

APPENDIX A COMPRESSOR WITH FREQUENCY CONVERTER WITH ADJUSTABLE MAXIMUM AND MINIMUM SPEED

CONNECTION

ANALOG INPUT

A IN 7: Signal to the CELLmatic with the current rotating speed.
4 mA corresponds to setpoint value "Revolutions – 4mA" and
20 mA is the "Max. Revolutions".

ANALOG OUTPUT

A OUT 0: Signal from the CELLmatic to the frequency converter with the desired
speed of rotation. 4 mA is the minimum speed of rotation and 20 mA is
the maximum speed of rotation.

FUNCTIONAL DESCRIPTION

AUTOMATIC

When the compressor is started, it will start at its minimum speed of rotation. (4mA). The capacity will then begin to increase. If there is a need for more refrigeration and the capacity reaches 100%, the compressor's speed of rotation will be regulated upwards. If the refrigeration requirement is so great that the speed of rotation of the compressor reaches its maximum speed, a start signal will be sent to a subsequent slave. If the refrigeration requirement is reduced, the speed of rotation will be reduced first, after which the capacity will be reduced. The slave is stopped according to the same condition as for operations in which this special function is not implemented.

MANUAL

When manual operation is selected, the compressor will run at the speed of rotation chosen for manual operation. When the compressor is started, the output at A OUT 0 will be regulated according to the input from A IN 6 in such a manner that the input reaches the speed of rotation which is chosen for the compressor in manual operation.

OPERATING INSTRUCTIONS

INDICATIONS

An "S" will appear in the report and status line when this special function is implemented. When the speed of rotation is regulated up or down, "S+" will indicate an increase in speed and "S-" will indicate a reduction in speed.
The current rotating speed can be read off in the third line of the start-up display.

Start-up screen:

```
27-10-98 14:07:55
F6 CLA      :P-suction (C) 0.0 C
F5 SETUP. 1 :Output (%) 0.0 %
F4 SETPOINT :Motor r.p.m. 0 rpm
F3 MANUAL   :T-oil compr. (C) 0.0 C
F2 DISPLAY 2:P-discharge (B) 0.00 Bar
F1 STOP     : S
```

PARAMETER

The screen "Setpunkt R – U" can expand and will be named "Setpunkt Q – U".

Setpoint Q-U:

```
27-10-98 14:07:55
SETPOINT//SETP. Q-U/
F6 SETP. Q :Motor revolution setpoints
F5 SETP. R :Refrigerant Unit data
F4 SETP. S :Vi-ratio Slide valve
F3 SETP. T :Boostersignal Setpoint P-suc 2
F2 SETP. U :Bypass Slave start/stop
F1 STOP :
```

Most of the parameters for the control of the frequency converter can be found on the "Setpoint Q" screen:

Setpoint Q:

```
27-10-98 14:07:55
SETPOINT//SETP. Q-U/SETP. Q/
F6 NEW (F6) :Max. Revolutions 3600 rpm
F5 NEW (F5) :revolutions -4mA 0 rpm
F4 NEW (F4) :Min. Revolutions 1800 rpm
F3 NEW (F3) :Revolutions Man. 1800 rpm
F2 ACC TIME :Acceleration time
F1 STOP :
```

1. Line F6: The maximum speed of rotation, which matches to 20 mA for the analog in- and output.
2. Line F5: The speed of rotation, if there are 4 mA on the input.
3. Line F4: The minimum speed of rotation, which matches to 4 mA for the analog output.
4. Line F3: The speed of rotation which is used for manual operation.
5. Line F2: Change to the picture with acceleration times for the frequency.

On the picture "Acceleration Times" are the parameter times for the frequency converter:

Acceleration Times:

| | | | |
|----|---------------------------------------|----------|----------|
| | | 27-10-98 | 14:07:55 |
| | SETPOINT//SETP. Q-U/SETP. Q/ACC TIME/ | | |
| F6 | CLA : | | |
| F5 | NEW (F5) :RPM. Max to Min | 300 | sec |
| F4 | NEW (F4) :RPM. Min to Max | 600 | sec |
| F3 | : | | |
| F2 | : | | |
| F1 | STOP : | | |

1. Line F5: The time it will take the rotating speed to go from maximum to minimum.
2. Line F4: The time it will take the rotating speed to go from minimum til maximum