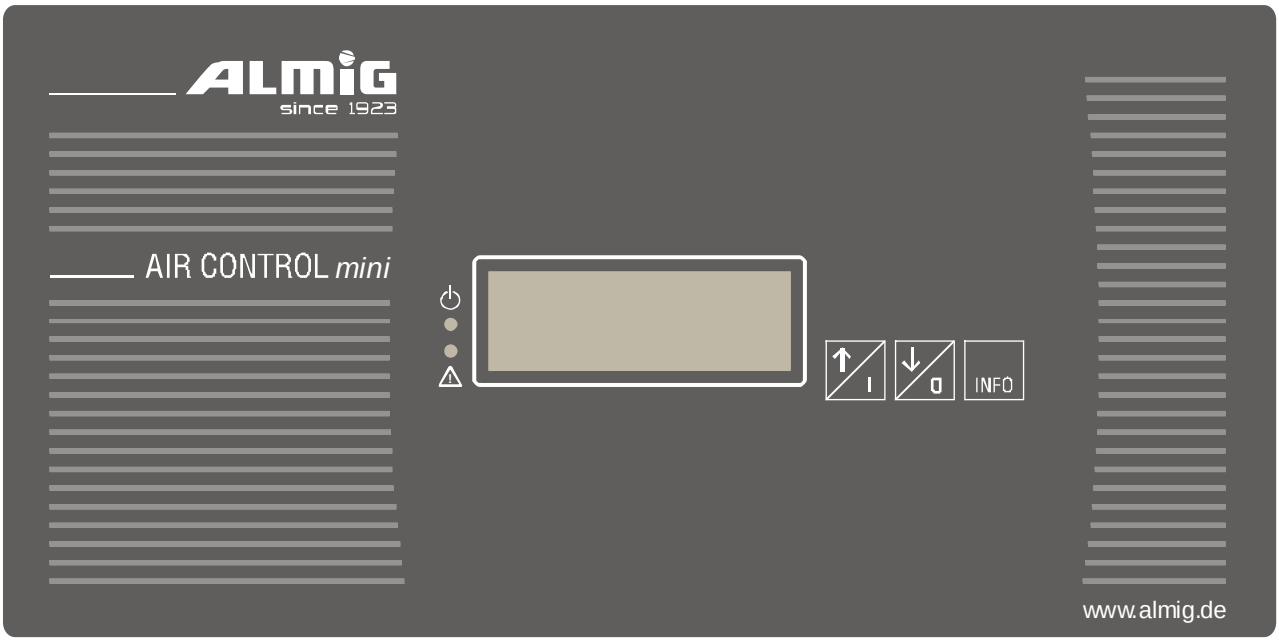
"AIR CONTROL *mini*"

1 Miscelleanous



The control consists of the following functional blocks:

a) microprocessor logic (including EEPROM as data storage) for control, monitoring and display functions

b) three buttons used to switch on/off the compressor and for input of setpoints and limits

c) customer-specific LCD used to display current values, setpoints and status as well as error messages and warnings

d) analog data processing of line pressure, endtemperature and dew-point temperature;

e) digital inputs and outputs to control a compressor

2 Hardware

2.1 Microprocessorlogic

- 16 bit microcontroller with watchdog,
- Powerfail-recognition (power down > 40 ms),
- 64 kByte Flash-EPROM,
- 256 Byte EEPROM (data storage),
- kByte RAM

2.2 Keypad

- keys,
- customer specific layout;

2.3 Display

customer specific LCD:

- 2x 3-digits 7-segment display;
- units: symbols for ^{o}C, ^{o}F, K, bar, psi and MPa;
- additional symbols for error, warning, motor, magnetic valve, dryer, remote, restart and automatic mode
- 2 LEDs (green, red)

2.4 Analog-inputs

- 18 Vdc
- 1 input 4-20mA (corr. 0-16 bar), resolution 10 bit;
- 2 inputs for Pt1000-temperature sensors, resolution 10 bit;

2.5 Digital inputs

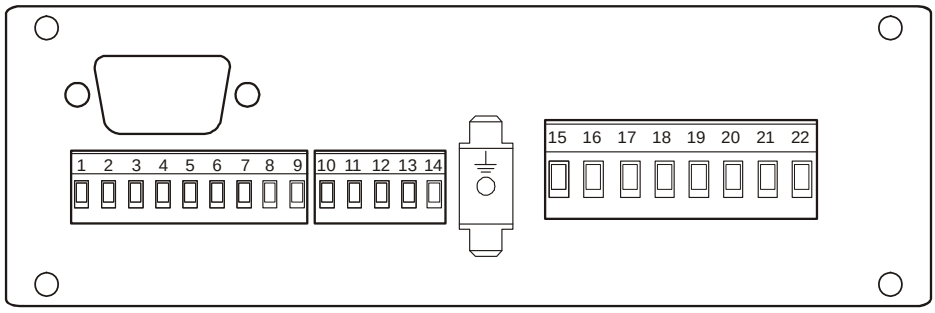
- 24 Vdc;
- 4 digital inputs 24 Vdc, 10mA;
- 1 input for PTC- temperature sensor;

2.6 Digital outputs

- 5 relay outputs, NO with one common connector, 250VAC / 4A (2A if inductive), thereof two outputs with varistor for connection to magnetic valves, 250 VAC/ 10A
- 1x relay output , NO, 250VAC/ 16A
- 1x transistor output;

2.7 Terminal Connections

Pin #	Description	Function	Connector / Pitch
1	0V AC	Power for control (18VAC, +10% / -15%, 50/60Hz, max. pre-fuse T 0,5 A)	Phoenix 9-pin MINI-COMBICON, / pitch 3,81 mm,
2	18V AC		
3	24V DC	For digital inputs	
4	Digital input 1	PTC (motor temperature)	
5	Digital input 2	Emergency stop	
6	Digital input 3	Collective fault dryer (refrigerant type)	
7	Digital input 4	function programmable	
8	Digital input 5		
9	Transistor output 1 (100 mA, switching to GND)		
10	18V DC	18V DC for analog input #1	Phoenix 5-pin MINI-COMBICON pitch 3,81 mm
11	Analog input 1	4-20 mA (line pressure)	
12	Analog input 2	PT1000 (end temperature)	
13	Analog input 3	PT1000 (dew.point temperature dryer – refrigerant type)	
14	GND	GND for analog input 2 and 3	
15	Relay output 1 COM	dryer (floating)	Phoenix 8-pin COMBICON MSTBA pitch 5,0 mm
16	Relay output 1 NO		
17	Relay output 2	Magnetic valve (with varistor)	
18	Relay output 3	Condensate valve (with varistor)	
19	Relay output 4	net	
20	Relay output 5	star	
21	Relay output 6	triangle	
22	Relay output 2-6 COM	Common connector for relay outputs #2 to #6	



3 Software

Key assingment:

If a key is assigned more than one function pushing the key repeatedly will switch through them.

a) Basic screen:

I switching on the compressor;

0
* switching off the compressor;
* acknowledge a fault message;
* keep pushed for at least 3seconds: start code input
  (please note: this is only possible if the machine is switched off)

INFO call INFO menu

Display	Parameter	Range
[1. ##.#]	switch on pressure	(3,5 - 15,0 bar)
[2. ##.#]	switch off pressure	(3,5 - 15,0 bar)
[3. ##.#]	pressure security limit	(display only)
[4. ##.#]	minimum pressure / LLC	(0,0 - 15,0 bar)
[5. 5.0]	min.end temperature	(display only)
[6. 110]	max. end temperature	(display only)
[7.#####]	run hours	
[8.#####]	on load hours	
[9.#####]	remaining time air filter	(display only)
[A.#####]	remaining time oil/oil filter	(display only)
[b.#####]	remaining time separator	(display only)
[C.#####]	remaining time lubricant	(display only)
[d.#####]	remaining time compressor	(display only)
[E.#####]	remaining time dryer	(display only)
[F.#####]	run hours dryer	

E.“ and „F.“ will not be displayed if dryer is set to „not available“ (see also: 3.2.10)!

<LED green> operating mode: on when compressor is on,
flashing if compressor could start any time.

<LED red> messages: on if fault occurs,
flashing when warning or maintenance message is pending

b) Menu system:

↑,↓ edit set points/ limit values / code

INFO accept changed values, switch to next menu item

3.1 Code input

While basic screen is displayed press and hold O-key for about three seconds.

The display shows the following screen:

(customer code is 1)

Use the arrow keys to change the code according to your needs (customer code, service code, works code). Press the INFO-key to accept a code press both of the arrow keys together (↑+↓) in order to dismiss your input.

3.2 Changing parameters

All parameters can be changed after input of the right code.

First put in the code, choose the corresponding code level using the arrow keys and then accept using the INFO-key.

Only those code-levels will be displayed which are accesible with the current code.

Pushing the arrow keys together at the same time serves as exit-key and leads back to the previous screen.

Values that are displayed after pressing the INFO key in the basic screen can only be changed after choosing the code-level „11“. Otherwise they are display-only.

3.2.1 Operating mode

Code-level 2 =>

1. 2

1. Operating mode:

0 = AUTOMATIC

1 = LOAD/OFF-LOAD

3.2.2 Automatic restart after power fail

See also 3.5.9

Automatic restart.

Code-level 3 => | 1. # | 0 = auto. restart OFF,
1 = auto. restart ON

If automatic restart is activated the symbol „**restart**“ will appear on the screen.

3.2.3 Function „recirculation“ on/off

Code-level 5 => | 1. # | 1 = Function „recirculation“

(0/1 = function „recirculation“ on/off)

3.2.4 local operation or remote operation

Code-level 8 => | 1. #

0 = local operation

ON/OFF with keys only

1 = remote

ON, if dig. input „remote on“ is closed (edge) and locally on
OFF, if dig. input „remote on“ is open or with O-key

If the control has been switched to remote control and the machine is on then the “**remote**” symbol appears and flushes!

If the machine is switched off with the O-key the “**remote**” symbol will disappear again.

The „remote on“ signal can be activated via one of the twe programmable digital inputs.

3.2.5 LLC operation

Lead lag control (slave)

Code-level 18 =>

1. #

0 = no LLC, on/off-load according to local pressure sensor;

1 = LLC, on-load when digital input „remote load“ closed, off-load when digital input „remote load“ open

PLEASE NOTE:

- If one of the two programmable inputs is set to „LLC-ok“ the signal “remote load” only takes effect if the ok-signal is on. Otherwise LLC operation is switched off automatically and only the local pressure sensor will be taken into account.

- If the LLC has been activated the „Remote“ symbol appears on the screen.

- For LLC operation set one of the two programmable inputs to “remote load”.

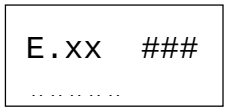
- The local pressure sensor is used for monitoring the security pressure limit (P_ZUL) only if the control is set to LLC.

- If during LLC operation the line pressure falls below the limit „minimum pressure“ (switch on pressure) the control switches to the local pressure sensor and shows the warning [E.39] (“lower pressure limit reached”). In order to switch back to LLC operation this warning must be acknowledged first.

3.2.6 Failure memory

a) Show failure memory:

Code-level 30...

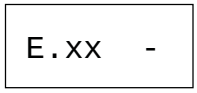


E.xx = item: 01 – 20,
= fault/warning number
= run hours at occurance

Use the arrow keys in order to scroll through the positions of the failure memory. The latest message is always on top position. The display shows the fault/warning number and the run hours at the time each fault/warning occurred.

Whenever the warning symbol is displayed the message is a warning or a maintenance message. If the fault symbol is shown instead the message is a fault message.

If there is no message at a given position the display shows the following:



All messages will be stored in the EEPROM and are therefor also available if the power is cut off in the meantime.

b) Delete failure memory

Activate code-level 130 in order to delete all messages from the failure memory.

3.2.7 Edit maintenance intervals

a) Dryer:
Code-level 40 =>

1. #####

Code level 40 is only available if dryer is programmed. Please refer to3.2.11 Dryer control.

b) air filter:
Code-level 41 =>

1. #####

c) oil/ oil filter:
Code- level 42 =>

1. #####

d) separator:
Code- level 43 =>

1. #####

e) lubricant:
Code- level 44 =>

1. #####

f) compressor:
Code- level 45 =>

1. #####

Use the arrow keys to change the interval in steps of 500h. To store the new value press the INFO-key (range 0-20000h).

Storing a new value also resets the corresponding counter for that maintenance interval.

3.2.8 Off-load time, stop time, star/triangle (start-up) delay

Code-level 51 => | 1. #### | 1. = off-load time range: 10 – 1200s

INFO => | 2. ## | 2. = stop time (motor off) range: 0 – 60s

INFO => | 3. ## | 3. = start-up time (star/triangle) range: 3 - 30s

Use the arrow keys to set or change a value. Store it by pressing the INFO key.

3.2.9 Machine type, pressure range, delivery quantity

Code-level 60 => | 1. ##### | 1. = machine type „Co“, „Co-d2“, „Co-d3“

Depending on the chosen machine type the parameters start-up time, maximum switching cycles per hour and off-load time, off time as well as the maintenance intervals will be preset with values stored in the machine type table. („VAr-t“ = with dryer).

INFO => | 2. ##.# | 2. = pressure range

range: 7.0 – 15.0 bar
or: 7.0 – 10.0 bar

The upper pressure limit (switch off pressure) will be determined by this value. The lower pressure limit (switch on pressure) will be set to switch off pressure – 2 bar.

The value also limits the range of the parameters switch on pressure, switch off pressure and minimum pressure LLC.

INFO => | 3. #### | 3. = max. Delivery quantity range: 0 – 9999 m³/h

Specify the maximum delivery quantity of the compressor (in m³/h).

3.2.10 Set pulse time and pause time for condensate valve

Code-level 65 =>

1. ##

1. = pulse time
range: 1 – 99 s

INFO =>

2. ###

2. = pause time
range: 1 – 999 s

INFO =>

3. ###

3. = mode CV
range: 0 / 1

The condensate valve is activated, when the condition in param. [3] is fullfilled: 0 = compr.motor is on / 1 = dryer is on

3.2.11 Dryer

Code-level 80 =>

1. #

1. = dryer available
range: 0/1 = no/yes

The following menu items only appear if there is a dryer available!

INFO =>

2. ##

2. = switch off temperature

INFO =>

3. ##

3. = diff. temperature
range: 2 – 10°C

INFO =>

4. ###

4. = minimum switch off time
range: 30 – 600 s

INFO =>

5. ##

5. = offset, dewpoint temperature.
range: -10 – +10°C

INFO =>

6. #

6. = switch off delay.
range: 0 – 56 min.

INFO =>

5. #

7. = dryer on if compr. off
range: 0 / 1 (1=YES)

The dryer will be started as soon as the dewpoint temperature exceeds the threshold “switch off temperature + diff. temperature”.

It will be switched off, if the dewpoint temperature falls below the “switch off temperature” for at least the programmed time (parameter [6] = switch off delay).

After switch off the dryer will not be started again before the end of “minimum switch off time”.

If parameter [7] is set to “1” (dryer on, even if compressor is switched off), then the dryer is working, also if the compressor is switched off.

The dryer symbol ⊡ will be displayed whenever the dryer is activated.

Press the keys up and INFO simultanously in order to manually switch on/ off the dryer. If manually switched off the dryer symbol ⊡ will start flashing.

Press the up and down key simultanously while in the basic screen in order to check the dewpoint temperature. The symbol T2 will indicate that the dewpoint temperature is displayed (= 2nd temperature).

3.2.12 Reset to default values

Code-level 88: resets all changeable parameters to default values!

ATTENTION: all previous changes will be lost!

3.2.13 Change pressure unit

Code-level 90 =>

1. #

0 = pressure displayed in [bar]
1 = pressure displayed in [MPa]
2 = pressure displayed in [psi]

3.2.14 Change temperature unit

Code-level 95 =>

1. #

0 = temperature displayed in [°C]
1 = temperature displayed in [°F]
2 = temperature displayed in [K]

3.2.15 Set offset for pressure measurement

Code-level 105 =>

1 ##.#

Set an offset for the pressure measurement within a range of -0.5 to +0.5 bar. Use the arrow keys to change the value. It will be used to adjust the gradient of the pressure characteristic in order to compensate for small differences of pressure sensors.

[current pressure = measured value * P_MAX / (P_MAX – PRESSURE.OFFSET)]

Example: P_MAX = 10.0 bar

a) PRESSURE.OFFSET = + 0.3 ..... P = P_meas * 10.0 / (10.0 - (+0.3)) = P_mass * 1.03

b) PRESSURE.OFFSET = - 0.3 ..... P = P_meas * 10.0 / (10.0 - (-0.3)) = P_meas * 0.97

3.2.16 Assign functions to progammable digital inputs

Code-level 150 =>

1. #	1. = digital input 4 range: 0 – 6
2. #	2. = digital input 5 range: 0 – 6

Each of the digital inputs can be assigned one of the follwing functions:

0 = not in use;	
1 = Remote on	(signal „1“ = compr. on);
2 = Remote load	(signal „1“ = load request);
3 = LLC-OK	(signal „1“ = OK);
4 = Fault over current	(signal „0“ = fault);
5 = Fault over pressure	(signal „0“ = fault);
6 = Fault rotating direction	(signal „0“ = fault);

3.2.17 Assign function to progammable digital output

Code-level 155 =>

1. #	1. = transistor output range: 0 – 10

The digital outputs can be assigned one of the follwing messages:

0 = not in use;	
1 = ready	(on, no fault present);
2 = running	(compressor motor running);
3 = on load	(compressor on load);
4 = off load	(compressor off load);
5 = warning	(at least one warning active);
6 = maintenance	(at least one maintenance message active);
7 = warning / maintenance	(at least one warning or maint. message active);
8 = fault	(at least one fault active);
9 = fault or warning	(at least one warning or fault active)
10 = fault, warning or maintenance;	(at least one warning, fault or maint. message active)

3.2.18 Test digital inputs / outputs

Code-level 9980 =>

1. = Input 1
0 = Off / 1 = on

INFO =>

2. = Input 2
0 = Off / 1 = on

INFO =>

5. = Input 5
0 = Off / 1 = on

INFO =>

6. = Output 1
0= switch off/1=switch on

INFO =>

b. = Output 6
0= switch off/1=switch on

INFO =>

C. = transistor output
0= switch off/1=switch on

Output signals are always set to “off” first. Use the arrow keys in order to switch on or switch off the signal.

The INFO key switches to the next in-/output.

ATTENTION:	ACTIVATING SINGLE OUTPUTS IN THE TEST MODE MAY INADVERTANTLY LEAD TO A START OF THE COMPRESSOR MOTOR!!!

3.2.19 Option „dewpoint temp. – monitoring“

Code-level 6 =>

1. ##	1. = Dewpoint temp. max. Range: 0 … +50°C (0 = monitoring off!)
2. ##	INFO => 2. = Dewpoint temp. min. Range: -10 ... +50°C
3. #	INFO => 3. = Warning / Fault 0 = Warning

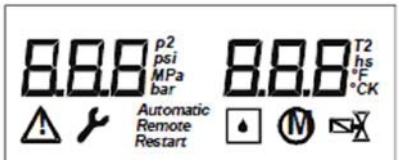
If this function is activated (param. 1 > 0°C), the dewpoint-temperature is monitored against the programmed thresholds, and if the temperature-sensor is defective (E.13).

If the dewpoint-temperature exceeds the threshold “dewpoint max.” when the **I**-key is pressed, then a warning “dewpoint-temperature” (E.33) is generated.

If the compressor motor is running and the dewpoint-temperature falls below the threshold “dewpoint min.”, then a warning/fault “dewpoint low” (E.37 / E.17) is gererated.

If the compressor motor is running and the dewpoint-temperature exceeds the threshold “dewpoint max.”, then a warning/fault “dewpoint high” (E.38 / E 18) is generated.

3.3 LC-Display



Upper half:

- two sections with 7-segment display for pressure and temperature and time display
- symbols for display of corresponding units: psi, Mpa, bar and °C, °F, K, h, s.

Lower half:

- symbols for fault and warning (the latter also used for maintenance messages)
- symbols for automatic and remote operation; symbol for automatic restart
- symbols for dryer, motor and magnetic valve

3.3.1 Basic screen

Upper half – left side: - current line pressure

if fault/ warning present: alternating with ...

- number of current fault (if fault symbol ϟ on)
- number of current warning/maint. if warning symbol ⚠ on

Upper half – right side: - current end temperature

- number of current fault (if fault symbol ϟ on)
- number of current warning/maint. if warning symbol ⚠ on

While the basic screen is on display the arrow keys can be used to switch between end temperature and temperature of the 2nd temperature sensor (dewpoint temperature).

3.4 Messages

3.4.1 Fault messages

Fault symbol starts flashing and current line pressure is alternating with number of current fault.

[E. 1]	"parameter wrong"	(check pressure set points!)	
[E. 2]	"EEPROM ?"	(check ALL changeable parameters)	
[E. 3]	"power low"	(only if monitoring active/ see also: Pos. 3.6)	
[E. 4]	"power failure"	(only if automatic restart not activated!)	
[E. 5]	"adjustment wrong"	(*needs to be sent back for readjustment!)*	
[E. 6]	"EMERGENCY-OFF"	(Contact open = fault)	
[E. 7]	"rotation direction"	(Contact open = fault)	(*)
[E. 8]	"motor temperature"	(PTC)	
[E. 9]	"over current"	(Contact open = fault)	(*)
[E.10]	"pressure high"	(Contact open = fault)	(*)
[E.11]	"fault dryer"	(Contact open = fault)	
[E.12]	"cable break end temp."	(Monitoring of endtemp. sensor)	
[E.13]	"cable break dewpt.temp."	(Monitoring of dewpoint temp. sensor)	
[E.14]	"cable break pressure"	(Monitoring of pressure sensor)	
[E.15]	"endtemperature high"	(temperature > max. end temperature)	
[E.16]	"line pressure high"	(pressure > security pressure)	
[E.17]	"dewpoint temp. low"	(dewpoint temp. < dewpoint min)	
[E.18]	"dewpoint temp. high"	(dewpoint temp. > dewpoint max)	

(*) monitoring can be activated by programming the two free digital inputs accordingly.

If any of these faults occur the compressor will be shut down. The red LED lights up until the fault has been acknowledged with the O-key. The latter is only possible if the cause of the fault has been eliminated before!

All faults will be displayed immediately after occurance if the basic sreen is displayed.

If the INFO button was pushed – e.g. in order to check or change a parameter – the fault message will only be visible after switching back to the basic screen.

3.4.2 Warning and maintenance messages

Warning symbol ⚠ starts flashing and current line pressure is alternating with number of current warning/ maintenance message.

[E.33]	"dewpoint temp."	(I-key and “dewpoint temp. > dewpoint max”)
[E.34]	"end temperature high"	(end temp. > max. end temperature. - 5°C)
[E.35]	"line pressure high"	(line pressure > security pressure - 0.3 bar)
[E.36]	"temperature low"	(end temp. < +1°C)
[E.37]	"dewpoint temp. low"	(dewpoint temp. < dewpoint min)
[E.38]	"dewpoint temp. high"	(dewpoint temp. > dewpoint max)
[E.39]	"line pressure below lower pressure limit“	machine is LLC slave and the pressure has fallen below the limit “minimum pressure”
[E.42]	"maintenance dryer"	(time until next maintenance < 100 hours)
[E.43]	"maintenance air filter"	(time until next maintenance < 100 hours)
[E.44]	"maintenance oil/oil filter"	(time until next maintenance < 100 hours)
[E.45]	"maintenance separator"	(time until next maintenance < 100 hours)
[E.46]	"maintenance lubricant"	(time until next maintenance < 100 hours)
[E.47]	"maintenance compressor"	(time until next maintenance < 100 hours)

Warnings and maintenance message do not lead to a shut down of the compressor.

The red LED flashes until the cause of the warning is resolved or the maintenance interval is reset.

If a fault is present the warning/ maintenance message will not be displayed.

All messages will be displayed immediately after occurance if the basic sreen is displayed.

If the INFO button was pushed – e.g. in order to check or change a parameter – the message will only be visible after switching back to the basic screen.

3.5 Operation

3.5.1 Status information

a) Compressor off
   - green LED is off
   - LCD symbols „motor“ and „magnetic valve“ are off

b) Compressor on but current pressure still above switch-on pressure (start protection)
   - Green LED is flashing
   - LCD symbols „motor“ and „magnetic valve“ are off

c) Compressor on but current end temperature (still) below +1°C
   - Both red and green LED are flashing
   - Warning “temperature low” appears
   - Symbols “motor” and “magnetic valve” are off

d) Compressor is on, magnetic valve is closed -> compressor not on load (yet) – start up, off load or run on time
   - Green LED is on
   - Symbol motor is on (flashing during start-up)
   - Symbol “magnetic valve” off

   If off load time is active while the compressor is in “automatic” or “automatic opt.” mode the symbol “s” will appear (flashing) on the right hand side of the temperature display. In that case pushing the O-key will lead to a display of the remaining off load time (instead of the current temperature).

e) Compressor is on, magnetic valve is open – compressor is on load
   - Green LED is on
   - Symbol motor is on
   - Symbol “magnetic valve” on

3.5.2 Operating modes

Please also refer to section 3.2.1.

a) Automatic
As soon as the switch-off pressure limit is reached the compressor switches to off load (or run-on) operation for the duration of the off-load time.
At the end of the off load time the compressor will be switched off and the green LED starts flashing to signal “ready for restart”.
If the pressure now falls below the switch-on limit the compressor will restart.

The symbol „s“ on the right hand side of the temperature display signals an active off-load time. In that case pushing the O-key will lead to a display of the remaining off load time (instead of the current temperature).

b) Load/off-load
The compressor switches between on-load and off-load operation depending on the line pressure. The motor will not stop.

3.5.3 Start up

If option “dewpoint monitoring” is activated, a start is possible only if the dewpoint-temp. is lower “dewpoint max”, otherwise a warning “dewpoint temp.” (E.33) is shown!

If the line pressure exceeds the switch on pressure when the compressor is switched on, the green LED starts flashing (= ready). Only after the line pressure falls below the switch on pressure the compressor will start and the flashing of the green LED will stop.

The green LED will also be flashing if the temperature is below +1°C when the compressor is switched on. In addition the warning “E.36” will be displayed.

If the temperature rises to at least +1°C the compressor will start.

3.5.4 Switch off

If the compressor is switched off with the 0-key (or via remote off) it first switches to off load operation and the „S“ symbol on the right hand side of the temperature display starts flashing.

After the time specified as “stop time” (see section 3.2.8) the compressor shuts down completely.

3.5.5 Condensate valve

During on-load operation the ouput „condensate valve“ will be activated periodically.

3.5.6 Stop time

Please refer to section 3.5.9 automatic restart.

3.5.7 Security pressure

The security pressure is the maximum acceptable pressure (P_ACC) and is calculated as pressure range + 0.8bar (see also section 3.2.9).

Example: pressure range = 10 bar → “P_acc” = 10.8 bar

If the line pressure exceeds the limit P_acc – 0.3 bar, a warning appears.

If the line pressure exceeds the limit P_acc an error appears and the compressor is shut down.

3.5.8 Maintenance intervals

For settings see section 3.2.7.

a) Maintenance message
   All maintenance intervals are counted backwards. If there are less than 100 hours left until next maintenance the corresponding message appears and the red LED starts flashing.
   In order to acknowledge this message first activate code level 21 and then press the 0-key. This will restart the counter for the maintenance interval.

b) First maintenance oil/oil filter
   After the first maintenance the maintenance interval “oil/oil filter” will automatically be changed from 500 hours to 2000 hours!

3.5.9 Automatic restart

If the control is set to „automatic restart after power fail“ the control will restart after a delay (see parameter in section 3.2.8

Off-load time, stop time, star/triangle (start-up) delay) after power is back.

If the compressor was on before the power failure it will be restarted otherwise it will stay in STOP mode.

The fault message „power failure“ will NOT appear if the automatic restart is active.

3.5.10 Function “recirculation”

If the function “recirculation” is activated (see: item 3.2.3), and the compressor is switched on, the compressor-motor is startet when the compressor temperature falls below +5°C (the compressor will run in mode “no load”). When the compressor temperature raises above +15°C the compressor-motor will be stopped.

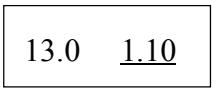
If the keys **INFO** and ▼ are pressed simultaneously (in the basic screen), then the activated function “recirculation” can be switched off/on temporary.

If the function “recirculation” is activated, then the symbol “h” is displayed in the basic screen, when it is temporary switched off this symbol is flashing.

3.6 Code levels

0002 => choice:	AUTOMATIC; LOAD-/NO-LOAD;
0003 => choice:	automatic restart (Y/N) and time
0005 => choice:	Function „recirculation“ on/off
0006 => choice:	Function „dewpoint-temp. monitoring“
0008 => choice:	local or remote operation
0011 => enable:	enable changing of set-points and limit values that can be viewed by pressing the INFO button
0018 => choice:	LLC operation (0/1) with 1 = control is LLC slave
0021 => call:	enable acknowledge of „maintenance message“ - after enabling it is possible to acknowledge the maintenance message using the O-key.
0030 => call	show failure store
0040 => call	edit maintenance interval „dryer“
0041 => call	edit maintenance interval „air filter“
0042 => call	edit maintenance interval „oil/ oil filter“
0043 => call	edit maintenance interval „separator“
0044 => call	edit maintenance interval „lubricant“
0045 => call	edit maintenance interval „compressor“
0051 => call	edit of no-load time, stop time, start-up time (star-triangle delay)
0060 => call	choose machine type, pressure range, delivery quantity
0062 => call	choose pressure range only
0069 => call	choose delivery quantity only
0065 => call	edit impulse time, pause time for condensate valve
0080 => call	set parameter for dryer control

0088 => call	reset system parameters to default values
0090 => call	change unit for pressure display
0095 => call	change unit for temperature display
0105 => call	set correction value for pressure measurement
0130 => call	delete failure memory
0150 => call	choose function of programmable digital inputs
0155 => call	choose function of programmable transistor output
9900 => enable	initialization (press O-key afterwards!) - reset operating hours/ on-load hours to 0 - reset maintenance intervals - delete failure memory ATTENTION: this initialization is meant to be used only at first commissioning!
9919 => call	edit operating hours/ on-load hours view parameter afterwards with INFO button
9929 => call	edit operating hours/ on-load hours changes in steps of 1000h here!
9970 => call	set behaviour afer „power low“
9980 => call	test inputs/ outputs
9999 => call	show current software version and random number for works code (second menu item)



Version: 13 bar (10 bar)

⇨ Software-version: 1.10

⇨ random number needed to find „works-code“

3.7 Error in the program store of the control

In case the control detects an error in the program store (after power on) the following message appears in the upper left corner of the display:

„FLA“ => in this case the programming/update of the control has to be repeated!

3.8 Programming/ updating of the software of the control

1. switch off power supply
2. push and hold INFO and O-key simultanously and switch on power supply.
3. The display now shows „FLA“ in the upper left corner
4. the control is now ready for transmission of the new software (hex file, baudrate = 19200 baud)
5. after transmission is complete switch off / on power supply

> **ATTENTION:** This control does not have a RS485-interface but a simple programming interface. Therefore a special progrmming adapter (ALMIG varioprog) is necessary!