

2. Inputs/Outputs

2.1. Analog Inputs

* Indicates Options Sensor

No.	Description	Conversion
0	Leaving Evaporator Water Temp	10-bit Standard Temp Conversion
1	Entering Evaporator Water Temp	10-bit Standard Temp Conversion
2	Compressor Suction Temp	10-bit Standard Temp Conversion
3	* 4-20mA ChW Reset Signal	8-bit 4-20 ma=0-100% Reset
4	* Demand Limit Reset Signal	8-bit 4-20 ma=0-100% Reset
5	* Refrigerant Leak Sensor	8-bit 4-20 ma=0-100PPM
6	* Evap Water Flow (Gpm)	8-bit 4-20 ma=0 - HiPressSpt
7	* Cond Water Flow (Gpm)	8-bit 4-20 ma =0 - HiPressSpt
8	Liquid Line Refrigerant Temp	10-bit Standard Temp Conversion
9	Entering Condenser Water Temp	10-bit Standard Temp Conversion
10	Leaving Condenser Water Temp	10-bit Standard Temp Conversion
11	Motor Current	8-bit 0-5V=0-125%RLA
12	Compressor Discharge Temp	10-bit Standard Temp Conversion
13	Oil Feed Temp	10-bit Standard Temp Conversion
14	Oil Sump Temp	10-bit Standard Temp Conversion
15	Oil Vent Pressure	10-bit Standard Low Press Conv
16	Evaporator Refrigerant Pressure	10-bit Standard Low Press Conv
17	Condenser Refrigerant Pressure	10-bit Standard High Press Conv
18	Oil Feed Gauge Pressure	10-bit Standard High Press Conv
19	Transducer Power Voltage Ratio	10-bit Used for calibration
20	* Outdoor Air Temp	10-bit Standard Temp Conversion
21	* Ent Heat Recovery Temp	10-bit Standard Temp Conversion
22	* Lvg Heat Recovery Temp	10-bit Standard Temp Conversion
23	(Spare Temperature)	

2.2. Digital Inputs

No.	Description	Lo Voltage	Hi Voltage
0	Front Panel "Stop/Auto" Switch	Stop	Auto
1	Compressor High Pressure Switch	Alarm	Normal
2	Motor High Temp (Guardistor)	Alarm	Normal
3	Vanes Closed	Closed	Open
4	Starter Transition	---	Delta
5	Starter Fault	Alarm	Normal
6	Evaporator Water Flow Switch	No Flow	Flow
7	Condenser Water Flow Switch	No Flow	Flow
8	Remote Start/Stop	Stop	Enable
9	Chiller/Tempifier	Tempifier	Chiller
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			

1. Unit Status hh:mm Mmm-dd-yy
 EvapOn Recirc 2Min Motor Amps=xxx%RLA
 Ent Evap=xxx.x°F Ent Cond=xxx.x°F
 Lvg Evap=xxx.x°F Lvg Cond=xxx.x°F

Menu

2. Water Temps/Flow hh:mm Mmm-dd-yy
 Ent Evap=xxx.x°F Ent Cond=xxx.x°F
 Lvg Evap=xxx.x°F Lvg Cond=xxx.x°F
 Delta T=xxx.x°F Delta T= xxx.x°F ↓

Menu

Evap Flow, Cond Flow, Ent Ht Recovery and Lvg Ht Recovery are all optional sensor values

2. Water Temps/Flow hh:mm Mmm-dd-yy
 Ent Ht Rcvy=xxx.x°F Evap Flow=xxxxxgpm ↑
 Lvg Ht Rcvy=xxx.x°F Cond Flow=xxxxxgpm
 Delta T= xxx.x°F

3. Refrig Temps/Press hh:mm Mmm-dd-yy
 Saturated Evap=xxx.xpsi / xxx.x°F
 Saturated Cond=xxx.xpsi / xxx.x°F
 Suct Line=xxx.x°F Liquid Line=xxx.x°F ↓

Menu

3. Refrig Temps/Press hh:mm Mmm-dd-yy
 Suct Suprht=xxx.x°F Subcool= xxx.x°F ↑
 Discharge= xxx.x°F Cond Apprch=xxx.x°F
 Dsch Suprht=xxx.x°F Evap Apprch=xxx.x°F ↓

Refrigerant Leak Detector is an optional sensor value

3. Refrig Temps/Press hh:mm Mmm-dd-yy
 Lift Press=xxx.xpsi ↑
 Leak Detect= xxxPpm

4. Motor Amps hh:mm Mmm-dd-yy
 %Rated Ld Amps=xxx%
 Amps=xxxx Amps
 Limit=None

Menu

5. Oil Temps/Press hh:mm Mmm-dd-yy
 Vent Press=xxx.xpsi Sump Temp=xxx.x°F
 Feed Press=xxx.xpsi Feed Temp=xxx.x°F
 Net Press= xxx.xpsi

Menu

6.Pump Status hh:mm Mmm-dd-yy
Evap Pumps (Status) Cond Pumps (Status)
Evap Lead=#1 Cond Lead=#1

Men

7.Tower Status hh:mm Mmm-dd-yy
Cooling Tower Stage=xx
Entering Condenser Water Temp=xxx.x°F
Cooling Tower Bypass Valve Pos=xxx%

↓

Mr

7.Tower Status hh:mm Mmm-dd-yy
Outdoor Air=xxx.x°F

↑

8.Operating Hours hh:mm Mmm-dd-yy
Compr Hours=xxxxx Starts=xxxxx
Last Start=xx:xx mmm-dd-yy
Last Stop= xx:xx mmm-dd-yy

↓

8.Operating Hours hh:mm Mmm-dd-yy
Evap Pmp #1=xxxxx Cond Pmp #1=xxxxx
Evap Pmp #2=xxxxx Cond Pmp #2=xxxxx

↑

9.Network Status hh:mm Mmm-dd-yy
Master Command=Auto Lead Unit=Master
Slave Command=Stop Status=Lead&Lag Off
Comm Status=Comm Ok

Man
9

10.Auto Logging hh:mm Mmm-dd-yy
Week Ending mmm/dd
Peak=xxx% Ent Evap=xxx.x°F
07/05 09:24 Lvg Evap=xxx.x°F ↓

Man
10

10.Auto Logging hh:mm Mmm-dd-yy
Ent Cond=xxx.x°F Condenser= xxx.x°F↑
Lvg Cond=xxx.x°F Evap Apprch=xxx.x°F
Evaporator= xxx.x°F Cond Apprch=xxx.x°F↓

10.Auto Logging hh:mm Mmm-dd-yy
Discharge= xxx.x°F SubCool= xxx.x°F↑
Dschr Suprht=xxx.x°F Sump Temp= xxx.x°F
Suct Suprht=xxx.x°F Temp= xxx.x°F ↓

10.Auto Logging hh:mm Mmm-dd-yy
Feed Press=xxx.xpsi ↑
Evap Flow=xxxxxgpm
Cond Flow=xxxxxgpm ↓

10.Auto Logging hh:mm Mmm-dd-yy
Wk Ending mmm/dd
Peak=xxx% Ent Evap=xxx.x°F
mmm/dd hh:mm Lvg Evap=xxx.x°F ↓
Etc.

7.2.2. Control Section

11.Control Mode hh:mm Mmm-dd-yy
Mode=Off Manual

12.Lvg Evap Spts hh:mm Mmm-dd-yy
Spt Source=Local Active Spt=xxx.x°F
Local Spt= xxx.x°F Startup DT= xxx.x°F
Network Spt=xxx.x°F Shutdown DT=xxx.x°F↓

12.Lvg Evap Spts hh:mm Mmm-dd-yy
ChW Reset=No Reset Max Lvg Spt= xx.x°F↑
Return Spt=xxx.x°F No Reset At xx.x°F
Reset Signal=xx.xmA Max Reset At xx.x°F↓

12.Lvg Evap Spts hh:mm Mmm-dd-yy
Pulldn Rate=xx.x°/M ↑
Amb Lockout=xxx.x°F

17. Timers hh:mm Mmm-dd-yy
Start-Start=xxMin
Evap Recirc=xxSec
Stop-Start =xxMin

18. Pump Spts hh:mm Mmm-dd-yy
Evap=Pmp1 Only
Cond=Pmp1 Only

19. Cooling Tower hh:mm Mmm-dd-yy
Tower Control=Yes Tower Stages=xx ↑
StageUp Time=xxMin StageDn Time=xxMin
Stage Differential=xx.x°F

19. Cooling Tower hh:mm Mmm-dd-yy
Stage #1 On=xxx.x°F Stage #4 On=xxx.x°F
Stage #2 On=xxx.x°F
Stage #3 On=xxx.x°F ↓

20. Cooling Twr Valve hh:mm Mmm-dd-yy
Valve Control=Stage Setpoint
Valve Spt=xxx.x°F Valve Db = xx.x°F
Min Position=xxx% Max Position=xxx% ↓

20. Cooling Twr Valve hh:mm Mmm-dd-yy
Valve Type=N/C To Tower ↑
Mod Limit=xx.x°F Sample Time=xxSec
Max Change=xx.x°F Proj Ahead=xx.xMin ↓

20. Cooling Twr Valve hh:mm Mmm-dd-yy
Min Start Pos=xxx% Min Pos At xx.x°F ↑
Max Start Pos=xxx% Max Pos At xx.x°F

21. Oil Setpoints hh:mm Mmm-dd-yy
Feed Spt=xxx.x°F
No Start Diff=xx.x°F
Htr On Diff =xx.x°F

22.Alarm Setpoints hh:mm Mmm-dd-yy
Low Evap Press-Shutdown...xxx.xpsi
Low Evap Press-Unload....xxx.xpsi
Low Evap Press-Hold.....xxx.xpsi ↓

22.Alarm Setpoints hh:mm Mmm-dd-yy
High Discharge Temp-Shutdown...xxx.x°F ↑
High Discharge Temp-Load.....xxx.x°F
High Condenser Press-Shutdown..xxx.xpsi ↓

22.Alarm Setpoints hh:mm Mmm-dd-yy
Motor Current Threshold...xxx% ↑
High Oil Feed Temp.....xxx.x°F
Low Oil Delta Temp.....xxx.x°F ↓

22.Alarm Setpoints hh:mm Mmm-dd-yy
Low Net Oil Pressure.....xxx.xpsi ↑
Low Disch Superht At Min RLA..xxx.x°F
High Disch Superht At Min RLA.xxx.x°F ↓

22.Alarm Setpoints hh:mm Mmm-dd-yy
Low Disch Superht At Max RLA...xxx.x°F ↑
High Disch Superht At Max RLA...xxx.x°F
Surge-High Suct Superht-Starting.xx.x°F ↓

22.Alarm Setpoints hh:mm Mmm-dd-yy
Surge-High Suct Superht-Running..xx.x°F ↑
Evap Water Freeze.....xx.x°F
Cond Water Freeze.....xx.x°F

23.Lead/Lag Spts hh:mm Mmm-dd-yy
Slave Address=01.00 Start-up=NoUnload
LL Mode=Auto Enable Lag=95%
LL SwOver=Sun 00:00 Disable Lag=40% ↓

23.Lead/Lag Spts hh:mm Mmm-dd-yy
Delay Timer= 5Min ↑
Lag-Standby=Yes

2

2

24.Service hh:mm Mmm-dd-yy
Manual Load=Off Hot Gas Bypass=xxx%
Setpoint = 40% Post Lube=xxSec
Timers = Normal Shutdn Vanes=xxSec ↓

24.Service hh:mm Mmm-dd-yy
Auto-Log Window:Sun xx:xx - Sat xx:xx↑
Evap Offset=xx.xpsi Oil Feed=xx.xpsi
Cond Offset=xx.xpsi Oil Vent=xx.xpsi

25.Service Testing hh:mm Mmm-dd-yy
Output #0=Off Output #3=Off
Output #1=Off Output #4=Off
Output #2=Off Output #5=Off ↓

25.Service Testing hh:mm Mmm-dd-yy
Output #6=Off Output #9=Off ↑
Output #7=Off Output #10=Off
Output #8=Off Output #11=Off ↓

25.Service Testing hh:mm Mmm-dd-yy
Output #12=Off Output #15=Off ↑
Output #13=Off Output #16=Off
Output #14=Off Output #17=Off ↓

25.Service Testing hh:mm Mmm-dd-yy
Output #18=Off Output #21=Off ↑
Output #19=Off Output #22=Off
Output #20=Off Output #23=Off ↓

25.Service Testing hh:mm Mmm-dd-yy
DI #0-7=10011000 ↑
DI #8-15=00111100
AI #19=x.xxVdc

26.Unit Setup hh:mm Mmm-dd-yy
Config=L2-TTY-Slave IDENT=12345678
Port A Baud=9600 Chiller Only

Unit Type=PEH063 Low Temperature=Yes↓

26.Unit Setup hh:mm Mmm-dd-yy
Master/Slave=Master Evap gpm Sensor=Yes↑
OAT Present=Yes Evap Full gpm=xxxx
Ambient Lockout=No Cond gpm Sensor=yes↓

26.Unit Setup hh:mm Mmm-dd-yy
Cond Full gpm=xxxx Oil Cooler=Valve ↑
Refrig Leak Sen=No Full Load Amps=xxxx
Ht Recovery Sen=No Alarm-Normal=Open ↓

26.Unit Setup hh:mm Mmm-dd-yy
Comm Loss=Slow Faults=Fast ↑
Warnings=Slow
Problems=Slow

7.2.3. Alarm Section

27.Current Alarm hh:mm Mmm-dd-yy
(Alarm Message) At hh:mm On mmm-dd
Running Ok Ent Evap=xxx.x°F
Motor Current=xxx% Lvg Evap=xxx.x°F ↓

27.Current Alarm hh:mm Mmm-dd-yy
Ent Cond=xxx.x°F Cond= xxx.xpsi↑
Lvg Cond=xxx.x°F Evap Aprch=xxx.x°F
Evap= xxx.x°F Cond Aprch=xxx.x°F ↓

27.Current Alarm hh:mm Mmm-dd-yy
Discharge= xxx.x°F SubCool=xxx.x°F ↑
Dschr Suprht=xxx.x°F Sump Temp=xxx.x°F
Suct Suprht=xxx.x°F Feed Temp=xxx.x°F ↓

27.Current Alarm hh:mm Mmm-dd-yy
Feed Press=xxx.xpsi ↑
Evap Flow= xxxgpm
Cond Flow= xxxgpm

7.2.4. Help Section

Help Index- Press: <Clear> to exit Help
<Next Menu> Once for help Finding Info.
<Next Menu> Twice for Changing Values
<Next Menu> Three times for Menu Listing

<Next Menu>

Finding Info: <Clear> to exit Help
Information is organized as a series of
Menus and Items. Menus represent cate-
gories of information. Press <Next Item> ↓

<Next Item>

Finding Info: <Clear> to exit Help
Items are screens of Menu information. ↑
This symbol: '↓' in the right margin of
the display indicates Press <Next Item> ↓

<Next Item>

Finding Info: <Clear> to exit Help
that more items are available. To see ↑
the next Item screen press <Next Item>.
This symbol: '↑' in the right margin of ↓

<Next Item>

Finding Info: <Clear> to exit Help
the display indicates that there is a ↑
previous Item screen. Press <Prev Item>
to access this screen. ↓

<Next Item>

Finding Info: <Clear> to exit Help
Menus are numbered 1 to 30. To see the ↑
next Menu screen press <Next Menu>. To

access a previous Menu screen press ↓

<Next Item>

Finding Info: <Clear> to exit Help
<Prev Menu>. The 'CATEGORY' keys can ↑
be used to quickly access the first
menus in the Status, Control, or Alarm ↓

<Next Item>

Finding Info: <Clear> to exit Help
sections. The SWITCH key is used to ↑
toggle between the Status and the re-
lated Control setpoints sections.

<Next Menu>

Changing Values: <Clear> to exit Help
To change a displayed value, press the
<Incr>, <Decr> or <Enter> keys. Re-
peated pressing of the <Enter>key will ↓

<Next Item>

Changing Values: <Clear> to exit Help
select the next changeable value. The ↑
arrow keys found under the MENU-ITEM
section can be used to quickly move ↓

<Next Item>

Changing Values: <Clear> to exit Help
around the screen. To exit the <Change↑
Values> mode, press the <Clear> key.

<Next Menu>

Menu Listing: <Clear> to exit Help
1.Unit Status 4.Motor Amps

2. Water Temps/Flow	5. Oil Temps/Press	↓
3. Refrig Temp/Press	6. Pump Status	

<Next Item>

Menu Listing:	<Clear> to exit Help	
7. Tower Status	10. Auto Logging	↑
8. Operating Hours	11. Control Mode	
9. Network Status	12. Lvg Evap Spts	↓

etc.

7.3. Detailed Information

7.3.1. Status Information

Menu/Item	Range/Limits	Switch Menu
1. Unit Status		10. Control Mode

Series 200 MicroTech PF Units or Dual PE Units with Lead Lag Configuration

The following procedure provides the necessary information to network two series 200 MicroTech controls in the lead/lag configuration.

1. Select which Microtech will be configured as the master and perform steps 2 through 7.
 2. The RS-485 plug must be in port A. This is the plug with wires in plug numbers 5,3,4.
 3. Set Hex address hi=0, lo=1.
 4. Menu 26 [Unit Setup]
 - a. Screen 1 Line 2 [Config=L2-Master-Slave]
 - b. Screen 2 Line 1 [Master/Slave=Master]
 5. Menu 23 [Lead Lag Setup]
 - a. Screen 1 Line 1 [Slave Address=01.01]
 - b. Screen 1 Line 2 [Start Up=Unload] You have to select unload if the network is for a Dual Chiller.
 6. Menu 11 [Control Mode]
 - a. Auto:Local
- Menu 12 [Leaving Evap Setpoints]
- a. SptSource=Local
8. Go to Slave MicroTech and perform steps 9 through 12.
 9. Set Hex address hi=0, lo=1.
 10. Menu 26 [Unit Setup]
 - a. Screen 1 Line 2 [Config=L3-TTY-Slave]
 - b. Screen 2 Line 1 [Master/Slave=Slave]
 11. Menu 11 [Control Mode]
 - a. Auto:Network

} RS485 Plug

Continued on next page

L1 LLLB, CSC, CPL, OPMI Control
↓
L2 MASTER
↓
L3 SLAVE

Series 200 MicroTech PF Units or Dual PE Units with Lead Lag Configuration

Continued

12. Menu 12 [Leaving Evap Setpoints]

a. SptSource=Network

13. Power down both Master and Slave MicroTechs for all settings to be saved. This is only necessary because of the level configuration changes.

14. Go to Menu 9 [Network Status] and check Screen 1 line 3 comm status should be OK.

15. All other settings must be the same on the Master and Slave MicroTechs. If the network communications should fail, each MicroTech panel will default to it's own setpoints.

MICROTECH SERIES 200

CONTROLS ALL CENTRIFUGAL OPERATING FUNCTIONS

STANDARD OUTPUTS

1. EVAPORATOR PUMP (S)
2. CONDENSER PUMP (S)
3. COOLING TOWER FAN STAGING (4)
4. OPM INTERFACING

STANDARD INPUTS

1. OUTSIDE AIR TEMPERATURE
2. REMOTE START / STOP
3. ICE MODE SELECTION
4. CONDENSER WATER FLOW METER
5. EVAPORATOR WATER FLOW METER
6. REFRIGERANT LEAK DETECTOR
7. DEMAND (MOTOR CURRENT) LIMIT
8. WATER TEMPERATURE RESET
9. HEAT RECOVERY SENSORS (2)

ALL THE ABOVE REQUIRE ADDITIONAL
SENSORS OR CONTROL INPUTS.

MICROTECH SERIES 200

TYPES OF RESET

1. RETURN WATER
2. 4-20mA
3. OAT
4. ICE

COOLING TOWER CONDTRON

1. CONTROL UP TO 4 FAN STAGES
2. CONTROL COOLING TOWER BY PASS VALVE [OR] VFD CONDENSER PUMP [OR] VFD COOLING TOWER FAN

MICROTECH SERIES 200

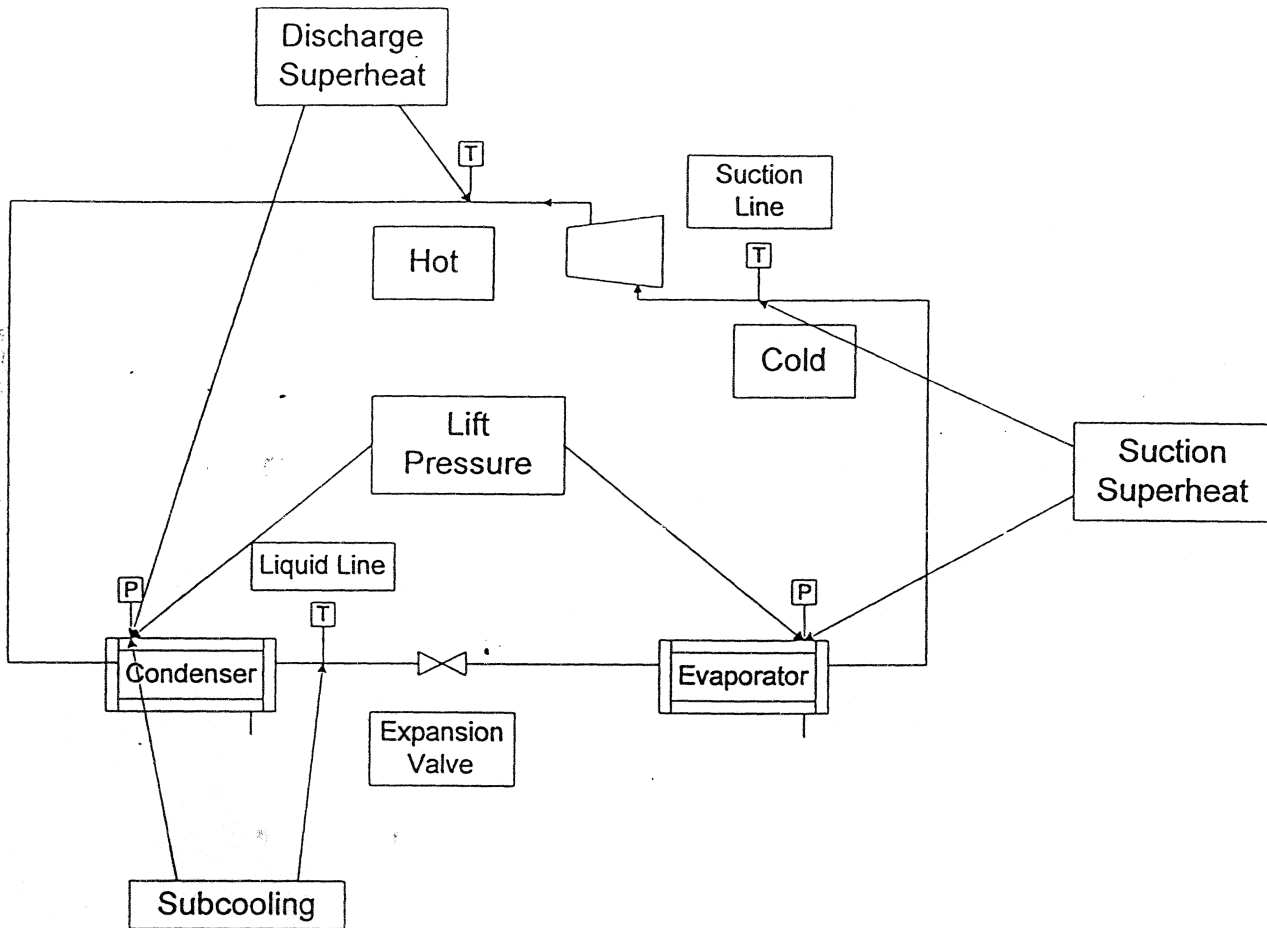
OPTIONAL OUTPUTS

1. COOLING TOWER BYPASS CONTROL
OR
COOLING TOWER VFD PUMP CONTROL
OR
COOLING TOWER VFD FAN CONTROL
 2. MOTOR CURRENT OUTPUT FOR REMOTE
INDICATION
- THE ABOVE REQUIRE THE AOX-4 BOARD
OPTION

OTHER FEATURES

1. MONITOR SOFTWARE
2. RS-232 / 485 FOR DIRECT PC CONNECTION
3. MODEM CONNECTION
4. NETWORK COMMUNICATIONS FOR LEAD
LAG / LOAD BALANCE

2.5. Calculated Temperatures and Pressures



Description	Derivation
Evaporator Temperature	Pressure to Temperature tables
Condenser Temperature	Pressure to Temperature tables
Net Oil Pressure	Oil Gauge Press - Oil Vent Press
Lift Pressure	Cond Pressure - Evap Pressure
Suction Superheat	Suction Line Temp - Evap Temp
Discharge Superheat	Discharge Temp - Cond Temp
Liquid Subcool	Cond Temp - Liquid Line Temp
Condenser Approach	Cond Temp - Lvg Cond Water Temp
Evaporator Approach	Lvg Evap Water Temp - Evap Temp
Evaporator Water Delta Temp	Ent Evap Temp - Lvg Evap Temp
Condenser Water Delta Temp	Lvg Cond Temp - Ent Cond Temp