Atlas Copco Stationary Air Compressors

GA18, -30, -37, -45, -50, -55, -75, -90 (W) VSD

User manual for Elektronikon® II regulator

1. This manual must be used together with the instruction books for GA18 up to -90 (W) VSD compressors.

2. From following serial numbers onwards:
   - GA18-30 VSD: AII 297 500
   - GA37-55 VSD: AII 355 000
   - GA75-90 VSD: AII 494 500

This instruction book meets the requirements for instructions specified by the machinery directive 98/37/EC and is valid for CE as well as non-CE labelled machines.

No. 2920 1456 03

(Replaces No. 2920 1456 02)

Registration code: APC G18-30 VSD/2002 / 38 / 977
APC G37-55 VSD/2003 / 38 / 975
APC G75-90 VSD/2000 / 38 / 987

2003-07 www.atlascopco.com

Contents Page

1 General description

The electronic regulator automatically controls the compressor, i.e.:
- matching the compressor output to the air consumption
- stopping the compressor whenever necessary
- restarting the compressor when required

In order to control the compressor and to read and modify programmable parameters, the regulator has a control panel provided with:
- LEDs indicating the status of the compressor
- a display indicating the operating conditions, a service need or a fault
- keys to control the compressor and to have access to the data collected by the regulator
- buttons to manually start and stop the compressor
- an emergency stop button or isolator switch

In general, the regulator has following functions:
- controlling the compressor
- protecting the compressor
- monitoring components subject to service
- automatic restart after voltage failure (made inactive)

1.1 Controlling the compressor

The regulator matches the air output to the air consumption by speed regulation of the motor.

The regulator takes into account a number of programmable settings, such as:
- net pressure setpoint
- indirect stop offset
- direct stop offset
- proportional band
- integration time
- minimum speed
- minimum stop time
- maximum speed limit
- power recovery time (if automatic restart after voltage failure is activated)

If the net pressure keeps on rising when the compressor runs at minimum speed, the regulator will stop the compressor. The regulator restarts the motor as soon as the net pressure approaches the net pressure setpoint.

The regulator stops the compressor whenever necessary:
- Indirect stop: i.e. the compressor runs at minimum speed and the net pressure rises to the indirect stop level.
- Direct stop: i.e. the compressor runs at a speed in between minimum and maximum and the net pressure rises above the direct stop setpoint.

Both settings are programmable; see section 18.

1.2 Protecting the compressor

1.2.1 Shut-down and fan motor overload

If the compressor element outlet temperature exceeds the programmed shut-down level, the compressor will be stopped. This will be indicated on the control display.

The compressor will also be stopped in case of overload of the fan motor.

1.2.2 Shut-down warning

If the compressor element outlet temperature exceeds a programmed value just below the shut-down level, this will also be indicated to warn the operator before the shut-down level is reached.

1.2.3 Warning

A warning message also appears if:
- On water-cooled compressors, the cooling water outlet temperature exceeds the warning level.
- On Full-Feature compressors, the dewpoint temperature exceeds the warning level.

1.3 Service warning

A number of service operations are grouped in plans (called Service plans A, B and C). Each Service plan has a programmed time interval. If a time interval is exceeded, a message will appear on display (12-Fig. 2.1) to warn the operator to carry out the service actions belonging to that plan.

1.4 Automatic restart after voltage failure

The regulator has a built-in function to automatically restart the compressor if the voltage is restored after voltage failure. For compressors leaving the factory, this function is made inactive. If desired, the function can be activated. Consult Atlas Copco.

Warning

If activated and provided the module was in the automatic operation mode, the compressor will automatically restart if the supply voltage to the module is restored within a programmed time period.

The power recovery time (the period within which the voltage must be restored to have an automatic restart) can be set between 10 and 3600 seconds or to Infinite. If the power recovery time is set to Infinite, the compressor will always restart after a voltage failure, no matter how long it takes to restore the voltage. A restart delay can also be programmed, allowing e.g. two compressors to be restarted one after the other.

2 Control panel (Fig. 2.1)

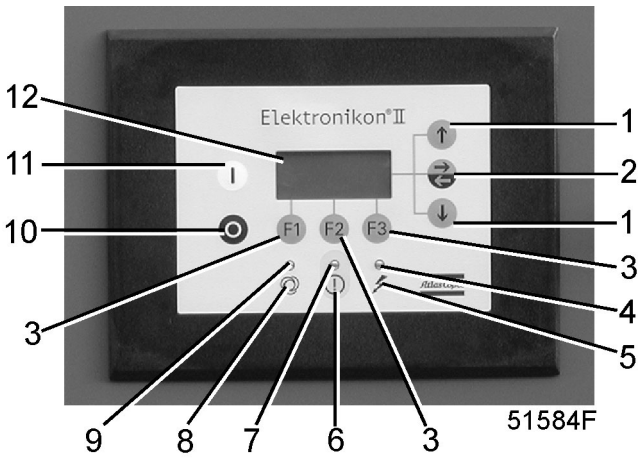

Fig. 2.1 Control panel

LEDs/buttons/keys

Ref.	Designation	Function
1	Scroll keys	Keys to scroll through the display.
2	Tabulator key	Key to select the parameter indicated by a horizontal arrow.
3	Function keys	Keys to control and program the compressor. See below.
4	Voltage on LED	Indicates that the voltage is switched on.
5	Pictograph	Voltage on.
6	Pictograph	Alarm.
7	General alarm LED	Is normally out. Is alight or blinks in case of an abnormal condition. See below.
8	Pictograph	Automatic operation.
9	Automatic operation LED	Indicates that the regulator is automatically controlling the compressor.
10	Stop button	Push button to stop the compressor. LED (9) goes out.
11	Start button	Push button to start the compressor. LED (9) lights up indicating that the regulator is operative (in automatic operation).
12	Display	Indicates messages concerning the compressor operating condition, a service need or a fault.
	On GA37 VSD (200 V) Isolator switch	Switch to isolate the compressor from the mains or to stop the compressor immediately in case of emergency. The compressor will be depressurized automatically when the isolator switch is switched off.
	On GA18/30/37/45/50/55/75/90 VSD: Emergency stop button	Push button to stop the compressor immediately in case of emergency. After remedying the trouble, unlock the button by pulling it out and press the Rset key. **Note:** Previously produced compressors may be equipped with an isolator switch

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Function keys

The keys are used:
- To call up or to program settings
- To reset a motor overload, shut-down or service message, or an emergency stop
- To have access to all data collected by the regulator

The functions of the keys vary depending on the displayed menu. The actual function is abbreviated and indicated on the bottom line of the display just above the relevant key. The most common abbreviations are listed below.

Abbreviation	Designation	Function
Add	Add	To add compressor start/stop commands (day/hour)
Back	Back	To return to a previously shown option or menu
Canc	Cancel	To cancel a programmed setting when programming parameters
Del	Delete	To delete compressor start/stop commands
Help	Help	To find the Atlas Copco internet address
Lim	Limits	To show limits for a programmable setting
Main	Main	To return from a menu to the main screen (Fig. 4.2)
Menu	Menu	Starting from the main screen (Fig. 4.2): to have access to submenus
Menu	Menu	Starting from a submenu, to return to the previous menu
Mod	Modify	To modify programmable settings
Prog	Program	To program modified settings
Rset	Reset	To reset a timer or message
Rtrn	Return	To return to a previously shown menu
Xtra	Extra	To find information regarding the installed modules

3 Display - keys

3.1 Display (12-Fig. 2.1)

The display has four lines of 16 characters. A typical display is shown in Fig. 4.2. It indicates:

1. On the first three lines:
   - the name of the sensor of which the actual reading is displayed
   - the unit of measurement and actual reading of the sensor
   - messages regarding the compressor operating condition (compressor off, etc.), a service need (e.g. for the oil filter and air filter) or a fault (e.g. shut-down)
2. On the fourth line, just above the three function keys (F1/F2/F3), the actual functions of these keys.

3.2 Scroll keys (1-Fig. 2.1)

These keys, labelled with vertical arrows, allow to scroll through the display.

As long as a downward pointing arrow is shown at the utmost right position of the display, the key (1) with the same symbol can be used to see the next item.

As long as an upward pointing arrow is shown at the utmost right position of the display, the key (1) with the same symbol can be used to see the previous item.

3.3 Tabulator key (2-Fig. 2.1)

This key, labelled with two horizontal arrows, allows the operator to select the parameter indicated by a horizontal arrow. Only the parameters followed by an arrow pointing to the right are accessible for modifying.

3.4 Function keys (3-Fig. 2.1)

The keys are used:
- to call up or program settings
- to reset an active fan motor overload, shut-down or service message
- to have access to all data collected by the regulator

The function keys allow to make the required selection from a menu of possibilities. The functions of the keys vary depending on the displayed menu. The actual function is abbreviated and indicated on the bottom line of the display just above the relevant key. Only the active and relevant functions at a moment are shown.

4 Menu-driven control programs

To facilitate programming and controlling the compressor, menu-driven programs are implemented in the electronic module.

A simplified menu flow is shown in Fig. 4.1.

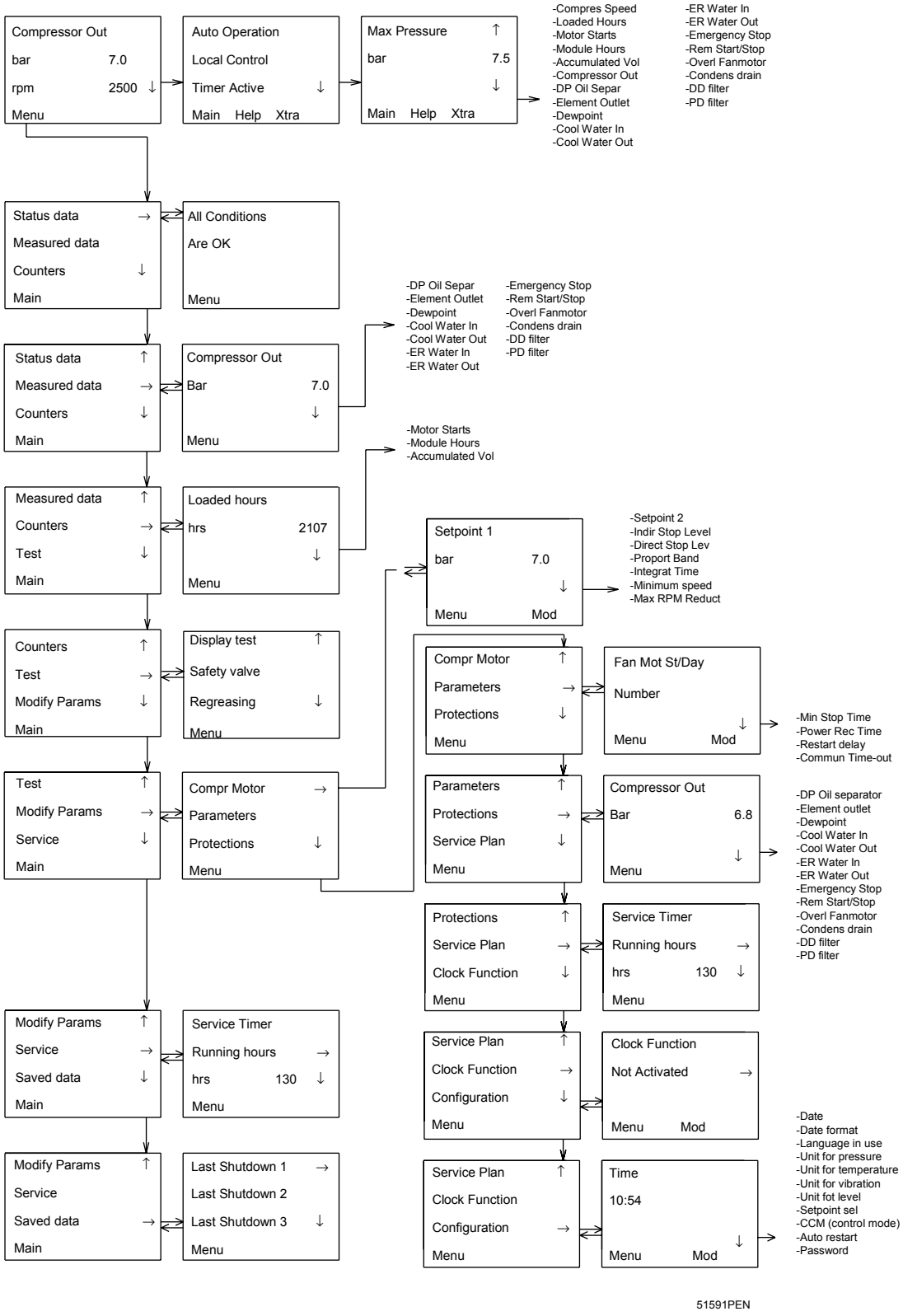


Fig. 4.1 Menu flow

4.1 Function of control programs

Program/Function	Description
Main screen	Shows in short the operation status of the compressor. It is the gateway to all functions. See Fig. 4.1.
Status data	Calling up the status of the compressor protection functions: - shut-down - shut-down warning - service warning - warning Resetting of a shut-down, motor overload and service condition.
Measured data	Calling up: - actually measured data - the status of a number of inputs, such as the fan motor overload protection
Counters	Calling up the: - loaded hours - number of motor starts - regulator (module) hours - accumulated volume
Test	Allows a display test.
Modify Params	Modifying the parameters for: - compr./motor settings (e.g. setpoints) - parameters (e.g. minimum stop time) - protections (e.g. air temperature shut-down level) - service plans - clock functions (automatic compressor start/stop/pressure band commands) - configuration (time, date, display language, …)
Service	Calling up service plans and resetting the timers.
Saved data	Calling up the saved data: last shut-down, last emergency stop data

4.2 Main screen

When the voltage is switched on, the Main screen is shown automatically, showing in short the operation status of the compressor.

Compressor out			
bar		7.0	
rpm		2500	↓
Menu			
F1	F2	F3	

Fig. 4.2 Main screen, typical example

If the function keys or arrow keys are not used for some minutes, the display will automatically return to the Main screen.

Whenever displayed on a submenu screen, press the key Main to return to the Main screen.

4.3 Calling up other menus

Starting from the Main screen:

- Use the ↓ key (1) for a quick look at the actual compressor status (see section 5).
- Press the key Menu (F1); the option Status data will be followed by a horizontal arrow:
  - either press the tabulator key (2) to select this menu
  - or use the ↓ key (1) to scroll until the desired submenu is followed by a horizontal arrow and then press tabulator key (2) to select this menu.

5 Quick look at actual compressor status

Procedure

1. Starting from the Main screen (see section 4.2), press the ↓ key: A screen similar to the one below appears:

Auto Operation			
Local Control			
Timer Active			
Main	Help	Xtra	↓
F1	F2	F3	

Fig. 5.1 Example of an actual compressor status display

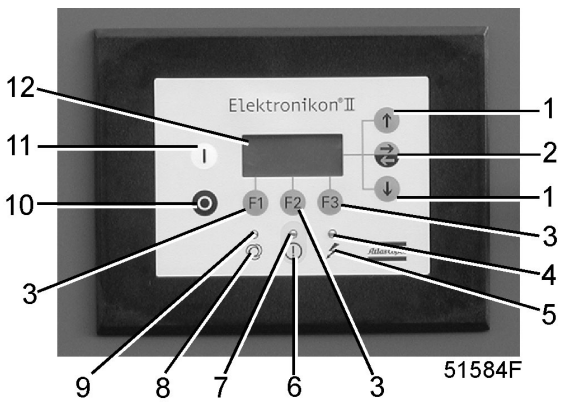
Line 1 indicates the automatic or manual operation status of the regulator:
<<Auto operation>> means that the regulator automatically adapts the operation of the compressor, i.e. matching the compressor output to the air consumption.

Line 2 indicates whether the regulator operates in local control or remote control mode:
<<Local control>> means that the start/stop buttons on the keyboard are activated.
<<Remote control>> means that these functions are controlled remotely. Consult Atlas Copco.

Line 3 indicates whether the timer which generates time-based start and stop commands is activated or not. See section 14.

See section 2 for the functions of keys Main, Help and Xtra.

2. Press the ↓ key to get other data (actual compressor conditions of the compressor) as shown in Fig. 4.1.



6 Status data menu

The status data submenu gives information regarding the status of the compressor protection functions (shut-down, shut-down warning, service warning and warning) and allows resetting of a shut-down, motor overload and service condition.

Procedure

Starting from the Main screen (see section 4.2):
- Press the key Menu (F1): the option Status data will be followed by a horizontal arrow.
- Press the tabulator key (2).

6.1 No message exists

In this case, LED (7) is out and the message on the display indicates that all conditions are normal (Fig. 6.1):

All conditions are OK		
Menu		
F1	F2	F3

Fig. 6.1 Example of a status data screen

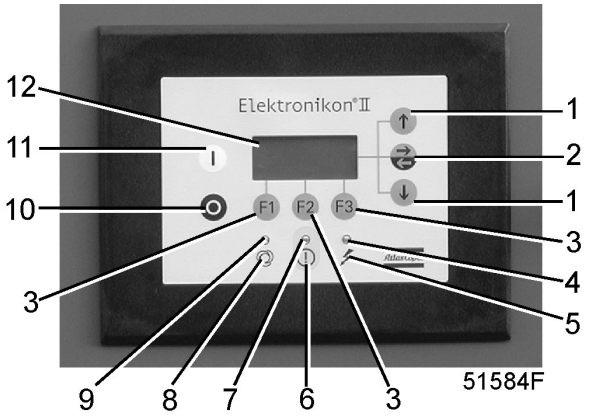
6.2 A shut-down message exists

In case the compressor is shut down, LED (7) will blink.

In case of a shut-down due to too high a temperature at the compressor element outlet, a screen similar to the one below will appear:

Element Outlet		
C		122
Shd	Max	120
Menu **		** Rset
F1	F2	F3

Fig. 6.2 Example of a status data screen



1. The indicators (**) are blinking. The screen shows the sensor (compressor element outlet), the actual reading (122 °C), that the compressor is shut down (Shd), and the shut-down setting (120 °C).
2. It remains possible to scroll through other menus, e.g. to check the values of other parameters. When returning to the Status data menu, the option Shutdowns will blink. This option can be selected by pressing the tabulator key (2) to return to the shut-down screen (Fig. 6.2).

Shut-down reset

1. Switch off the voltage and remedy the trouble. After remedying and when the shut-down condition has disappeared, switch on the voltage and press the key Rset.
2. Press the keys Menu and Main to return to the Main screen and restart the compressor by means of button **I**.

Reset of fan motor overload

1. Switch off the voltage and remedy the trouble. Reset overload relay (F15) after cooling off. When the shut-down condition has disappeared, switch on the voltage and press the key Rset.
2. Press the keys Menu and Main to return to the Main screen and restart the compressor by means of button **I**.

6.3 A shut-down warning message exists

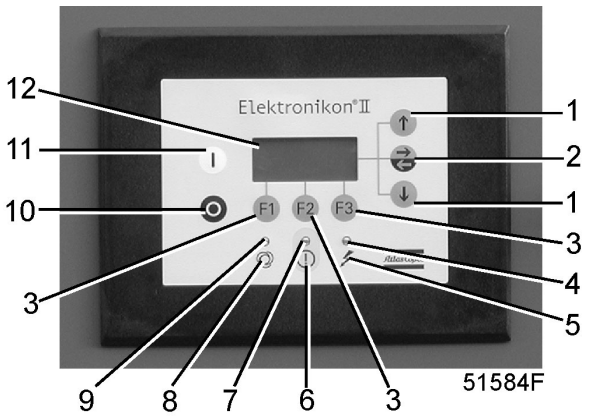
A shut-down warning level is a programmable level below the shut-down level.

1. If a shut-down warning exists, LED (7) is alight. The Main screen will change into a screen similar to the one below:

Compressor Out		
bar		7.0
*Shutd	Warn*	
Menu **		** Unld
F1	F2	F3

Fig. 6.3 Example of a shut-down warning screen

2. The indicators (**) are blinking and the message *Shutd Warn* appears.
3. Press the key Menu (F1) and the tabulator key (2) to select the Status data menu, the option Protection is blinking.
4. Scroll to this option and select it by pressing the tabulator key (2): option Warnings blinks. A screen similar to the one in Fig. 6.4 appears:



Element outlet		
C		116
Shdw	Max	110
Menu **		**
F1	F2	F3

Fig. 6.4 Example of a shut-down warning screen

The screen shows that the temperature at the outlet of the compressor element (116 °C) is too high.

5. If necessary, stop the compressor by means of button **0** and wait until the compressor has stopped.
6. Switch off the voltage, inspect the compressor and remedy.
7. The warning message will disappear automatically as soon as the warning condition disappears.

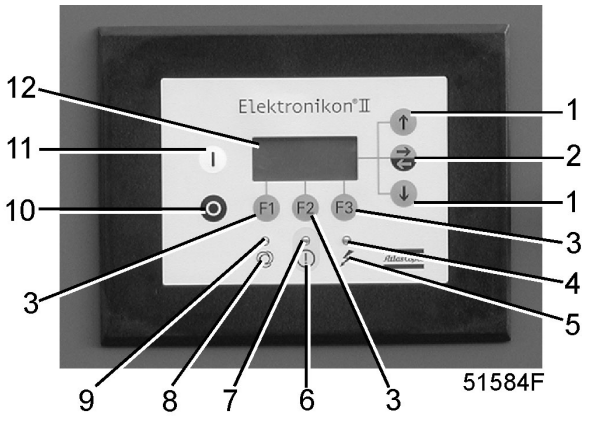
6.4 A service warning message exists

1. LED (7) is alight and the main screen will change into a screen similar to that shown in Fig. 6.5.

Compressor Out		
bar		7.0
*Serv Requir *		
Menu **		** Unld
F1	F2	F3

Fig. 6.5 Example of a warning screen

2. The indicators (**) are blinking and the service warning message appears.
3. Press the key Menu (F1) and the tabulator key (2) to select the Status data menu: the option Service is blinking.
4. Scroll to this option and select it by pressing the tabulator key (2), two options may blink:
   <<Inputs>>: if the programmed service level of a component is exceeded (e.g. the maximum pressure drop of the oil separator).
   <<Plans>>: if a service plan interval is exceeded.
5. Stop the compressor and switch off the voltage.
6. In case the service message was referring to <<Inputs>> (oil separator): replace the separator, switch on the voltage, scroll in the Status data menu to <<Inputs>> and press the Rset key to reset the service message.
7. In case the service message was referring to <<Plans>>: carry out the service actions related to the indicated plans. Reset the timers of the related plans as described in section 16.



6.5 A warning message exists

1. LED (7) is alight and a warning message will appear on the screen.
2. The indicators (**) are blinking and the warning message appears. This warning indicates that:
   - **On water-cooled compressors**, the cooling water outlet temperature exceeds the programmed warning level.
   - **On Full-Feature compressors** (compressors with integrated air dryer), the dewpoint temperature exceeds the warning level.
3. Stop the compressor and wait until the compressor has stopped.
4. Switch off the voltage, inspect the compressor and remedy.

7 Measured data menu

Function

To call up information regarding the actually measured data and the status of a number of inputs, such as the motor overload protection.

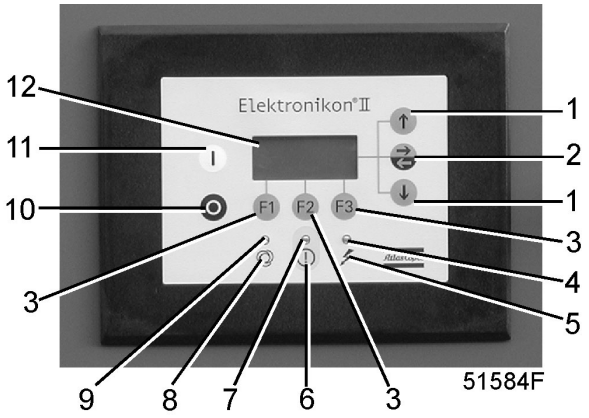
Procedure

1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Measured data is followed by a horizontal arrow
   - press the tabulator key (2) to activate the menu
2. By pressing the ↓ key, a number of actually measured data can be found (see Fig. 4.1).
3. If one of the sensors is linked to a shut-down, service or warning function, both the actually measured value as well as the corresponding shut-down, warning or service level can be called up by pressing the tabulator key (2).

8 Counters menu

Function

To allow the operator to call up the:
- loaded hours
- number of motor starts
- regulator (module) hours (the hours the module has been under tension)
- accumulated volume



Procedure

1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Counters is followed by a horizontal arrow
   - press the tabulator key (2) to activate the menu
2. By pressing the ↓ key, the above-mentioned items can be found (see also Fig. 4.1).

Calling up the accumulated volume:

1. Consult the section above to select the item Accumulated volume:

Accum Volume			↑
1000 m³		230	
Menu	Mod		↓
F1	F2	F3	

Fig. 8.1 Example of an accumulated volume screen

The display indicates that the compressor has delivered 230 x 1000 m³ of compressed air.

If it should be required to modify the value of the indicated timer, consult Atlas Copco.

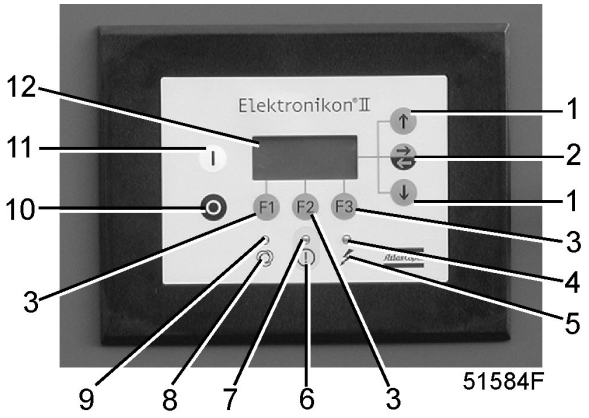
9 Test menu

Function

To carry out a display test, i.e. to check whether the display and LEDs are still intact.

Procedure

1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Test is followed by a horizontal arrow
   - press the tabulator key (2) to activate the menu
2. The option Display test will be followed by a horizontal arrow.
3. After pressing the tabulator key (2), the regulator will generate a series of patterns on the display which enable the operator to check that each pixel still functions normally; at the same time the LEDs are lit.



10 Modify Params – modifying compr./motor settings

Function

The menu allows the operator to program:

- Compr. / motor settings
- Parameters, see section 11
- Protection settings, see section 12
- Service plan settings, see section 13
- Clock settings, see section 14
- Configuration settings, see section 15

Modifying compr./motor settings

Function

To modify a number of settings as mentioned in Fig. 4.1.

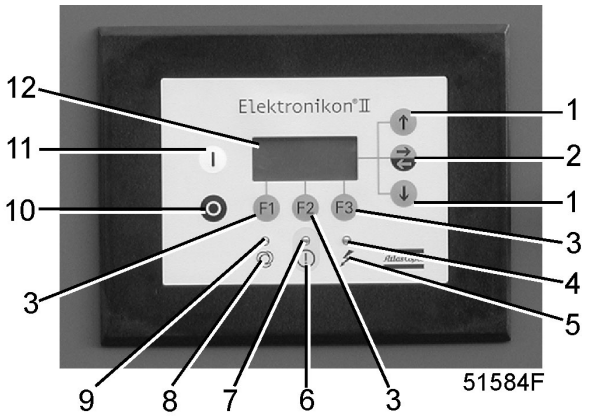
Procedure

1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Modify Params is followed by a horizontal arrow
   - press the tabulator key (2) to activate the menu
2. The first option (Compr./motor) will be followed by a horizontal arrow.
3. Press the tabulator key (2): the first item (Setpoint 1) and its setting will appear.
4. Use the ↓ key to scroll until the parameter to be modified is followed by a horizontal arrow.

Modifying the net pressure setpoints

If desired, the operator can program two setpoints (Setpoint 1 and setpoint 2).

1. Consult the steps above to select Setpoint 1.
2. The screen shows that the current setting is 7.0 bar(e). To modify this setting, press the key Mod (F2); the setting will blink.
3. The key Lim (F2) can be used to find out the limitations for the parameter. Use the ↓ or ↑ arrow key to change the value.
4. Press the key Prog (F1) to program the new setting or the key Canc (F3) to cancel the modification operation.
5. If required, the procedure to modify setpoint 2 is similar to the description above.



Setpoint 1		
Bar		7.0
Menu	Mod	↓
F1	F2	F3

Fig. 10.1 Modify setpoint screen

11 Modifying parameters

Function

To modify a number of parameters as mentioned in Fig. 4.1.

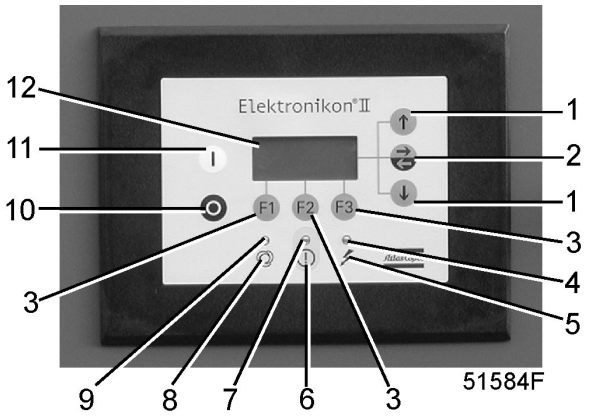
Procedure

1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Modify Params is followed by a horizontal arrow
   - press the tabulator key (2) to activate the menu
2. Use the ↓ key until the option Parameters is followed by a horizontal arrow
3. Press the tabulator key (2): the first item (Fan Mot St/Day) and its setting will appear.

Fan Mot St/Day		
Number		240
Menu	Mod	↓
F1	F2	F3

Fig. 11.1 Modify parameters menu

4. To modify this setting, press the key Mod (F2); the setting will blink.
5. The key Lim (F2) can be used to find out the limitations for the parameter. Use the ↓ or ↑ arrow key to change the value.
6. Press the key Prog (F1) to program the new setting or the key Canc (F3) to cancel the modification operation.
7. The procedure to modify other parameters is similar.



12 Modifying protection settings

Function

1. To modify protection settings:
   - shut-down (<<Shd>>), for element outlet temperature
   - shut-down warning (<<Shdw>>), for element outlet temperature
   - warning (<<Warn>>), e.g. for cooling water outlet or dewpoint
   - service warning (<<Serv>>), e.g. DP of oil separator (max. pressure drop)

2. To check some compressor conditions, e.g. the status of the fan motor overload contacts. The list of parameters is shown in Fig. 4.1.

   Note:
   Some parameters cannot be modified.

Procedure

1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Modify Params is followed by a horizontal arrow
   - press the tabulator key (2) to activate the menu
2. Use the ↓ key to scroll until the option Protections is followed by a horizontal arrow.
3. Press the tabulator key (2): the first item (Delivery air) and its value will appear.
4. Use the ↓ key to scroll until the parameter to be modified is followed by a horizontal arrow.

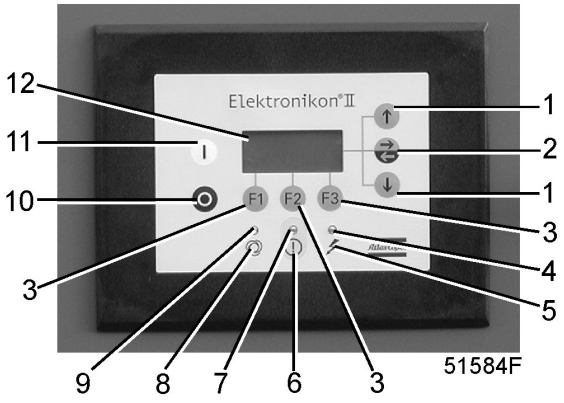
Modifying settings for compressor element

1. Consult the section above to select the parameter Element outlet:

Element Outlet			
C		94	→
Shd Max		120	
Menu	Mod		↓
F1	F2	F3	

Fig. 12.1 Modify parameters menu

2. The screen shows that the current temperature is 94 °C and that the shut-down setting is 120 °C. To modify this setting, press the key Mod (F2):



Element Outlet			
C		120 (blinks)	
Prog	Lim	Canc	↓
F1	F2	F3	

Fig. 12.2 Modify parameters menu

3. The key Lim (F2) can be used to find out the limitations for the parameter. Use the ↓ or ↑ arrow key to change the value.
4. Press the key Prog (F1) to program the new setting or the key Canc (F3) to cancel the modification operation.
5. The screen shown in Fig. 12.1 shows an arrow pointing to the right to call up the screen to modify the shut-down warning value:

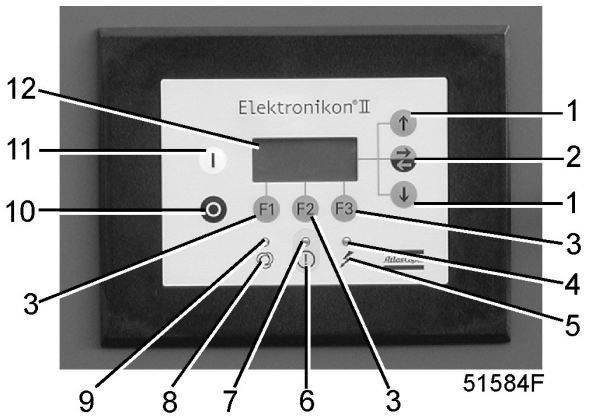
Element Outlet		
C		94
Shdw Max		110
Back	Mod	
F1	F2	F3

Fig. 12.3 Modify parameters menu

6. The screen shows that the current temperature is 94 °C and that the shut-down warning setting is 110 °C. The modifying procedure is similar to the description above.

Note:

The modifying procedure for other settings is similar. For some settings, a delay can be programmed. See section 18.



13 Modifying service plans

Function

To modify the hour intervals for the Service plans.

Service plans

The service operations to be carried out are grouped in plans called Service plan A, B, C or D. When reaching an interval, a message will appear on the screen indicating which Service plans are to be carried out.

Important

Always consult Atlas Copco in case any timer setting should be changed. The intervals must not exceed the periods below and must coincide logically.

Programmed service plan intervals

Service plans	Intervals
Service plan A	Every 4000 running hours
Service plan B	Every 4000 running hours
Service plan C	Every 8000 running hours
Service plan D	Every 24000 running hours

Resulting service actions to be carried out

Service actions according to	At
Service plan A and B	4000 running hours
Service plan A, B and C	8000 running hours
Service plan A and B	12000 running hours
Service plan A, B and C	16000 running hours
Service plan A, B, C and D	24000 running hours
…	…

Procedure

1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Modify Params is followed by a horizontal arrow
   - press the tabulator key (2) to activate the menu
2. Use the ↓ key to scroll until the option Service plan is followed by a horizontal arrow.
3. Press the tabulator key (2): a screen similar to the one below will appear:

Service Timer			
Running hours			→
hrs		2130	
Menu			↓
F1	F2	F3	

Fig. 13.1 Service plan menu

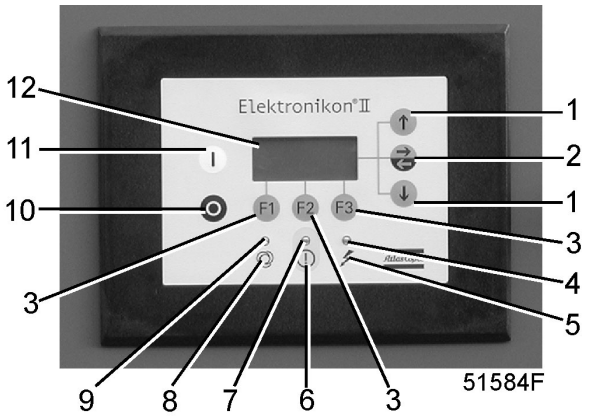
4. The screen shows the actual running hours (2130).

5. Press the tabulator key (2): a screen similar to the one below will appear:

Service Timer			
Level A			
hrs		4000	
Menu	Mod		↓
F1	F2	F3	

Fig. 13.2 Service plan menu

6. The screen indicates that the level for Service plan A is set at 4000 running hours.
7. Press the Mod key. The key Lim (F2) can be used to find out the limitations for the parameter. Use the ↓ or ↑ arrow key to modify the interval.
8. Press the key Prog (F1) to program the new setting or the key Canc (F3) to cancel the modification operation.
9. The procedures to modify the other Service plans (B, C, …) are carried out in a similar way.



14 Programming Clock function

To program:
- time-based start/stop commands for the compressor
- time-based change-over commands for the net pressure band (see also section 10)

14.1 Programming start/stop/pressure band commands

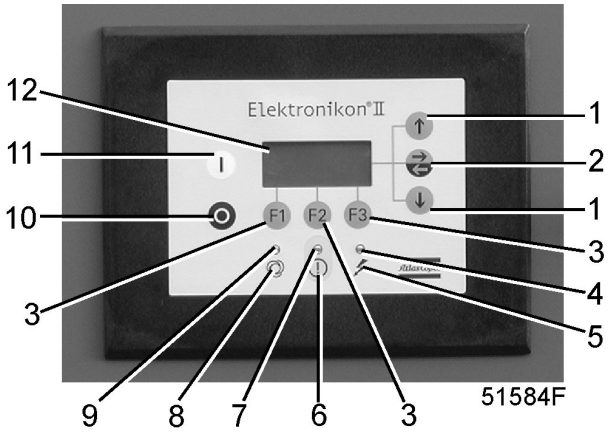
In this example, the compressor will be programmed as follows:
- On Monday at 06:15 starting in pressure band 1
- On Friday at 18:00 changing over to pressure band 2
- On Saturday at 18:00 stopping

1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Modify Params is followed by a horizontal arrow
   - press the tabulator key (2) to activate the menu
2. Use the ↓ key to scroll until the option Clock function is followed by a horizontal arrow. Press the tabulator key (2); following screen appears:

Clock Function		
Not activated		→
Menu	Mod	Del
F1	F2	F3

3. Press the tabulator key (2); following screen appears:

Monday		→
Tuesday		
Wednesday		↓
Menu	Mod	Del
F1	F2	F3



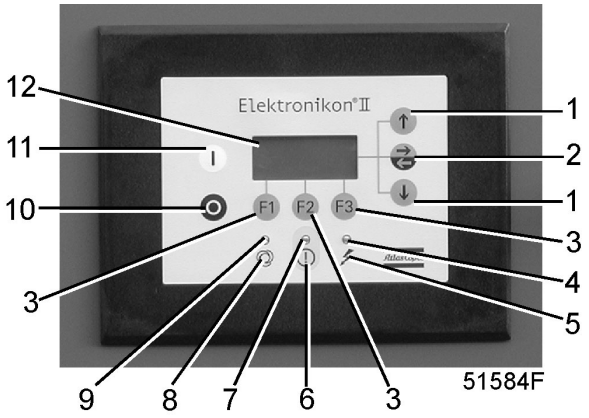
4. Use the ↓ or ↑ keys until the day on which a command must be programmed is followed by a right pointing arrow. Press the tabulator key (2); following screen appears:

--:--	----------		→
--:--	----------		
--:--	----------		↓
Menu	Mod	Del	
F1	F2	F3	

5. Press the key Mod (F2). The first two dashes will flash. Use the ↑ or ↓ key to enter <<06>>. Press the tabulator key to jump to the following two dashes. Use the ↑ or ↓ key to enter <<15>>. Press the tabulator key to jump to the row of dashes. Use the ↑ or ↓ key to enter the command Start. Press the key Prog to program the command: 06:15 Start.
6. Press the ↓ key: the right pointing arrow key indicates that the second line is accessible. Press the key Mod and modify this line in a similar way to the following command line: 06:15 Band 1.
7. Press the key Menu (F1) and scroll to <<Friday>>:

Thursday			↑
Friday			→
Saturday			↓
Menu	Mod	Del	
F1	F2	F3	

8. Programming the command to change over at 18 o'clock to Band 2 is carried out in a similar way as described above.
9. Press the key Menu (F1) and scroll to <<Saturday>>. Programming the command to stop at 18 o'clock is carried out in a similar way as described above.



14.2 To activate/deactivate the timer

1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Modify Params is followed by a horizontal arrow
   - press the tabulator key (2) to activate the menu
2. Use the ↓ key to scroll until the option Clock function is followed by a horizontal arrow. Press the tabulator key (2); following screen appears:

Clock Function Not activated →		
Menu	Mod	Del
F1	F2	F3

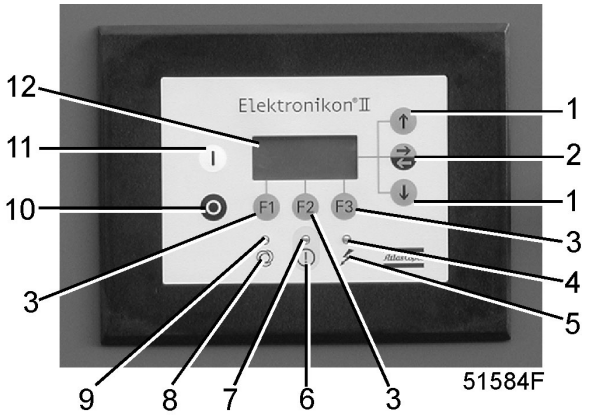
3. Press the key Mod, <<Not activated>> starts blinking.
4. Press the ↓ key, <<Not activated>> changes into <<Activated>>.
5. Press the key Prog.

Important:

1. It is necessary to program the start/stop/pressure band commands in successive order timewise, e.g.:

   07.30 start
   07.30 band 1
   08.30 band 2
   17.00 stop
   etc.

2. Make sure that the clock function is activated (indicated as <<Activated>>). If not, the programmed start/stop commands will not be executed.



14.3 To modify a command

Suppose the command to stop the compressor on Saturday 18:00 is to be modified: stopping at 17 o'clock instead of 18 o'clock:

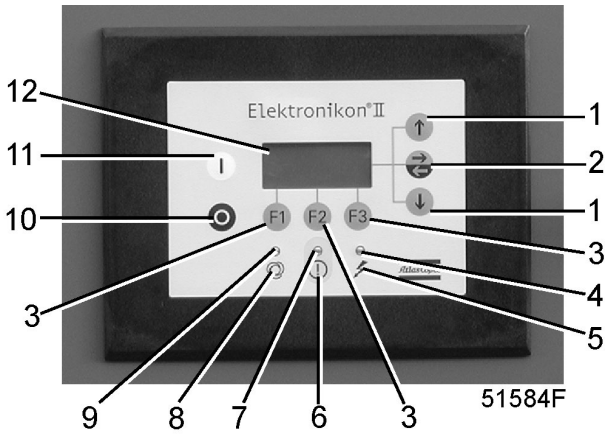
1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Modify Params is followed by a horizontal arrow
   - press the tabulator key (2) to activate the menu
2. Use the ↓ key to scroll until the option Clock function is followed by a horizontal arrow. Press the tabulator key (2); following screen appears:

Clock Function		
Not activated		→
Menu	Mod	Del
F1	F2	F3

3. Press the tabulator key (2); following screen appears:

Monday		→
Tuesday		
Wednesday		↓
Menu	Mod	Del
F1	F2	F3

4. Scroll through the display until <<Saturday>> is followed by a horizontal arrow. Press the tabulator key (2). If necessary, scroll through the compressor start/stop/pressure band commands until the command to be modified is followed by the horizontal arrow on the screen. Press the key Mod, the first two digits of the command start blinking. Modify as required using the scroll keys, i.e. in the example above change <<18>> into <<17>> using the ↑ key.
5. If necessary, press the tabulator key (2) to go to the next field to be modified, the minutes indication and the start/stop/pressure band indication.
6. Press the key Prog to program the new command or the key Canc to quit without reprogramming.



14.4 To add a command

Adding a command at the end of an existing list

1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Modify Params is followed by a horizontal arrow
   - press the tabulator key (2) to activate the menu
2. Use the ↓ key to scroll until the option Clock function is followed by a horizontal arrow. Press the tabulator key (2); following screen appears:

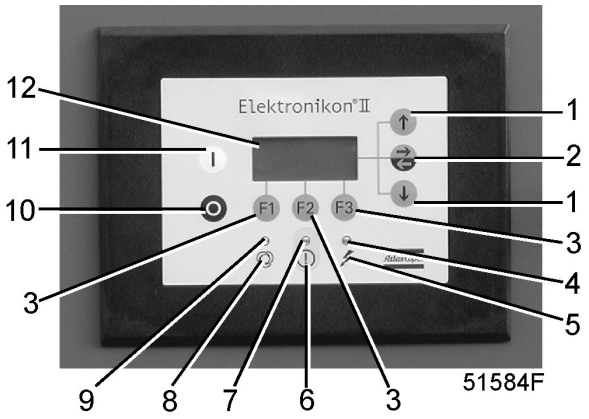
Clock Function		
Not activated		→
Menu	Mod	Del
F1	F2	F3

Suppose the command to stop the compressor at 18:00 must be added to the list of Monday:
- 06:15 start
- 06:15 band 1

3. Press the tabulator key (2); following screen appears:

Monday		→
Tuesday		
Wednesday		↓
Menu	Mod	Del
F1	F2	F3

4. Scroll through the display until <<Monday>> is followed by a horizontal arrow. Press the tabulator key (2). Scroll through the compressor start/stop/pressure band commands until the first empty command line is indicated by the horizontal arrow on the screen.
5. Press the key Mod; the first two digits of the command start blinking. Enter <<18:00 stop>> using the scroll keys ↓ or ↑ to modify a field and the tabulator key (2) to jump from one field to another.
6. Press the key Prog to program the new command or the key Canc to quit without reprogramming.



Adding a command between two existing commands

1. Suppose the command 17:00 band 2 must be added to following list:
   - 06:00 start
   - 06:00 band 1
   - 18:00 stop
2. The regulator does not allow to enter a new command which is situated before the last command in the list timewise.
3. Scroll through the display until the command before which the new command must be entered is followed by the horizontal arrow (in the example above: 18:00 stop) and press the key Mod. Change this command to the new command (in the example above: 17:00 band 2) and press the key Prog. Press the ↓ key, add the last command of the list (in the example above: 18:00 stop) and press the key Prog.

14.5 To delete a command

1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Modify Params is followed by a horizontal arrow
   - press the tabulator key (2) to activate the menu
2. Use the ↓ key to scroll until the option Clock function is followed by a horizontal arrow. Press the tabulator key (2); following screen appears:

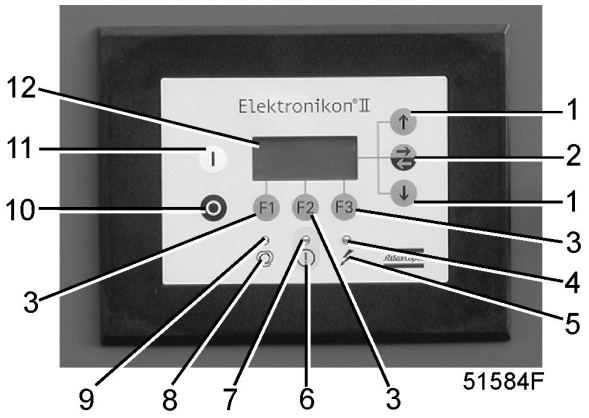
Clock Function Not activated →		
Menu	Mod	Del
F1	F2	F3

Deleting all commands

Press the key Del (F3) in the screen above. A question to confirm the deleting operation will appear.

Deleting all commands related to a specific day

Scroll through the display until the desired day is followed by a horizontal arrow. Press the key Del (F3). A question to confirm the deleting operation will appear.



Deleting a specific start/stop/pressure band command

Scroll through the display until the desired start, stop, band 1 or band 2 command line is followed by a horizontal arrow. Press the key Del (F3). A question to confirm the deleting operation will appear.

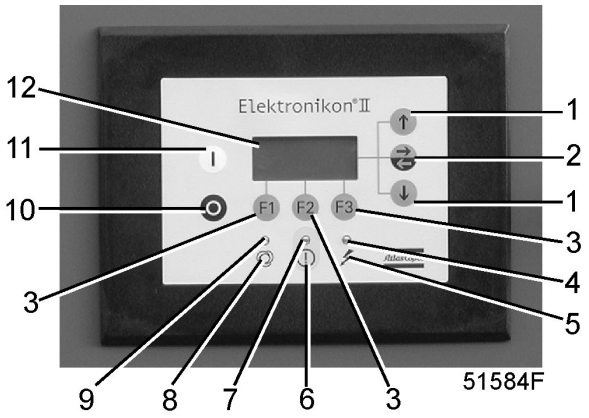
15 Configuration menu

Function

To reprogram a number of parameters. See Fig. 4.1.

Procedure

1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Modify Params is followed by a horizontal arrow
   - press the tabulator key (2) to activate the menu
2. Use the ↓ key to scroll until the option Configuration is followed by a horizontal arrow.
3. Press the tabulator key (2): The first option shown is <<Time>>. If another option is desired, scroll through the display (using ↓ or ↑ keys) and select it using the tabulator key (2).
4. In case of option <<Time>>, the second line on the screen indicates the actual setting, e.g. 14:30.
5. If it is desired to modify the time, press key <<Mod>>. If not, press key <<Menu>> to return to the submenu.
6. After pressing the key Mod, the first field (14) will blink. Modify the hours using the ↓ or ↑ keys. Then press the tabulator key (2) to go to the next field (i.e. 30). The setting of this field can now be modified with the ↓ or ↑ keys.
7. The bottom line of the display will show two options:
   - Prog to program the new setting
   - Canc to cancel the new setting
8. Proceed in a similar way for the other parameters to be modified.



Programming compressor control modes

Compressor control modes

The compressor can be controlled locally, remotely or via a local area network (LAN-consult Atlas Copco).

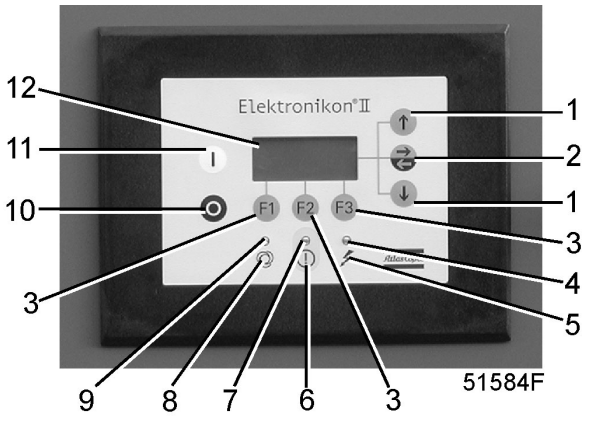
Procedure

1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Modify Params is followed by a horizontal arrow
   - press the tabulator key (2) to activate the menu
2. Use the ↓ key to scroll until the option Configuration is followed by a horizontal arrow.
3. Press the tabulator key (2): The first option shown is <<Time>>. Scroll through the display (using ↓ or ↑ keys) until the option C.C.M. is followed by a horizontal arrow and select it using the tabulator key (2). Following screen is shown:

CCM			↑
Local control			
Menu	Mod		↓
F1	F2	F3	

Fig. 15.1 Compressor control mode menu

4. Press the key Mod and use the ↓ or ↑ keys to select the desired control mode. Press the Prog key to program or the Cancel key to cancel the modification.



16 Service menu

Function

- To reset the service plans which are carried out.
- To check for both the next service plans to be carried out and to find out which service plans were carried out previously.

Service plans

- Consult the relevant instruction book to find out which service actions are related to these plans.
- Consult section 13 if any modification to the intervals should be required.

When the service plan interval is reached, a message will appear on the screen. See section 6.

Example

Programmed service plan intervals ex-factory

Service plans	**Intervals**
Service plan A	Every 4000 running hours
Service plan B	Every 4000 running hours
Service plan C	Every 8000 running hours
Service plan D	Every 24000 running hours

Resulting service actions to be carried out

Service actions according to	**At**
Service plan A and B	4000 running hours
Service plan A, B and C	8000 running hours
Service plan A and B	12000 running hours
Service plan A, B and C	16000 running hours
Service plan A, B, C and D	24000 running hours
…	…

Procedure

1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Service is followed by a horizontal arrow
   - press the tabulator key (2) to activate the menu

2. A screen similar to the one below appears:

Service Timer			
Running Hours			→
hrs		7971	↓
Menu			
F1	F2	F3	

Fig. 16.1 Service menu

The screen shows that the total compressor running time is 7971 hrs.

3. Press the tabulator key (2):

Next Timer			
Level	A B C		
hrs		8000	↓
Back		Rset	
F1	F2	F3	

Fig. 16.2 Service menu

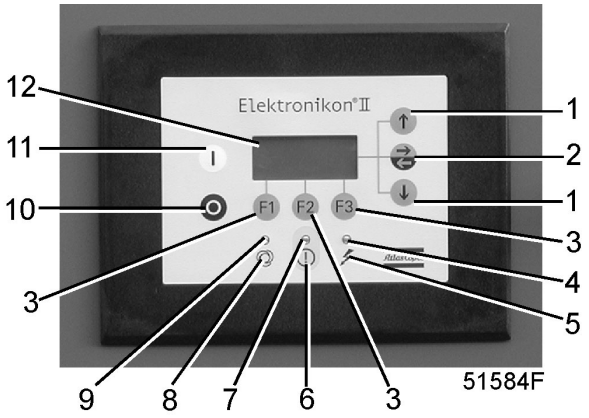
The screen shows that the next service plans to be carried out are plans A, B and C and that these plans are to be carried out every 8000 running hours.

4. Press the ↓ key to find out which service plans were carried out previously:

Previous Timer			↑
Level	A B		
hrs		4008	
Back			
F1	F2	F3	

Fig. 16.3 Service menu

The screen shows that service plans A and B were carried out at 4008 running hours.



5. Stop the compressor, switch off the voltage and carry out the service operations related to plans A, B and C. See instruction book.
6. Switch on the voltage and scroll to the service screen shown in Fig. 16.2. Press the Rset button (F3) to reset the timer. Confirm the question for resetting.

Notes

- The Rset button only appears when the next Timer level is almost reached (from 400 running hours before elapsing of the service plan interval).
- After pressing the ↓ key in Fig. 16.1, the Life time hours are shown (i.e. the number of hours elapsed since initial programming ex-factory). This counter is not taken into account.

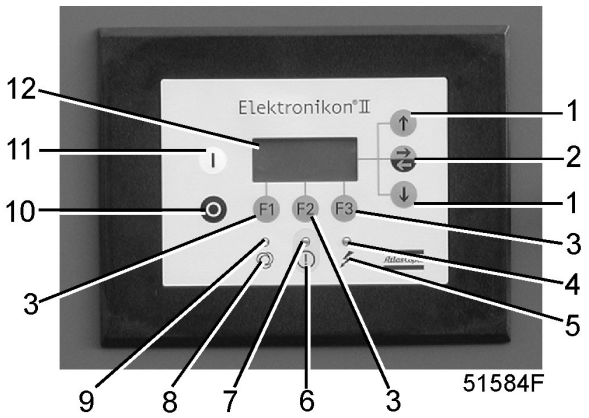
17 Saved data menu

Function

To call up some compressor data saved by the regulator. These data are:
- Last shut-down data
- Last emergency stop data

Procedure

1. Starting from the Main screen (see section 4.2):
   - press the key Menu (F1)
   - press the ↓ key until the option Saved data is followed by a horizontal arrow
   - press the tabulator key (2) to activate the menu
2. The first option is shown (Last shutdown 1).
3. Press the tabulator key (2) to find out the date, time and other data reflecting the status of the compressor at the last shut-down.
4. If desired, scroll through the other items.



18 Programmable settings

18.1 Compr./motor

		Minimum	Nominal	Maximum
Setpoint 1 / 2				
-GA(W) VSD	bar(e)	4	7	13
-GA(W) VSD Full-Feature	bar(e)	4	7	12.8
Indirect stop level	bar	0.1	0.3	1
Direct stop level	bar	0.3	1	1.5
Proportional band **1)**	%	6	10	15
Integration time **1)**	sec	5	6	10
Minimum motor speed				
- GA18 VSD	rpm	1875	1875	2500
- GA30 VSD (Siemens motor)	rpm	2000	2000	4000
- GA30 VSD (ABB motor)	rpm	1870	1870	2500
- GA37/45/50/55 VSD	rpm	900	900	2000
- GA75 VSD	rpm	700	700	1000
- GA90 VSD	rpm	600	600	1000
Max. RPM reduction	%	75	100	100

18.2 Parameters

		Minimum	Nominal	Maximum
Minimum stop time				
- GA18 up to GA55 VSD	sec	5 **2)**	5	30
- GA75 VSD (200-230 V)	sec	10 **2)**	10	30
- GA75 VSD (380-575 V)	sec	5 **2)**	5	30
- GA90 VSD	sec	5 **2)**	5	30
Power recovery time	sec	10	10	3600 **3)**
Restart delay	sec	0	0	1200
Communication time-out **4)**	sec	10	30	60
On air-cooled compressors also:				
Fan motor starts per day		1	240	240

18.3 Protections

		Minimum	Nominal	Maximum
Compressor element outlet temperature **5)**	°C	50 **11)**	110	119
(shut-down warning level)				
Compressor element outlet temperature **5)**	°C	111	120	120
(shut-down level)				
Oil separator (pressure difference)	bar	0	1	2 **6)**
(shut-down warning level)				
Oil separator (delay at signal) **7)**	sec	0	10	20
For Full-Feature also 8):				
Dewpoint warning temperature	°C	0	25	99
Delay at signal **7)**	sec	0	3	255
Delay at starting **9)**	sec	0	255	255
On water-cooled compressors also:				
Cooling water inlet temperature (warning level)	°C	0	50	99
Delay at warning signal **7)**	sec	0	0	255
Delay at start **10)**	sec	0	0	255
Cooling water outlet temperature (warning level)	°C	0	60	99
Delay at warning signal **7)**	sec	0	0	255
Delay at start **10)**	sec	0	0	255

18.4 Service plan

		Minimum	Nominal	Maximum
Service plan A (running hours)				
- compressors filled with Food grade oil	hr	**12)**	2000	**12)**
- compressors filled with Roto-injectfluid	hr	**12)**	4000	**12)**
- compressors filled with HD Roto-fluid	hr	**12)**	8000	**12)**
Service plan B (running hours)	hr	**12)**	4000	**12)**
Service plan C (running hours)	hr	**12)**	8000	**12)**
Service plan D (running hours)	hr	**12)**	24000	**12)**

Footnotes chapter 18

1) The settings for the Proportional band and Integration time are determined by experiment. Altering these settings may damage the compressor. Consult Atlas Copco.
2) Once the compressor is automatically stopped, it will remain stopped for the **minimum stop time**, whatever happens with the air net pressure. It is recommended to program this setting at minimum 20 seconds to prevent too-short stopping periods. If a lower setting should be required, consult Atlas Copco.
3) See section 1.4.
4) In case of LAN control. See section 15. Consult Atlas Copco.
5) The regulator does not accept illogical settings, e.g. if the warning level is programmed at 95 °C, the minimum limit for the shut-down level changes into 96 °C. The recommended difference between the warning level and shut-down level is 10 °C.
6) Use Atlas Copco oil separators. The recommended maximum pressure difference is 1 bar.

7) Is the time period during which the warning signal must exist before the warning message appears.
8) Full-Feature version is the Workplace version with integrated air dryer.
9) Is the time period during which the warning signal is ignored after starting to allow the dryer to reach the dewpoint temperature.
10) Is the period after starting which must expire before generating a warning. This setting should be less than the setting for delay at signal.
11) Recommended minimum setting: 70 °C. For testing the temperature sensor, this setting can be decreased to 50 °C. Reset the setting value after testing.
12) Always consult Atlas Copco in case any timer setting should be changed. The intervals must not exceed the nominal intervals and must coincide logically. See section 13.

Notes: