

Instructions and Advices to use the electronic controller Logik 18

ORIGINAL INSTRUCTIONS

CE





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CAUTIONS

THE LOGIK 18 IS AN INDUSTRIAL CONTROL EQUIPMENT (NOT A SAFETY INSTRUMENT) FOR THE OPERATION OF A SCREW COMPRESSOR.

THE INSTALLATION MUST BE MADE IN ACCORDANCE TO THE LOCAL AND INTERNATIONAL STANDARDS AND REGULATIONS WHERE THE COMPRESSOR IS MANUFACTURED.

THE INSTALLATION AND START UP OF THE CONTROLLER MUST BE CARRIED OUT BY TRAINED PERSONNEL WELL KNOW IN THIS MANUAL.

THE CONTROLLER HAS TO BE USED IN STANDARD INDUSTRIAL ENVIRONMENT AND IT CAN NOT BE USED IN EXPLOSION RISK ENVIRONMENT, MARITIME AND MILITARY PURPOSE.

THIS MANUAL COULD BE SUBJET TO CHANGES; PLEASE CONTACT LOGIKA CONTROL TECHNICAL OFFICE IN CASE OF DOUBT ON THE LAST VERSION.



TECHNICAL FEATURES

- industrial control equipment for the operation and management of screw compressors only; <u>don't mount and use in</u> <u>explosive room</u>.
- In accordance to **CE** regulation:
- Low tension: 2006/95/ČE
- Safety: EN 60730-1 (General regulations)
- EMC 2004/108/CE
- In accordance to UL 508 (FILE #: E316817).
- Inputs and outputs via terminal-block board to wires (300V, 15A, 18-14AWG).
- Black auto-extinguishing box in ABS:
- a) according EC:
- IP64 for the front panel and IP20 for the other parts;

b) according UL:

- Type 1 and Type 12 for front panel mounting , installation in pollution degree 2 for the other parts
- Tightening torque: 8 Nm
- Working temperature: -10°C (14°F) ÷ 50°C (122°F) 90% RH (non condensing).
- Storage temeprature: -20 (-4°F) ÷ 70°C (158°F).
- Power supply: 12Vac ± 10% 50÷60 Hz (power of the transformer's secondary: ~ 8 VA) from safety transformer.
- Max. current absorbed = ~ 250 mA.
- Visualization through custom back light LCD and nr. 2 led.
- nr. 6 key buttons.
- nr. 1 emergency stop button according EN 60947-5-1, IEC 947-5-1, contacts AC-15, 3 A, 240Vac.
- nr. 1 input for temperature probe.
- nr. 1 input for pressure transducer.
- nr. 3 digital inputs for connection to Logika Control phases unit.
- nr. 1 input for PTC or Klicson for motor protection (IN7).
- nr. 6 opto isolated digital inputs from 12/24Vac to detect:
- IN 1 = thermal motor
- IN 2 = thermal fan
- IN 3 = remote start/stop
- IN 4 = air filter pressure switch
- IN 5 = separator filter differential pressure switch
- IN 6 = settable as: door of the electrical cabinet open control phase relay generic alarm
- nr. 7 outputs via relay with contact 1.5A max. (general use):
- RL1 = line contactor
- RL2 = delta contactor
- RL3 = star contactor
- RL4 = load solenoid valve
- RL5 = fan contactor
- RL6 = settable as: condensate drain solenoid valve or compressor status
- RL7 = settable as: alarm or compressor status

MAX. RATED CURRENT WITH ALL RELAYS CLOSED: 4.5A

- nr. 1 serial port RS232 for connection to a second compressor (Master/Slave operation), PC or GSM unit (Supervision Tele Assistance).
- Check min. and max. power supply to the controller.
- Non volatile memory to store setting data, working hours, compressor status, alarm list.
- The controller switches OFF due to micro interruption longer than ~ 300 m.s..

Accessories:

- nr. 1 temperature probe KTY 13.5 for detection of the air end temperature: cable in silicone rubber, length 2.5 m, working range $-10 \div 130^{\circ}$ C, resolution 1°C, precision $\pm 1^{\circ}$ C.
- nr. 1 pressure transducer 4-20 mA for working pressure control: 2 wires, AISI 316L stainless steel membrane, working range $0 \div 15$ bar, resolution 0,1bar, precision $\pm 0,1$ bar.
- Windows[™] application for remote control (Super Vision and Tele Assistance).
- nr. 1 Logika Control phases unit:
- a) for power supply $380 \div 400V$ three phase
- b) for power supply 230V three phase
- c) for power supply $440 \div 460V$ three phase



MOUNTING

Use the drawing below as overall dimensions to mount the controller.





ELECTRICAL DRAWING AND LEGEND OF THE CONNECTIONS



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NOTES ON THE CONNECTIONS

Respect the working technical features and instructions on the electrical wiring; in special way both the cables of the temperatures probes and pressure transducers must be isolated from the power cables and proper RC filters must be placed on the contactors' coils. Besides pay attention low voltage and high voltage cables run on separate trunks. - On the back side of the controller there must be enough space for wiring and connectors.

- The rear side of the controller must be protected against condensation, oil and dust.

- Don't wash the front panel by water injection; clean the front mylar with a soft cloth using soap water.

NOTE: the inputs not used have to be connected to 12-24V directly, except IN4 if not used has not to be connected



LEGEND

Terminal M1

Poles 1-2 = power supply 12Vac

Terminal M2

Pole 1 = GND Pole 2 = RX Pole 3 = TX Pole 4-5 = input PTC for motor protection (IN 7) (Total resistance of operation = 2.900 ohm – Total resistance of restoration = 1.600 ohm)

Terminal M3

Poles 1-2 = air end temperature probe Poles 3-4 = pressure transducer (pole 3 = negative - pole 4 = positive)

Terminal M4

Pole 1 = Pole 1 of the control phases unit (L3) Pole 2 = Pole 2 of the control phases unit (L2) Pole 3 = Pole 3 of the control phases unit (L1) Pole 4 = Pole 5 of the control phases unit (GND) **NOTE: THE GND FROM THE CONTROL PHASES UNIT MUST NOT BE CONNECTED TO EARTH. IT'S THE GROUND OF THE CONTROLLER AND MUST BE CONNECTED TO IT**.

Terminal M5

Pole 1 = IN 1 = thermal motor (L) Pole 2 = IN 2 = thermal fan (L) Pole 3 = IN 3 = remote start/stop (L) Pole 4 = IN 4 = air filter pressure switch (L) Pole 5 = IN 5 = separator filter differential pressure switch (L) Pole 6 = IN 6 = settable as: door of the electrical cabinet open - control phase relay - generic alarm Pole 7 = common (N)

Terminal M6

- Pole 1 = RL7 = alarm or compressor status Pole 2 = RL6 = condensate drain solenoid valve or compressor status Pole 3 = RL5 = fan contactor Pole 4 = RL4 = load solenoid valve Pole 5 = RL3 = star contactor Pole 6 = RL2 = delta contactor Pole 7 = RL1 = line contactor
- Pole 8 = common = $24 \div 230$ Vac



EXAMPLE OF CONNECTION TO THE SECURITY PRESSURE SWITCH

Contactors 24Vac

If the operation of the contactors and soenoid valves come through 24 Vac, the digital inputs have to be connected to 24 Vac (*see drawing on the right*); on this way when the pressure switch opens due to high pressure, 24 Vac lacks and deenergize all the contactors, solenoid valve and digital: the controller detects all the digital inputs opened and signal the alarm "AL21".



Contactors 230Vac

If the operation of the contactors and solenoid valves comes through 230 Vac, the digital inputs have to be connected to 12 Vac; next to the contact of the pressure switch, place and energize an auxiliary relay and put the contact in serie to 12 Vac (L) (*see drawing on the right*). When the pressure switch is closed, the auxiliary relay with contact closed supply power to the digital inputs; the power supply of the controller is connected before the contact of the relay. When the pressure switch opens, the

auxiliary relay opens power to the digital inputs; the controller detects all the digital inputs open and signal the alarm **"AL21**".



CONNECTION THROUGH SERIAL PORT RS 232

Master – Slave connection LOGIK18 / LOGIK 16-S



Logik 18	Logik 16-S		
Terminal M2	Terminal M4		
Pole 1	Pole 3		
Pole 2	Pole 5		
Pole 3	Pole 4		

Master – Slave connection LOGIK 18 / LOGIK 25-S



Logik 18	Logik 25-S
Terminal M2	Terminal M2
Pole 1	Pole 1
Pole 2	Pole 3
Pole 3	Pole 2

Master – Slave connection LOGIK 18 / LOGIK 18



Logik 18	Logik 18		
Terminal M2	Terminal M2		
Pole 1	Pole 1		
Pole 2	Pole 3		
Pole 3	Pole 2		

Connection LOGIK 18 / PC



Logik 18	РС
Terminal M2	D'Sub 9 poles
Pole 1	Pole 5
Pole 2	Pole 3
Pole 3	Pole 2

NOTE: in case of connection to PC through serial port RS232 or connection of single compressor (RS232) or several compressors (RS485) to GSM unit, select the parameter **nc** into menu **LonF** (COMPRESSOR CONFIGURATION).



INSTRUCTION FOR SERIAL CONNECTION RS232 AND/OR RS485

NOTES ON THE WIRING: wrong wiring can damage both the controller and other devices connected to the serial port.

Be careful to the following technical points below:

- 1. Use flexible, twisted pair, earth shielded cable, type 22 AWG.
- 2. The total length of the net has to be no more than:
 - 5 m for serial connection through RS232
 - 400 m for serial connection through RS485
- 3. In serial connection RS485 the maximum devices connectable are 32 units.

NOTES ON INSTALLATION

- The signal wire must be placed in electrical trunk separated from power cables or dangerous cables like the wires of lighting and so on....
- Don't place the signal wires near power bus-bar, lamps, transformers and high frequency antenna.
- The signal cable must be minimum 2 m far from heavy inductive load (motors, inverters and control / patch board).
- Don't pull the cables by strength over 12 Kg; stronger strength can damage the wires and reduce the signal transmission on the line.
- Don't twist, knot, crush and fray the wires.
- Use always a single cable without cut it to make the connection between two devices.
- Pay attention to wire stripper.
- To be sure that the connection is well done, sign the position of terminal block with the colour of the wire.



CONTROL PANEL



MEANING OF ICONS

- 1 Compressor loading (icon lightened) compressor unloading (icon blinking).
- 2 Remote start stop enabled.
- 3 Compressor working into Master/Slave operation.
- 4 Working pressure detected (in the main visualization) or name of the parameter (into the different menu)
- 5 Unit of the pressure detected (in the main visualization).
- 6 Unit of timer and counter (into the proper menu).
- 7 Compressor status or temperature detected (in the main visualization) or value of the parameters (into the different menu).
- 8 Unit of the temperature (in the main visualization).
- 9 Alarm detected (in the main visualization).
- 10 Code of the alarm detected (in the main visualization) or number of the menu (into the menu).
- 11 Icon indicating you're into the menu.
- 12 Indication of the compressor status (in the main visualization) or number of the parameter (into the different menu).



DESCRIPTION OF THE VISUALIZATIONS

1) Power ON to the controller and the I' LCD visualizes the following:

2) From **OFF** goes to **RUN** by pushing the button (I) the LCD visualizes the following:

3) The possible compressor status are the followings:

Status	Visualization	Icon
Waiting for starting (timer t5)	On blinking	
Compressor starting	Visualization of pressure - temperature and message run blinking	≠ blinking
Compressor loading	Visualization of pressure – temperature and message רעח	≠ lightened
Compressor unloading for set pressure reached	Visualization of pressure – temperature and message ר שח	 ✔ blinking
Compressor in set	SEL Visualization of the pressure	
Compressor going to stop (unload running)	DFF blinking	if remote start/stop opened
Compressor off	OFF	if remote
compressor on	Visualization of the pressure	opened
	See description on quick oil drain	
	(visualization of message D L)	
Compressor shut off for alarm	SEoP + alarm code	\wedge



FUNCTION OF THE KEY BUTTONS

From the main visualization, pushing the button the LCD visualizes in sequence the working hours, software release and serial number of the compressor the manufacturer can enter in the parameter **5**-*n*. into menu 8 **ConF** (COMPRESSOR CONFIGURATION).

Pushing (factor) the LCD visualizes the following:

the total working hours of the compressor.

Pushing () and/or () the LCD visualizes in sequence:

L = load working hours - P = working percentage - n^{--} = starts/hour - 5 - n = serial number

rEL = software release with own proper values.

In every step by pushing (R) the LCD shift back to the main visualization.

When the total working hours are visualizes, pushing the LCD visualizes the maintenance timer, always selectable by and/or ; in sequence:

LRF = change air filter - LOF = change oil filter - LSF = change separator filter - L-- = change oil - L-h = check compressor with own proper residual timer.

After the visualization of L-h, pushing again, the LCD shift back to the main visualization.

Till on the main visualization, by pushing flow the menu down; enter to the menu and to the modification of the parameters according the password levels reported in the chapter of every single menu.

In the main visualization, pushing () the modification of the Start and Stop pressures is enabled. Pushing () once, the LCD visualizes the following:

	7. 5 ^{bar}
PSE	r E

with the value of the start pressure blinking; by the button \bigoplus and/or \bigoplus change the value and confirm it by \bigoplus ; the LCD shift to the modification of the Stop pressure, visualizing the following:

with the value of the Stop pressure blinking.

Follow the same procedure used to change the Start pressure and confirm by (). Once the data has been confirmed, the LCD shift back to the main visualization.



The button (R) resets the alarm visualized on the LCD further to quit the menu during the programming. Button (I) = compressor start Button (0) = compressor stop

ENTER THE PASSWORD

When the compressor is **OFF** pushing \bigoplus and \bigoplus together it's possible to enter the password for the programming of the parameters; the LCD visualizes the following:

By the buttons (and/or $(PRI \div PRB)$) and confirm by the button (according the password level you need to enter, the LCD visualizes the number of digits as per the figures to enter with the first digit blinking:

- selecting **PRI** = nr. 2 digits (default password 22)

- selecting **PR2** = nr. 4 digits (default password 4444)

- selecting **PR3** = nr. 5 digits (default password 66666)

Pushing the button (R) shift back the previous visualization.

Once the password level has been confirmed, enter the first digit by the button and/or and confirm it by ; the next digit starts blinking.

Enter the next digits following the same procedure used for the first one.

When you enter the number, the button (R) is used to shift back to the previous digit, in case it's wrong.

Confirming the last digit the password is accepted and you can enter to program the menu and parameters according the level selected; in case the you enter a wrong password the LCD visualizes the following:

The message **-Err-** blinks for 3 seconds to indicate the password is wrong and then the LCD shift back to the main visualization.

PASSWORD MISSED

In case you've missed or forgotten the password number, it's possible to restore the password default (<u>on all 3 levels</u>) according the following procedure:

take power off, in case the controller is powered; supply power again and keep on pushing the button \bigcirc for 5 seconds.

The message **rESEL** blinks on the LCD to indicate the restoring of the password default is in progress.



SETTING PARAMETERS

When the compressor is OFF, once the password has been entered correctly, in the main visualization by pushing enter to the main menu and the LCD visualizes the following:



 $\ensuremath{\textbf{PP}}$ (Pressures) indicates the first menu and $\ensuremath{\textbf{I}}$ I its own number into the main menu.

When you are into the menu flow, the icon $\hat{}$ with proper number of the menu are always visualized on the LCD.

- By the buttons and/or flow the menu up/down.
- By the button ()confirm the menu you need to enter and the LCD visualizes as follow:



- By the buttons (and/or (b)) select the code of the parameter you need to change or by pushing (c) shift back to the main menu; pushing (c)) on the last parameter, the LCD shift back to the menu you enter.
- By the button ()confirm the parameter selected; the setting value starts blinking to indicate the change is enabled.
- By the buttons and/or change the value and confirm it by .
- Pushing (R) shift back to the selection of the parameters without any change.

MENU	Password	Display DS2
1-Pressures	0	PP
2-Temperatures	1	PH
3-Working timer	1	PE
4-Maintenance timer	1	SEr
5-Working hours	0	HoUr
6-Alarms	0	AL
7-Reset	1	rE5
8-Compressor configuration	1	EonF
9-Password	1	PASS
10-Quick oil drain	1	DI L

MENU FLOW

NOTE

After the visualization of the last menu, the controller quit the setting automatically and the compressor is OFF; after 120 seconds the password level is missed.

For safety reasons, after 120 seconds from the last pushing of any button, the controller quit the setting automatically, loading the parameters changed.

ANTIPANIC FUNCTION: in every step of the setting , pushing the button (a) for 5 seconds, the LCD shift back to the main visualization.



MENU 1 *PP* = **PRESSURES**

Parameters pertinent to the pressures.

Parameter	Description	Setting values	Password	Default
PO I	Top range transducer	15 - 16	3	15 bar
P02	High pressure alarm	(P03+0,5) ÷ (P01-0,5)	2	11,0 bar
PD3	Stop pressure	(P04+0,2) ÷ (P02-0,2)	0	10,0 bar
P04	Start pressure	3 ÷ (P03-0,2)	0	8,5 bar
POS	Start pressure slave	2,8 ÷ (P04-0.2)	0	8,3 bar
P06	Offset pressure transducer	-2,0 ÷ +2,0	2	0 bar

NOTE: the parameter **PDS** is visualized if the parameter **con** into the menu 8 **ConF** (compressor configuration) has been selected **1** or **2** (Master/Slave operation).

After the last parameter, the LCD shift back to the message **PP**.

MENU 2 *PH* = **TEMPERATURES**

Parameters pertinent to the temperatures.

Parameter	Description	Setting values	Password	Default
HO I	High air end temperature alarm	(WT2+2°) ÷ 125	3	110 °C
HD2	High air end temperature warning	(WT3+2°) ÷ (WT1-2°C)	3	105 °C
HDB	Temperature Start fan	30 ÷ (WT2-2°)	2	70 °C
HDY	ΔT. Stop fan	5 ÷ 15°C	2	10 °C
HOS	Low air end temperature alarm	-10 ÷ +15	2	0 °C
H06	Offset temperature probe	-10 ÷ +10 °C	3	0 °C

After the last parameter, the LCD shift back to the message **PH**.

MENU 3 PL = WORKING TIMER

Parameter	Description	Setting values	Password	Default
ED I	人	2 ÷ 20 sec	3	5 sec
F05	⋌→△	10 ÷ 50 ms	3	20 ms
F03	\triangle	1 ÷ 60 sec	3	2 sec
FDA	Unload timer	1 ÷ 10 min	2	4 min
£05	Safety timer	10 ÷ 240 sec	3	60 sec
F02	RL6 On	1 ÷ 10 sec	1	2 sec
FDJ	RL6 Off	1 ÷ 10 min	1	3 min
FOB	Master/Slave rotation	0 ÷ 200h	2	100 h
F03	Timer slave	1 ÷ 99min	2	5 min

NOTE: the parameters **LOB** and **LO9** are visualized only if the parameter **con** into the menu **ConF** (Compressor configuration) has been selected **1** or **2** (Master/Slave operation).

The parameter **LDB** set as 0 doesn't allow the Master/Slave rotation.

Changing the set value, the new one is loaded once the timer in progress is elapsed.

After the last parameter, the LCD shift back to the message P_L .



MENU 4 5Er = MAINTENANCE TIMER

Parameter	Description	Setting values	Default	Livello Pin
CRF	Change air filter	100÷3000	1-2-3	2.000 h
EDF	Change oil filter	100÷10000	1-2-3	2.000 h
ESF	Change separator filter	100÷10000	1-2-3	4.000 h
C	Change oil	100÷10000	1-2-3	8.000 h
[-h	Check compressor	100÷10000	1-2-3	500 h

This menu allows to set time for the maintenance to the compressor.

After the last parameter, the LCD shift back to the message SEr.

NOTE

- 1) Changing the set value, automatically the value of the timer changes.
- 2) The new value is loaded once the timer in progress is elapsed or after the reset of the timer.
- 3) If the parameter **L-h** is set as 9.999 hours, the proper alarm will not be generated.
- 4) The counting is pertinent to the ON time of the line contactor (RL1) and it comes backwards; when the counting reaches **0**, the LCD visualizes the proper alarm and the timer goes on as negative counting; the storage of the working hours comes every 15 minutes; if during the counting the power is off, the part of 15 minutes is lost.

MENU 5 Hollr = WORKING HOURS

Into this menu it's possible to visualize the working hours, load working hours, working percentage, starts/hour, serial number of the compressor and software release.

The LCD visualizes the short name of the parameter (E, L, P, n^{--} , 5^-n , rEL) with the proper value.

By the buttons (a) and/or (b) flow the timer up/down and by (R) shift back to the previous menu.

NOTE: it's possible to change both "Total hours" and "Load hours" if password level 3 has been enabled.

Pushing \bigcirc the first figure starts blinking to be modified; by \bigcirc and/or \bigcirc select the new figure and

confirm it by () and going to the next figures to set according the same procedure.

Confirming the last figure, the new value will be loaded into the memory.

During the setting, in case you need to come back to the previous character, push the button (R).

$MENU \ 6 \ RL = ALARMS$

Visualization of the last 20 alarms code detected; the 21st erases the 1st and so on. The LCD visualizes the following:



DDB indicates the alarm code detected (make reference to the alarm list at page 20 and 21 of this manual)

2 indicates the times the alarm has been detected.

By the button (and/or \bigcirc flow the alarm list up/down; by the button (R) shift back to the previous menu. In case there is no alarm stored, the LCD visualizes the message "----".



MENU 7 rE5 = RESET

In this menu it's possible to make the following reset:

P-F = maintenance timer (password level = 1-2-3)

\mathbf{R}-L = alarm list (password level = 1-2-3)

L-h = working hours (password level = 3)

G-G = general reset and load of the default values (password level = 3)

Enter into the menu by the button and the LCD visualizes the following:

By the button () and/or () select the reset; by the button () shift back to the previous menu.

Start reset by pushing the button for 3 seconds: the message *rESEL* blinks for few seconds to indicate the reset is in progress.

In case of selection and confirmation of the parameter **P-F** (maintenance timer), the LCD visualizes the following:

pushing \bigoplus and/or \bigoplus flows the maintenance timer up/down to make possible the reset of each single timer. Start the reset as explained above.

Pushing (R) shift back to the previous menu.

NOTE: general reset is allowed when compressor is OFF only.



Parameter	Description	Setting values	Password	Default
r	Restart	0 (manual) – 1 (automatic)	1	0
FRS	Control phases	0 (no) – 1 (yes)	1	1
'nБ	Input IN6	0 (disabled) – (door open) 2 (control phases relay) – 3 (generic alarm)	3	0
٦u	Input PTC	0 (disabled) – 1 (enabled)	3	0
rLG	Output RL6	0 (condensate drain) – 1 (compressor status) 2 (always activated)	3	0
r.]	Output RL7	0 (alarm) – 1 (compressor status)	3	0
٤٩	Timer t04	0 (fixed timer) – 1 (variable timer)	1	1
5	Safety	0 (no) – 1 (yes)	1	0
L-P	Low voltage	0 (no) – 1 (yes)	1	1
c_F	Unit of the temperature	0 = L - 1 = F	1	°C
ь_Р	Unit of the pressure	0 = bAr - 1 = P5 /	1	bar
n	Starts/hour	6 ÷ 20	2	6
P	Air flow	1.0 ÷ 200.0	3	1m³/min
con	Connection	0 (stand alone) – 1 (Master/Slave)	2	1
	Compressor nr.	0 ÷ 32	2	1
5-n	Serial number	00000 ÷ 99999	3	00000

MENU 8 [onF = COMPRESSOR CONFIGURATION

After the last parameter, the LCD shift back to the message LonF.

NOTA: the change of the parameter **r** -- (manual/automatic) is stored into the alarm list and it's possible to reset by **general reset only**.

MENU 9 PR55 = CHANGE PASSWORD

In this menu it's possible to change the password numbers of the three different levels.

Passwords are called **PR I** (Service 1) - **PR2** (Service 2) - **PR3** (Factory).

To enter in the menu, confirm by \bigcirc and the LCD visualizes:

By the button (and/or (select the password level you need to change and confirm by (while by (shift back to the previous menu.

Once the editing is enabled, the first digit starts blinking and you can change it by the button (and/or); confirm the first digit by (a) shift forward to the next digit starts blinking; follow the same procedure to change all the next digits; confirming the last one, the new password number is saved automatically.

NOTE: during the change, the button (R) allows to go back to the previous digit in case it has been edited wrong.



MENU 10 DIL = QUICK OIL DRAIN

If this menu is selected when the compressor is not loading or running unload for pressure set reached, the LCD visualizes the following with the **StArt** blinking:

In this status, pushing the button (\mathbf{I}) , the compressor starts.

If the pressure is over 2.0 bar, the line contactor (RL1) is energized while the load solenoid valve (RL4) is not; the LCD visualizes the following:

with -P- blinking to indicate to blow down pressure to allow the quick oil drain process.

When the pressure goes down 2.0 bar, the load solenoid valve is energized and the LCD visualizes the following:

with the message run blinking to indicate the quick oil drain is in progress. Stop the drain by the button (a) and the LCD shifts back to the main menu.



ALARMS WITH IMMEDIATE COMPRESSOR SHUT OFF

Code	Meaning	Cause
01	EMERGENCY STOP	Emergency stop button opened (IN 1)
02	MOTOR OVERLOAD	Thermal motor opened (IN 2)
03	FAN OVERLOAD	Thermal fan opened (IN 3)
04	NO PHASE	One or more phases are missed longer than 300 m.s.
05	WRONG PHASE	Phases inverted
07	DOOR OPENED	IN6 opened (parameter nb in menu LonF has been selected as door switch (1)
11	HIGH PRESSURE ALARM	Working pressure over set PD2
12	TEMP. PROBE FAILURE	Air end temperature probe failure
13	HIGH AIR END TEMPERATURE	Air end temperature over set HD I
14	LOW AIR END TEMPERATURE	Air end temperature probe lower than set HDS
18	POWER FAULT	In case of power off and compressor set as manual restart
19	CONTROLLER FAILURE	The controller is not working properly
20	HIGH MOTOR TEMPERATURE	Input IN7 (PTC) opened
21	INPUT POWER FAULT	All digital inputs IN1 ÷ IN6 opened (security pressure switch opened, if mounted)
23	INPUT IN6	If the parameter $\mathbf{n} \mathbf{b}$ in menu LonF has been selected as control phase relay (2) or generic alarm (3)
25	SEPARATOR FILTER	Separator filter differential pressure switch opened (IN5)

ALARMS WITH COMPRESSOR SHUT OFF AFTER 30 SECONDS UNLOAD RUN

Code	Meaning	Cause
26	PRESSURE TRANSDUCER FAILURE	Pressure transducer failure
28	LOW VOLTAGE	Power supply to the controller lower than 9,5Vac; reset accepted when voltage overcomes 10,6Vac
29	SECURITY	Timer CAF elapsed; alarm detected only if the parameter Safety is set YES
30	HIGH AIR END TEMPERATURE	Air end temperature over set HD2 . Reset with temperature lower than HD2 -5°C

NOTE: in case of shut off alarm RL7 (if it set as alarm operation) is energized and the alarm message is stored into the alarms memory; after the cause of the alarm has been solved, push the button () to reset the alarm and restart the compressor.

If the alarm "Low voltage" (code 28) has been disabled in menu LonF, it will not be detected.

WARNINGS (VISUAL ALARMS)

Code	Meaning	Cause
35	SETTING DATA FAILURE	Default data loaded
36	AIR FILTER	Air filter pressure switch closet (IN4)
39	LOW VOLTAGE	Power supply to the controller lower than 11.6Vac with automatic reset when the voltage rise to 12Vac
40	HIGH VOLTAGE	Power supply to the controller over 14.5Vac
42	RS232 FAILURE	Communication interrupted
47*	MAX. STARTS/HOUR	Starts/hour has reached the value set in parameter Starts/hour (menu 7)

47* The alarm code "Max. starts/hour" informs the compressor will not stop; it will run continuously load/unload

according the pressure, until the expiration of 1 hour time from the first starting in the hour.

NOTE:

1) In case of warnings RL7 is energized intermittently (if it is set as alarm).

2) In case of message visualized (if it has not automatic reset), pushing the button () the message reset, de-exciting

RL7 and storing the message into the alarm memory.

3) The code alarm 42 reset automatically when the communication restart properly.



MESSAGES VISUALIZED IN ALARM LIST ONLY

Code	Meaning	Cause
48	MANUAL RESTART	Restart set from automatic into manual
49	AUTOMATIC RESTART	Restart set from manual into automatic

MAINTENANCE MESSAGES

Code	Meaning	Cause
50	CHANGE AIR FILTER	Counter of the timer set into menu 5E r parameter CAF elapsed
51	CHANGE OIL FILTER	Counter of the timer set into menu SEr parameter LOF elapsed
52	CHANGE SEP. FILTER	Counter of the timer set into menu SEr parameter LSF elapsed
53	CHANGE OIL	Counter of the timer set into menu 5Er parameter L elapsed
54	CHECK COMPRESSOR	Counter of the timer set into menu 5Er parameter [-h elapsed

With message visualized on the LCD, the relay RL7 is excited intermittently (if it's set as alarm); pushing the button (a) the message is reset and RL7 unexcited.

After the maintenance request by the message has been carried out, reset the counter into menu **5***Er*; if the counter has not been reset, every 50 working hour or next ON to the compressor, the LCD visualizes the maintenance message.



HOW LOGIK 18 CONTROLS THE COMPRESSOR

Safety timer **EDS**

Pushing the stop button **0**, the compressor stops according the following procedures:

- a) if the compressor is running load, changes into unload running for the time set on **LOS**; during this time the restart is accepted by the button (1); once the timer **LOS** is elapsed, the compressor stops and the LCD visualizes the message **DFF**;
- b) if the compressor is running unload and the timer ŁOY is higher than ŁOS, once ŁOY is elapsed, the compressor stops and the LCD visualizes the message OFF; if the timer ŁOY is lower than ŁOS, ŁOS starts counting and when it's over, the compressor stops and the LCD visualizes the message OFF;
- c) if the compressor is OFF due to pressure set reached, it stops and the LCD visualizes the message **DFF**;
- d) when the compressor stops and the message **DFF** is visualized, the timer **EDS** starts; during this time if the start button (1) is pushed, the message **DFF** starts blinking and the compressor will not start till the timer **EDS** will be elapsed.

In case the compressor stops due to an alarm, the timer **LOS** starts; during this time if the alarm message is reset and the button (1) is pushed, the message **DFF** starts blinking and the compressor will start when the timer **LOS** is elapsed only.

Operation of the load solenoid valve (RL4)

1) **<u>LOY</u>** set as fixed time = 0

When the pressure reaches the stop pressure, RL4 turns off, the LCD visualizes the pressure and the timer **LOY** starts; when the timer is over, if the pressure is not below the start set, the compressor stops; when the timer is in progress, if the pressure goes down the start set, the load solenoid valve turns on and the LCD visualizes the pressure while the timer **LOY** erases.

2) **<u>LOY** set as variable time = 1</u>

On the first start the compressor works as point 1; on the next cycle the controller counts the time the pressure spend to decrease from stop to start set; if this time (**tx**) is higher than the set on **LOY**, the next unload run **LOY** will be reduced of 1 minute and so on up to a minimum time of 2 minutes.

Nel momento in cui **tx** diventa minore di **LDY** variato, il ciclo di vuoto successivo tornerà ad essere conteggiato come il tempo impostato su **LDY**.

ATTENTION: on the contact of the relay operating the load solenoid value is mounted an RC Filter (22 η F + 100 Ω) sized for power of 4.7W; in case a less power load solenoid value is used, if the value keeps on powered even if the contact of the relay is opened, the RC Filter must be eliminated by cutting the terminal of the resistor R11.

Thermoregulation of the fan (RL5)

When the delta contactor (RL2) is activated, the fan contactor (RL5) operates as follow:

- a) if the air end temperature is equal or higher than HOB = RL5 ON;
- b) if the air end temperature is lower than (HO3 HO4) = RL5 OFF.



Operation of RL6 set as condensate drain solenoid valve

Every time the load solenoid valve is powered (RL4), the condensate drain solenoid valve (RL6) is activated and deactivated according the time set on the parameters **EQE** and **EQT**; besides it's deactivated every time the load solenoid valve switches OFF.

Operation of RL6 set as compressor status

When the compressor is ON the relay is excited, when the compressor is OFF for pressure set reached, the relay is unexcited.

Compressor stopped through remote start/stop input (IN3)

When the remote start/stop input (IN3) opens, the compressor stops according the following procedures:

- a) if the pressure is between start and stop set (load solenoid valve is on and LCD = compressor loading), the load solenoid valve turns off for the time s LCD + **LDH** and the LCD visualizes the blinking message **SLDP**; when the timer is over, if the remote start/stop input (IN3) is still opened, the compressor stops and the message **SLDP** stops blinking; during the timer **LDH**, if the remote start/stop input (IN3) should close again, the compressor comes back under the pressure transducer operation;
- b) if the pressure is between start and stop set, the load solenoid valve is off and is blinking (compressor unloading), when the timer **LOY** is over, the compressor stops and the LCD visi es the message **SLOP**;
- c) if the compressor is stopped due to reaching the pressure set, the LCD visualizes the message **5LDP**.

Restart after power off

Automatic.

In case of power off, when the power comes back again, the compressor restarts from the operation previous to power off: if it was ON, will follow the start procedure mentioned below, after the timer **LOS**; during **LOS** in progress, the message **DFF** blinks.

Manual.

In case of power off, when the power comes back again, the compressor doesn't restart automatically and the display visualizes the message P-DF; after the message has been reset, the compressor will start by pushing \square .



MASTER/SLAVE OPERATION

After the two compressors has been connected through the proper terminal of serial port RS232 (max. length not longer than 5 m; for longer lengths use the line converter RS232/485):

1) check the parameters **LDB** (timer to change Master into Slave) and **LD9** (timer to start Slave in case Master can't reach the pressure set on first starting) into menu **PL** are properly set;

2) if one of the 2 compressors has more working hours than **LOB**, the other compressor will work till reaching the working hours of the first compressor plus the hours set on **LOB**; after this time only, the Master/Slave rotation will be operated.

Pushing the Start button on one of the two compressors both are operated:

both LCD of the two compressors visualize the blinking message DFF for around 5 seconds: during this time the start button (1) is not accepted; when the message DFF stops blinking, the button (1) is enabled.

Pushing the Stop button on one of the two compressors both are stopped

The common parameters of the 2 compressors in Master/Slave operation are:

PD2-PD3-PD4-PD5, the parameter for Manual / Automatic restart and timer LD8 e LD9.

Changing one of these parameters, the modification is transferred to the other compressor automatically.

Slave compressor starts only if:

- 1) On first ON, the Master has not reached the stop pressure until the time set on **LO9**.
- 2) The pressure goes down the value set on PDS.
- 3) If one of the two compressors has the working hours higher than the time set in the parameter Timer Master/Slave (working hours), the other compressor will work continuously till to get the same working hours of the first compressor in addiction to the hours set in the parameter Timer Master/Slave; only after this time, the Master/Slave rotation will be operated.

NOTE: the compressor stops when the pressure reaches the value of PD3.

Master/Slave rotation comes:

- 1) When the timer set on **LOB** elapses.
- 2) In case Master compressor shuts off.

NOTE:

- 1) In case of maintenance on one of the 2 compressors, before to stop it remember to set both units into standing alone operation and set it again into Master/Slave operation after the maintenance will be carried out.
- 2) In case of serial line failure both compressors become Master.



WARRANTY TERMS

24 (twenty-four) months from the production date printed on the label of the serial number.

Temperature probe is not included in the warranty terms.

Both working and technical features of the controller must be fully respected: the warranty declines if the controller has been opened or repaired by unauthorized personnel.

Operation or modification different from the original, wrong electrical wiring or bad assembling can be cause of failures or malfunctioning of the controller; in these cases both warranty and own technical features of the controller declines.

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On its unquestionable judgement, Logika Control reserves the authority to modify the product to improve operation and performance, besides to the right to withdraw the product from the production, in any time and without notice.

REVISION INDEX

Revision 0 = Issue Revision 0.1 = Issue for UL certification Revision 0.2 = Upgrade to function "2" for RL7 Revision 0.3 = Extended parameter **L03** to 60 seconds

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