HYBRID ACTIVE POWER FACTOR CORRECTION SYSTEM

CLIENT		**PROJECT NO.**	
EQUIPMENT		**SERIAL NO.**	

INSTALLED BY		**LOCATION**	

1. INSTALLATION INSPECTION

WARNING: SYSTEM MUST BE DE-ENERGISED

ITEM	RESULT (OK)	RESULT (X)	COMMENTS
SIGNS OF EXTERNAL DAMAGE	[ ] ABSENT	[ ] PRESENT	
SIGNS OF INTERNAL DAMAGE	[ ] ABSENT	[ ] PRESENT	
ENCLOSURE SECURELY MOUNTED	[ ] CORRECT	[ ] INCORRECT	
ENCLOSURE VENTILATION	[ ] SUFFICIENT	[ ] INSUFFICIENT	
SIZE OF POWER CABLE	[ ] CORRECT	[ ] INCORRECT	
SIZE OF NEUTRAL CABLE	[ ] CORRECT	[ ] INCORRECT	
SIZE OF PE CABLE	[ ] CORRECT	[ ] INCORRECT	
CABLE CONNECTIONS	[ ] CORRECT	[ ] INCORRECT	
PHASE SEQUENCE	[ ] CORRECT	[ ] INCORRECT	
POSITION OF CT'S	[ ] CORRECT	[ ] INCORRECT	
POWER FUSES	[ ] CORRECT	[ ] INCORRECT	
CONTROL FUSES	[ ] CORRECT	[ ] INCORRECT	
CT LINKS	[ ] REMOVED	[ ] ABSENT	

2. INSULATION RESISTANCE

WARNING: SYSTEM MUST BE DE-ENERGISED — **INSTRUMENT S/N**

CIRCUITS	MEGGER VALUE	OTHER SPECIFY	COMMENTS
L1 - L2	>200MΩ PASS [ ]	FAIL [ ]	
L1 - L3	>200MΩ PASS [ ]	FAIL [ ]	
L2 - L3	>200MΩ PASS [ ]	FAIL [ ]	
L1 - N	>200MΩ PASS [ ]	FAIL [ ]	
L2 - N	>200MΩ PASS [ ]	FAIL [ ]	
L3 - N	>200MΩ PASS [ ]	FAIL [ ]	
L1 - PE	>200MΩ PASS [ ]	FAIL [ ]	
L2 - PE	>200MΩ PASS [ ]	FAIL [ ]	
L3 - PE	>200MΩ PASS [ ]	FAIL [ ]	
N - PE	>200MΩ PASS [ ]	FAIL [ ]	

3. RESISTANCE OF EARTHING SYSTEM

WARNING: SYSTEM MUST BE DE-ENERGISED — **INSTRUMENT S/N**

PART	MEGGER VALUE	OTHER SPECIFY	COMMENTS
GLAND PLATE	<0.5Ω PASS [ ]	FAIL [ ]	
ENCLOSURE	<0.5Ω PASS [ ]	FAIL [ ]	
DOORS	<0.5Ω PASS [ ]	FAIL [ ]	

4. CIRCUIT BREAKER SETTINGS				
WARNING: SYSTEM MUST BE DE-ENERGISED				
CIRCUIT BREAKER INSTALLED	in switchboard	[ ]	in HAPFC system	[ ]
PROTECTION FUNCTION	RECOMMENDED SETTING		SETTING AT COMMISSIONING	
Long Delay Overload	1.25 to 1.5 times In			
Instant Short Circuit	5 times In			

To determine In, use the following formula:

$In\ (A) = ((Q\ kVAr/50kVAr) \times 70A + I_{AHF})) \times 1.3$

Where:
In – Total Nominal Current of HAPFC unit (expressed in Amps)
Q – Total Nominal Reactive Power of Capacitor bank (expressed in kVAr)
I_{AHF} – Total Rated Current of HPQ modules (expressed in Amps)

NOTE	IT IS ESSENTIAL TO CHECK AND MAKE ALL NECESSARY ADJUSTMENTS TO THE HAPFC CIRCUIT BREAKER(S) TO ENSURE DISCRIMINATION IS CO-ORDINATED WITH THE UPSTREAM PROTECTION.

5. THERMO CONTROLLER			
WARNING: SYSTEM MUST BE DE-ENERGISED			
STAGE #1		STAGE #2	
Set to		Set to	

6. CONTROLLER			
Model		HMI Version	
Serial Number		HMI Data Version	
7. HPQ MODULE - MASTER			
Model		Manufacturer	
Serial Number		MCC Version	

8. HPQ MODULE - SLAVE			
Model		Manufacturer	
Serial Number		MCC Version	

9. CAPACITOR BANK

WARNING: UNIT MUST BE DE-ENERGISED

Stage	Size, kVAr	Capacitance, uF		
		L1-L2	L1-L3	L2-L3

Stage	Size, kVAr	Capacitance, uF		
		L1-L2	L1-L3	L2-L3

10. VOLTAGE WHEN SYSTEM DE-ENERGISED			
LINE VOLTAGE	L1-L2	L1-L3	L2-L3

11. CAPACITOR BANK - CURRENT										
Stage	Size, kVAr	Current, A			Stage	Size, kVAr	Current, A		
		L1	L2	L3			L1	L2	L3

12. CONNECTION SETTINGS			
	Controller	HPQ Master	HPQ Slave
Name			
IP-address			
Port			

13. HPQ SETTINGS				
Menu	Parameter	HPQ - Master	HPQ - Slave	Comments
COMMISSIONING	ENABLE IGBT OPERATION			
	CONNECTION TYPE			
	ELECTRICAL CONNECTION (3W/4W)			
	CONFIRMED FREQUENCY			
	Confirmed voltage			
	COMPENSATION MODE			
	BALANCING DEGREE			
	X1 CT-RATIO (CUSTOMER CTS)			
	TOTAL INSTALLED CURRENT			
	X3 CT-RATIO (AUXILIARY CTS)			
	ENABLE AUTOSTART			
	ENABLE AUTOACK			
	ENABLE STAND-BY			
	STAND BY TRIGGER LEVEL			
	X1 CT-POLARITY L1			
	X1 CT-POLARITY L2			
	X1 CT-POLARITY L3			
	DIGITAL OUTPUT 0			
	DIGITAL OUTPUT 1			
	DIGITAL OUTPUT 2			
	DIGITAL OUTPUT 3			
	DIGITAL INPUT 1			
	DIGITAL INPUT 2			
	DIGITAL INPUT 3			

HPQ PARAMETERS	Enable HPQ			
	HPQ-MODE			
	UNIT ROLE			
	ENABLE FO			
	OVERVOLTAGE LIMIT			
	THDU TRIP LIMIT			
	STEP COUNT			
	STEP SIZE			
	SERIES REACTOR			
	RATED CAPACITOR VOLTAGE			
	HYSTERESIS LIMIT			
	DISCHARGE TIME			
	ENABLE LAST DO AS TRIP			
	CONNECTION ALARM COUNT			
	TARGET POWER FACTOR			
	CAPACITIVE POWER FACTOR			
	SECONDARY POWER FACTOR			
	PRIORITY CURRENT LEVEL			
COMPENSATION DEGREE	Ih2			
	Ih3			
	Ih4			
	Ih5			
	Ih6			
	Ih7			
	Ih8			
	Ih9			
	Ih10			
	Ih11			
	Ih12			
	Ih13			
	Ih14			
	Ih15			
	Ih16			
	Ih17			
	Ih18			
	Ih19			
	Ih20			
	Ih21			
	Ih22			
	Ih23			
	Ih24			
	Ih25			
	Ih1			

14. POWER QUALITY PARAMETERS							
HAPFC Mode	THD_V, L1	THD_V, L2	THD_V, L3	THD_I, L1	THD_I, L2	THD_I, L3	PF
"STOP"							
"RUN"							

15. VOLTAGE WHEN SYSTEM OPERATING			
LINE VOLTAGE	L1-L2	L1-L3	L2-L3
PHASE VOLTAGE	L1-N	L2-N	L3-N

16. FUNCTIONAL TEST					
PASS	[ ]	FAIL	[ ]	OTHER	
COMMENTS					

	NAME	COMPANY	SIGNATURE	DATE	TIME
COMMISSIONED BY					
ACCEPTED BY					