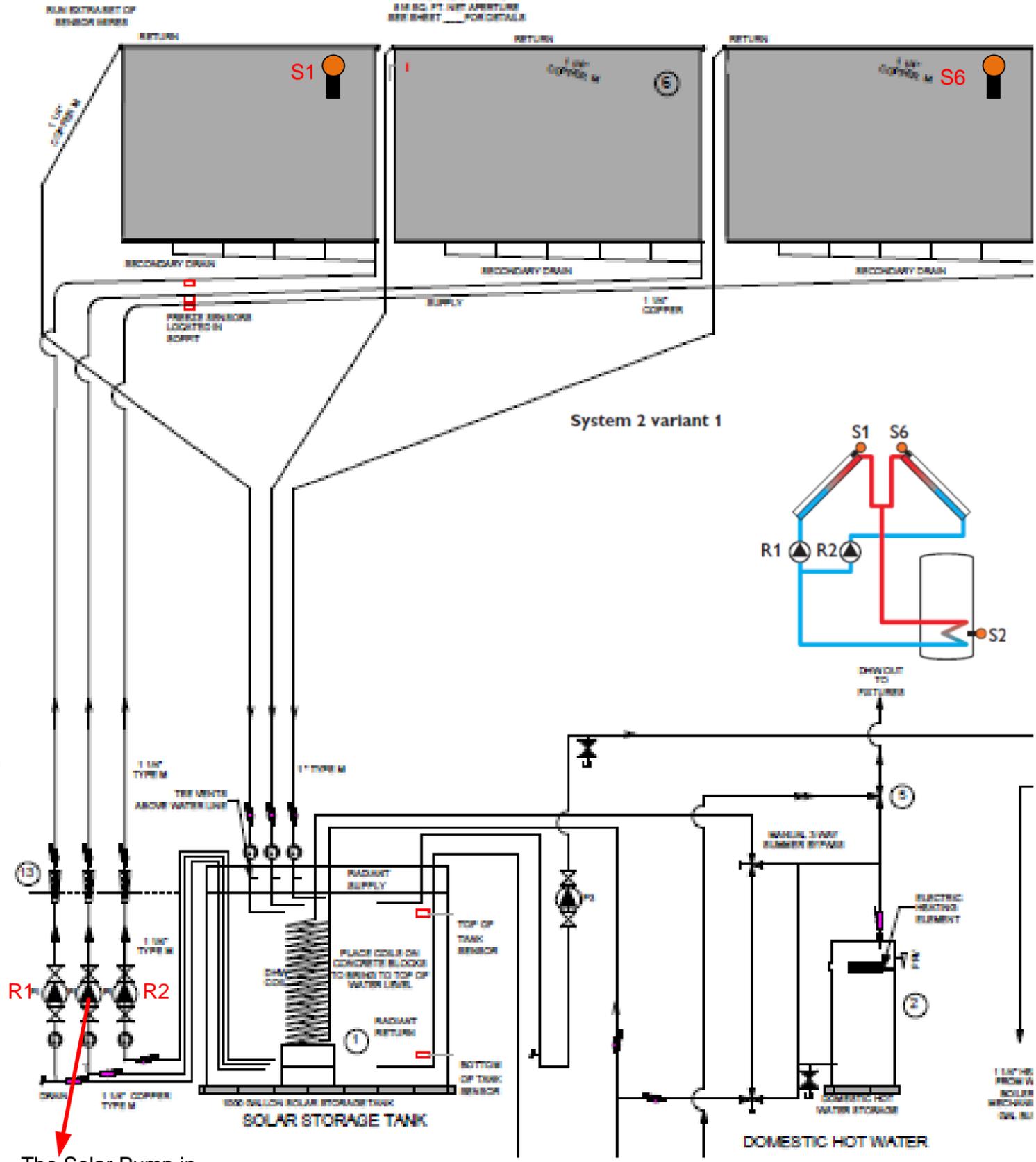
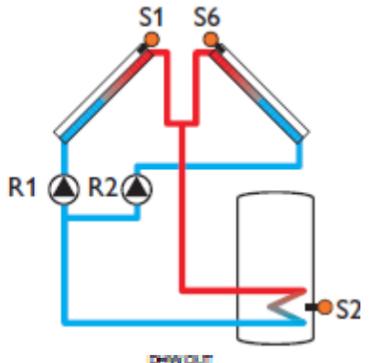


ROOF TOP SOLAR THERMAL ARRAY

17 ABSORBER PLATES - 2 SUBARRAYS OF 8 AND ONE OF 1 (2017)
 816 SQ. FT. NET APERTURE
 SEE SHEET _____ FOR DETAILS



System 2 variant 1



Solar—Basic Setting

ITEM	QTY.	PART NO.	DESCRIPTION
------	------	----------	-------------

Basic settings	
System	2.1
Collector 1	
Collector 2	

DeltaSol® MX

Arrangement- Function Block to control R3

Function block	
Relay	R3
<input type="checkbox"/> Thermostat a	
<input type="checkbox"/> Thermostat b	

Function block	
<input type="checkbox"/> Timer	
<input checked="" type="checkbox"/> Ref. relay	
Mode	OR

Function block 1	
Mode	OR
Relay	R1
Relay	R2

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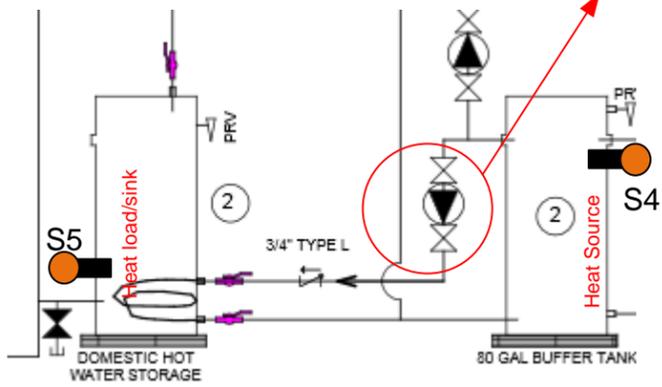
DeltaSol® MX

In 2013, RESOL MX only can control 2 collector fields, so I suggested to place sensors S1 and S6 at two collectors fields left and right; The two collectors have two corresponding solar circulation pump R1 and R2. R3 is the pump for the collector in between, the programming allows R3 to be activated when either R1 or R2 is activated.

The Solar Pump in the middle is R3

		SIZE	FSCM NO	DWG NO	REV
		DRAWN	LinY		
ISSUED	March 16, 2016	SCALE	1 : 1	SHEET	1 OF 7

Heat Exchanger between DHW tank and 80 Gal Buffer Tank



Arrangement → Opt.Function → Heat Exchange

Heat exchange	
Relay	R4
Sen. Source	S4
Sen. Sink	S5

DeltaSol® MX

Heat exchange	
ΔTon	6.0 K
ΔToff	4.0 K
ΔTset	10.0 K

DeltaSol® MX

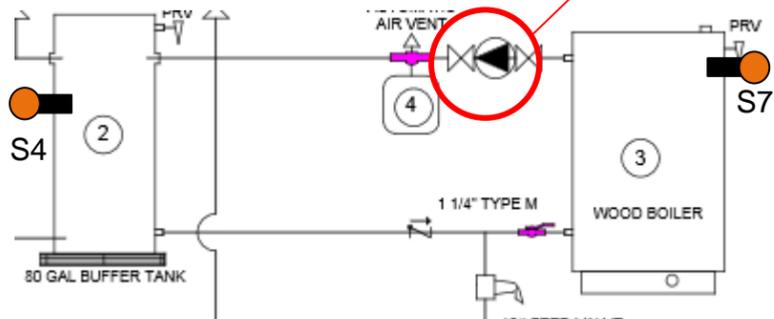
Heat exchange	
Min speed	50%
Tmax	60 °C
Tmin	10 °C

DeltaSol® MX

S5-heat Load
S4-Heat Source

I don't know whether this section is still existing; I did not find this on the schematic in Nov, 2013 but I just add the programming in the MX, if you don't need it, you can delete it in MX controller.

Heat Transfer between Wood Boiler and 80 Gal Buffer Tank



Arrangement → opt.Function → Solid Fuel Boiler

Solid fuel boiler	
Relay	R5
Sen. Boiler	S7
Sen. Store	S4

Solid fuel boiler	
ΔTon	6.0 K
ΔToff	4.0 K
ΔTset	10.0 K

DeltaSol® MX

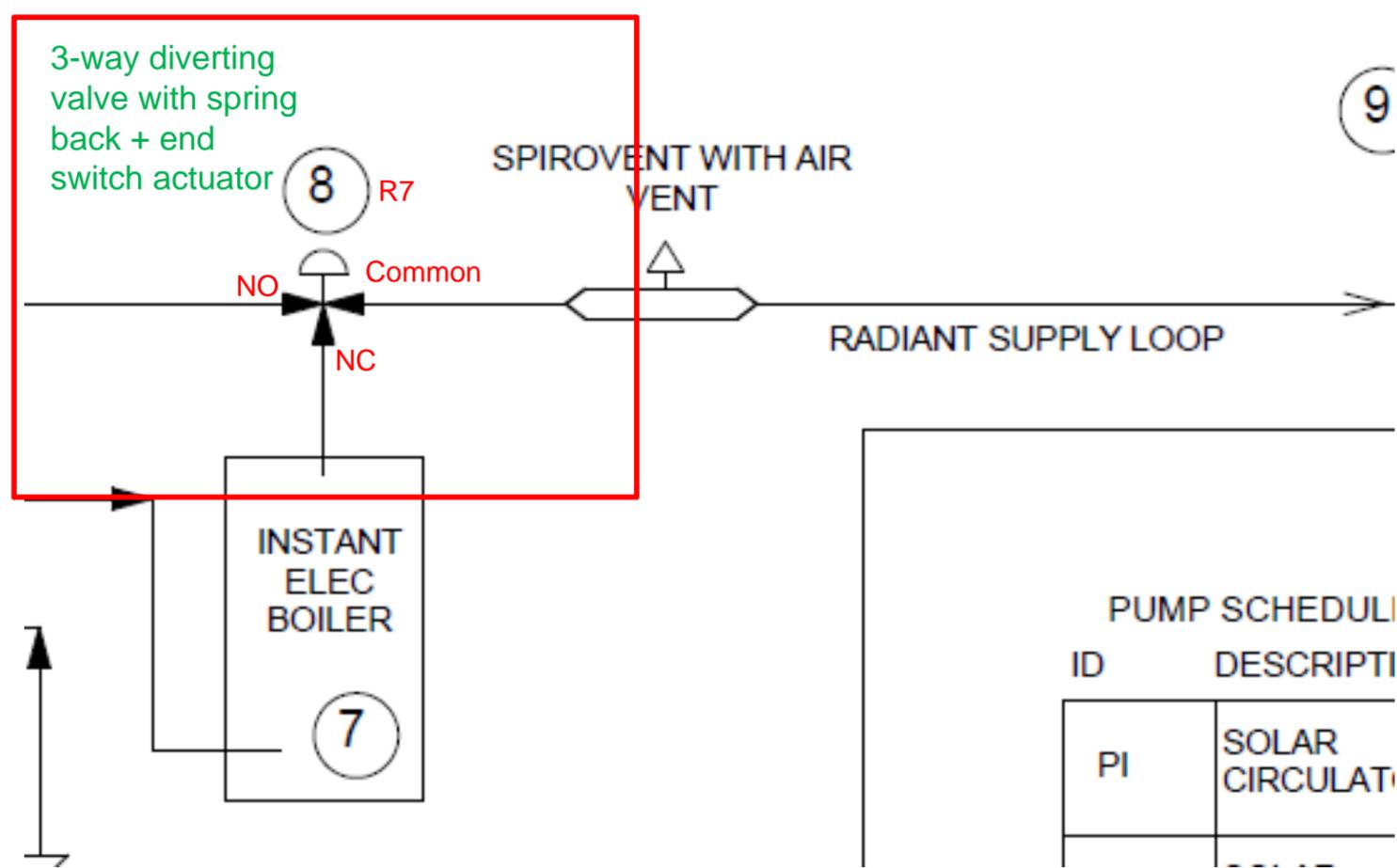
Solid fuel boiler	
Min speed	50%
Tmax st.	90 °C
Tmin boiler	60 °C

DeltaSol® MX

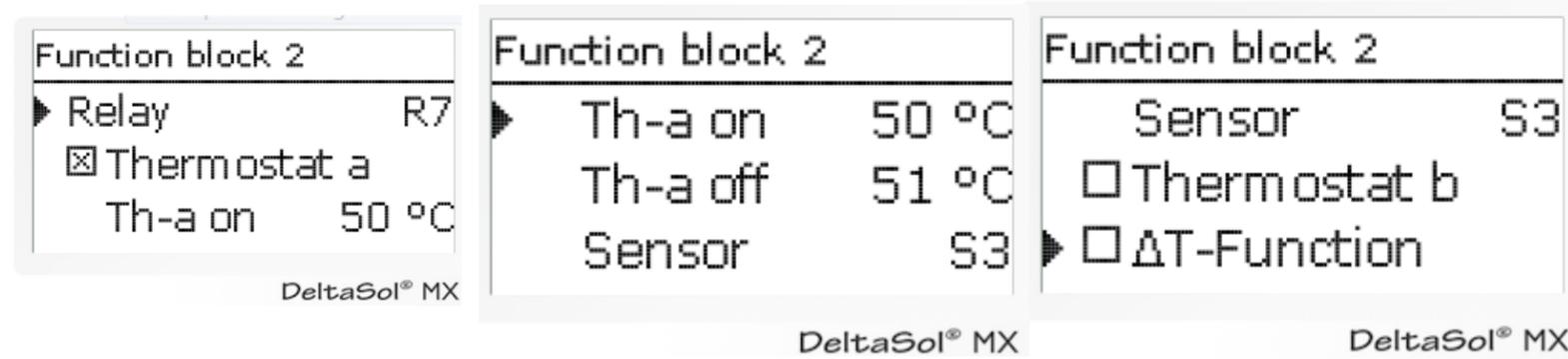
S7—Wood Boiler

S4—80 gal Tank

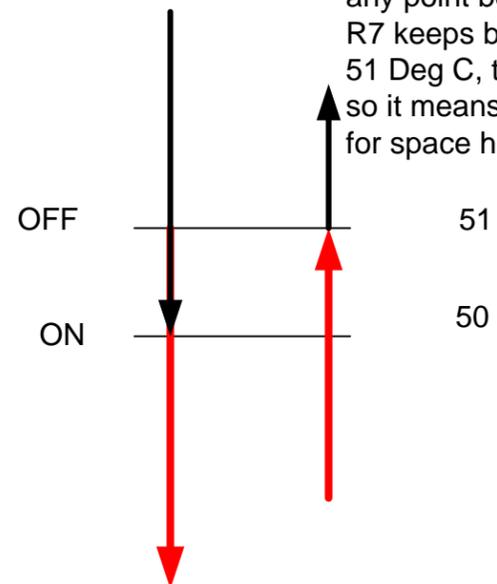
I don't know whether this section is still existing; I did not find this on the schematic in Nov, 2013 but I just add the programming in the MX, if you don't need it, you can delete it in MX controller.



Arrangement → opt.Function → Function Block 2



When Solar Tank Temperature is increased from any point below 50 Deg C, The three way valve R7 keeps being activated, until solar tank reaches 51 Deg C, then three way valves is deactivated, so it means Solar Tank is ready to supply energy for space heating



When solar tanks is decreased below 50 Deg C, R7 is activated. R7 is activated, the three way valve allows energy to be supplied from Electrical Boiler

This is the three-way motorized diverting valve. I supposed its NO/NC port is installed like above. If not, please let me know and we have to change the programming in the MX.

The sensor S3 is at the top of the solar storage tank.

Solar Storage Tank has the first priority to supply energy for space heating, temperature reference sensor is S3. For example, I assume, when solar storage tank is higher than 50 Deg C & there is room(s) is/are calling for heat, solar storage tank supplies energy to rooms, if solar storage tank is less than 50 Deg C, the three way valve will be activated and allows energy to be supplied from Instant Elec Boiler.

MX controller Logic:

When S3 is above 50 Deg C, it means solar tank is ready, as long as room(s) is/are calling for heat, the water will pass by the three-way valve from NO port to Common port;

When S3 is less than 50 Deg C, it means solar tank is Not Ready, 3-way valve (R7) will be activated; as long as room(s) is/are calling for heat, energy will supply from Elec Boiler, passing by the three way from from NC port to Common (at this moment, the three way valve is activated, NC port is Open).

SOLARNETIX INC.		SIZE	FSCM NO	DWG NO	REV
DRAWN	LinY				
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In-/Output → change Sensor S8 and S9 to be "Switch". The set up is below.

The End Switches from two Taco board will connect to S8 and S9

S8

Type Switch

Inverted

back

S9

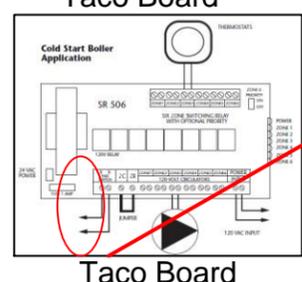
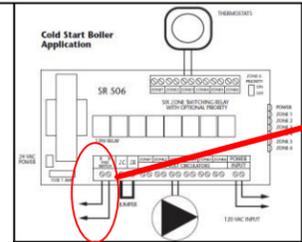
Type Switch

Inverted

back

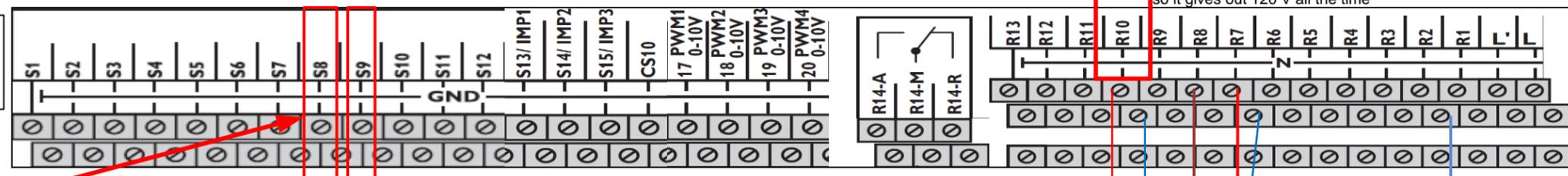
DeltaSol® MX

Two Taco Boards, one connects to S8 and one connects to S9



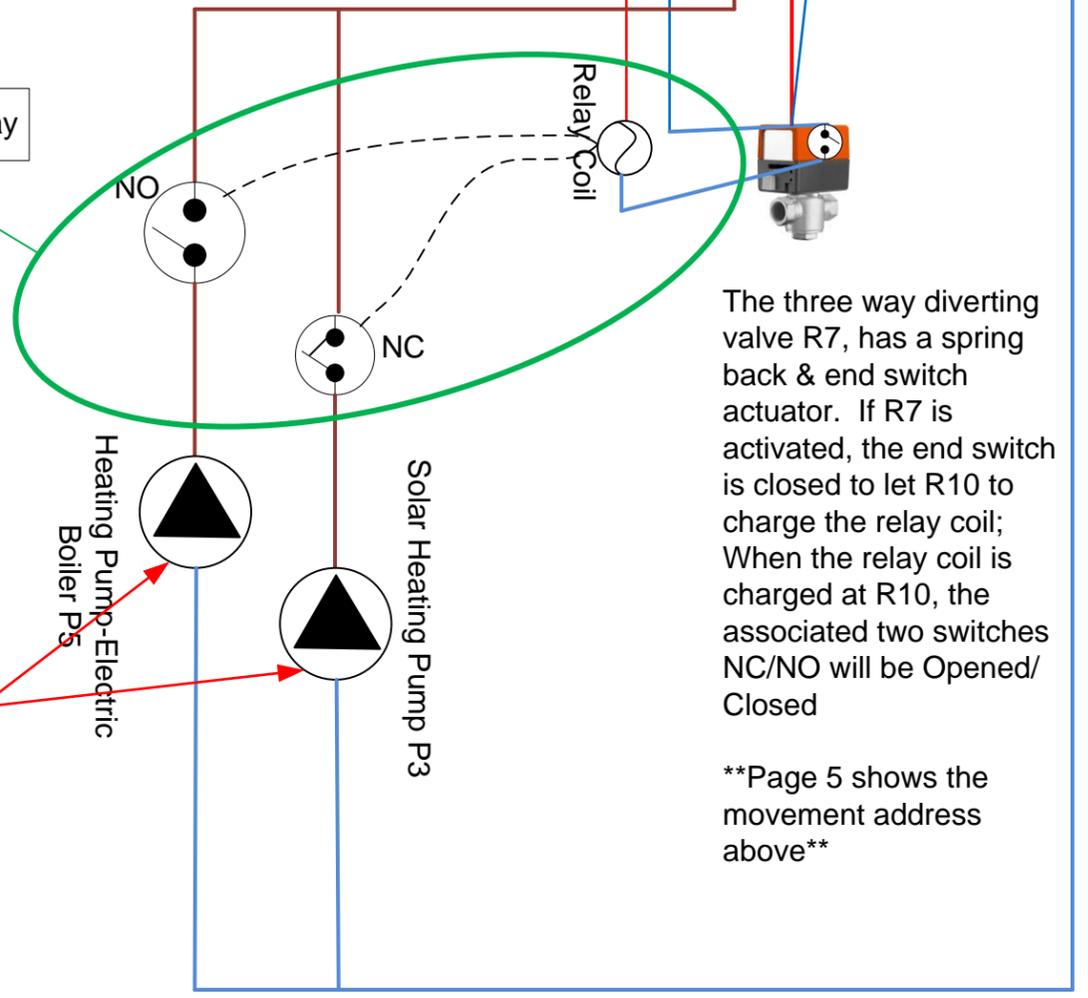
The setting makes R10 have 120V always

Manual mode	
Relay 8	Auto
Relay 9	Auto
Relay 10	Max



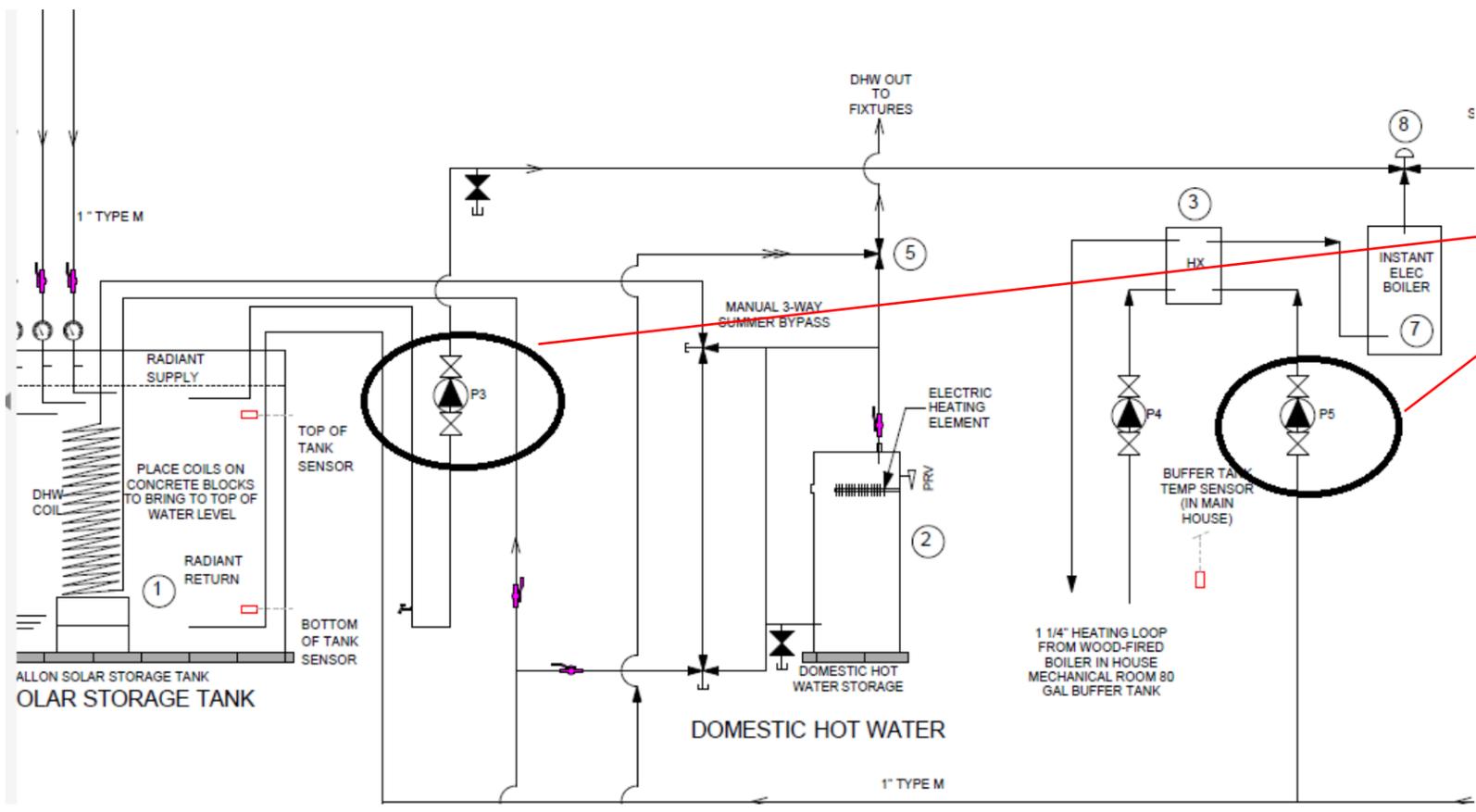
Relay R10 is Manually On all the time, so it gives out 120 V all the time

Need an extra relay



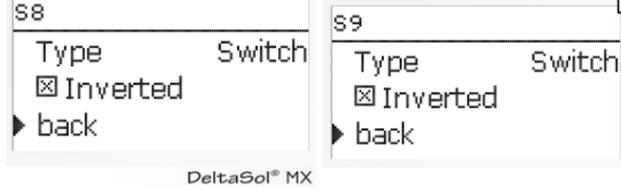
The three way diverting valve R7, has a spring back & end switch actuator. If R7 is activated, the end switch is closed to let R10 to charge the relay coil; When the relay coil is charged at R10, the associated two switches NC/NO will be Opened/ Closed

Page 5 shows the movement address above



The page shows : Solar Storage Tank is hot enough. The detailed explanation is on the separated sheet

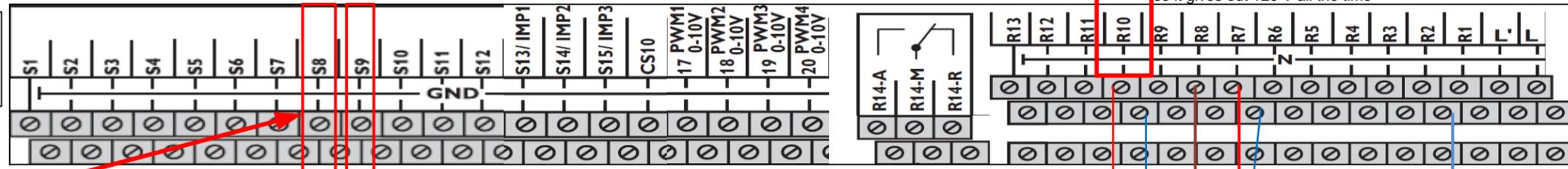
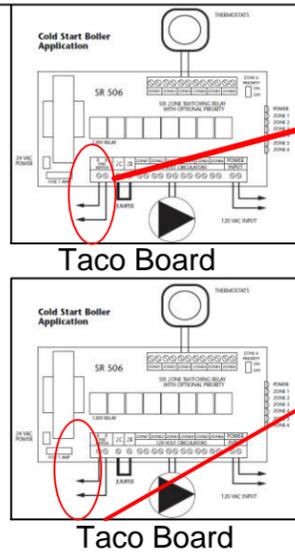
In-/Output → change Sensor S8 and S9 to be "Switch". The set up is below. The End Switches from two Taco board will connect to S8 and S9



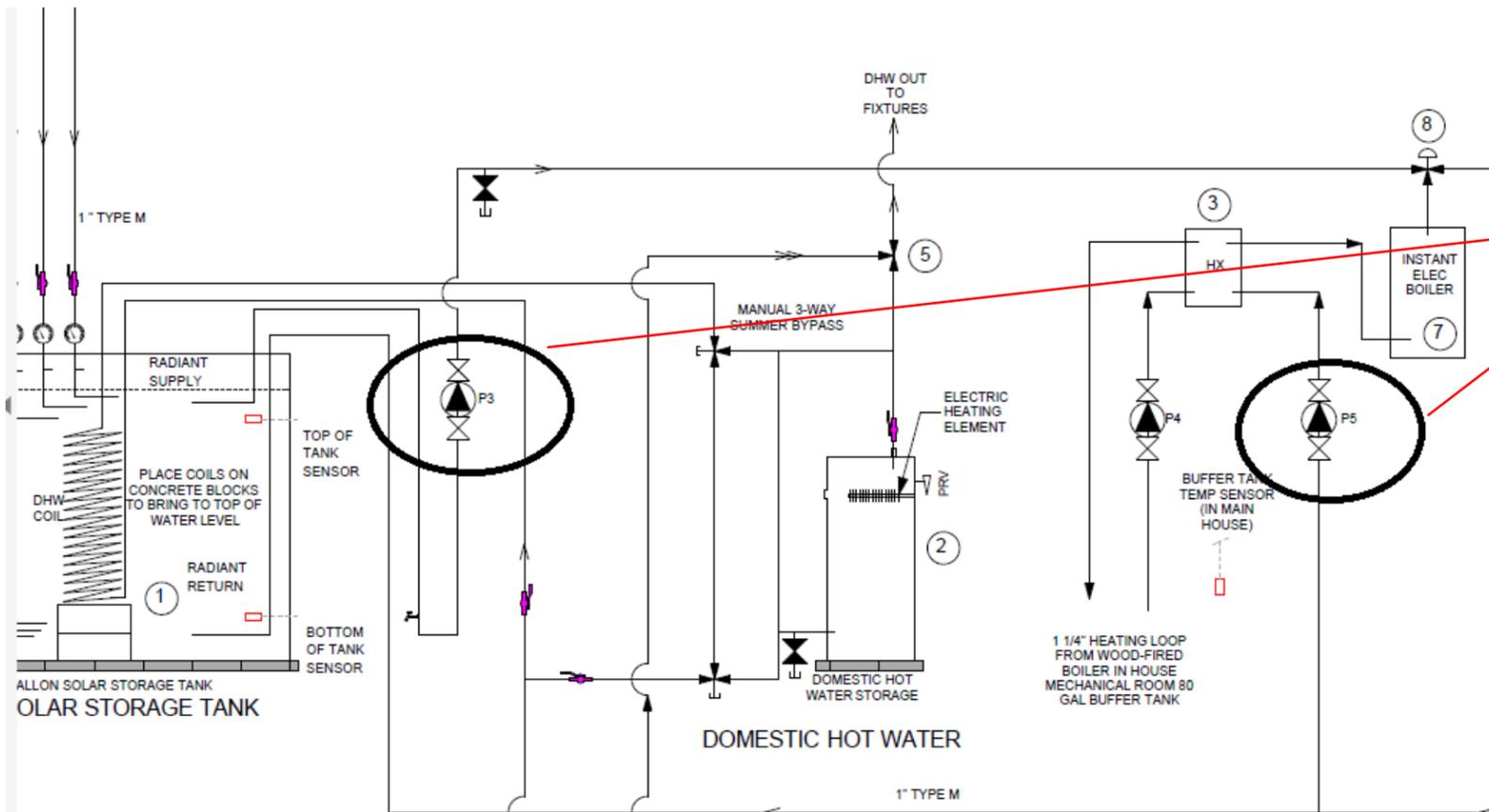
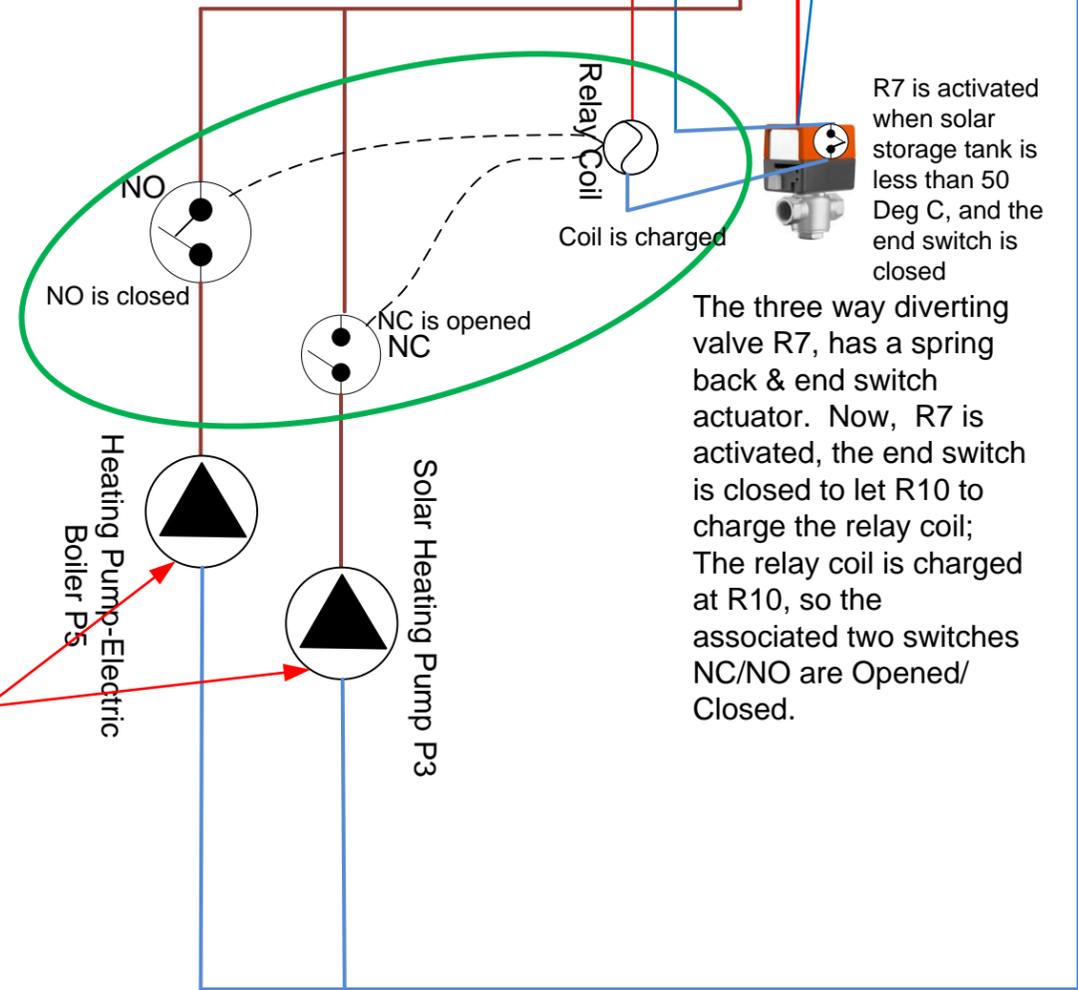
The setting makes R10 gives 120V always

Manual mode	
Relay 8	Auto
Relay 9	Auto
Relay 10	Max

Two Taco Boards, one connects to S8 and one connects to S9

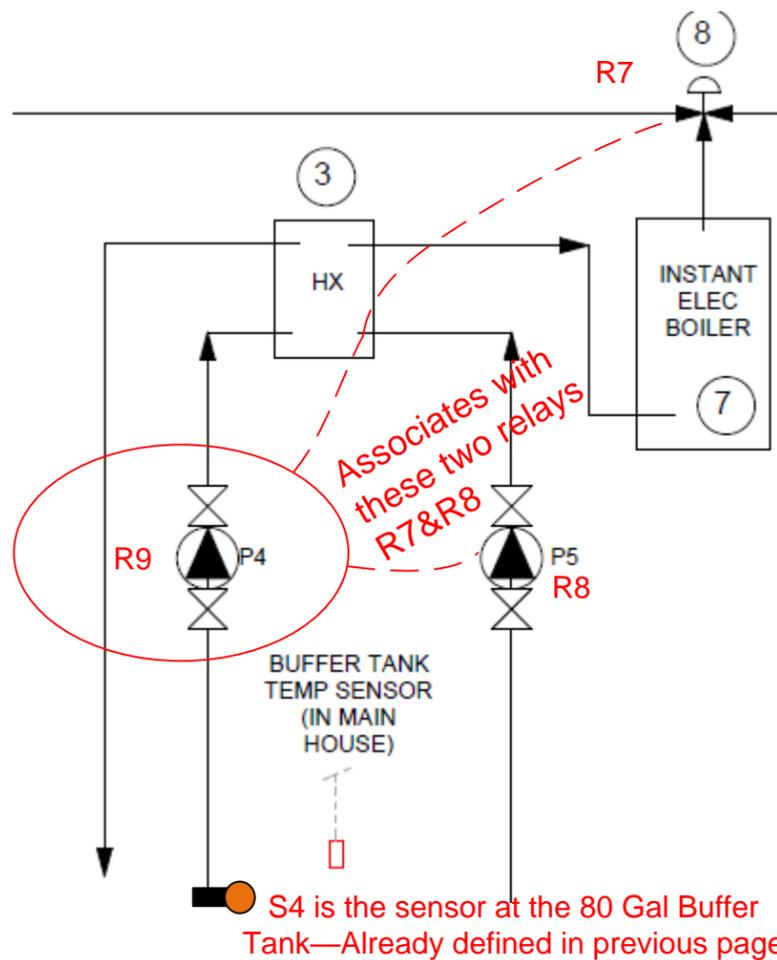


Relay R10 is Manually On all the time, so it gives out 120 V all the time



The detailed explanation is on the separated sheet

SOLARNETIX INC.		SIZE	FSCM NO	DWG NO	REV
DRAWN	LinY				
ISSUED	March 16, 2016	SCALE	1 : 1	SHEET	5 OF 7



The P4 (connects to R9 in the MX controller) runs when P5 is runs.

The logic is:
 In order to activate R9, the condition are:
 When radiant zone(s) call for heat &
 When Instant elec boiler gets chance to supply energy to radiant zone(s)
 → P5 is running (R8 is activated) and three way valve is activated (R7 is activated).

Arrangement—Function Block 3

Function block 3	
▶ Relay	R9
<input checked="" type="checkbox"/> Thermostat a	
Th-a on	50 °C
Th-a off	49 °C
DeltaSol® MX	

Function block 3	
<input checked="" type="checkbox"/> Thermostat a	
Th-a on	50 °C
Th-a off	49 °C
DeltaSol® MX	

Function block 3	
▶ Th-a on	50 °C
Th-a off	49 °C
Sensor	S4
DeltaSol® MX	

To make sure, 80Gal Buffer Tank is hot enough, e.g it is over 50 Deg C

Function block 3	
<input type="checkbox"/> Timer	
<input checked="" type="checkbox"/> Ref. relay	
Mode	AND

Function block 3	
Mode	AND
Relay	R7
Relay	R8

When R7 and R8 are both activated, R9 is activated. Which executes, when three way valve is activated, which allows water to flow from Electrical Boiler to radiant zones, and there are/is radiant zone(s) call for heat, P5 pump (R8 is activated) runs, the R9 is activated to let P4 run.

80 gal buffer Tank is over 50 Deg C?
 yes→
 Are both R7 and R8 activated?
 Yes→
 So, R9 is activated.
 Whichever condition is not met, R9 is not activated.

Due to Controller programming needed, I suggested to add a outdoor Temperature Sensor and connects it to MX S11, and one flow sensor, I suggested to place after the number 8: three-way diverging valve as Flow Sensor, connecting to MX S10.

	SIZE	FSCM NO	DWG NO	REV
	DRAWN	LinY		
ISSUED	March 16, 2016	SCALE	1 : 1	SHEET 6 OF 7

Due to Controller programming needed, I suggested to add a outdoor Temperature Sensor and connects it to MX S11, and one flow sensor, I suggested to place after the number 8: three-way diverging valve as Flow Sensor, connecting to MX S10.