

Section 6
DRAWINGS & SCHEMATICS

Job/Master	Drawing Nbr.	Title
10-004	803-091734	FURNACE ARRANGEMENT, LA-309
STD	803-091734-1	INTERFACE ROLLER LOCATION
STD	802-101100	PRODUCT CLEARANCE
10-004	802-101701	PLC CONFIGURATION
STD	802-101770-01	POWER CONTROL SCHEMATIC
STD	802-101771	FRAME WIRING SCHEMATIC
STD	802-101772	SIGNAL CONTROL WIRING
STD	802-101773	MA/O2 ANALYZER WIRING
STD	802-101774	CONTROL CONSOLE
STD	802-101777	HANDSHAKE
STD	802-101814	ELEMENT WIRING
STD	802-10188	ELEMENT MONITOR

Section 6

EQUIPMENT SPECIFICATIONS

NUMBER OF LAMPS	28
NUMBER OF HEATING ZONES	3
FURNACE HEATING CHAMBER LENGTH	30 in (762 mm)
FURNACE BELT WIDTH (LAMP LENGTH)	9 in (229 mm)
PRODUCT HEIGHT (MAX)	4 in (102 mm)
ENTRANCE INTERFACE ROLLER	INCLUDED OPTION
EXIT INTERFACE ROLLER	INCLUDED OPTION
EDGE HEAT	SINGLE, ZONES 1-3
LINE VOLTAGE	380 Vac, 50 Hz, 3 Ph
APPROX NET WEIGHT	1600 LB (726 kg)

EQUIPMENT RATING

	MAX	TYPICAL
TEMPERATURE	500 °C	400 °C
BELT SPEED	2-20 ipm (5-50 cm/min)	10 ipm (25 cm/min)
POWER (PEAK & OPERATING)	24 kW	9 kW
CURRENT (BALANCED LOAD)	36 A	14 A

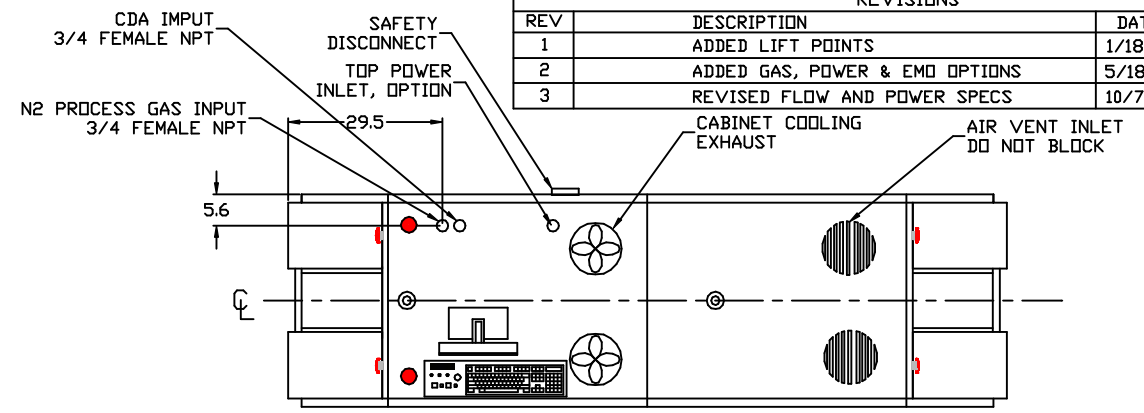
PROCESS GAS & EXHAUST

Replenishment Rate	Actual Conditions		Minimum		Typical	
	Temp °C	Pressure Psi	Min Flow scfh	Min Flow sL/m	Typical scfh	Typical sL/m
CDA SUPPLY	30	70	19	9.1	38	18.1
N2 SUPPLY	30	70	192	90.7	384	181.0
TOTAL PROCESS GAS EXHAUST			211	99.7	423	199.0

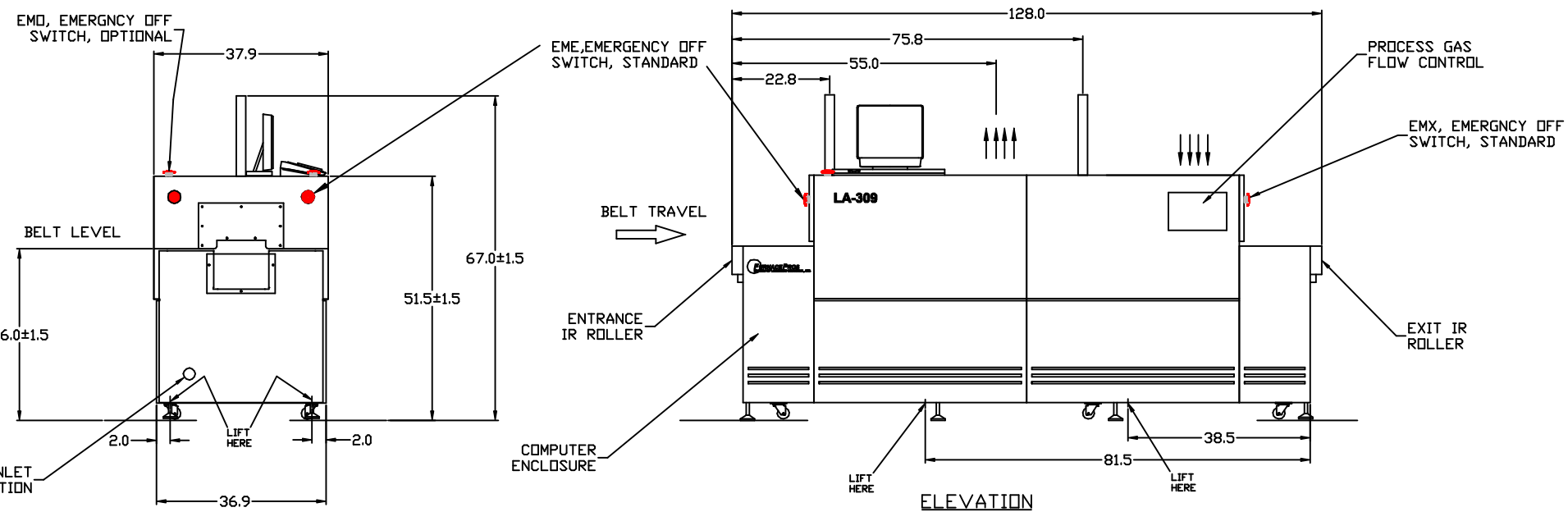
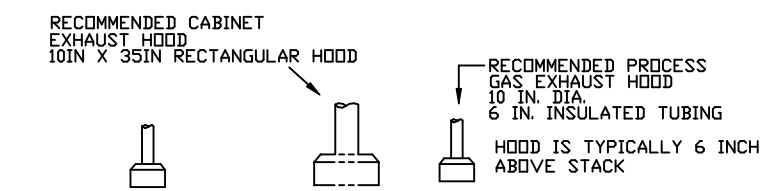
CABINET EXHAUST - HEATING CHAMBER	FLOWRATE	1000 cfm (1700 m3/h)	1000 cfm (1700 m3/h)
	TEMPERATURE	<104°F (<40°C)	<104°F (<40°C)
CABINET EXHAUST - CONTROLLED ATMOSPHERE COOLING	FLOWRATE	1000 cfm (1700 m3/h)	1000 cfm (1700 m3/h)
	TEMPERATURE	<104°F (<40°C)	<104°F (<40°C)

STANDARD CONDITIONS	PRESSURE	14.7 psia (101.3 kPa)
	TEMPERATURE	70 °F (21 °C)

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
1	ADDED LIFT POINTS	1/18/10	J CLARK
2	ADDED GAS, POWER & EMO OPTIONS	5/18/10	J CLARK
3	REVISED FLOW AND POWER SPECS	10/7/10	J CLARK



PLAN



ELEVATION

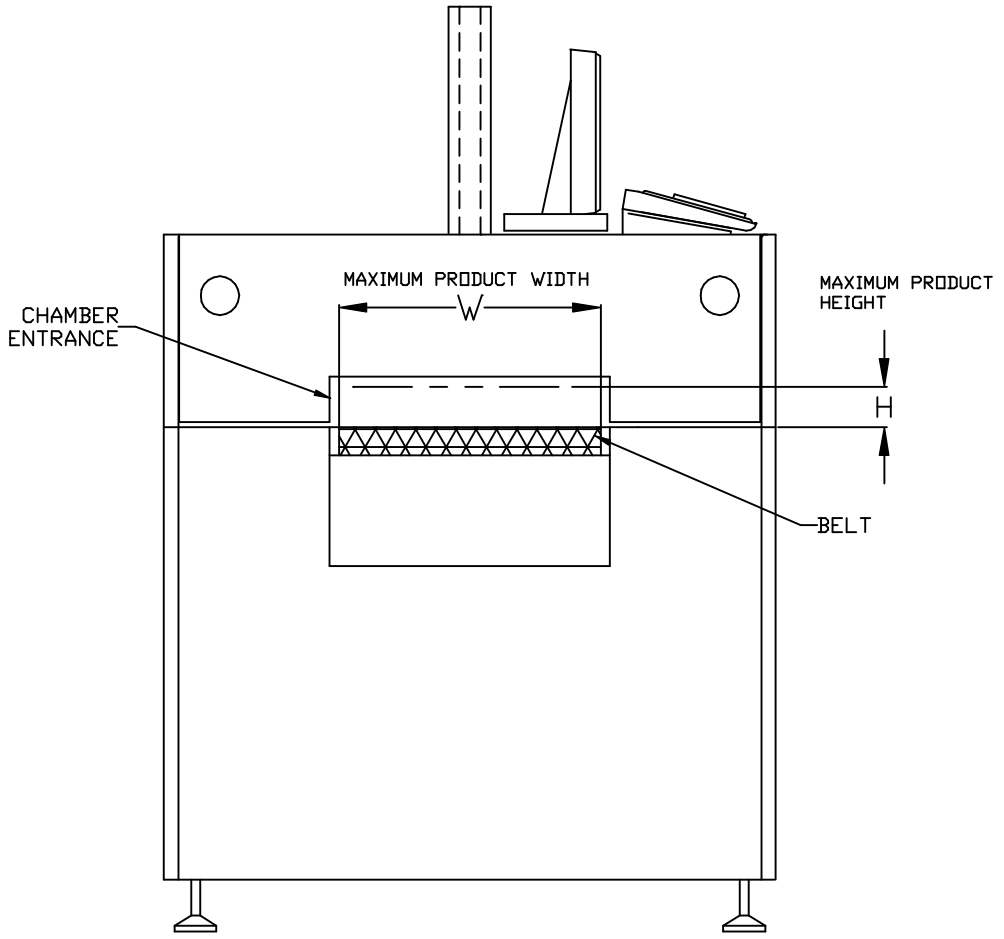
NOTES:

- FOR COMPLETE INSTALLATION INSTRUCTIONS CONSULT FURNACE OPERATING MANUAL.
- INPUT LINES ARE SIZED FOR FEED LENGTHS OF 20 FEET OR LESS WITH 90 PSI MINIMUM AT SUPPLY MANIFOLD. AN AIR REGULATOR AND FILTER ARE INSTALLED AT THE FURNACE. SIZE SUPPLY LINE AS FOLLOWS.
 - A. LESS THAN 35 SCFM: 1/2" SCH 40 OR SCH 80 PIPE
 - B. 35-90 SCFM: 3/4" SCH 40 OR SCH 80 PIPE
- CONNECT 3-PHASE POWER AT DISCONNECT SWITCH, #8 AWG - #4 AWG WIRE SIZE.

PART NUMBER	DESCRIPTION	MATERIAL/STOCK SIZE
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE: DECIMALS ANGLES FRACTIONS X ± .03 XX ± .05 XXX ± .1 X/X±1/4 XX±.5 X/X±1/4		
CONFIG.	FINISH	
NEXT ASSY	USED ON	
APPLICATION	DO NOT SCALE DRAWING	

APPROVALS	DATE		TITLE FURNACE ARRANGEMENT LA-309		
DRAWN C ROODE	12/18/09				
CHECKED J CLARK	12/18/09				
ISSUED J CLARK	12/18/09	SIZE	CONTRACT NO. 10-004	DWG. NO. 803-091734	REV. 3
SCALE NONE		SHEET 1 OF 1			

REVISIONS				
REV	DESCRIPTION	ED#	DATE	APPROVED



BELT MODEL	CHAMBER OPTION	DESCRIPTION	"W" PRODUCT WIDTH		"H" PRODUCT HEIGHT	
			INCH	MM	INCH	MM
-09		9" BELT	9.0 inch	229mm		
-15		15" BELT	15.0 inch	381mm		
-24		24" BELT	24.0 inch	610mm		
-36		36" BELT	36.0 inch	914mm		
	STD	2" THROAT			2.0 inch	50mm
	PH1	1" THROAT			1.0 inch	25mm
	PH4	4" THROAT			3.9 inch	100mm

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:			CONTRACT NO.	
DECIMALS XXX.XX	ANGLES XXX.X	FRACTIONS XX/XX	APPROVALS	DATE
			DRAWN C ROODE	12/18/09
			CHECKED J CLARK	12/18/09
			ISSUED C ROODE	12/18/09

FURNACEPROS
DIVISION OF LOCHABER CORNWALL, INC.

TITLE
PRODUCT CLEARANCE

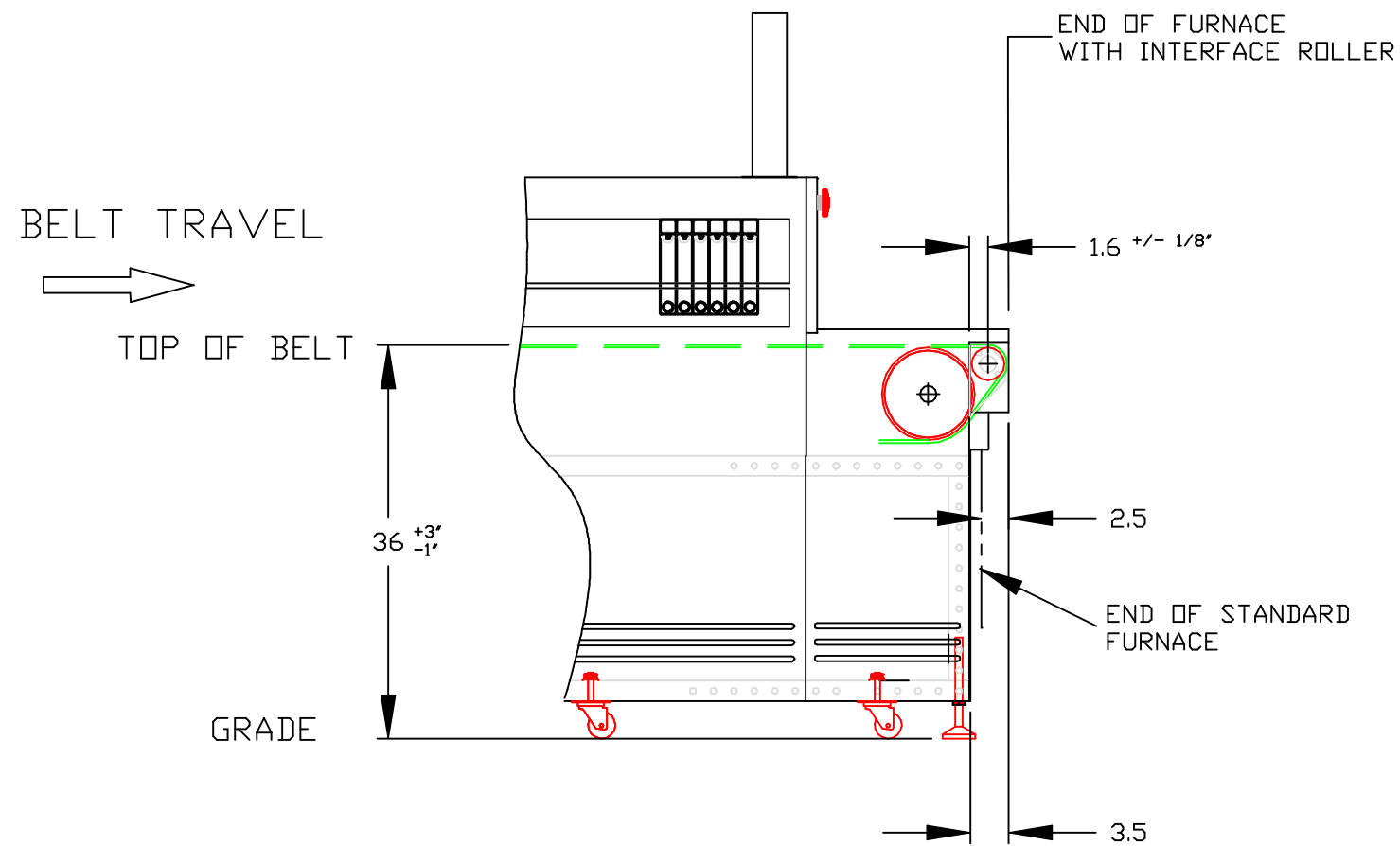
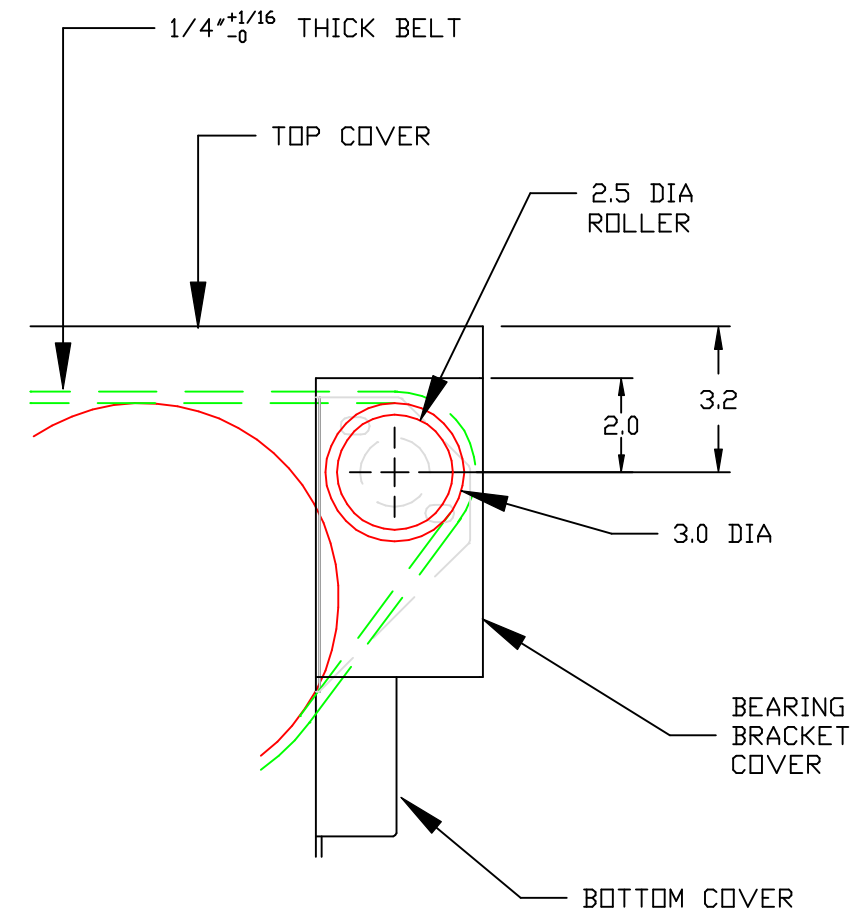
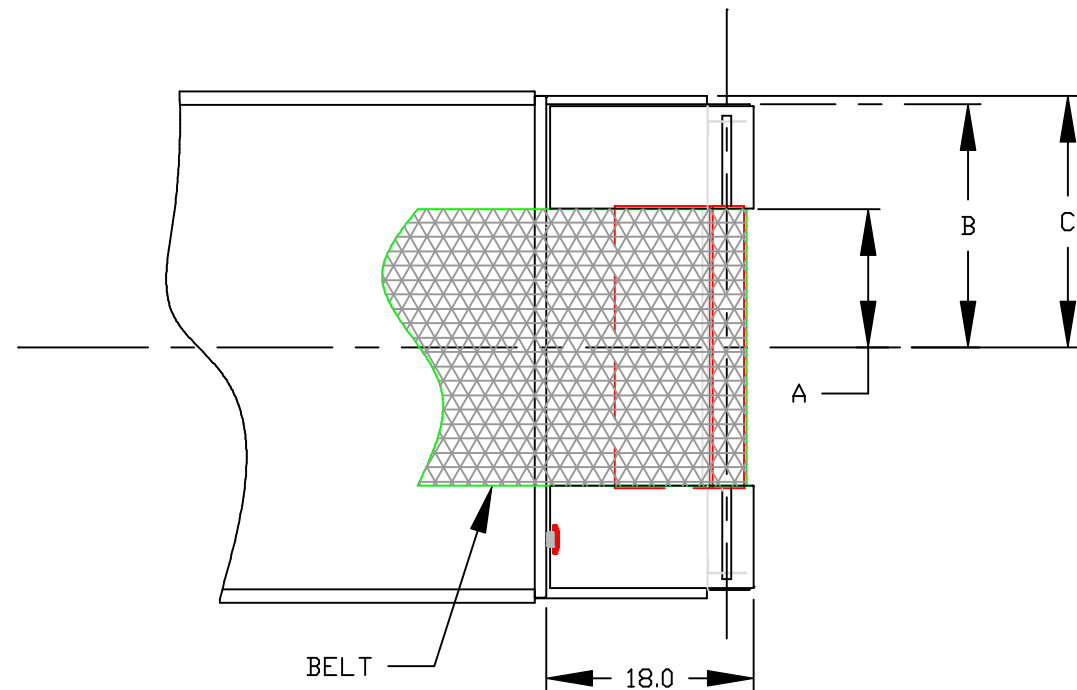
SIZE A	FP NO.	DWG NO. 803-101100	REV 0
-----------	--------	-----------------------	----------

SCALE NONE FURNACEPROS PROPRIETARY SHEET 1 OF 1

NEXT ASSY	USED ON
APPLICATION	

DO NOT SCALE DRAWING

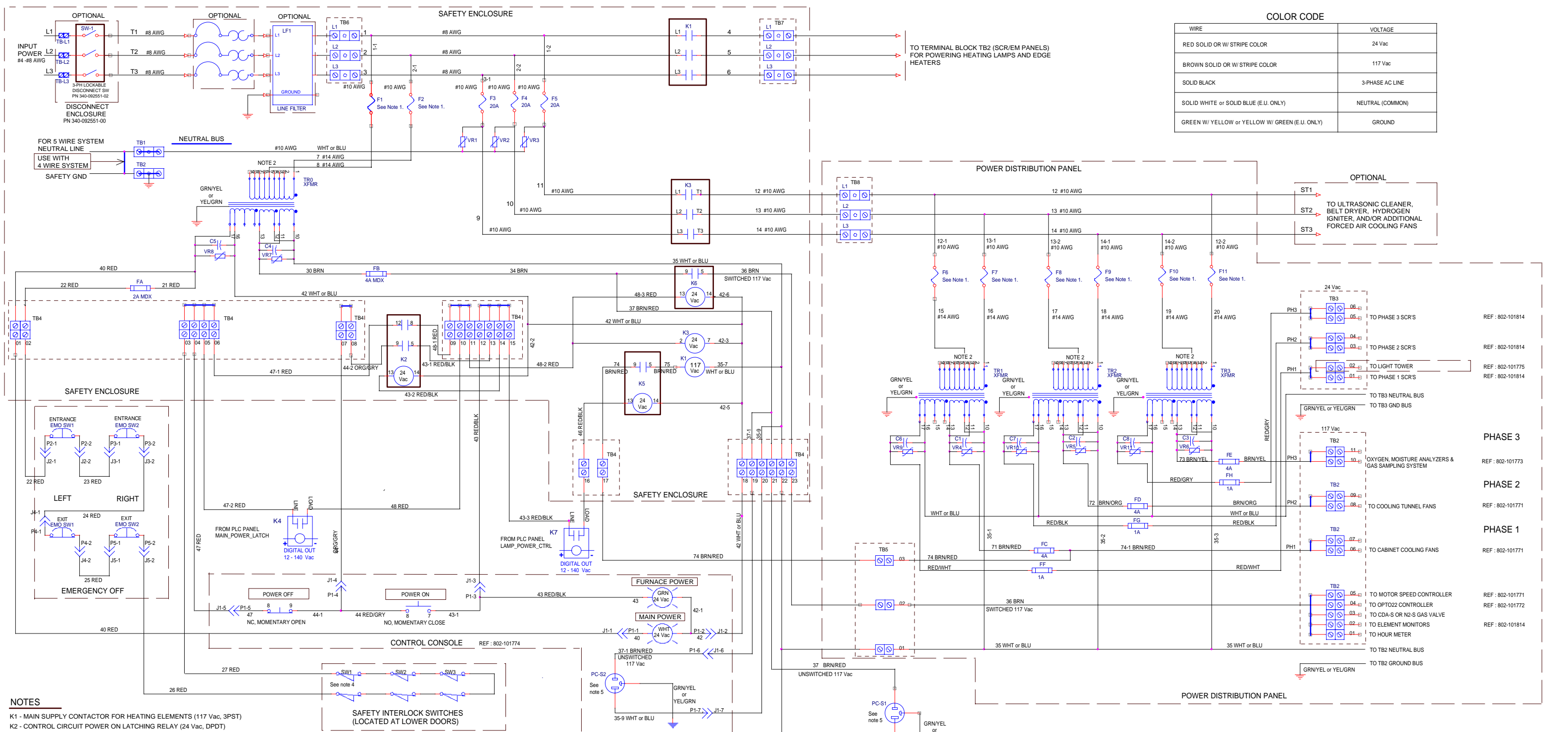
REVISIONS				
REV	DESCRIPTION	ED#	DATE	APPROVED
A	ADDED DIMS FOR 9', 15' AND 36' BELT FURNACES		12/22/09	J CLARK



-10	4.75	17.4	18.1	9' AND 10' WIDE BELT
-15	7.5	17.4	18.1	15' WIDE BELT
-24	12.0	21.1	21.8	24' WIDE BELT
-36	18.0	26.7	27.4	36' WIDE BELT
DASH No	A	B	C	DESCRIPTION

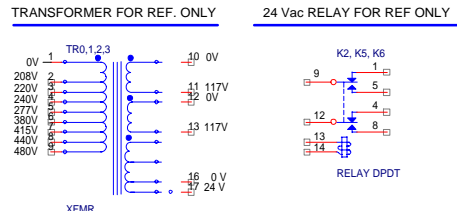
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: DECIMALS XX ±.03 XXX ±.010 ANGLES XX±.5 XXX±.2 FRACTIONS X/X±1/32				
APPROVALS		DATE	TITLE	
DRAWN C. ROODE		4/09/08	INTERFACE ROLLER LOCATION	
CHECKED T. MACIAS		4/09/08	SIZE B	CONTRACT NO. STD
ISSUED J. CLARK		4/09/08	DWG NO. 803-091734-1	REV A
DO NOT SCALE DRAWING			SCALE NONE	FURNACEPROS PROPRIETARY SHEET 1 OF 1





COLOR CODE	
WIRE	VOLTAGE
RED SOLID OR W/ STRIPE COLOR	24 Vac
BROWN SOLID OR W/ STRIPE COLOR	117 Vac
SOLID BLACK	3-PHASE AC LINE
SOLID WHITE or SOLID BLUE (E.U. ONLY)	NEUTRAL (COMMON)
GREEN W/ YELLOW or YELLOW W/ GREEN (E.U. ONLY)	GROUND

- NOTES**
- K1 - MAIN SUPPLY CONTACTOR FOR HEATING ELEMENTS (117 Vac, 3PST)
 - K2 - CONTROL CIRCUIT POWER ON LATCHING RELAY (24 Vac, DPDT)
 - K3 - CONTACTOR CONTROLLING POWER TO TRANSFORMERS TR1, TR2, TR3 (24 Vac, 3PST)
 - K4 - PLC DIGITAL OUTPUT MAIN_POWER_LATCH
 - K5 - RELAY CONTROLLING K1 (24 Vac, DPDT)
 - K6 - RELAY CONTROLLING SWITCHED 117 Vac OUTPUT OF TR0 (24 Vac, DPDT)
 - K7 - PLC DIGITAL OUTPUT LAMP_POWER_CTRL LATCH
- VRX - TRANSIENT SURGE SUPPRESSOR X
- FOR INPUT VOLTAGE OF 380 VAC OR GREATER, F1, F2, AND F6 THROUGH F11 ARE 3 AMP. FOR INPUT VOLTAGE OF 277 VAC OR LESS, F1, F2, AND F6 THROUGH F11 ARE 4 AMP.
 - CONNECT TAP ACCORDING TO LINE VOLTAGE.
- | PIN # | VOLTAGE |
|-------|---------|
| 2 | 208 |
| 3 | 220 |
| 4 | 240 |
| 5 | 277 |
| 6 | 380 |
| 7 | 415 |
| 8 | 440 |
| 9 | 480 |
- ALL WIRES #18 AWG EXCEPT WHERE NOTED.
 - SWITCH LABEL STARTS FROM SW1. TOTAL # OF SWITCHES VARIES FROM MACHINE TO MACHINE.
 - USE RECEPTACLE PC-S1 FOR COMPUTER; RECEPTACLE PC-S2 FOR COMPUTER MONITOR.

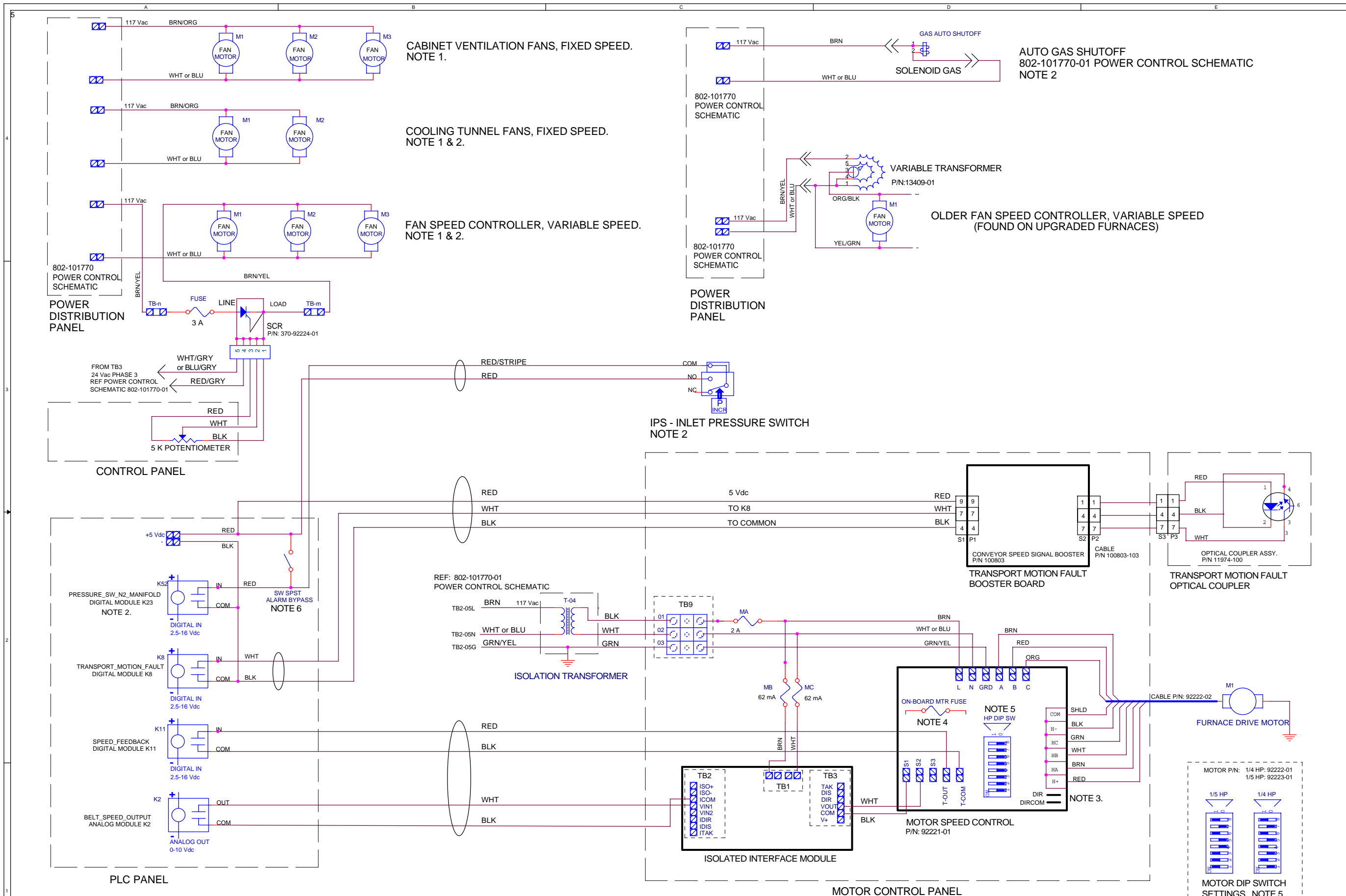


REV	DESCRIPTION	DATE	APPROVED	REV	DESCRIPTION	DATE	APPROVED
7	UPDATE TR0, TR1, TR2, TR3 WIRING	7/15/10	S BARBER	4	REMOVED UPS CONNECTIONS TO DRAWING 802-101770-02	6/17/10	S BARBER
6	CHANGE FURNACE POWER LAMP TO GRN	7/07/10	S BARBER	3	ADDED TB4 & TB5, 4 EMO, NEW P1/J1, WIRES RENUMBERED	6/14/10	S BARBER
5	NEW TB6, TB7, TB9, K2, K5 & K6 PINS; #14 AWG REPL #16 AWG	6/25/10	S BARBER	2	UNSWITCHED AND UPS POWER FOR PC & MONITOR	5/29/09	S BARBER
				1	ADD 3-PH DISCONNECT SW	10/21/08	J CLARK

FurnacePros
DIVISION OF LOCHABER CORNWALL, INC.
675 NORTH ECKHOFF, BLDG D, ORANGE, CA 92668 USA


POWER CONTROL SCHEMATIC

Document Number: 10-004-802-101770-01
Date: Tuesday, July 27, 2010
Sheet: 1 of 1



- NOTES:**
1. NUMBER OF FANS MAY VARY.
 2. SUPPLIED WITH OPTIONAL EQUIPMENT.
 3. DIR & DIRCOM MUST BE CONNECTED FOR PROPER 1/5 HP MOTOR ROTATION.
 4. FUSE 1.5 A FOR 1/5 HP, 2 A FOR 1/4 HP MOTOR
 5. SET HORSEPOWER SWITCHES AS SHOWN.
 6. OPEN-ENABLE ALARM, CLOSED-DISABLE ALARM.

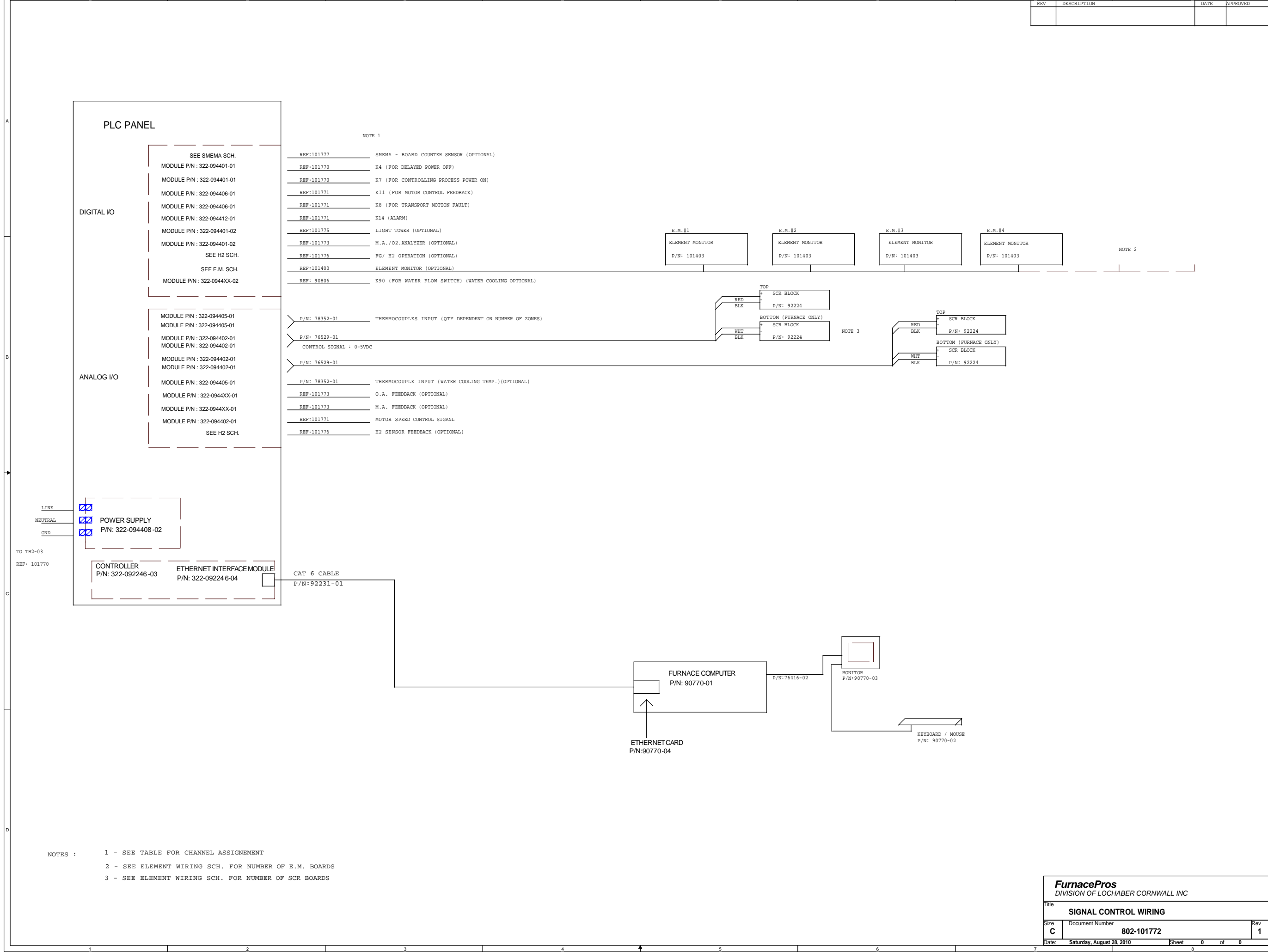
REV	DESCRIPTION	DATE	REV	DESCRIPTION	DATE	DRWN	J CLARK	10/14/08
6	REMOVE SPEED_FEEDBACK COM	10/06/10	4	ADD MOTOR CNTL SETTINGS, OLDER FAN CNTL	8/18/10	ENGR	J BARBER	10/16/08
5	ADD AUTO GAS SHUTOFF WIRE COLOR	9/16/10	3	ADD IPS, AUTO GAS SHUTOFF	8/07/10	CHKD	B CLARK	10/16/08
			2	ADD ISOLATED INTERFACE MODULE TO MSC	7/02/10	ISSUED	J CLARK	10/16/08
			1	REVERSE BELT SPEED FEEDBACK CONNECTION				


 DIVISION OF LOCHABER CORNWALL, INC.
 675-D NORTH ECKHOFF STREET, ORANGE, CA 92868 USA

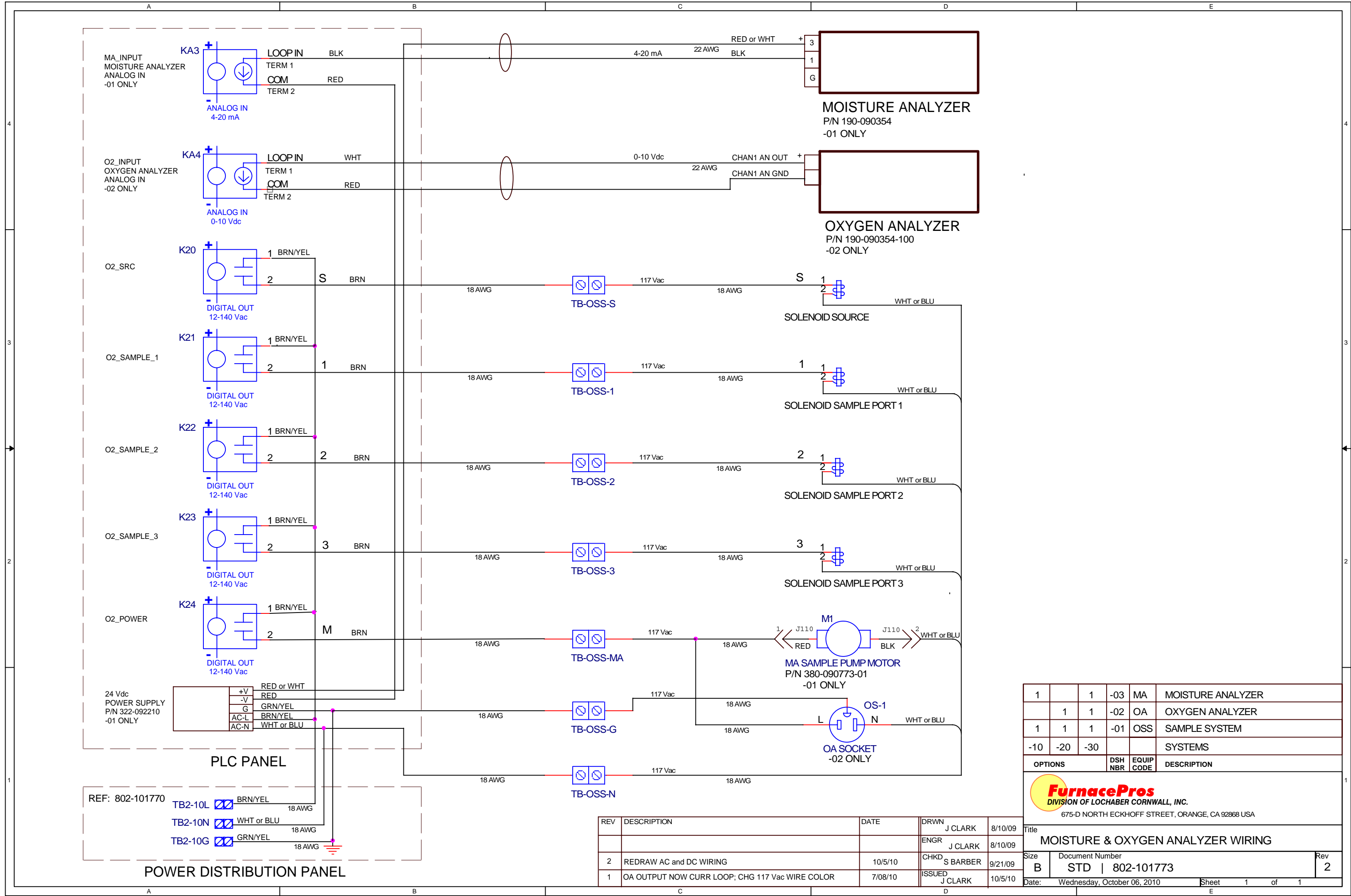
FRAME WIRING SCHEMATIC
 Document Number
STD | 802-101771

Rev **6**
 Date: Monday, December 06, 2010 Sheet 1 of 1

REV	DESCRIPTION	DATE	APPROVED



- NOTES :
- 1 - SEE TABLE FOR CHANNEL ASSIGNMENT
 - 2 - SEE ELEMENT WIRING SCH. FOR NUMBER OF E.M. BOARDS
 - 3 - SEE ELEMENT WIRING SCH. FOR NUMBER OF SCR BOARDS



1	1	-03	MA	MOISTURE ANALYZER
	1	-02	OA	OXYGEN ANALYZER
1	1	-01	OSS	SAMPLE SYSTEM
-10	-20	-30		SYSTEMS
OPTIONS		DSH NBR	EQUIP CODE	DESCRIPTION

FurnacePros
DIVISION OF LOCHABER CORNWALL, INC.
675-D NORTH ECKHOFF STREET, ORANGE, CA 92668 USA

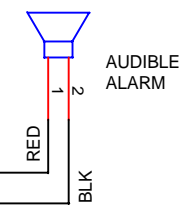
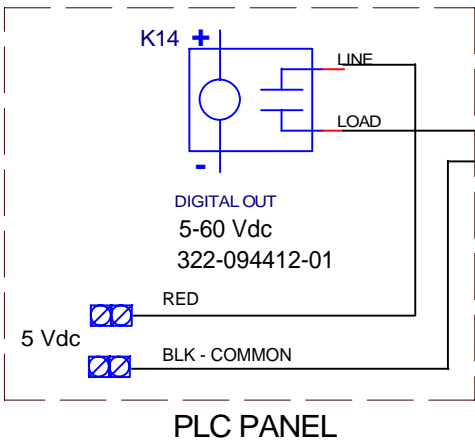
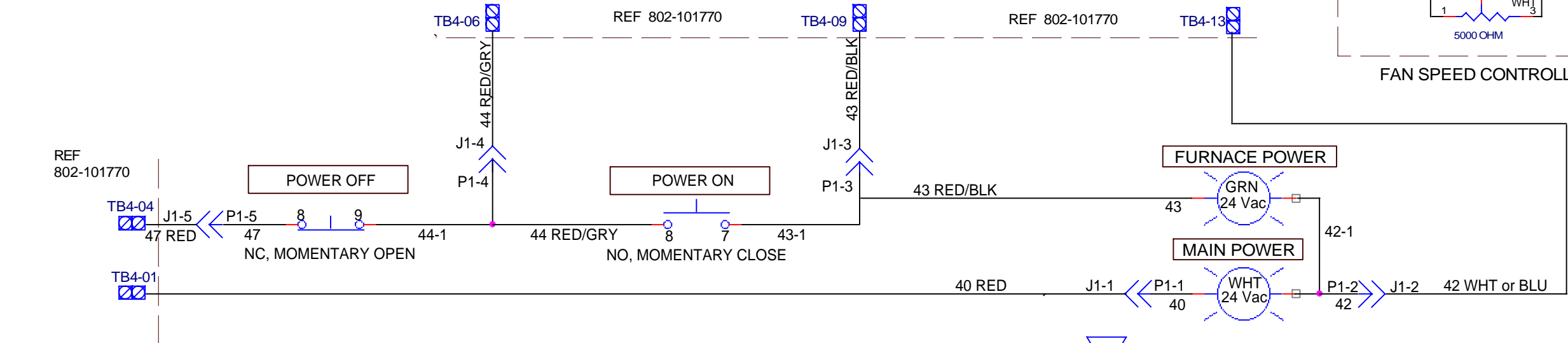
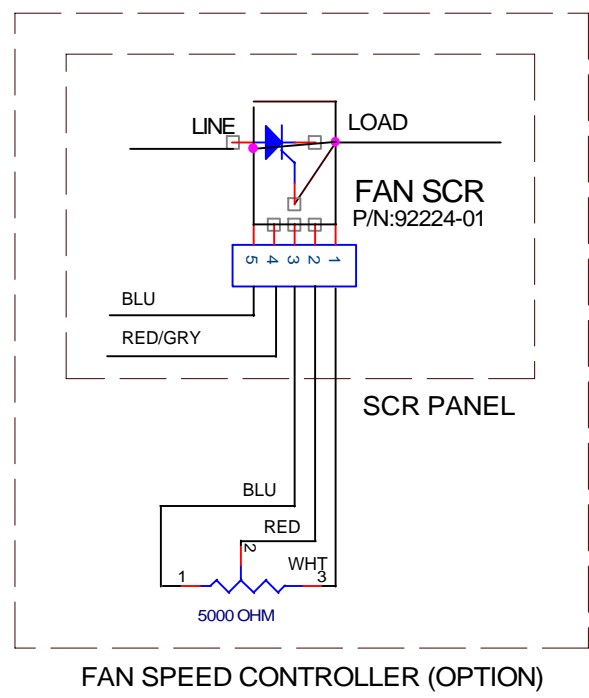
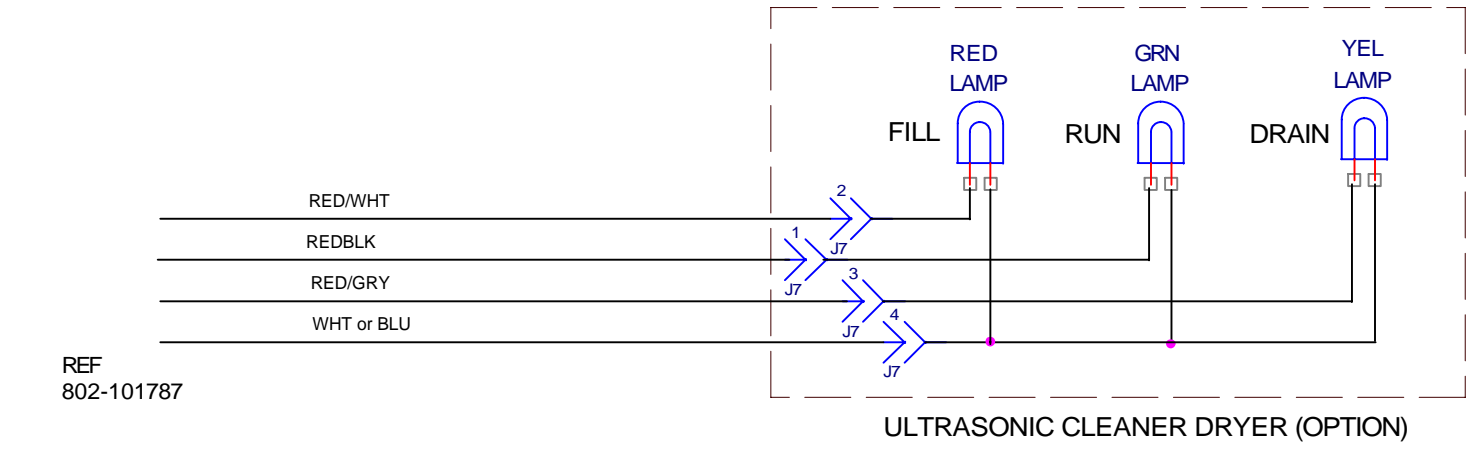
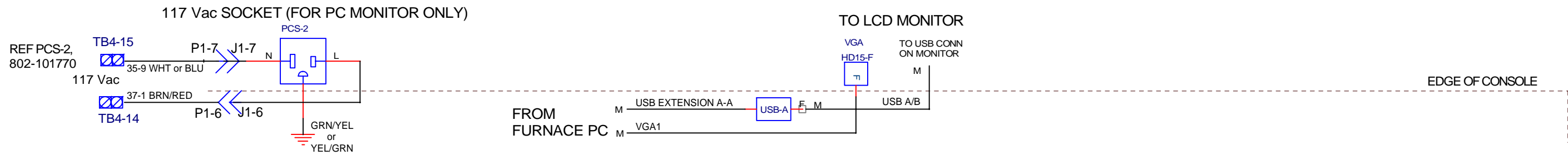
Title		MOISTURE & OXYGEN ANALYZER WIRING	
Size	Document Number		Rev
B	STD 802-101773		2
Date:	Wednesday, October 06, 2010		Sheet 1 of 1

REV	DESCRIPTION	DATE	DRWN	DATE
2	REDRAW AC and DC WIRING	10/5/10	CHKD J CLARK	8/10/09
1	OA OUTPUT NOW CURR LOOP; CHG 117 Vac WIRE COLOR	7/08/10	ISSUED J CLARK	9/21/09

REF: 802-101770

TB2-10L	BRN/YEL	18 AWG
TB2-10N	WHT or BLU	18 AWG
TB2-10G	GRN/YEL	18 AWG

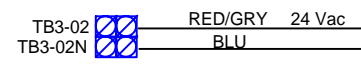
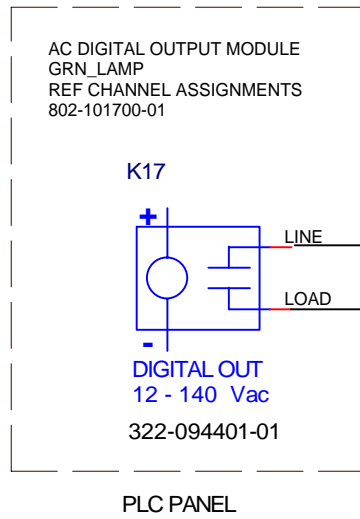
POWER DISTRIBUTION PANEL



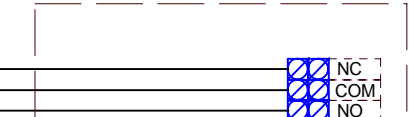
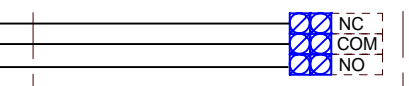
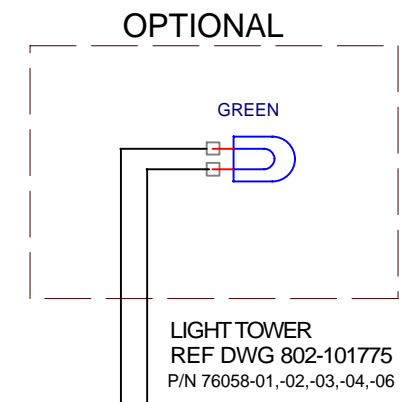
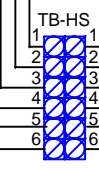
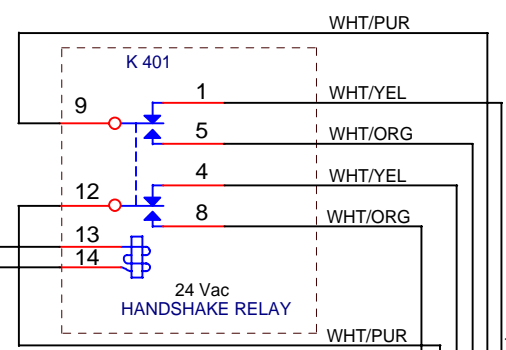
FurnacePros
DIVISION OF LOCHABER CORNWALL, INC.
675 NORTH ECKHOFF STREET, BLDG D, ORANGE, CA 92868 USA

REV	DESCRIPTION	BY / DATE	REV	DESCRIPTION	BY / DATE	DRWN	10/19/08
			4	UPDATE TB4 & LAMP COLOR 802-101770 SCHEMATIC	SLB 08/02/10	J CLARK	10/19/08
			3	UPDATE CONSOLE J1/P1 CONNECTIONS, PER 802-101770 SCHEMATIC	SLB 07/06/10	J CLARK	10/19/08
			2	DELETE 117 Vac SOCKET. CHG FURNACE PWR LAMP TO GRN. ADD VGA/USB	JMC 07/06/10	B CLARK	10/20/08
5	CHANGE WIRE NBR 35-9 & 117 Vac SOCKET WIRING	JMC 9/27/10	1	CHANGE FAN SPEED CONTROL TO PH3	SLB 11/24/08	J CLARK	10/21/08

Title		CONTROL CONSOLE	
Size	Document Number	Rev	
B	802-101774	5	
Date: Monday, October 04, 2010		Sheet 1 of 1	



REF PWR CONTROL SCHEMATIC
802-101770-01



- NOTES:
1. ALL WIRE SHALL BE 18 AWG UNLESS OTHERWISE NOTED.
 2. K17, K401, TB-HS LOCATED ON PLC PANEL

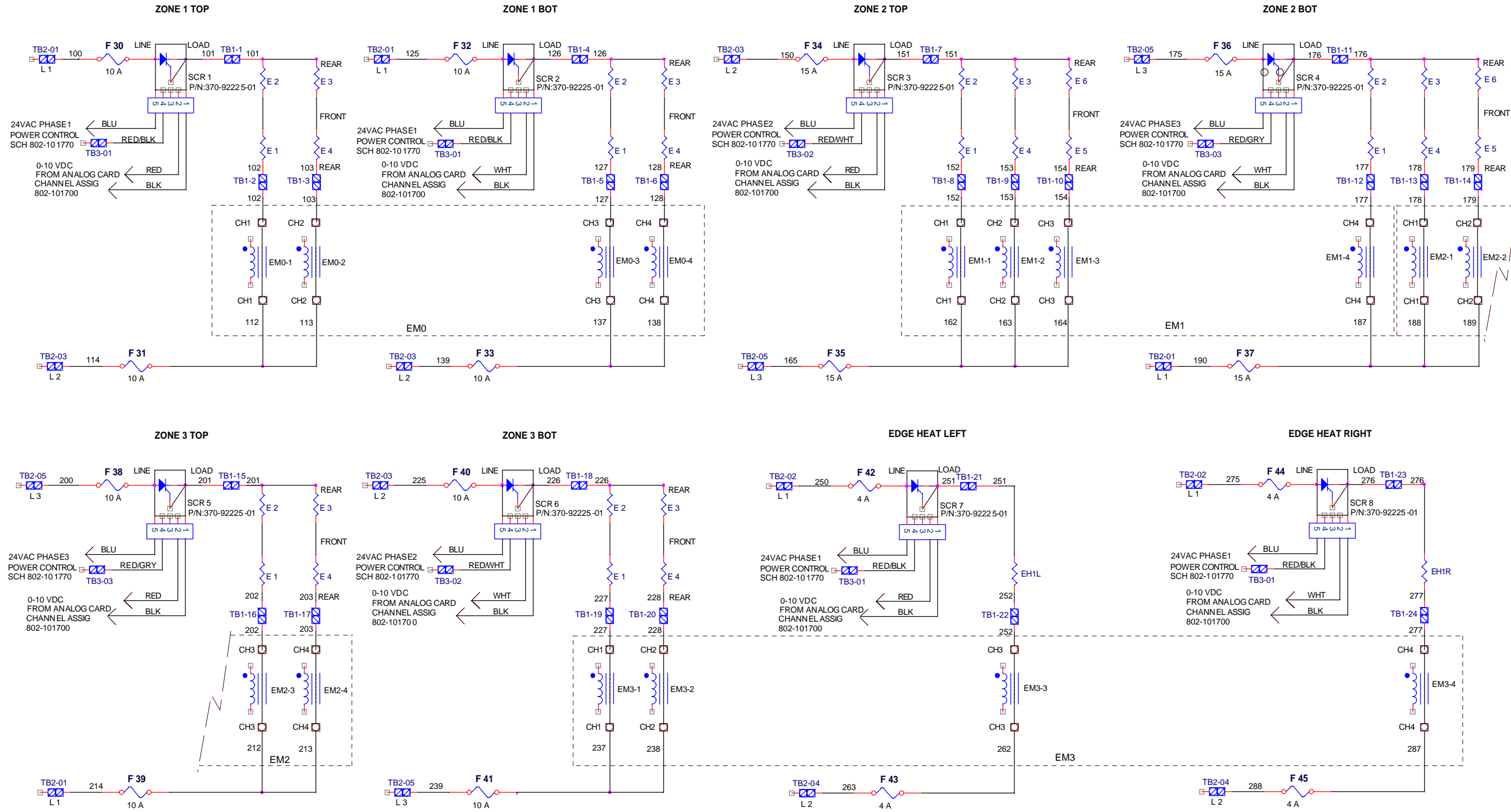
REV	DESCRIPTION	DATE	DRWN	J CLARK	10/8/08
			ENGR	S BARBER	10/08/08
			CHKD	B CLARK	10/09/08
1	ADD TB-HS, CHG RLY, WIRE CLR, TB2 CONN	07/12/2010	ISSUED	J CLARK	10/10/08

FurnacePros
DIVISION OF LOCHABER CORNWALL, INC.
675-D NORTH ECKHOFF STREET, ORANGE, CA 92868 USA

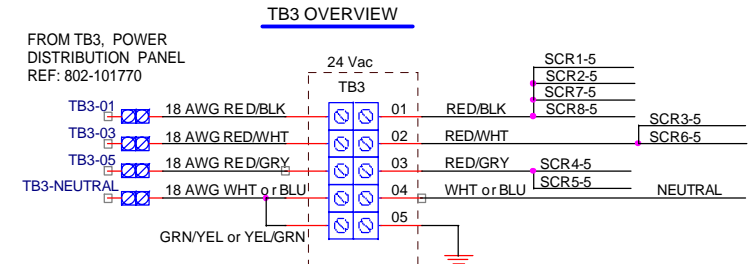
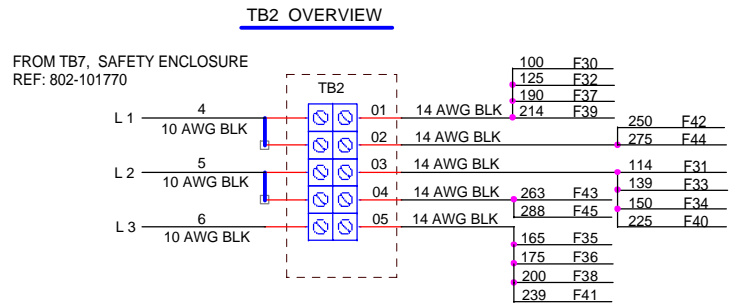
Title: **HANDSHAKE**

Size: B Document Number: **STD | 802-101777** Rev: 1

Date: Monday, July 12, 2010 Sheet 1 of 1



- NOTES**
1. SCR CONTROL WIRING (CONNECTIONS TO TB3 AND DC CONTROLS) #18 AWG.
 2. ALL OTHER WIRES #14 AWG, EXCEPT AS NOTED.
 3. ALL FUSES KTK TYPE (REF: 802-101520)



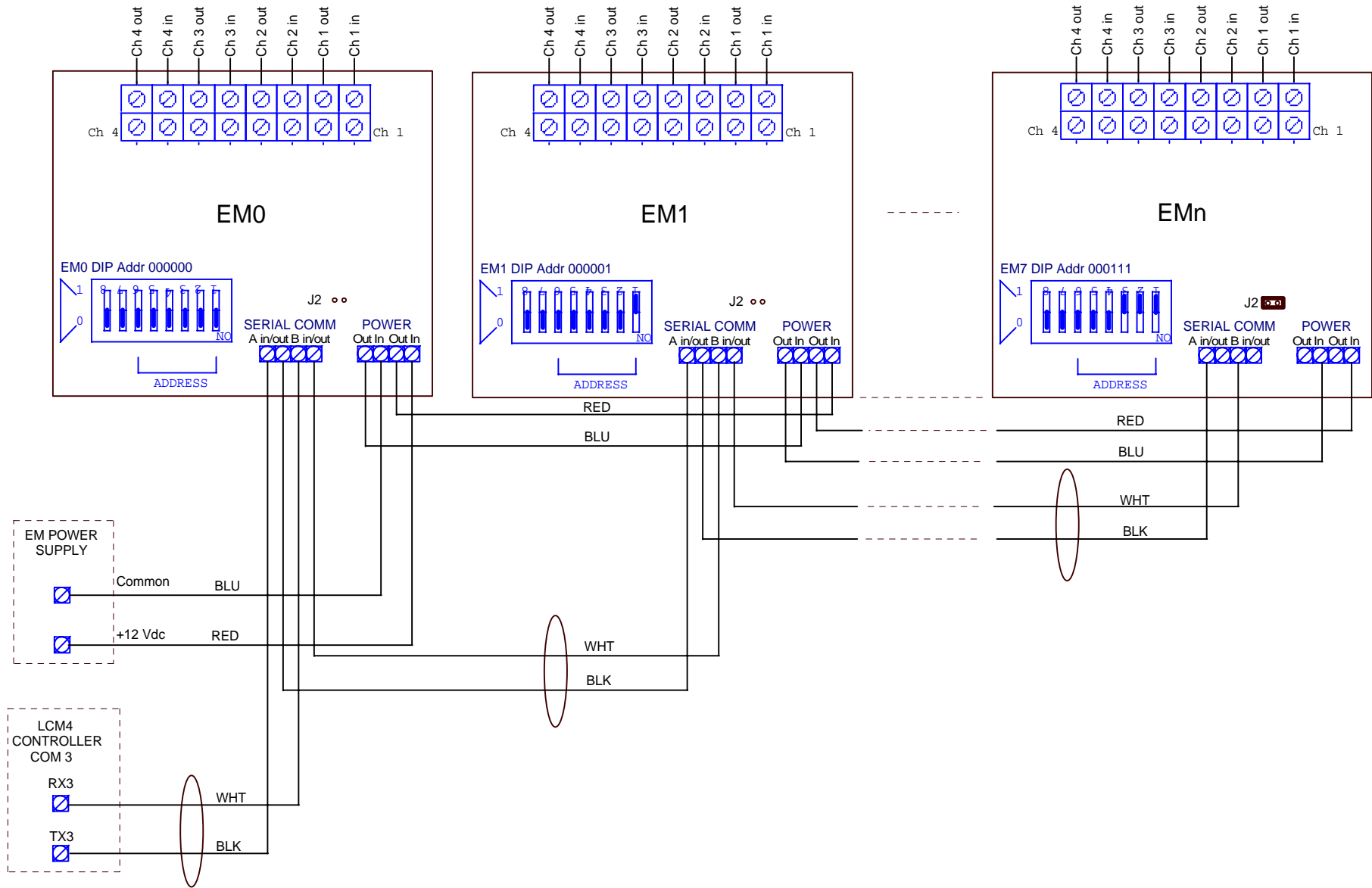
REV	DESCRIPTION	DATE	DRWN	J CLARK	07/03/10
			ENGR	S BARBER	07/03/10
			CHKD	S BARBER	07/05/10
			APVD	J CLARK	07/05/10

FO: 10-004
MODEL: LA-309

FurnacePros
DIVISION OF LOCHABER CORNWALL, INC.
675-D NORTH ECKHOFF STREET, ORANGE, CA 92868 USA

ELEMENT WIRING

Document Number: 10-004 - 802-101814
Date: Wednesday, July 07, 2010
Sheet 1 of 1



EM BOARD BINARY ADDRESSES	
EM0	EM0 DIP Addr 000000
EM1	EM1 DIP Addr 000001
EM2	EM2 DIP Addr 000010
EM3	EM3 DIP Addr 000011
EM4	EM4 DIP Addr 000100
EM5	EM5 DIP Addr 000101
EM6	EM6 DIP Addr 000110
EM7	EM7 DIP Addr 000111
EM8	EM8 DIP Addr 001000
EM9	EM9 DIP Addr 001001
EM10	EM10 DIP Addr 001010
EM11	EM11 DIP Addr 001011
EM12	EM12 DIP Addr 001100
EM13	EM13 DIP Addr 001101
EM14	EM14 DIP Addr 001110
EM15	EM15 DIP Addr 001111
EM16	EM16 DIP Addr 010000
EM17	EM17 DIP Addr 010001
EM18	EM18 DIP Addr 010010
EM19	EM19 DIP Addr 010011
EM20	EM20 DIP Addr 010100
EM21	EM21 DIP Addr 010101
EM22	EM22 DIP Addr 010110
EM23	EM23 DIP Addr 010111

6. SET DIP SWITCH TO BINARY ADDRESS (SEE TABLE ON RIGHT) FOR EACH EMx BOARD
5. LOCATE JUMPER J2 ON LAST EM BOARD ONLY
4. POWER SUPPLY WIRE SHALL BE #18 AWG, TWISTED
3. COM WIRE SHALL BE 2-CONDUCTOR CABLE
2. CAUTION: BOARDS MAY BE IN REVERSE ORDER
1. NUMBER OF EM BOARDS VARIES BY SYSTEM (EM0-EMn).

NOTES:

REV	DESCRIPTION	DATE	DRWN	DATE
1	REVERSE RED & BLU WIRES	09/13/10	ISSUED J CLARK	

FurnacePros
DIVISION OF LOCHABER CORNWALL, INC.
675-D NORTH ECKHOFF STREET, ORANGE, CA 92668 USA

Title		ELEMENT MONITOR WIRING	
Size	Document Number		
B	STD 802-101888	Rev	1
Date: Monday, September 13, 2010		Sheet	1 of 1