

Baseline Chiller -Heat Pump-Rack Application

Quick Start Guide - OEM











1. Document History

| Document Revision History | | | | | | | | | |
|---------------------------|--------------------|-------------|-----------------------|--------------------------------------|--|--|--|--|--|
| Version | Date yyyy/mm/dd | Authors | Modifications Details | Sw Release | | | | | |
| 1.0 | 2021/02/23 | T. Tremonti | Document Creation | Application 2.7.15 HMI Touch 1.11 | | | | | |
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2. Introduction

The purpose of this document is to provide to the end user the minimum competencies to use the Rack/Chiller application.

The User Manual "Baseline_CH-HP-CR_UserManual_1.9_EN"shall be used and can't be replaced by this document.

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All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

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Failure to observe this information can result in injury or equipment damage.



3. Part numbers

| P/N | Description | Note |
|---------------|-----------------------------------|-------------------------|
| AVD126006I500 | AVD12600/C/L/U/I | Main controller |
| AVP100W0P0500 | AVP1000 /P WHITE | Remote display Option 1 |
| EVK100000B00 | FREE EVK1000 | Remote display Option 2 |
| HMISTW6200 | 4"W touch panel display, | Remote display Option 3 |
| | 1Ethernet, USB host&device, | |
| | 24VDC | |
| HMISTW6400 | 7"W touch panel display, | Remote display Option 4 |
| | 2Ethernet, USB host&device, | |
| | 24VDC | |
| HMISTW6500 | 10"W touch panel display, | Remote display Option 5 |
| | 2Ethernet, USB host&device, | |
| | 24VDC | |
| HMISTW6600 | 12"W touch panel display, | Remote display Option 6 |
| | 2Ethernet, USB host&device, | |
| | 24VDC | |
| HMISTW6700 | 15"W touch panel display, | Remote display Option 7 |
| | 2Ethernet, USB host&device, | |
| | 24VDC | |
| EVE1020000500 | CAN IO expansion | |
| XVD420H485030 | Electronic Expansion Valve driver | |
| | | |



4. User interface option

The user can control the application using the follow Human Machine Interface (HMI)

Touch color HMI

| Set | 0.0°C | Set | 0.0°C |
|-----|---------|-------------|--------|
| St | 0.0°C | Ct | 0.0°C |
| LP | 0.00Bar | HP | 0.00ba |
| SH | 0.0°C | SC | 0.0K |
| 📥 o | | 22 o | |

PLC HMI



Web Server HMI PC

Crost 1

The Touch color HMI is a user interface dedicated for the end user operation On-Off, setpoints, alarm monitoring and reset are easily available in the landing page. A system overview is available in the landing page and detailed information are available base on the active user password.

The OnBoard PLC HMI is a graphical user interface dedicated for the service and the basic operation.

It can be used also for the commissioning and allow the user to Save the Configuration end export in a USB memory.

The data logger file in CSV format can also be exported via USB in a dedicated form. On-Off, setpoints, alarm monitoring and reset are easily available in the landing page. A system overview is available in the landing page and detailed information and all parameter are available base on the active user password.

The Web server is a complete responsive Web interface that can be used either for basic operation or for service / troubleshooting. It has been developed to minimize the commissioning operation and reduce the commissioning time. The web page is organized to help the user to easily find the required parameters. Configuration parameters can be exported in a USB memory in a dedicated form. The data logger file in CSV format can also be downloaded via Web server. A real time chart is available to trace the behavior of the process variable. On-Off, setpoints, alarm monitoring and reset are easily available in the landing page. A system overview is available in the landing page.

Touch Color HMI up to 15" with Harmony PLC ST6W



The Web server is a complete with the web HMI of the Harmony series. https://www.se.com/ww/en/product-range/65770-harmony-st6/13428910798-web-hmi/

From 4" to 15 "



4.1. **Program a PLC with the default settings**

To program an empty PLC AVD 12600 with the default setting copy the file present in folder USB_CH-HP-CR_42IO_APP-PAR of the zip file USB_CH_HP_CR_2.X.yy.zip in an empty USB memory and plug in an unpowered PLC.

Power up the controller and wait until the PLC complete the programming operation.

4.2. **Program the PLC webserver**

To add this feature copy the files present in the folder USB_CH-HP-CR_WEB of the zip file USB_CH_HP_CR_2.X.yy.zip in an empty microSD card and plug the micro SD card and then plug the micrSD card in the controller.

4.3. Configure Web server access

To use the web server for remote monitoring and data logging the Ethernet port shall be configured. A direct connection PC to PLC will allow the user to get access to the webserver application. The default parameter for the Ether port are

| | PLC | PC/Laptop | | | | | |
|------------------|---------------|---------------|--|--|--|--|--|
| IP Configuration | 10.0.0.100 | 10.0.099 | | | | | |
| Net Mask | 255.255.255.0 | 255.255.255.0 | | | | | |
| Default Gateway | 10.0.0.1 | 10.0.0.1 | | | | | |

The default credential to login to the web server page are:

User "oper1"

Password "1"

The IP configuration can be modified in the local HMI. From Home press 3 second OK to enter in the password Form and enter the Level 1 Password then follow the next navigation option.



The IP configuration can be modified in the Touch HMI. From the Home the kay button and enter then L3 password Form and enter the Level 1 Password then follow the next navigation option.

| | \bigcirc | | | | 4 | 3 | | | | | | | |
|-----------|------------|-------|---------|-----|---------------------------------------|-------|--------------------|-----|-------|-----|---|---|-----------------|
| \langle | U 🖉 🖇 |) | k 🕅 | | U 🔑 8 |) | 8 🖄 🔺 | S S | ervio | ces | | × | Com. Settings 0 |
| Set | 0.0°C | € 1 | | Set | 0.0°C | Ð | | | | | 1 | | PLC RS485-1 |
| Set | 0.0°C | Set | 0.0°C | Set | 0.0°C | Set | 0.0°C | | ۲ | 2 | | | Address |
| St | 0.0°C | Ct | 0.0°C | St | 0.0°C | Ct | 0.0°C | | | | | | |
| LP | 0.00Bar | HP | 0.00bar | LP | 0.00Bar | HP | 0.00bar | | | iV | 1 | | 0 |
| SH | 0.0°C | sc | 0.0K | SH | 0.0°C | sc | 0.0K | 1-0 | Log | 생 | | | |
| o | (| :0 🤰 | 0 | o 🧔 | · · · · · · · · · · · · · · · · · · · | :0 | 6 0 | | | | | | |



4.4. Configure Unit feature

Access to the PLC webserver by entering the default IP address of the PLC 10.0.0.100 and access with the admin right

- User: admin
- Password: admin

Select wizard page and check the requested configuration.

- 1. Select Wizard page.
- 2. Select compressor Rack unit or Chiller/HP unit.
- 3. Select refrigerant type.
- 4. Specify the number of circuits.
- 5. Specify the compressor model.

| Synoptic | | All 1-General 2-Compressor | rs 3-Inverter 4-Mode 5-Fai | ns 6-Cond. Rack-Chiller 7-Eva | ap.HP Mode Search |
|-------------------|----------|------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|
| Circuit 1 | ~ | | | | |
| Circuit 2 | ~ | lo allocation preset 2.070 | Load IO Allocation Preset | Unit mode (0:chiller, 1: heat 14.754 pump, 2: chiller-heat pump) | Refrigerant type 1.002 |
| Setpoints | ~ | USER APPPPLICATION 1~ | FALSE TRUE | COMP-RACK 🙎 🗸 | R507A 3 |
| Alarms | ~ | Number of circuits 1.005 | Regulation probe (0:outlet 14.756 water temp, 1:inlet water | Unit selection of the relative 1.004 pressure t: psi f:bar | Unit selection of the relative 1.003 temperatures T: ° F. F: ° C |
| Wizard 1 | ^ | 1 4 | SUCTION TEMPERATURE | 0=BAR V | 0=°C ~ |
| Compressor | | | | | |
| Fans | | Circuit 1 compressor 1 1.027 | Circuit 1 compressor 2 1.028 | Circuit 1 compressor 3 1.029 | Circuit 1 compressor 4 1.030 |
| Rtc | | 6=HS85 SCREW STEP 50- | | | |
| Alarms settings | | | | | |
| Generic Regulator | | Circuit 1 comproscor 5 1 030 | Circuit 1 comproses f 1 030 | Circuit 2 comproport 1 1 033 | Circuit 2 comprosor 2 1 034 |
| Inverter | | Circuit i compressor 5 | Circuit i compressor 6 | | Circuit 2 compressor 2 1.034 |
| Others | | | | 100 | |

The synoptic page will be automatically update according with your configuration



| Synoptic | | Circuit 01 | Settings |
|---------------|---|----------------------------------------------------------------------------|------------------------|
| Circuit 1 | ~ | Source exchanger | Controls |
| Circuit 2 | ~ | Fan Set T. 37.2 °C Fan Set P. 16.00 bar Fan Temp 37.2 °C Defrost WAIT TIME | 0=COOL 1=HEAT |
| Setpoints | ~ | | Setpoints |
| Alarms | ~ | Fan 01 0.0% | Regulation Set 10.0 °C |
| Parameters | ~ | | Fan Temp.Set 37.2 °C |
| Logger | ~ | | |
| Status | ~ | Compressors | Probes |
| IO allocation | ~ | High Pressure 6.04 bar | Reg. Probe 9.7 °C |
| IO mapping | | | |
| IO value | ~ | \land | |
| P-h chart | | | |
| Info | | | |
| | | 0.0% 0.0% 0.0% | |
| | | Low Pressure 7.38 bar SH 18.1 K | |

5.1. Configure IO Allocation

Access to the PLC webserver by entering the default IP address of the PLC 10.0.0.100

- 1. Select the Ax allocation page and specify the IO position for each Input and Output
- 2. Select the device (PLC or EXPANSION)
- 3. Select Allocation number (AI1, AI2 ecc)
- 4. Select the correct Ax type.

| Synoptic | | |
|-----------------|---|--------------------------|
| Circuit 1 | ~ | |
| Circuit 2 | ~ | Outlet water temp |
| Setpoints | ~ | CONTROLLER V 1=AI1 V |
| Alarms | ~ | Type 4 Calibration |
| Parameters | ~ | 0=NTC(NK103) ∨ 0 |
| Logger | ~ | |
| Status | ~ | Device Number |
| IO allocation | × | CONTROLLER ✓ 10=AI10 ✓ |
| Ai allocation 1 | | Type Max Min Calibration |
| Di allocation | | 3=4-20MA ∨ 300 0 0 |
| AO Allocation | | |

- 1. Check the correct PLC model
- 2. Check the correct Expansion Model if any.
- 3. Apply the change and wait untile the IO Map has been exported in the CSV file.
- 4. Check allocation error.



| Synoptic | | All Command Status Used IO D | evice Type | | Search |
|------------------------------------------------------------------|---|------------------------------|-----------------------------------------|----------------------------------|----------------------------|
| Circuit 1 | ~ | | | | |
| Circuit 2 | ~ | Update io configuration 3 | Export io map to csv file | Reload io configuration | Io allocation alarm |
| Setpoints | ~ | FALSE TRUE | FALSE TRUE | FALSE TRUE | FALSE TRUE |
| Alarms | ~ | Device id allert | Alert Al | Alert AO | Alert DI |
| Parameters | ~ | 0 | 0 | 0 | 0 |
| Logger | ~ | Alert DO | Number of ai configured | Number of ao configured | Number of di configured |
| Status | ~ | 0 | 13 | 1 | 10 |
| IO allocation Ai allocation Di allocation AO Allocation | × | Number of do configured | Main controller 1 4=AVD12600-42-10 ∽ | Expansion 1 2 EVE6000-10 10 ~ | Expansion 2 0=NOTUSED V |
| Do allocation AO Setup | | Expansion 3 0=NOTUSED ✓ | Expansion 4 0=NOTUSED ✓ | | |

The IO mapping overview (PLC and expansion) will be available in a dedicated page.

| Synoptic | | CONTROLLER | DI | AI | DO | AO |
|---------------|---|------------|----------------------|------------------|-------------------|--------------|
| Olares in 1 | | 1 | xAlarmThBlockPump1 | iOutletWaterTemp | xComp1Cir1 | iFanCir1 |
| Circuit 1 | ~ | 2 | xPumpFlowSW | iInletWaterTemp | xPwComp1Cir1 | n.u. |
| Circuit 2 | ~ | 3 | n.u. | iHighPressCir1 | xY1Comp1Cir1 | xY4Comp1Cir1 |
| Setpoints | ~ | 4 | xGeneralComp1Cir1 | iLowPressCir1 | xY2Comp1Cir1 | n.u. |
| | | 5 | xAlarmFan1Cir1 | n.u. | xY3Comp1Cir1 | n.u. |
| Alarms 🗸 | | б | x0ilPressSWComp1Cir1 | iDischTempCir1 | xPump1 | n.u. |
| Parameters | ~ | 7 | xHPSWCir1 | iCondOutTempCir2 | xLiqInjComp1Cir1 | |
| Loggor | | 8 | xLPSWCir1 | n.u. | xGeneralAlarm | |
| Logger | × | 9 | xCommonOilAlarmCir1 | iSuctionTempCir1 | xDOGenRegTempReg1 | |
| Status | ~ | 10 | xOilLevelComp1Cir1 | iCondOutTempCir1 | xFan1Cir1 | |
| IO allocation | ~ | 11 | xOilThalComp1Cir1 | n.u. | xSolenoidCir1 | |
| | | 12 | n.u. | n.u. | n.u. | |
| IO mapping | | • | | | | |



5.2. Configuration setting

The unit configuration setting can be exported in an empty USB memory using a dedicated menu.

Plug the empty USB memory in the controller.

- 1- Select others from the parameter menu
- 2- Select configuration
- 3- Select export configuration to USB
- 4- Select confirm and wait until the configuration status will be set to completed.

