DCV CONTROLLER

Part No. / Ref. / Item No. / Code:

84370 – 84371 – 84372 – 84373 - 84374

Alentec & Orion AB Grustagsvägen 4, SE-13840, Älta, SWEDEN · Info@alentec.se · alentec.com

1 Technical data

DCV Controller

TO ACHIEVE OPTIMAL FUNCTION AND SAFETY, THIS MANUAL MUST BE READ CAREFULLY BEFORE USING THE PRODUCT!

Frequency converter

Manufacturer	Danfoss	
Model	VLT-HVAC	
Enclosure rating	IP55	
Vibration test	0.7g RMS (IEC-68-2-34/35/36)	
Ambient temperature		50°C
	Min.0°C e (at full operation)	
	Min.-10°C e (at reduced operation)	
Storage and transport temp.		-25°C to 65°C
Max. altitude above sea level		1000m
Max. relative humidity		93% +2% -3% (during storage and transport)
	95% non-condensing (during operation).	

For further information, consult the frequency converter manual.

Pressure transmitter

Pressure range		0-2500 Pa (83015, TG-2500)
Enclosure rating	IP54	
Output	4-20 mA	
Supply voltage	18 to 33 VDC	
Current consumption		30 mA
Sensor material	LSR (silicone)	
Pressure connection		6 mm
Cable connection	Screw terminal	
Linearity	< +/- 0.7% fs	
Hysteresis	< +/- 1% fs	
Operating temperature		0 70°C
Storage temperature		-10 70°C

2 Safety information

- The frequency converter is under lethal voltage when connected to the mains. Incorrect installation of the motor or frequency converter can cause material damage, serious personal injury or death. The instructions in the manual and national and local safety regulations must therefore be followed.

- Touching live parts can be life-threatening even after the mains voltage has been disconnected: wait at least four minutes for up to 7.5 kW and at least 15 minutes for over 7.5 kW.

- The mains connection to the frequency converter must be disconnected during all repair work. Check that the mains voltage is disconnected and that the prescribed time has elapsed before removing the motor or mains plugs.

- The [OFF/STOP] button on the frequency converter control panel does not disconnect the mains power and therefore cannot be used as a safety switch.

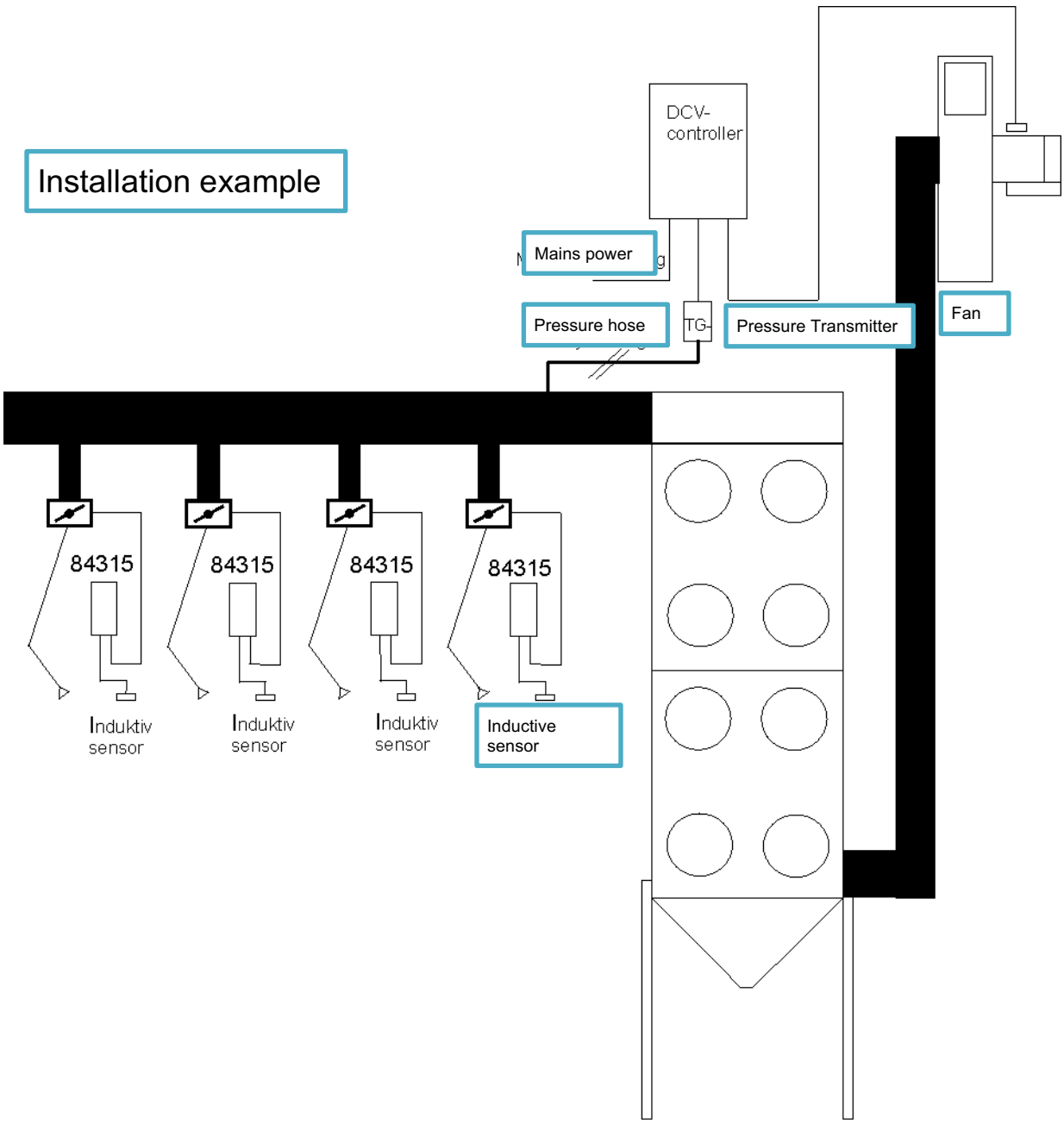
- Ensure that the device is properly earthed and that the user is protected from live parts. The motor must be equipped with overload protection in accordance with applicable national and local regulations.

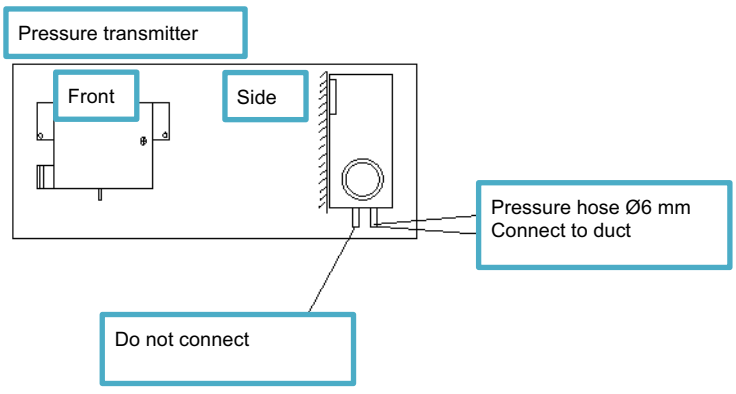
- The leakage currents to earth are higher than 3.5 mA.

For further safety information, consult the frequency converter manual.

3 Function

The DCV Controller controls your process ventilation by monitoring the air pressure in your system.
The DCV Controller ensures that the fans automatically use only the capacity required
for your production.


Installation example
DCV-
controller
Mains power
Pressure hose
TG
Pressure Transmitter
Fan
84315
84315
84315
84315
Induktiv
sensor
Induktiv
sensor
Induktiv
sensor
Inductive
sensor


Pressure transmitter
Front
Side
Pressure hose Ø6 mm
Connect to duct
Do not connect

4 Installation - Mechanical

- The frequency converter must be installed vertically.
- The frequency converter is air-cooled and therefore there must be an air gap above and below it in accordance with the dimensions and instructions in the manual.
- The frequency converter must not be installed in a location where there is a risk of vibration.
- Pressure transmitters must be installed with air connections facing downwards.

For complete mechanical installation information, consult the frequency converter manual.

5 Electrical installation

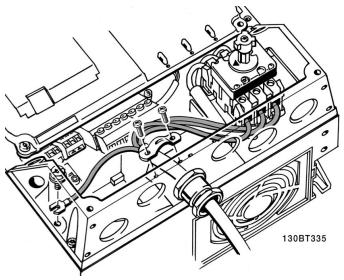
Important

- Frequency converters and pressure transmitters must not be installed in explosive environments.
- Always check that the supply voltage is disconnected when installing the frequency converter.
- All electrical installation must be carried out by qualified personnel.
- Always check that the electrical installation has been carried out correctly before putting the system into operation.

For other electrical installation information, consult the frequency converter manual.

Mains connection

The mains voltage must be connected to terminals T1, T2 and T3 (L1, L2 & L3) on the main switch. Check that the mains voltage corresponds to the mains voltage on the frequency converter's rating plate.



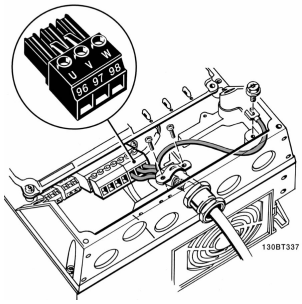
Motor connection

The motor must be connected to terminals 96, 97 & 98 (U, V & W).

The earth is connected to terminals 94/95/99.

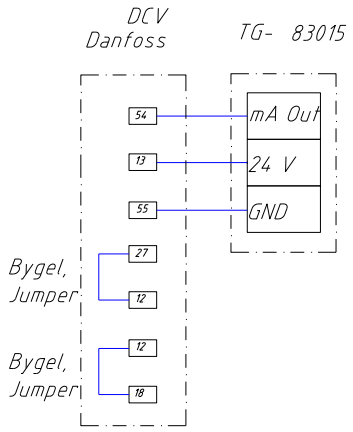
All types of standard asynchronous motors can be used with the frequency converter.

Please note that if the direction of rotation is incorrect, change it by swapping two of the phases in the motor cable; do not use the frequency converter's reverse function.

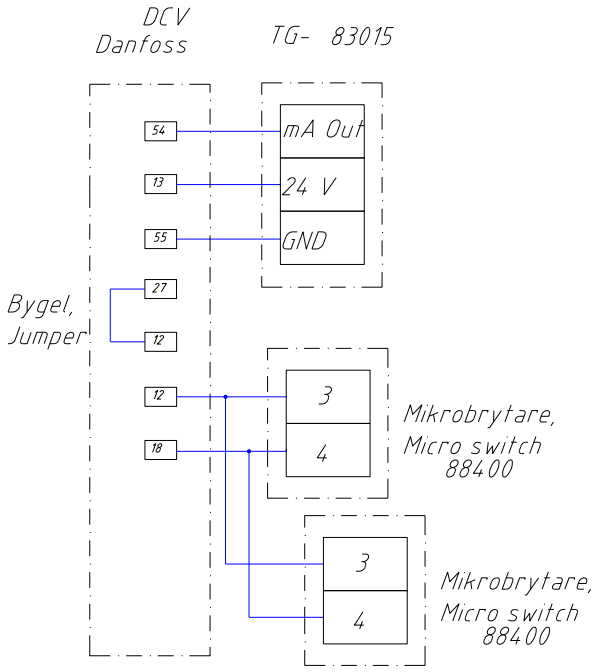


Control cables, jumpers and pressure transmitter - TG-

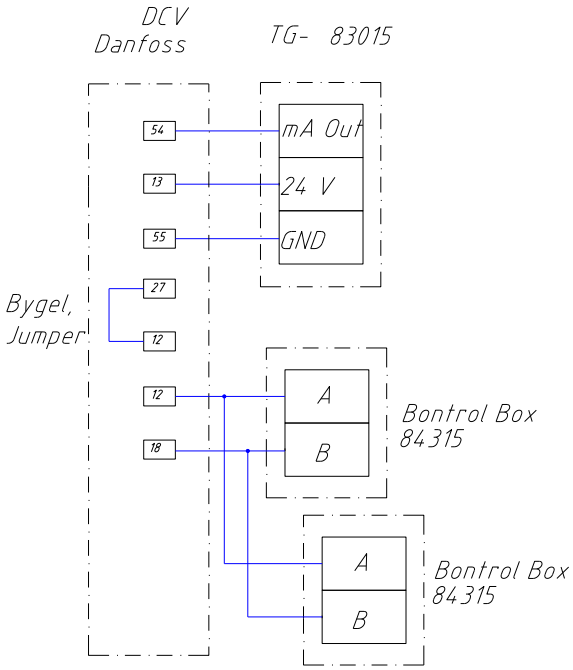
Application with start/stop via control panel (continuous operation).



Application with start/stop via external NO (normally open) contact, e.g. 88400.



Application with integration of Alentec & Orion AB control equipment for start/stop.



6 Configuration

6.1 Control buttons

The control buttons are divided into functions:

STATUS	Used to select display mode and to return to display mode either from the quick menu or from menu mode.
QUICK MENU	Used to program the parameters in the quick menu.
MAIN MENU	Used to program all parameters.
ALARM LOG	Used to list alarms.
BACK	Used to go back one step at a time in the menus.
CANCEL	Used to undo changes to the selected parameter.
OK	Used to select a parameter and confirm changes to the selected parameter.
UP/DOWN ARROW	Used to select a parameter and change the value of the selected parameter. These buttons can also be used to change the local reference. In Display mode, the buttons are used to switch between read status values.
ARROW L/R	Used to change numerical parameter values.
HAND ON	Used to control the frequency converter via the control panel.

OFF	Used to stop the connected motor.
AUTO ON	Used when the frequency converter is to be controlled via control terminals (pressure transmitter).
RESET	Used to reset the frequency converter after an alarm.

6.2 Determining application data

Be sure to enter the values below. They may be needed if the system loses its settings, e.g. due to a prolonged power failure.

Before programming the frequency converter, a number of application conditions must be noted:

6.2.1 Determine the pressure (setpoint) to be maintained at the point where the pressure transmitter's measuring point is located. (Extraction arm + duct system approx. 800-900Pa)

Value:_____Pa

6.2.2 Note the lowest measured value for the pressure transmitter.

Value:_____Pa

6.2.3 Note the highest measured value for the pressure transmitter.

Value:_____Pa

6.2.4 Note the motor power of the fan motor.

Value:_____kW

6.2.5 Note the fan motor supply voltage

Value:_____V

6.2.6 Note the fan motor's nominal frequency

Value:_____Hz (50/60)

6.2.7 Note the rated current of the fan motor.

Value:_____A

6.2.8 Note the fan motor's rated speed

Value:_____rpm

Ramp times

Please note that ramp times are unique for each installation and motor power.
General example: 4kW fan motor - up ramp time 5s, down ramp time 5s.

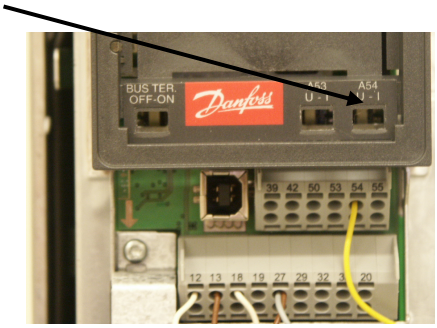
6.2.9 Note the fan motor's up ramp time.

Value:_____s

6.2.10 Note the fan motor's down ramp time.

Value:_____s

! Set switch A54 (below the display) to position I (to the right).



! The converter must be de-energised.

6.4 Programming factory settings

Press MAIN MENU twice

14 Special functions

14 Reset functions

14 Operation Mode = Initialisation (2)

Important

After completing step 6.4, disconnect the mains power supply and wait until the display has gone out. Then reconnect the mains power supply. The frequency converter is now factory programmed.
If the mains voltage is not disconnected, factory programming will take place the next time there is a power failure and your settings will be lost.

6. Programming motor and application data;

Press OFF,

Press QUICK MENU,

Press S2 Quick Setup,

Navigate through the menus using the Down Arrow.

PARAMETER		FUNCTION/ VALUE	
0-01	Language	=	Swedish (6)
1	Engine power	=	See 6.2.4
1-22	Motor voltage	=	See 6.2.5
1-23	Motor frequency	=	See 6.2.6
1-24	Motor current in A	=	See 6.2.7
1-25	Motor speed	=	See 6.2.8
3	Ramp-up time	=	See 6.2.9
3-42	Deceleration time	=	See 6.2.10

4	Engine speed min			
4	Maximum engine speed			
Press QUICK MENU				
0	Function menus			
03	With feedback setting			
03-30	Single zone, int. start			
1	Configuration mode	=	With feedback (3)	
20	Unit ref./feedback	=	Pa (72)	
20-14	Max reference/feedback	=	See 6.2.3	(e.g. 000001.600 = 1600Pa)
6-24	Low feedback. Value	=	See 6.2.2 (0)	
6	High feedback. Value	=	See 6.2.3	(e.g. 000001.600 = 1600Pa)
20	Setpoint	=	See 6.2.1 (Typically 800-900Pa)	
20	Normal/Inv PID control	=	Normal (0)	
20	Prop. First. PID	=	0.	
20	PID integral time	=	5.0	
Press MAIN MENU				
3	My reference	=	See 6.2.2 (0)	
3-03	Max reference	=	See 6.2.3	(e.g. 000001.600 = 1600Pa)
Press MAIN MENU				
0	Operation/display			
0	LCD display			
0-20	Display row 1.1, small	=	Feedback 1 (1654)	
Press STATUS				

6.6 Configuring the pressure sensor

Setting the measuring range/damping

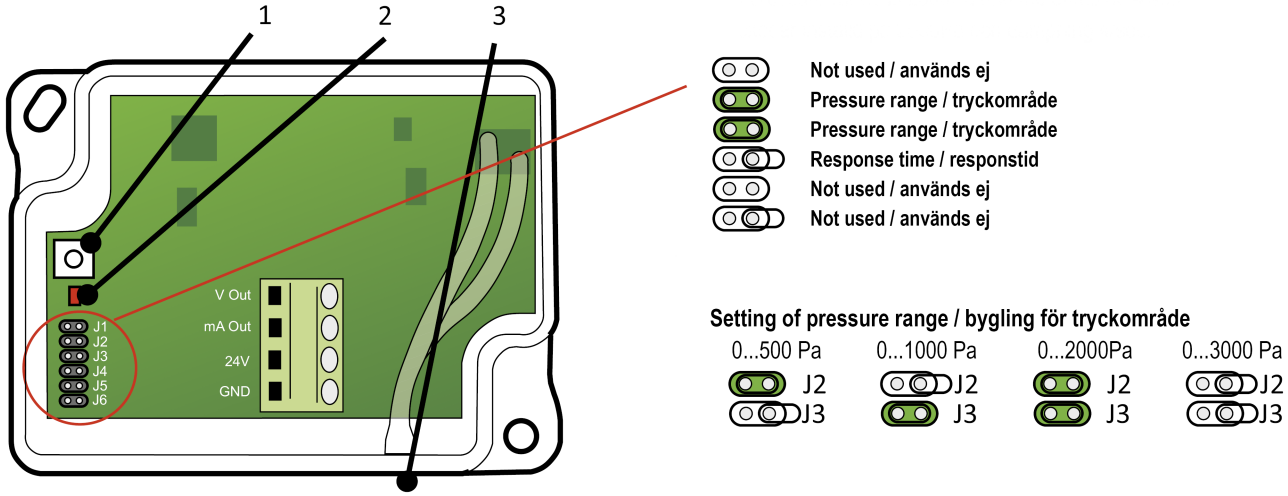
The pressure range is selected using jumpers on the circuit board as shown in the figure below. The measuring range should be as close as possible to the actual value in order to achieve accurate control.

Zero setting

The pressure sensor should be powered up for 1 hour before zero point adjustment is performed. Disconnect the pressure hose externally. Press and hold the zero reset button (1) and the LED (2) will light up. Release the button and the zero reset is complete when the LED stops lighting up. Reconnect the pressure hose to the negative terminal (3).

Setting on delivery

The pressure is set to 2000Pa and damping to 4/sec.



7 Commissioning

The frequency converter is now ready for commissioning. Press AUTO ON to start up the system.

When starting up the system, the setpoint, parameter 20-21, must be adjusted.

This is to ensure that the correct flow is obtained at all extraction points.

After adjustment, the TG pressure transmitter and DCV controller will automatically regulate the fan speed (air flow) depending on the number of extraction points that are open.

If a mechanical filter is used in the system, the TG pressure transmitter and

DCV controller will continuously regulate the fan motor speed as the filter media

is blocked by collected particles (the pressure drop across the filter unit increases).