selec

APFC347

96 x 96mm

Operating Instructions

PRODUCT PROFILE



SPECIFICATIONS

Display	: 4 Digit, 7 Segment LED display, height : 0.56"
Auxiliary Supply	: 85-270V AC, 50-60Hz
Wiring Input	: LN / L-L
Rated input voltage	: 40-300V(L-N), 50-530V(L-L), 45-65Hz
Rated input current	: Nominal 5A AC (MIN 50mA, MAX 6A), Single CT Sensing
Burden	: 20 mOhms
CT Primary	: 1-9999A(For CT.S=1) ; 5-9999A(For CT.S=5)
CT Secondary	: 1 or 5A
No of Relay Stages	: For APFC347-108 : 8 Relay
	For APFC347-106 : 6 Relay
	For APFC347-104 : 4 Relay
Trip indication	: Alarm relay turns ON & ALM (Alarm) LED blinks
	(Refer LED indication chart)
Controlling Range	: Target PF : 0.8 lag to 0.8 lead
	Control sensitivity : 55 to 100%
	Step time : 1 to 999 Sec.
	Discharge time : 1 to 999 Sec.
	Switching program : Automatic/Linear/Rotational
	Control Mode : Automatic/Manual
	Auto initialization : Yes / No
Output	: Relay output
_	Alarm mode : Under voltage, Over voltage,
	CT polarity error, Under compensate, Over compensate
Programmable Hysteresi	0
	Power Factor : 1 to 5%
Power Consumption	: 7 VA max.
Environmental Condition	
	Storage :-20°C to 60°C
Humidity	: 0% to 95% without moisture consideration
Accuracy	: Measurement Accuracy
	Power factor ±0.01
Mounting	: Panel Mounting
Weight	: APFC347-108 : 263 gms APFC347-106: 258 gms
	APFC347-104 : 253 gms

ORDER CODE INFORMATION

PRODUCT	SUPPLY	CE	NO. OF STAGES			
APFC347-108-230V	85 to 270V AC, 50/60Hz	-	8			
APFC347-106-230V	85 to 270V AC, 50/60Hz	-	6			
APFC347-104-230V	85 to 270V AC, 50/60Hz	_	4			

A SAFETY PRECAUTIONS

All safety related codification, symbols and instructions that appear in this operating manual or on the equipment must be strictly followed to ensure the safety of the operating personnel as well as the instrument.

If the equipment is not handled in a manner specified by the manufacturer, it might impair the protection provided by the equipment.

CAUTION : Read Complete instruction prior to installation and operation of the unit.

WARNING : Risk of electric shock.

MWIRING GUIDELINES

- To prevent the risk of electric shock, power supply to the equipment must be kept OFF while doing the wiring arrangement. Do not touch the terminals while power is being supplied.
- Wiring shall be done strictly according to the terminal layout. Confirm that all connections are correct.
- 3. Use pin type lugged terminals.
- 4. To eliminate electromagnetic interference, use wires with adequate ratings and twists of the same in equal size shall be made.
- Cables used for connection to power source, must have a cross section of 1.5mm². These wires shall have current carrying capacity of 5A.

MAINTENANCE

- 1. The equipment should be cleaned regularly to avoid blockage of ventilating parts. 2. Clean the equipment with a clean soft cloth. Do not use Isopropyl alcohol or any
- other cleaning agent.

INSTALLATION GUIDELINES

A CAUTION

- This equipment, being buit-in type, normally becomes a part of main control panel and in such case the terminals do not remain accessible to the user end after installation and internal wiring.
- Conductors must not come in contact with the internal circuitry of the equipment or else it may lead to a safety hazard that may in turn endanger life or cause electrical shock to the operator.
- 3. Before disconnecting the secondary of the external current transformer from the equipment, make sure that the current transformer is short circuited to avoid risk of electrical shock and injury.
- 4. The equipment shall not be installed in environmental condition other than those mentioned in this manual.
- Thermal dissipation of equipment is met through ventilation holes provided on chasis of equipment. Such ventilation holes shall not be obstructed else it can lead to a safety hazard.
- 6. Connector screw must be tightened after installation.

MECHANICAL INSTALLATION / DIMENSIONS

- For installing the meter 1. Prepare the panel cutout with proper dimensions as shown
- below. 2. Push the meter into the panel cutout. Secure the meter in its place by fitting the clamp on the rear side. fit clamps on both sides in diagonally opposite location for optimum fitting.



^{3.} For proper sealing, tighten the screws evenly with required torque.

MAINTENANCE

The equipment should be cleaned regularly to avoid blockage of ventilating parts.
 Clean the equipment with a clean dry or damp cloth. Do not use any cleaning agent other than water.

EMC GUIDELINES

- 1. Use proper input power cables with shortest connections and twisted type.
- 2. Layout of connecting cables shall be away from any internal EMI source.

FRONT PANEL DESCRIPTION						
selec		CONFIGURATI	ON			
SELEC	APFC347	There are 4 dedicated keys , , , , , , , , , , , , , , , , , , ,				
		KEY DESCRIPTION				
		Press 💽 & 🕑	For 3 sec to enter or exit from the configuration menu.			
		Press 🔘	For increment			
		Press 💽	For decrement			
NOTE : The setting shou	ld be done by a	Press	To save the setting and move on to next page			
professional afte	r going through	Press	To go back			

LED INDICATIONS

LED	DESCRIPTION	
10 to X0 [X=8/6/4]	Capacitor Banks that are ON.	
Ο Αυτο	Indicates controller is in AUTO mode.	
Ο Αυτο	Indicates controller is in MANUAL mode.	NOTE : On occurrence of
O ALM	No fault condition present.	any new fault condition ALM LED
° ⊘ , ALM [Blinking]	Fault condition occurred [Press ENTER key to display trip parameter.]	starts blinking again & on pressing ENTER key all trip
Ø ALM	This will take place when user will press ENTER key in fault condition. Trip parameters will be displayed for 3sec each.	parameters will be displayed for 3sec each.

Press ESC () key for 10sec. to display 8 digit serial number.

Example : Sr. No. 12345678 Press ESC () key for10sec.

Displays 1234 for 3 sec.

After 3 sec. displays 5678 for 3 sec.

USER GUIDE

a) Manual switching (MANL)

When this switching program is selected, the capacitor steps are controlled manually by the user.

b) Rotational switching (ROTN)

This switching program is based on rotational first-in-first-out sequence. This option will automatically switch in and out the capacitors according to the targeted power factor, sensitivity setting and the re-connection time setting.

c) Automatic switching (AUTO)

This automatic switching program uses intelligent switching sequence. The step switching sequence is not fixed and the program automatically selects the most appropriate steps to switch in or out in order to achieve shortest reaction time with minimum number of steps.

d) Linear switching (LINR)

In this switching sequence it works in last in first out mode. This option will automatically switch in and out the capacitors according to the targeted power factor, sensitivity setting and the re-connection time setting.

CONFIGURATION MENU

		MAIN MENU	LEVEL	SUB MENU
				Change Password Yes No New Yes No Password CT Primary CT Network phase Yes No New Threshold Selection Phase Voltage Voltage
		Installation Password (PW1)	LE-1	
				Auto Initialization Max No. Mode Switching Target Control Low Program P.F Step Time Discharge Control Current Time Sensitivity Current Setting Setting
menu.			After enter	R. INE PLY FODDE SYPE E.PF SEPE E.SNS E.EUF ing into PW1, sub menu of LE-1 will be selected.
ation				arough sub menu press increment or decrement key.
sec. to enter or exit from configuration menu.				Change Password Yes / No Password CT Primary CT Network Secondary Network Phase Nominal Threshold Selection Compensation Nominal Threshold Voltage Voltage
r exit fi			LE-I	
to enter of	Password	P279	Auto Initialization Max No. Mode Switching Program P.F Step Time Discharge Control Low Current Time Setting Setting Setting	
3 sec.				
+	0 Passwo		Technical	Technical
		Password (PW2)	LE-2	Hysteresis Power Factory Default HPF dFLL
	7		LE-3	Bank ¹ Bank ² Bank ³ Bank ⁴ Bank ⁵ Bank ⁶ Bank ¹ Bank ⁸ PLO3 PLO3 PLO4 PLO5 PLO5 PLO5 PLO1 PLO5 Note : LE-3 will be prompted only when mode is set to manual in LE-1 RL.01-RL.08 applicable only for APFC347-108; RL.01-RL.06 applicable only for APFC 347-106; RL.01-RL.04 applicable only for APFC347-104
				ing into PW2, all levels can be accessed. C Key to change the level. Different level can be selected be pressing increment & decrement Key.

Display	Description	Default Value	Range	Conditio
PSWD	Password	sword 10(PW1); 11(PW2) 0000 - 9999		
C.PWD	Change Password	rd NO NO / YES		
N.PWD	New Password	0	0000 to 9999	This optic will be prompte only whe C.PWD set to YE
CT.P	CT Primary	rry 5 5 to 9999		1 to 9999 (CT.S=1 5 to 9999 (CT.S=5
CT.S	CT Secondary	5A	1A / 5A	
NETW	Network Selection	L-L	LN / LL	
PCMA	Phase compensation	00 0,00		
VOLT	Nominal Voltage			
V.TH	Voltage Threshold	0	0% to 100%	
A.INT	Auto Initialization	YES	NO / YES	
*RLY	Max Relay Numbers	8/6/4	3 to 8/6/4	
MODE	Mode	AUTO	AUTO / MANL	
			Automatic (AUTO)	
SWPG	Switching Program	AUTO	Linear (LINR)	
			Rotational (ROTN)	
T. PF	Targeted P. F	1.000	-0.800 to 0.800	
STP.T	STEP TIME	5	1-999s	
DIS.T	Discharge time (Reconnection time)	180	1-999s	
C.SNS	C/K Setting	60	55% to 100%	
L.CUR	Low current setting	0	0-50%	

* 8 Relay : Applicable only for APFC347-108

6 Relay : Applicable only for APFC347-106

4 Relay : Applicable only for APFC347-104

NOTE :

Auto - Initialization (A.INT) is working at best, under stable load conditions.

Auto- Initialization (A.INT) works only with capacitor banks and not with reactors.

> If V.TH value is set to zero, A.IN will be done only at power ON.

- Recommended that number of relays not to be changed during normal operation. If done so, restart the unit.
- Recommended to restart the unit if Switching program(SWPG) is changed during normal operation for proper functionality in accordance with the chosen control mode.

➢ A.INT will be update 'NO' automatically in configue after Auto initialization

Reauto - Initialization will be done by only changing A.INT - YES in configue manually

> When condition of low current occurs, the display of controller will show the 'CURR'.

	LEVEL 2				
	Display	Description	Default Value	Range	Condition
[O.VLT	Over voltage	ON	ON / OFF	
	OV.S	Over voltage setting	256(L-N) 540(L-L)	256V to 264V (L-N) 540V to 570V (L-L)	This option will be prompted only when O.VLT option made ON.
	U.VLT	Under voltage	OFF	ON / OFF	
	UV.S	Under voltage setting	195(L-N) 380(L-L)	195V to 204V (L-N) 380V to 480V (L-L)	This option will be prompted only when U.VLT option made ON.
	O.CMP	Over compensation	ON	ON / OFF	
	U.CMP	Under compensation	ON	ON / OFF	
	CT.ER	CT Polarity error	ON	ON / OFF	
	H.VLT	Hysteresis voltage	2	1% to 10%	
[H.PF	Hysteresis power factor	1	1% to 5%	
[DFLT	Factory default	NO	NO / YES	

LEVEL 3	к. — — — — — — — — — — — — — — — — — — —			
Display	Description	Default Value	Range	Condition
RL.01	Bank 1	OFF	ON / OFF	
RL.02	Bank 2	OFF	ON / OFF	
RL.03	Bank 3	OFF	ON / OFF	Prompted
RL.04	Bank 4	OFF	ON / OFF	only if MODE
RL.05	Bank 5	OFF	ON / OFF	is set to
RL.06	Bank 6	OFF	ON / OFF	MANUAL
RL.07	Bank 7	OFF	ON / OFF	
RL.08	Bank 8	OFF	ON / OFF	

Note: RL.01-RL.08 applicable only for APFC347-108 RL.01-RL.06 applicable only for APFC 347-106 RL.01-RL.04 applicable only for APFC347-104

WIRING DIAGRAM



PHASE-ANGLE SETTING									
Voltage	L1-N	L2-N	L3-N	L1-N	L2-N	L3-N	L1-N	L2-N	L3-N
СТ	L1	L2	L3	L2	L3	L1	L3	L1	L2
Phase-Angle	0°	0°	0°	240°	240°	240°	120°	120°	120°
Voltage	L2-L3	L3-L1	L1-L2	L2-L3	L3-L1	L1-L2	L2-L3	L3-L1	L1-L2
СТ	L1	L2	L3	L2	L3	L1	L3	L1	L2
Phase-Angle	90°	90°	90°	330°	330°	330°	210°	210°	210°

(Specifications are subject to change, since development is a continuous process.)

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