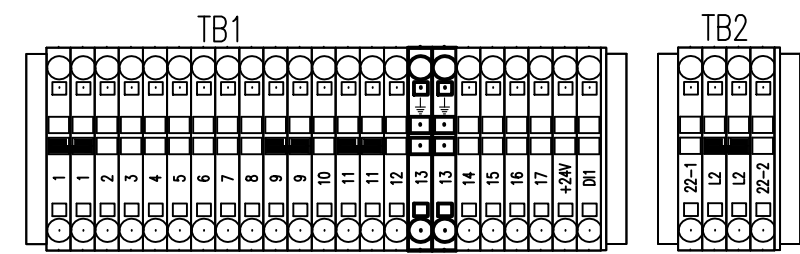
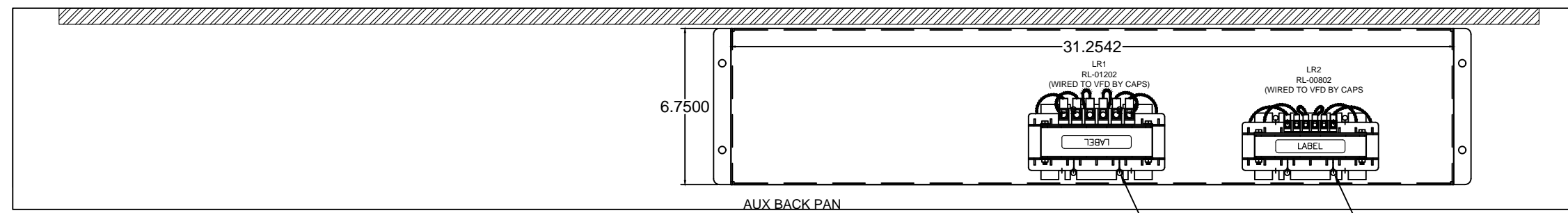


LEGEND

CC1	COMPRESSOR CONTACTOR 1
CC2	COMPRESSOR CONTACTOR 2
CF1	CONDENSER FAN CONTACTOR 1
CF2	CONDENSER FAN CONTACTOR 2
ETCL0	COMPRESSOR SAFETY BOARD
FU	FUSE
HC1	HEAT CONTACTOR 1
HC2	HEAT CONTACTOR 2
HM1	HOUR METER 1
HM2	HOUR METER 2
ICM	DOM TIMER
OL	OVERLOAD RELAY
PM	PHASE MONITOR
POT	POTENTIOMETER
TR	RELAY TIMER
VFD	DRIVE



REV#	DATE	DESIGNER	DESCRIPTION
0	12/06/2016	DN	FOR CUSTOMER APPROVAL
1	12/19/2016	DN	REVISE P&ID
2	02/23/2017	J.OMALLEY	CORRECTIONS FROM RED-LINES

35 SOUTHBELT INDUSTRIAL DR., HOUSTON, TX. 77047
 PHONE: (713) 460-9009 FAX: (713) 460-9499
 TEXAS BOARD OF PROFESSIONAL ENGINEERS
 FIRM NUMBER F-14008

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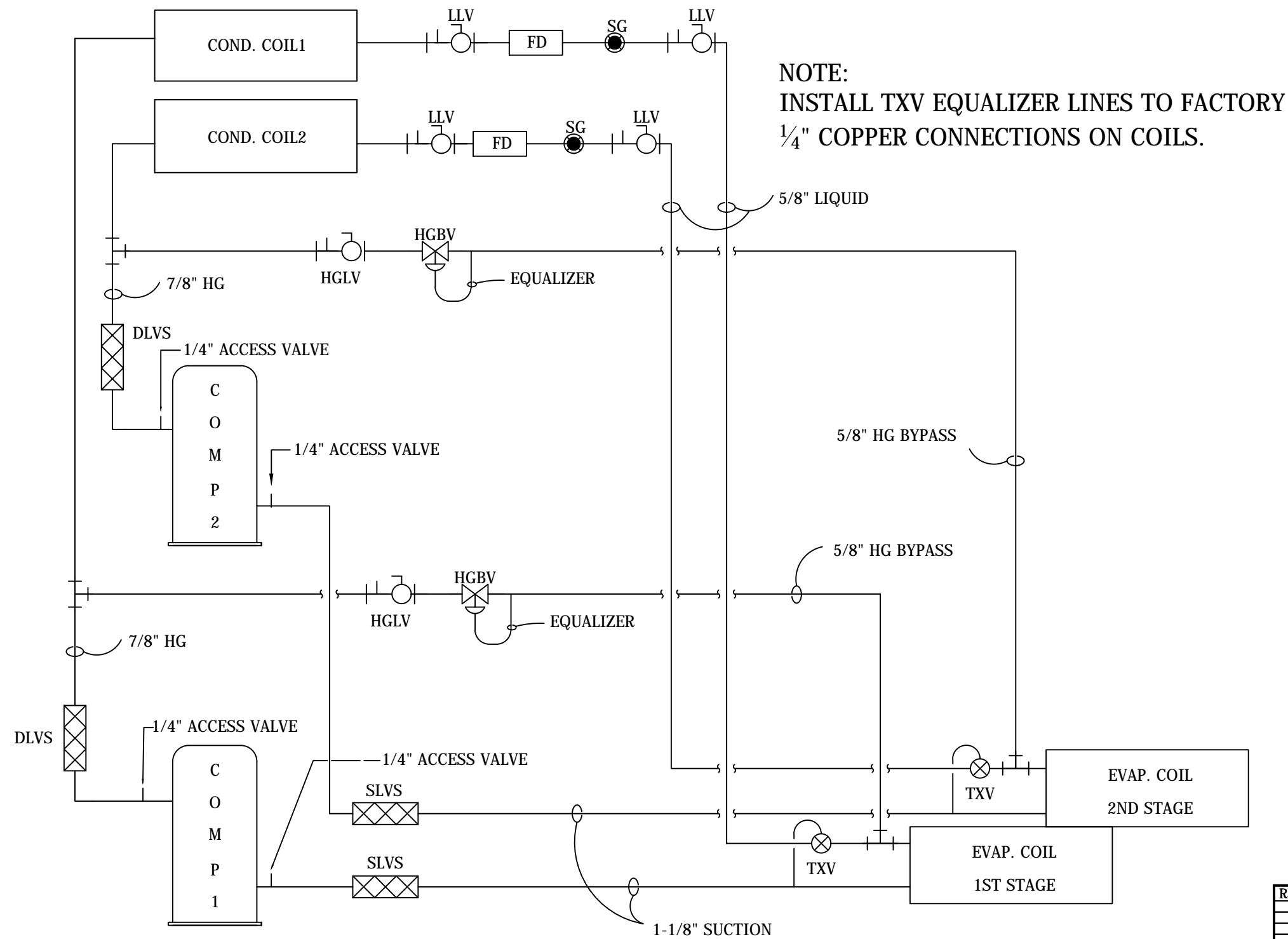
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CHECKER: _____ DATE: _____
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CAPS NO.:	DRAWING:	DRAWN BY:	DATE:
16F-0653	AE2	DAVID NGUYEN	12/06/2016
CUST. PO#:	SHEET:	CHECKED BY:	DATE:
	2 OF 4	J.OMALLEY	02/23/2017
SIZE:	REV:	APPROVED BY:	DATE:
B	2	JOHN PHAN	02/23/2017

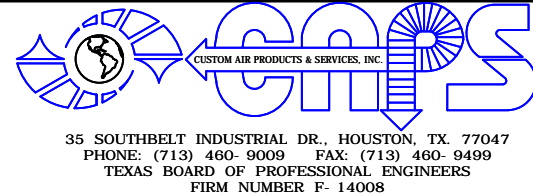
CUSTOMER: **HERC RENTALS**

(25) 20 TON ENTERTAINMENT UNIT WITH 72KW HEAT AND QUADBOX PLUGS, TRANSFORMERS 460/3/60 ELECTRICAL DESIGN CONTROL PANEL LAYOUT



NOTE:
INSTALL TXV EQUALIZER LINES TO FACTORY
1/4" COPPER CONNECTIONS ON COILS.

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CAPS NO.: 16F-0653	DRAWING: AE3	DRAWN BY: DAVID NGUYEN	DATE: 12/06/2016
CUST. PO#:	SHEET: 3 OF 4	CHECKED BY: J.OMALLEY	DATE: 02/23/2017
SIZE: B	REV: 2	APPROVED BY: JOHN PHAN	DATE: 02/23/2017

CUSTOMER: HERC RENTALS
(25) 20 TON ENTERTAINMENT UNIT WITH 72KW HEAT AND QUADBOX PLUGS, TRANSFORMERS
460/3/60
ELECTRICAL DESIGN P&ID

The general parameter setting procedure in the Short parameter mode:

- To go to the Main menu, press if the bottomline shows OUTPUT; otherwise press repeatedly until you see MENU at the bottom.
- Press keys until you see PAR S on the display.
- Press . The display shows a parameter of the Short parameter mode.
- Find the appropriate parameter with keys .
- Press and hold for about two seconds until the parameter value is shown with under the value.
- Change the value with keys . The value changes faster while you keep the key pressed down.
- Save the parameter value by pressing .

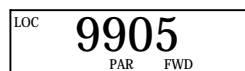


Enter the motor data from the motor nameplate:

ABB Motors									
3 motor M2AA 200 M LA 4									
IEC 200 M/L 55									
No									
V	Hz	kW	r/min	A	cos φ	IP	IP 55		
690 Y	50	30	1475	32.5	0.83				
400 D	50	30	1475	56	0.83				
660 Y	50	30	1470	34	0.83				
380 D	50	30	1470	59	0.83				
415 D	50	30	1475	54	0.83				
440 D	60	35	1770	59	0.83				
Cat. no. 3GAA 202 001 - ADA									
6312/C3 6210/C3 180 kg									
IEC 34-1									

Note: Set the motor data to exactly the same value as on the motor nameplate. Wrong motor settings of parameter group 99 may result in incorrect operation of the drive.
For example, if the motor nominal speed is 1440 rpm on the nameplate, setting the value of parameter 9908 MOTOR NOM SPEED to 1500 rpm results in the wrong operation of the drive.

- motor nominal voltage (parameter 9905 MOTOR NOM VOLT) - follow steps given above, starting from step 4.

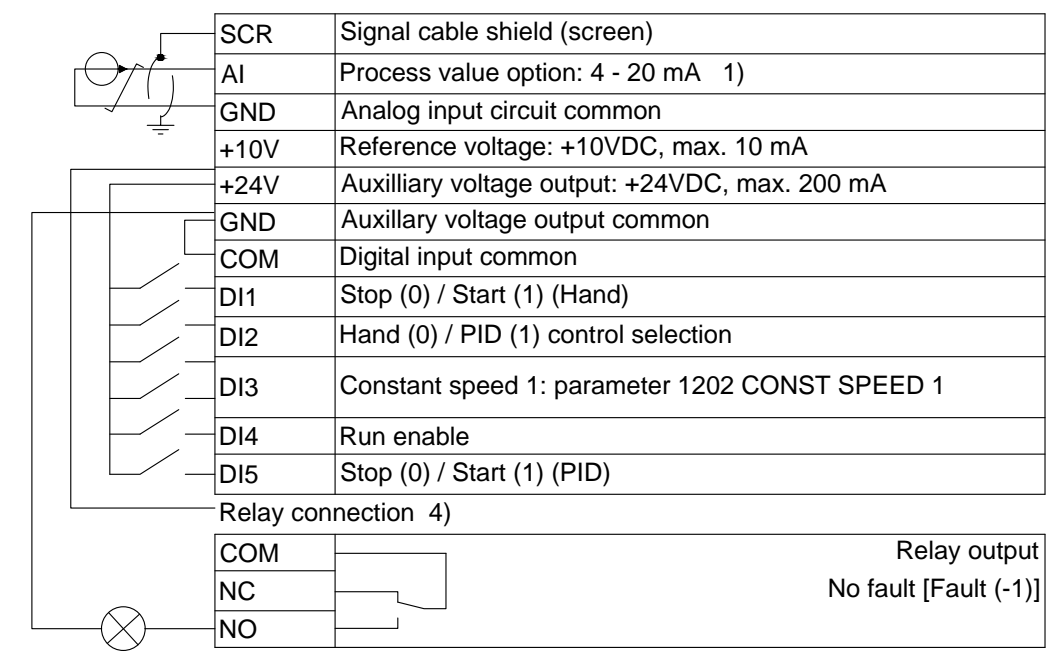


- motor nominal current (parameter 9906 MOTOR NOM CURR)



Note: Parameter 2108 STAR T INHIBIT must remain in the default setting 0 (OFF).

Default I/O connections



- Hand: frequency reference comes from the integrated potentiometer
PID: Process reference comes from the integrated potentiometer.
- 360 degree grounding under a clamp.
- Tightening torque: 0.22 N · m / 2 lbf·in
- Tightening torque: 0.5 N · m / 4.4 lbf·in

Programming for Condenser Fan Speed Control for low ambient operation

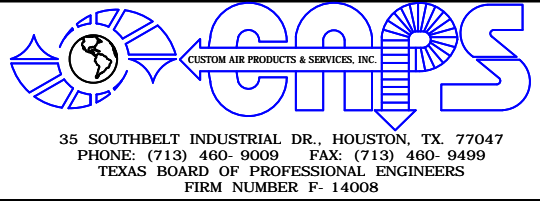
(Note: Pressure Transmitter is 0 to 750 psig with a 4 to 20 mA output. Setpoint is 400 psig)

- SELECT APPLICATION MACRO AT POWER UP
- 9902 - 6 (PID CONTROL)
 - 9905 - "460"
 - 9906 - "6.8"
 - 9907 - "60"
 - 9908 - "1200"
- 1102 - 7 (EXT2)
1105 - 60 HZ (REF1 MAX)
1601 - 0, RUN ENABLE (NOT SEL)
1401 (Relay Output 1) - "4=FAULT", Energize relay when a fault is active
2008 - 60 HZ (MAX FREQUENCY)
2202 - 5 SEC (ACCEL TIME)
2203 - 5 SEC (DECCEL TIME)
3408 - 0128, PID1 SETPOINT (SIGNAL 2 PARAMETER)
3415 - 0130, PID1 FEEDBACK (SIGNAL 3 PARAMETER)
3418 - 9 [DIRECT] (OUTPUT 3 DECIMAL POINT)
4001 - 1, PID GAIN
4002 - 7.5, INTEGRATION TIME
4005 - 1 [YES], INVERTED, A DECREASE IN FEEDBACK DECREASES DRIVE SPEED
4006 - 4, Units - "%"
4007 - 0, Unit Scale (NO DECIMAL POINTS)
4008 0% Value - "0.0"
4009 100% Value - "750"
4010 - Set Point Select, 19 (INTERNAL)
4011 55% = 400 PSI, Internal Setpoint
4016 - 1, AI1
4019 - 100%

Evaporator VFD ABB ACS310 Parameters:

- 1105 - 60hz
- 1106 - 2
- 1301 - 20%
- 1601 - 0
- 1611 - 3
- 1810 - 60hz
- 2007 - 30hz
- 2008 - 60hz
- 2101 - 6
- 2102 - 2 ramp stop
- 2113 - 0 seconds
- 2202 - 30sec

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CAPS NO.: 16F-0653	DRAWING: AE4	DRAWN BY: DAVID NGUYEN	DATE: 12/06/2016
CUST. PO#:	SHEET: 4 OF 4	CHECKED BY: J.OMALLEY	DATE: 02/23/2017
SIZE: B	REV: 2	APPROVED BY: JOHN PHAN	DATE: 02/23/2017

CUSTOMER: **HERC RENTALS**

(25) 20 TON ENTERTAINMENT UNIT WITH 72KW HEAT AND QUADBOX PLUGS, TRANSFORMERS 460/3/60 ELECTRICAL DESIGN VFD PROGRAMMINGS