ALPTEC Power factor controller

ALPTEC3

ALPTEC5

ALPTEC7

ALPTEC12

I - CONNECTIONS CONTROL

II - MANUAL KEYPAD SET-UP

III – OPERATING MODE

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I - CONNECTIONS CONTROL

– At the first power up, the ALPTEC display views --- which means no parameter has been programmed yet.
– In these conditions, a manual test of the steps can be conducted to check the connections.
– By pressing the ▲ or ▼ key, the steps are connected or disconnected.

NOTE: Products illustrated here in are subject to alterations and changes without prior notice. Technical data and descriptions in the documentation are accurate to the best of our knowledge, but no liabilities for errors, omissions, or contingencies will be accepted.

FRONT PANEL DESCRIPTION

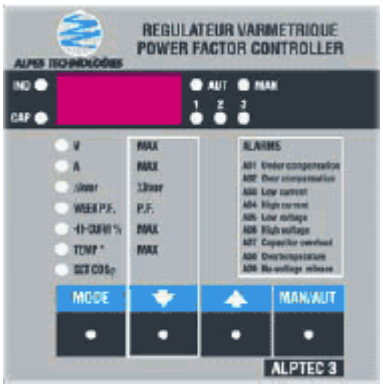
–The display shows the cos φ of the system together with the IND and CAP LEDs. The flashing decimal point indicates the negative sign (inverse energy flow).

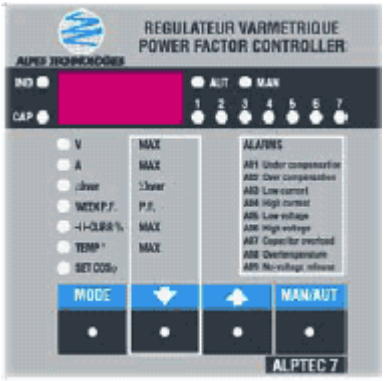
– By pressing the MODE key, the V, A, Δkvar, etc. LEDs are switched on one after another and the relative measurement of each is viewed.

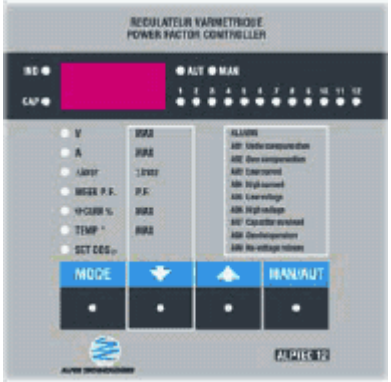
– An optional function is available for each LED and indicated on front viewable by pressing the ▼ key; the LED flashes quickly thereafter.

– For some measurements, a second optional function is displayable by pressing the ▼ key.

Programmed: the ▼ and ▲ keys respectively increase or decrease the value. The set cos φ can be adjusted between 0.80 IND and 0.80 CAP.







LED		▼	▲
V	RMS voltage	Max voltage value	
A	RMS Current	Max current value	
ΔKvar	Kvar required to reach set point	ΔKvar	Steps required to achieve set-point
WEEK P.F.	Weekly average	Real power factor	
⫞⫞CURR"%	Capacitor overload	MAX over load value	Over load event counter
TEMP°	Electrical panel temperature	MAX temperature value	Measure Unit °C or °F
SET COS φ	Required cos φ	Decrease set cos φ	Increase set cos φ

II - MANUAL KEYPAD SET-UP

– For a manual set up it is necessary to set the proper value such as described in the parameter table.
– Place the unit in manual mode and press the MODE key for 5 consecutive seconds (fig.1).
– The word Set is viewed on the display to confirm access to the basic menu parameters (fig. 2).

PARAMETER	DESCRIPTION	RANGE	DEFAULT SETTING
P.01	CT primary current For values higher than 1000, a flashing dot indicates "thousands"	OFF to 10.00	OFF
P.02	Smallest step kvar Rated power in kvar of the smallest installed capacitor bank. Example: for 10Kvar, set **10.0**	0.10 to 300	1.00
P.03	Rated capacitro voltage. Rated voltage (nameplate) of the capacitors. Example: for 440V, set **440**	80 to 750V	400
P.04	Reconnection time. Minimum time needed for the capacitor to discharge and be ready to bu used again. Example: for 60 seconds, set **060**	5 to 240 sec.	60
P.05	Sensitivity. The sensitivity is a coefficient, which adjust the controller regulation speed.	5 to 600 sec.	30
P.06	LED 1...n step coefficients The coefficients of the steps represent the power of each step in relation to the smallest capacitor bank, which value is programmed at P.02	0 to 16	0
P.06 LED1 to LED n	If a step has the same power rating of the smallest step, then its coefficient will be 1, while if it is double it will be 2 and so on up to a maximum of 16. By setting 0, the step will be disabled and will never be considered or used by the controller.		
P.06 EXAMPLE	With a ALPTEC7 installed in a control panel with 6 capacitor banks, respectively 5, 10, 20, 20, 20, 20 kvar at rated 440V and needing to use the last step as alarm: P.02 = 5.00 (smallest step=5Kvar) P.03 = 440 (Rated voltage 440V) P.06 LED1 = 001 (5kvar = 1 times P.02) P.06 LED2 = 002 (10kvar = 2 times P.02) P.06 LED3 = 004 (20kvar = 4 times P.02) P.06 LED4 = 004 (20kvar = 4 times P.02) P.06 LED5 = 004 (20kvar = 4 times P.02) P.06 LED6 = 004 (20kvar = 4 times P.02) P.06 LED7 = noR (Normally open alarm)	NOTE: The last two steps can be programmed to operate as normal steps or as alarm relay or again as fan control. If the second last step is linked to a function then the last step cannot be used as a normal step. To select these functions, press ▼until the following codes are viewed: noR : Normally open alarm (contact open in absence of alarm) ncR : Normally closed alarm (contact closed in absence of alarm) FAn : Fan control	

QUICK SET-UP VIA PC

– For quick set-up via PC, it is necessary to use the relative automatic test and remote control software ALPTECSW, that includes the PC software and the connection cable (code 51 C11). For this reason, all the ALPTEC models are provided with a communication port in the rear.

– All of the parameters are viewed on the PC monitor. The settings can be transmitted and stored with a few simple clicks of the mouse.

– This solution is ideal if you have several controllers to programme with the same setting. The set-up can be downloaded to a file and used to program other controllers.

– When the capacitor bank is power up you can monitor any parameter such as temperature, nominal voltage and current or the reactive power of each step can be viewed…

III - OPERATING MODE

– The AUT and MAN LEDs indicate the automatic or manual operating mode.
– To change mode, press the MAN/AUT key for at least 1 second.
– When the SET COS φ LED is switched on, no mode change is possible.
– The operating mode remains stored even if power is removed.

AUTOMATIC OPERATION

– In automatic mode, the controller calculates the optimum configuration to achieve the set cos φ value.
– The selection criteria take into consideration many variables such as: power of each step, the number of operations, the total time of usage, reconnection time, etc.
– The controller displays the imminent connection or disconnection of the step by the AUT LED flashing. The LED flashing can last in cases when the connection of a step is not possible because of the reconnection time (i.e. capacitor discharge time).

MANUAL OPERATION

– When the controller is in manual mode, one of the steps can be selected and manually connected or disconnected.

– If a measurement other than cos φ is viewed, press MODE until all the LEDs of the measurements are switched off.

– To select one of the steps, use the ▼and ▲keys. The LED of the selected step starts flashing quickly.

– Press MODE to connect or disconnect the selected step.

– If the reconnection time of the selected step has not elapsed, the MAN LED flashes to indicate the operation has been confirmed and will be conducted in due time.

– The manual configuration of the steps is maintained even when voltage is removed. When power returns, the original state of the steps is restored.

KEYPAD LOCK

– A function to exclude all modification to operating parameters can be enabled; measurement viewing is still provided in any case.

– To lock and unlock the keypad, push and keep MODE key pressed. Then press the ▲key three times and the ▼key twice and then release MODE. The display will view LOC when the keypad is locked and UnL when unlocked.

– When the lock is enabled, it is not possible to make the following operations:

- Change from automatic and manual mode
- Access set-up menus
- Change the cosf set-point
- Clear of MAX values.

– By attempting to conduct the above operations, the display will view LOC to indicate the locked keypad state.

IV - ALARMS

– When the controller detects an abnormal situation in the system, a flashing alarm code is displayed. By pressing any key, the alarm viewing will be momentarily ignored to permit the user to check all the measurements. If no key is pushed for 30 seconds and the alarm conditions persist, the alarm code will be displayed once again.

– Each alarm can cause diverse results such as the alarm relay tripping, the delayed or immediate step disconnection, etc., according to the programmed property.

– The property of each alarm can be changed (e.g. disabled, change the delay time or effect), by using a PC and the relative software (order code ALPTEC SW), used for the quick parameter set-up.

– The following table indicates the alarm codes and the relative meaning of each along with the default setting.

ALARM CODE	DESCRIPTION	ENABLING	ALARM RELAY	DISCON-NECTION	TRIPPING DELAY
A01	**Under compensation:** Capacitor are all connected and cos φ is lower than set point value.	Y	Y	N	015 min
A02	**Over compensation:** All capacitors are disconnected and cos φ is higher than set point value.	Y	N	N	120 s
A03	**Low current:** Current value is lower than 2.5% full scale value. In automatic, the capacitors are disconnected after 2 minutes.	Y	N	N	5 s
A04	**High current:** Current value is 120% higher than full scale value.	Y	N	N	120 s
A05	**Low voltage:** Voltage value is -15% lower than lower rate voltage.	Y	Y	Y	5 s
A06	**High voltage:** Voltage value is +10% higher than rated voltage.	Y	N	Y	5 min
A07	**Capacitor overload:** Current value flowing in the capacitors is higher than the set threshold (refer to P20 and P21).	Y	Y	Y	120 s
A08	**Over temperature:** Internal temperature is higher than setted threshold (refer P27).	Y	Y	Y	30 s
A09	**No-voltage release:** Voltage failure	Y	N	N	0 s