For Demo Purposes Only

Steam Station Controls

John N. Fehlinger Company Inc.

20 VESEY STREET. NEW YORK, NY

CP3 Energy Systems Inc.

"Helping Reduce Carbon Footprint"

Sequence of Operation, Bill of Material & Installation Details

Steam Station Control System – Sequence of Operation:
The steam station control system is designed to reduce the incoming Con Ed provided 150-175 psi down to approx. 55 psi (adj) at the intermediate section of the station. This is achieved by modulating the high and low flow primary valves to meet system demand on both the high and low flow lines. The intermediate section of the station is between the primary regulator valves (PRV-1 and PRV-3) and the secondary regulator valves (PRV-2 and PRV-4). Once reduced to 55 psi (adj.) at the intermediate, it is then further reduced by the secondary regulator valves down to desired building supply psi – approx. 12 psi (adj.).

System Enable:
The steam station control system has a system enable switch located in the station control panel. This switch is used to index the system to either the enable or disable modes of operation. When enabled the station will operate to maintain the current system setpoint as determined by the current operating mode.
When placed in the disable mode the system, valves will be commanded closed and the PID's will be disabled to eliminate system windup. This should be used anytime the steam service is going to be valved off from the station at the Con Ed inlet.

Occ Mode:
An occupancy switch located in the steam station control panel is used to provide the building engineers with a simple way of reducing the steam station pressure without having to make changes via the BMS or control panel display. The setback mode is a predetermined setpoint determined by the building engineers that allows the station to run at a lower pressure by indexing the panel switch to the setback mode.
During the occupied mode the system can operate either at a static setpoint, or based on an outdoor reset schedule as determined by the BMS.

Con Ed Sensor:
The Con Ed sensor is used to monitor the incoming steam supply line and to enable the system whenever steam pressure is sensed at the inlet. When steam is not sensed at the inlet, the steam station is disabled and sends all valves to 0%. In the case that steam is actually available and the sensor has either failed or the sensing line is plugged, the operator can place the ConEd sensor switch in the "Bypass" mode. This will bypass the safety that disables the station due to loss of ConEd steam. Once the sensing line or inlet sensor is repaired the switch can be returned to the “Enable” position.

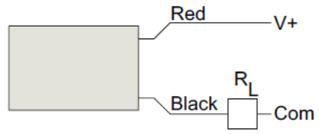
Safeties:
The steam station has a high pressure manual reset safety switch located downstream of the control valves that are used to disable the system if the steam pressure exceeds the high limit safety setpoint. The safety switch is wired in series and directly controls a 120v pneumatic solenoid. Status of the high pressure safety switch is indicated locally by a RIB relay. In the normal operating state the relay’s red indicating light would be energized. The pneumatic solenoid is wired so that in the normal operating state the solenoid is energized. The energized solenoid allows a maximum 30psi pneumatic signal to pass through the solenoid and open a normally closed pneumatic safety shutoff valve. One normally closed pneumatic safety shutoff valve is located before both paths and operation of this circuit is completely independent of the electronic control system. The pressure setting at which the switches will trip is field adjustable at the switch.

In the event that the high pressure safety switch has tripped, the following shall occur:

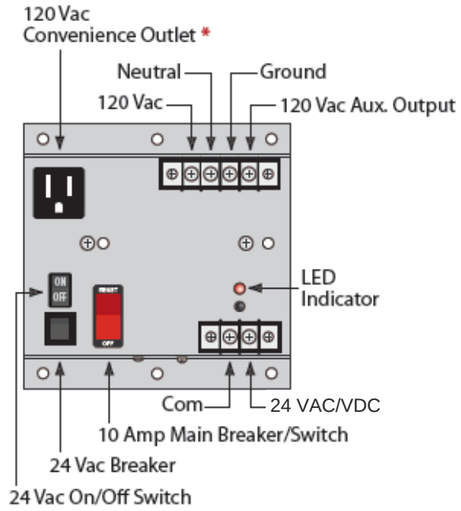
1. 120vac shall be disconnected from the solenoid and the pneumatic signal to the control valve shall block and bleed loading air to atmosphere
2. The normally closed pneumatic safety shutoff valve shall close and stop steam flow to the system.

Once tripped, the Safety Shut Off Switch must be manually reset by depressing the white button on top of the switch cover.

Pressure Transmitter Installation Details



Power Supply Installation Details



BILL OF MATERIALS

KEY	QTY	MANUFACTURER	MODEL NO.	DESCRIPTION
IO	1	EasyIO	FS32	Programmable Controller
PS1	1	Functional Devices	PSB40AB10	40VA 120 to 24VAC Power Supply
PS2	1	Rhino	PSB24-060-P	60W 120 to 24VDC Power Supply
PT1-3	3	ProSense	SPT25-20-0200A	0-200 PSI 4-20mA Pressure Sensor
PT4	1	ProSense	SPT25-20-0030A	0-30 PSI 4-20mA Pressure Sensor
TAB	1	EasyIO	SH-SystemView-10	10.1" IPS Display, 1280x800 Res.
RIB	1	Functional Devices	RIBU1C	24V 10A SPDT Enclosed Relay
ENC	1	Hammond	EN4SD24308LG	24x30x8 NEMA 4/12 Enclosure
SUB	1	Hammond	EP2430	Carbon Steel 22"x28" Sub Panel
IND	2	AutomationDirect	GCX1231-24L	22mm Red LED Indicating Light
WIFI	1	TRENDnet	TEW-731BR	5 Port 10/100Mbs Wifi Router

**Valve Positioners and Position Feedback Sensors supplied and installed by Fehlinger.*

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demo project

PROJECT:
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CONTRACTOR:
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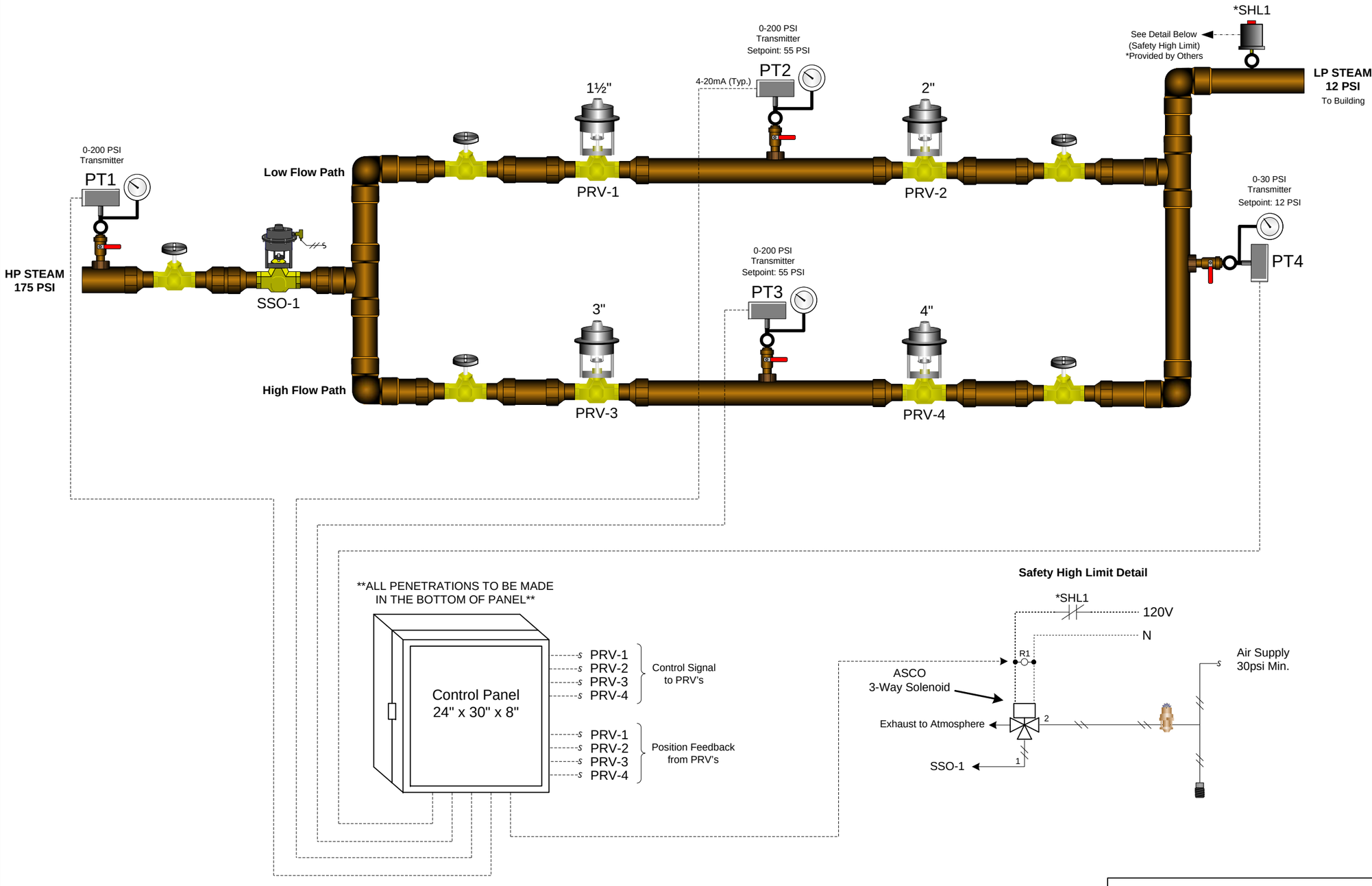
ENGINEERED BY: MS
DRAWN BY: MS
CHECKED BY:
Project #: DEMO
PAGE: 2 of 4

REV	DATE	REVISIONS	INIT

Steam Station Flow Diagram

** DO NOT INSTALL ISOLATION VALVES
ON SAFETY HIGH LIMIT SWITCHES **



**ALL PENETRATIONS TO BE MADE
IN THE BOTTOM OF PANEL**

Safety High Limit Detail

Air – 3/8" O.D. x 1/4" I.D. Tubing

Electrical – 18 AWG Shielded

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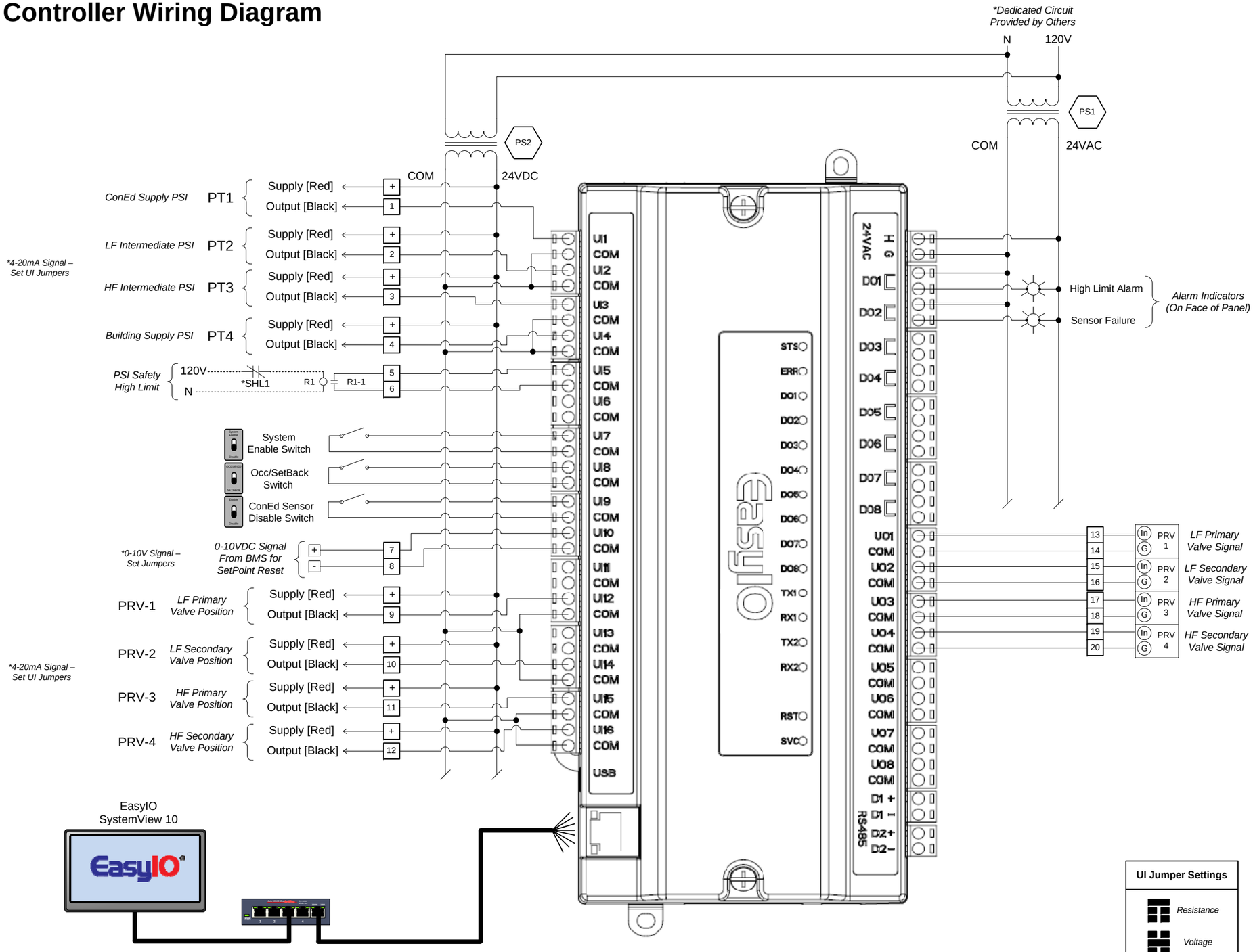
Controller Wiring Diagram



UI Jumper Settings

Resistance

Voltage

Current

UO Jumper Settings

Current

Voltage

Open Collector

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