

A CAUTION

Read this manual carefully before attempting to install or use the product.

- This equipment must only be installed by qualified staff in accordance with the applicable regulations, to avoid causing damage to people and property.
- Before starting work on the device, de-energise the power supply and measurement inputs and short-circuit the current transformers.
- The LEGRAND group will not accept liability for electrical safety if the product is used incorrectly.
- The products described in this document are likely to be upgraded or modified without prior warning.
- A breaking and protection device must be located in the immediate vicinity, within the operator's reach. It must be identified as a device which disconnects the equipment.
- Clean the device with a soft dry cloth; do not use abrasive products, liquid detergents or solvents.

CONTENTS	PAGE
1 - Introduction	2
1 - Introduction	2
3 - Modularity	3
4 - IR programming port	4
5 - Front panel	4
6 - Information on the display	5
7 - Operating modes	5
8 - Measurements	6
9 - Keyboard lock/unlock	6
9 - Keyboard lock/unlock	7
11 - First switch-on	8
12 - Main programming actions	8
13 - Parameter tables	8
14 - Alarms	14
15 - Description of alarms	14
16 - "CMD" command menu	14
17 - "FUN" Ethernet menu	15
18 - Position of terminals	15
19 - Technical characteristics	

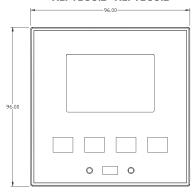
1 - INTRODUCTION

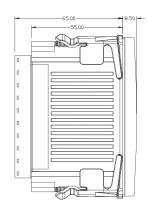
ALPTEC controllers are designed to offer cutting-edge functions for power factor correction applications. Built with dedicated components and extremely compact, ALPTEC combines an interface with a modern design, ease of installation and the option of extension at the rear where an EXT extension module can be connected. The LCD screen offers a clear, intuitive user interface.

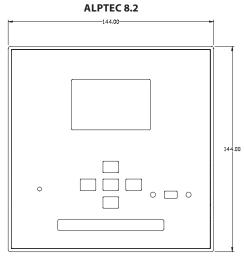
2 - DESCRIPTION

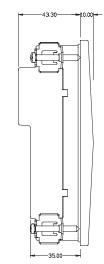
- Automatic power factor controller
- Mounted on front panel on door or faceplate
- Overall controller dimensions:

ALPTEC 3.2 - ALPTEC 5.2



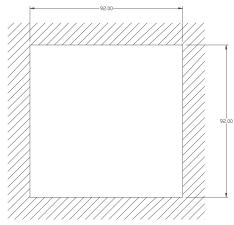


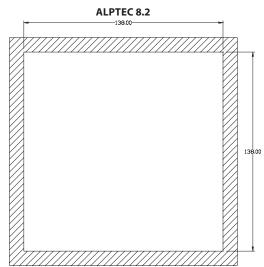




- Cut-outs for mounting:

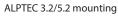
ALPTEC 3.2 - ALPTEC 5.2

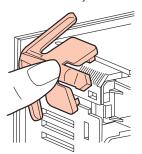




Installation:

ALPTEC 3.2/5.2 and 8.2 controllers are designed to be flush-mounted in your installation. The protection class on the front is IP54 if they have been installed correctly.

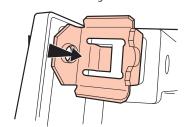


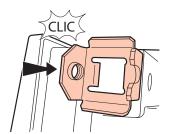


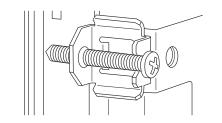














2 - DESCRIPTION (CONTINUED)

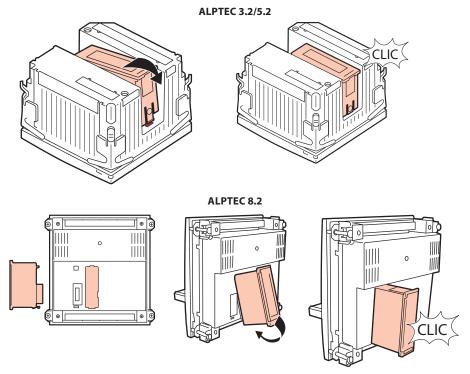
Backlit LCD display.

- Versions:
 - ALPTEC 3.2: control of 3 steps, which can be extended to 6.
 - ALPTEC 5.2: control of 5 steps, which can be extended to 8.
 - ALPTEC 8.2: control of 8 steps, which can be extended to 14.
- 4 to 5 navigation and setting buttons.
- Alarm messages in 6 languages.
- Extension BUS with 1 slot for the EXT extension module:
 - RS485 communication interface.
 - · Additional output relays.
- Accurate RMS measurements.
- Vast range of electrical measurements including voltage, current, THD and harmonics up to order 15.
- Voltage measurement circuit independent from the auxiliary power supply for connecting VTs on HV applications.
- Wide range of supply voltages (100-440 VAC).
- Programming interface via optical port: galvanic isolation, high speed, USB and Wi-Fi compatible.
- 2 protection and setting levels.
- Backup copy of commissioning parameters.
- Built-in temperature sensor.
- Easy toolless assembly.

3 - MODULARITY

Using the Extension BUS, ALPTEC controllers can be configured with an EXT extension module.

- To insert an extension module:
- Remove the power supply from the ALPTEC.
- Remove the protective cover from the Extension slot.
- Insert the module upper hook in the fixing hole on top of the Extension slot.
- Pivot towards the bottom of the module body, inserting the connector on the BUS.
- Push until the bottom clip fully engages in its slot.



Using the extension modules, it is possible to increase the number of steps or communication interfaces.

- Possibility of inserting 1 EXT module for the ALPTEC 3.2/5.2 and 2 modules for the ALPTEC 8.2.
- When the ALPTEC is supplied with power, it automatically recognises the EXT module which has been fitted.
- The extension modules provide additional resources which can be used by dedicated configuration menus.
- The configuration menus associated with the extensions are always accessible, even if the extension modules are not physically connected.

Compatible extension modules:

Type of module	Cat. No.	Function
ADDITIONAL STEP	EXT2GR	Relay with 2 steps
	EXT3GR	Relay with 3 steps
COMMUNICATION	EXTRS485	RS 485
	EXTETH	Ethernet (ALPTEC 8.2 only)

4 - IR PROGRAMMING PORT

- The ALPTEC parameters can be configured via the optical port, using the USB or Wi-Fi connection device. The programming software is available for download via the online catalogue, the smartphone and tablet app from the Apple App Store and Google Play Store.
- This programming port has the following advantages:
- You can configure ALPTEC without needing to access the back of the device or opening the electrical cabinet.
- It is galvanically isolated from the ALPTEC's internal circuits, ensuring greater operator safety.
- · High-speed data transfer.
- Front panel protection class: IP54.
- Minimises the possibility of unauthorised access to the device configurations.
- Simply connect the appropriate connection device to the front panel, inserting the outlets in the dedicated connectors, and the device will be recognised.







Wi-Fi connection device - Cat. No. 4 226 88

Using the Wi-Fi connection device

- Interface Cat. No. 422688 offers the option of a Wi-Fi access point for connection to a PC, tablet or smartphone. It can also be used to save and transfer data to/from an ALPTEC.
- Insert the interface in the infrared port on the front panel.
- Switch to the interface by pressing on/off for 2 sec.
- Wait until the LINK LED flashes orange.



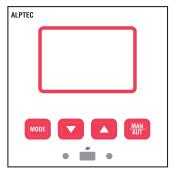


- Quickly press on/off 3 times in succession.
- -The controller main screen displays the first possible command (from D1 to D6).
- Press and to scroll through the commands.
- Press 💮 or 🖊 to confirm the command. The controller asks you for confirmation OK? on the main screen.
- Confirm by pressing 🚻 or 💵 , cancel with 🔤 .
- The list of available commands appears below:

Code	Command	Description
D1	Device setting → Interface	Copies the ALPTEC settings to the interface.
D2	Interface setting → ALPTEC	Copies the interface settings to ALPTEC.
D3	CLONE ALPTEC → Interface	Copies the ALPTEC settings and data to the interface.
D4	CLONE Interface → ALPTEC	Copies the interface settings and data to ALPTEC.
D5	Interface DATA	Shows information about the data saved in the interface.
D6	EXIT	Exits the dongle menu.

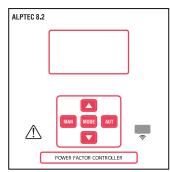
5-FRONT PANEL

ALPTEC 3.2/5.2



- : Backlit screen with LCD display
- : Set the values and select the steps
- selection of available measurements (see page 6), access to the programming and keyboard lock menus
- 🔐 : Switch to "AUT" mode 🔁 and "MAN" mode 🤚
- : High-speed optical port, USB and Wi-Fi compatible

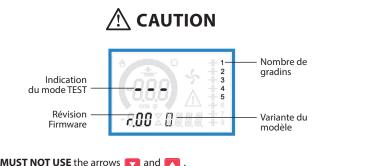
ALPTEC 8.2



- : Backlit screen with LCD display
- : Set the values and select the steps
- : Selection of available measurements (see page 6), access to the programming and keyboard lock menus
- 📶 : Switch to "AUT" mode 🔁
- 🔤: Switch to "MAN" mode 🍨
- In the High-speed optical port, USB and Wi-Fi compatible

6 - INFORMATION ON THE DISPLAY Inductif/capacitif Mode Automatique Etat des ventilateurs Etat des sorties Mode Manuel Etat des gradins 11-3 Affichage principal Barre graphique Alarme active Affichage Affichage secondaire Alpha numérique

7 - OPERATING MODES



If this screen appears on power-up, **YOU MUST NOT USE** the arrows and and

Press the button of for 3 sec to exit the page and enter parameter-setting mode. Please refer to page 7 ""SET" main menu" for more details.

Switching between "MAN" and "AUT" mode

- The icons 🔁 and 🍨 indicate whether the operating mode is automatic or manual.
- To change mode, press 🔐 or 📶 or 📶 .
- The operating mode remains in memory even after the supply voltage is disconnected.

MAN mode 🖑

This mode is used to select and connect/disconnect all live steps.



- Press to see the other possible measurements.
- Press or to select the step to be connected/disconnected.
- The selection is obtained as soon as the symbol for the selected step capacitor flashes
- Press to connect/disconnect the step.
- Because of the capacitor discharge time, the controller does not allow the same step to be reconnected for at least 3 minutes after being disconnected.
- If the step number 📲 and icon- Hill are flashing, the operation has been taken into account, but the controller waits for the time required before reconnecting the step.
- The step configuration is maintained even when the supply voltage is disconnected. When the power returns, the initial status is restored.

AUT mode 🔁

This mode allows the controller to calculate the optimum step configuration in order to obtain the setpoint cos phi.

- The selection criteria take account of numerous variables such as: each step's power rating, the number of operations, the total operating time, the reconnection time, etc.
- The controller warns of imminent connection/disconnection of the step by displaying the flashing step number. Flashing may continue if the step connection is not possible immediately due to the programmed reconnection time.
- The controller activates the steps when the reactive energy demand (delta-kVAr) is greater than 50% of the power rating of the smallest step and the cos phi differs from the setpoint cos phi.

8 - MEASUREMENTS

- ALPTEC provides a set of measurements displayed on the alphanumeric screen, related to the cos phi which is always displayed on the main screen.
- The button is used to access the various measurements detailed below:

Measurement	Icon	Description
Delta–kVAr	ΔKVAR	kVArs needed to reach the setpoint cos phi. If >0, steps will be activated, if <0 they will be disconnected
	KVAR	Total installation kVAr.
	Δ STEP	Number of equivalent steps.
Voltage	V	Installation RMS voltage.
	V HI	Maximum voltage value.
Current	А	Installation RMS current.
	A HI	Maximum voltage value.
Weekly PF	WPF	Average weekly Cos phi.
	PF	Instantaneous Cos phi
Cap. current	%C.CU	Calculation of the capacitor current, as a % of its nominal value.
	%C.HI	Maximum measurement value.
Temperature	°C °F	Temperature.
	°CHI °FHI	Maximum measurement value.
Voltage THD	THDV	Installation Voltage Total Harmonic Distortion % (THD).
	VH02 VH15	Individual voltage harmonic, %, from order 2 to order 15.
Current THD	THDI	Installation Current Total Harmonic Distortion % (THD).
	IH02 IH15	Individual current harmonic, %, from order 2 to order 15.
Cos phi setpoint	LEAD LAG	Cos phi setpoint setting
Step power ⁽¹⁾	%	Step residual power as a % of the nominal value
Step counter ⁽¹⁾	OPC	Number of step activations
Step hours ⁽¹⁾	н	Number of step operating hours

- After 30 seconds without any key being pressed, the display automatically returns to the default measurement defined by parameter P.47
- At the bottom of the list of measurements, the cos phi setpoint can be set, acting on the same value defined with parameter P.19
- (1) These measurements are only effective if the "step trimming" function is enabled (P25=ON) and the advanced password has been entered.

9 - KEYBOARD LOCK/UNLOCK

- -The keyboard can be locked/unlocked to prevent parameter modifications being authorised (switching between modes 🔁 and 📵, access to the setting menus, modification of the cos phi setpoint), while still allowing the measurements to be viewed.
- Hold down MODE .
- Press 3 times on then twice on .
- Release MODE .
- The main screen indicates ${f LOC}$ when the keyboard is locked and ${f UNL}$ when it is unlocked.
- If one of the parameter modification operations is attempted with the keyboard locked, the main screen will indicate LOC.

10 - "SET" MAIN MENU

To access the programming menu:

- Switch the controller to mode 🖣 to disconnect all the steps.
- Press for 3 seconds to call up the SET main menu.



- If the main screen displays PAS rather than SET, enter the password (001 by default) using 🔽 and 🔼, then confirm with 🔎 or 🚟.
- Depending on the operating mode (Usr or Adm) the main screen will display **OK U** or **OK A** if the password is correct.
- If the password is incorrect, the main screen will display ERR.
- Repeat the procedure to access the programming menu.
- The parameter menu lock will be active again when the controller is reset or after 2 minutes of inactivity.
- Press 🔽 and 🔼 to select the submenu you wish to configure, which will be displayed on the main screen.
- The list of available submenus appears below:

Code	Description
BAS	Basic menu
ADV	Advanced menu
ALA	Alarm menu
CMD	Command menu
EXIT	Exit without saving
SAVE	Exit and save
FUN	Ethernet menu (only for ALPTEC 8.2)

To access the menu to be modified:

- Press 🕮 or 💷 to confirm which submenu is to be configured.
- The main screen displays the code for the selected parameter (P.01 for example), while the alphanumeric area at the bottom of the screen displays the parameter value and/or description.



- Press or or to scroll upwards through the parameters. Press or I to scroll upwards through the parameters.
- Once on the parameter to be modified, use and to change the value.
- Once you reach the end of the list of parameters, press 🔠 or 🚾 to return to the **SET** menu.
- Use and to access the **SAVE** submenu (save parameters) or **EXIT** (exit without saving).
- If you hold down for 3 seconds \text{ mor } or \text{ or } or \text{ in this will save changes and exit directly.}
- After 2 minutes of inactivity, the system exits the programming menu and returns to the normal display, without saving the parameter modifications.
- A copy of the parameters can be saved in the controller memory and retrieved at a later date if necessary. To do this, please refer to the **CMD** submenu (parameters C08 and C09) on page 14.



Any modification of the controller advanced mode parameters carries the risk of premature wear or even destruction of the equipment, involving risks to its environment and people, leading to unavailability of the installation, and the user is wholly responsible for any such action. The Legrand Group accepts no liability and the warranty is rendered null and void.

- (1) Only for ALPTEC 3.2 and 5.2
- (2) Only for ALPTEC 8.2

11 - FIRST SWITCH-ON

If the primary CT value needs to be set when the controller is first switched on, parameter P.01 is set to OFF:

- -The main screen then displays the code flashing.
- Use and to change the value of the primary.
- Confirm by pressing m or .
- The controller saves the parameter value and starts up in mode 🔁 .

12 - MAIN PROGRAMMING ACTIONS

Changing the primary CT value

If the primary CT value needs to be modified:

- Press or to switch to mode .
- Following the procedure outlined in the "Setting the "SET" parameters" section on page 7, go to the BAS menu, then to parameter P.01.
- Use and to change the value of the primary.
- Hold down 👑 or 🚾 until the countdown starts to confirm the new value.
- Press or uto switch to mode 🔁.

Setting the cos phi setpoint

- Following the procedure outlined in the "Setting the "SET" parameters" section on page 7, go to the BAS menu, then to parameter P.19.
- Press or to change the value of the cos phi.
- Press to confirm the new value.
- Press or or to switch to mode .

13 - PARAMETER TABLES

This is a list of all the programming parameters in tabular form. The possible setting range and factory setting are indicated for each parameter, along with a brief explanation of the parameter function. The parameter description displayed on the screen may in some cases differ from that quoted in the table due to a lower number of characters being available. However the parameter code can be used as a reference.

Note: The greyed-out parameters shown in the table are essential for the system to work, and therefore represent the minimum programming required for operation.

"BAS" Basic menu

Code	Description	ACC	UoM	DEF	Range
P.01	CT primary	Usr	А	OFF	OFF/110,000
P.02	CT secondary	Usr	Α	5	1/5
P.03	CT read phase	Usr		L1	L1 L2 L3
P.04	CT connection direction	Usr		Aut	Aut Dir Rev
P.05	Voltage read phase	Usr		L2-L3	L1-L2 L2-L3 L3-L1 L1-N L2-N L3-N
P.06	Reference power	Usr	kVAr	1.00	0.10 10,000
P.07	Step nominal voltage	Usr	V	410	50 50,000
P.08	Nominal frequency	Usr	Hz	Aut	Aut 50 Hz 60 Hz Var
P.09	Reconnection time	Adm	S	180	1 30,000
P.10	Sensitivity	Adm	S	30	1 1000
P.11	Step 1 function	Adm		OFF	OFF 132 ON NOA NCA FAN MAN AUT A01A13

"BAS" Basic menu (continued)

Code	Description	ACC	UoM	DEF	Range
P.12	Step 2 function	Adm		OFF	=
P.13	Step 3 function	Adm		OFF	=
P.14	Step 4 function	Adm		OFF	=
P.15	Step 5 function	Adm		OFF	=
P.16	Step 6 function	Adm		OFF	=
P.17 ⁽¹⁾	Step 7 function	Adm		OFF	=
P.18 ⁽¹⁾	Step 8 function	Adm		OFF	=
P.19	Cos phi setpoint	Usr		0.96 LEAD	0.50 Lead – 0.50 Lag
P.20	Alarm message language	Usr		ENG	ENG ITA FRA SPA POR GER

- **P.01** Value of the transformer primary current. Example: with CT 800/5, set 800. If set to OFF, after switch-on the device invites you to define the CT and allows direct access to the parameter.
- P.02 Value of the current transformer secondary. Example: with CT 800/5, set 5.
- **P.03** Defines the phase on which the device reads the current signal. The current input wiring must correspond to the value defined for this parameter. Accounts for all the possible combinations of parameter P.05.
- P.04 Read the CT connection polarity.
 - AUT = The polarity is automatically detected on switch-on. Can only be used when working with one CT and when the installation has no electricity-generating device.
 - Dir = Automatic detection disabled. Direct connection.
 - Rev = Automatic detection disabled. Crossover.
- **P.05** Defines how many and on which phases the voltage signal is read. The voltage input wiring must correspond to the value of this parameter. Accounts for all the possible combinations of parameter P.03.
- **P.06** Reference power in kVAr relating to parameters P.11 to P.18 (usually the power in kVAr of the smallest installed step), at the nominal voltage stated in parameter P.07.
- P.07 Nominal voltage of steps.
- P.08 System working frequency:
 - Aut = automatic selection between 50 and 60 Hz on switch-on.
 - 50Hz = set to 50 Hz
 - 60Hz = set to 60 Hz
 - $\label{eq:Var} Var = variable, measured continuously and adjusted.$
- **P.09** Minimum time which should elapse between disconnection of a step and its reconnection, in MAN or AUT mode. During this time, the step number on the main page flashes.
- P.10 Sensitivity on connection. This parameter defines the controller reaction speed. With a low value of P.10 regulation is fast (more accurate around the setpoint, but with more step switching operations). With high values we have slower regulation reactions, with fewer step switching operations. The controller time delay is inversely proportional to the demand required by steps to reach the setpoint value: wait = (sensitivity/number of steps required. For example: with the sensitivity set to 60, if you wish to insert a step, the time is 60 s (60/1 = 60). If 4 steps are needed the time will be 15 s (60/4 = 15).
- **P.11 ... P.18** Function of output relays 1 ... 8:
 - OFF = Not used.
 - 1 .. 32 = Multiplication factor. These relays control steps with a power rating n times (n = 1 ... 32) the reference power defined in parameter P.06. ON = Always connected.
 - NOA = alarm normally switched off. The relay is energised when an alarm with the global alarm property appears.
 - NCA = alarm normally switched on. The relay is de-energised when an alarm with the global alarm property appears.
 - MAN = the relay is energised when the device is in manual mode.
 - AUT = the relay is energised when the device is in automatic mode.
 - FAN = The relay controls the cooling fan.
 - A01 ... A13 = The relay is energised when the specified alarm is active.
- P.19 Cos phi setpoint (target value). Used for standard application.
- P.20 Alarm message language.

(1) Only for ALPTEC 5.2 and 8.2

"ADV" advanced menu

Code	Description	ACC	UoM	DEF	Range	
P.21	Password enabled	Adm		ON	OFF ON	
P.22	User password	Usr		001	0-999	
P.23	Advanced password	Adm		***	***	
P.24	Type of connection	Usr		3PH	3PH Three-phase 1PH Single-phase	
P.25	Step power setting	Usr		ON	ON Enabled OFF	
P.26	+ target cos phi tolerance	Adm		00:00	0 – 0.10	
P.27	- target cos phi tolerance	Adm		00:00	0 – 0.10	
P.28	Step insertion mode	Adm		STD	STD Standard Lin Linear Disc Disconnection	
P.29	Target cos phi on cogeneration	Usr		OFF	OFF/ 0.50 LEAD – 0.50 LAG	
P.30	Sensitivity on disconnection	Adm	s	OFF	OFF/1 – 600	
P.31	Disconnection of steps in MAN mode	Usr		ON	OFF ON Enabled	
P.32	Capacitor overload alarm threshold	Adm	%	105	OFF/100150	
P.33	Capacitor overload immediate disconnection alarm threshold	Adm	%	110	OFF/100 200	
P.34	VT primary	Usr	V	OFF	OFF/50-50,000	
P.35	VT secondary	Usr	V	100	50-500	
P.36	Temperature UoM	Usr		°C	°C °Celsius °F °Fahrenheit	
P.37	Fan start-up temp.	Adm	٥	55	0 100°C (32212°F)	
P.38	Fan switch-off temp.	Adm	۰	50	0 100°C (32212°F)	
P.39	Temperature alarm threshold	Adm	۰	45	50 100°C (122212°F)	
P.40	Faulty step alarm threshold	Adm	%	OFF	OFF/25100	
P.41	Overvoltage alarm threshold	Adm	%	107	OFF/90150	
P.42	Undervoltage alarm threshold	Adm	%	80	OFF/60110	
P.43	THD V alarm threshold	Adm	%	3	OFF/5250	
P.44	THD I alarm threshold	Adm	%	10	OFF/5250	
P.45	Maintenance interval	Adm	kh	3.76	1 - 30,000	
P.46	Bar graph function	Usr		kVAr inst/tot	Inst/tot kVAr Act/nom curr Rchd/tot kVAr delta	
P.47	Default auxiliary measurements	Usr		kVAr delta	kVAr delta V A Weekly cos phi Overload Temp THDV THDI ROT	
P.48	Backlight enabled on alarm	Usr		ON	OFF ON	
P.49	Serial address (unsigned)	Usr		01	01-255	

"ADV" advanced menu (CONTINUED)

Code	Description	ACC	UoM	DEF	Range	
P.50	Transmission speed	Usr	bps	9.6 k	1.2 k 2.4 k 4.8 k 9.6 k 19.2 k 38.4 k	
P.51	Data format Usr 8-bit – n 8-bit, no parity 8-bit, even 7-bit, odd 7-bit, even		8-bit, even 7-bit, odd			
P.52	Stop bit	Usr		1	1-2	
P.53	Protocol	Usr		Modbus RTU	Modbus RTU Modbus RTU	
P.54	Number of activations for maintenance	Adm	Kcnt	50	OFF/1-60	
P.55 ⁽¹⁾	Step 9 function	Adm		OFF	OFF/132/ON/NOA/NCA/FAN/MAN/AUT/ A01A13	
P.56 (1)	Step 10 function	Adm		OFF	=	
P.57 (1)	Step 11 function	Adm		OFF	=	
P.58 (1)	Step 12 function	Adm		OFF	=	
P.59 (1)	Step 13 function	Adm		OFF	=	
P.60 (1)	Step 14 function	Adm		OFF	=	

- P.21 If set to OFF, password management is disabled and anyone can access the parameters and menu commands.
- P.22 With P.21 set to ON, value to be entered to enable access at user level (see password access in section 10).
- P.23 For more informations, please contact your Legrand group representative.
- P.24 Number of phases in the capacitor bank enclosure.
- **P.25** Allows the actual power of the step executed on each connection to be measured. The measured power of the steps is adjusted after each switching operation and displayed on the step life statistics page.
- **P.26 P.27** Tolerance around the setpoint. When the cos phi is within the range bounded by these parameters, in AUT mode the device neither connects nor disconnects any steps even if the kVAr delta is higher than the smallest step.
- P.28 Selection of step insertion mode.

Standard mode – Normal step operation

Linear mode – The steps are connected according to their number and the LIFO (Last In First Out) method. The controller will not connect a step when these have different power ratings and if on connecting the next one, the setpoint value is exceeded.

Disconnection mode - If a step with a lower power rating needs to be connected and the activated one needs to be disconnected, the sequence will be:

- disconnection of the currently activated step
- connection of the new step
- P.29 Setpoint used when the system is generating active power (with negative power/power factor).
- **P.30** Sensitivity on disconnection. Similar to parameter P.10, but concerning disconnection. If set to OFF, disconnection has the same reaction time as parameter P.10.
- P.31 If enabled, during switching from AUT mode to MAN mode, the steps are disconnected in sequence.
- P.32 Capacitor overload protection trip threshold (alarm A07), which will appear after a time delay inversely proportional to the overload value.
- P.33 Threshold beyond which the overload alarm tripping delay is reset to zero, causing immediate intervention of alarm A08.
- P.34 P.35 Data relating to VTs which may be used to measure the voltage.
- P.37 P.38 Cabinet cooling fan tripping and switch-off temperature, expressed by the unit stated in P.36.
- **P.39** Threshold for generating alarm A08 "temperature too high".
- **P.40** Threshold as a percentage of the step residual power, compared to the original power programmed in the general menu. Below this threshold, alarm A13 "step fault" is generated.
- P.41 Maximum voltage alarm threshold, referring to the nominal voltage set with P.07, above which alarm A06 "voltage too high" is generated.
- P.42 Undervoltage alarm threshold, referring to the nominal voltage set with P.07, below which alarm A05 "voltage too low" is generated.
- P.43 Installation maximum voltage THD alarm threshold above which alarm A10 "Voltage THD too high" is generated.
- P.44 Installation maximum current THD alarm threshold above which alarm A11 "Current THD too high" is generated.
- P.45 Maintenance interval in hours. When it has elapsed, alarm A12 "maintenance required" is generated. The hour counter is incremented as long as the device is switched on.
- **P.46** Function of the semi-circular bar graph.

Inst/tot kVAr: The graph represents the total connected kVAr compared to the total installed reactive power in the enclosure.

Act/nom curr: Percentage of the installation actual current compared to the CT maximum current.

kVAr delta: bar graph with zero in the middle. Indicates the negative/positive kVAr delta needed to reach the setpoint, compared to the total installed kVAr.

- P.47 Default measurement displayed on the secondary screen. Setting the parameter to ROT allows measurements to be displayed with sequential rotation.
- P.48 If it is enabled, backlighting flashes when one or more alarms is active.
- **P.49** Serial address (node) of the communication protocol.
- P.50 Port communication speed.
- P.51 Data format. 7-bit settings are only possible for ASCII protocol.
- **P.52** Number of stop bits.
- **P.53** Selects the communication protocol.
- **P.54** Defines the number of step activations (with reference to the step which has the most) above which maintenance alarm A12 will be generated. This parameter is used as an alternative to P.45. If P.45 and P.54 are both used, P.45 has priority.
- P.54...P.60 Function of output relays 9 to 14. See description of parameter P.11

(1) Only for ALPTEC 8.2

"ALA" alarm menu

Code	Description	ACC	UoM	DEF	Range
P.61	Alarm A01 activation	Adm		ALA	OFF
					ON
					ALA
					DISC
					A+D
P.62	Alarm A01 delay	Adm		15	0-240
P.63	A01 delay unit of time	Adm		min	Min.
1.05	7.01 delay diffe of diffe	, tuiii		'''''	Sec
P.64	Alarm A02 activation	Adm		ALA	OFF
P.04	Alaim A02 activation	Adm		ALA	OFF
					ALA
					DISC
					A+D
P.65	Alarm A02 delay	Adm		120	0-240
	-				
P.66	A02 delay unit of time	Adm		Sec	Min.
	1				Sec
P.67	Alarm A03 activation	Adm		ALA	OFF
					ON
					ALA
					DISC
				-	A+D
P.68	Alarm A03 delay	Adm		5	0-240
P.69	A03 delay unit of time	Adm		Sec	Min.
					Sec
P.70	Alarm A04 activation	Adm		ALA	OFF
					ON
					ALA
					DISC
					A+D
P.71	Alarm A04 delay	Adm		120	0-240
P.72	A04 delay unit of time	Adm		Sec	Min.
					Sec
P.73	Alarm A05 activation	Adm		A+D	OFF
					ON
					ALA
					DISC
					A+D
P.74	Alarm A05 delay	Adm		0	0-240
P.75	A05 delay unit of time	Adm		Sec	Min.
r./ J	A03 delay drift of time	Adili		360	Sec
D76	Alama AOC activistica	A due		A . D	
P.76	Alarm A06 activation	Adm		A+D	OFF
					ON
					ALA DISC
					A+D
D 7 7	Alama AGC dalam	A -1			'
P.77	Alarm A06 delay	Adm		0	0-240
P.78	A06 delay unit of time	Adm		Sec	Min.
	1				Sec
P.79	Alarm A07 activation	Adm		A+D	OFF
					ON
					ALA
					DISC
					A+D
P.80	Alarm A07 delay	Adm		30	0-240
	A07 delay unit of time	Adm		Sec	Min.
P.81	Aor delay diffe of time	/ Marii	1	1 000	14

"ALA" alarm menu (continued)

Code	Description	ACC	UoM	DEF	Range
P.82	Alarm A08 activation	Adm		A+D	OFF
					ON
					ALA
					DISC
					A+D
P.83	Alarm A08 delay	Adm		60	0-240
P.84	A08 delay unit of time	Adm		Sec	Min.
Do. 5	11 12 12				Sec
P.85	Alarm A09 activation	Adm		A+D	OFF
					ON
					ALA
					DISC
					A+D
P.86	Alarm A09 delay	Adm		0	0-240
P.87	A09 delay unit of time	Adm		Sec	Min.
Doo	A1 A10 11 11			A - D	Sec OFF
P.88	Alarm A10 activation	Adm		A+D	
					ON
					ALA
					DISC
					A+D
P.89	Alarm A10 delay	Adm		5	0-240
P.90	A10 delay unit of time	Adm		Sec	Min. Sec
P.91	Alarm A11 activation	Adm		A+D	OFF
F.91	Alami ATT activation	Adili		A+D	ON
					ALA
					DISC
					A+D
P.92	Alarm A11 delay	Adm		5	0-240
P.93	A11 delay unit of time	Adm		Sec	Min.
	,				Sec
P.94	Alarm A12 activation	Adm		ALA	OFF
					ON
					ALA
					DISC
					A+D
P.95	Alarm A12 delay	Adm		0	0-240
P.96	A12 delay unit of time	Adm		Sec	Min.
					Sec
P.97	Alarm A13 activation	Adm		A+D	OFF
					ON
					ALA
					DISC A+D
P.98	Alarm A13 delay	Adm		5	0-240
					0-240 Min.
P.99	A13 delay unit of time	Adm		Sec	Min. Sec
					Jec

P.61 – Activation of alarm A01 and definition of controller operation:

OFF – Alarm disabled

ON – Alarm activated

ALA – Alarm activated, activation of global alarm relay (if set)

DISC – Alarm activated, disconnection of steps

A + D = Activation of alarm relay and disconnection of steps.

When you access parameters P.61, P.64, P.67, etc, the display indicates the corresponding alarm code.

P.62 – Alarm A01 time delay.

P.63 – Alarm A01 delay unit of measurement.

P.64 – Same as P.61, for alarm A02.

P.65 – Same as P.62, for alarm A02.

P.66 – Same as P.63, for alarm A02.

...

P.97 – Same as P.61, for alarm A13.

P.98 – Same as P.62, for alarm A13.

P.99 – Same as P.63, for alarm A13.

14 - ALARMS

- When an alarm is generated, the screen displays an alarm icon, the alarm code and description in the language selected.
- If the navigation buttons in the pages are pressed, the scrolling message showing the alarm information briefly disappears, and then reappears after a few seconds.
- The alarms are automatically reset once the alarm conditions which generated it have disappeared.
- If there are one or more alarms, ALPTEC's behaviour depends on the properties of the active alarms.

15 - DESCRIPTION OF ALARMS

Code	Alarm	Description
A01	Undercompensation	All the steps are connected but the cos phi is below the setpoint.
A02	Overcompensation	All the steps are disconnected and the cos phi is above the setpoint.
A03	Current too low	The current read by the controller is lower than the minimum possible measurement. The installation can be at no-load.
A04	Current too high	The current read by the controller is higher than the maximum possible measurement.
A05	Voltage too low	The voltage measured is lower than the threshold set at P.42.
A06	Voltage too high	The voltage measured is higher than the threshold set at P.41.
A07	Capacitor overload	The overload current is higher than the threshold set at P.32 and P.33.
A08	Temperature too high	The temperature measured is higher than the threshold set at P.39.
A09	Micro-interruption	Micro-interruption on the voltage measurement input lasting more than 8 ms.
A10	Voltage THD too high	The installation THD U is higher than the threshold set at P.43.
A11	Current THD too high	The installation THD I is higher than the threshold set at P.44.
A12	Maintenance required	The maintenance interval set at P.45 or P.54 has been exceeded. To reset, use the CMD command menu.
A13	Step fault	The residual power of the indicated step is lower than the threshold set at P.40.

Code	Description	Enable	Alarm relay	Disconnection	Delay
A01	Undercompensation	•	•		15 min
A02	Overcompensation	•	•		120 s
A03	Current too low	•	•		5 s
A04	Current too high	•	•		120 s
A05	Voltage too low	•	•	•	0 s
A06	Voltage too high	•	•	•	0 s
A07	Capacitor overload	•	•	•	30 s
A08	Temperature too high	•	•	•	60 s
A09	Micro-interruption	•	•	•	0 s
A10	Voltage THD too high	•	•	•	5 s
A11	Current THD too high	•	•	•	5 s
A12	Maintenance required		•		0 s
A13	Step fault	•	•	•	5 s

16 - "CMD" COMMAND MENU

- This menu allows you to execute one-off operations such as resetting counters, alarms, etc.
- Following the procedure outlined in the "Setting the "SET" parameters" section on page 7, go to the CMD menu.
- Press 🔐 or 💵 to scroll upwards through the commands. Press 🚾 (1) or 🙉 (2) to go back.
- Hold down of for 3 seconds to confirm the command to be executed, the controller asks you for confirmation OK? on the main screen with a countdown.
- Continue pressing until the end of the countdown for definitive confirmation. Releasing the button before the countdown finishes will cancel the command.
- Press or I to return to the main menu.
- The table below indicates which commands are possible:

Code	Command	Access level	Description
C01	Maintenance reset	Usr	Resets the maintenance interval
C02	Step counter reset	Usr	Resets the step counter
C03	Step power setting reset	Adm	Resets the original step power rating
C04	Step no. of hours reset	Adm	Resets the step no. of operating hours
C05	Max. values reset	Adm	Resets the previously saved maximum values
C06	Weekly Power Factor reset	Usr	Resets the weekly Power Factor value
C07	Default settings	Adm	Initialises all parameters with their default values
C08	Back up configuration	Adm	Makes a copy of the user settings
C09	Restore configuration	Adm	Loads the settings with the above backup copy

(1) Only for ALPTEC 3.2 and 5.2

(2) Only for ALPTEC 8.2

17 - "FUN" ETHERNET MENU

-This menu is only available on ALPTEC 8.2 controllers equipped with the EXTETH module.

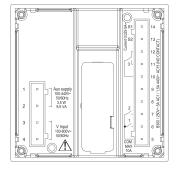
Code	Description	Access level	UoM	DEF	Range
F.01	IP address	Usr	•	192.168.1.1	IP1.IP2.IP3.IP4 IP1 0255
					IP2 0255 IP3 0255 IP4 0255
F.02	Subnet mask	Usr	•	0.0.0.0	SUB1.SUB2.SUB3.SUB4 SUB1 0255 SUB2 0255 SUB3 0255 SUB4 0255
F.03	IP port	Usr	•	1001	09999
F.04	Client/Server	Usr	•	Server	Client/Server
F.05	Remote IP address	Usr	٠	0.0.0.0	IP1.IP2.IP3.IP4 IP1 0255 IP2 0255 IP3 0255 IP4 0255
F.06	Remote IP port	Usr	•	1001	09999
F.07	Gateway IP address	Usr	•	0.0.0.0	GW1.GW2.GW3.GW4 GW1 GW2 GW3 GW4

F.01...F.03 – TCP-IP coordination for the Ethernet interface application

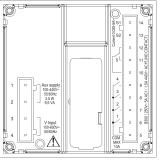
F.04 – Authorises the **Server** TCP-IP connection = waits for connection of a remote client. **Client** = Establishes connection to a remote server **F.05...F.07** – Coordinates connection to a remote server when F.04 is configured as client

18 - POSITION OF TERMINALS

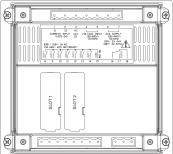
ALPTEC3.2



ALPTEC5.2



ALPTEC 8.2



19-TECHNICAL CHARACTERISTICS

Power	su	pp	ly
-------	----	----	----

i ower suppry	
Nominal voltage Us	100 – 440 V
Operating range	90 – 484 V
Frequency	45 – 66 Hz
Power consumption/dissipation	3.5 W/9.5 VA
Relay release on micro-interruption	> = 8 ms
Micro-cut immunity time	< = 25 ms
Recommended fuses	F1A (fast-blow)

Voltage inputs

voitage inputs	
Nominal voltage Ue max	600 VAC L-L (346 VAC L-N)
Measurement range	50720 V L-L (415 VAC L-N)
Frequency range	4565 Hz – 360440 Hz
Measurement type	TRMS
Input impedance measurement	$> 0.55~\text{M}\Omega~\text{L-N}$ $> 1.10~\text{M}\Omega~\text{L-L}$
Wiring mode	Single-phase, Two-phase, Three- phase with or without neutral and balanced system
Recommended fuses	F1A (fast-blow)

Current inputs

Nominal current le	1 A ∼ or 5 A ∼
Measurement range	for 5 A setting: $0.025 - 6$ A \sim for 1 A setting: $0.025 - 1.2$ A \sim
Input type	Shunt powered by an external CT (LV) 5 A max.
Measurement type	RMS
Overload limit	+20% le
Overload peak	50 A per 1 second
Consumption	< 0.6 VA

Measurement precision

Line voltage	±0.5% f.s. ±1 digit
--------------	---------------------

Relay outputs: ALPTEC 3.2 OUTPUTS1 - 2/ALPTEC 5.2 OUTPUTS 1 - 4/ ALPTEC 8.2 OUTPUTS 1-7

/(LI I LECOIL COII CID I /		
Type of contact	ALPTEC5.2	2 x 1 NO + common contact 4 x 1 NO + common contact 7 x 1 NO + common contact
UL marking		B300 30 V = 1 A Auxiliary duty
Max. nominal voltage		440 V∼
Nominal current		AC1-5 A 250 V
Max. current on the conta	ıct	10 A

Relay output: ALPTEC 3.2 OUTPUT 3/ALPTEC 5.2 OUTPUT 5/ALPTEC 8.2 OUTPUT 8

Type of contact	1 changeover switch
UL marking	B300 30 V = 1 A Auxiliary duty
Max. nominal voltage	415 V ∼
Nominal current	AC1- 5 A 250 V

Insulation level

Nominal insulation voltage Ui	600 V ∼
Nom. impulse withstand voltage Uimp	9.5 kV
Power frequency withstand voltage	5.2 kV

Ambient operating conditions

Operating temperature	-20 - +60°C
Storage temperature	-30 - +80°C
Relative humidity	< 80% (IEC/EN 60068-2-78)
Max. pollution level	Grade 2
Overvoltage category	3
Measurement category	III
Climatic sequence	Z/ABDM (IEC/EN 60068-2-61)
Impact resistance	15 g (IEC/EN 60068-2-27)
Vibration resistance	0.7 g (IEC/EN 60068-2-6)

Connections

Terminal block type	Plug-in
Conductor cross-section (min. and max.)	0.22.5 mm ² (2412 AWG)
UL marking Conductor cross-section (min. and max.)	0.752.5 mm ² (1812 AWG)
Tightening torque	0.56 Nm (5 LBin)

Casing

Mounting	Flush-mountable
Material	Polycarbonate
Protection class	IP 54 front panel – IP 20 terminal block
Weight	350 g

Certification and conformity

cer tilication and comorning	
Conformity to standards	IEC EN 61000-6-3 (ALPTEC 8.2) IEC EN 61000-6-4 (ALPTEC 3.2/5.2)
UL Marking	Use 60°C/75°C copper (CU) conductor only AWG range: 18 - 12 AWG stranded or solid Field wiring terminals tightening torque: 4.5 lb.in Flat panel mounting on a Type 1 enclosure

Auxiliary power supply sampled on a phase-neutral voltage system \leq 300 V.

NOTES	