Microprocessor Control Board Set Up Procedures

(OR-34300 Series)

SWITCHES/PUSHBUTTONS
Push Buttons at display
SW1 Enter button
SW2 Back button
SW3 Down
SW4 UP
Back light on/off switch

Rotary switches on main board
SW1 Peak limit 1-F
SW7 25V, 250V, 750V

Factory default setting will be 12VDC, 500A unless customized at PEC.

Prior to energizing the main contactor on the power supply; verify rated output settings for volts, amps, and peak limit settings on control board.

OUTPUT VOLTAGE SETUP

When the control board first initializes it will look for the appropriate feedback resistor on P4 terminals 4 and 6. If the rectifier is rated other than 12VDC (9VDC for example) it will display the following:

FB Resistor Mismatch
Saved 1.5K (12V)
Measured 750 (9V)
OK (enter) Not OK (enter)
* If output is between 25VDC and 250VDC select position 2 on rotary switch SW7 for 250VDC
* If output is between 250VDC and 750VDC select position 3 on rotary switch SW7 for 750VDC
If the measured resistor and DC value is correct select OK with appropriate push button to correctly limit the output voltage and then it will save the value and go to the main status screen.

The NOT OK choice would be used if there is a wrong resistor selected for the output voltage.

If the output voltage is 12VDC with the correct resistor the board will go to the main status screen.

OUTPUT CURRENT SETUP

The main status screen will display the Lset values (local) and Act values (actual). Press the enter button and press enter again to go pass warning screen. The screen will display setup and three other options. Select the setup option and then select the current option. This option will display the old value “500Amps”. To select a new value use the up and down buttons for the new selection. It will go up in 50A increments until 1000Amps then 500Amp increments. Press the enter button to save the new value for current.

AC PEAK LIMIT SETUP

The Peak Limit Section monitors the AC line current of the equipment by means of current transformers connected to J2/P2. These current transformers are scaled to supply between 1/10 and 1/3 amps at rated line current. This current is rectified, summed, and compared to a reference level set on rotary switch SW1.If the summed current falls below the reference level, a reset is performed. If the microprocessor is reset more than 18 – 20 times in sequence, a peak limit trip is generated, and the DC output is removed. The normal current trip points for the standard C.T. as a function of SW1 setting is shown in the following table (page 3):

After the DC voltage, current and peak limit has been set. The unit is ready to be energized. We recommend using a digital voltmeter to verify the analog voltmeter accuracy and a digital millivolt meter to verify the analog ammeter. The input voltage to the ammeter will be 50mvdc at full rated output.

		Small CT's (4 TAPS)			Large CT's (2 TAPS)
S1 Position	Binary Number	Tap 1 to 2 Up to 30A	Tap 1 to 3 30 - 100A	Tap 1 to 4 100 -300A	300 - 1000A
1	1	5.0	15.0	50.0	150
2	2	9.6	28.4	95.0	285
3	3	14.4	43.6	145.0	435
4	4	19.0	57.0	190.0	570
5	5	23.6	70.4	236.0	704
6	6	28.0	84.0	280.0	840
7	7	32.4	97.6	324.0	976
8	8	37.0	111.0	370.0	1110
9	9	41.0	123.0	410.0	1230
10	10	45.6	136.4	456.0	1364
11	11	49.6	148.4	496.0	1484
12	12	54.0	162.0	540.0	1620
13	13	58.0	174.0	580.0	1740
14	14	62.0	186.0	620.0	1860
15	15	65.6	196.4	656.0	1964

The trip action of the Peak Limit is accomplished by the microprocessor de-energizing the permit/lockout relay, which is mounted external to the board. This relay is energized by two driver stages, and is monitored by LED D6. The tripped condition may only be removed by interrupting power to the board.

A LCD display continuously shows the operating status of the gate drive. A list of possible faults that can be display and their meanings are in the following table:

FAULT / STATUS	MEANING
Phase A not detected	Ø A Synchronization signal missing.
Phase B not detected	Ø B Synchronization signal missing.
Lockout detected	Lockout – terminal J4/P4, terminal 14 shorted to common.
Lset Act ABC	Local set values Volts and Amps Actual Volts and Amps Input phase rotation
Peak Limit Trip	Peak Limit Trip Activated – Fault must be acknowledge to reset.
	Zero – circuit operating, amplifier calling for lower output – pulses shut off.
Angle 0 – 180 Deg	Relative indication of degree of phase advance Roughly 0-180 Degrees
Phase C not detected	Possible Ø C Sync signal missing. Possible wrong relationship between Ø A & Ø B sync signals. Possibly due to no ground on Y of AC source, or lack of cabinet ground. Possible Ø A & Ø B sync signals both are missing.
	High – phase angle full advanced, but control Amplifier not satisfied. 1) Rectifier output does not correspond to command signal. 2) A. With only 1 – 5 Red LED's on (upper right corner) indicates a board problem. B. With all 6 Red LED's on indicates a problem external to board such as SCR's, Diodes, DV/DT Boards, Sync Transformer, Wiring, Etc. If new rectifier installation, where maximum rated output voltage cannot be achieved, switch two AC incoming power leads at disconnect switch.

The Control board has (3) Red LED's mounted horizontally and (6) Red LED's mounted vertically. The (3) indicating 3V, 5V, 12V, levels are OK. Board power is good. The (6) Red LED's when all are red indicates Gate Pulses OK.

All LED's must be on for board to work properly. Red LED's (Gate Pulses) may be off or flicker when output is low or at 0.

Back light can be used to view display then switch off when finished.

POWER REQUIREMENTS

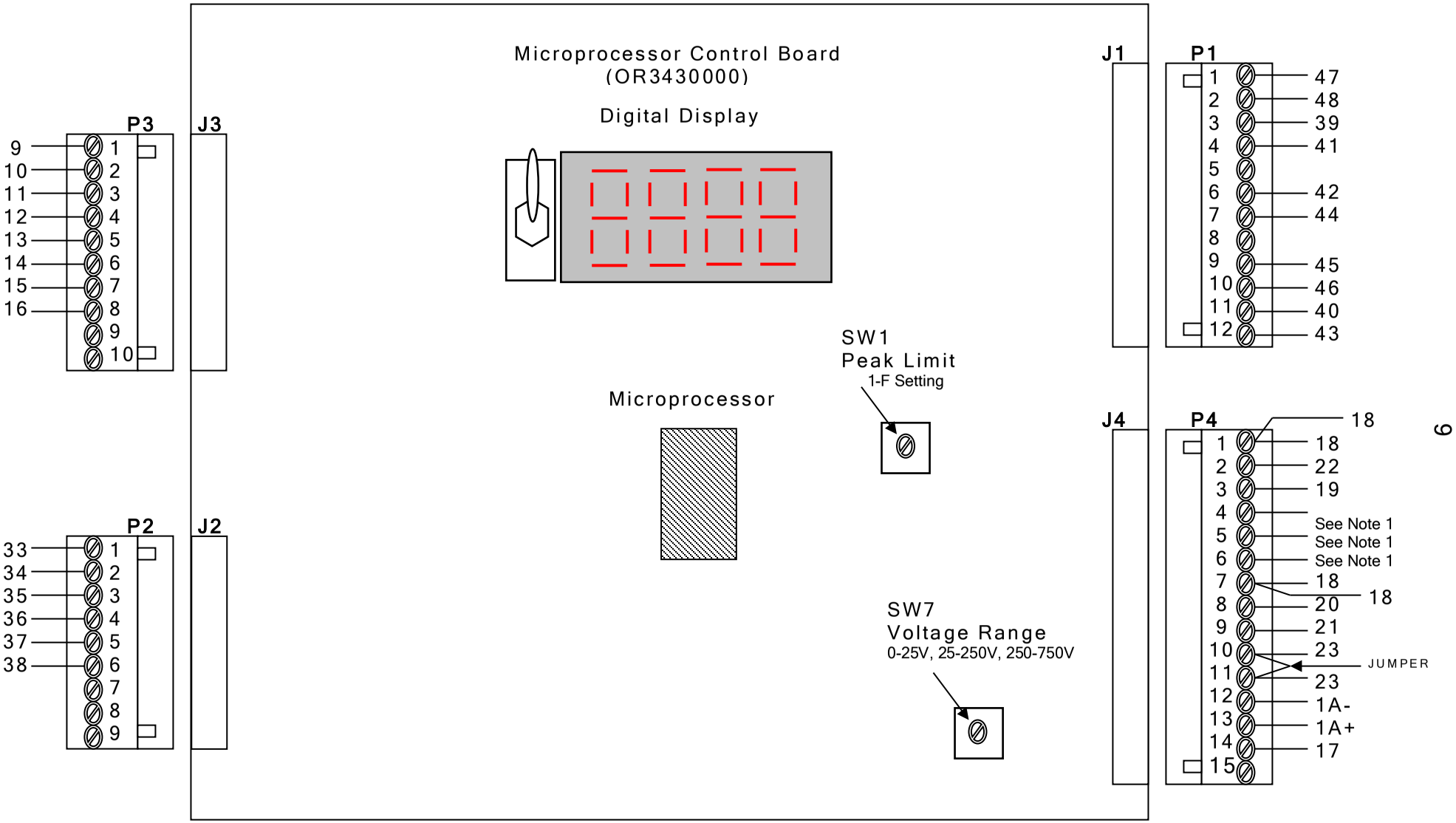
50 Volts AC, center tap, 50/60 HZ. 25VA at terminals 3, 4, and 5.

INPUT REQUIREMENTS

TYPE	RANGE	DESIGNATION	CONNECTOR	TERM
Controls	0 – 5 Vdc	V ref	J4/P4	8
		I ref	J4/P4	9
		Current Density	J4/P4	2
		Vf+	J4/P4	4 or 6
		Vf-	J4/P4	7
		If	J4/P4	10
		Lockout	J4/P4	14
	0 – 50 mVdc	50+	J4/P4	13
		50-	J4/P4	12
Sync.	30 Vac	Ø A	J3/P3	8
		Ø B	J3/P3	7
	GND	Neutral	J3/P3	6
Peak Limit CT's		0 – 1/3 Amp	J2/P2	1-6

OUTPUT REQUIREMENTS

TYPE	RANGE	DESIGNATION	CONNECTOR	TERM
+5 Volt Ref.	+5 Vdc	+5V	J4/P4	3
Relay Drive	35 Vdc	+K	J3/P3	2
		-K	J3/P3	1
Current Feedback	0 ± 5 Vdc	Ifb	J4/P4	11
Pulse Output	35 Vdc Pulse	J1	J1/P1	1 - 12



Notes:

1. If output is 6VDC then add jumper wire between pin 4 to 6 on P4
   With wire #24 going to P4-5.
   If output is 9,12,15,18 or 24 VDC then wire #24 goes to P4-5 and
   Resistor (R3) goes from P4-4 to P4-6.