GEOVENT

INSTRUCTIONS MANUAL

MULTIBOX III

source capture control panel

Version 1.0 09.01.2025

www.geovent.com

1.0 General safety precautions

IMPORTANT – Please study all the instructions before mounting and commissioning.

Please keep these instructions in a safe place and instruct all users in the function and operation of the product.

Installation and service should only be implemented after studying the wiring diagram thoroughly.

Avoid the dismantling of any factory-mounted parts, since it impedes the commissioning of the equipment.

All electrical installations must be carried out by an authorised electrician.

1.1 Danger

Dismantling parts on the MultiBox whilst in operation could be deadly dangerous.

Always disconnect the MultiBox from the mains, when removing the cover.

2.0 Adjustment of parameters

The MultiBox contains sevaral software programs, which controls how the MultiBox behaves. The MultiBox is by default set to 530, which is the program that is to be used in 9 out of 10 situations

1. Connect the MultiBox to 230 Volts as shown in the diagram

2. The Display will show “P0” on power-up

3. Press “ENTER” and select the appropriate soft ware program by scrolling with the “+” and “-“ keys and the press “ENTER” once more.

4. Shift to P1 (the set point parameter) by using the “+” key and the press “ENTER” – adjust the value to your desired set point pressure (in Pascals) and press “ENTER” once more.

5. Use the “+” until you get to D10.

6. Keep the “ENTER” key pressed until you get a beep (tells you that the changes you have made are now saved in EEPROM).

7. In case of failure – cut the power for at least 20 seconds and put it back on. The MultiBox is now reset and you must start the programming procedure again.

Tabel of general MultiBox III parameters				
P75	Service timer	0	0-36	0=Off 1-36=months between service
P76	Call service		Max 16 letters	Press and hold arrow down when connecting main power to type service message
P77	Reg volt start	5V	0-10V	Regulator start up voltage
P78	Reg delay start	5	0-240	Regulator start up time in seconds
P92	Start position	0	0-1-2	0=closed, 1=open, 2=frees
P93	Zero calibration	No	Yes	Calibration of pressure zero (pa)
P94	Manual start/ stop	Yes	Yes No	Yes= Manual start No=Auto
P95	Alarm delay	10	3600	Time delay before alarm signal
P96	Language select	DK	GB	select DK or GB language
P97	Disable alarm sound	0	0-1	Disable alarm sound when P97=1
P98	PIN code	0	2211	PIN code on / off
P99	Parameter Reset	No	Yes	Yes = Reset all parameters
P00	Select of version	550	Table 1	Software version selection

The software is applied for PID feedback regulation of process air extraction by means of frequency inverter or electric or pneumatic damper. The regulator PID signal can be inverted, and thereby have opposite direction. The Transmitter has 0-10V signal for calculated air extraction flow, and slave control of balanced Inlet air.

The following start-up procedure is recommended:

- Installation according to diagram below
- Green or Red Alarm diode when T3 is active
- Select software V530 or V630 in Parameter P00
- Connect one pressure sensor tube to ventilation ducting, or 2 sensor tubes to a flow meter
- Select desired regulator setpoint (Pa) in P01
- Select min. and max. alarm limits in P02 and P03
- Control signal in T10 can be inverted in P16.
- Terminal T10 is connected to freq. inv. or damper
- Terminal T8 with slave signal for balanced inlet air is connected to inlet air frequency inverter
- Terminal T9 with flow signal (l/s) can be connected to Sumbox such as version V670 or V675.
- Max fan capacity (50 Hz) is entered into P14
- Controller start in T4 or pres ESC (when P94=yes).

After start-up the following adjustments are possible:

- Adjust PID regulator: higher P06-value will speed up the regulator, and higher P07-value will moderate the regulator and reduce instability
- Adjust P22 and P23 to max Room and Inlet air flow
- T8 has 0-10V signal for Inlet air slave control
- T9 has 0-10V signal for flow rate transmitter
  The regulator maintains the actual set point as indicated in P10, and transmit 0-10V signals for flow rate(T9) and slave control of Inlet air (T8) with frequency control

Parameter list

Par.	Label	Def.	Max	Def	Max	Description
P00	Model number	530	530	630	630	Software version number
P01	Setpoint+pressure	1000	5000	100	1000	Adjust PID setpoint + pressure
P02	Min. alarm limit (Pa)	200	4999	20	999	Monitor alarm min. limit (Pa)
P03	Max. alarm limit (Pa)	5000	5000	1000	1000	Monitor alarm max. limit (Pa)
P04	Time delay (sec)	10	3600	10	3600	Time delay to shut down
P05	Neutral zone (Pa)	3	100	3	1000	Neutral zone from set point
P06	P-factor (PID)	3	200	3	200	Regulator P-factor (speed)
P07	I-time (PID) (sec)	30	1000	30	1000	Regulator I-time (moderation)
D10	Pressure+setpoint	-	5000	0	1000	Actual press.+setpoint values
P14	Max flow for T10	1000	9999	1000	9999	Max capacity (l/s) main fan
P16	Invert PID signal	No	Yes	No	Yes	No = normal PID ; Yes = invert
D18	Flow display (l/s)	0	-	0	-	Flow with K-factor in P17
P22	Max Room flow	1	9999	1	9999	Room fan max capacity (l/s)
P23	Max Inlet flow	1000	9999	1000	9999	Inlet fan max capacity (l/s)
P24	Residual flow	0	9999	0	9999	Residual fan max capacity
D49	Display T10 (V)	0	-	0	-	0-10V value from PID (V)
D50	Display T9 (V)	-	-	-	-	10-0V Room air value (V)
D51	Display T8 (V)	-	-	-	-	0-10V Inlet air value (V)
P52	Min. limit T10 (V)	0	9	0	9	Adjust voltage limit for T10
P53	Max. limit T10 (V)	10	1	10	1	Adjust voltage limit for T10
P54	Min Limit T9 (V)	0	9	0	9	Adjust voltage limit for T9
P55	Max limit T9 (V)	10	1	10	1	Adjust voltage limit for T9
P56	Min Limit T8 (V)	0	9	0	9	Adjust voltage limit for T8
P57	Max limit T8 (V)	10	1	10	1	Adjust voltage limit for T8
P73	Flow rate (10V)	1000	9999	1000	9999	Flow (l/s) limit T9 at 10V output

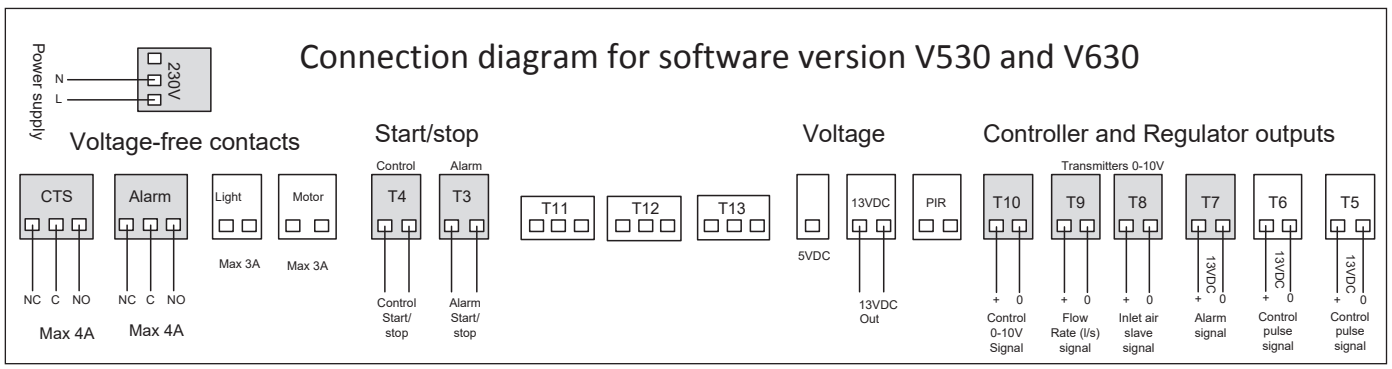
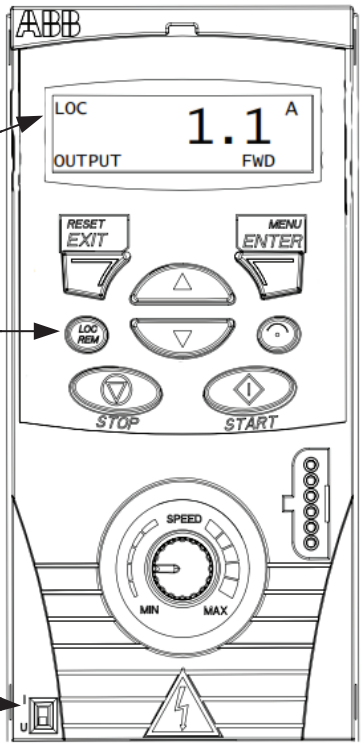


ABB ACS 150

Quick guide for frequency inverter setup.



If Multibox II is used, control mode is set at ”REM”.

”LOC”	=	Control using front panel.
”REM”	=	External PID control.

”AI” adjustment type is set to ”U” on the micro switch (0-10V)

Access parameter list.

Exit


Arrows

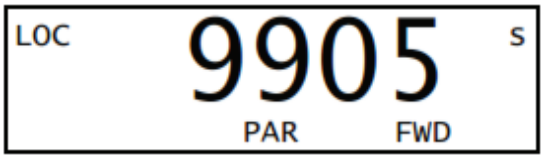
Menu

Press menu and select Par L

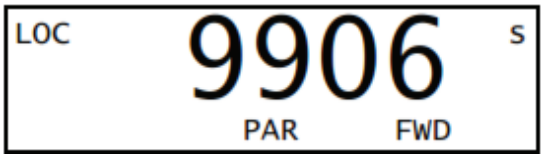
Now it is possible to scroll through the parameter list using arrows.
(Shown: example)

Motor data setup

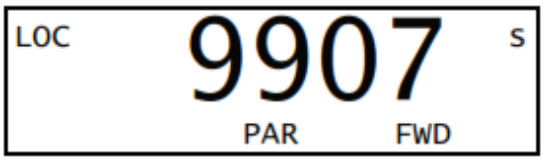
Setup the motor´s rated voltage as indicated on the motor label. For example 400V



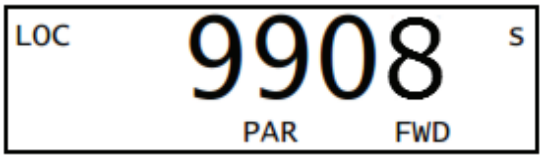
Setup the motor´s rated current as indicated on the motor label. For example 2,6A



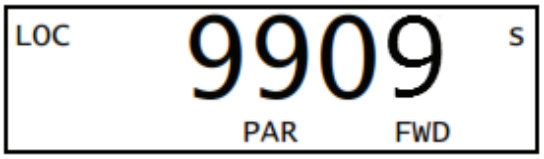
Setup the motor´s rated frequency as indicated on the motor label. For example 50Hz



Setup the motor´s rated speed as indicated on the motor label. For example. 2830 rpm

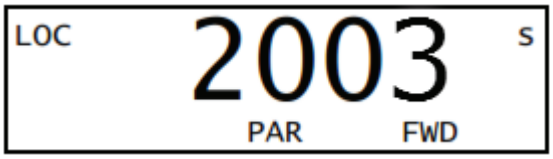


Setup the motor´s rated power consumption as indicated on the motor label. For example 4Kw

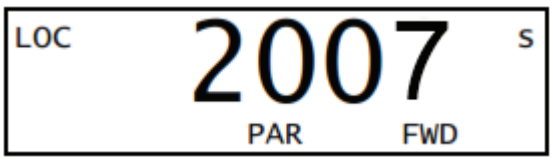


Operation Limits

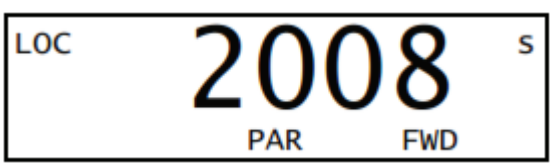
Setup the allowed current. In many cases the same as indicated on the label on the motor. For example. 2,6A



Setup minimum frequency.
Set at 15Hz. If set lower, both fan and frequency inverter may suffer damage.

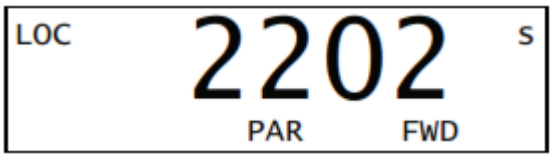


Set max. frequency.
Set at max allowed frequency for the current fan.

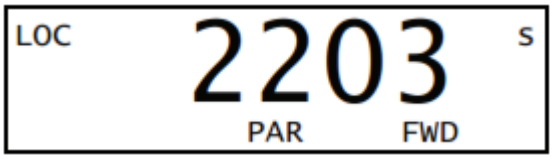


Ramp time setup.

Setup ramp up time.
Normally about 20 seconds.
(Ramp time correlates with fan size – the larger the fan, the longer the ramp time)

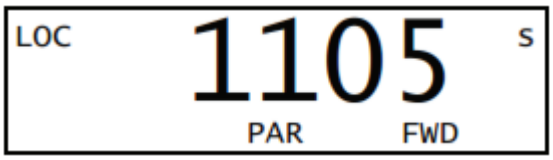


Setup ramp down time.
Normally about 50 seconds
(Ramp time correlates with fan size – the larger the fan, the longer the ramp time



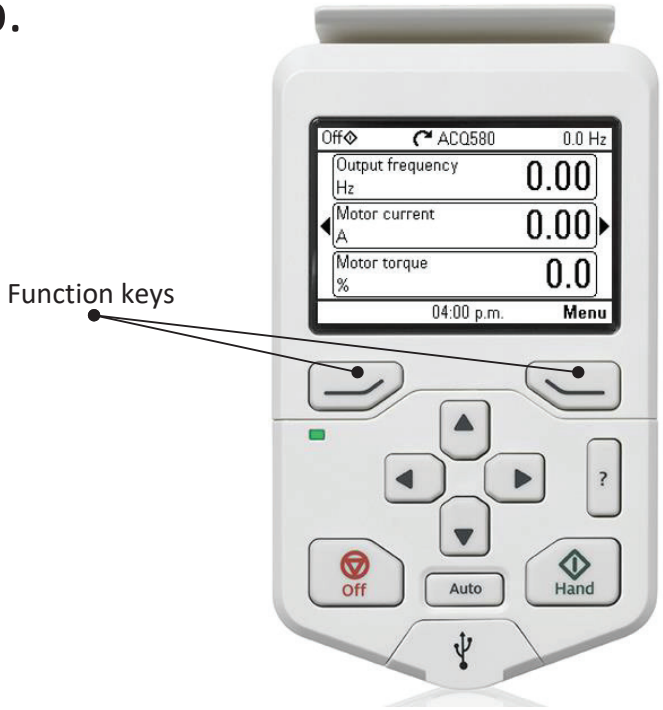
Setup max reference.

Setup the value(Hz) of max reference voltage (10V).
If you want the fan to run at for ex. 55Hz set it at 55Hz.
(If you do not set this parameter the fan will not run faster than 50Hz)



This is a quick guide for setting up the frequency inverter with the minimu required settings.
These settings apply to a typical Geovent product constellation, and are not directly applicable for use with other products.
For settings of other parameters/macros and detailed explanation hereof, see the instructions manual from ABB.

Quick guide for Frequency inverter setup.

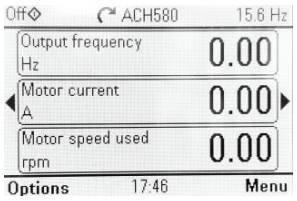


If Multibox is used, set control mode to ”AUTO”.

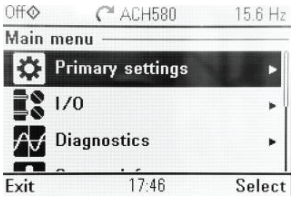
”Hand”	=	Control using front panel.
”Auto”	=	External PID control.

Access setup menu.

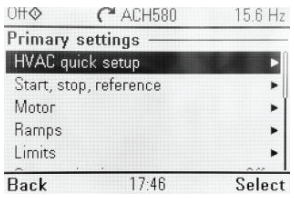
Press ”menu”



Select ”Primary settings”.

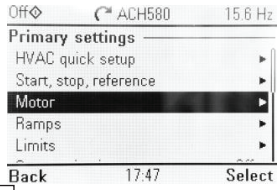


Now choose The parameter groups you need to setup. On the following pages you will be guided through the parameters we Recommend you setup.



Motor data setup

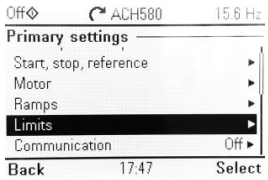
In ”primary settings” select ”motor”.



Setup the motor´s rated current as indicated on the motor nameplate. For exampel 2.6A	9906 Current
Setup the motor´s rated speed as indicated on the motor nameplate. For exampel 2830 rpm	9909 Speed
Setup the motor´s rated voltage as indicated on the motor nameplate. For exampel 400V	9907 Voltage
Setup the motor´s rated frequency as indicated on the motor nameplate. For exampel 50Hz	9908 Frequency
Setup the motor´s rated power comsumption as indicated on the motor nameplate. For exampel 4Kw	9910 Power

Operation limits

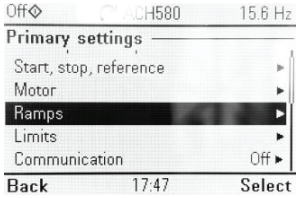
In ”Primary settings” select ”Limits”.



Setup minimum allowed frequency. Set at 15Hz. If set lower, both fan and inverter may suffer damage.	Minimum frequency
Set maximum frequency. Set maximum allowed frequency for the selected fan.	3013 Maximum frequency
Setup the max allowed current. In many cases this is the same as indicated on the motor nameplate. For example 2.6A	3014 Maximum current
	3017

Ramp time setup

In ”Primary settings” select ”Ramps”.



Setup ramp up time. Normally 20 seconds.
(Ramp time correlates with fan size – larger fan = more ramp time)

2872	Acceleration time

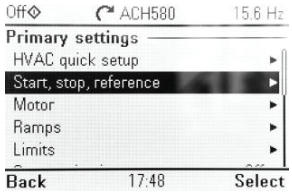
Setup ramp down time. Normally 50 seconds.
(Ramp time correlates with fan size – larger fan = more ramp time)

2873	Deceleration time

Setup max reference.

In ”Primary settings” select ”Start, stop,reference”. In the following page select ”Primary auto control location” and then ”AI1 -scale”

2211

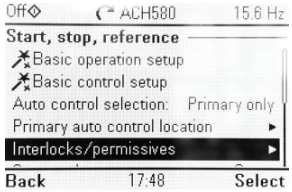


Setup the value(Hz) of max reference voltage(10V). If you set the parameter 2008 to ex. 55Hz then set this parameter to 55Hz too.

1220	Max scale

Setup start conditions.

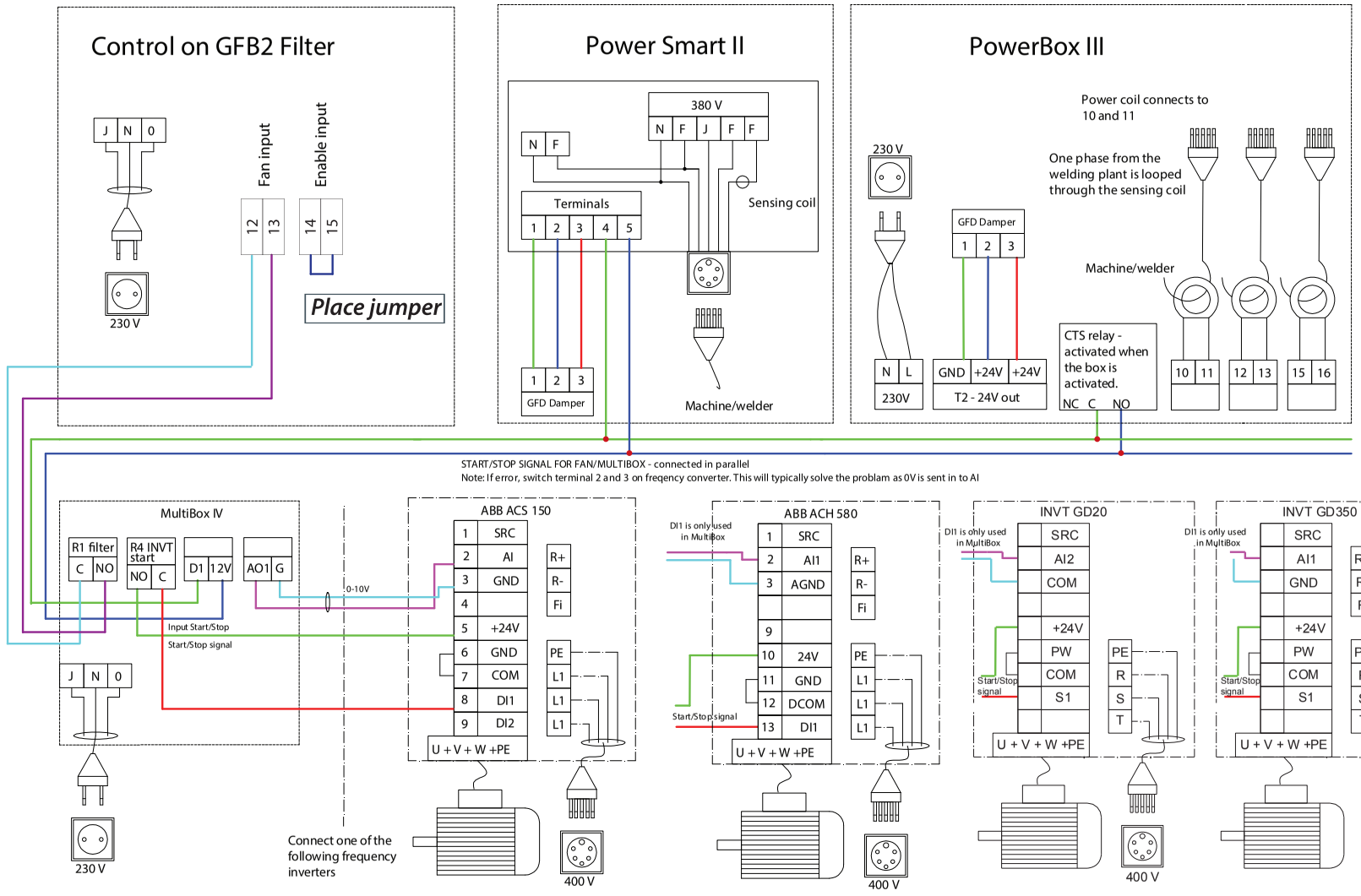
In ”Start, stop, reference” select ”Interlocs/permissives”.



Activate/deactivate DI4 as start condition.
Standard setting is DI4 is activated as start condition. We recommend removing the checkmark.

2041	Use start interlock 1

This is a quick guide for setting up the frequency inverter with the minimum required settings.
These settings apply to a typical Geovent product constellation, and are not directly applicable for use with other products.
For settings of other parameters/macros and detailed explanation hereof, see the instructions manual from ABB.



Adjusting the frequency inverter:
See manual - important parameters to adjust:

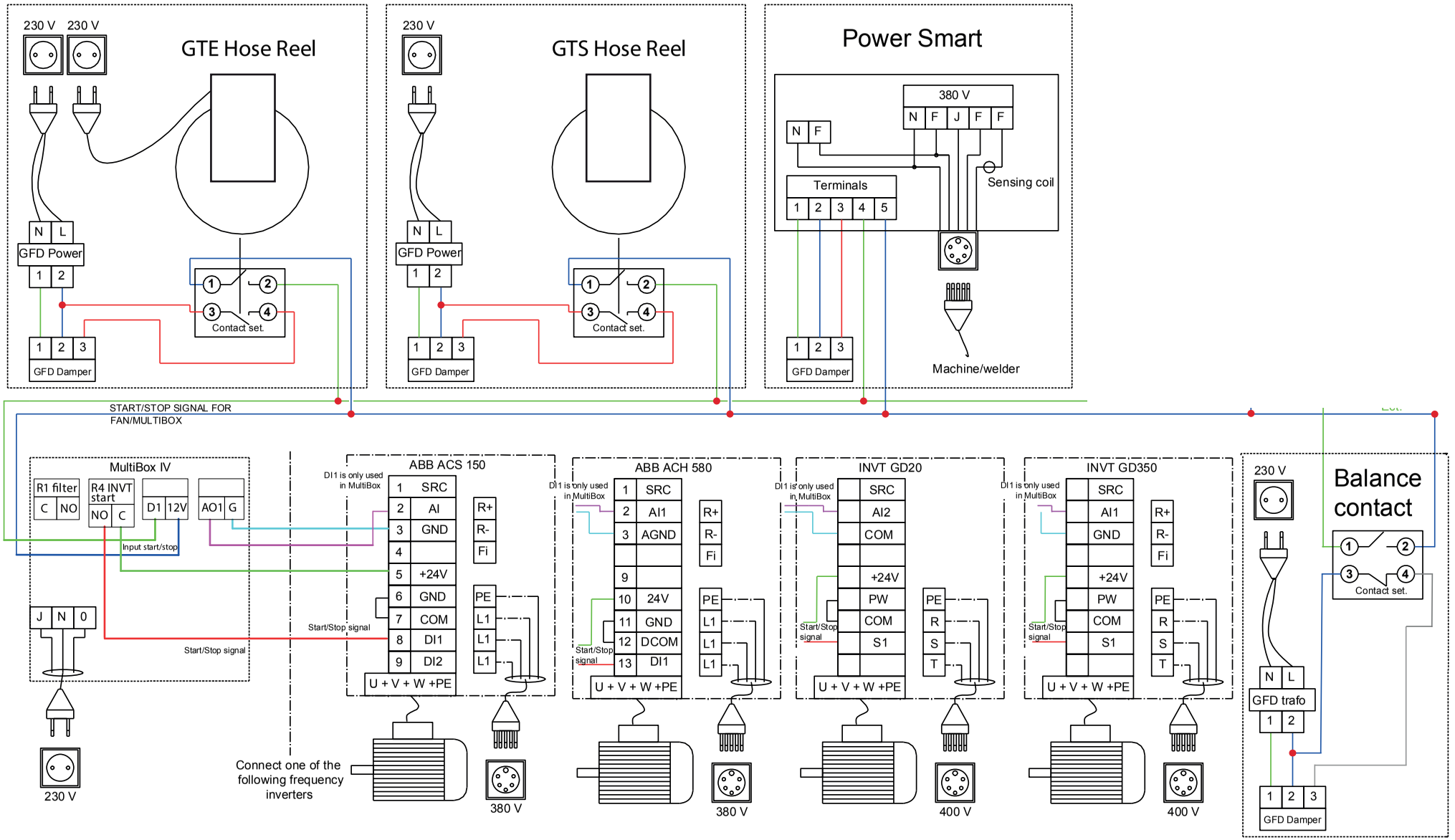
Motor data: Typically parameter group 99
Ramp up/down: Typically parameter group 22.
Frequency Max/Min:
Typically parameter group 20 and 11

IMPORTANT
Jumper on the bottom (S1) must be switched from "I" to "U"
This will change output from current to voltage.
Remember to bridge GND and COM.

Adjusting Multibox IV:

Quick guide - also see manual
Adjustment set point [Pa]
Min. Alarm limits [s] at too low pressure
Max. Alarm limit [s] at too high pressure
shows current pressure.

MULTI COUPLING DIAGRAM - TERMINALS, MULTIBOX AND FREQUENCY INVERTERS



8.1 Commuting

Pendling can be caused by an imbalance in the system, where individual components become unbalanced and fine tuning may be necessary.
Follow the guide below:

1: Always start with the measuring point. I.e. where is the pressure hose? This should be in a place where there is no turbulence.
This is checked by putting the frequency converter in manual, reading if the oscillations are smaller.
If the measurements in the multibox are stable, this fault can be ruled out.
If it continues to oscillate, the measurement point must be moved.

2: The parameters P, I and D are changed in the MultiBox.

- P05 is set to e.g. 30 Pa (Neutral zone)
- P06 is set to 1 (P-factor)
- P07 is set to 300-400 (I time)

1. Start by setting P07 to 300 (it may be necessary to adjust this value up or down afterwards)
2. If it is still unstable, set P06 to 1.
3. In most cases it is not necessary to change the neutral zone, but if the measuring point is very unstable, it may help to set this to e.g. 30Pa.

3: The ramp times in the frequency converter are changed. Typically, longer ramp times will help.
This could be changing the ramp up and down, for example from 10 to 20 seconds.
The correct ramp time depends on the wheel size and rotation speed.
The bigger the wheel, the longer the ramp times.
For ABB converters this is usually changed in parameter group 22-02 and 22-03, but always check the manual.

10.0 Dismantling, disabling and scrapping

Deactive the product by disconnection the electrical mains. Dismantle compressed air pipes and other pipes or wires etc.
Dismantle the filter cartridge by unscrewing the finger screws and remove the service hatch.
Turn the filter cartridge so that is loosens from the latches at the top of the cartridge.
Carefully remove the contaminated filter cartridge, place it in a plastic bag and seal the bag.
Dispose of it according to local regulations.
The inside of the product must be cleaned by means of a vacuum cleaner with a filter which suits the purpose.

The inside of the product must be cleaned by means of a vacuum cleaner with a filter which suits the purpose.

Dismantle plastic parts and dispose of it according to local regulations.

Dismantle the metallic parts by unscrewing screws and bolts. Afterwards cut the larger pieces into smaller pieces and dispose of it according to local regulation.

Dismantle plastic parts and dispose of it according to local regulations.

The packing material must be sorted according to local regulation in order to be able to reuse the material.

12.0 Liability

Warranty
Geovent A/S grants a warranty for products, which are defective, when it can be proved that the defects are due to poor manufacture or materials on the part of Geovent. The warranty comprises remedial action (reparation or exchange) until one year after the date of shipment.

No claims can be made against Geovent A/S in relation to loss of earnings or consequential loss as a result of defects on products from Geovent.

Wear on parts such as filter cartridges and hose is not included in the warranty.

User liability

In order for Geovent to be capable of granting the declared warranty, the user/fitter must follow this instruction manual in all respects.

Under no circumstances may the products be changed in any way, without prior written agreement with Geovent A/S.

Please refer to the current sales and delivery conditions at www.geovent.com

13.0 Declaration of conformity

The manufacturer: GEOVENT A/S
HOVEDGADEN 86
DK-8831 LØGSTRUP

Hereby declares that:

Model: MultiBox III

Complies with the relevant parts of the following directives and standards:

Directive 2006/42 / EC of the European Parliament and of the Council of 17 May 2006 on machines and amending directives 95/16 / EC.

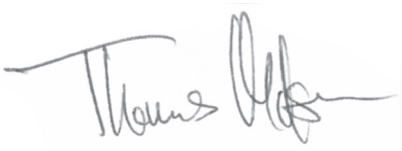
This declaration is no more valid if changes are made to the product by others than the manufacturer.

Authorized to collect the technical file:

Lise Cramer

Date: 09.01.2025

Position: Director
Name: Thomas Molsen

Signature: 

CE

GEOVENT

HOVEDGADEN 86 • DK-8831 LØGSTRUP
(+45) 8664 2211 • salg@geovent.dk