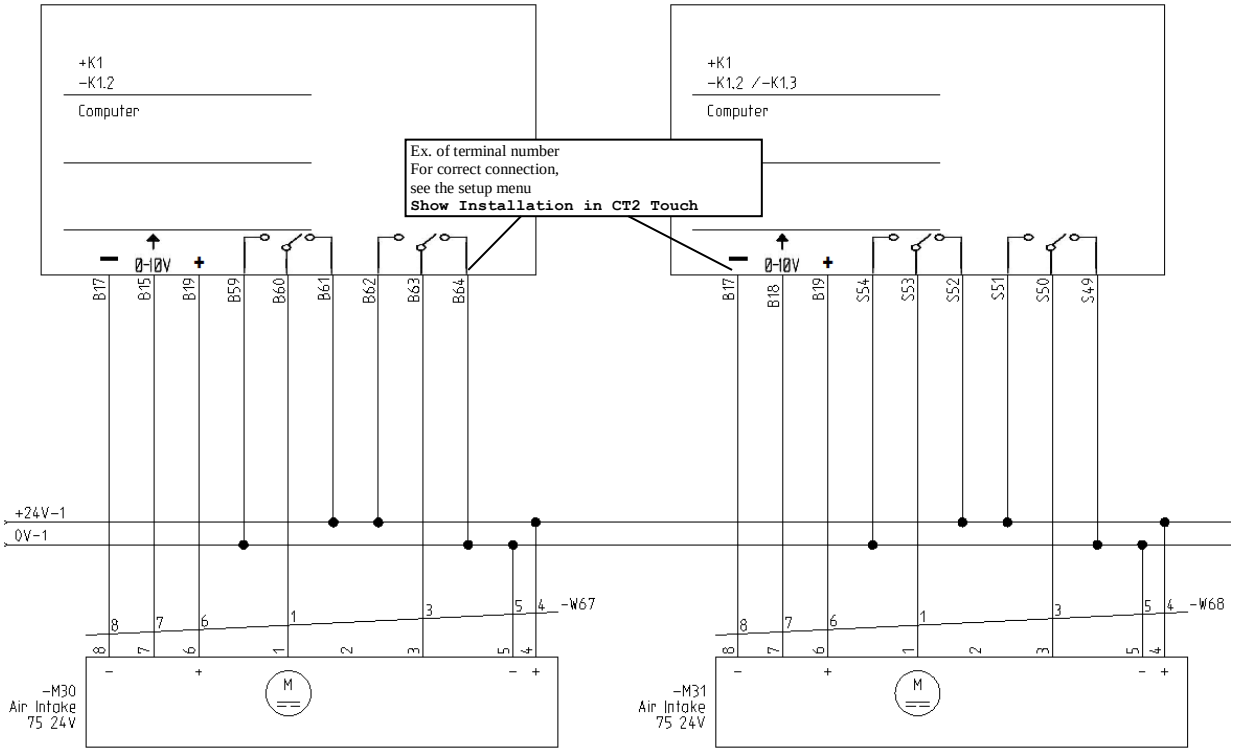
11.7 Winch Motors for Air Inlet all positions

11.7.1 CL 75A 24 V

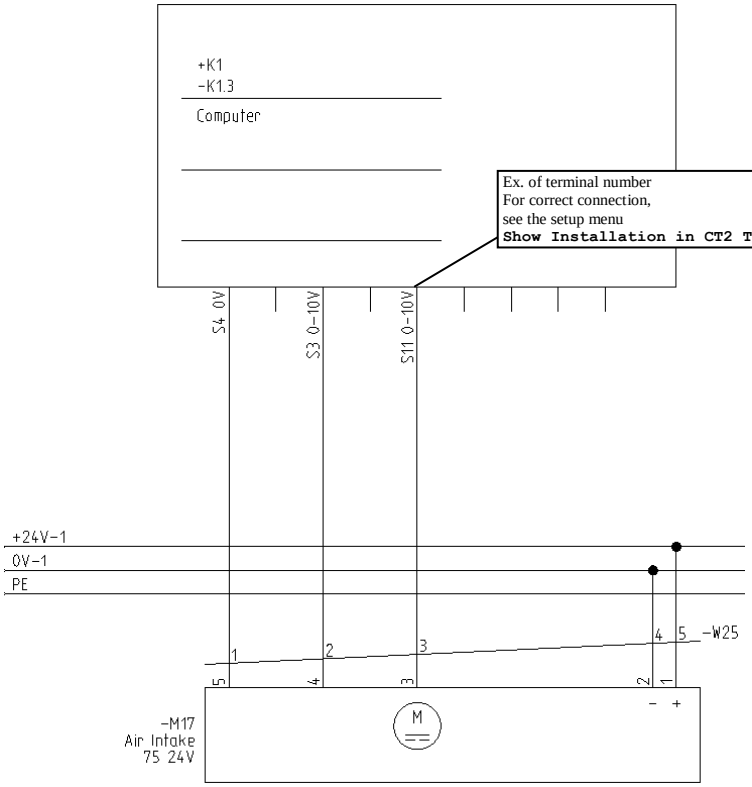


Cable dimensions for CL 75 24V DC depending on length	
0 < Length < 100 m	7 x min. 1,5 mm^2
100 < Length < 165 m	7 x min. 2,5 mm^2
165 < Length < 265 m	7 x min. 4,0 mm^2

11.7.2 Two CL 75A 24V

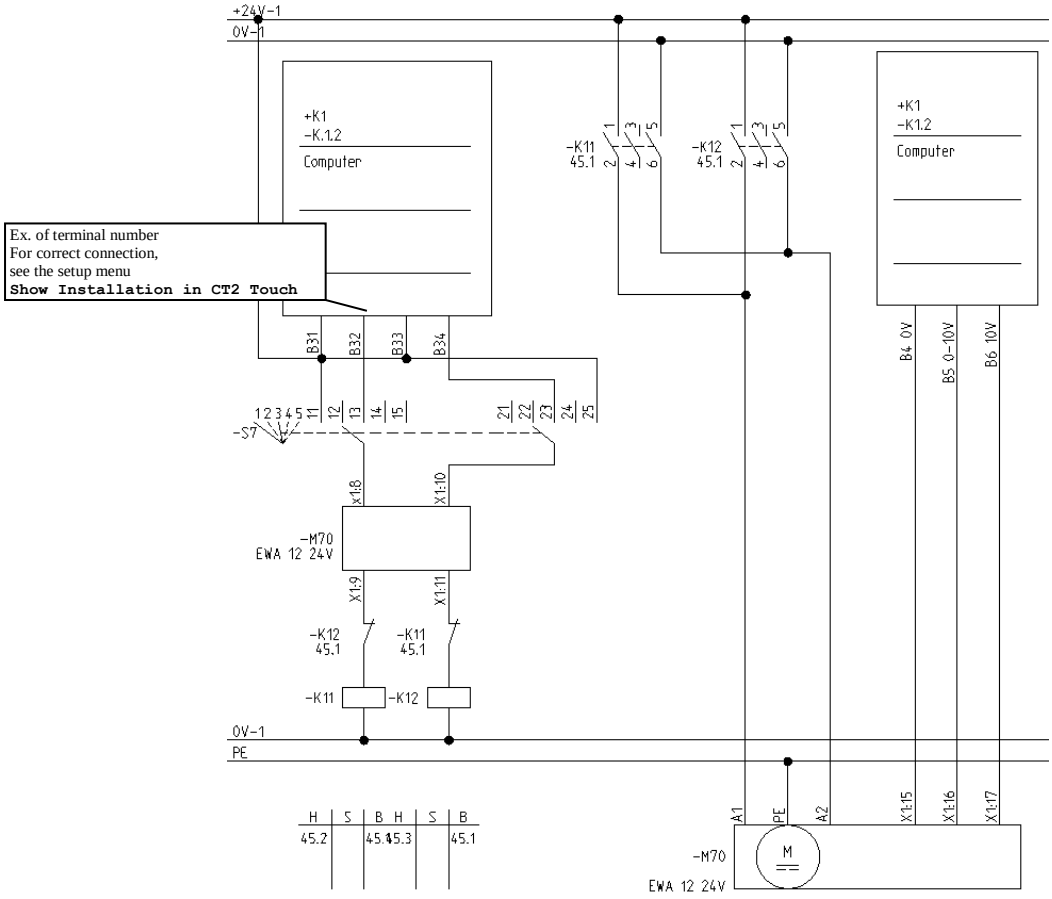


11.7.3 CL 75A 24 V 0-10 V

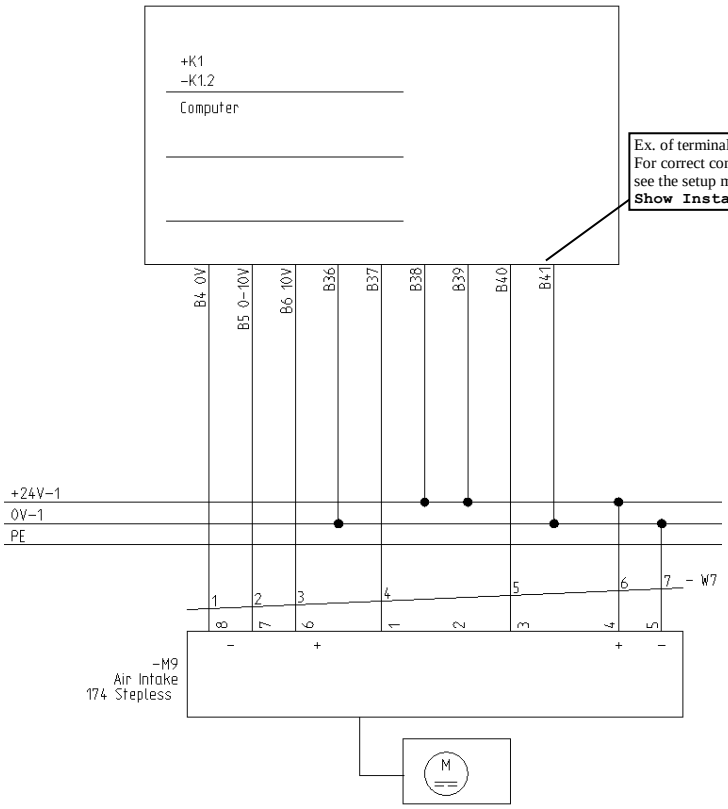


Cable dimensions for CL 75 24V DC depending on length	
0 < Length < 100 m	7 x min. 1,5 mm²
100 < Length < 165 m	7 x min. 2,5 mm²
165 < Length < 265 m	7 x min. 4,0 mm²

11.7.4 EWA 12 24V

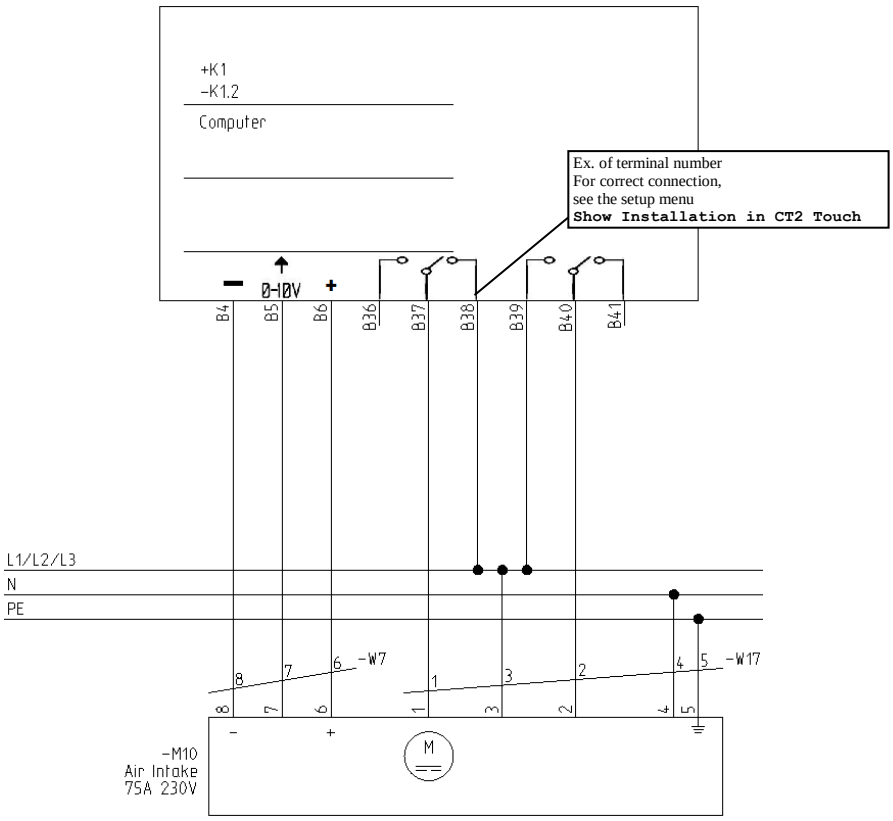


11.7.5 CL 174 24 V



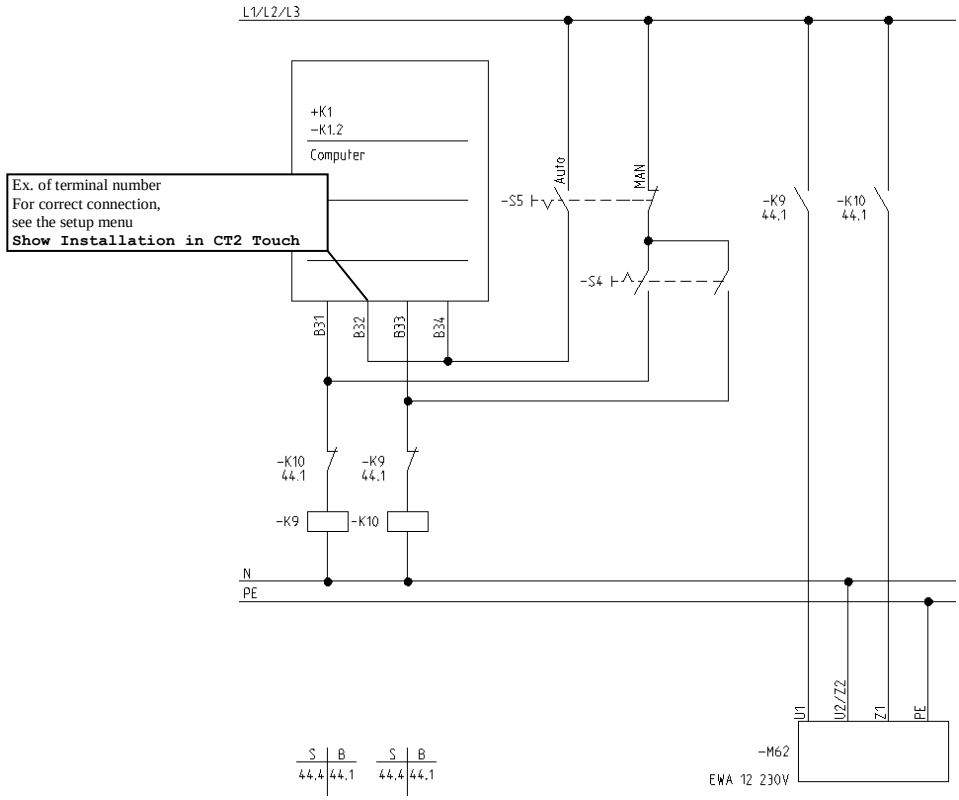
Cable dimensions for CL 174 24V DC depending on length	
0 < Length < 100 m	7 x min. 1,5 mm^2
100 < Length < 165 m	7 x min. 2,5 mm^2
165 < Length < 265 m	7 x min. 4,0 mm^2

11.7.6 CL 75A 230 V



Installation in accordance with applicable national rules. However, cable dimension min. 1.5 mm^2.

11.7.7 EWA 12 230 V

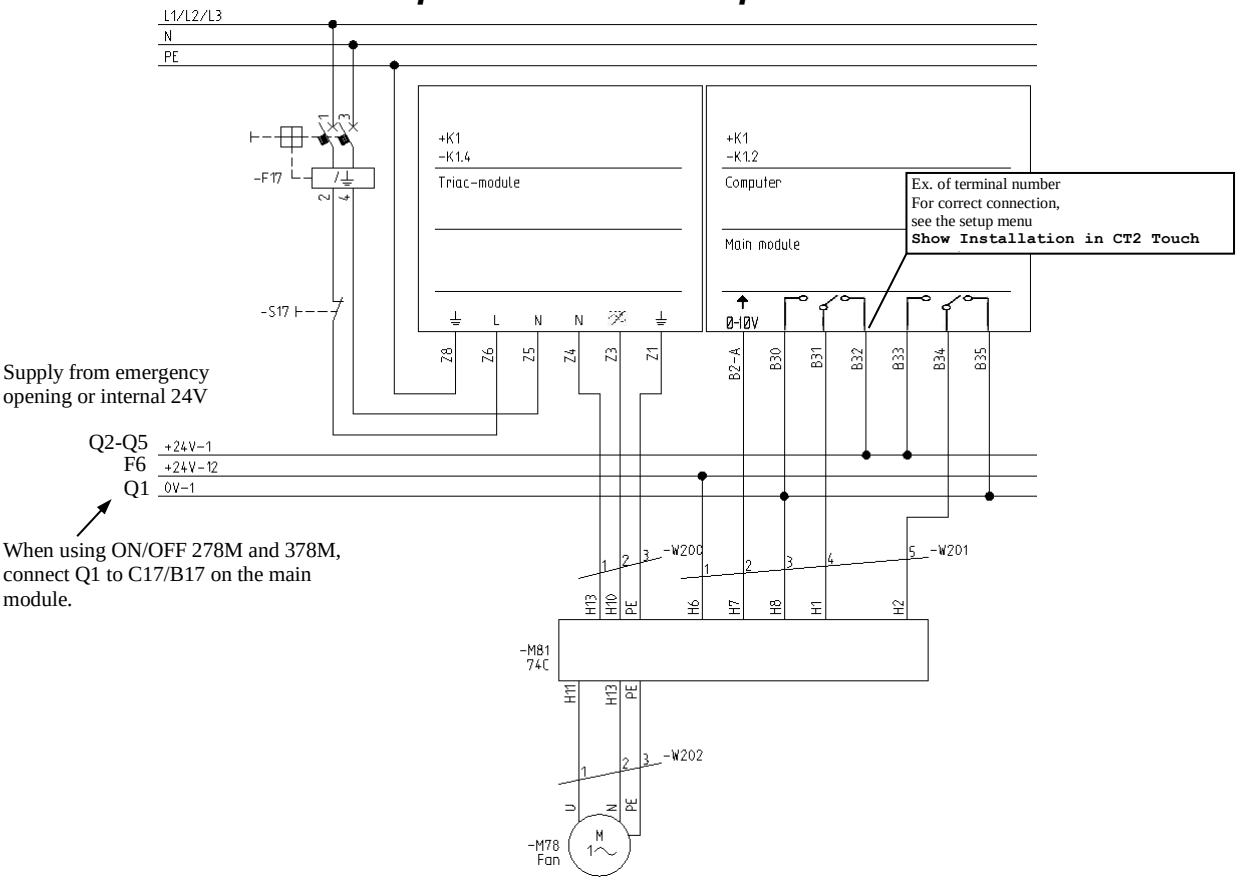


Installation in accordance with applicable national rules. However, cable dimension min. 1.5 mm^2

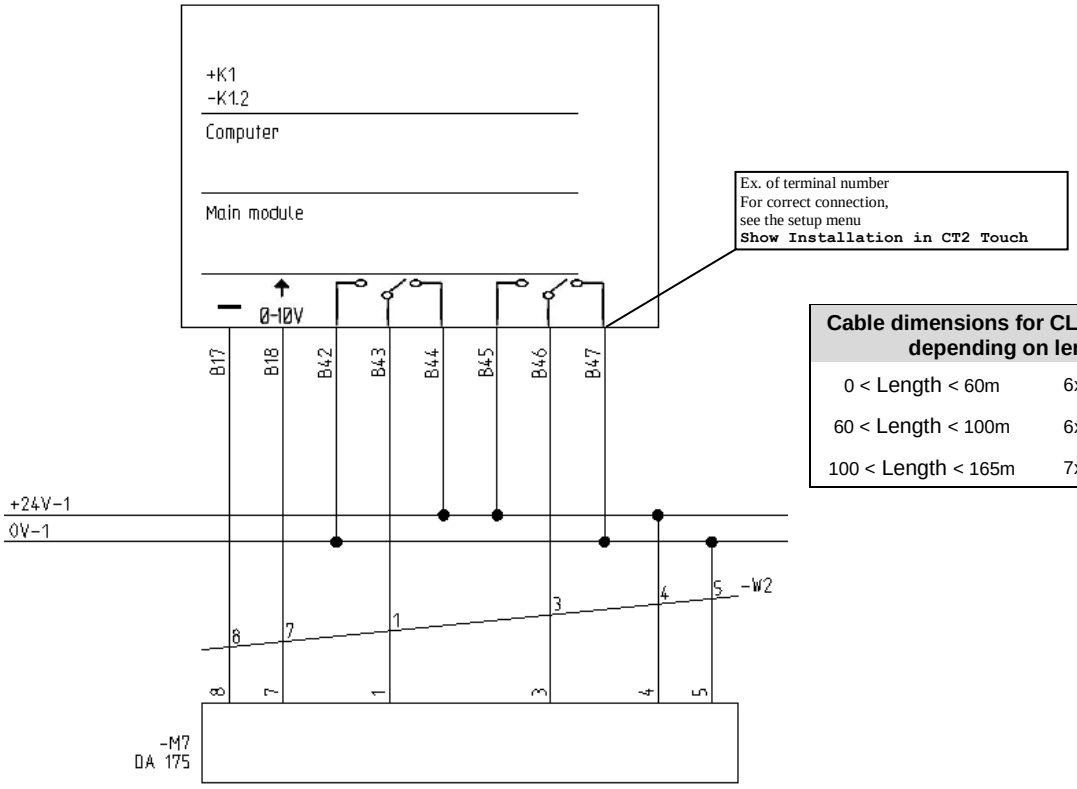
NOTE: 230V winch motors for air inlet and air outlet cannot be connected in parallel. They must be separated by means of two contactors.

See diagram 11.3.3 Connection of more than two CL 75 230 V

11.7.8 CL 74CV Stepless to Internal Speed Control

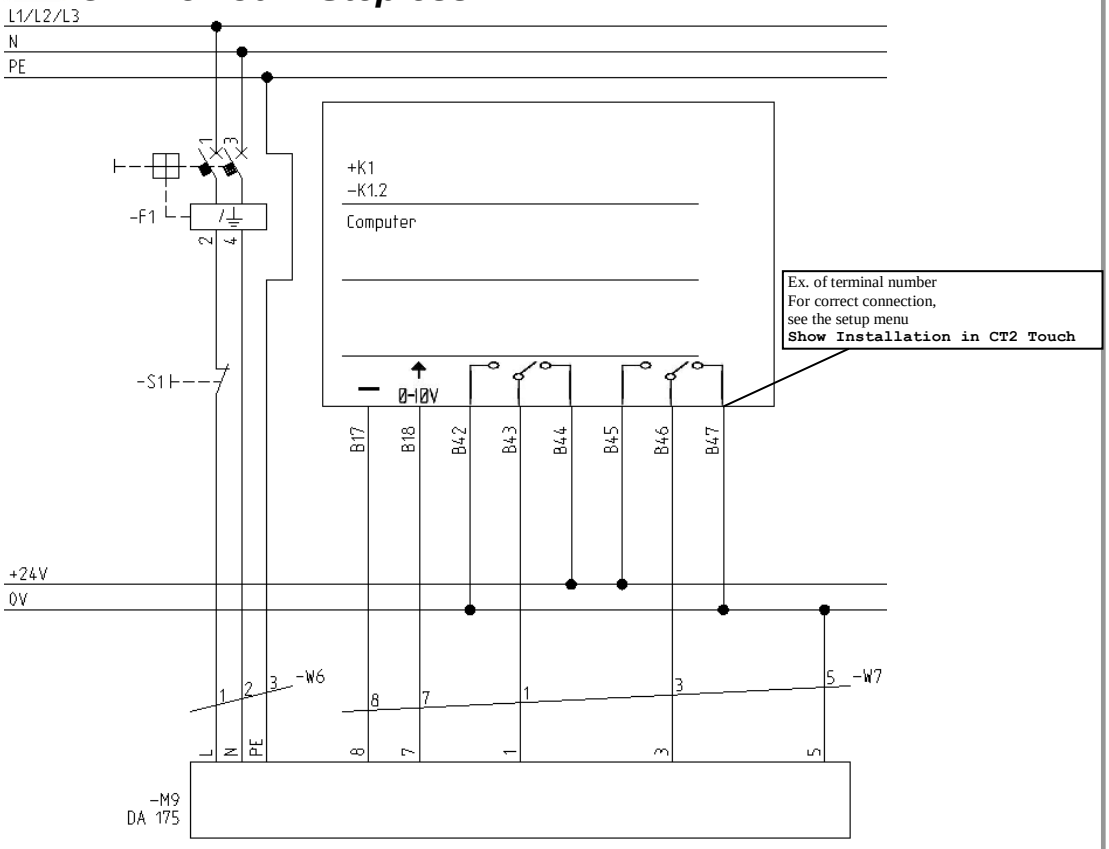


11.7.9 CL 175 24 V Stepless



Cable dimensions for CL 175 24V DC depending on length	
0 < Length < 60m	6xmin. 1,5mm²
60 < Length < 100m	6xmin. 2,5mm²
100 < Length < 165m	7xmin. 4,0mm²

11.7.10 CL 175 230 V Stepless



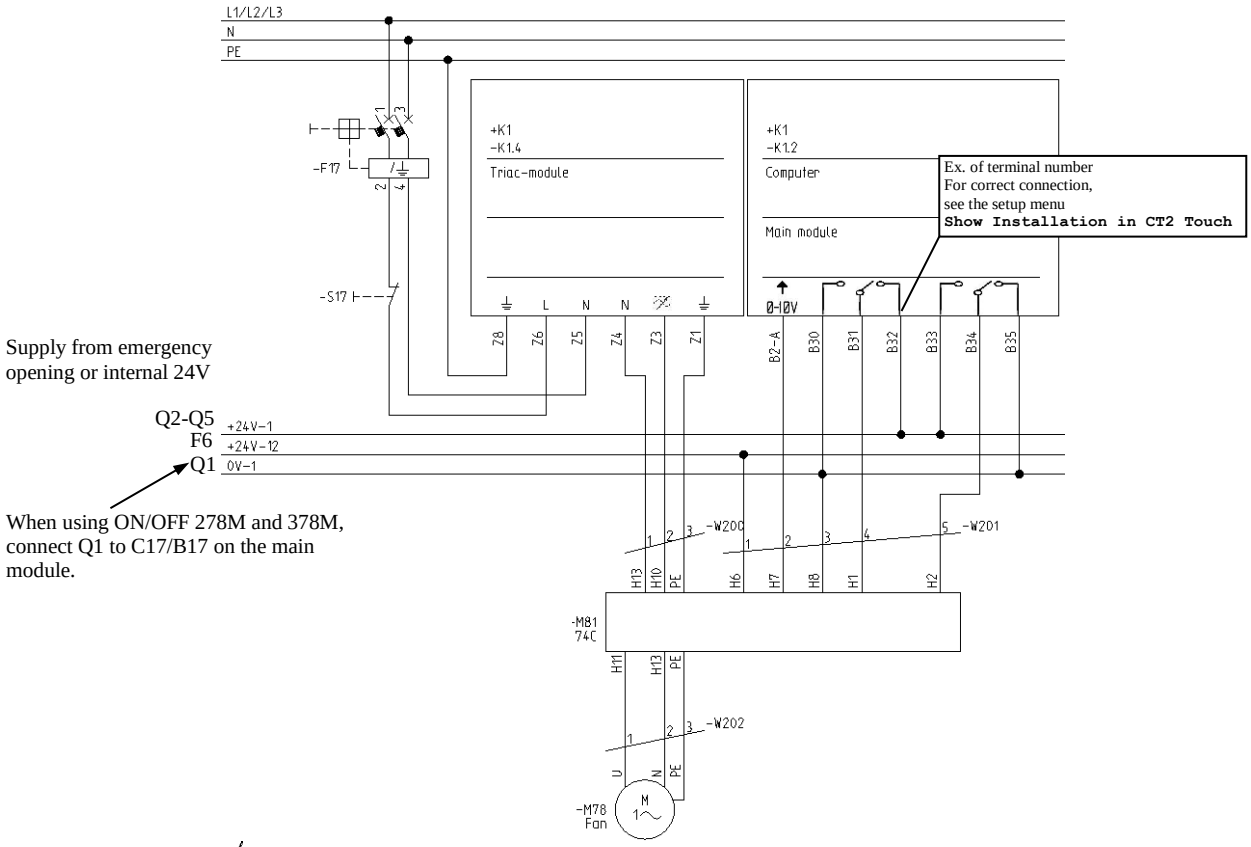
11.7.11 Six CL 75A 24 V

Six CL75A 24V
See diagram 11.7.2 Two CL 75A 24V

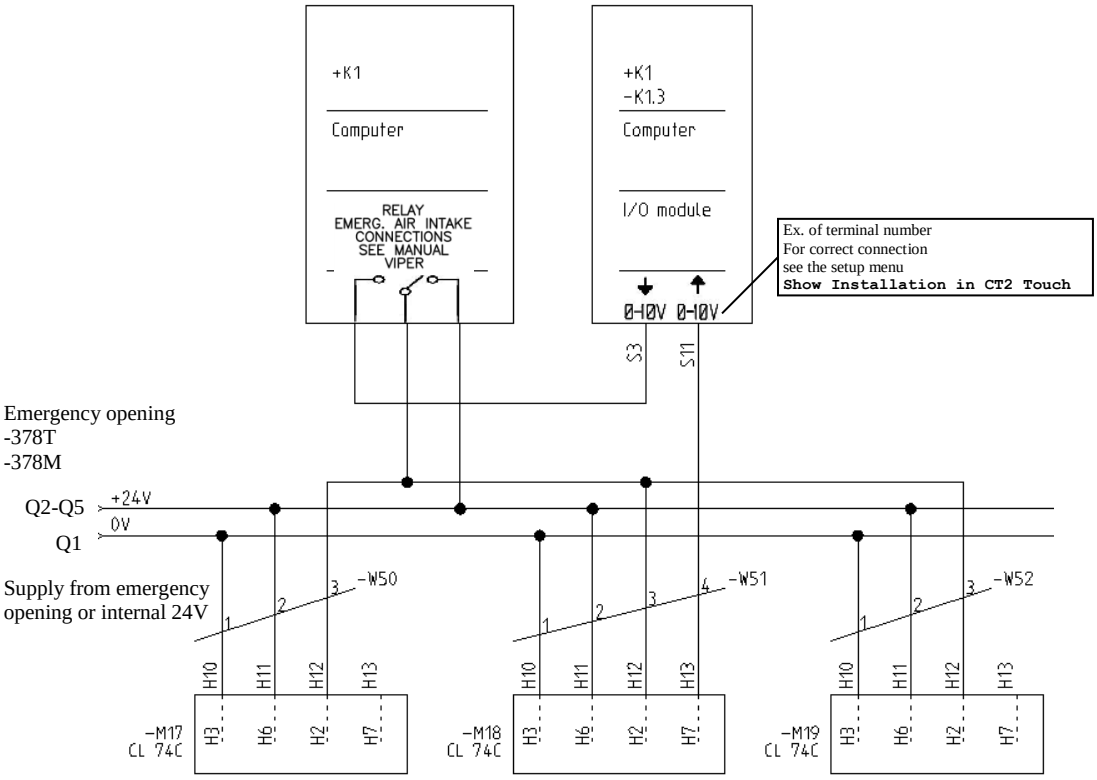
For correct connection of several winch motors, see the setup menu **`Show Installation`** in Viper Touch.

11.8 Winch Motors for Air Outlet

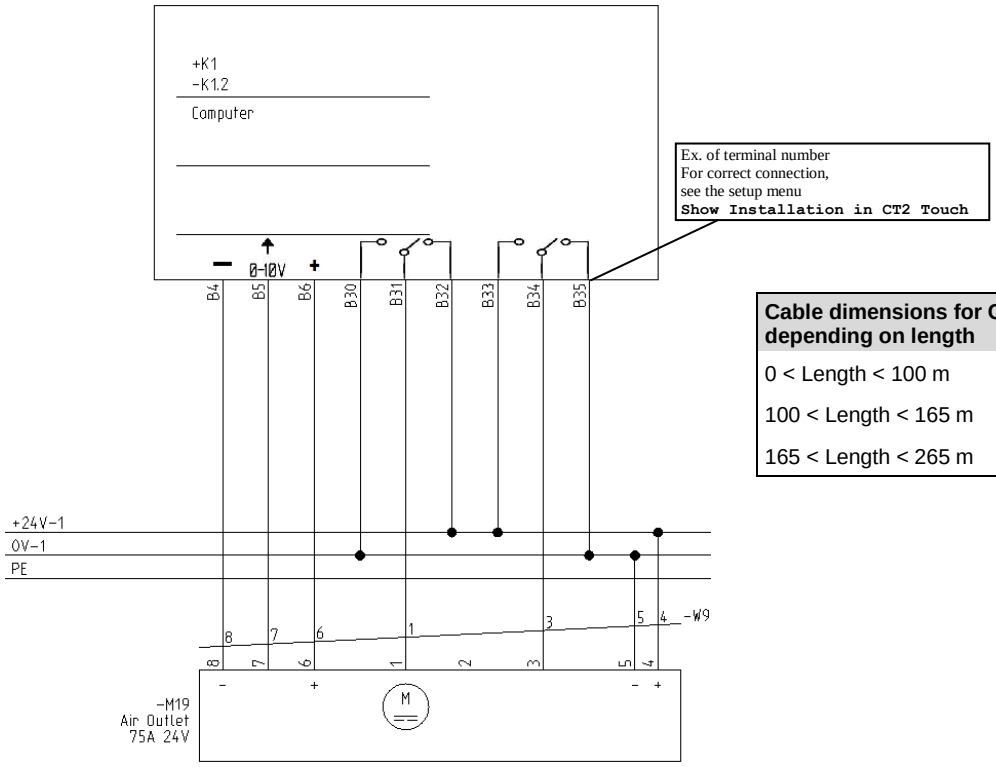
11.8.1 CL 74CV Stepless to Internal Speed Control



11.8.2 CL 74CVA Stepless 0-10V



11.8.3 CL 75A 24 V

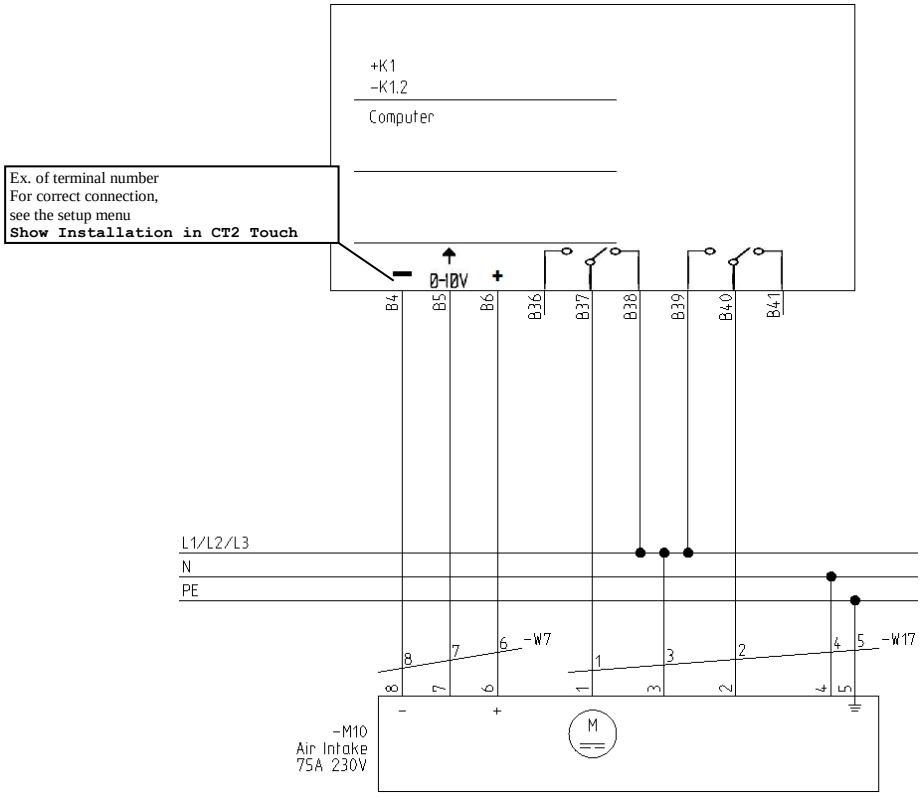


Cable dimensions for CL 75A 24V DC depending on length	
0 < Length < 100 m	7 x min. 1,5 mm^2
100 < Length < 165 m	7 x min. 2,5 mm^2
165 < Length < 265 m	7 x min. 4,0 mm^2

11.8.4 EWA 12 24 V

See diagram **11.7.4 EWA 12 24V**

11.8.5 CL 75A 230 V



11.8.6 EWA 12 230 V

See diagram **11.7.7**  **EWA 12 230 V**

11.8.7 Two CL 74CV Stepless

Two CL 74CV Stepless Winch Motors for Air Outlet

See diagram 11.8.1  CL 74CV Stepless

11.8.8 Two CL 74CVA Stepless 0-10 V

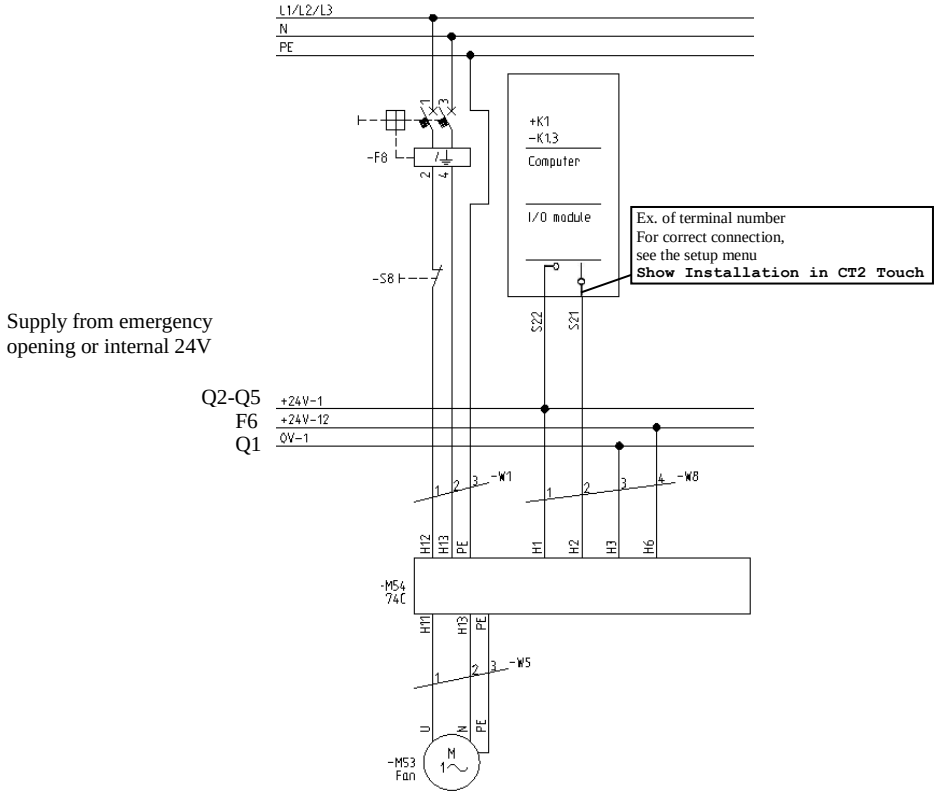
Two CL 74CV Stepless Winch Motors for Air Outlet

See diagram 11.8.2  CL 74CVA Stepless 0-10V

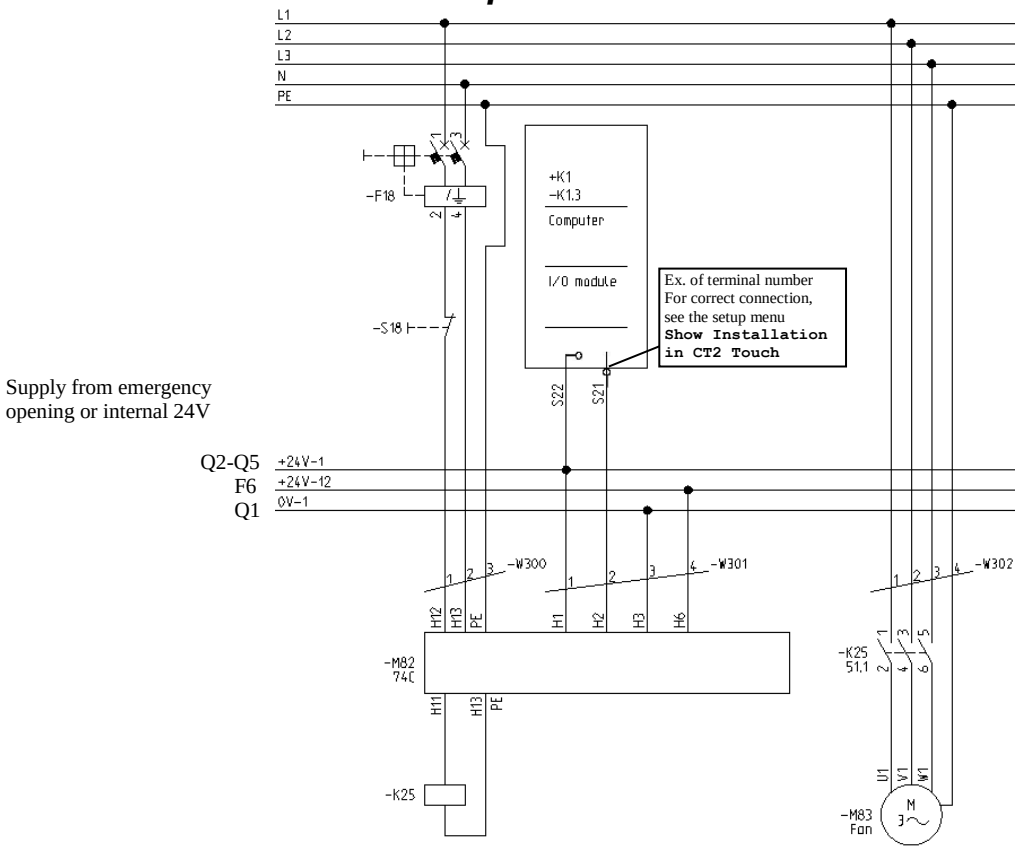
For correct connection of several winch motors, see the setup menu **`Show Installation in CT2 Touch`**.

11.9 MultiStep®

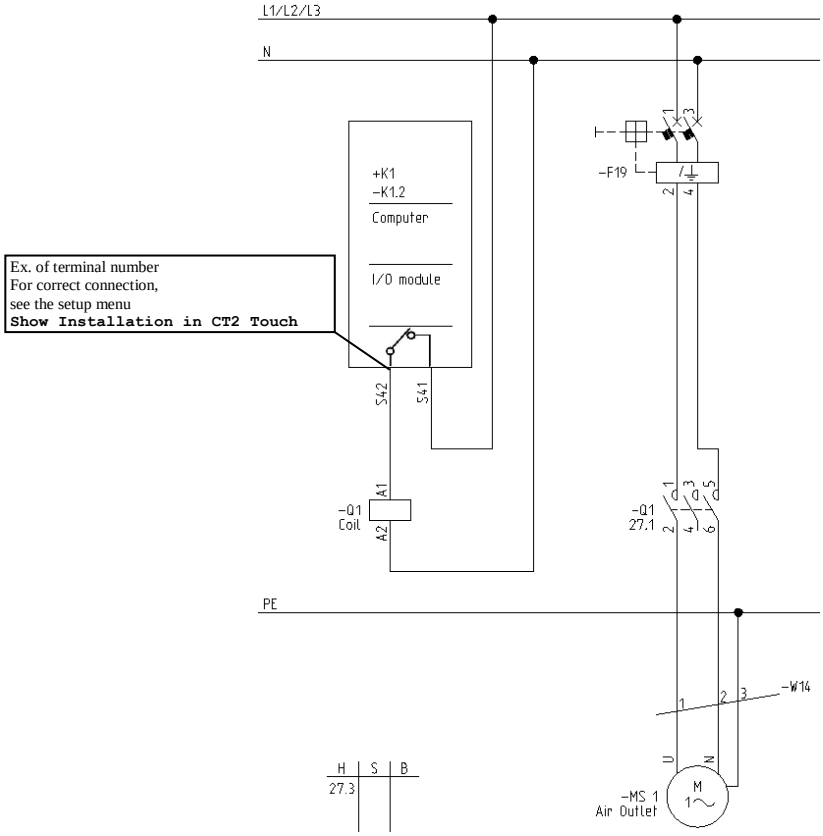
11.9.1 Air Outlet one-phase DA 74CO ON/OFF



11.9.2 Air Outlet three-phase DA 74CO ON/OFF

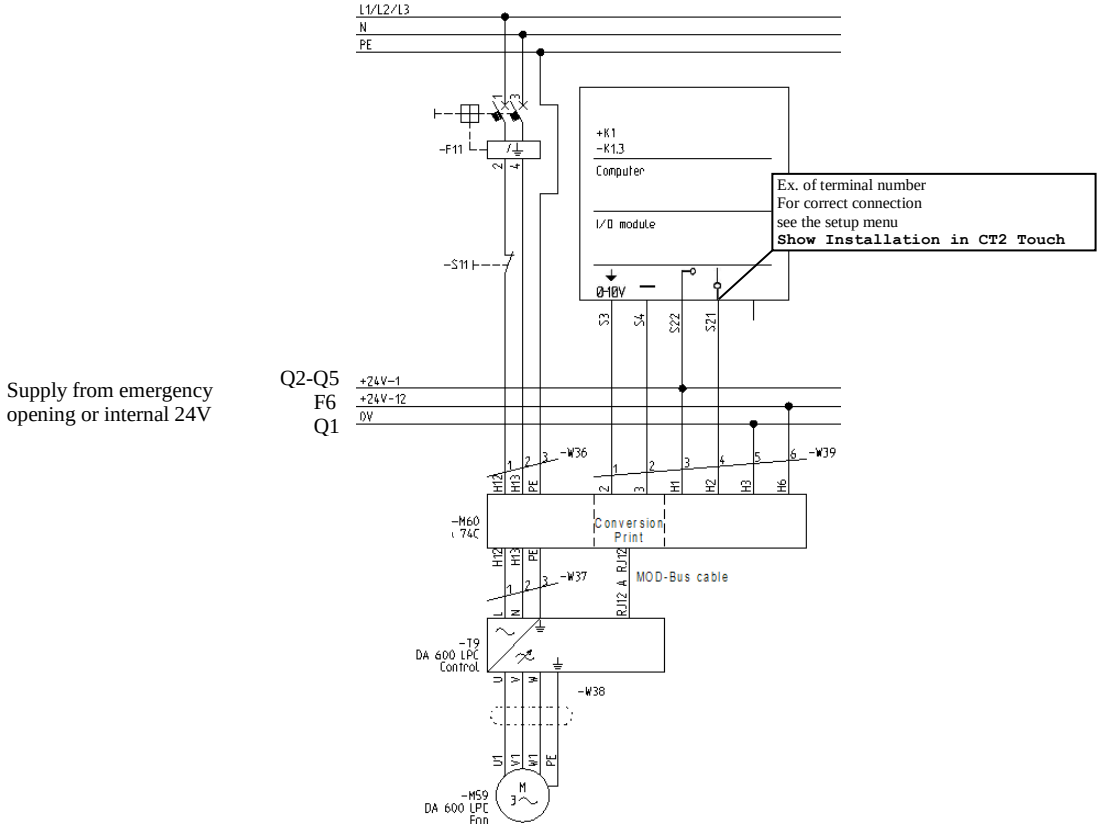


11.9.3 Gable Fan for Air Outlet Step 1

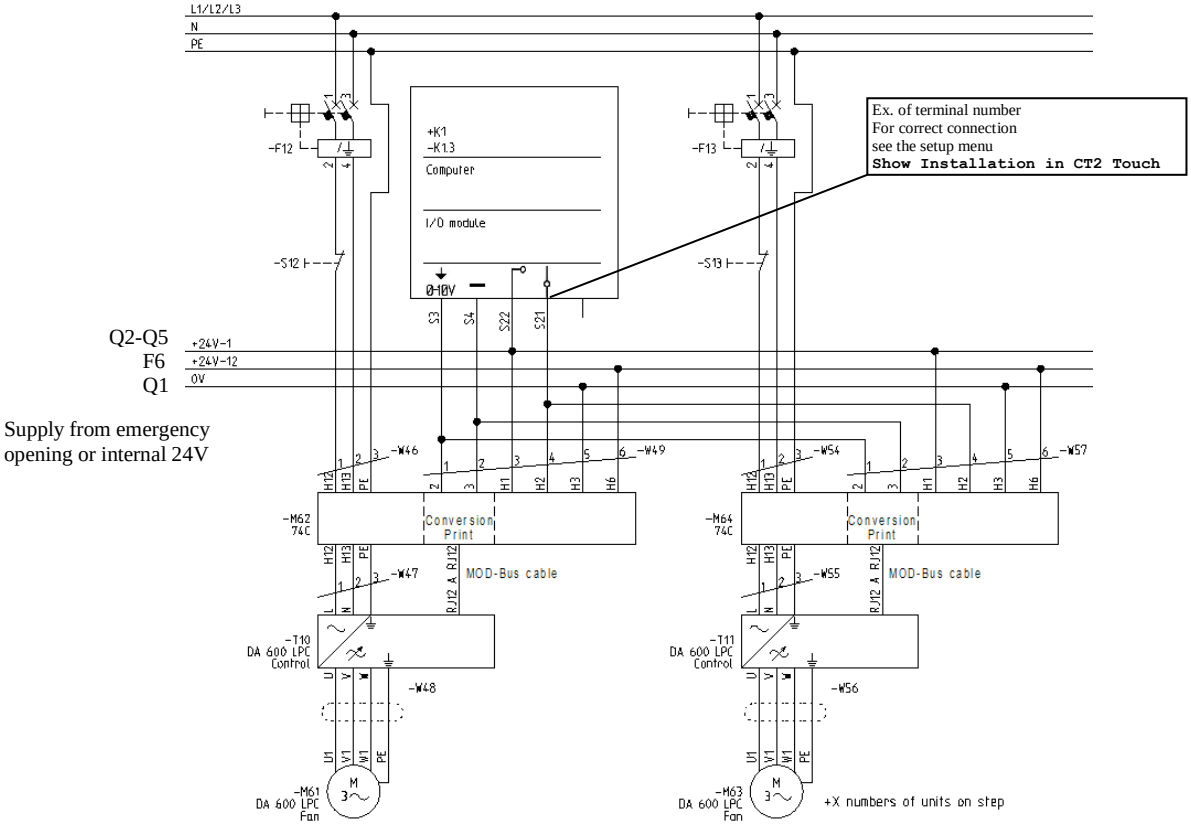


11.10 Dynamic MultiStep, AnySpeed

11.10.1 Air Outlet DA 74CO ON/OFF to DA 600 LPC



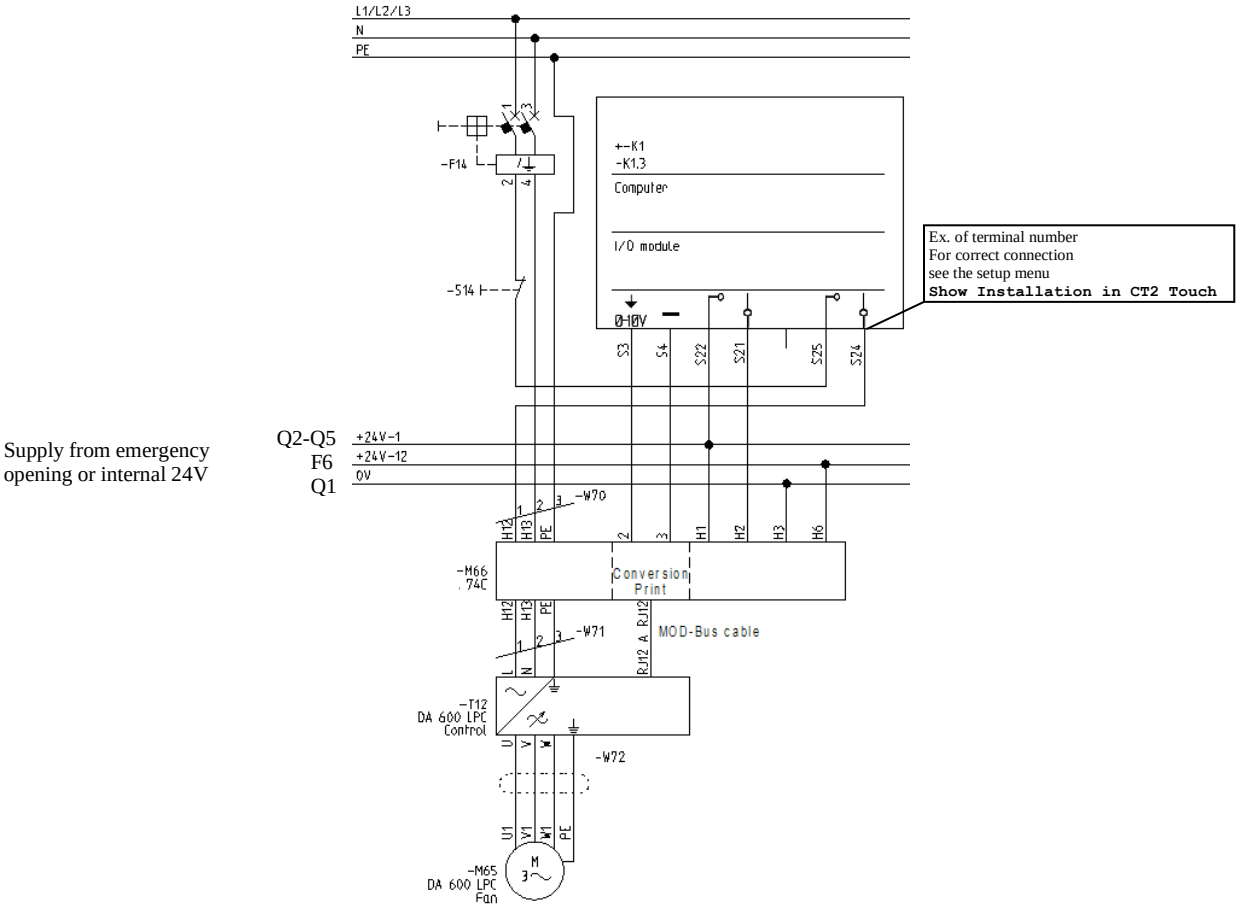
11.10.2 Air Outlet with several fans



11.11 Dynamic MultiStep, DualSpeed

With stop relay when free range or natural ventilation is used.

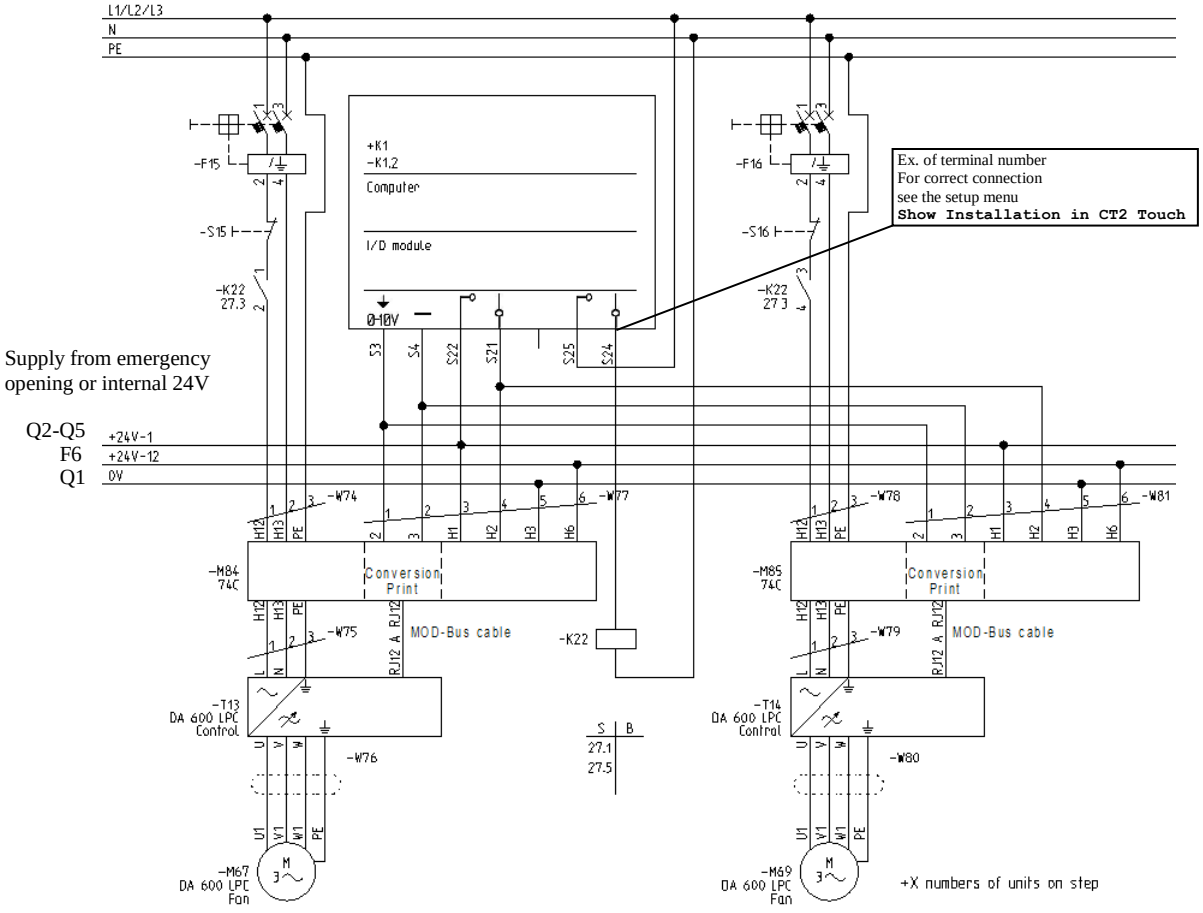
11.11.1 Air Outlet DA 74CO ON/OFF to DA 600 LPC



11.11.2 Air Outlet with several fans

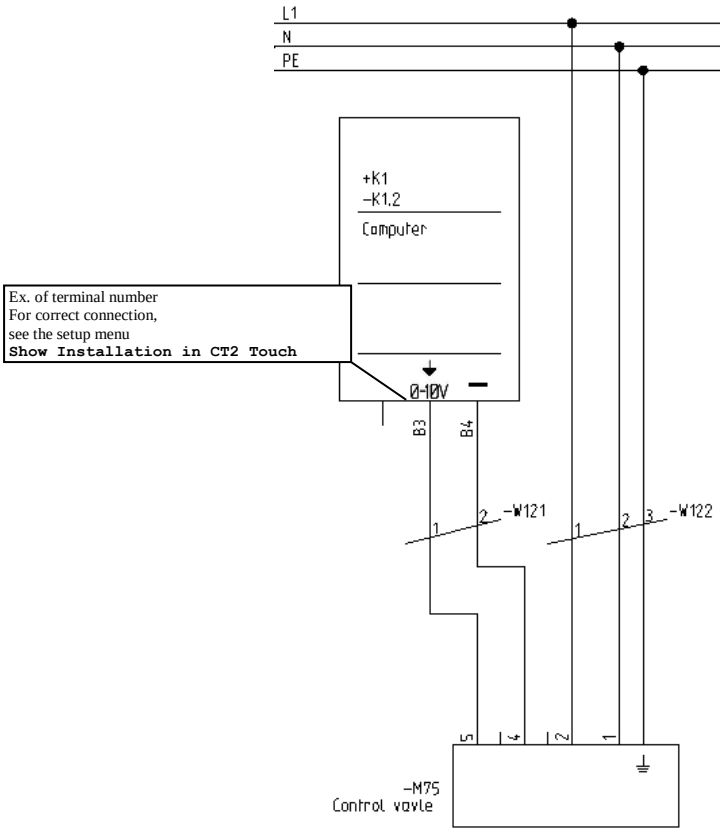
With stop relay when free range or natural ventilation is used.

Distribute the fans on phases L1, L2, L3.

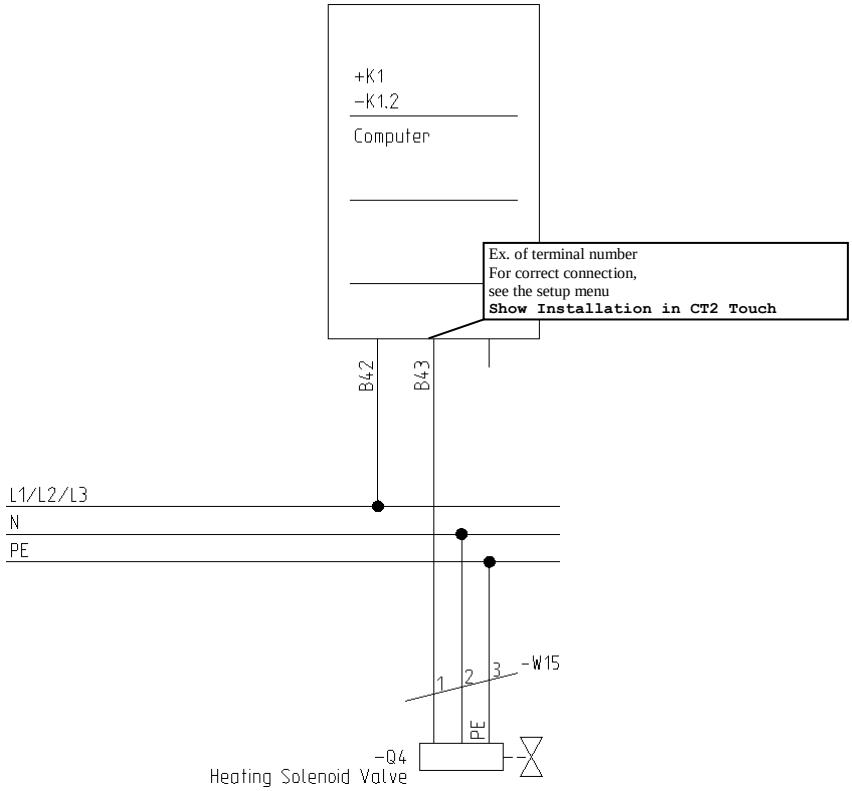


11.12 Room/Floor Heating

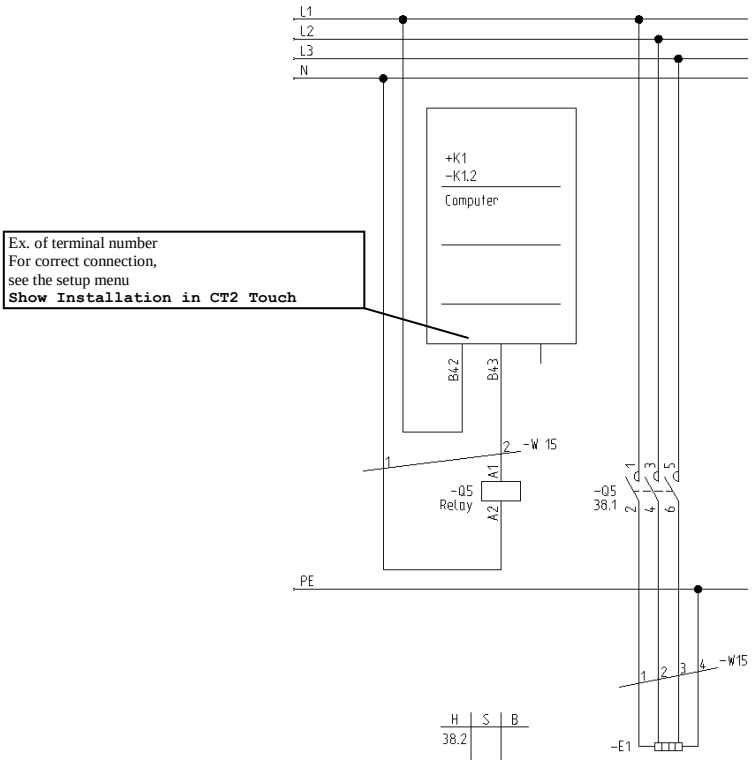
11.12.1 0-10 V Analogue



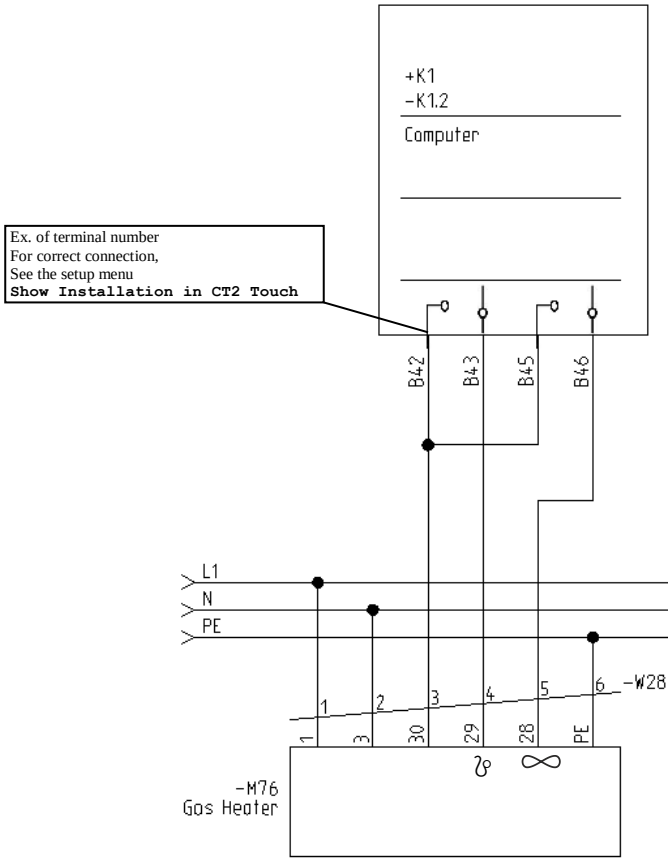
11.12.2 Relay Heating (Solenoid Valve)



11.12.3 Relay Heating three-phase



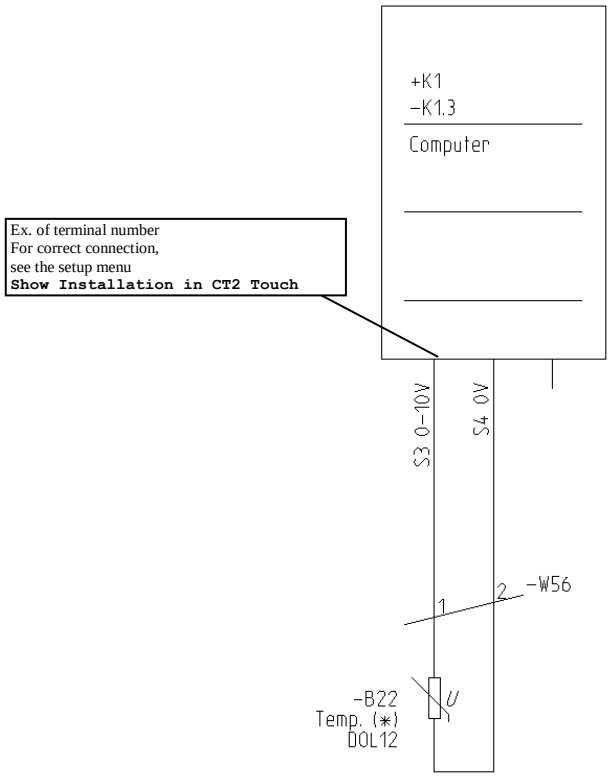
11.12.4 Blow Heater and Stir Fan



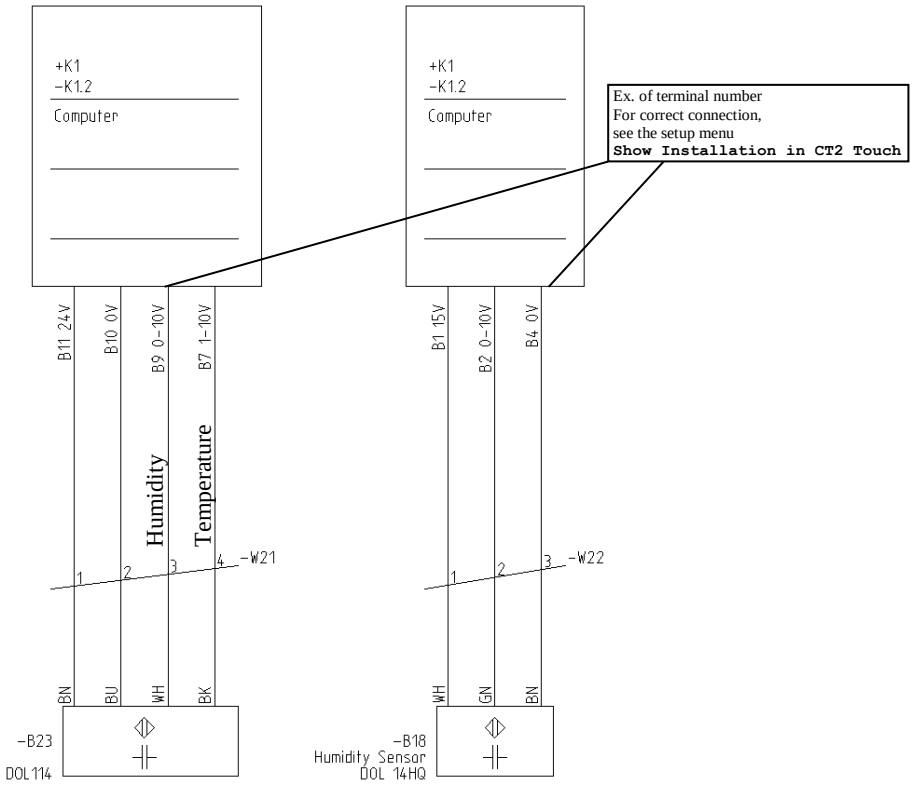
11.13 Sensors

See section 5 for correct mounting and positioning of climate sensors

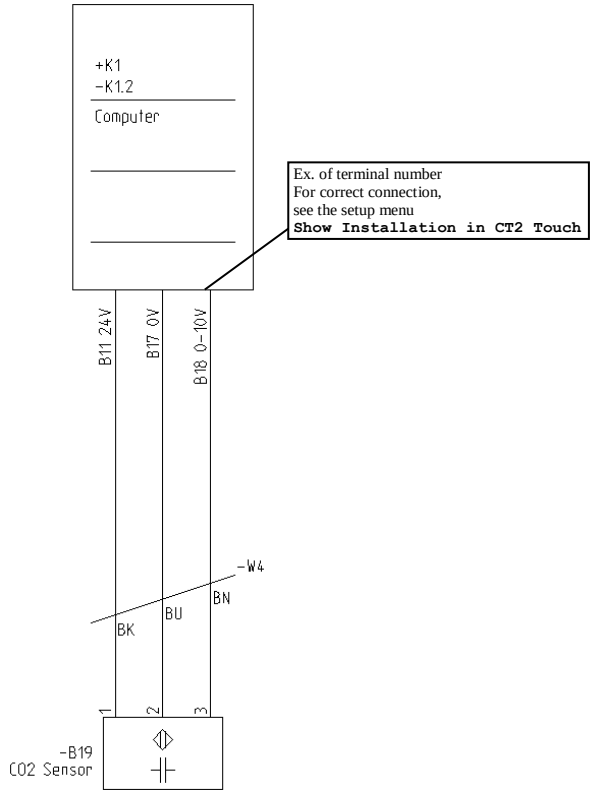
11.13.1 Temperature sensor



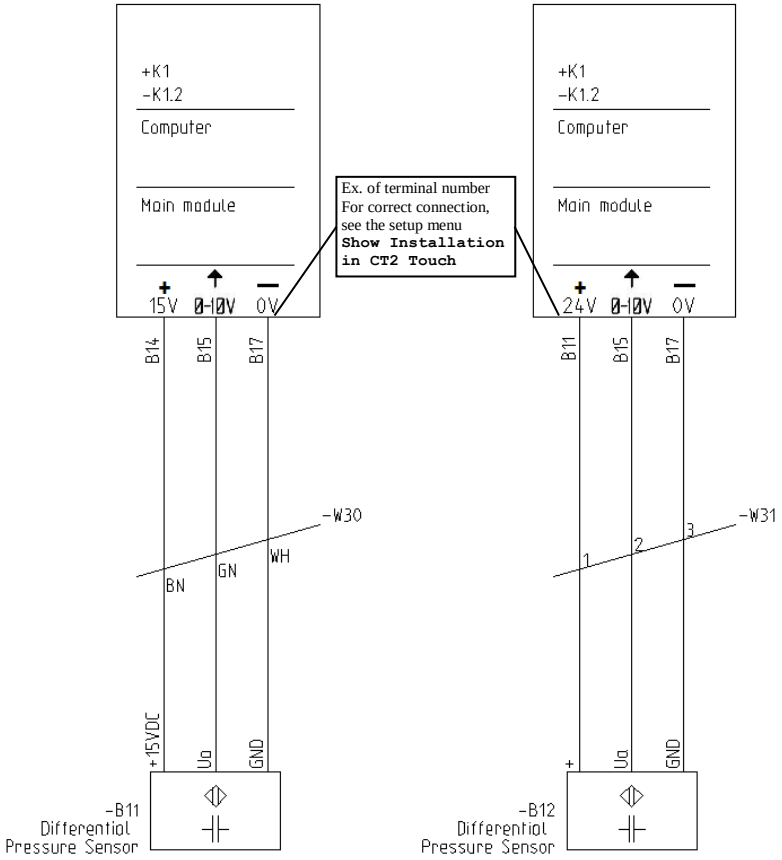
11.13.2 Temperature Sensor DOL 114 og DOL 14HQ



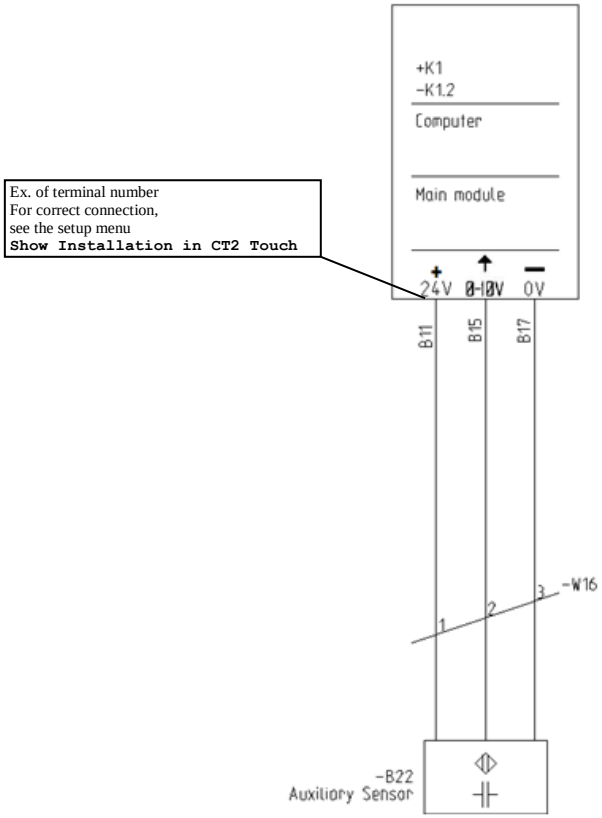
11.13.3 CO_2



11.13.4 Differential Pressure Sensor

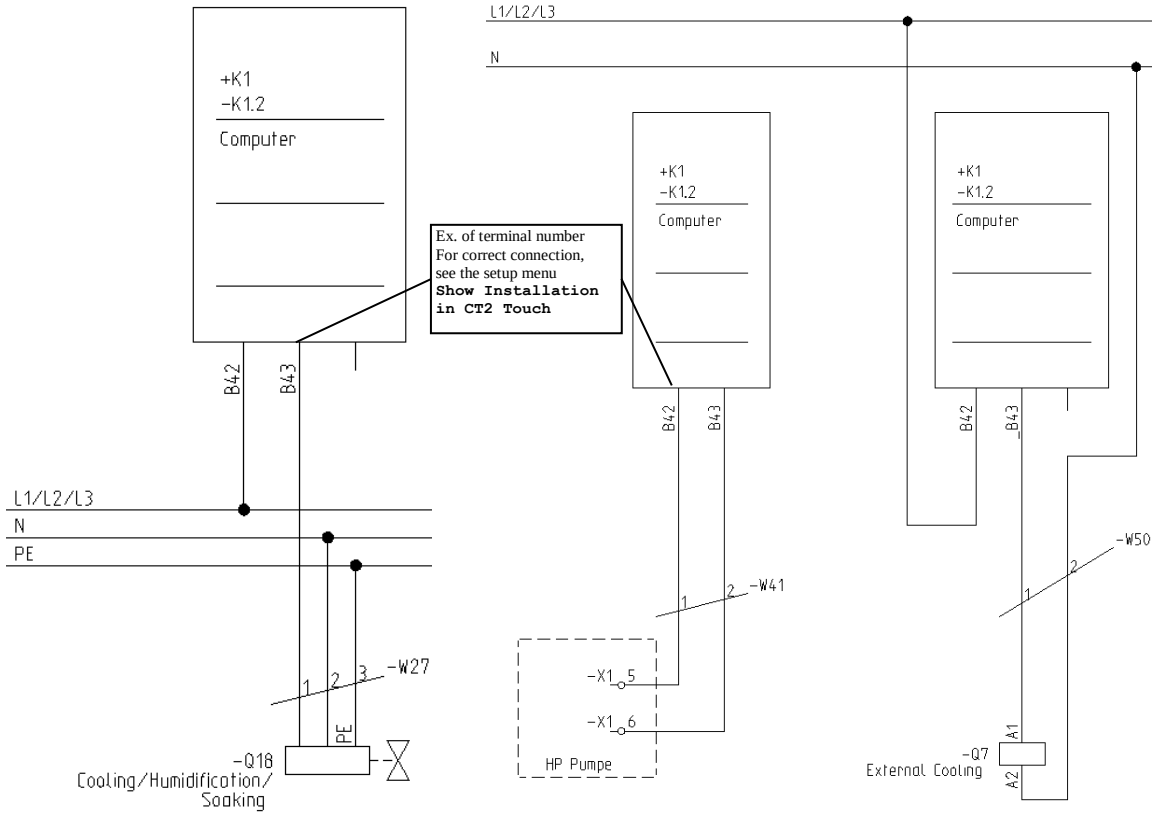


11.13.5 Auxiliary Sensor

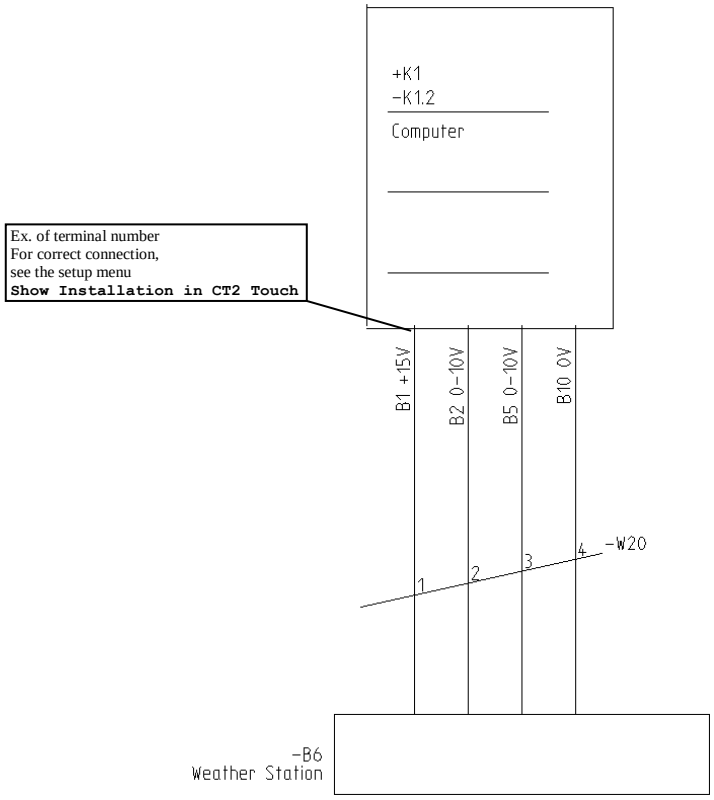


11.14 Special Connections

11.14.1 Cooling/Humidification/Soaking



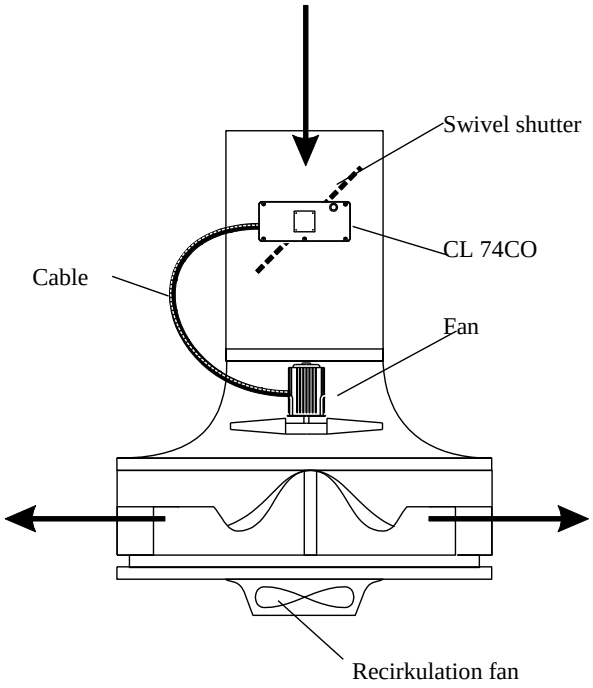
11.14.2 Weather Station

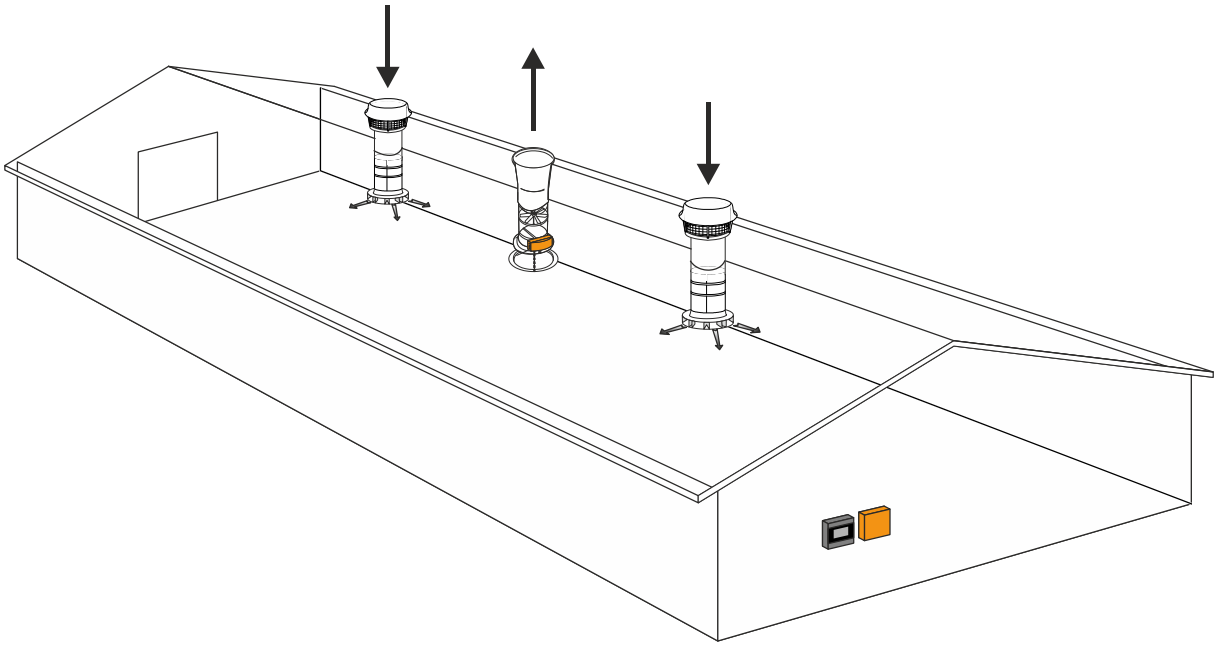


12 Connection of Equal Pressure System

We distinguish between two types of equal pressure systems:

1) MultiStep® air outlet: The swivel shutters are controlled by the MultiStep® principle and open by turns
2) Stepless air outlets: The swivel shutters are mechanically connected and open equally much





12.1 MultiStep®

Recirculation

Mount the recirculation fans in an external fan speed controller MC 31 or in internal Speed Control.

See diagram section 11.6.1 MC 31

See diagrams section 11.4 Internal Speed Control

Injection

Connect the fan to Air Inlet in Air Inlet **`1 Fan`**.

See diagram section 11.6.1 MC 31

Air Inlet

See diagrams section 11.7 Winch Motors for Air Inlet all positions

Air Outlet

Connect Air Outlet like ordinary MultiStep®.

See diagrams section 11.9 MultiStep®

12.2 Stepless

Recirculation

Mount the recirculation fans in an internal Speed Control.

See diagrams afsnit 11.4 Internal Speed Control.

Air Inlet and Air Outlet

Connect the fans in and external fan speed controller MC 31.

See diagram section 11.6.1 MC 31.

Air inlet

See diagrams section 11.7 Winch Motors for Air Inlet all positions

Air Outlet

See diagrams section 11.8 Winch Motors for Air Outlet.

Big Dutchman

2014.03.21 • 611861-02 • 9.18 • EN

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