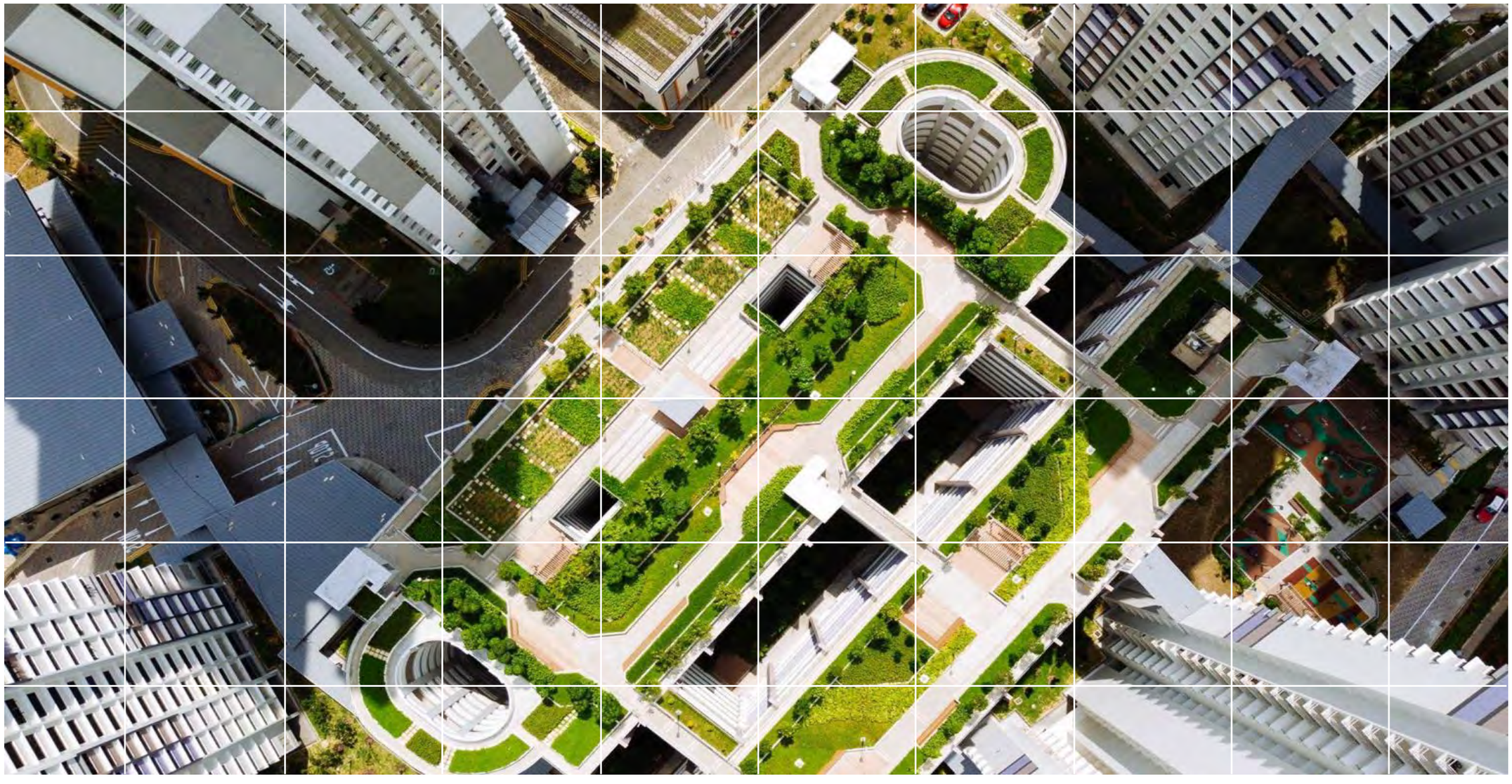
QVANTUM
HEAT PUMPS FOR SUSTAINABLE CITIES



QVANTUM RS/2 - HYDRAULIC SCHEMATICS

Qvantum Hydraulic Schematics

QHS - RS2_2550-B

D100022

Subject to possible printing errors.

QVANTUM RS/2 HEAT PUMPS - HYDRAULIC SCHEMATICS

The following QVANTUM hydraulic schematics are applicable to QVANTUM heat pumps with X-Pro controller.
Detailed information can be found in the relevant product documentation.

GROUND SOURCE HEAT PUMP SYSTEM

- The hydraulic schematics include controls for heating and DHW. Dimensioning of pumps, buffer tank volume, DHW cylinder volume, control valves etc. needs to be done by the installer.

- The hydraulic schematics include controls for DHW distribution and pool system control (optional accessories package QAP20). Dimensioning of pumps, control valves, immersion heaters, plate heat exchangers etc. needs to be done by the installer.

- The hydraulic schematics include controls for both passive and active cooling (optional accessories package QAP10). For active cooling a cooling buffer tank must be installed to ensure enough volume. Dimensioning of pumps, control valves, plate heat exchangers, buffer tank volume etc. needs to be done by the installer.

- The hydraulic schematics include controls for up to four mixed circuits (optional accessories package QAP30). Dimensioning of pumps, control valves etc. needs to be done by the installer.

- The hydraulic schematics for multiple heat pumps are shown with 2 No. of heat pumps. Prefix HP02 is used to represent all slave heat pumps. The control system handles up to 4 No. heat pump units. For higher thermal capacity requirements please contact Qvantum.

- Specific components such as, but not limited to, dosing pot, commissioning set, air admittance valve, lock shield valve, drain cock, binder test point, gauge etc. are not included in the hydraulic schematics but are installed when required. Dimensioning needs to be done by the installer.

- DHW cylinders, regardless of type (thermal store, calorifiers etc.), should be installed with reverse return connections, as shown in hydraulic schematics for multiple heat pumps, to ensure equal temperature in all cylinders.

- Red marks * in the schematics show components that are supplied by Qvantum. Blue marks * in the schematics show components that can be supplied by Qvantum. If not supplied by Qvantum the installer needs to follow Qvantums specifications.



Q65-144RS/2



Q162-192RS/2

QVANTUM RS/2 HEAT PUMPS - HYDRAULIC SCHEMATICS

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Subject to possible printing errors.

QVANTUM RS/2 HEAT PUMPS - HYDRAULIC SCHEMATICS

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Single heat pump

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QVANTUM RS/2 HEAT PUMPS - HYDRAULIC SCHEMATICS

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QVANTUM RS/2 HEAT PUMPS - HYDRAULIC SCHEMATICS

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Q162-192RS/2, multiple heat pumps, heating & DHW, only HP01 for DHW, thermal store with DHW coils, passive cooling	Q-162-192-RS2-8-203	77
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Accessories package

Title	Drawing number	Page
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QAP20, DHW system control & pool system control	Shown in the hydraulic schematics	
QAP30, Mixed circuits	QAP-30-8-001	88

QVANTUM
HEAT PUMPS FOR SUSTAINABLE CITIES

QVANTUM RS/2

HYDRAULIC SCHEMATICS

single heat pump

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Please note

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- The representation of safety devices is not complete and fittings and safety devices outside the RS/2 unit are not included and must be provided and installed on site.

DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

- – – – – DI, DO, AI & AO signals
- —·— Modbus TCP/IP
- — – – Modbus RTU
- ✳ Components supplied by Qvantum
- ✳ Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

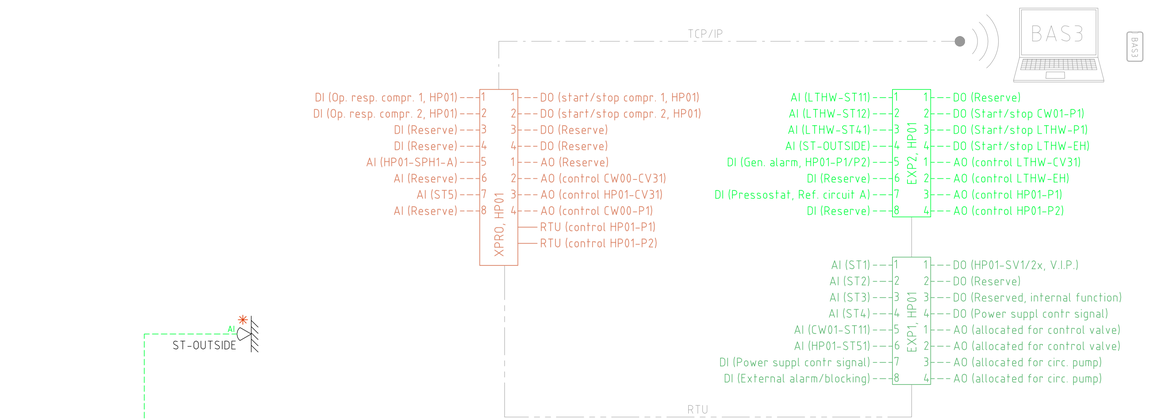
Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

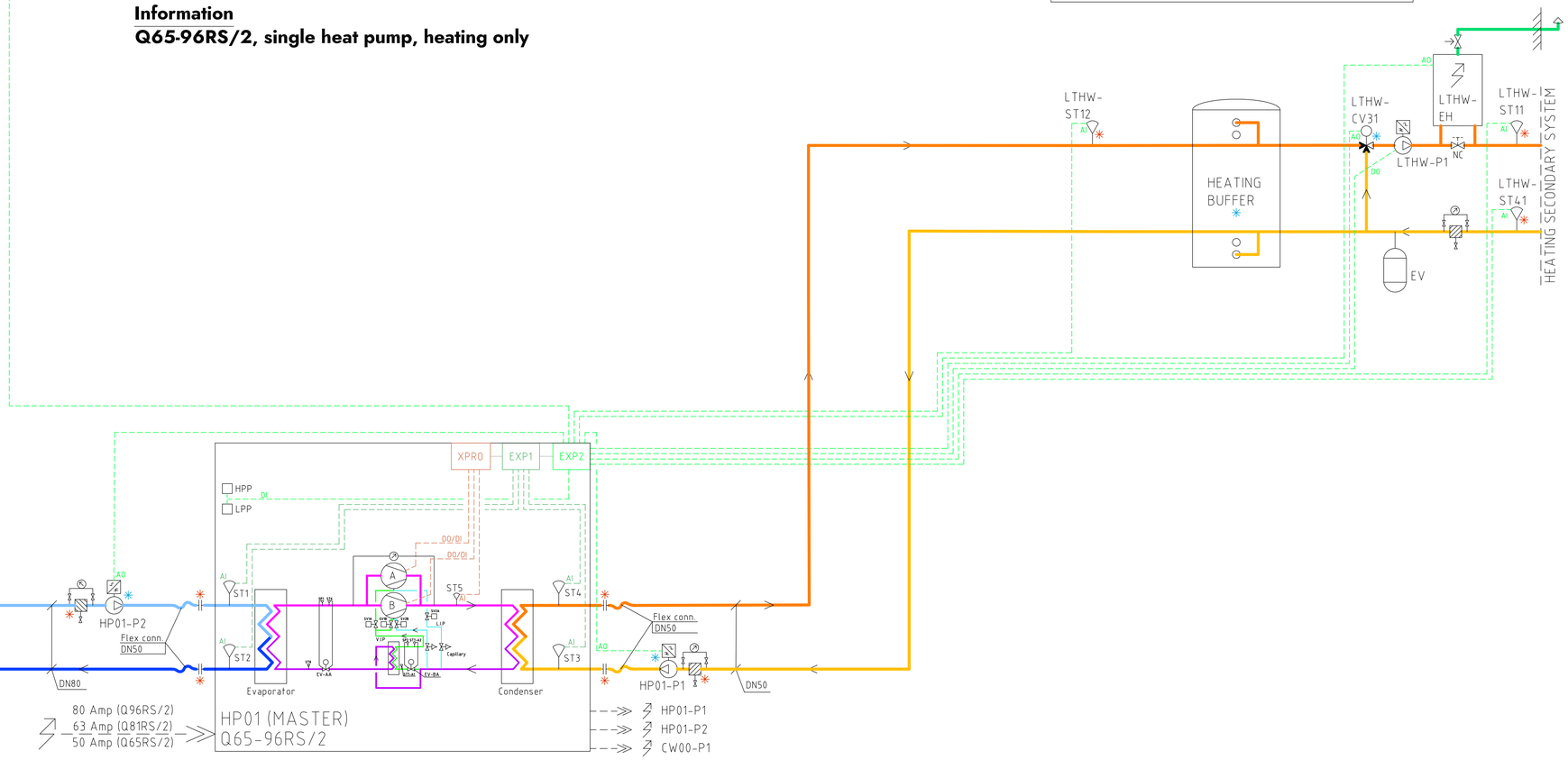


Information

Q65-96RS/2, single heat pump, heating only

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.



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HEAT PUMPS FOR SUSTAINABLE CITIES

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Ji-te gatan 7, 265 38 Åstorp

DRAWN BY	DRAWING NUMBER	PAGE NUMBER
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XREF:
LAGER: SB11

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DI, DO, AI & AO signals

Modbus TCP/IP

Modbus RTU

Components supplied by Qvantum

Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

Circulation pump

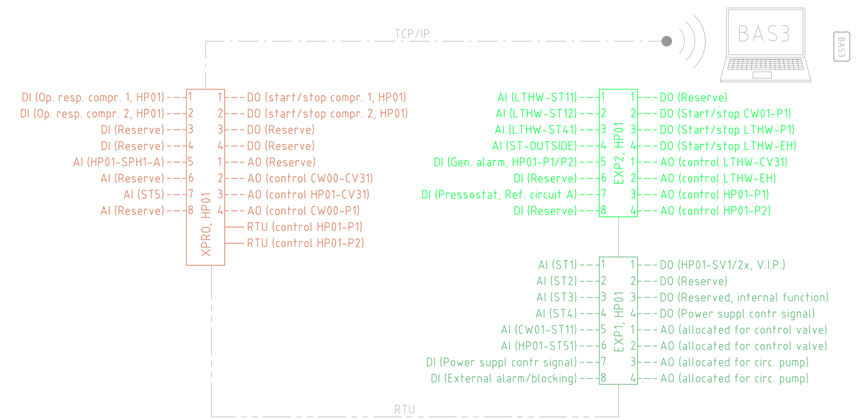
Temperature sensor

3-way control valve

Isolation valve

Non return valve

Strainer

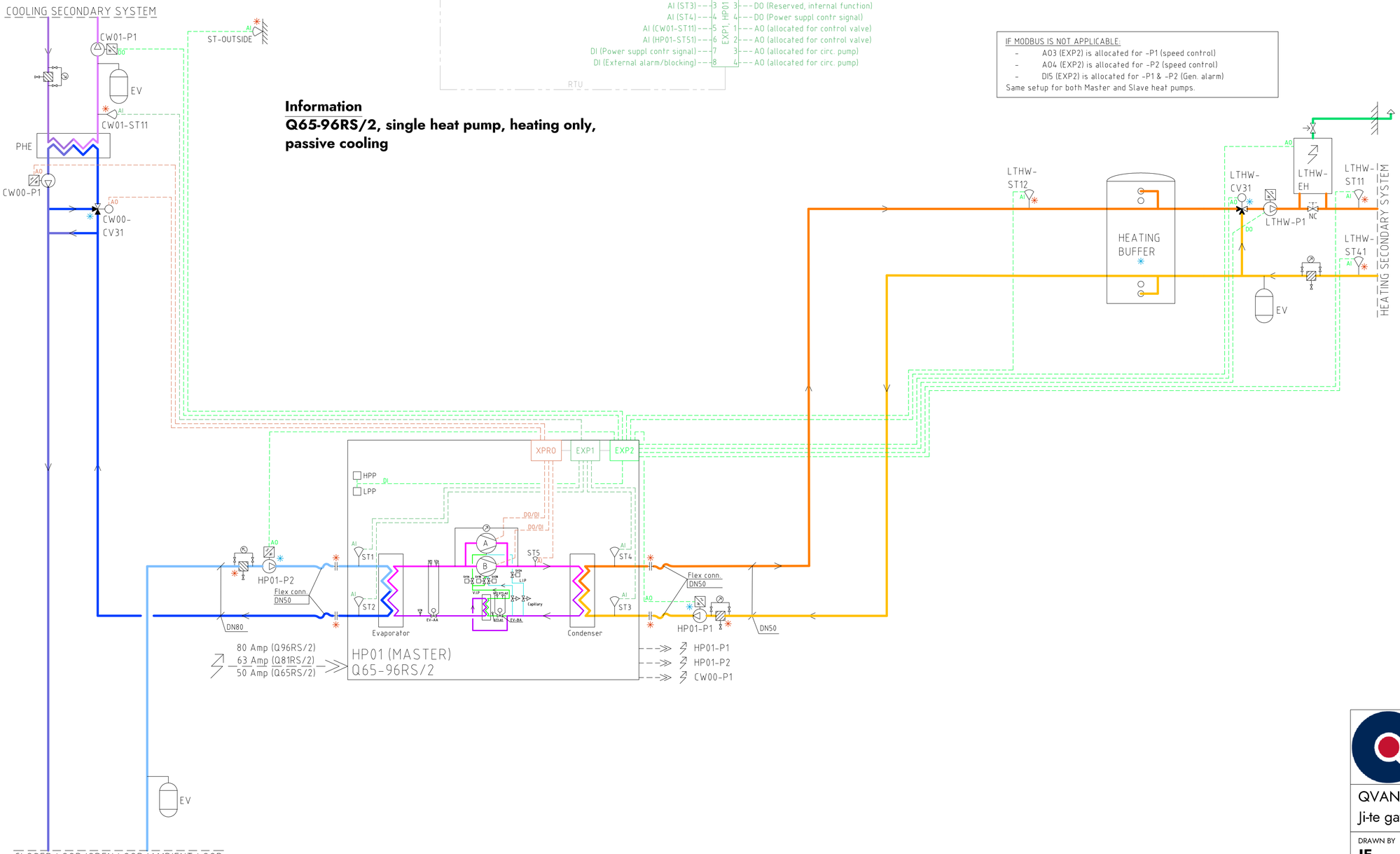


Information

Q65-96RS/2, single heat pump, heating only, passive cooling

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.



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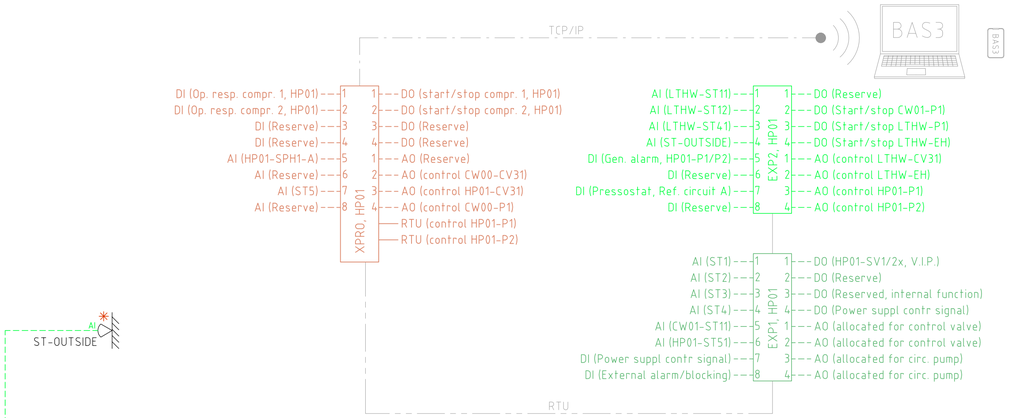
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HEAT PUMPS FOR SUSTAINABLE CITIES

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JE	**Q-65-96-RS2-8-101**	**10**

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LAGER: SB11

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Information

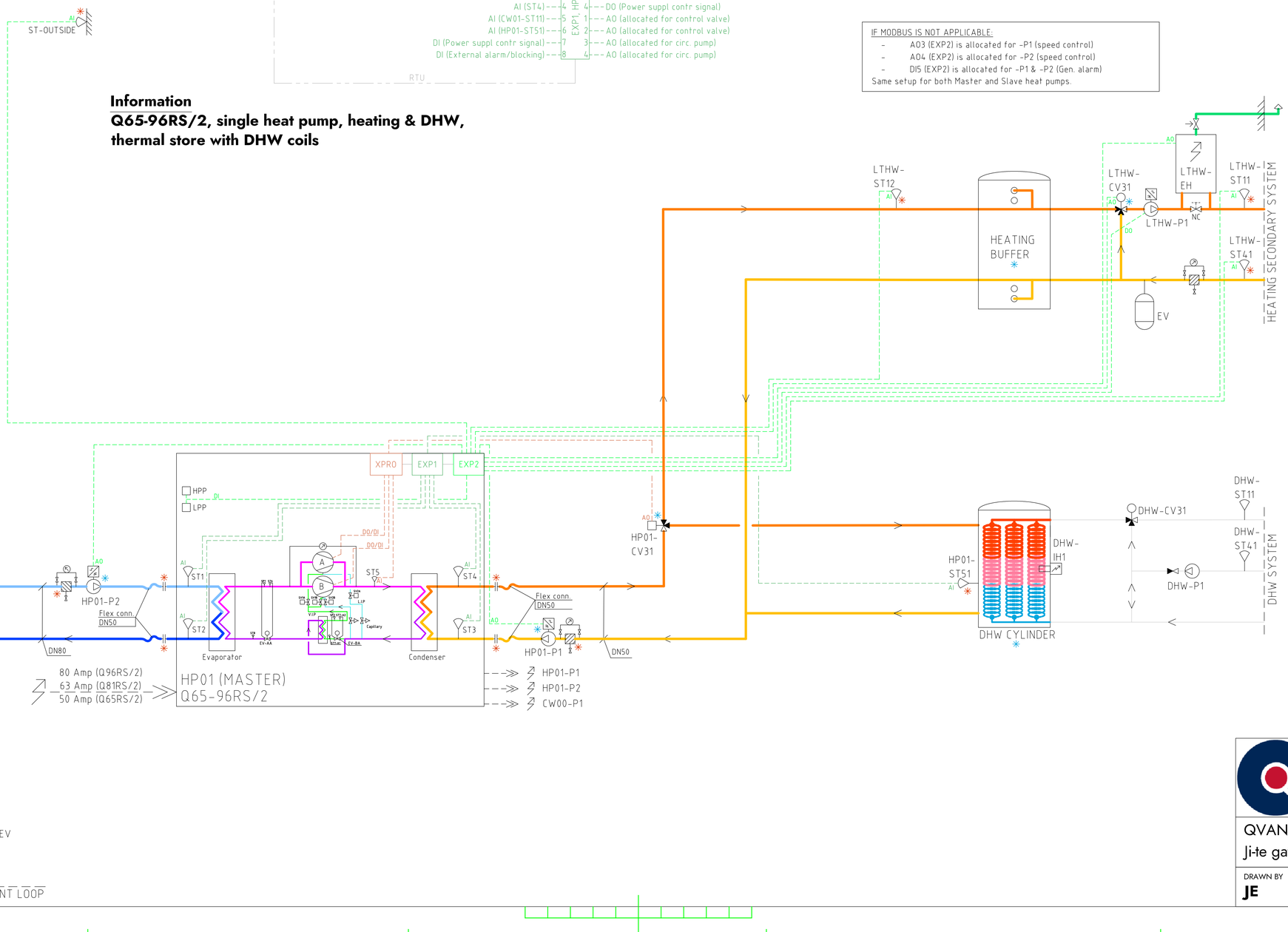
Q65-96RS/2, single heat pump, heating & DHW, thermal store with DHW coils

Please note

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Same setup for both Master and Slave heat pumps.



DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

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COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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HEAT PUMPS FOR SUSTAINABLE CITIES

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DRAWN BY	DRAWING NUMBER	PAGE NUMBER
JE	Q-65-96-RS2-8-102	11

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Please note

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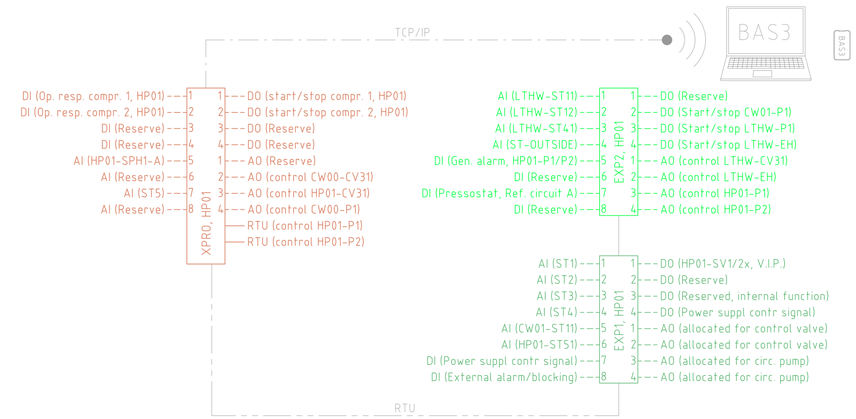
Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

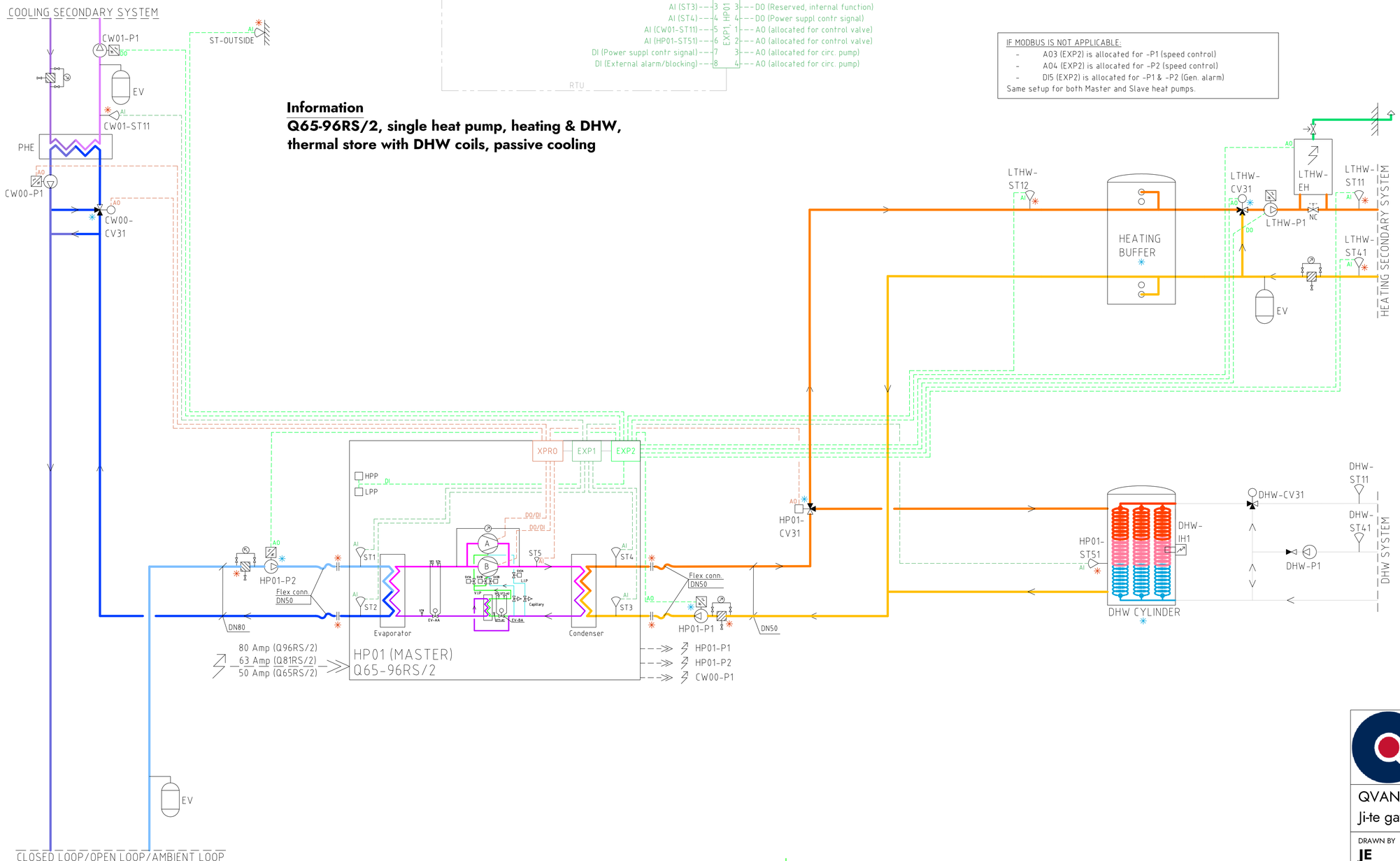


Information

Q65-96RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive cooling

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.



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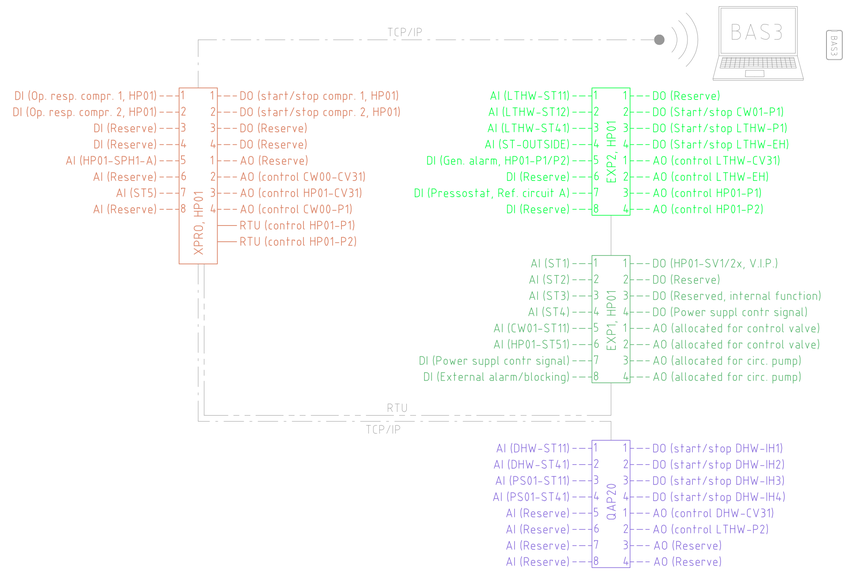
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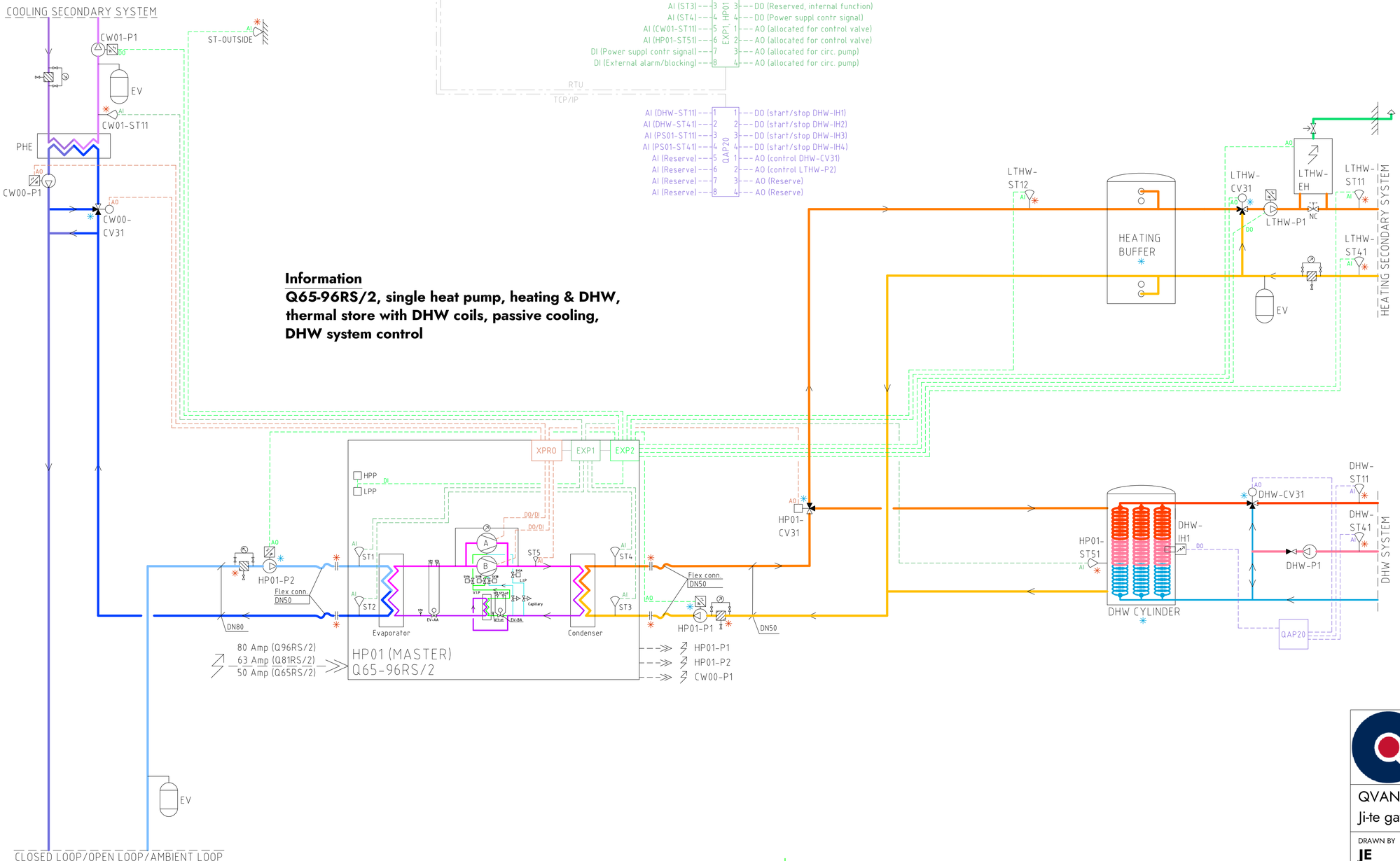
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- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.



Information

Q65-96RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive cooling, DHW system control

DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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- DI, DO, AI & AO signals
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- Modbus RTU
- Components supplied by Qvantum
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For meausurements and other information regarding the heat pump, see separate documents and drawings.

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Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

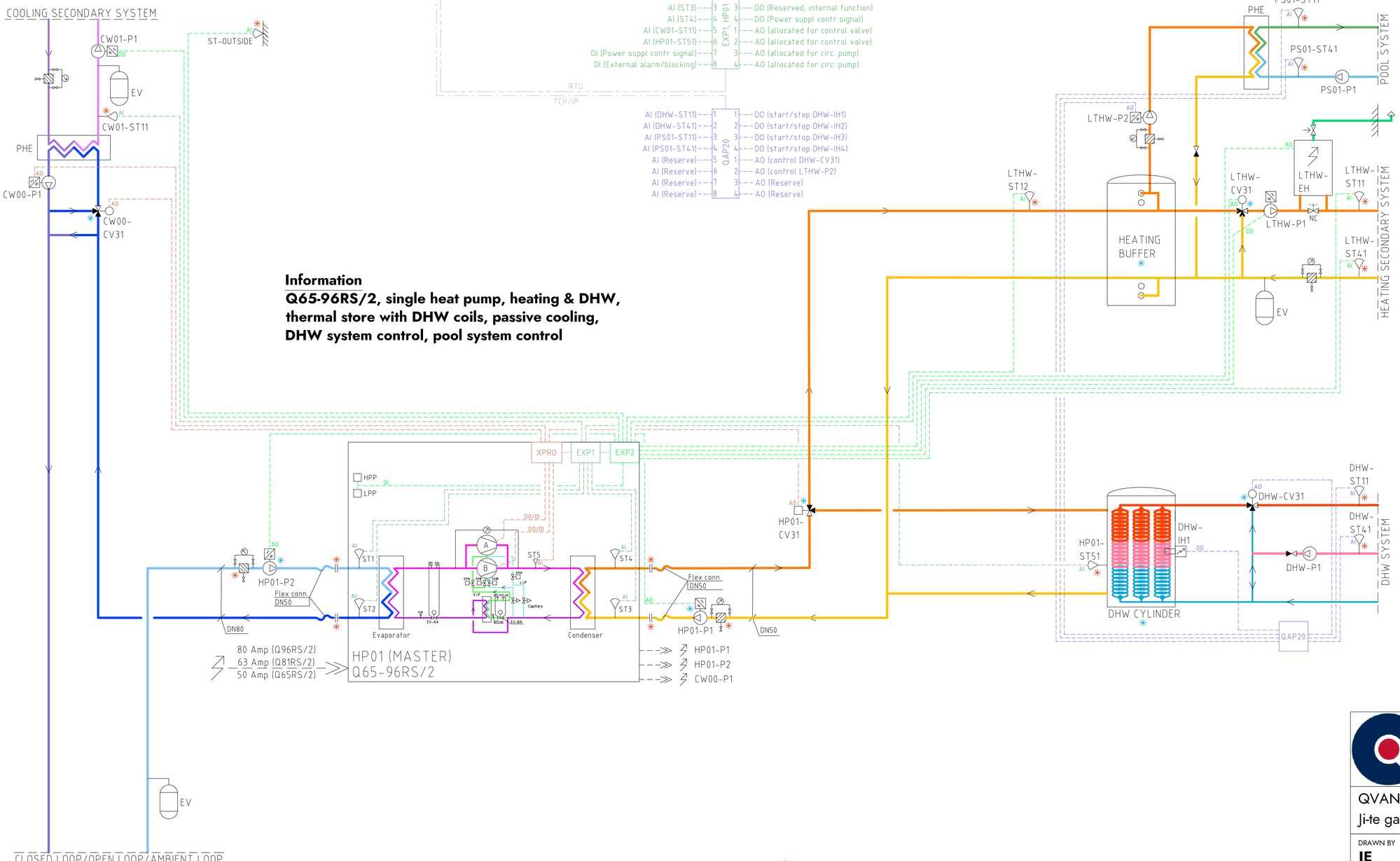
COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

IF MODBUS IS NOT APPLICABLE:
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- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

Information
Q65-96RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive cooling, DHW system control, pool system control



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Same setup for both Master and Slave heat pumps.

DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

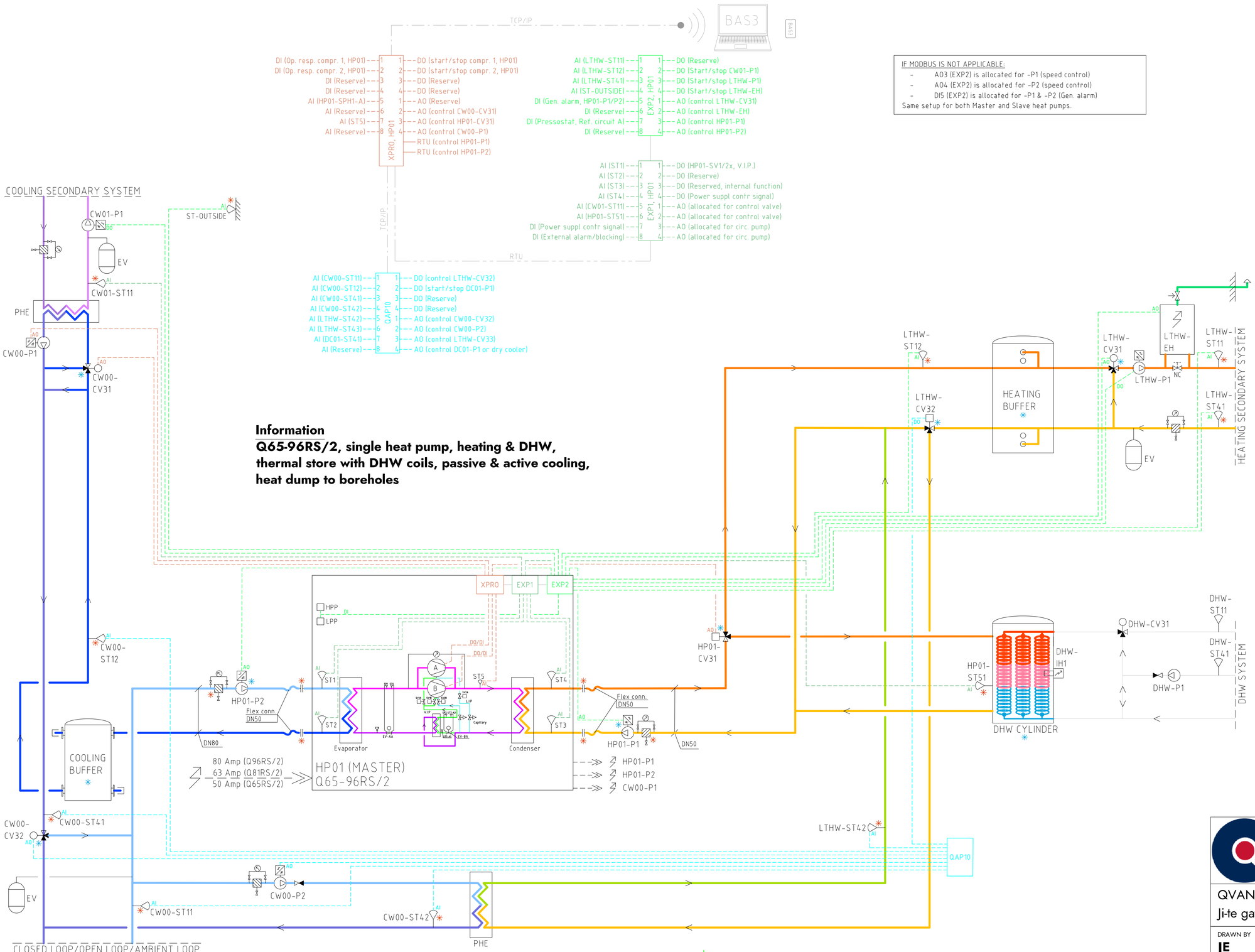
Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

Information

Q65-96RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to boreholes



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- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

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Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

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Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

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Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

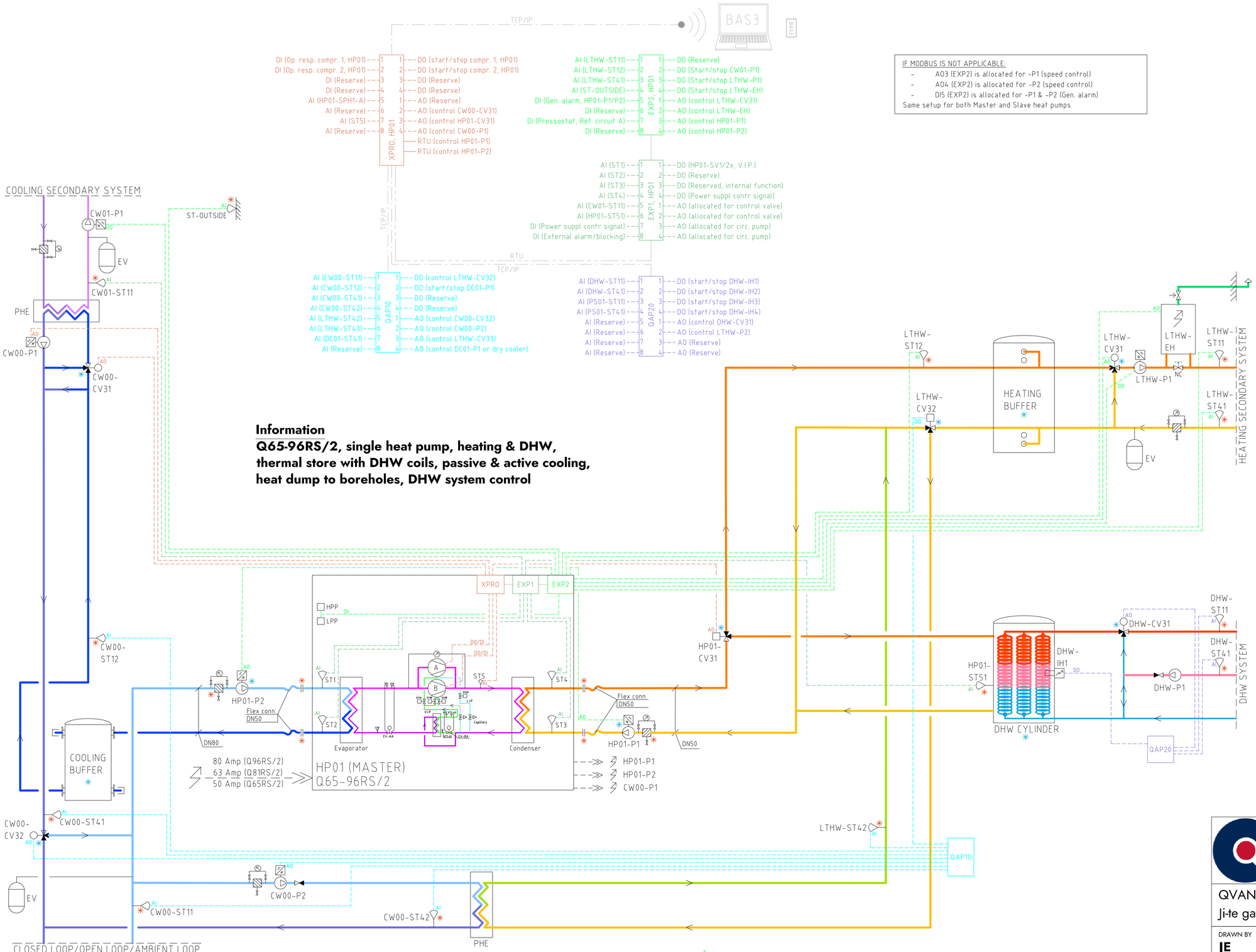
Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

Information

Q65-96RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to boreholes, DHW system control



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DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

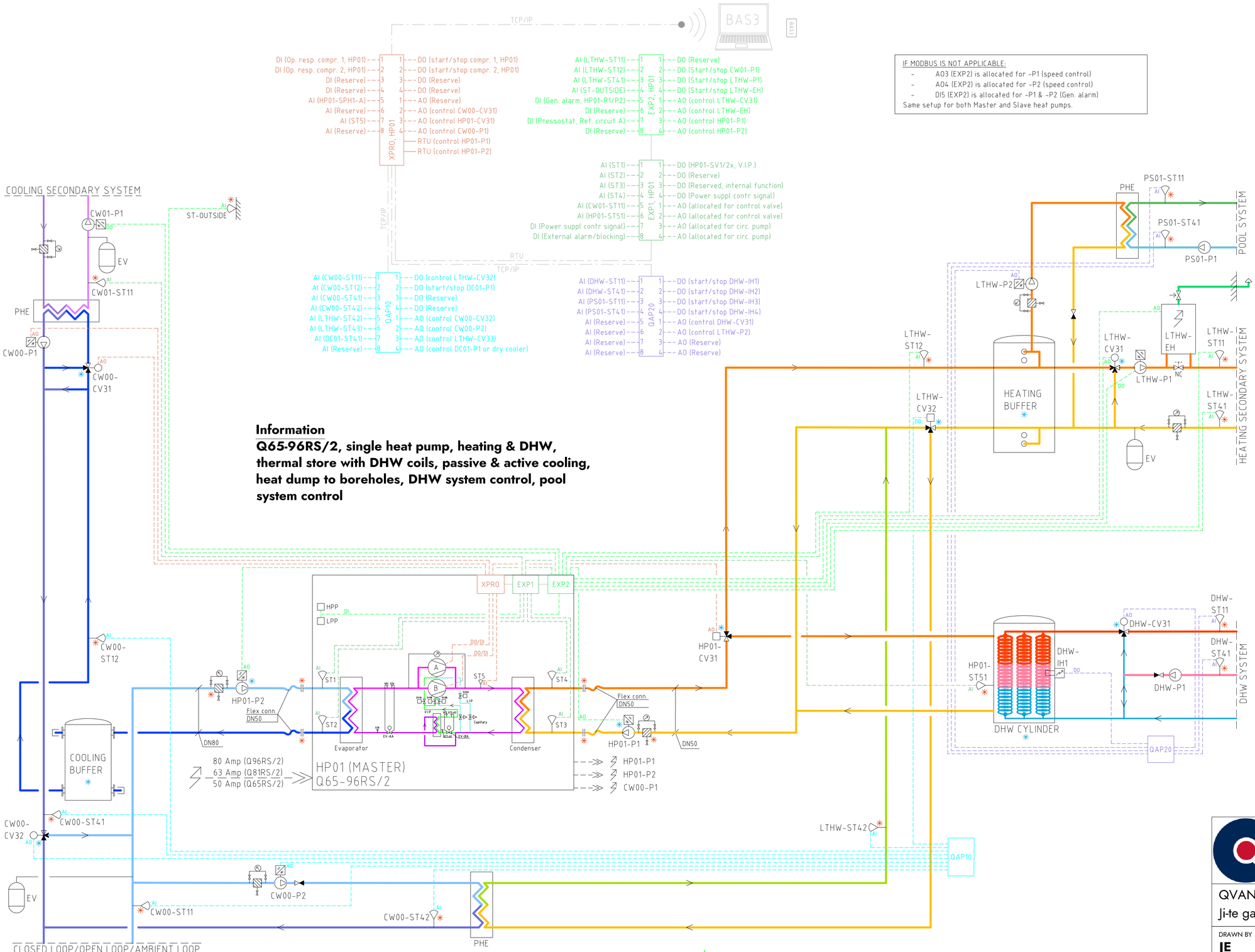
- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

Information

Q65-96RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to boreholes, DHW system control, pool system control



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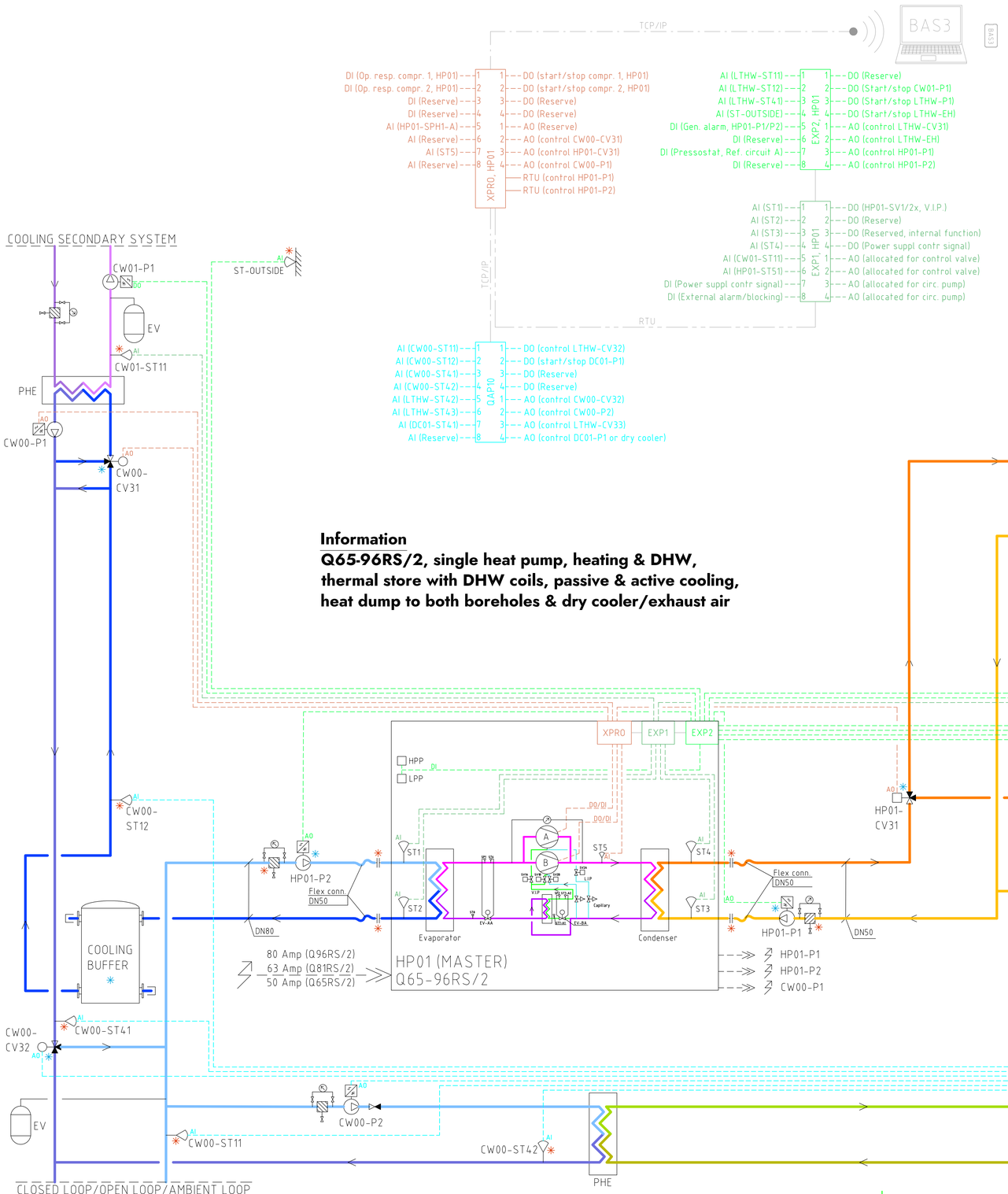
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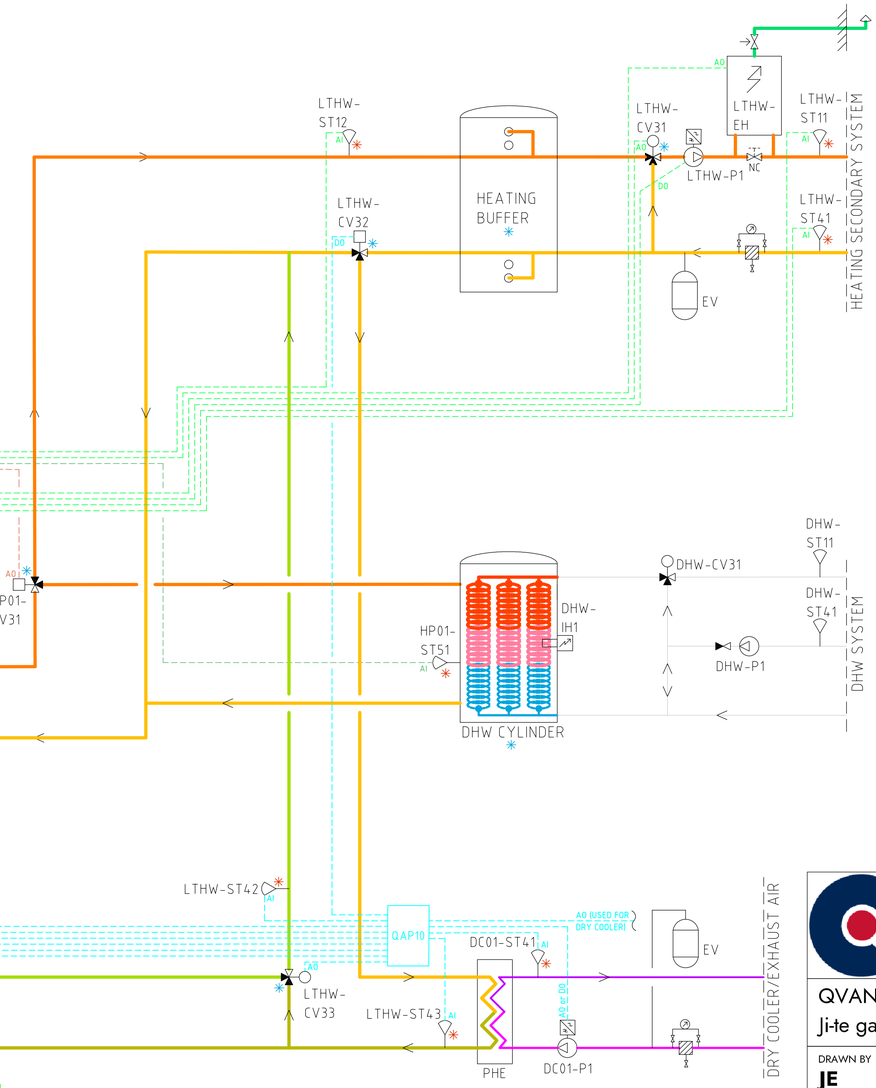
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IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.



Information

Q65-96RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to both boreholes & dry cooler/exhaust air

DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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Same setup for both Master and Slave heat pumps.

DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

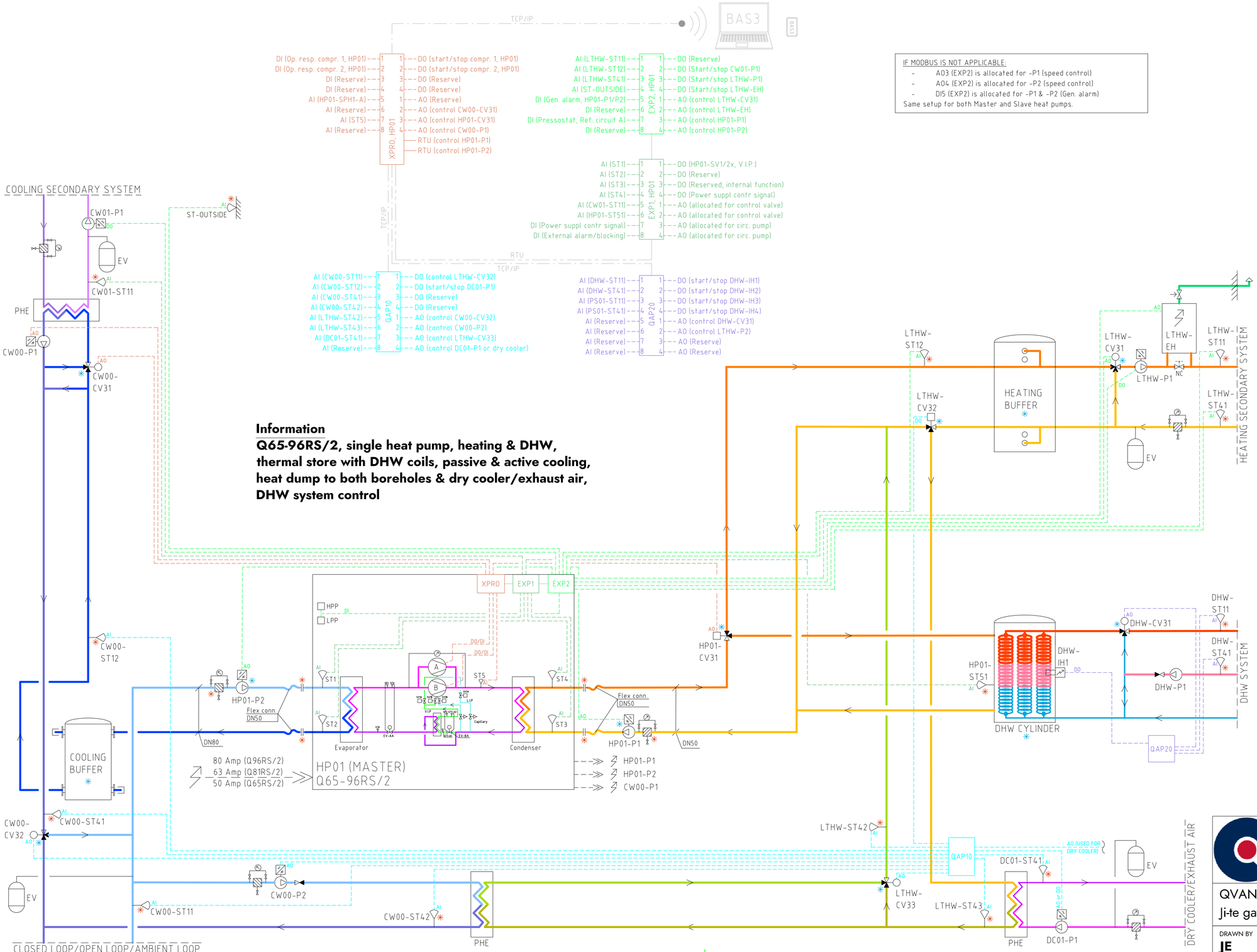
Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

Information

Q65-96RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to both boreholes & dry cooler/exhaust air, DHW system control



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- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

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COMPONENT SYMBOLS

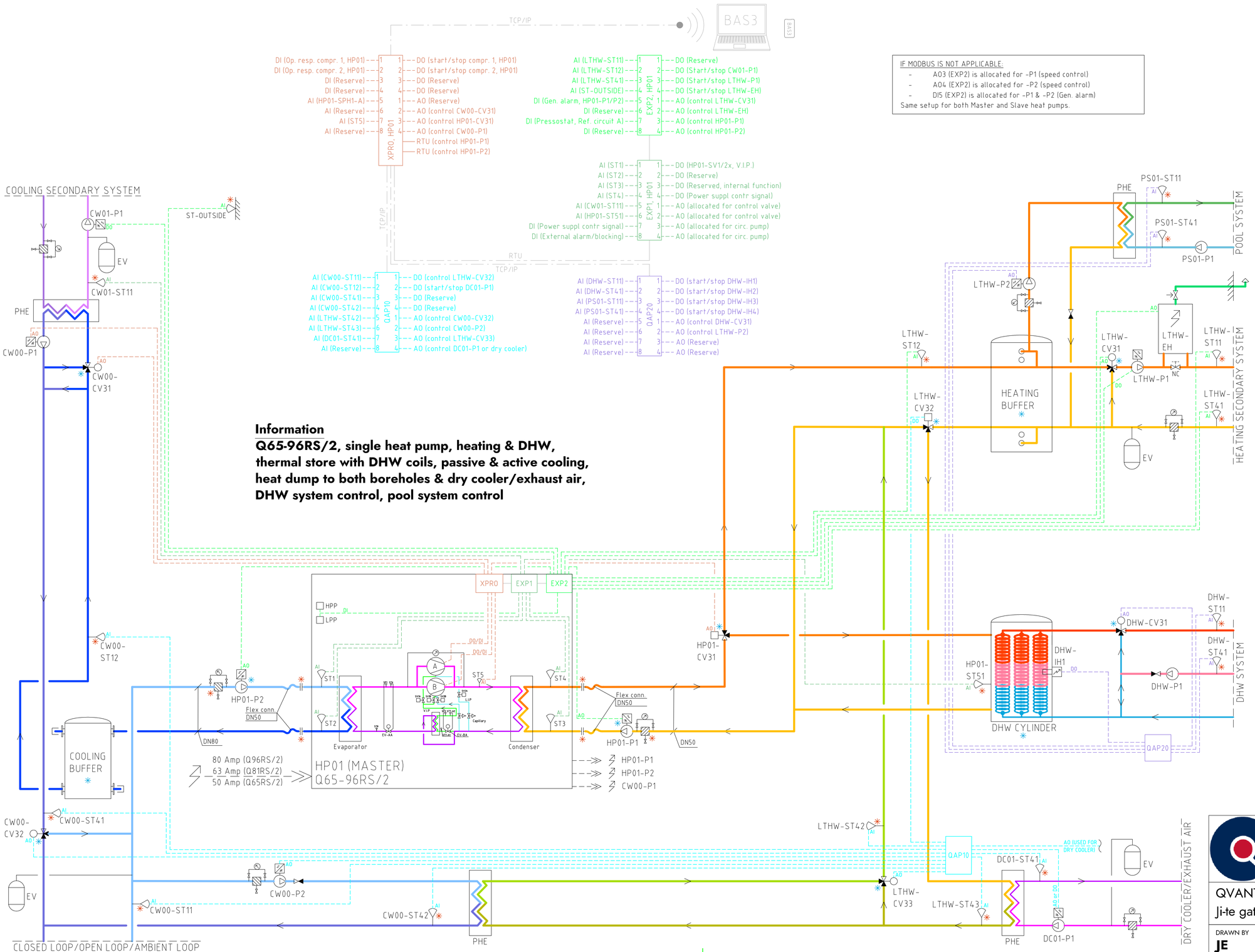
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- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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Same setup for both Master and Slave heat pumps.

Information

Q65-96RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to both boreholes & dry cooler/exhaust air, DHW system control, pool system control



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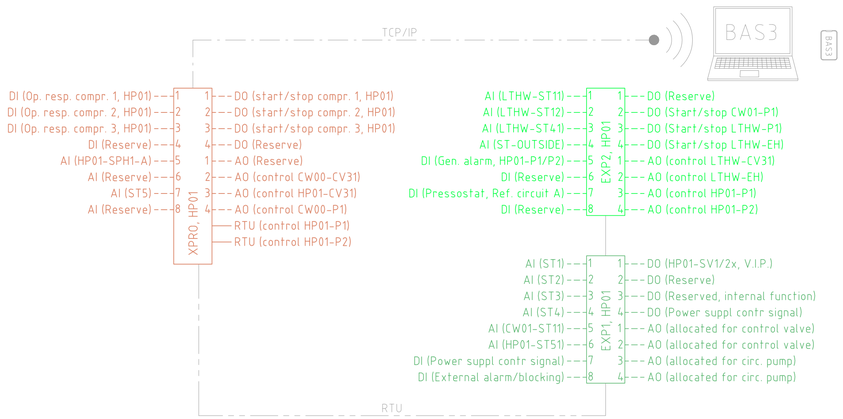
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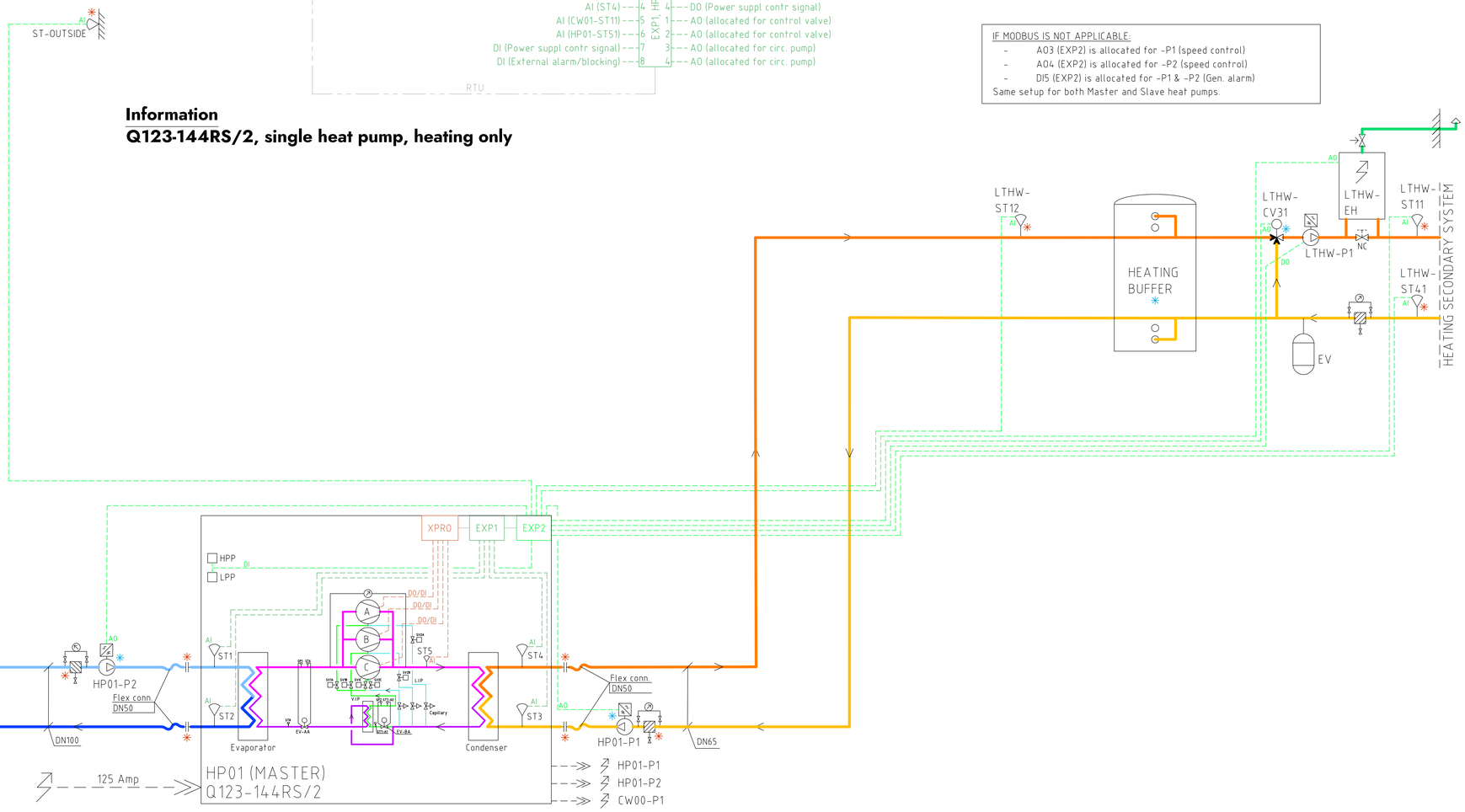


Information

Q123-144RS/2, single heat pump, heating only

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.



DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

DI, DO, AI & AO signals

Modbus TCP/IP

Modbus RTU

Components supplied by Qvantum

Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

Circulation pump

Temperature sensor

3-way control valve

Isolation valve

Non return valve

Strainer

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HEAT PUMPS FOR SUSTAINABLE CITIES

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JE	Q-123-144-RS2-8-100	21

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XREF:
LAGER: SB11

Subject to possible printing errors.

Please note

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DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

DI, DO, AI & AO signals

Modbus TCP/IP

Modbus RTU

Components supplied by Qvantum

Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

Circulation pump

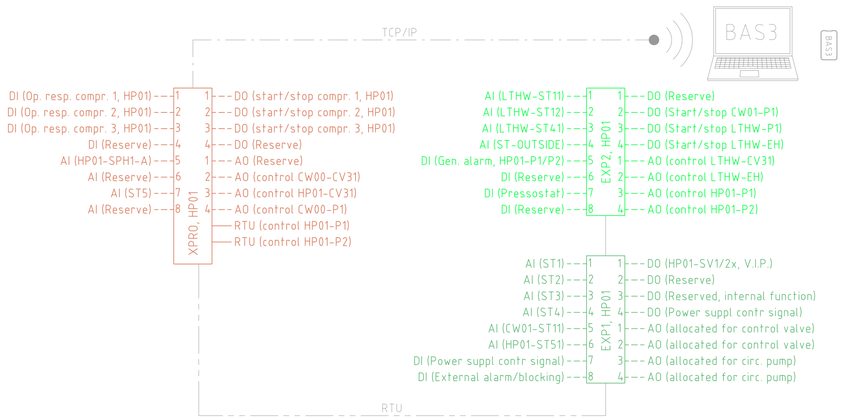
Temperature sensor

3-way control valve

Isolation valve

Non return valve

Strainer

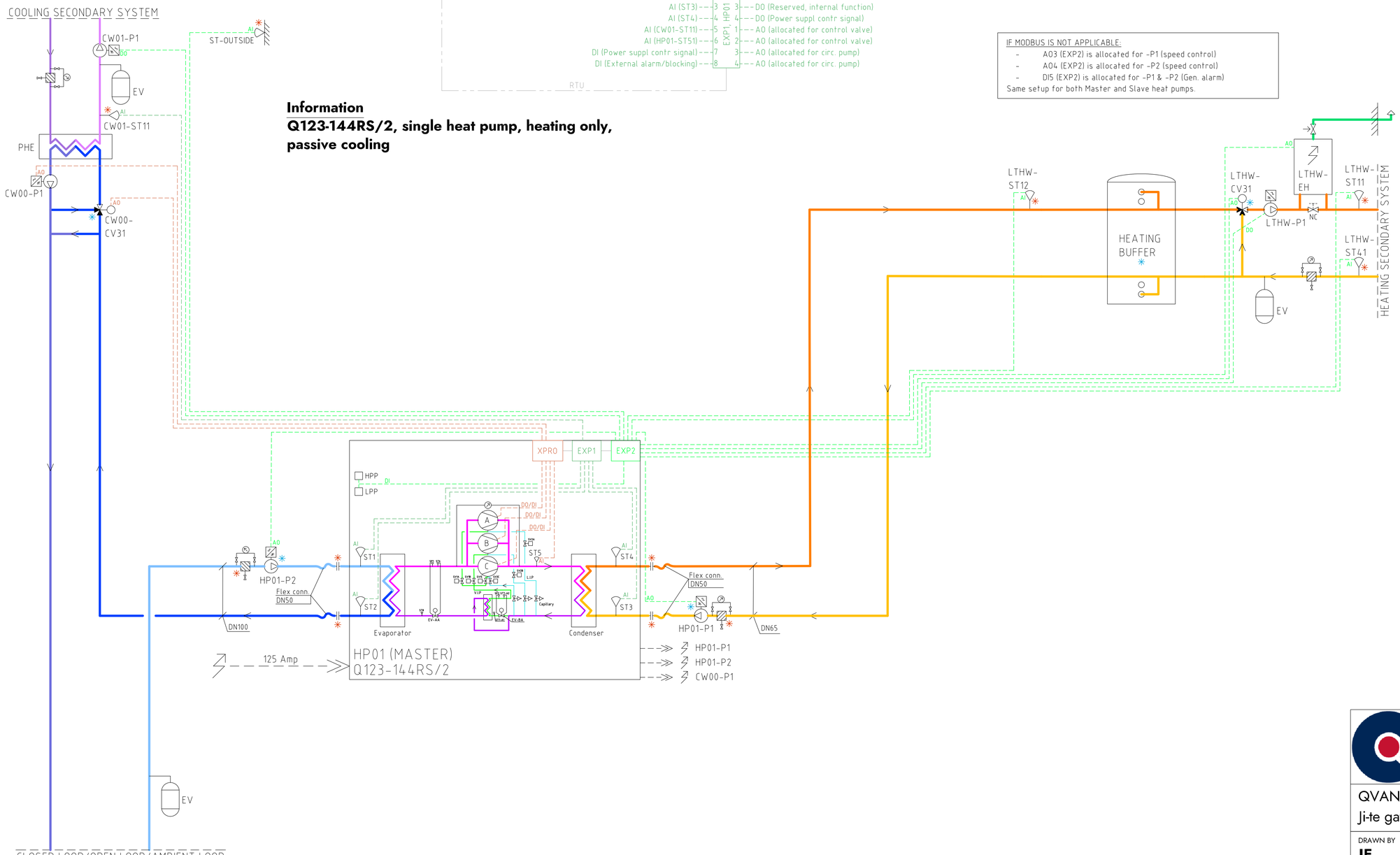


Information

Q123-144RS/2, single heat pump, heating only, passive cooling

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.



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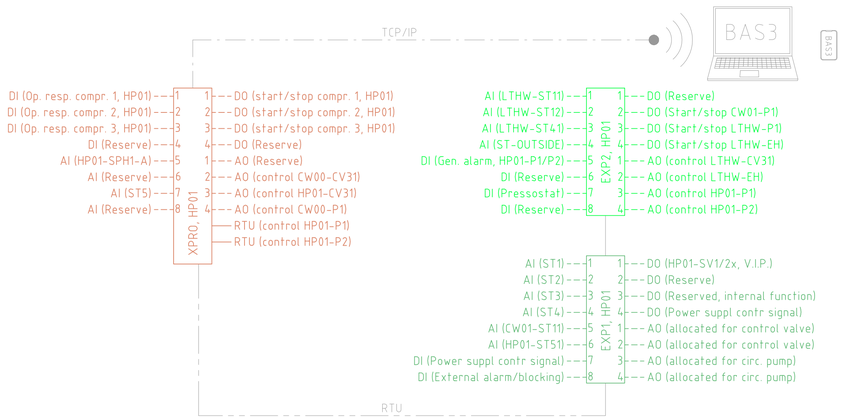
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Subject to possible printing errors.

Please note

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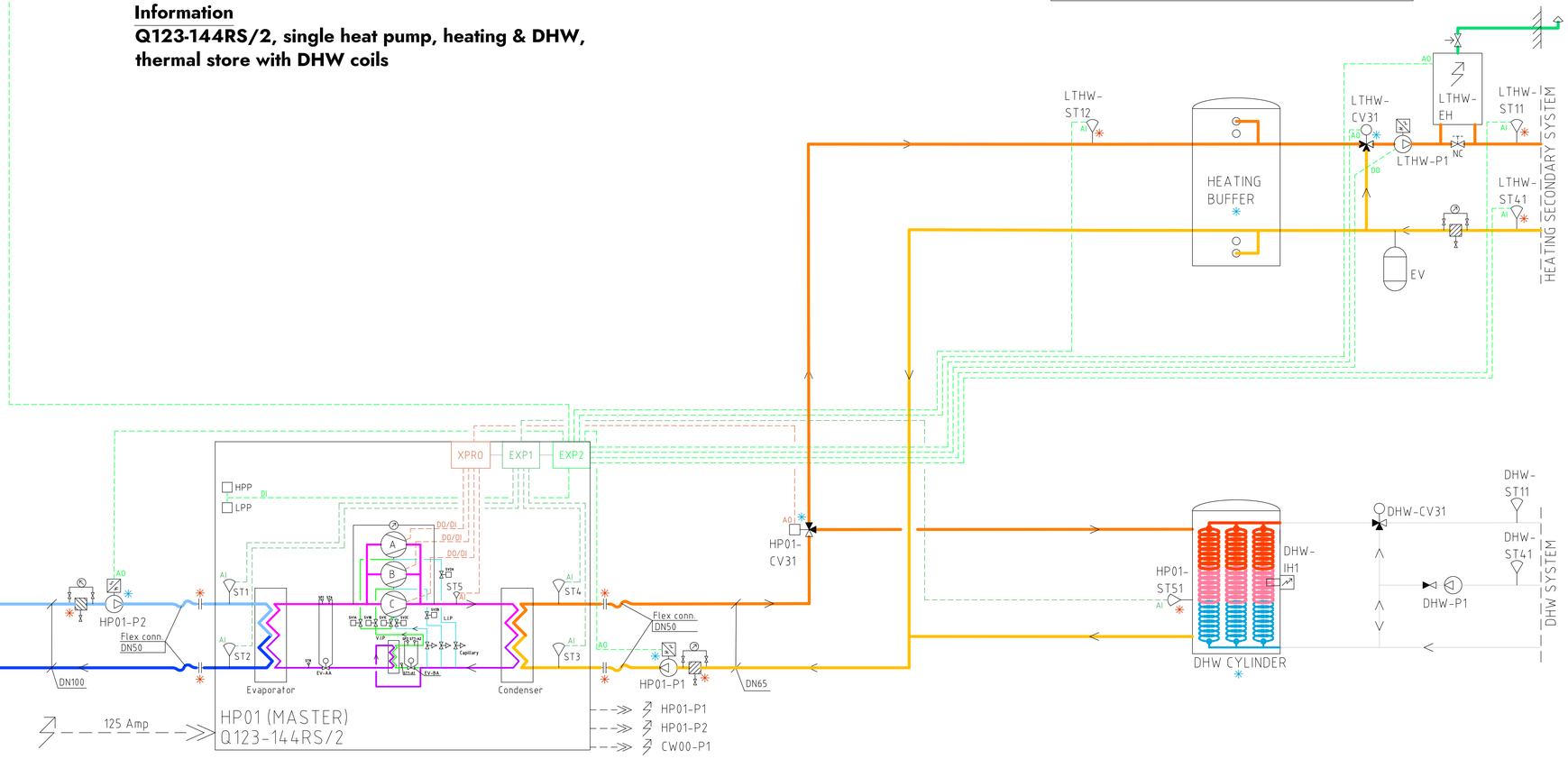


Information

Q123-144RS/2, single heat pump, heating & DHW, thermal store with DHW coils

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.



DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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Subject to possible printing errors.

Please note

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DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

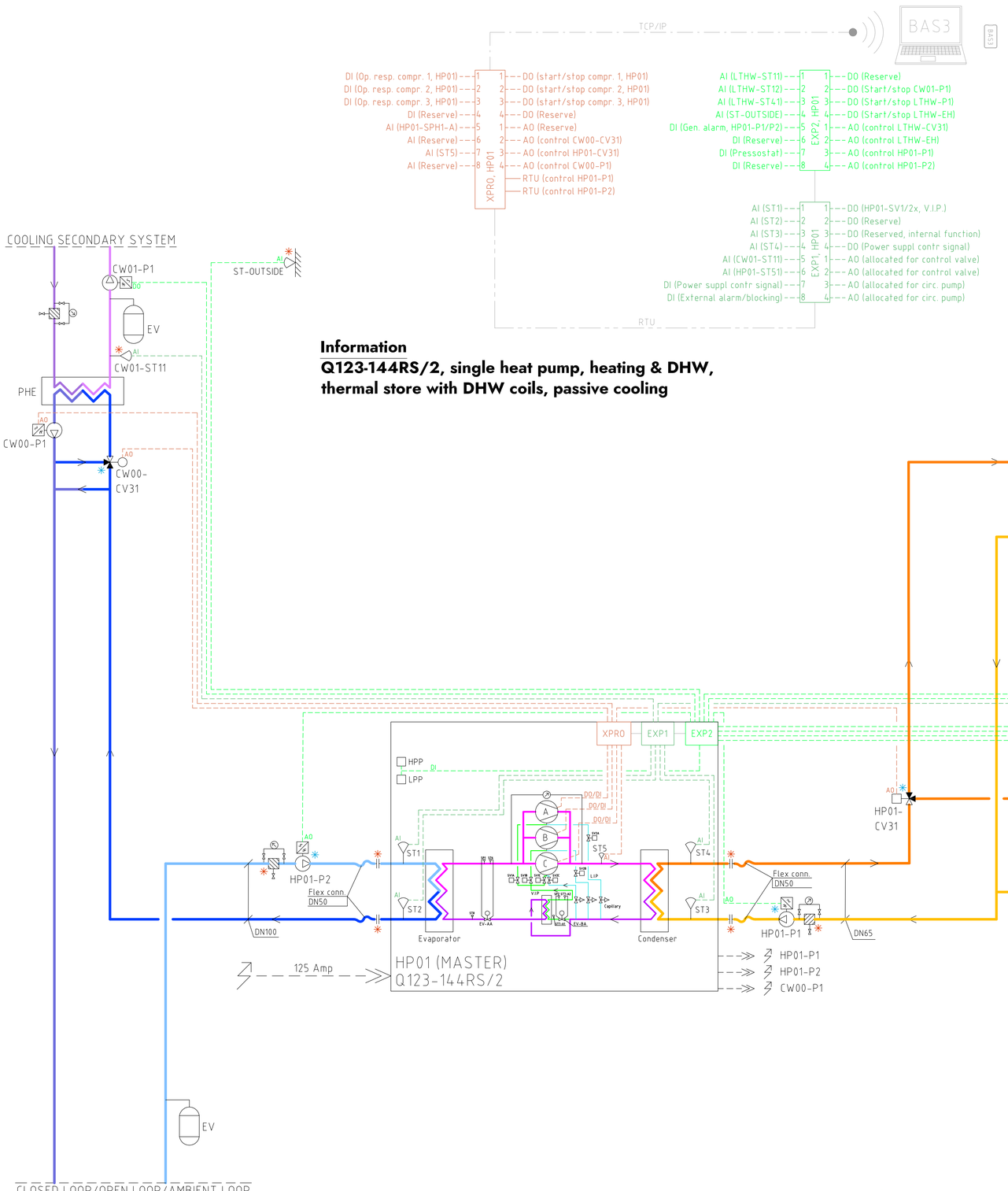
Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer



Information

Q123-144RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive cooling

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

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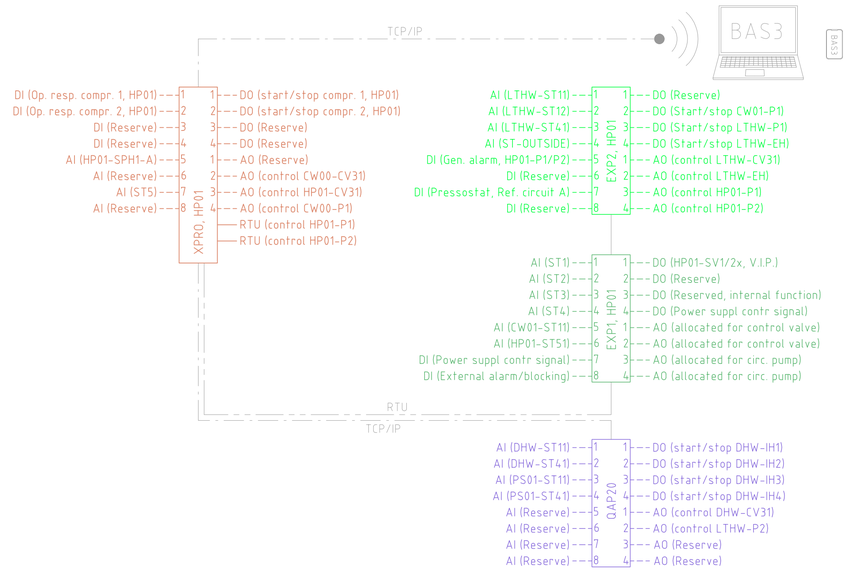
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Subject to possible printing errors.

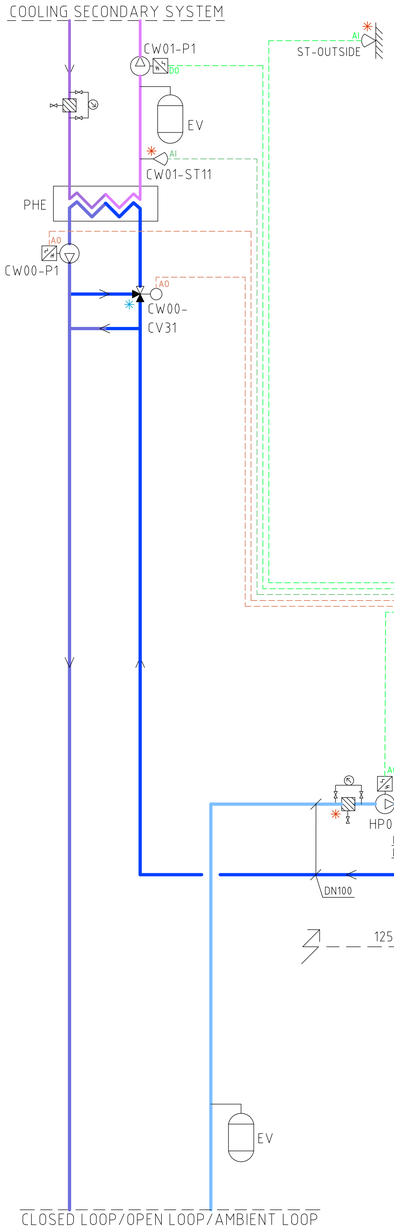
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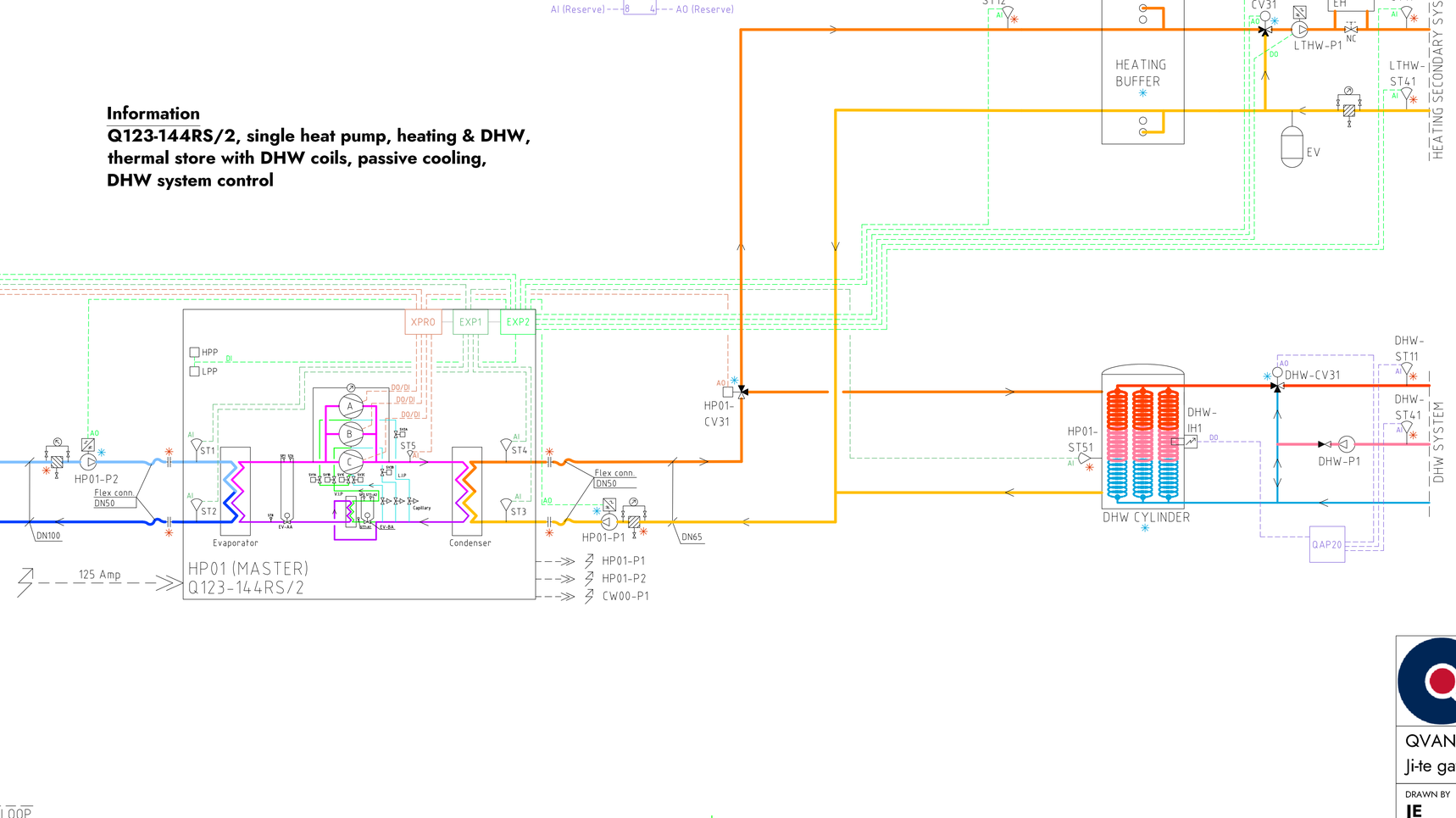
IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.



Information

Q123-144RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive cooling, DHW system control



DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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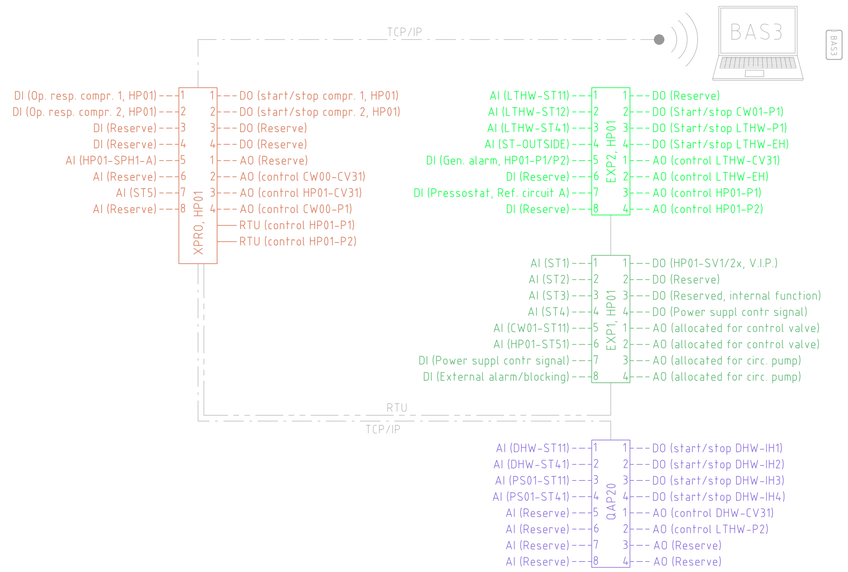
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Subject to possible printing errors.

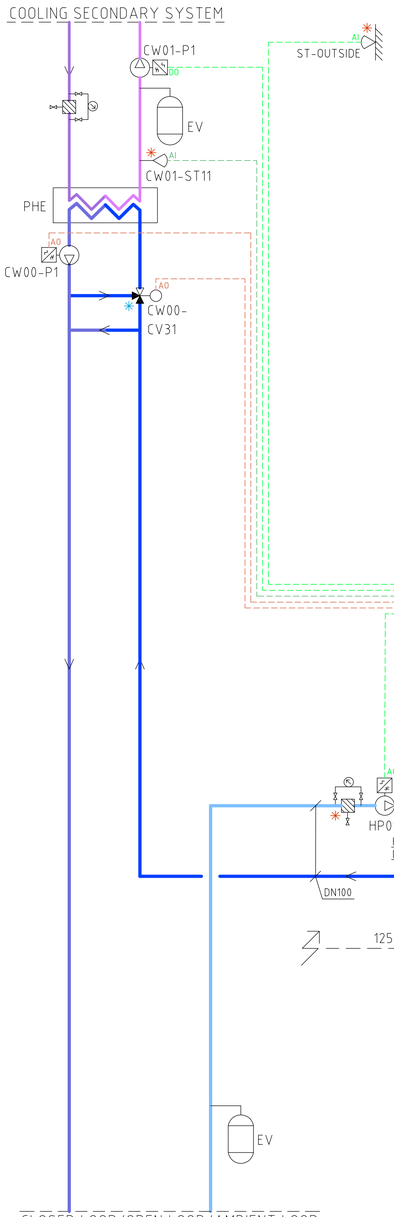
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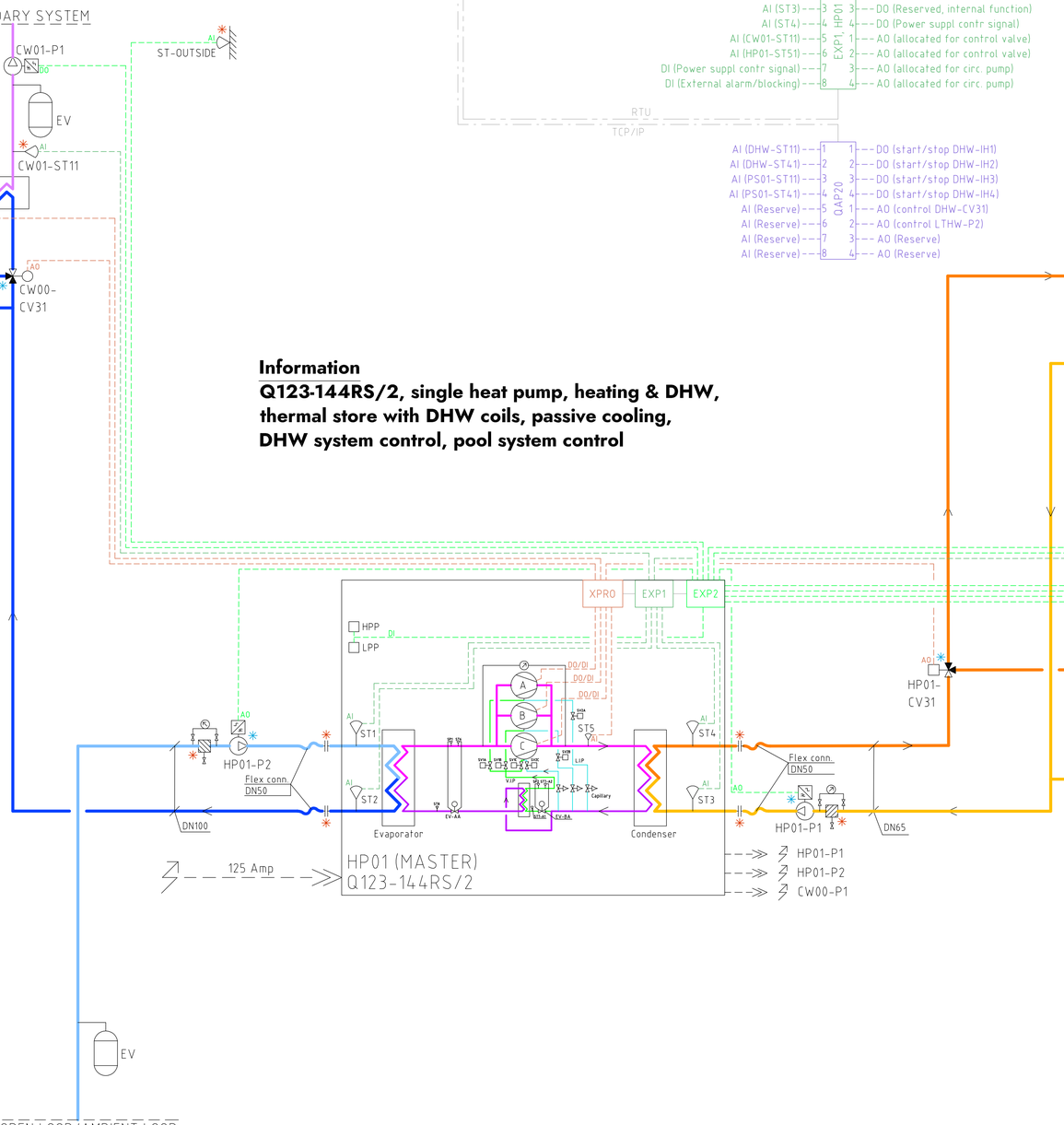
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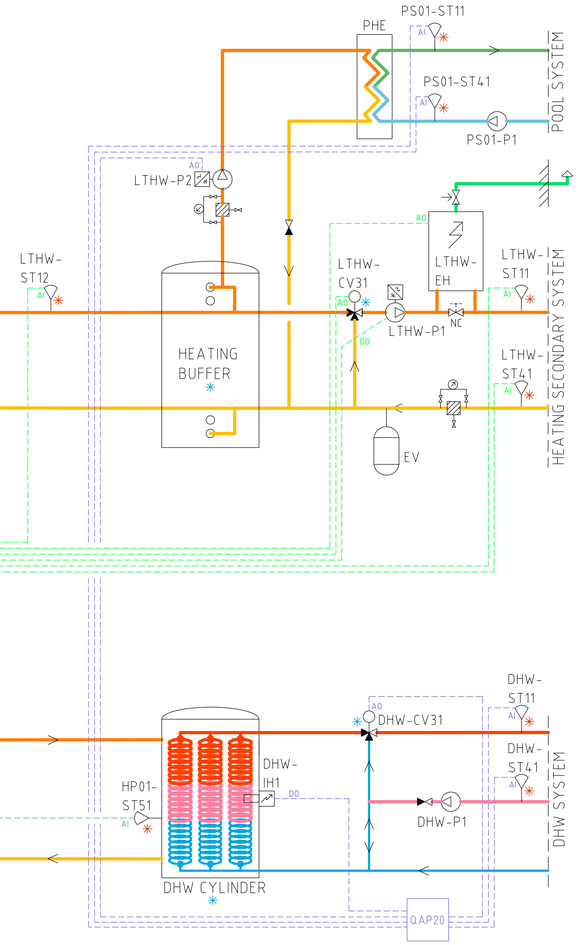


IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.







Information

Q123-144RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive cooling, DHW system control, pool system control

DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

DI, DO, AI & AO signals

Modbus TCP/IP

Modbus RTU

Components supplied by Qvantum

Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

Circulation pump

Temperature sensor

3-way control valve

Isolation valve

Non return valve

Strainer

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HEAT PUMPS FOR SUSTAINABLE CITIES

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Ji-te gatan 7, 265 38 Åstorp

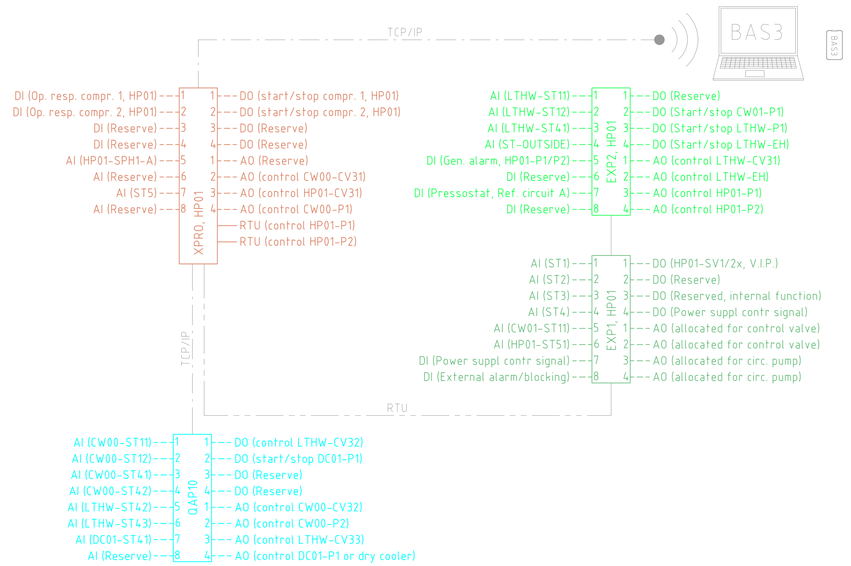
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Subject to possible printing errors.

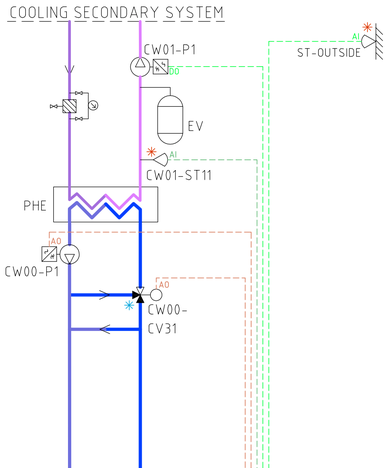
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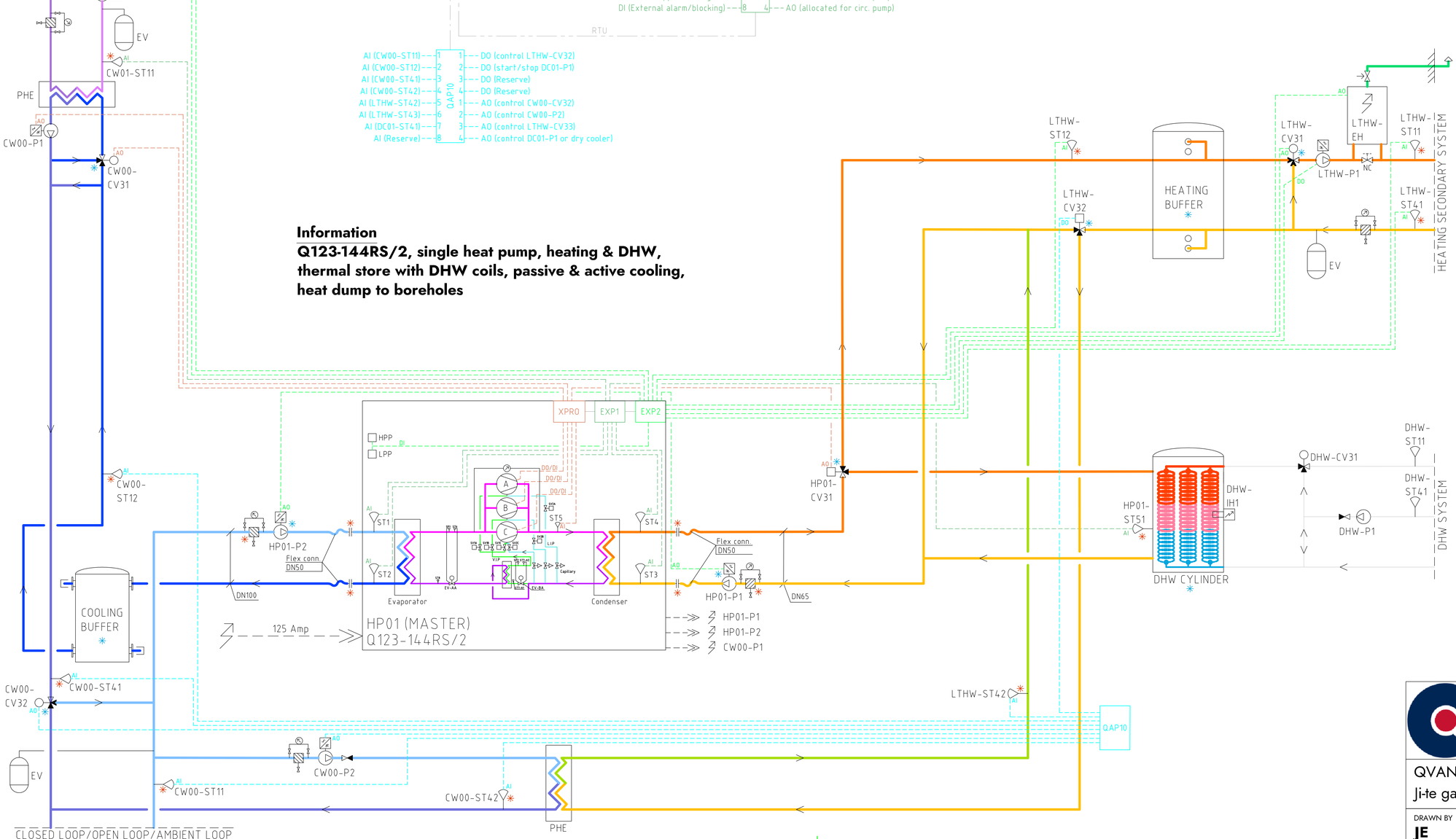
IF MODBUS IS NOT APPLICABLE:
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- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.



Information

Q123-144RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to boreholes



DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

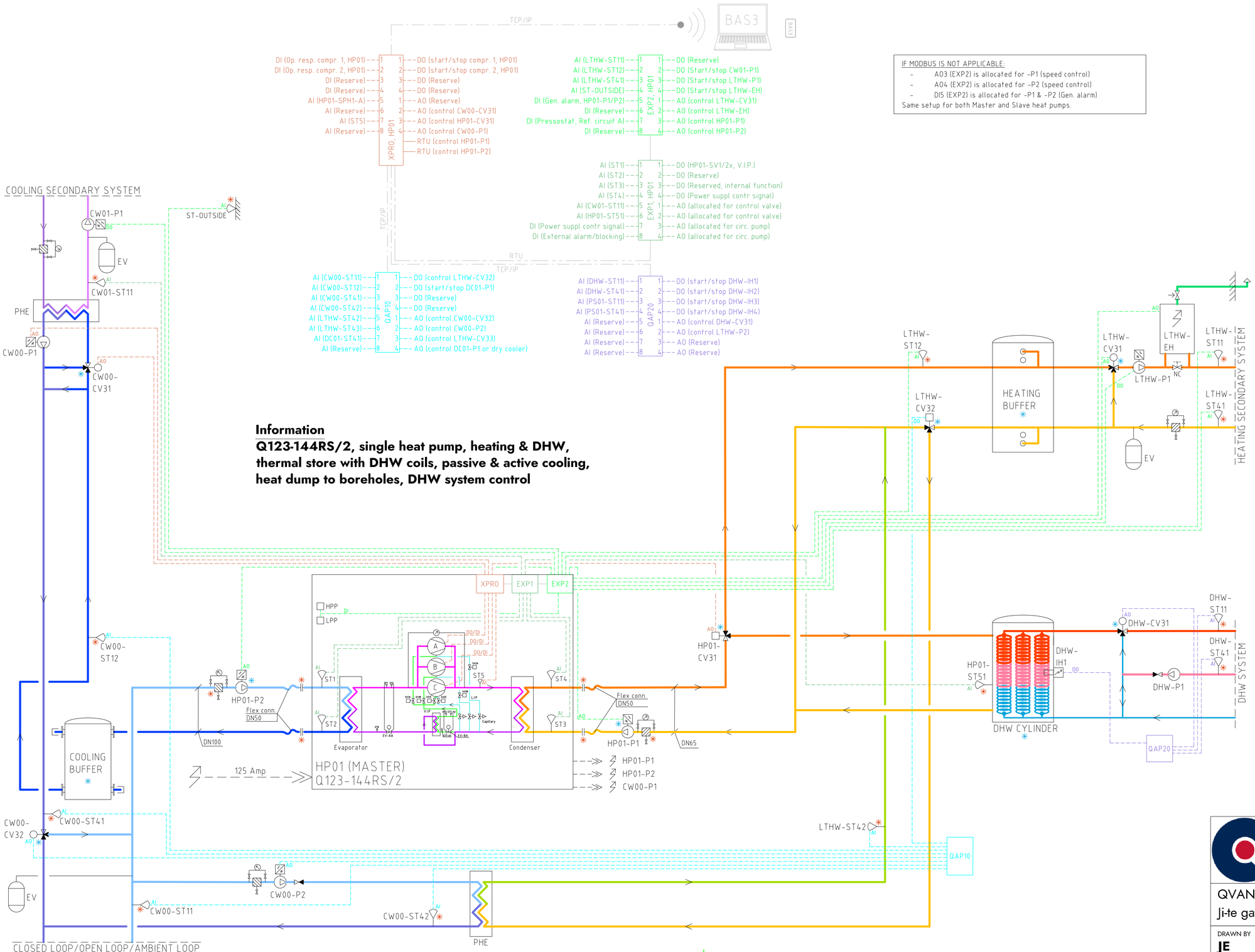
Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

Information

Q123-144RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to boreholes, DHW system control



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DISCLAIMERS

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Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

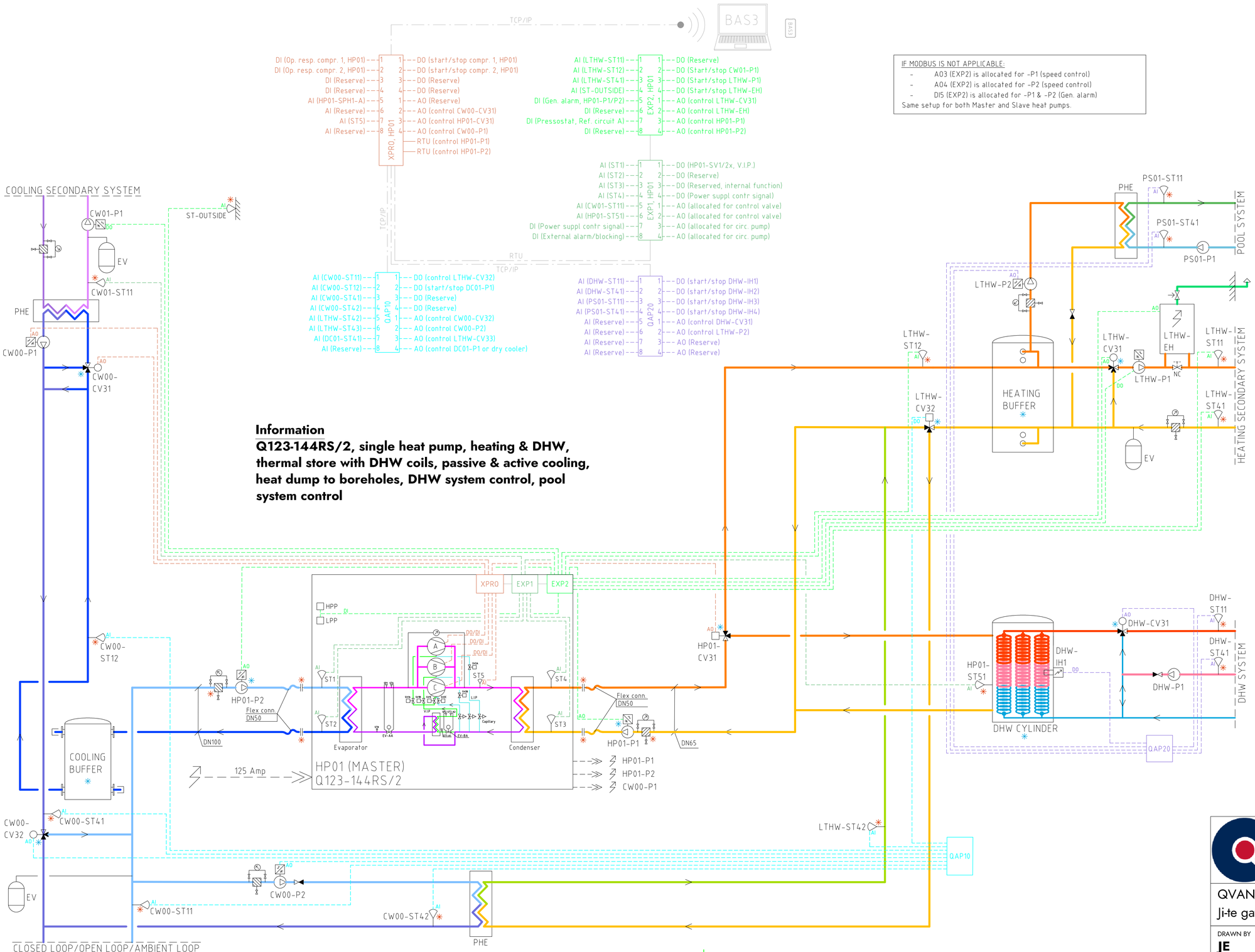
- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

IF MODBUS IS NOT APPLICABLE:
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- AO4 (EXP2) is allocated for -P2 (speed control)
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Same setup for both Master and Slave heat pumps.

Information

Q123-144RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to boreholes, DHW system control, pool system control



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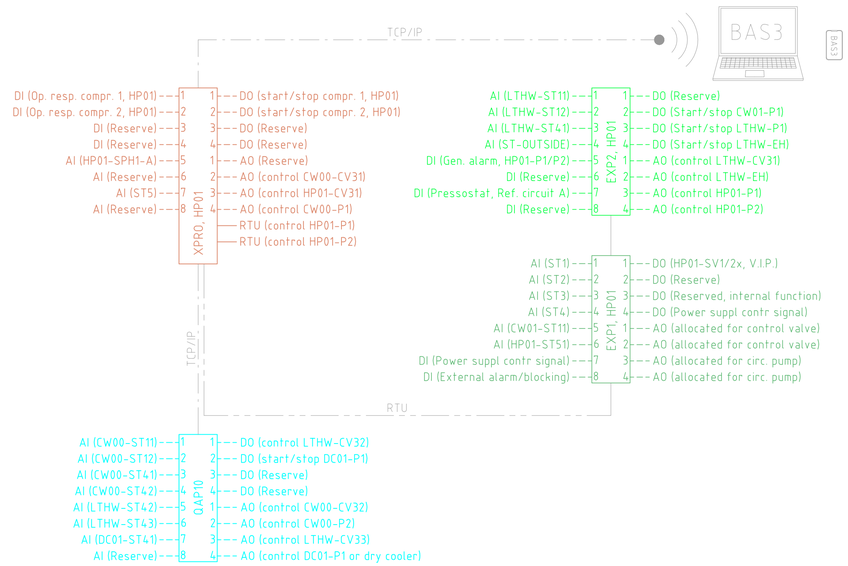
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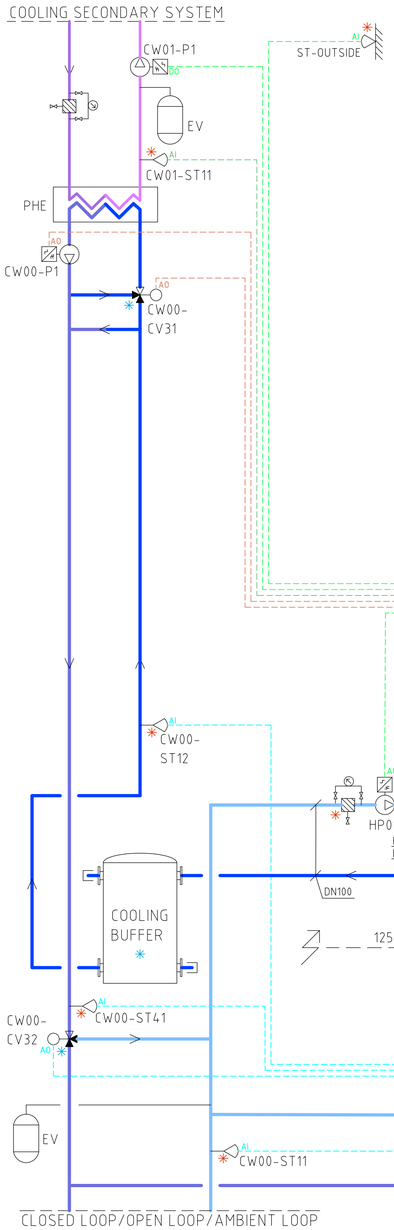
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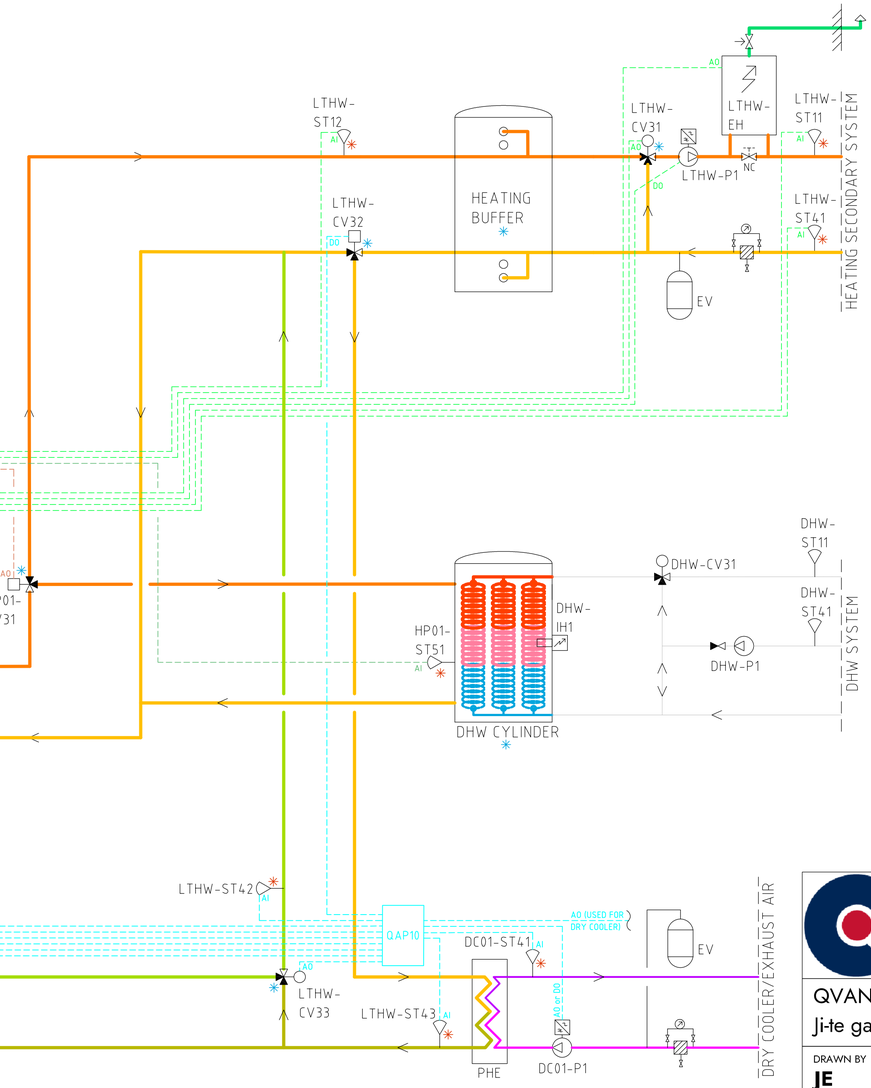
- This hydraulic schematic is a non-binding, schematic proposal for the hydraulic integration of the RS/2 unit.
- This hydraulic schematic does not replace professional planning and implementation, all applicable laws, standards, and regulations must be adhered to.
- The representation of safety devices is not complete and fittings and safety devices outside the RS/2 unit are not included and must be provided and installed on site.



IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

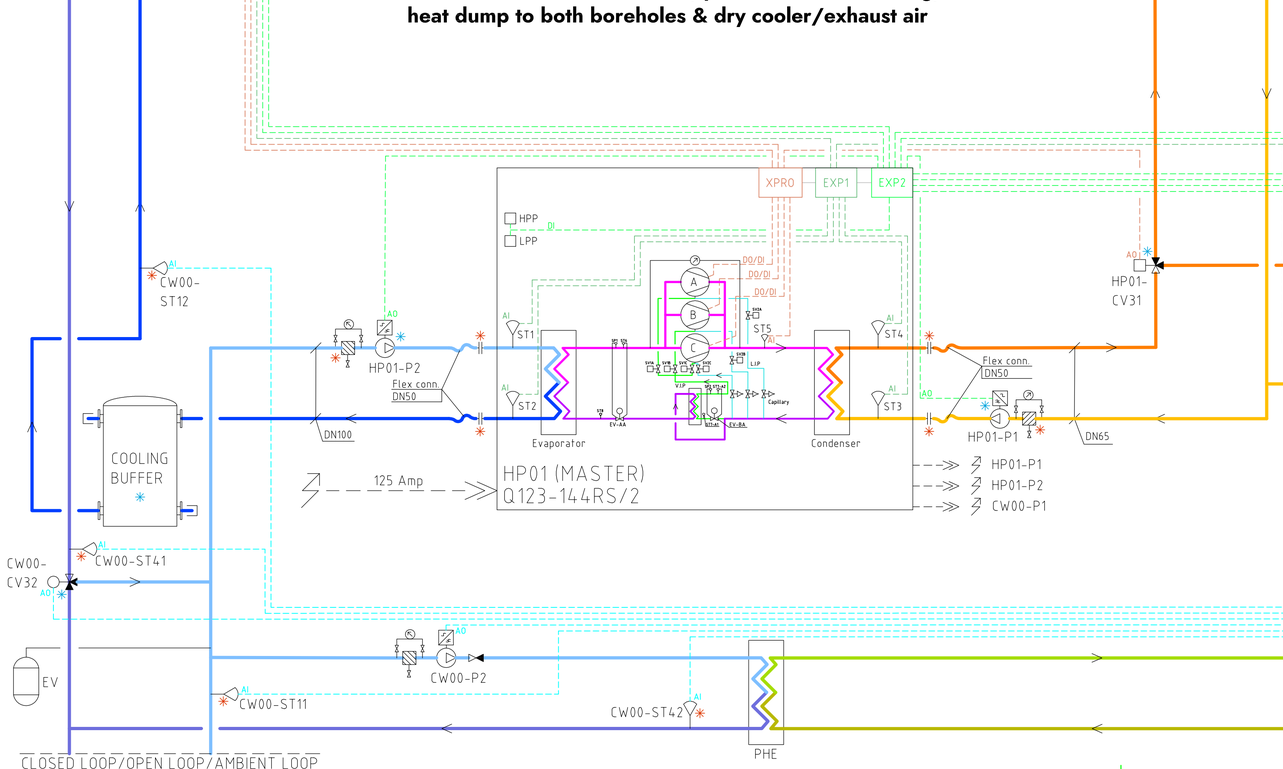
Same setup for both Master and Slave heat pumps.





Information

Q123-144RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to both boreholes & dry cooler/exhaust air



DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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- Components supplied by Qvantum
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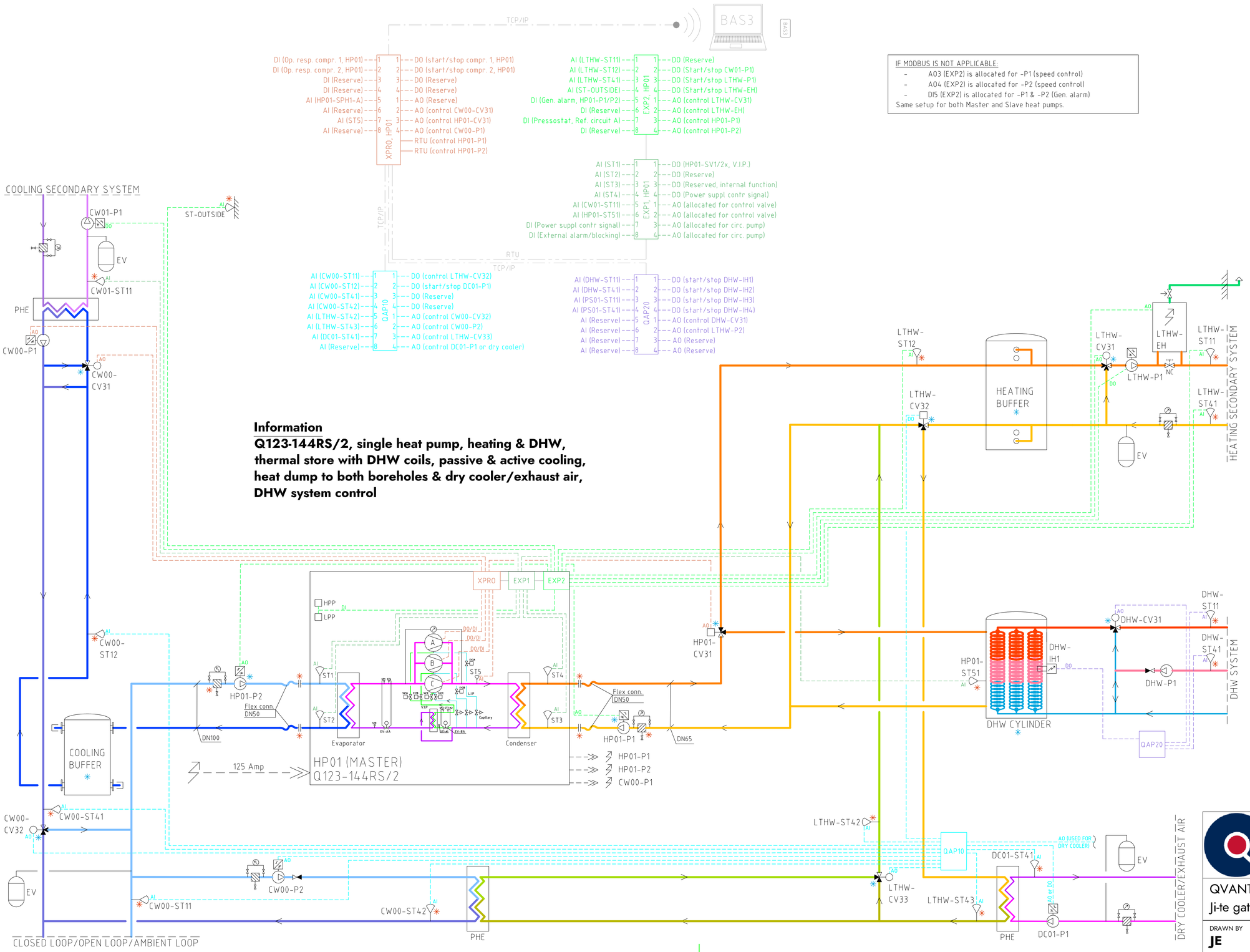
COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

Information
Q123-144RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to both boreholes & dry cooler/exhaust air, DHW system control

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.



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Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

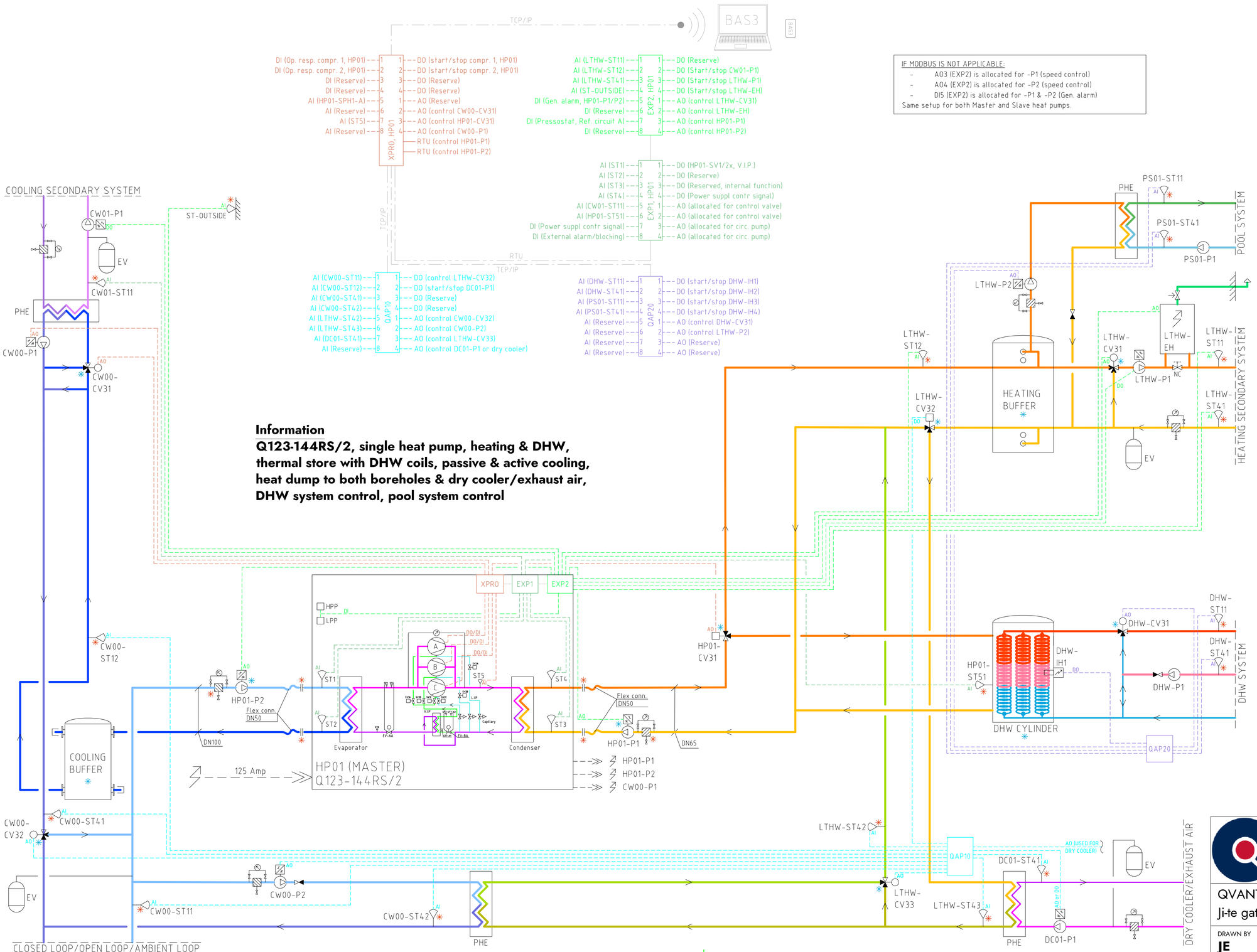
- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

Information

Q123-144RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to both boreholes & dry cooler/exhaust air, DHW system control, pool system control



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DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

DI, DO, AI & AO signals

Modbus TCP/IP

Modbus RTU

Components supplied by Qvantum

Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

Circulation pump

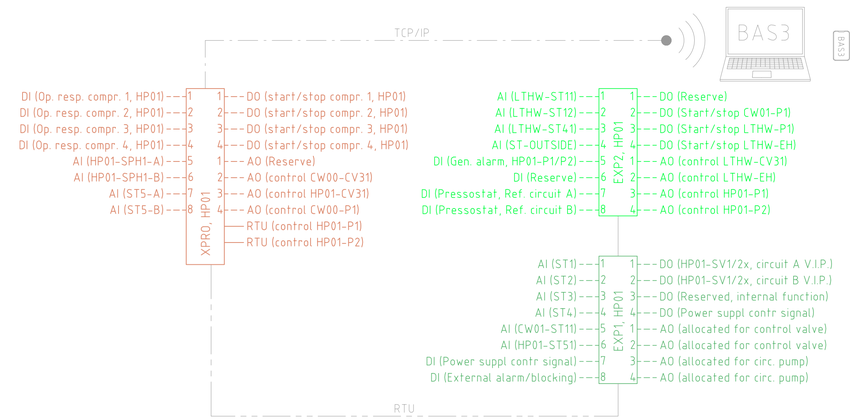
Temperature sensor

3-way control valve

Isolation valve

Non return valve

Strainer

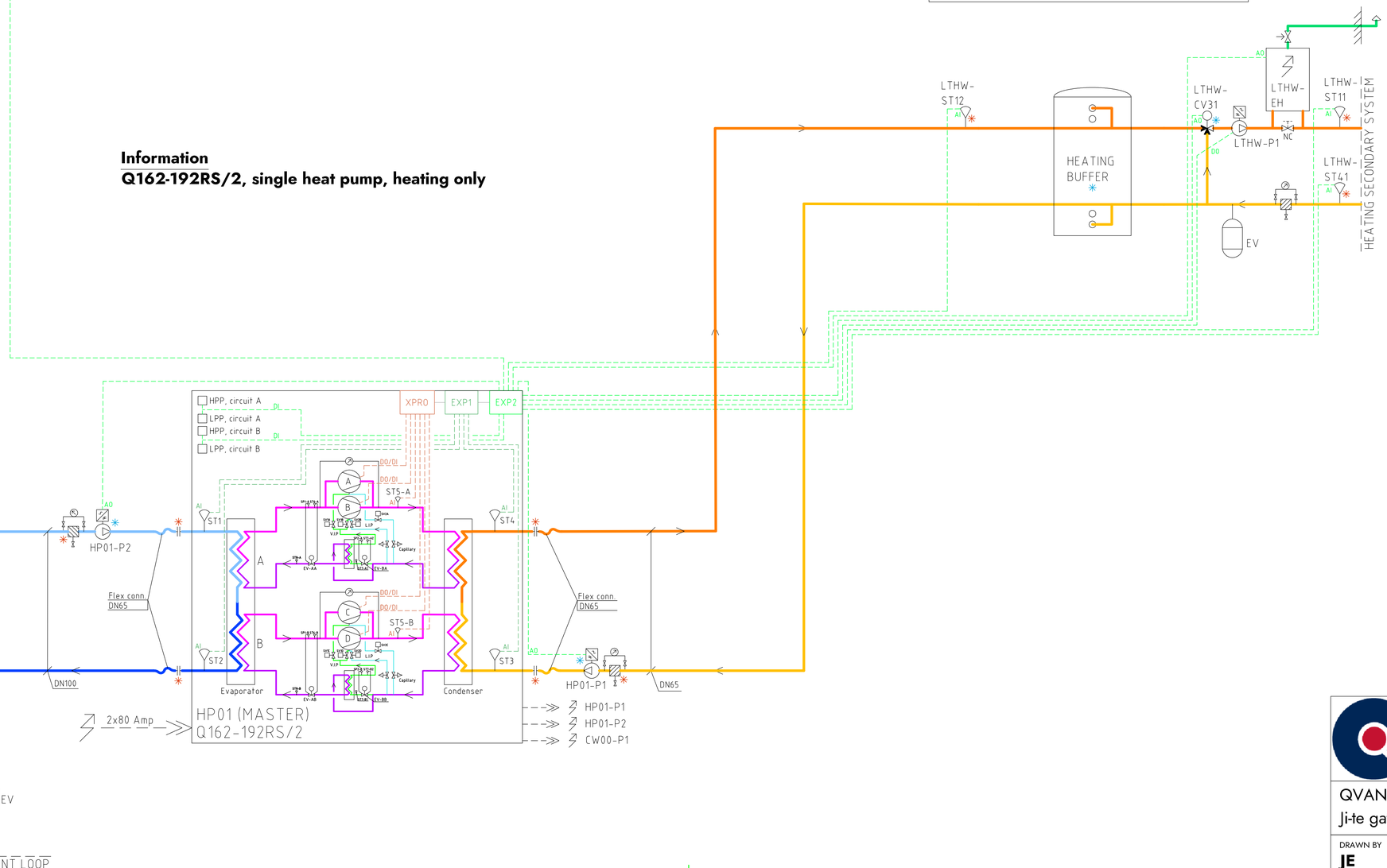


IF MODBUS IS NOT APPLICABLE:
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- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

Information

Q162-192RS/2, single heat pump, heating only



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DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

DI, DO, AI & AO signals

Modbus TCP/IP

Modbus RTU

Components supplied by Qvantum

Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

Circulation pump

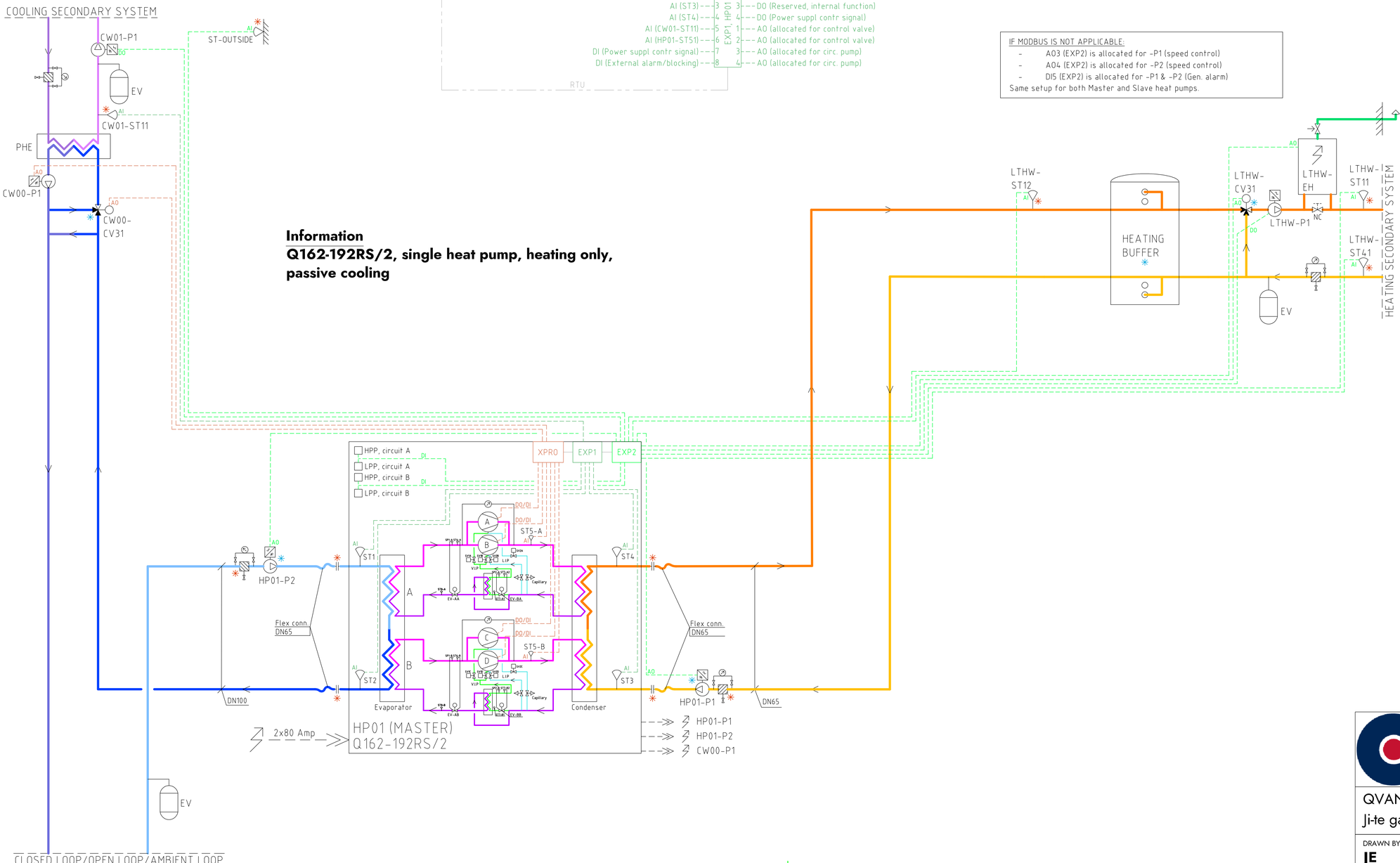
Temperature sensor

3-way control valve

Isolation valve

Non return valve

Strainer



Information

Q162-192RS/2, single heat pump, heating only, passive cooling

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DISCLAIMERS

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Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

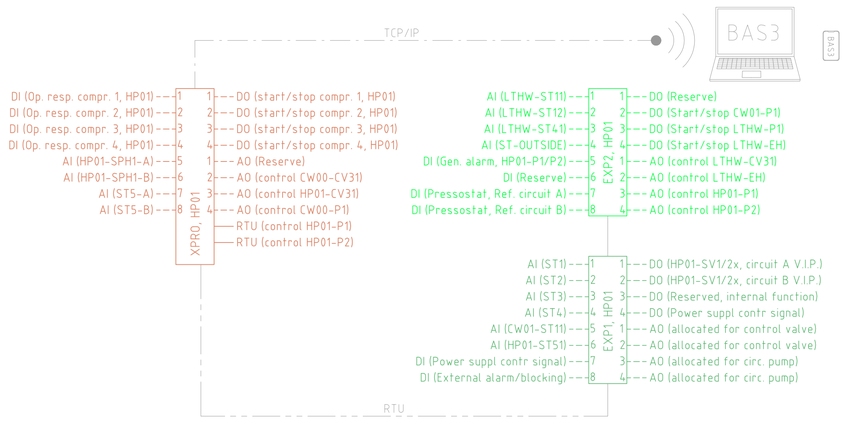
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COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

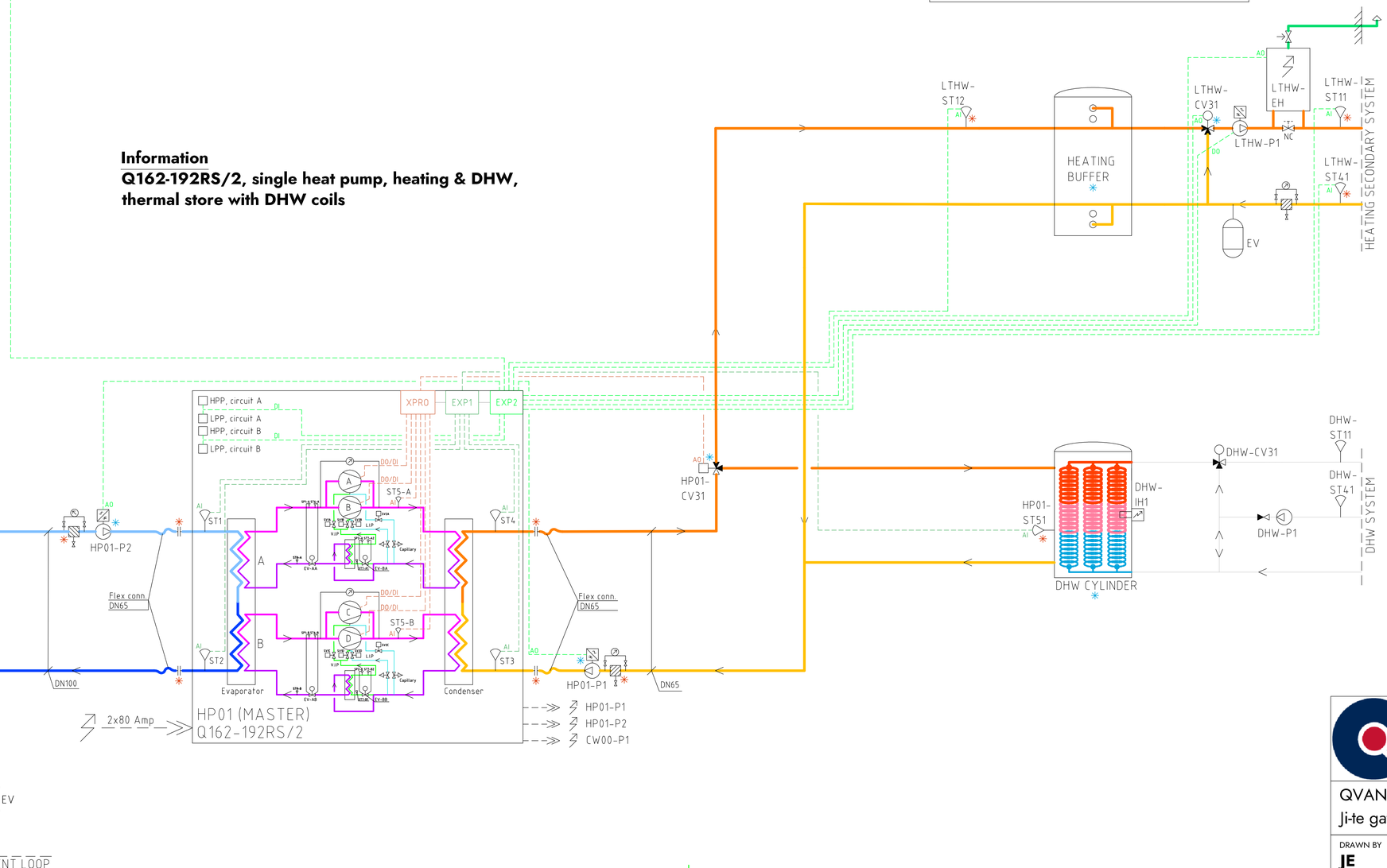


Information

Q162-192RS/2, single heat pump, heating & DHW, thermal store with DHW coils

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.



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DISCLAIMERS

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Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

TCP/IP
BAS3
RTU

DI (Op. resp. compr. 1, HP01) — DO (start/stop compr. 1, HP01)
DI (Op. resp. compr. 2, HP01) — DO (start/stop compr. 2, HP01)
DI (Op. resp. compr. 3, HP01) — DO (start/stop compr. 3, HP01)
DI (Op. resp. compr. 4, HP01) — DO (start/stop compr. 4, HP01)
AI (HP01-SPH1-A) — AO (Reserve)
AI (HP01-SPH1-B) — AO (control CW00-CV31)
AI (ST5-A) — AO (control HP01-CV31)
AI (ST5-B) — AO (control CW00-P1)
XPRO, HP01
RTU (control HP01-P1)
RTU (control HP01-P2)

AI (LTHW-ST11) — DO (Reserve)
AI (LTHW-ST12) — DO (Start/stop CW01-P1)
AI (LTHW-ST41) — DO (Start/stop LTHW-P1)
AI (ST-OUTSIDE) — DO (Start/stop LTHW-EH)
DI (Gen. alarm, HP01-P1/P2) — AO (control LTHW-CV31)
DI (Reserve) — AO (control LTHW-EH)
DI (Pressostat, Ref. circuit A) — AO (control HP01-P1)
DI (Pressostat, Ref. circuit B) — AO (control HP01-P2)
EXP2, HP01

AI (ST1) — DO (HP01-SV1/2x, circuit A V.I.P.)
AI (ST2) — DO (HP01-SV1/2x, circuit B V.I.P.)
AI (ST3) — DO (Reserved, internal function)
AI (ST4) — DO (Power suppl contr signal)
AI (CW01-ST11) — AO (allocated for control valve)
AI (HP01-ST51) — AO (allocated for control valve)
DI (Power suppl contr signal) — AO (allocated for circ. pump)
DI (External alarm/blocking) — AO (allocated for circ. pump)
EXP1, HP01

IF MODBUS IS NOT APPLICABLE:
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- AO4 (EXP2) is allocated for -P2 (speed control)
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Same setup for both Master and Slave heat pumps.

Information
Q162-192RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive cooling

COOLING SECONDARY SYSTEM
CW01-P1
EV
CW01-ST11
PHE
CW00-P1
CW00-CV31
ST-OUTSIDE
CLOSED LOOP/OPEN LOOP/AMBIENT LOOP
EV

HPP, circuit A
LPP, circuit A
HPP, circuit B
LPP, circuit B
XPRO
EXP1
EXP2
HP01 (MASTER)
Q162-192RS/2
2x80 Amp
Evaporator
Condenser
HP01-P2
HP01-P1
CW00-P1
ST1
ST2
ST3
ST4
ST5-A
ST5-B
Flex conn. DN65
DN100
DN65
HP01-CV31

LTHW-ST12
HEATING BUFFER
LTHW-CV31
LTHW-EH
LTHW-ST11
LTHW-P1
LTHW-ST41
EV
HEATING SECONDARY SYSTEM

HP01-ST51
DHW CYLINDER
DHW-IH1
DHW-CV31
DHW-P1
DHW-ST11
DHW-ST41
DHW SYSTEM

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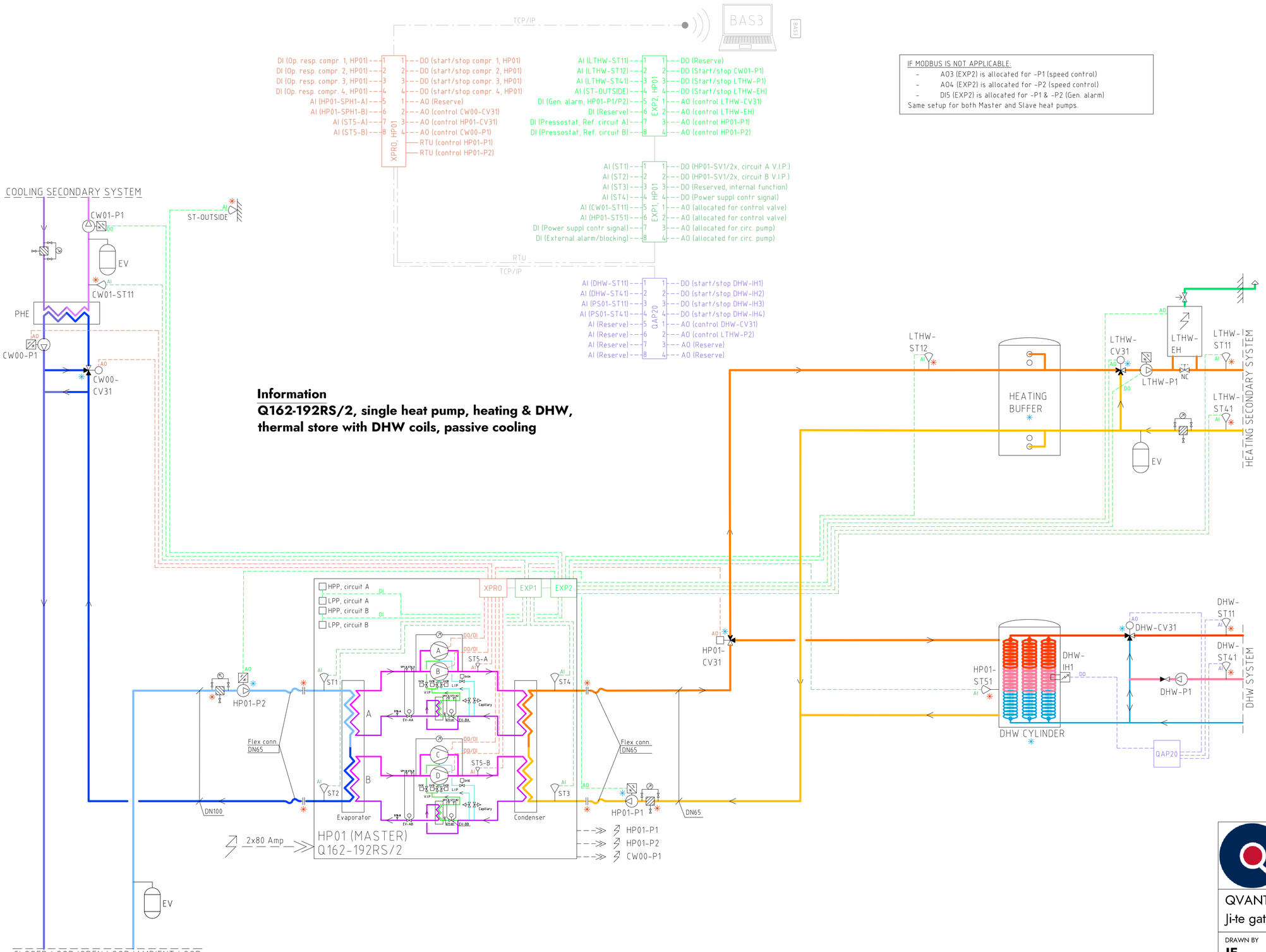
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Information

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- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

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COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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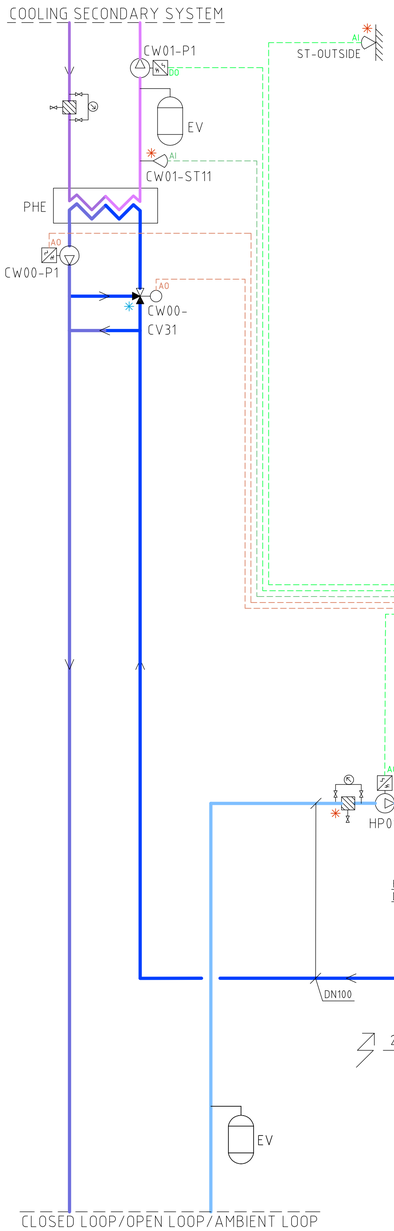
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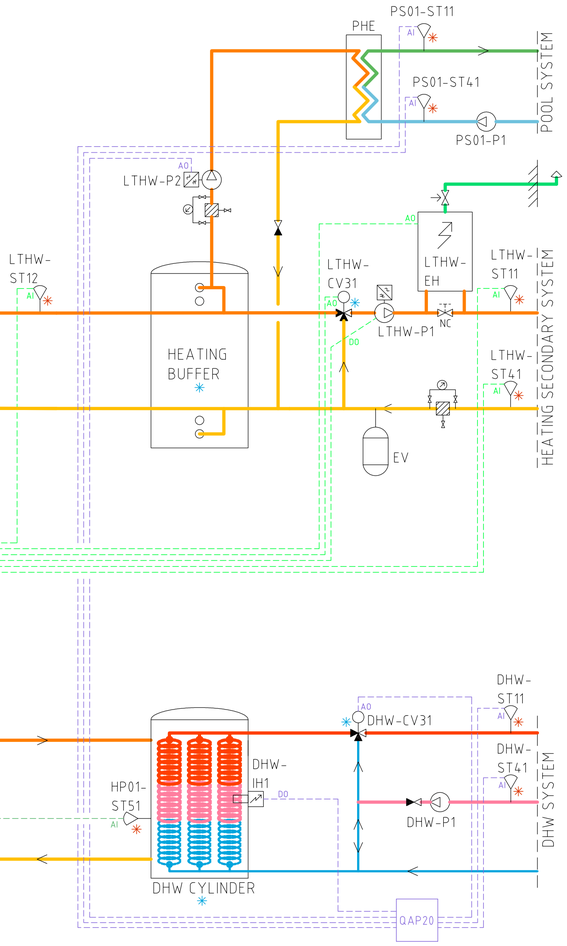
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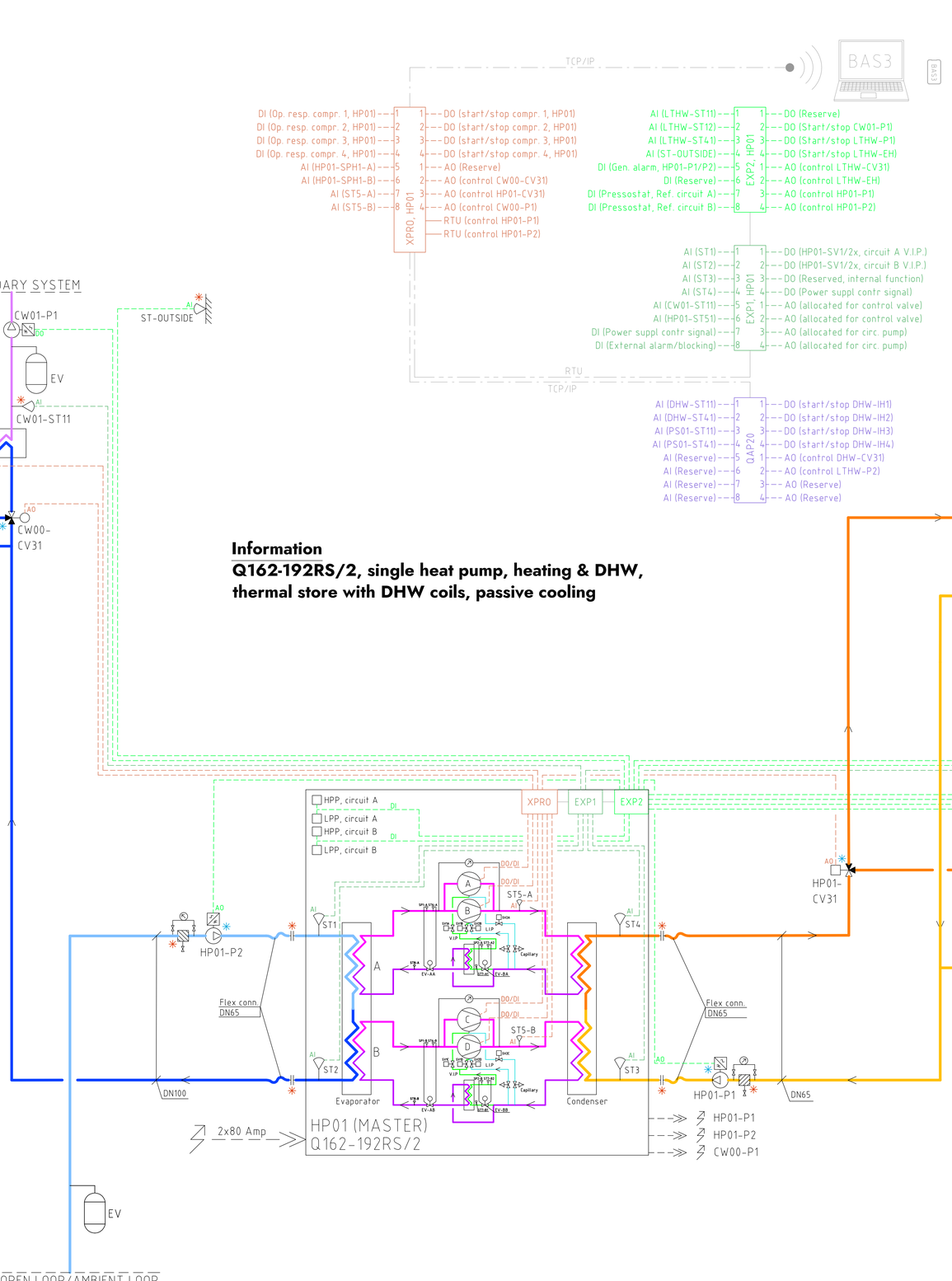
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IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.





Information

Q162-192RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive cooling

DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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HEAT PUMPS FOR SUSTAINABLE CITIES

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DRAWN BY	DRAWING NUMBER	PAGE NUMBER
JE	Q-162-192-RS2-8-105	38

XREF:
LAGER: SB11
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Subject to possible printing errors.

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- AO4 (EXP2) is allocated for -P2 (speed control)
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Same setup for both Master and Slave heat pumps.

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Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

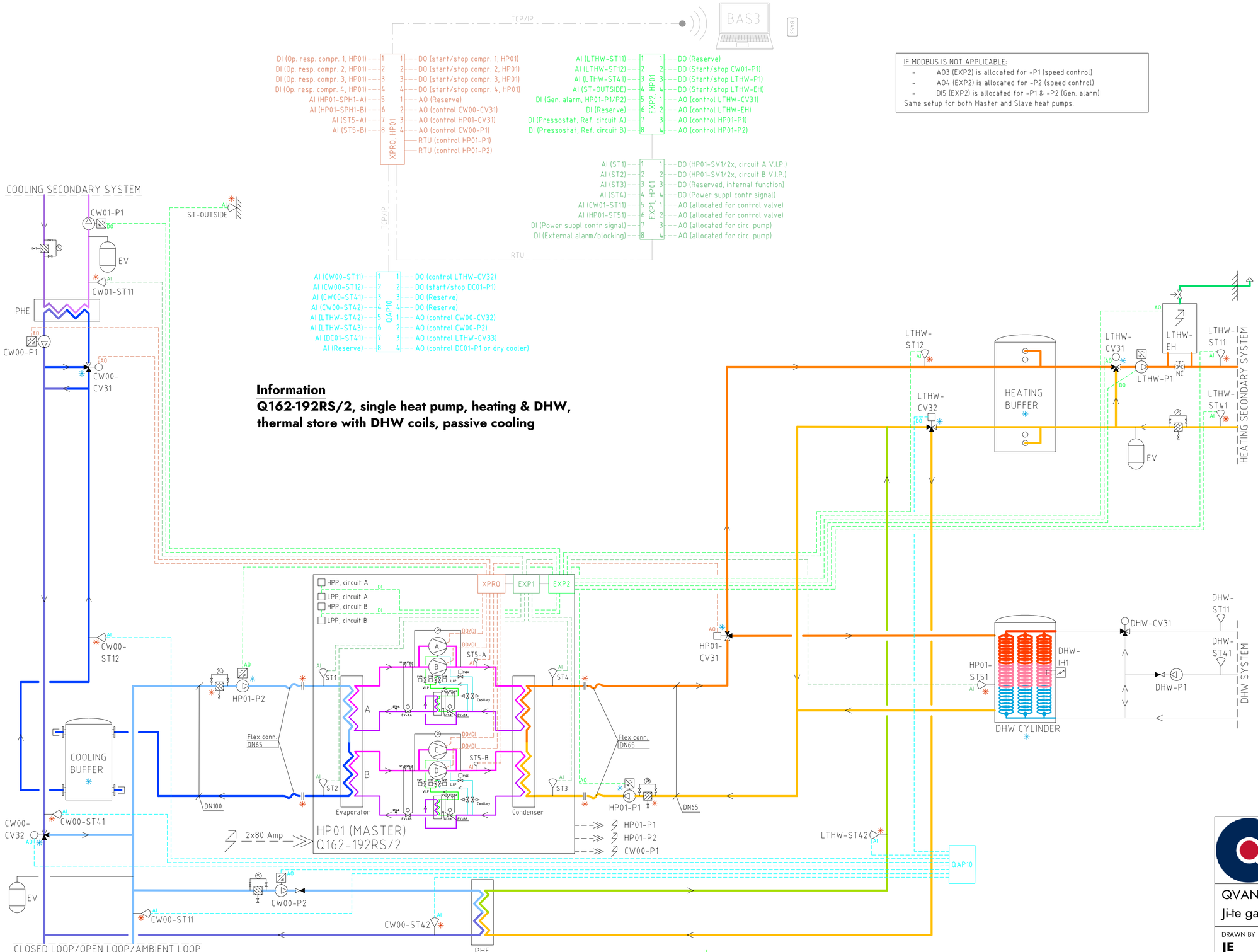
Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

Information

Q162-192RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive cooling



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- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

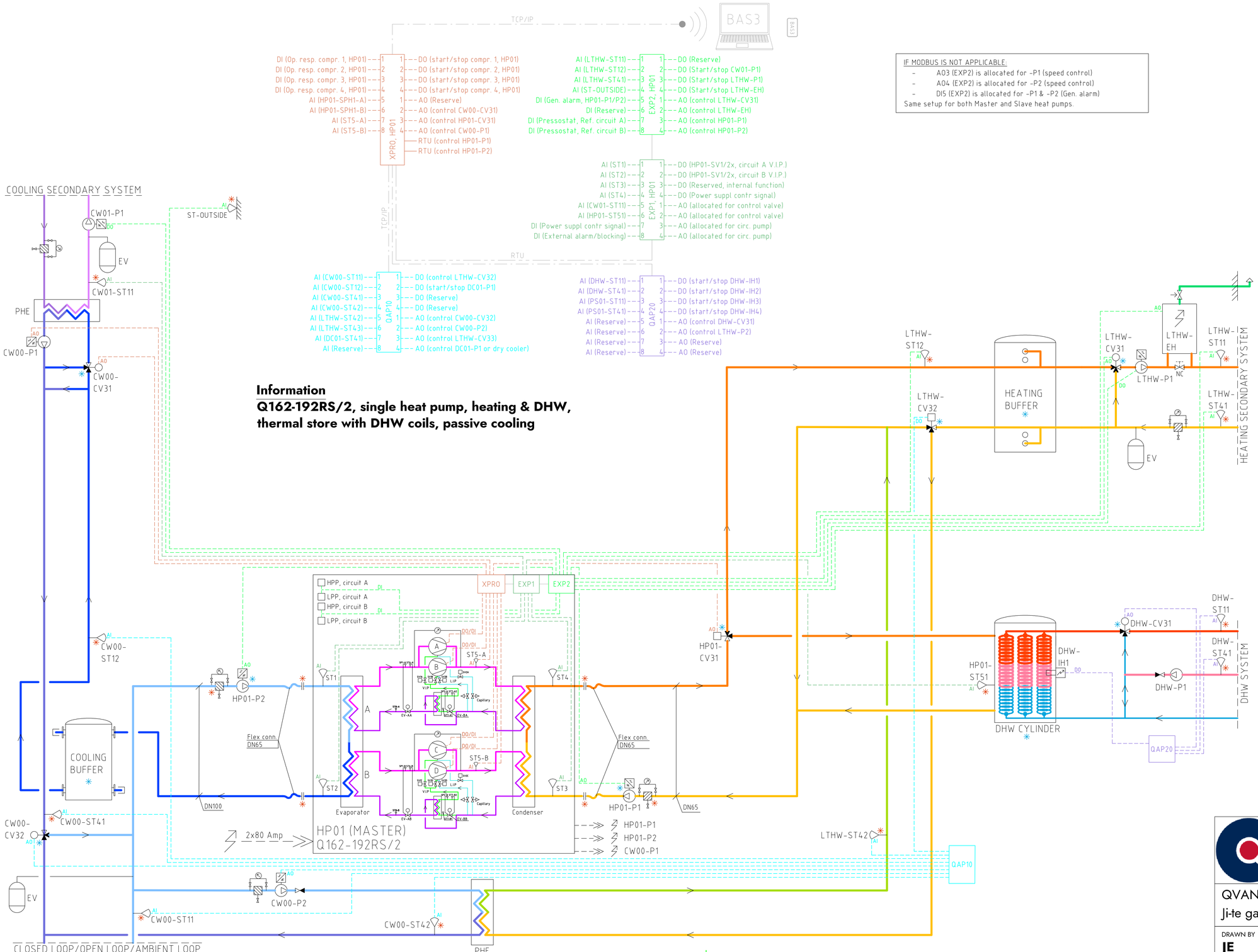
Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

Information

Q162-192RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive cooling



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DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

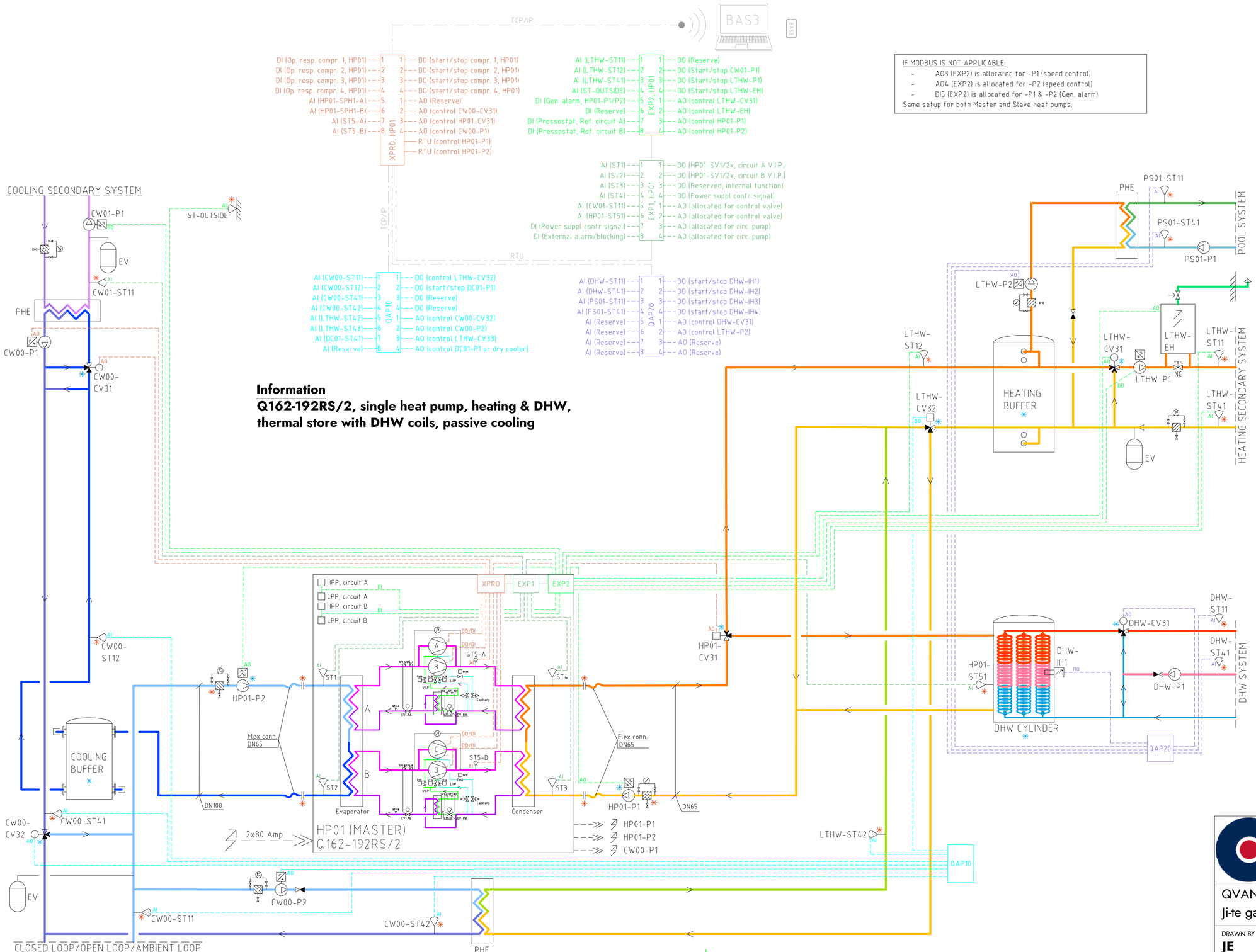
Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.



Information

Q162-192RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive cooling

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Same setup for both Master and Slave heat pumps.

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Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

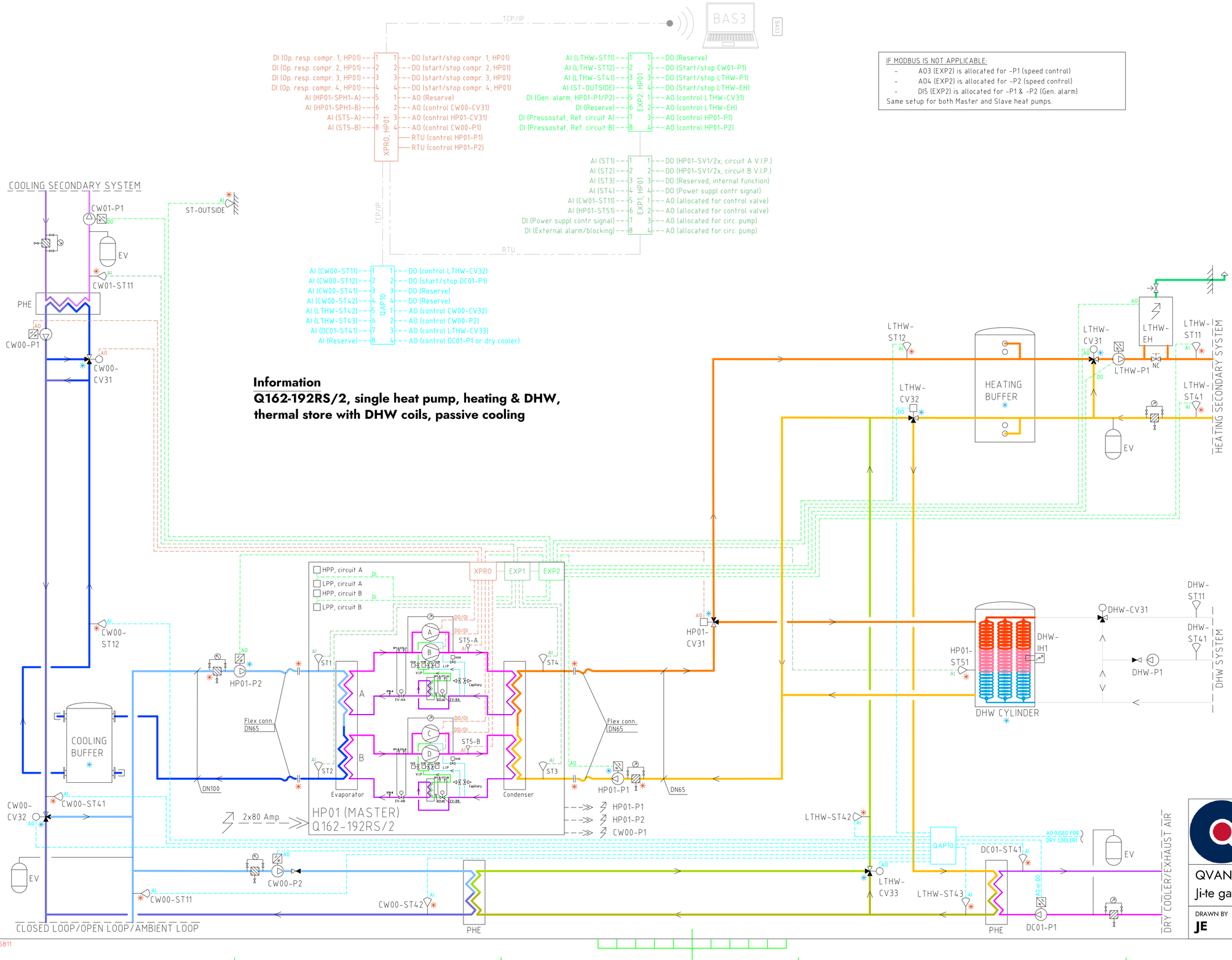
Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

Information

Q162-192RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive cooling



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Same setup for both Master and Slave heat pumps.

DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

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Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

Information

Q162-192RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive cooling

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IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

DISCLAIMERS

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

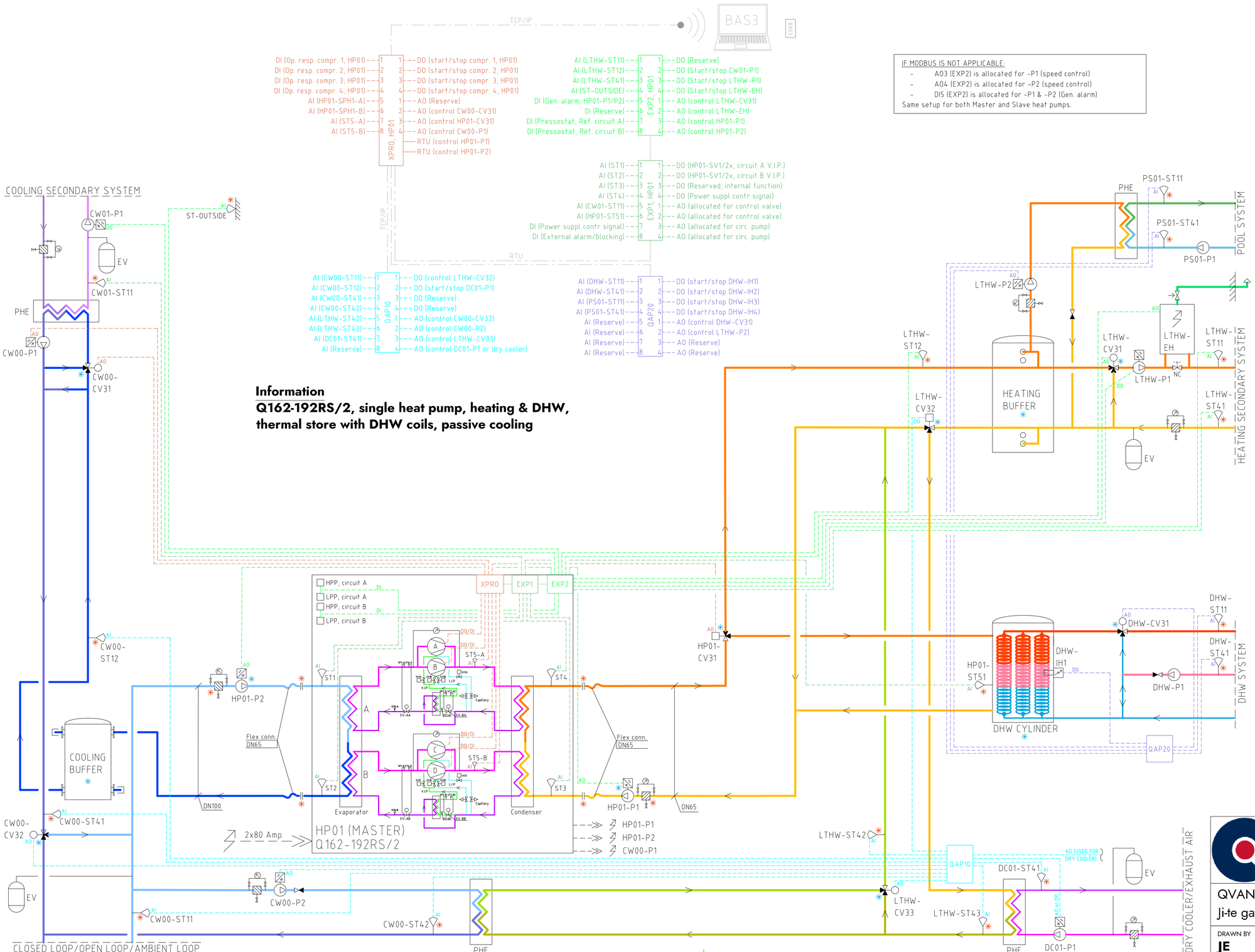
Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

Information

Q162-192RS/2, single heat pump, heating & DHW, thermal store with DHW coils, passive cooling



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QVANTUM RS/2

HYDRAULIC SCHEMATICS

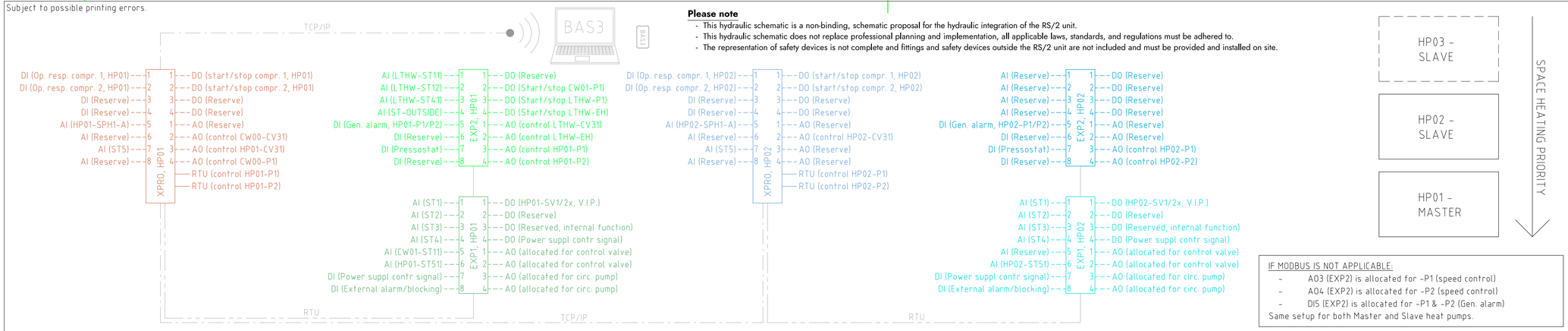
multiple heat pumps

Subject to possible printing errors.

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- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

DISCLAIMERS

Space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

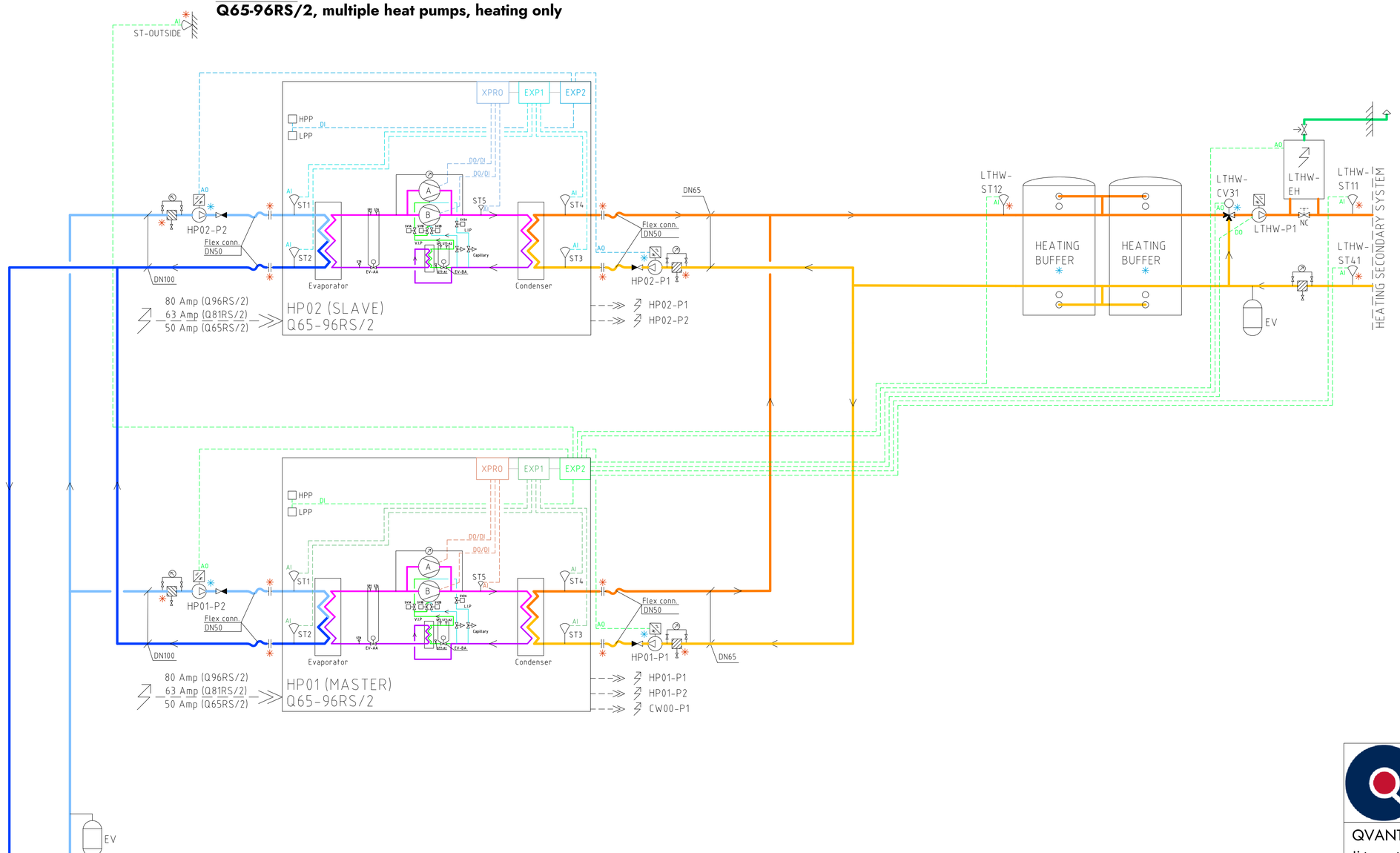
Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

Information

Q65-96RS/2, multiple heat pumps, heating only



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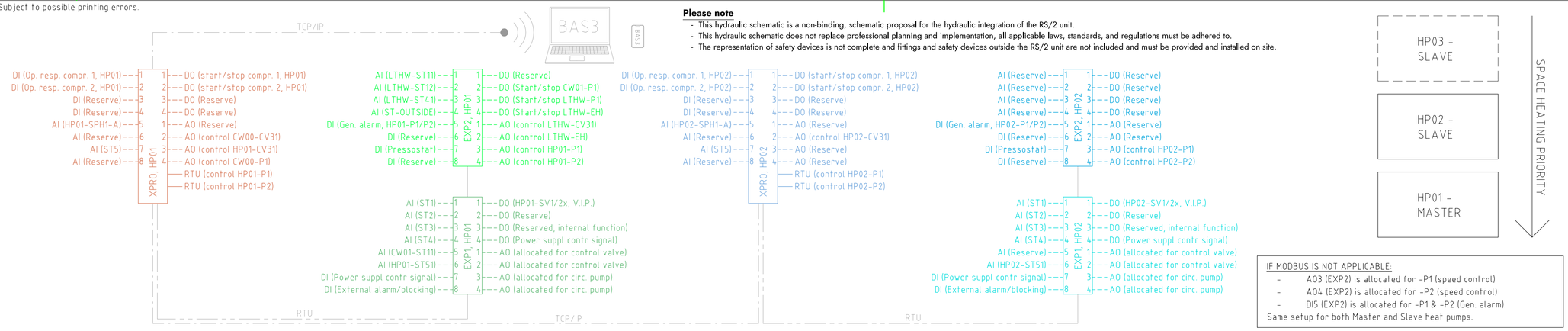
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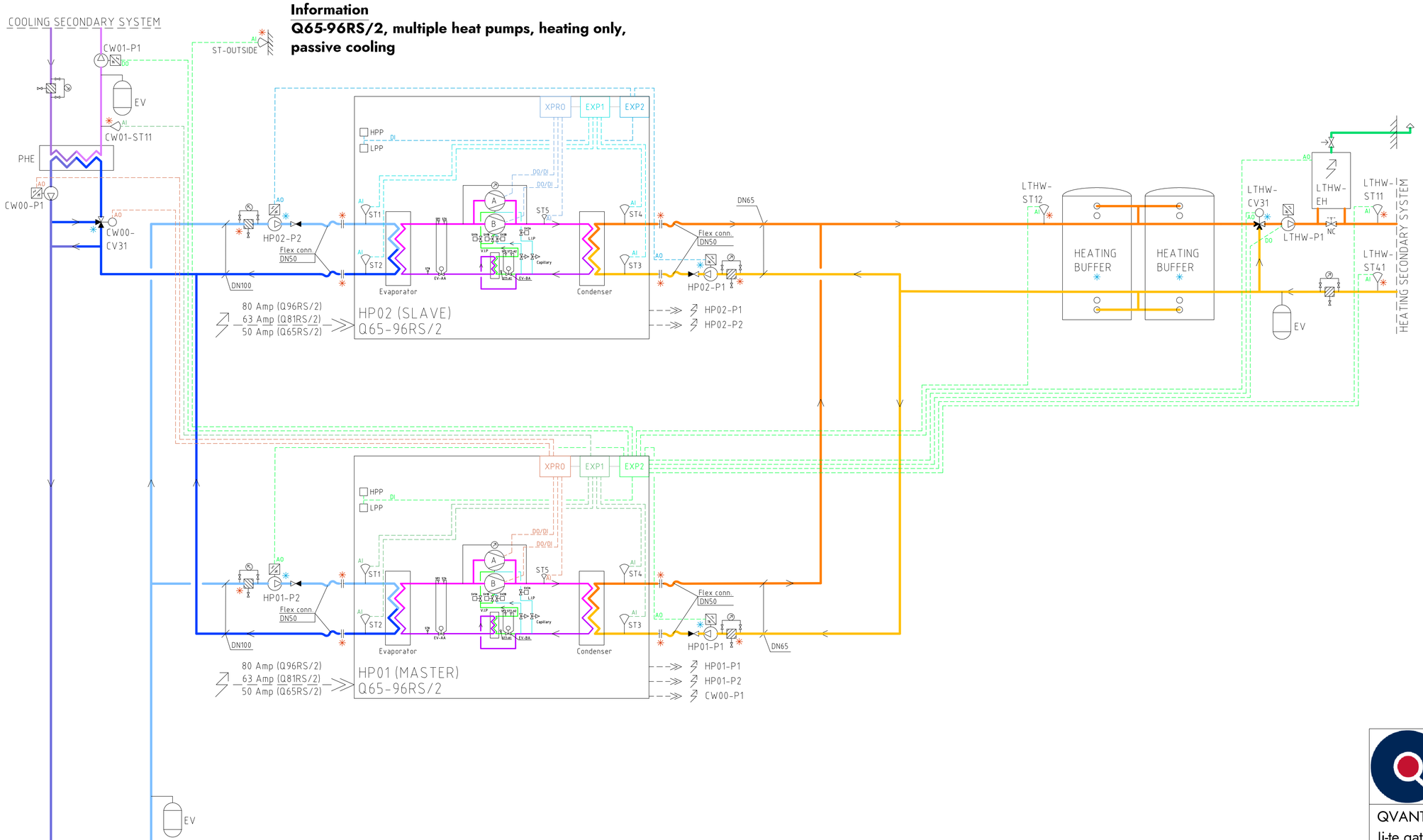
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- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

Information
Q65-96RS/2, multiple heat pumps, heating only, passive cooling



DISCLAIMERS

Space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

- – – – – DI, DO, AI & AO signals
- —·— Modbus TCP/IP
- —·–·— Modbus RTU
- ✳ Components supplied by Qvantum
- ✳ Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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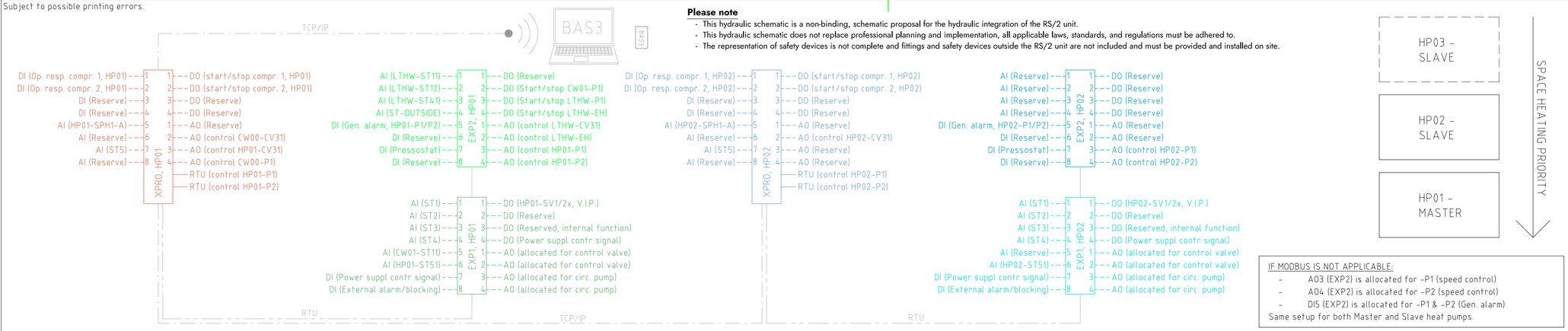
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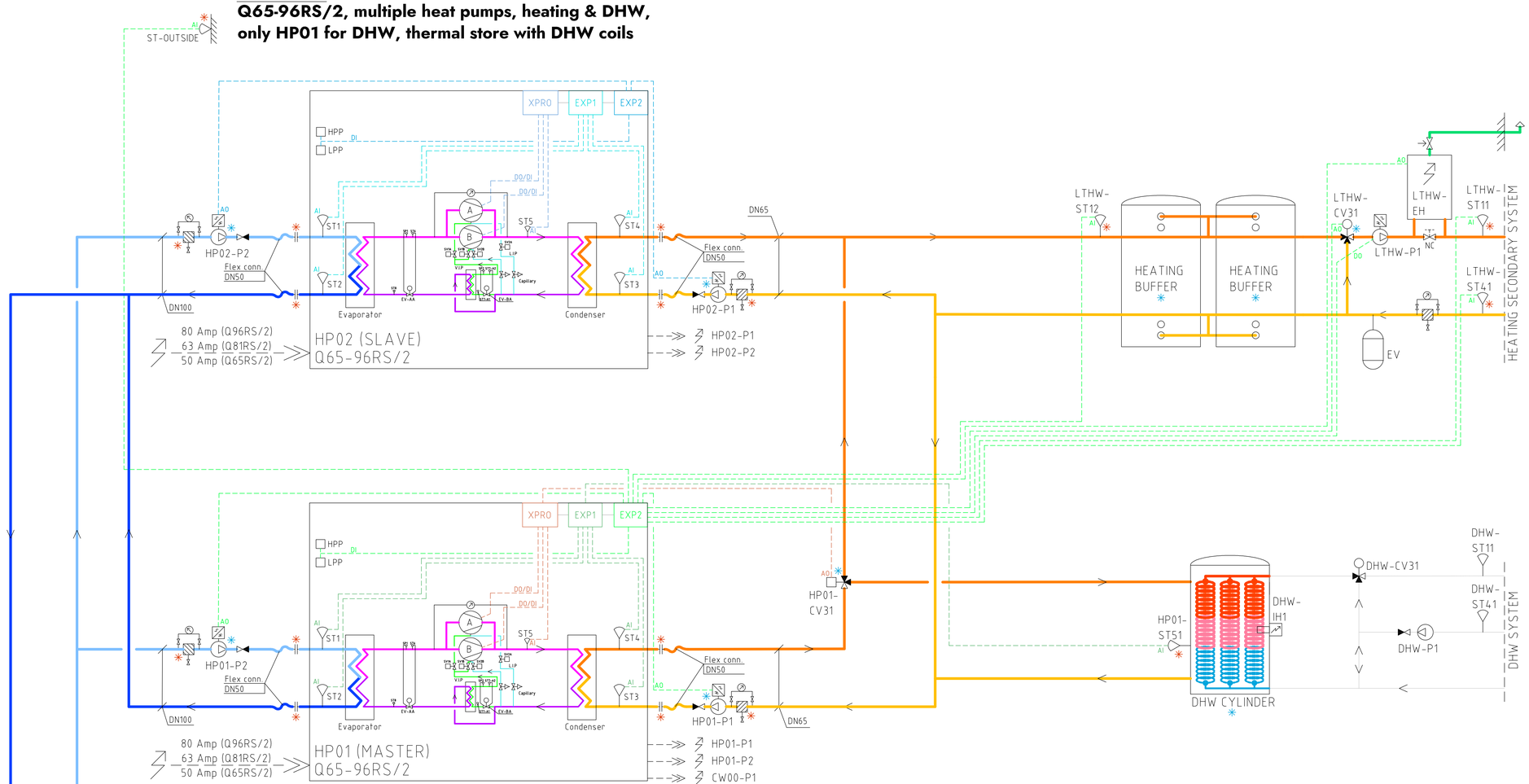
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Same setup for both Master and Slave heat pumps.

Information
Q65-96RS/2, multiple heat pumps, heating & DHW, only HP01 for DHW, thermal store with DHW coils



DISCLAIMERS

Space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that could be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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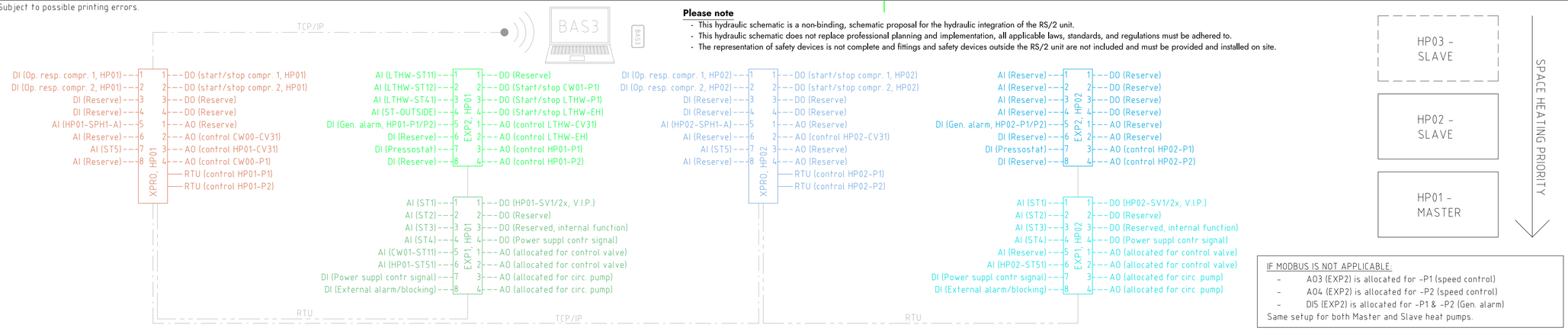
QVANTUM
HEAT PUMPS FOR SUSTAINABLE CITIES

QVANTUM ENERGI AB
Ji-te gatan 7, 265 38 Åstorp

DRAWN BY	DRAWING NUMBER	PAGE NUMBER
JE	Q-65-96-RS2-8-202	48

XREF:
LAGER: SB11
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Subject to possible printing errors.



Please note

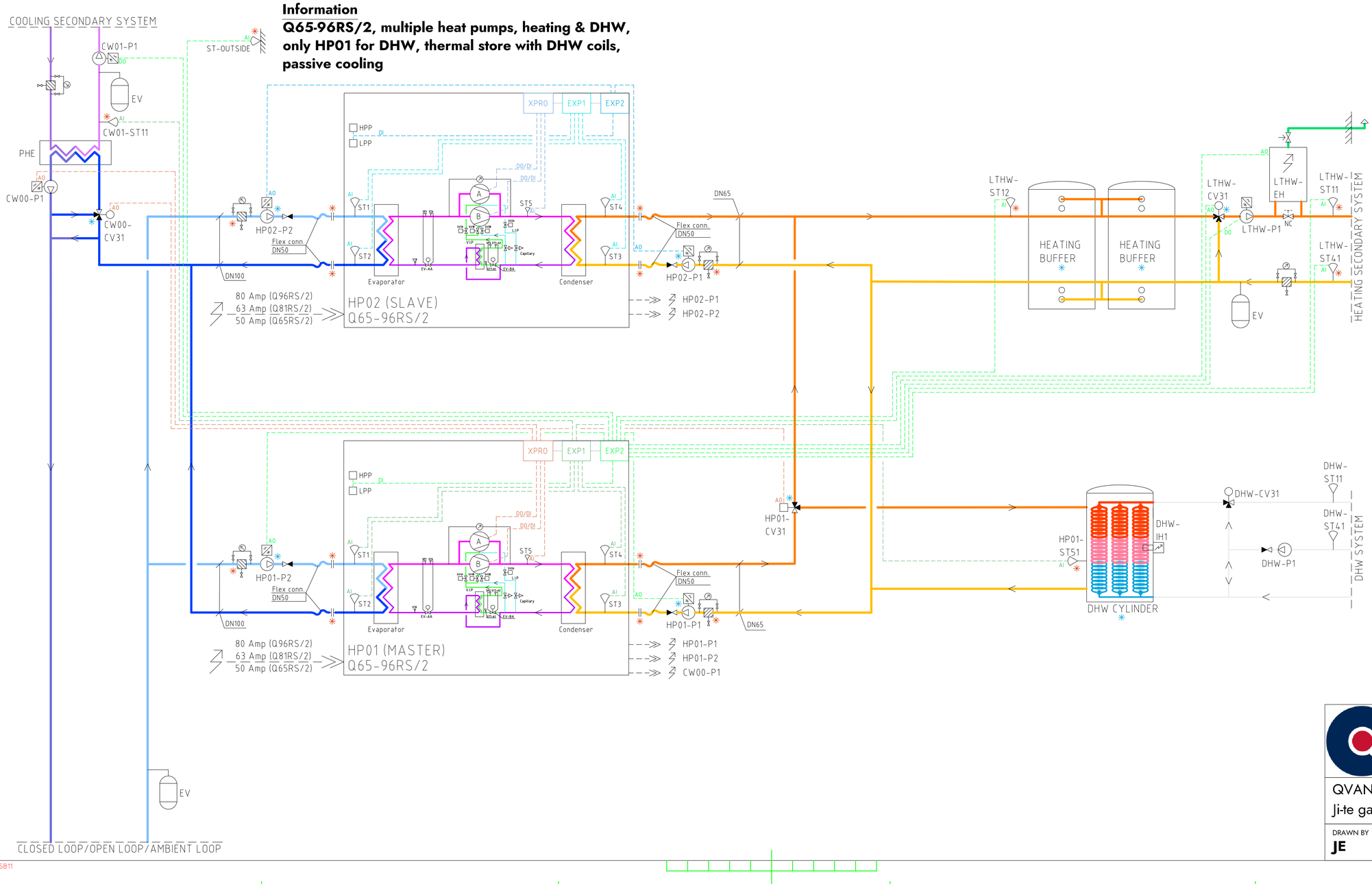
- This hydraulic schematic is a non-binding, schematic proposal for the hydraulic integration of the RS/2 unit.
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IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

Information

Q65-96RS/2, multiple heat pumps, heating & DHW, only HP01 for DHW, thermal store with DHW coils, passive cooling



DISCLAIMERS

Space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that could be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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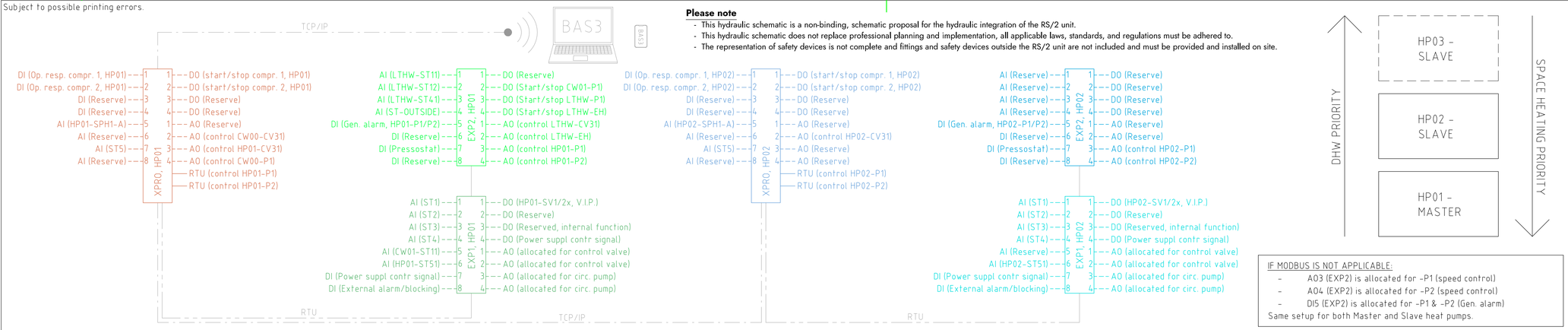
QVANTUM
HEAT PUMPS FOR SUSTAINABLE CITIES

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DRAWN BY	DRAWING NUMBER	PAGE NUMBER
JE	Q-65-96-RS2-8-203	49

XREF:
LAGER: SB11
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Subject to possible printing errors.



Please note

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IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

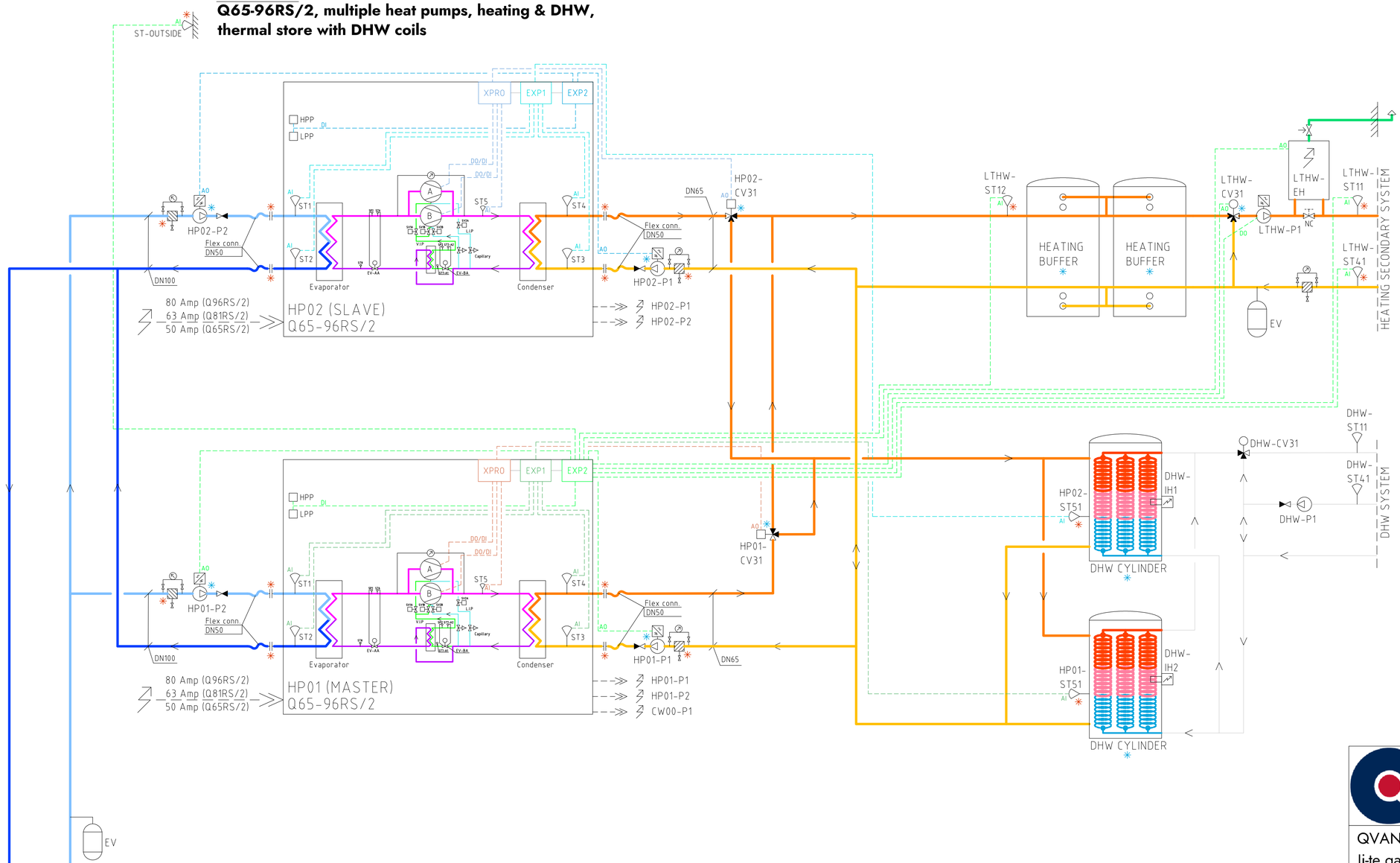
Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

Information
Q65-96RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils



- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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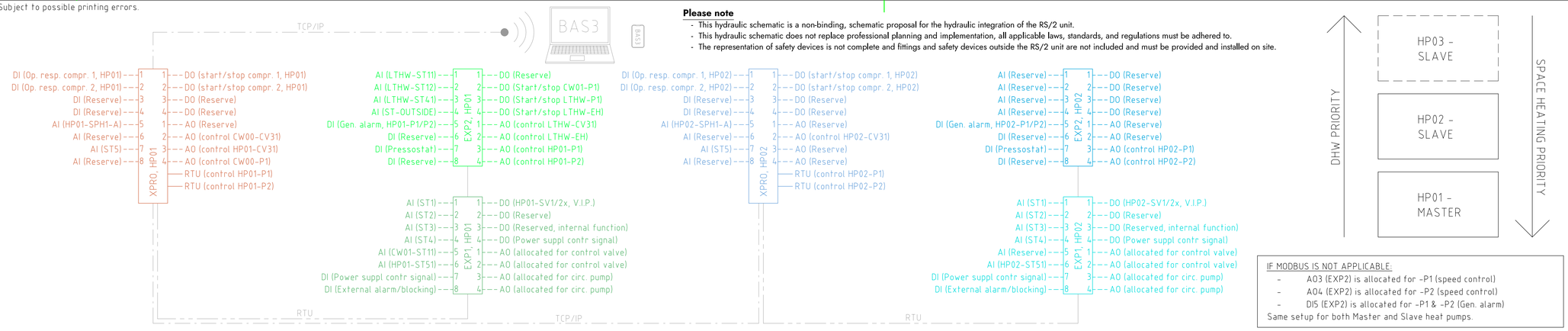
QVANTUM
HEAT PUMPS FOR SUSTAINABLE CITIES

QVANTUM ENERGI AB
Ji-te gatan 7, 265 38 Åstorp

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Subject to possible printing errors.



Please note

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IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

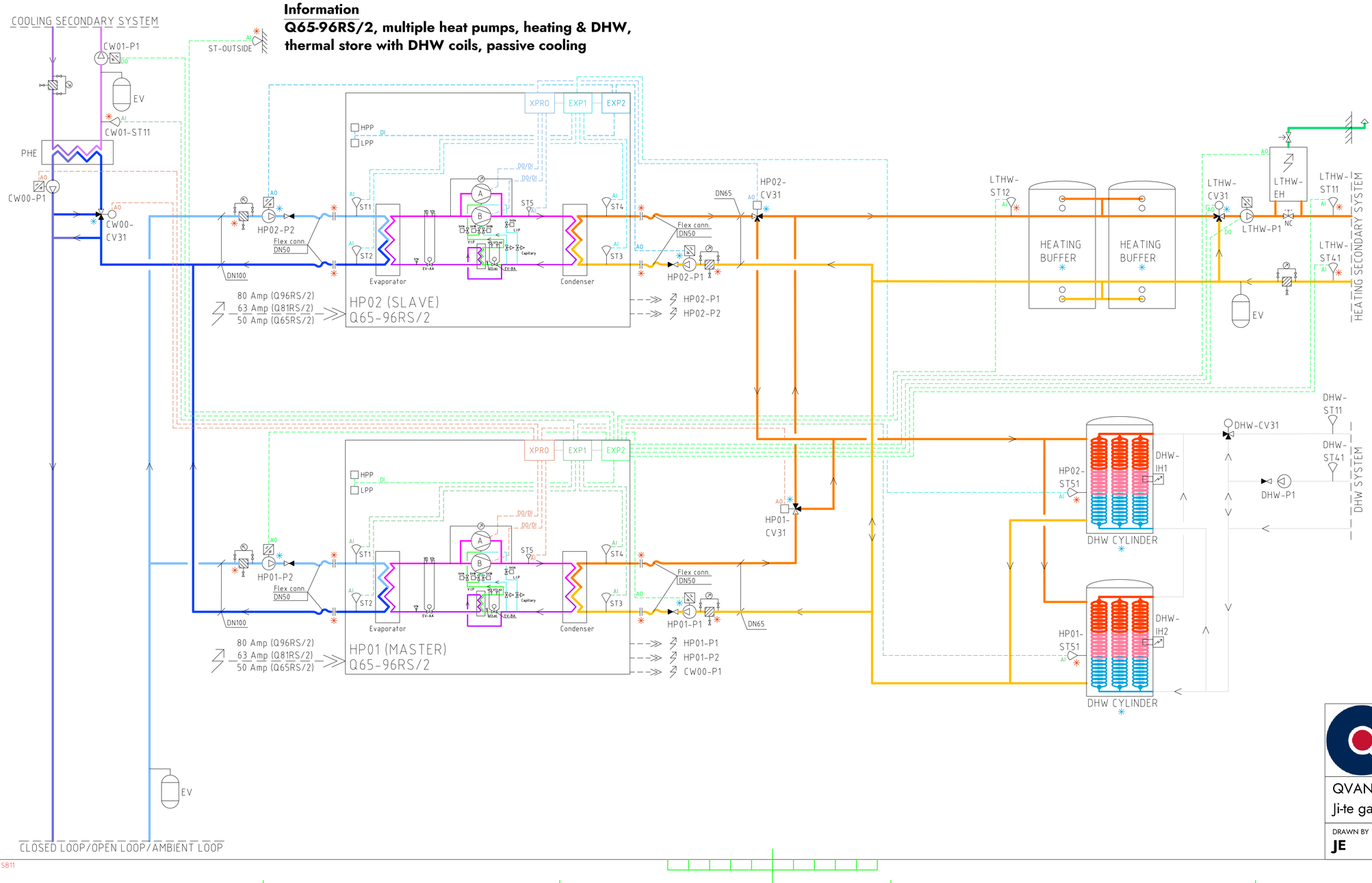
Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

Information
Q65-96RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive cooling



DI, DO, AI & AO signals

Modbus TCP/IP

Modbus RTU

Components supplied by Qvantum

Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

Circulation pump

Temperature sensor

3-way control valve

Isolation valve

Non return valve

Strainer

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HEAT PUMPS FOR SUSTAINABLE CITIES

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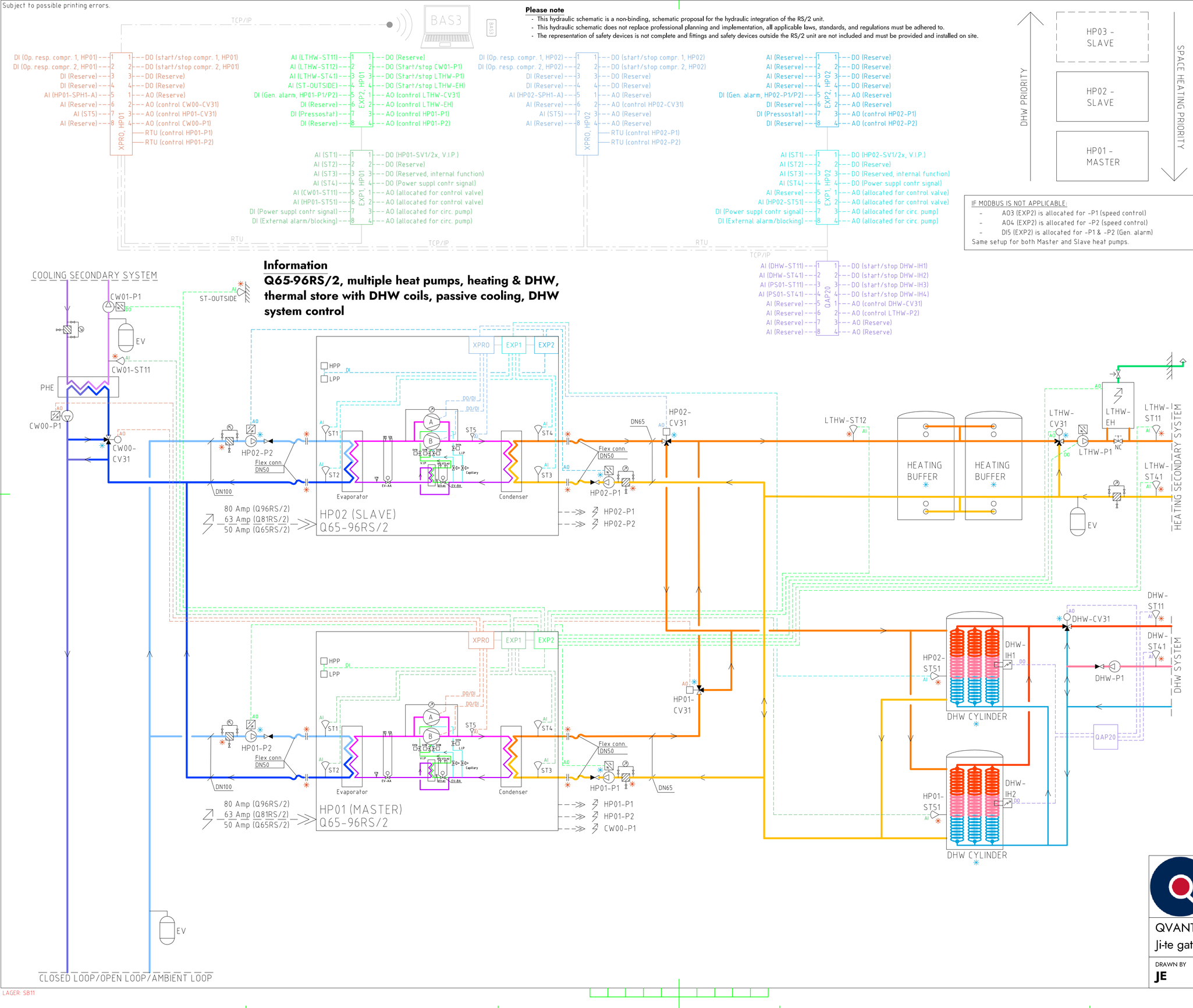
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Subject to possible printing errors.

Please note
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Information
Q65-96RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive cooling, DHW system control



DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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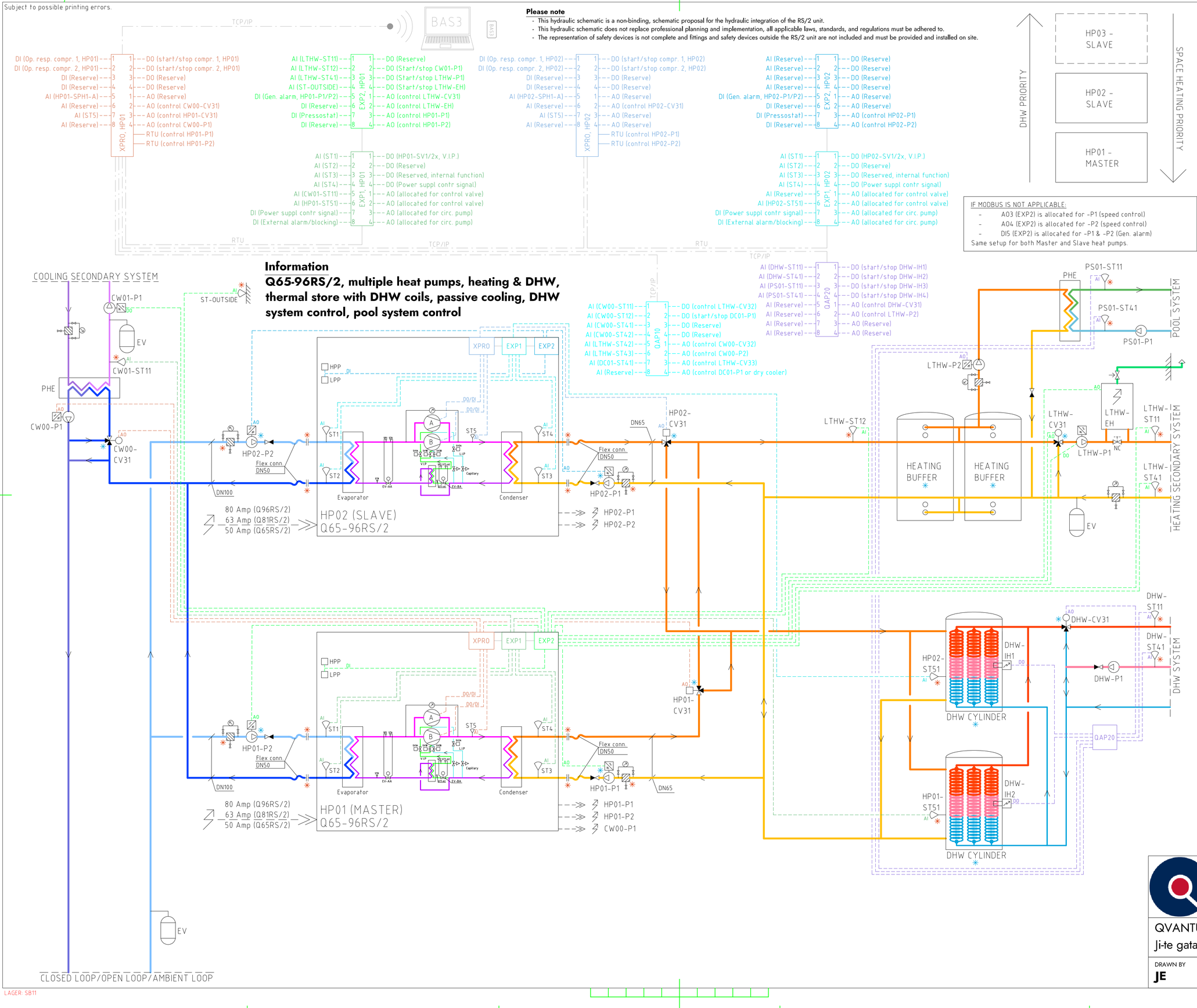
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Subject to possible printing errors.

Please note
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Information
Q65-96RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive cooling, DHW system control, pool system control



DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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Information
Q65-96RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to boreholes

HP03 - SLAVE
HP02 - SLAVE
HP01 - MASTER
DHW PRIORITY
SPACE HEATING PRIORITY

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

DI, DO, AI & AO signals
Modbus TCP/IP
Modbus RTU
Components supplied by Qvantum
Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

Circulation pump
Temperature sensor
3-way control valve
Isolation valve
Non return valve
Strainer

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Subject to possible printing errors.

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Information
Q65-96RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to boreholes, DHW system control

TCP/IP
BAS3
SS-EN 16798-5-1

XPRO, HP01
- DI (Op. resp. compr. 1, HP01) → DO (start/stop compr. 1, HP01)
- DI (Op. resp. compr. 2, HP01) → DO (start/stop compr. 2, HP01)
- DI (Reserve) → DO (Reserve)
- DI (Reserve) → DO (Reserve)
- AI (HP01-SPH1-A) → AO (Reserve)
- AI (Reserve) → AO (control CW00-CV31)
- AI (ST5) → AO (control HP01-CV31)
- AI (Reserve) → AO (control CW00-P1)
- RTU (control HP01-P1)
- RTU (control HP01-P2)

EXP2, HP01
- AI (LTHW-ST11) → DO (Reserve)
- AI (LTHW-ST12) → DO (Start/stop CW01-P1)
- AI (LTHW-ST41) → DO (Start/stop LTHW-P1)
- AI (ST-OUTSIDE) → DO (Start/stop LTHW-EH)
- DI (Gen. alarm, HP01-P1/P2) → AO (control LTHW-CV31)
- DI (Reserve) → AO (control LTHW-EH)
- DI (Pressostat) → AO (control HP01-P1)
- DI (Reserve) → AO (control HP01-P2)

EXP1, HP01
- AI (ST1) → DO (HP01-SV1/2x, V.I.P.)
- AI (ST2) → DO (Reserve)
- AI (ST3) → DO (Reserved, internal function)
- AI (ST4) → DO (Power suppl contr signal)
- AI (CW01-ST11) → AO (allocated for control valve)
- AI (HP01-ST51) → AO (allocated for control valve)
- DI (Power suppl contr signal) → AO (allocated for circ. pump)
- DI (External alarm/blocking) → AO (allocated for circ. pump)

XPRO, HP02
- DI (Op. resp. compr. 1, HP02) → DO (start/stop compr. 1, HP02)
- DI (Op. resp. compr. 2, HP02) → DO (start/stop compr. 2, HP02)
- DI (Reserve) → DO (Reserve)
- DI (Reserve) → DO (Reserve)
- AI (HP02-SPH1-A) → AO (Reserve)
- AI (Reserve) → AO (control HP02-CV31)
- AI (ST5) → AO (Reserve)
- AI (Reserve) → AO (Reserve)
- RTU (control HP02-P1)
- RTU (control HP02-P2)

EXP2, HP02
- AI (Reserve) → DO (Reserve)
- AI (Reserve) → DO (Reserve)
- AI (Reserve) → DO (Reserve)
- AI (Reserve) → DO (Reserve)
- DI (Gen. alarm, HP02-P1/P2) → AO (Reserve)
- DI (Reserve) → AO (Reserve)
- DI (Pressostat) → AO (control HP02-P1)
- DI (Reserve) → AO (control HP02-P2)

EXP1, HP02
- AI (ST1) → DO (HP02-SV1/2x, V.I.P.)
- AI (ST2) → DO (Reserve)
- AI (ST3) → DO (Reserved, internal function)
- AI (ST4) → DO (Power suppl contr signal)
- AI (Reserve) → AO (allocated for control valve)
- AI (HP02-ST51) → AO (allocated for control valve)
- DI (Power suppl contr signal) → AO (allocated for circ. pump)
- DI (External alarm/blocking) → AO (allocated for circ. pump)

QAP10
- AI (CW00-ST11) → DO (control LTHW-CV32)
- AI (CW00-ST12) → DO (start/stop DC01-P1)
- AI (CW00-ST41) → DO (Reserve)
- AI (CW00-ST42) → DO (Reserve)
- AI (LTHW-ST42) → AO (control CW00-CV32)
- AI (LTHW-ST43) → AO (control CW00-P2)
- AI (DC01-ST41) → AO (control LTHW-CV33)
- AI (Reserve) → AO (control DC01-P1 or dry cooler)

QAP20
- AI (DHW-ST11) → DO (start/stop DHW-IH1)
- AI (DHW-ST41) → DO (start/stop DHW-IH2)
- AI (PS01-ST11) → DO (start/stop DHW-IH3)
- AI (PS01-ST41) → DO (start/stop DHW-IH4)
- AI (Reserve) → AO (control DHW-CV31)
- AI (Reserve) → AO (control LTHW-P2)
- AI (Reserve) → AO (Reserve)
- AI (Reserve) → AO (Reserve)

DHW PRIORITY
- HP03 - SLAVE
- HP02 - SLAVE
- HP01 - MASTER

SPACE HEATING PRIORITY

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

COOLING SECONDARY SYSTEM
CW01-P1
ST-OUTSIDE
EV
CW01-ST11
PHE
CW00-P1
CW00-CV31
CW00-ST12
COOLING BUFFER
HP02-P2
Flex conn. DN50
DN100
HP02 (SLAVE) Q65-96RS/2
80 Amp (Q96RS/2)
63 Amp (Q81RS/2)
50 Amp (Q65RS/2)
Evaporator
Condenser
HP02-P1
DN65
HP02-CV31
LTHW-ST12
LTHW-CV32
HEATING BUFFER
HEATING BUFFER
LTHW-CV31
LTHW-EH
LTHW-ST11
LTHW-P1
LTHW-ST41
EV
HEATING SECONDARY SYSTEM
HP01-P2
HP01-P1
HP01-CV31
HP01 (MASTER) Q65-96RS/2
CW00-ST41
CW00-CV32
CW00-P2
CW00-ST11
CW00-ST42
LTHW-ST42
QAP10
DHW-ST11
DHW-CV31
DHW-ST41
DHW-P1
DHW SYSTEM
HP02-ST51
DHW-IH1
DHW CYLINDER
QAP20
HP01-ST51
DHW-IH2
DHW CYLINDER
CLOSED LOOP/OPEN LOOP/AMBIENT LOOP

DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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HEAT PUMPS FOR SUSTAINABLE CITIES

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Ji-te gatan 7, 265 38 Åstorp

DRAWN BY	DRAWING NUMBER	PAGE NUMBER
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Information
Q65-96RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to boreholes, DHW system control, pool system control

HP03 - SLAVE
HP02 - SLAVE
HP01 - MASTER
DHW PRIORITY
SPACE HEATING PRIORITY

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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HEAT PUMPS FOR SUSTAINABLE CITIES

QVANTUM ENERGI AB
Ji-te gatan 7, 265 38 Åstorp

DRAWN BY	DRAWING NUMBER	PAGE NUMBER
JE	Q-65-96-RS2-8-210	56

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LAGER: SB11
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Subject to possible printing errors.

Please note
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- The representation of safety devices is not complete and fittings and safety devices outside the RS/2 unit are not included and must be provided and installed on site.

Information
Q65-96RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to both boreholes & dry cooler/exhaust air

HP03 - SLAVE
HP02 - SLAVE
HP01 - MASTER
DHW PRIORITY
SPACE HEATING PRIORITY

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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HEAT PUMPS FOR SUSTAINABLE CITIES

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Ji-te gatan 7, 265 38 Åstorp

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JE	Q-65-96-RS2-8-211	57

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Subject to possible printing errors.

Please note
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Information
Q65-96RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to both boreholes & dry cooler/exhaust air, DHW system control

TCP/IP — BAS3 — ESYS

XPRO_HP01
- DI (Op. resp. compr. 1, HP01) — DO (start/stop compr. 1, HP01)
- DI (Op. resp. compr. 2, HP01) — DO (start/stop compr. 2, HP01)
- DI (Reserve) — DO (Reserve)
- DI (Reserve) — DO (Reserve)
- AI (HP01-SPH1-A) — AO (Reserve)
- AI (Reserve) — AO (control CW00-CV31)
- AI (ST5) — AO (control HP01-CV31)
- AI (Reserve) — AO (control CW00-P1)
- RTU (control HP01-P1)
- RTU (control HP01-P2)

EXP2_HP01
- AI (LTHW-ST11) — DO (Reserve)
- AI (LTHW-ST12) — DO (Start/stop CW01-P1)
- AI (LTHW-ST41) — DO (Start/stop LTHW-P1)
- AI (ST-OUTSIDE) — DO (Start/stop LTHW-EH)
- DI (Gen. alarm, HP01-P1/P2) — AO (control LTHW-CV31)
- DI (Reserve) — AO (control LTHW-EH)
- DI (Pressostat) — AO (control HP01-P1)
- DI (Reserve) — AO (control HP01-P2)

EXP1_HP01
- AI (ST1) — DO (HP01-SV1/2x, V.I.P.)
- AI (ST2) — DO (Reserve)
- AI (ST3) — DO (Reserved, internal function)
- AI (ST4) — DO (Power suppl contr signal)
- AI (CW01-ST11) — AO (allocated for control valve)
- AI (HP01-ST51) — AO (allocated for control valve)
- DI (Power suppl contr signal) — AO (allocated for circ. pump)
- DI (External alarm/blocking) — AO (allocated for circ. pump)

XPRO_HP02
- DI (Op. resp. compr. 1, HP02) — DO (start/stop compr. 1, HP02)
- DI (Op. resp. compr. 2, HP02) — DO (start/stop compr. 2, HP02)
- DI (Reserve) — DO (Reserve)
- DI (Reserve) — DO (Reserve)
- AI (HP02-SPH1-A) — AO (Reserve)
- AI (Reserve) — AO (control HP02-CV31)
- AI (ST5) — AO (Reserve)
- AI (Reserve) — AO (Reserve)
- RTU (control HP02-P1)
- RTU (control HP02-P2)

EXP2_HP02
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- DI (Gen. alarm, HP02-P1/P2) — AO (Reserve)
- DI (Reserve) — AO (Reserve)
- DI (Pressostat) — AO (control HP02-P1)
- DI (Reserve) — AO (control HP02-P2)

EXP1_HP02
- AI (ST1) — DO (HP02-SV1/2x, V.I.P.)
- AI (ST2) — DO (Reserve)
- AI (ST3) — DO (Reserved, internal function)
- AI (ST4) — DO (Power suppl contr signal)
- AI (Reserve) — AO (allocated for control valve)
- AI (HP02-ST51) — AO (allocated for control valve)
- DI (Power suppl contr signal) — AO (allocated for circ. pump)
- DI (External alarm/blocking) — AO (allocated for circ. pump)

QAP10
- AI (CW00-ST11) — DO (control LTHW-CV32)
- AI (CW00-ST12) — DO (start/stop DC01-P1)
- AI (CW00-ST41) — DO (Reserve)
- AI (CW00-ST42) — DO (Reserve)
- AI (LTHW-ST42) — AO (control CW00-CV32)
- AI (LTHW-ST43) — AO (control CW00-P2)
- AI (DC01-ST41) — AO (control LTHW-CV33)
- AI (Reserve) — AO (control DC01-P1 or dry cooler)

QAP20
- AI (DHW-ST11) — DO (start/stop DHW-IH1)
- AI (DHW-ST41) — DO (start/stop DHW-IH2)
- AI (PS01-ST11) — DO (start/stop DHW-IH3)
- AI (PS01-ST41) — DO (start/stop DHW-IH4)
- AI (Reserve) — AO (control DHW-CV31)
- AI (Reserve) — AO (control LTHW-P2)
- AI (Reserve) — AO (Reserve)
- AI (Reserve) — AO (Reserve)

DHW PRIORITY — SPACE HEATING PRIORITY

HP03 - SLAVE
HP02 - SLAVE
HP01 - MASTER

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

COOLING SECONDARY SYSTEM
CW01-P1
ST-OUTSIDE
EV
CW01-ST11
PHE
CW00-P1
CW00-CV31
CW00-ST12
COOLING BUFFER
HP02-P2
Flex conn. DN50
DN100
Evaporator
Condenser
HP02-P1
DN65
HP02-CV31
80 Amp (Q96RS/2)
63 Amp (Q81RS/2)
50 Amp (Q65RS/2)
HP02 (SLAVE) Q65-96RS/2
HP02-P1
HP02-P2
HP01-P2
HP01-P1
HP01-CV31
HP01 (MASTER) Q65-96RS/2
HP01-P1
HP01-P2
CW00-P1
CW00-ST41
CW00-CV32
CW00-P2
CW00-ST11
CW00-ST42
CLOSED LOOP/OPEN LOOP/AMBIENT LOOP
LTHW-ST12
LTHW-CV32
HEATING BUFFER
HEATING BUFFER
LTHW-CV31
LTHW-EH
LTHW-P1
LTHW-ST11
LTHW-ST41
EV
HEATING SECONDARY SYSTEM
LTHW-ST42
LTHW-CV33
LTHW-ST43
QAP10
DC01-ST41
DC01-P1
EV
DRY COOLER/EXHAUST AIR
DHW-ST11
DHW-CV31
DHW-ST41
DHW-IH1
DHW-P1
DHW SYSTEM
HP02-ST51
DHW CYLINDER
QAP20
DHW-IH2
HP01-ST51
DHW CYLINDER

DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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HEAT PUMPS FOR SUSTAINABLE CITIES

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DRAWN BY	DRAWING NUMBER	PAGE NUMBER
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XREF:
LAGER: SB11
PLO: 2025-11-18 22:26 G:\QVANTUM\01 INTERNT\05 RITNINGAR\DOCKNINGSPRINCIP KYLKRETS\MITKS2_(200-213)_2025-11-18.DWG JONAS

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Please note
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- The representation of safety devices is not complete and fittings and safety devices outside the RS/2 unit are not included and must be provided and installed on site.

Information
Q65-96RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to both boreholes & dry cooler/exhaust air, DHW system control, pool system control

HP03 - SLAVE
HP02 - SLAVE
HP01 - MASTER
DHW PRIORITY
SPACE HEATING PRIORITY

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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HEAT PUMPS FOR SUSTAINABLE CITIES

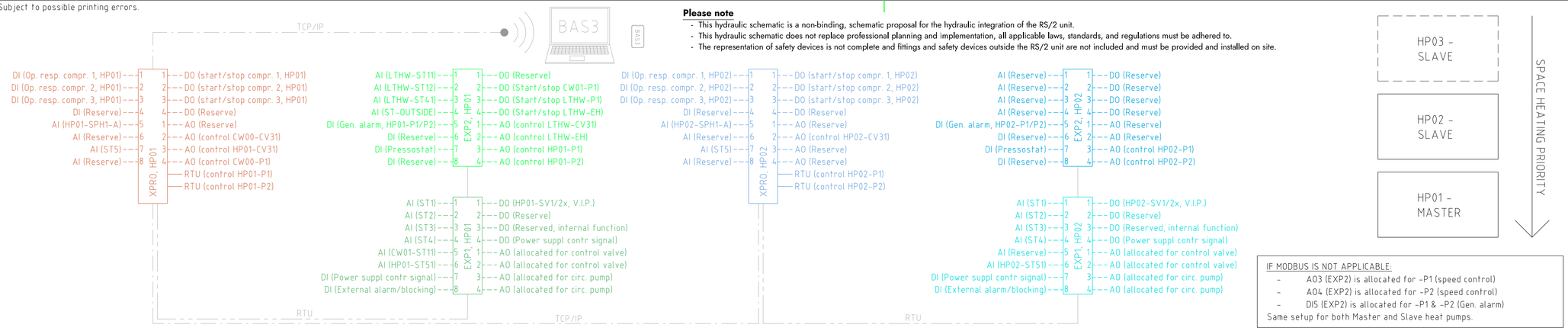
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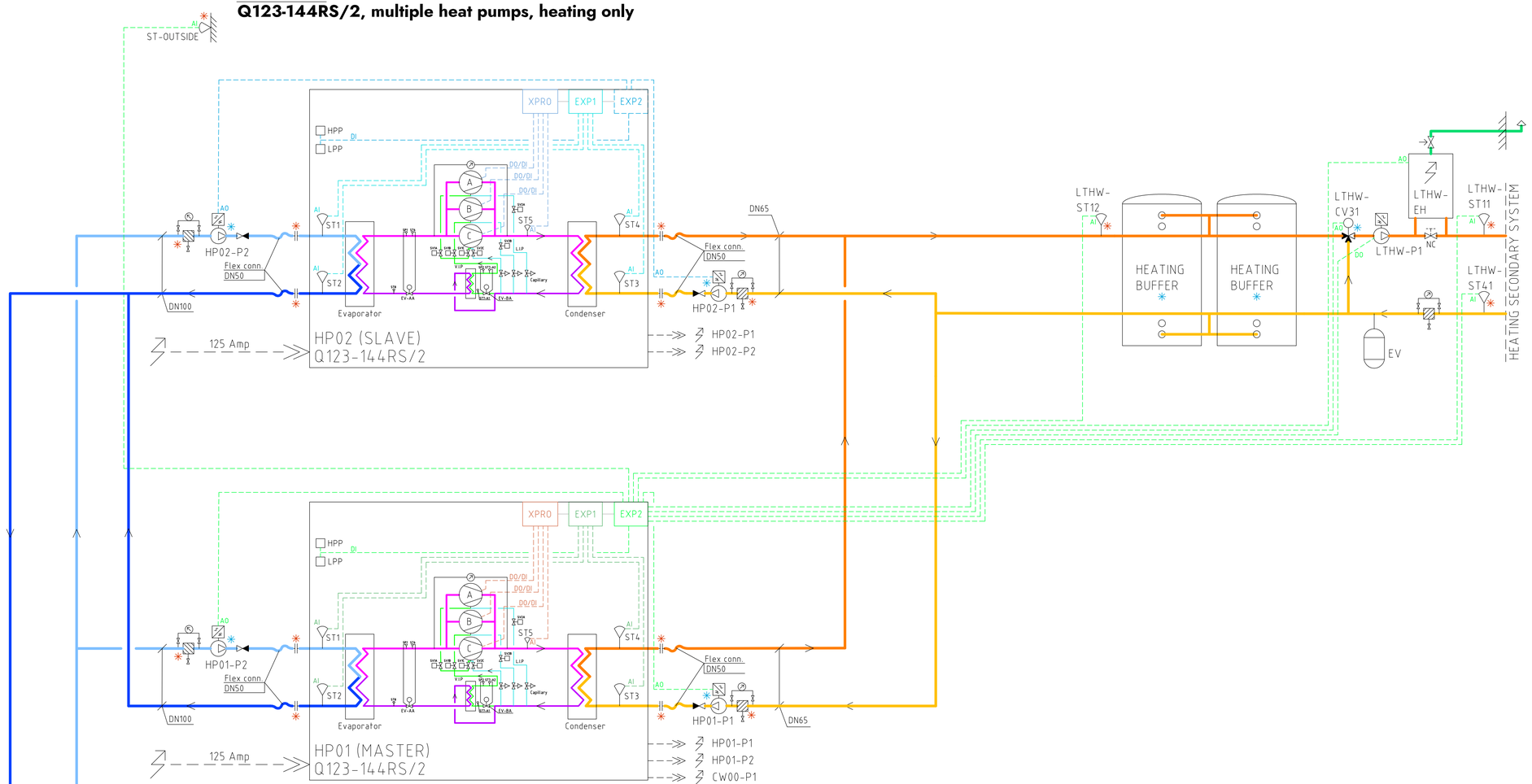
Please note
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IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

Information
Q123-144RS/2, multiple heat pumps, heating only



DISCLAIMERS

Space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

DI, DO, AI & AO signals

Modbus TCP/IP

Modbus RTU

Components supplied by Qvantum

Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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HEAT PUMPS FOR SUSTAINABLE CITIES

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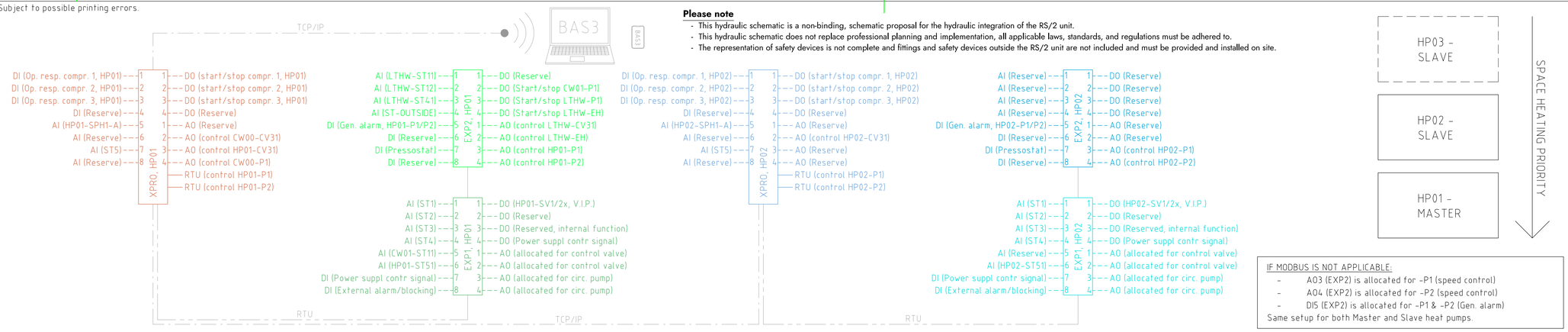
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Please note

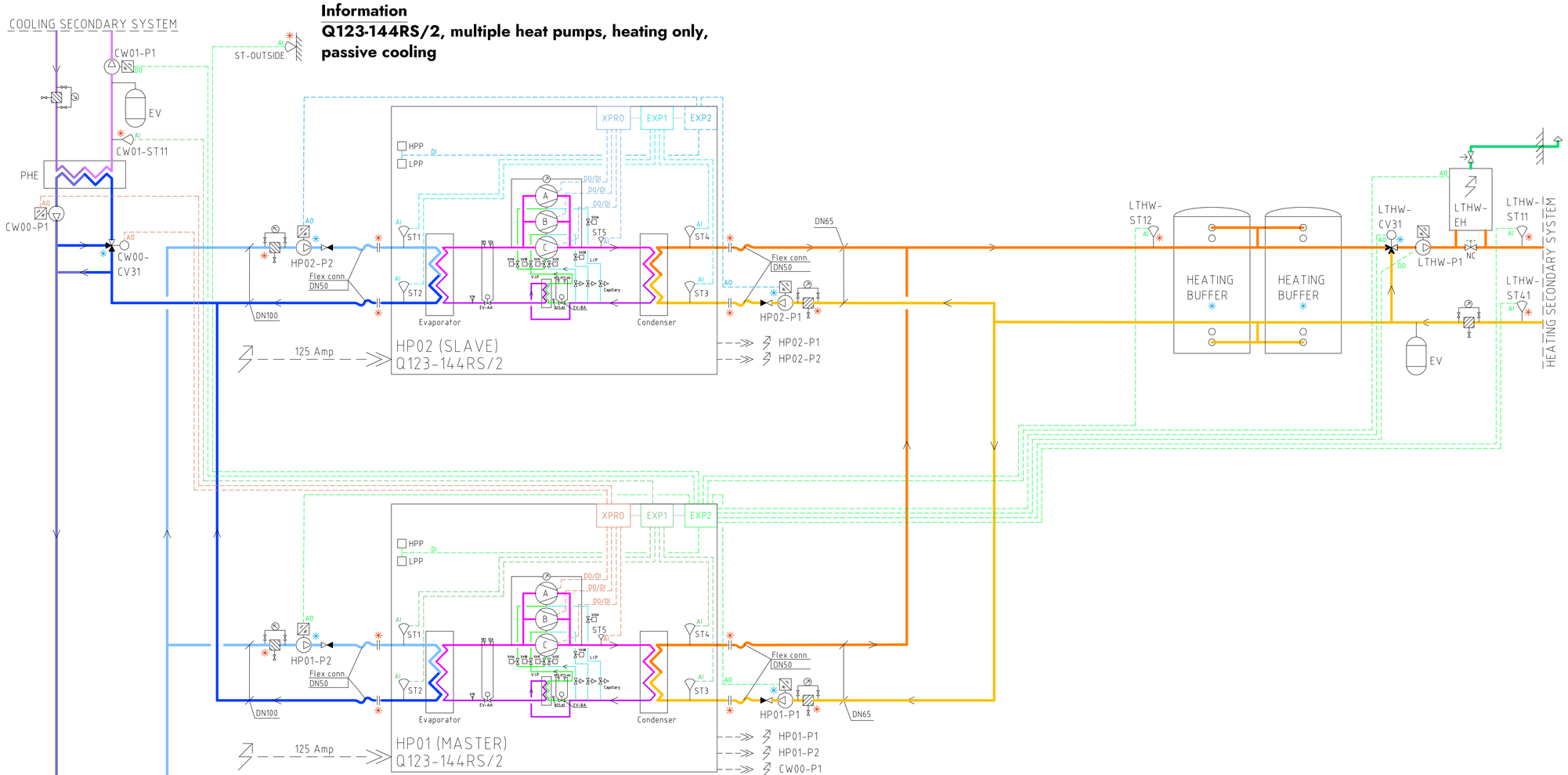
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IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

Information
Q123-144RS/2, multiple heat pumps, heating only, passive cooling



DISCLAIMERS

Space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

- – – – – DI, DO, AI & AO signals
- —·— Modbus TCP/IP
- —– – – Modbus RTU
- ✳ Components supplied by Qvantum
- ✳ Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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HEAT PUMPS FOR SUSTAINABLE CITIES

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TCP/IP — BAS3 — SSYB

XPRO, HP01
- DI (Op. resp. compr. 1, HP01) — DO (start/stop compr. 1, HP01)
- DI (Op. resp. compr. 2, HP01) — DO (start/stop compr. 2, HP01)
- DI (Op. resp. compr. 3, HP01) — DO (start/stop compr. 3, HP01)
- DI (Reserve) — DO (Reserve)
- AI (HP01-SPH1-A) — AO (Reserve)
- AI (Reserve) — AO (control CW00-CV31)
- AI (ST5) — AO (control HP01-CV31)
- AI (Reserve) — AO (control CW00-P1)
- RTU (control HP01-P1)
- RTU (control HP01-P2)

EXP2, HP01
- AI (LTHW-ST11) — DO (Reserve)
- AI (LTHW-ST12) — DO (Start/stop CW01-P1)
- AI (LTHW-ST41) — DO (Start/stop LTHW-P1)
- AI (ST-OUTSIDE) — DO (Start/stop LTHW-EH)
- DI (Gen. alarm, HP01-P1/P2) — AO (control LTHW-CV31)
- DI (Reserve) — AO (control LTHW-EH)
- DI (Pressostat) — AO (control HP01-P1)
- DI (Reserve) — AO (control HP01-P2)

EXP1, HP01
- AI (ST1) — DO (HP01-SV1/2x, V.I.P.)
- AI (ST2) — DO (Reserve)
- AI (ST3) — DO (Reserved, internal function)
- AI (ST4) — DO (Power suppl contr signal)
- AI (CW01-ST11) — AO (allocated for control valve)
- AI (HP01-ST51) — AO (allocated for control valve)
- DI (Power suppl contr signal) — AO (allocated for circ. pump)
- DI (External alarm/blocking) — AO (allocated for circ. pump)

RTU — TCP/IP — RTU

XPRO, HP02
- DI (Op. resp. compr. 1, HP02) — DO (start/stop compr. 1, HP02)
- DI (Op. resp. compr. 2, HP02) — DO (start/stop compr. 2, HP02)
- DI (Op. resp. compr. 3, HP02) — DO (start/stop compr. 3, HP02)
- DI (Reserve) — DO (Reserve)
- AI (HP02-SPH1-A) — AO (Reserve)
- AI (Reserve) — AO (control HP02-CV31)
- AI (ST5) — AO (Reserve)
- AI (Reserve) — AO (Reserve)
- RTU (control HP02-P1)
- RTU (control HP02-P2)

EXP2, HP02
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- DI (Gen. alarm, HP02-P1/P2) — AO (Reserve)
- DI (Reserve) — AO (Reserve)
- DI (Pressostat) — AO (control HP02-P1)
- DI (Reserve) — AO (control HP02-P2)

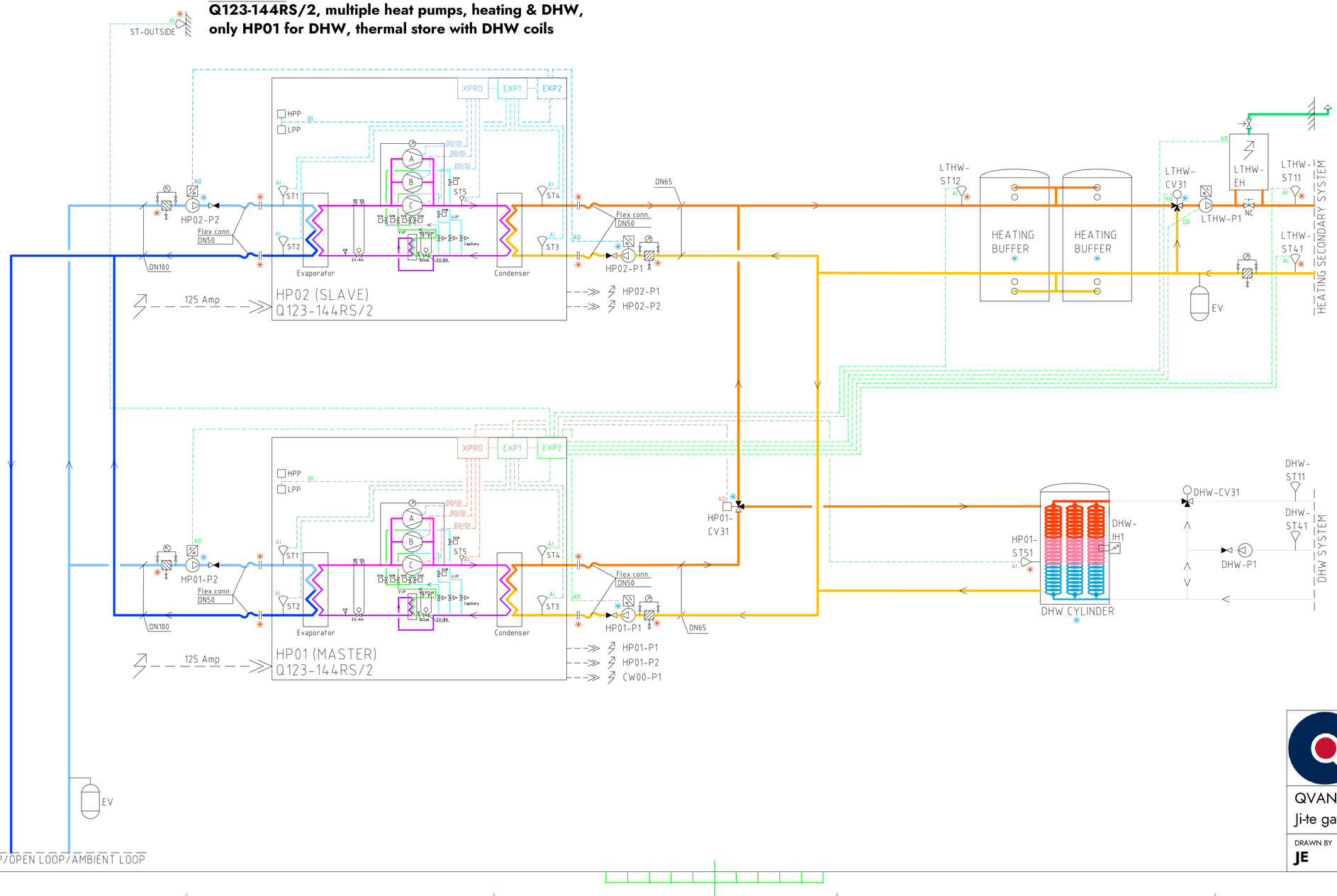
EXP1, HP02
- AI (ST1) — DO (HP02-SV1/2x, V.I.P.)
- AI (ST2) — DO (Reserve)
- AI (ST3) — DO (Reserved, internal function)
- AI (ST4) — DO (Power suppl contr signal)
- AI (Reserve) — AO (allocated for control valve)
- AI (HP02-ST51) — AO (allocated for control valve)
- DI (Power suppl contr signal) — AO (allocated for circ. pump)
- DI (External alarm/blocking) — AO (allocated for circ. pump)

HP03 - SLAVE
HP02 - SLAVE
HP01 - MASTER
SPACE HEATING PRIORITY

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

Information
Q123-144RS/2, multiple heat pumps, heating & DHW, only HP01 for DHW, thermal store with DHW coils



DISCLAIMERS

Space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that could be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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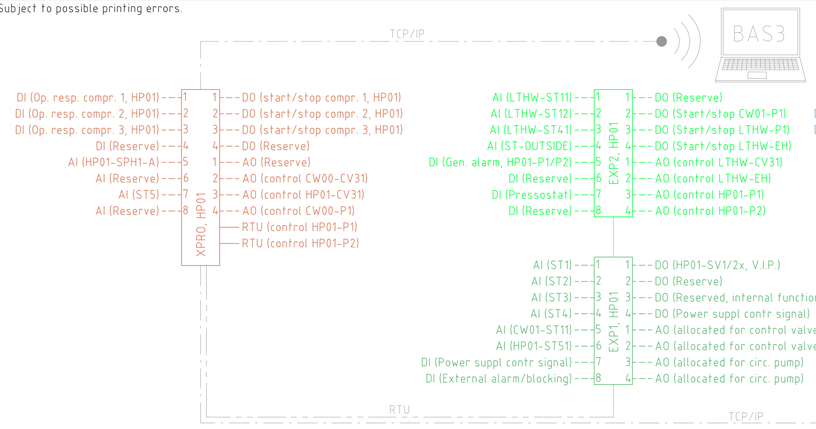
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HEAT PUMPS FOR SUSTAINABLE CITIES

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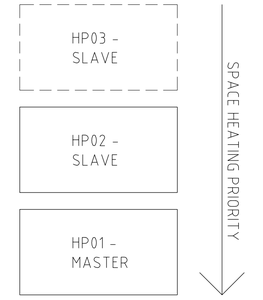
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Subject to possible printing errors.



Please note

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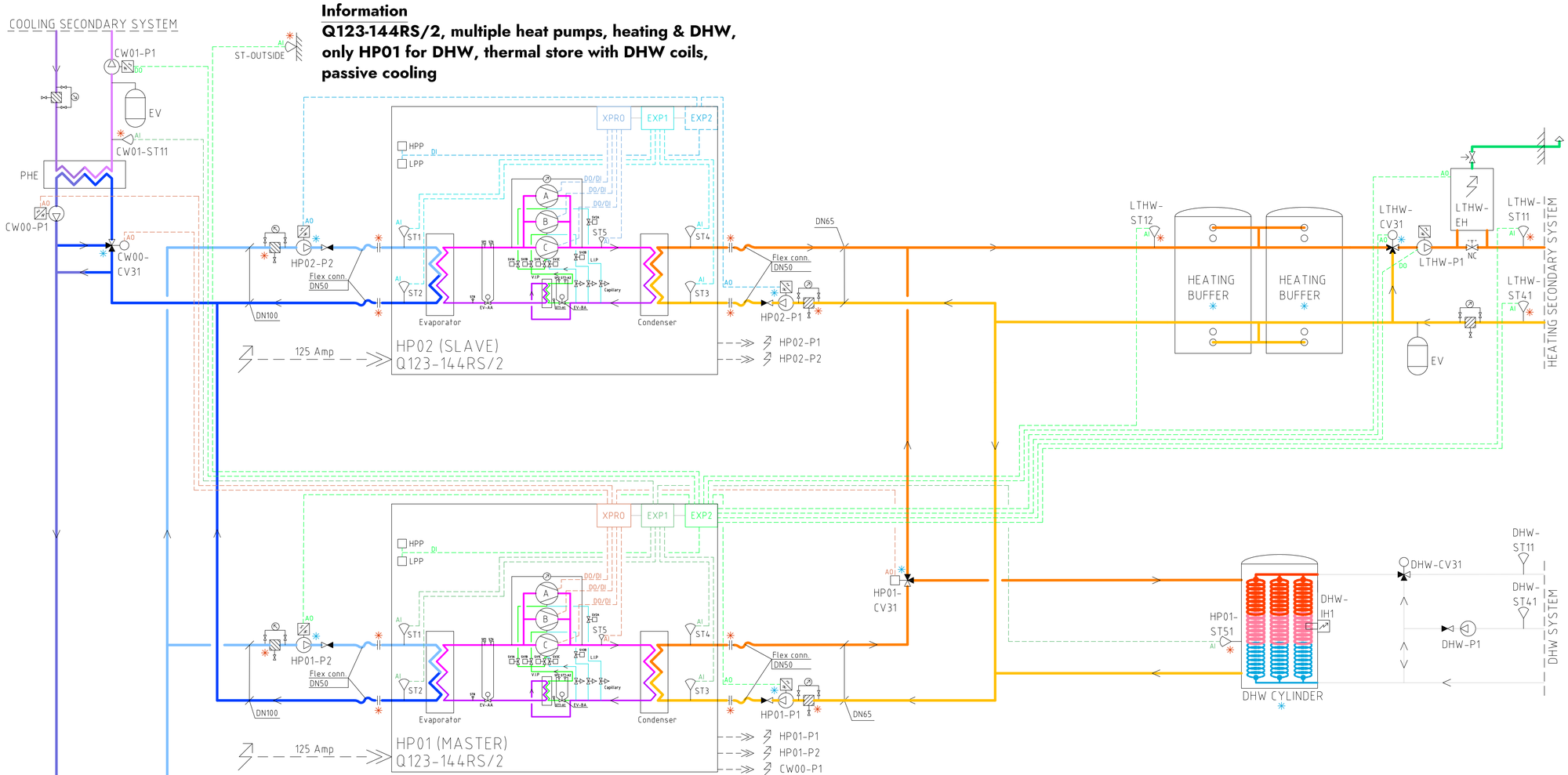


IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

Information

Q123-144RS/2, multiple heat pumps, heating & DHW, only HP01 for DHW, thermal store with DHW coils, passive cooling



DISCLAIMERS

Space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that could be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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TCP/IP — BAS3 — SSYS

XPRO, HP01
- DI (Op. resp. compr. 1, HP01) — DO (start/stop compr. 1, HP01)
- DI (Op. resp. compr. 2, HP01) — DO (start/stop compr. 2, HP01)
- DI (Op. resp. compr. 3, HP01) — DO (start/stop compr. 3, HP01)
- DI (Reserve) — DO (Reserve)
- AI (HP01-SPH1-A) — AO (Reserve)
- AI (Reserve) — AO (control CW00-CV31)
- AI (ST5) — AO (control HP01-CV31)
- AI (Reserve) — AO (control CW00-P1)
- RTU (control HP01-P1)
- RTU (control HP01-P2)

EXP2, HP01
- AI (LTHW-ST11) — DO (Reserve)
- AI (LTHW-ST12) — DO (Start/stop CW01-P1)
- AI (LTHW-ST41) — DO (Start/stop LTHW-P1)
- AI (ST-OUTSIDE) — DO (Start/stop LTHW-EH)
- DI (Gen. alarm, HP01-P1/P2) — AO (control LTHW-CV31)
- DI (Reserve) — AO (control LTHW-EH)
- DI (Pressostat) — AO (control HP01-P1)
- DI (Reserve) — AO (control HP01-P2)

EXP1, HP01
- AI (ST1) — DO (HP01-SV1/2x, V.I.P.)
- AI (ST2) — DO (Reserve)
- AI (ST3) — DO (Reserved, internal function)
- AI (ST4) — DO (Power suppl contr signal)
- AI (CW01-ST11) — AO (allocated for control valve)
- AI (HP01-ST51) — AO (allocated for control valve)
- DI (Power suppl contr signal) — AO (allocated for circ. pump)
- DI (External alarm/blocking) — AO (allocated for circ. pump)

RTU

TCP/IP

XPRO, HP02
- DI (Op. resp. compr. 1, HP02) — DO (start/stop compr. 1, HP02)
- DI (Op. resp. compr. 2, HP02) — DO (start/stop compr. 2, HP02)
- DI (Op. resp. compr. 3, HP02) — DO (start/stop compr. 3, HP02)
- DI (Reserve) — DO (Reserve)
- AI (HP02-SPH1-A) — AO (Reserve)
- AI (Reserve) — AO (control HP02-CV31)
- AI (ST5) — AO (Reserve)
- AI (Reserve) — AO (Reserve)
- RTU (control HP02-P1)
- RTU (control HP02-P2)

EXP2, HP02
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- DI (Gen. alarm, HP02-P1/P2) — AO (Reserve)
- DI (Reserve) — AO (Reserve)
- DI (Pressostat) — AO (control HP02-P1)
- DI (Reserve) — AO (control HP02-P2)

EXP1, HP02
- AI (ST1) — DO (HP02-SV1/2x, V.I.P.)
- AI (ST2) — DO (Reserve)
- AI (ST3) — DO (Reserved, internal function)
- AI (ST4) — DO (Power suppl contr signal)
- AI (Reserve) — AO (allocated for control valve)
- AI (HP02-ST51) — AO (allocated for control valve)
- DI (Power suppl contr signal) — AO (allocated for circ. pump)
- DI (External alarm/blocking) — AO (allocated for circ. pump)

DHW PRIORITY

HP03 - SLAVE

HP02 - SLAVE

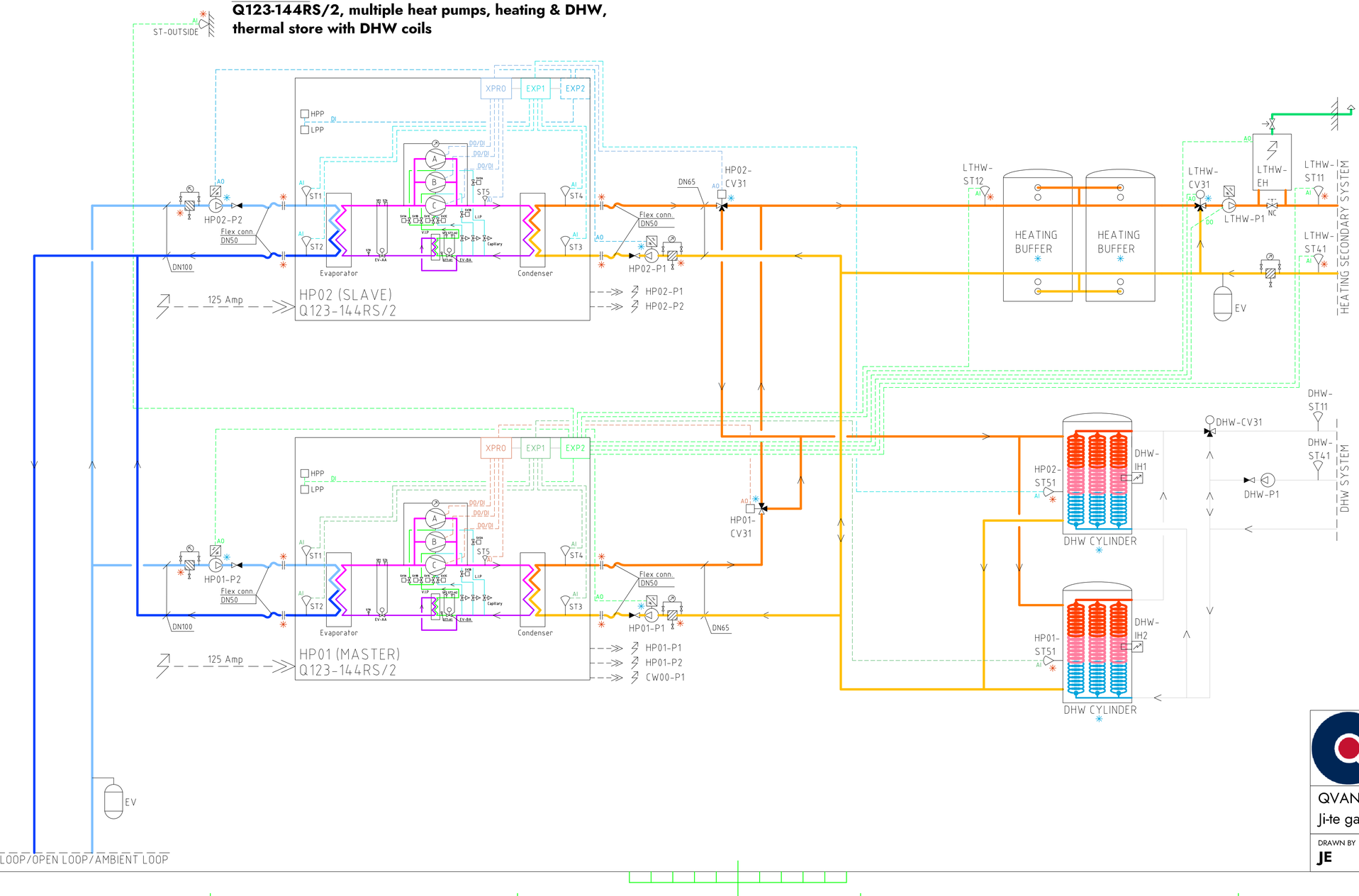
HP01 - MASTER

SPACE HEATING PRIORITY

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

Information
Q123-144RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils



DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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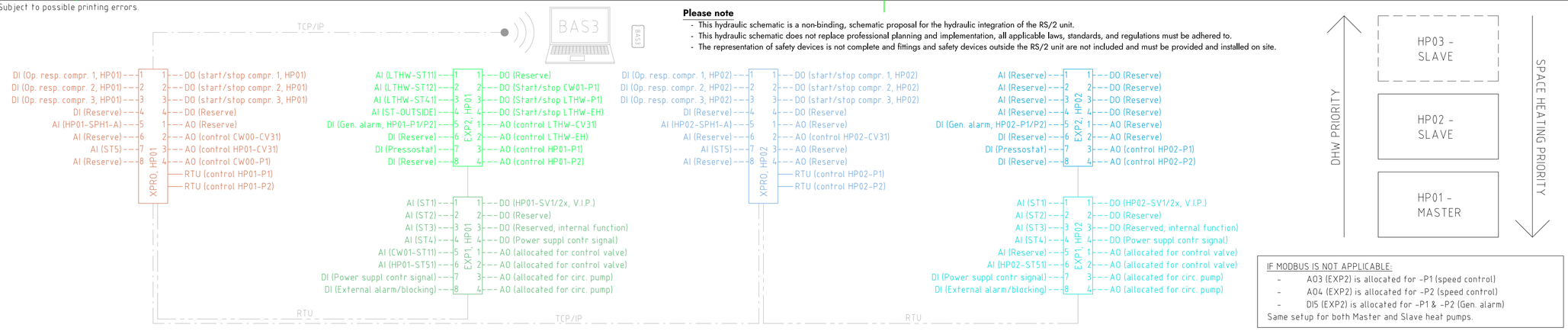
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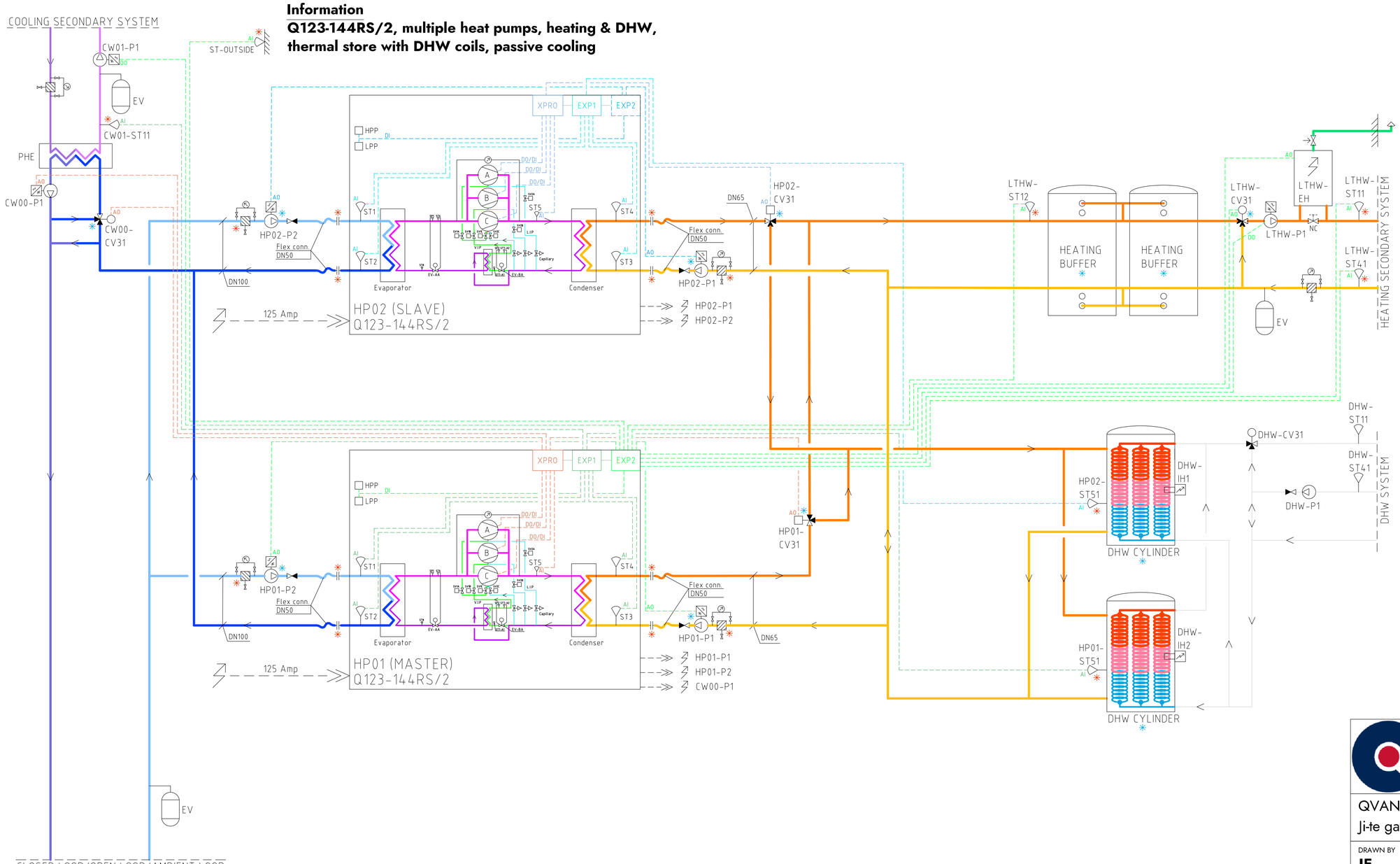
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IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

Information
Q123-144RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive cooling



DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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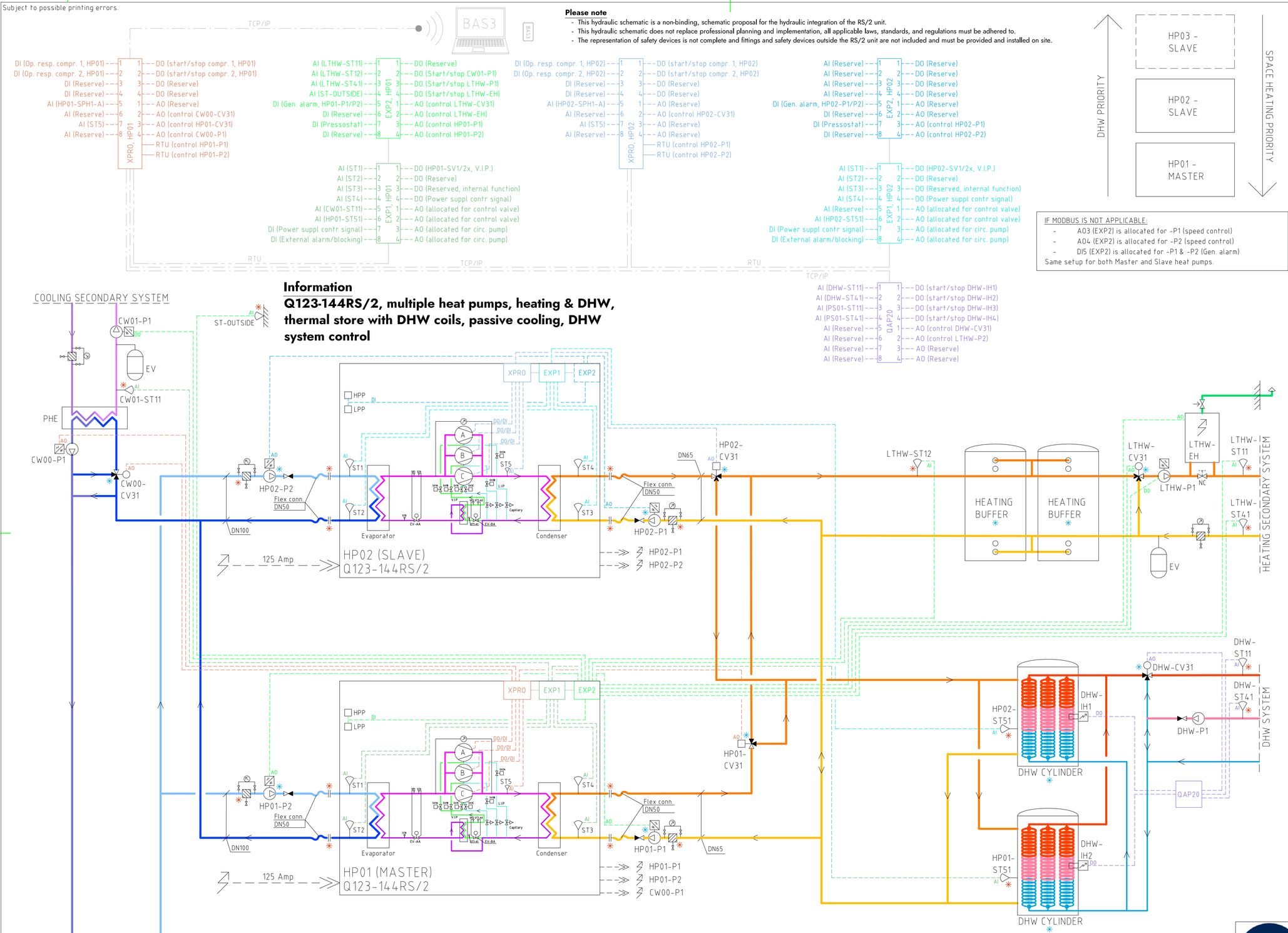
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Subject to possible printing errors.

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- The representation of safety devices is not complete and fittings and safety devices outside the RS/2 unit are not included and must be provided and installed on site.

Information
Q123-144RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive cooling, DHW system control



IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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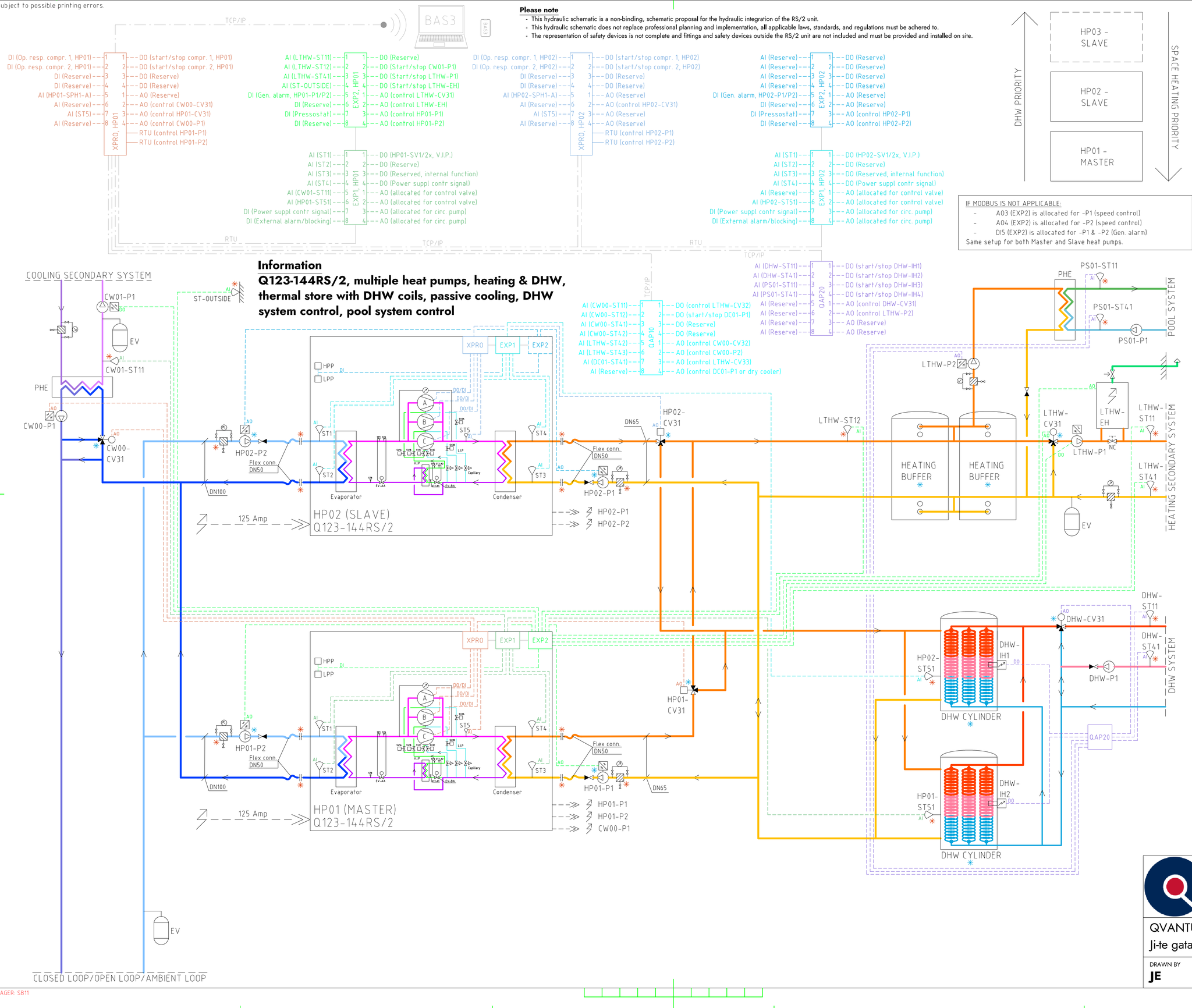
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Information
Q123-144RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive cooling, DHW system control, pool system control



DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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Information
Q123-144RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to boreholes

HP03 - SLAVE
HP02 - SLAVE
HP01 - MASTER
DHW PRIORITY
SPACE HEATING PRIORITY

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

DI, DO, AI & AO signals
Modbus TCP/IP
Modbus RTU
Components supplied by Qvantum
Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

Circulation pump
Temperature sensor
3-way control valve
Isolation valve
Non return valve
Strainer

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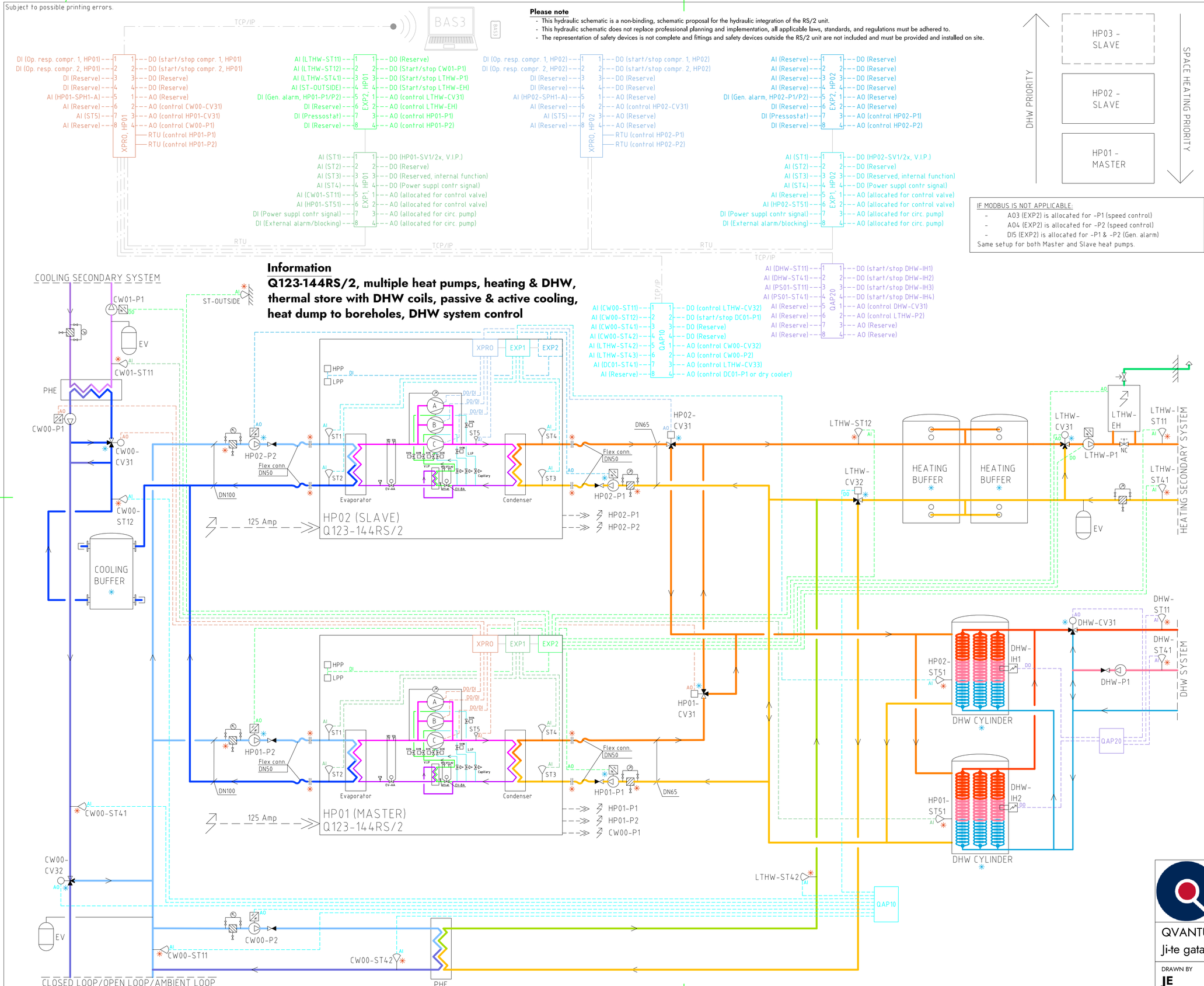
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Information
Q123-144RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to boreholes, DHW system control



DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

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- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

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COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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Information
Q123-144RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to boreholes, DHW system control, pool system control

HP03 - SLAVE
HP02 - SLAVE
HP01 - MASTER
DHW PRIORITY
SPACE HEATING PRIORITY

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

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- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

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COMPONENT SYMBOLS

- Circulation pump
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- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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JE	Q-123-144-RS2-8-210	70

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Please note
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TCP/IP — BAS3 — ETH0

XPRO, HP01
- DI (Op. resp. compr. 1, HP01) — DO (start/stop compr. 1, HP01)
- DI (Op. resp. compr. 2, HP01) — DO (start/stop compr. 2, HP01)
- DI (Reserve) — DO (Reserve)
- DI (Reserve) — DO (Reserve)
- AI (HP01-SPH1-A) — AO (Reserve)
- AI (Reserve) — AO (control CW00-CV31)
- AI (ST5) — AO (control HP01-CV31)
- AI (Reserve) — AO (control CW00-P1)
- RTU (control HP01-P1)
- RTU (control HP01-P2)

EXP2, HP01
- AI (LTHW-ST11) — DO (Reserve)
- AI (LTHW-ST12) — DO (Start/stop CW01-P1)
- AI (LTHW-ST41) — DO (Start/stop LTHW-P1)
- AI (ST-OUTSIDE) — DO (Start/stop LTHW-EH)
- DI (Gen. alarm, HP01-P1/P2) — AO (control LTHW-CV31)
- DI (Reserve) — AO (control LTHW-EH)
- DI (Pressostat) — AO (control HP01-P1)
- DI (Reserve) — AO (control HP01-P2)

EXP1, HP01
- AI (ST1) — DO (HP01-SV1/2x, V.I.P.)
- AI (ST2) — DO (Reserve)
- AI (ST3) — DO (Reserved, internal function)
- AI (ST4) — DO (Power suppl contr signal)
- AI (CW01-ST11) — AO (allocated for control valve)
- AI (HP01-ST51) — AO (allocated for control valve)
- DI (Power suppl contr signal) — AO (allocated for circ. pump)
- DI (External alarm/blocking) — AO (allocated for circ. pump)

TCP/IP

XPRO, HP02
- DI (Op. resp. compr. 1, HP02) — DO (start/stop compr. 1, HP02)
- DI (Op. resp. compr. 2, HP02) — DO (start/stop compr. 2, HP02)
- DI (Reserve) — DO (Reserve)
- DI (Reserve) — DO (Reserve)
- AI (HP02-SPH1-A) — AO (control HP02-CV31)
- AI (ST5) — AO (Reserve)
- AI (Reserve) — AO (Reserve)
- RTU (control HP02-P1)
- RTU (control HP02-P2)

EXP2, HP02
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- DI (Gen. alarm, HP02-P1/P2) — AO (Reserve)
- DI (Reserve) — AO (Reserve)
- DI (Pressostat) — AO (control HP02-P1)
- DI (Reserve) — AO (control HP02-P2)

EXP1, HP02
- AI (ST1) — DO (HP02-SV1/2x, V.I.P.)
- AI (ST2) — DO (Reserve)
- AI (ST3) — DO (Reserved, internal function)
- AI (ST4) — DO (Power suppl contr signal)
- AI (Reserve) — AO (allocated for control valve)
- AI (HP02-ST51) — AO (allocated for control valve)
- DI (Power suppl contr signal) — AO (allocated for circ. pump)
- DI (External alarm/blocking) — AO (allocated for circ. pump)

RTU — TCP/IP — RTU

DHW PRIORITY

HP03 - SLAVE

HP02 - SLAVE

HP01 - MASTER

SPACE HEATING PRIORITY

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

Information

Q123-144RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to both boreholes & dry cooler/exhaust air

TCP/IP — QAP10
- AI (CW00-ST11) — DO (control LTHW-CV32)
- AI (CW00-ST12) — DO (start/stop DC01-P1)
- AI (CW00-ST41) — DO (Reserve)
- AI (CW00-ST42) — DO (Reserve)
- AI (LTHW-ST42) — AO (control CW00-CV32)
- AI (LTHW-ST43) — AO (control CW00-P2)
- AI (DC01-ST41) — AO (control LTHW-CV33)
- AI (Reserve) — AO (control DC01-P1 or dry cooler)

COOLING SECONDARY SYSTEM

CW01-P1 — DO — EV — AI — CW01-ST11

ST-OUTSIDE — AI

PHE

CW00-P1 — AO

CW00-CV31 — AO

CW00-ST12 — AI

COOLING BUFFER

HP02-P2 — AO — Flex conn. DN50 — DN100

HP02 (SLAVE) Q123-144RS/2

XPRO — EXP1 — EXP2

HPP — DI — LPP

AI — ST1 — ST2 — Evaporator — ST3 — ST4 — Condenser — ST5

DO/DI

A — B — C

VIP — LLP — Capacity

EV-AA — EV-BA

Flex conn. DN50 — DN65 — HP02-P1

HP02-CV31 — AO

125 Amp

HP02-P1

HP02-P2

LTHW-ST12 — AI

LTHW-CV32 — AO — DO

HEATING BUFFER

HEATING BUFFER

LTHW-CV31 — AO — DO — LTHW-P1 — NC

LTHW-EH — AO

LTHW-ST11 — AI

LTHW-ST41 — AI

EV

HEATING SECONDARY SYSTEM

HP01-P2 — AO — Flex conn. DN50 — DN100

HP01 (MASTER) Q123-144RS/2

HP01-P1

HP01-P2

CW00-P1

HP01-CV31 — AO

DN65

CW00-ST41 — AI

125 Amp

DHW-ST11 — DHW-CV31

DHW-ST41 — DHW-P1

DHW SYSTEM

HP02-ST51 — AI — DHW-IH1 — DHW CYLINDER

HP01-ST51 — AI — DHW-IH2 — DHW CYLINDER

CW00-CV32 — AO

EV

CW00-P2 — AO

CW00-ST11 — AI

CW00-ST42 — AI

PHE

CLOSED LOOP/OPEN LOOP/AMBIENT LOOP

LTHW-ST42 — AI

LTHW-CV33 — AO

QAP10

DC01-ST41 — AI

AO (USED FOR DRY COOLER)

AO or DO

LTHW-ST43 — AI

PHE

DC01-P1

EV

DRY COOLER/EXHAUST AIR

DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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HEAT PUMPS FOR SUSTAINABLE CITIES

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- The representation of safety devices is not complete and fittings and safety devices outside the RS/2 unit are not included and must be provided and installed on site.

Information
Q123-144RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to both boreholes & dry cooler/exhaust air, DHW system control

TCP/IP
BAS3
RTU
TCP/IP
RTU
TCP/IP

XPRO, HP01
DI (Op. resp. compr. 1, HP01)
DI (Op. resp. compr. 2, HP01)
DI (Reserve)
DI (Reserve)
AI (HP01-SPH1-A)
AI (Reserve)
AI (ST5)
AI (Reserve)
DO (start/stop compr. 1, HP01)
DO (start/stop compr. 2, HP01)
DO (Reserve)
DO (Reserve)
AO (Reserve)
AO (control CW00-CV31)
AO (control HP01-CV31)
AO (control CW00-P1)
RTU (control HP01-P1)
RTU (control HP01-P2)

EXP2, HP01
AI (LTHW-ST11)
AI (LTHW-ST12)
AI (LTHW-ST41)
AI (ST-OUTSIDE)
DI (Gen. alarm, HP01-P1/P2)
DI (Reserve)
DI (Pressostat)
DI (Reserve)
DO (Reserve)
DO (Start/stop CW01-P1)
DO (Start/stop LTHW-P1)
DO (Start/stop LTHW-EH)
AO (control LTHW-CV31)
AO (control LTHW-EH)
AO (control HP01-P1)
AO (control HP01-P2)

EXP1, HP01
AI (ST1)
AI (ST2)
AI (ST3)
AI (ST4)
AI (CW01-ST11)
AI (HP01-ST51)
DI (Power suppl contr signal)
DI (External alarm/blocking)
DO (HP01-SV1/2x, V.I.P.)
DO (Reserve)
DO (Reserved, internal function)
DO (Power suppl contr signal)
AO (allocated for control valve)
AO (allocated for control valve)
AO (allocated for circ. pump)
AO (allocated for circ. pump)

XPRO, HP02
DI (Op. resp. compr. 1, HP02)
DI (Op. resp. compr. 2, HP02)
DI (Reserve)
DI (Reserve)
AI (HP02-SPH1-A)
AI (Reserve)
AI (ST5)
AI (Reserve)
DO (start/stop compr. 1, HP02)
DO (start/stop compr. 2, HP02)
DO (Reserve)
DO (Reserve)
AO (Reserve)
AO (control HP02-CV31)
AO (Reserve)
AO (Reserve)
RTU (control HP02-P1)
RTU (control HP02-P2)

EXP2, HP02
AI (Reserve)
AI (Reserve)
AI (Reserve)
AI (Reserve)
DI (Gen. alarm, HP02-P1/P2)
DI (Reserve)
DI (Pressostat)
DI (Reserve)
DO (Reserve)
DO (Reserve)
DO (Reserve)
DO (Reserve)
AO (Reserve)
AO (Reserve)
AO (control HP02-P1)
AO (control HP02-P2)

EXP1, HP02
AI (ST1)
AI (ST2)
AI (ST3)
AI (ST4)
AI (Reserve)
AI (HP02-ST51)
DI (Power suppl contr signal)
DI (External alarm/blocking)
DO (HP02-SV1/2x, V.I.P.)
DO (Reserve)
DO (Reserved, internal function)
DO (Power suppl contr signal)
AO (allocated for control valve)
AO (allocated for control valve)
AO (allocated for circ. pump)
AO (allocated for circ. pump)

QAP10
AI (CW00-ST11)
AI (CW00-ST12)
AI (CW00-ST41)
AI (CW00-ST42)
AI (LTHW-ST42)
AI (LTHW-ST43)
AI (DC01-ST41)
AI (Reserve)
DO (control LTHW-CV32)
DO (start/stop DC01-P1)
DO (Reserve)
DO (Reserve)
AO (control CW00-CV32)
AO (control CW00-P2)
AO (control LTHW-CV33)
AO (control DC01-P1 or dry cooler)

QAP20
AI (DHW-ST11)
AI (DHW-ST41)
AI (PS01-ST11)
AI (PS01-ST41)
AI (Reserve)
AI (Reserve)
AI (Reserve)
AI (Reserve)
DO (start/stop DHW-IH1)
DO (start/stop DHW-IH2)
DO (start/stop DHW-IH3)
DO (start/stop DHW-IH4)
AO (control DHW-CV31)
AO (control LTHW-P2)
AO (Reserve)
AO (Reserve)

HP03 - SLAVE
HP02 - SLAVE
HP01 - MASTER
DHW PRIORITY
SPACE HEATING PRIORITY

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

COOLING SECONDARY SYSTEM
CW01-P1
EV
CW01-ST11
PHE
CW00-P1
CW00-CV31
CW00-ST12
COOLING BUFFER
ST-OUTSIDE
HP02-P2
Flex conn. DN50
DN100
125 Amp
HP02 (SLAVE)
Q123-144RS/2
Evaporator
Condenser
HP02-P1
DN65
HP02-CV31
LTHW-ST12
LTHW-CV32
HEATING BUFFER
HEATING BUFFER
LTHW-CV31
LTHW-EH
LTHW-P1
LTHW-ST11
LTHW-ST41
HEATING SECONDARY SYSTEM
EV
HP01-P2
HP01-P1
HP01-CV31
HP01 (MASTER)
Q123-144RS/2
CW00-ST41
CW00-CV32
CW00-P2
CW00-ST11
CW00-ST42
LTHW-ST42
LTHW-CV33
LTHW-ST43
QAP10
DC01-ST41
DC01-P1
AO (USED FOR DRY COOLER)
DRY COOLER/EXHAUST AIR
DHW-CV31
DHW-ST11
DHW-ST41
DHW SYSTEM
DHW-P1
DHW-IH1
DHW-IH2
DHW CYLINDER
DHW CYLINDER
HP02-ST51
HP01-ST51
QAP20
CLOSED LOOP/OPEN LOOP/AMBIENT LOOP

DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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Information
Q123-144RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to both boreholes & dry cooler/exhaust air, DHW system control, pool system control

HP03 - SLAVE
HP02 - SLAVE
HP01 - MASTER
DHW PRIORITY
SPACE HEATING PRIORITY

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

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Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

DI, DO, AI & AO signals
Modbus TCP/IP
Modbus RTU
Components supplied by Qvantum
Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

Circulation pump
Temperature sensor
3-way control valve
Isolation valve
Non return valve
Strainer

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HEAT PUMPS FOR SUSTAINABLE CITIES

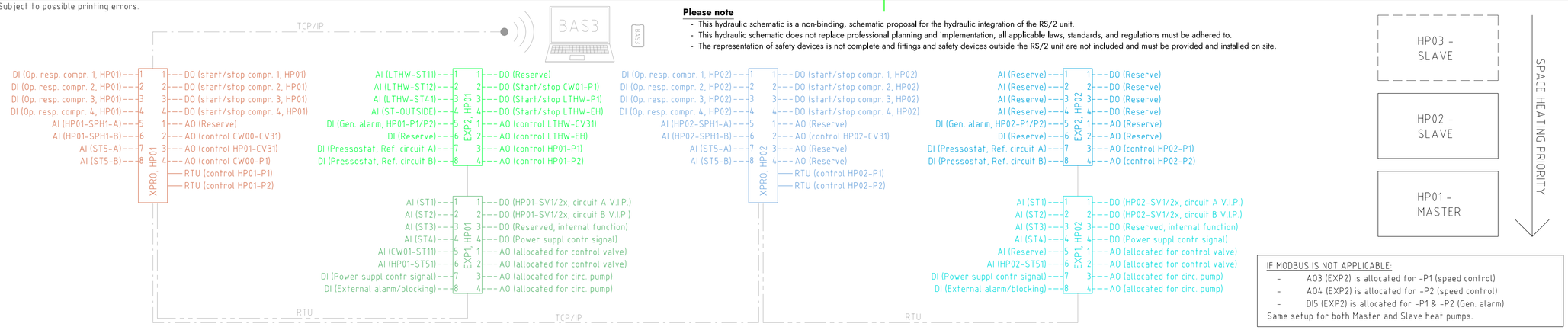
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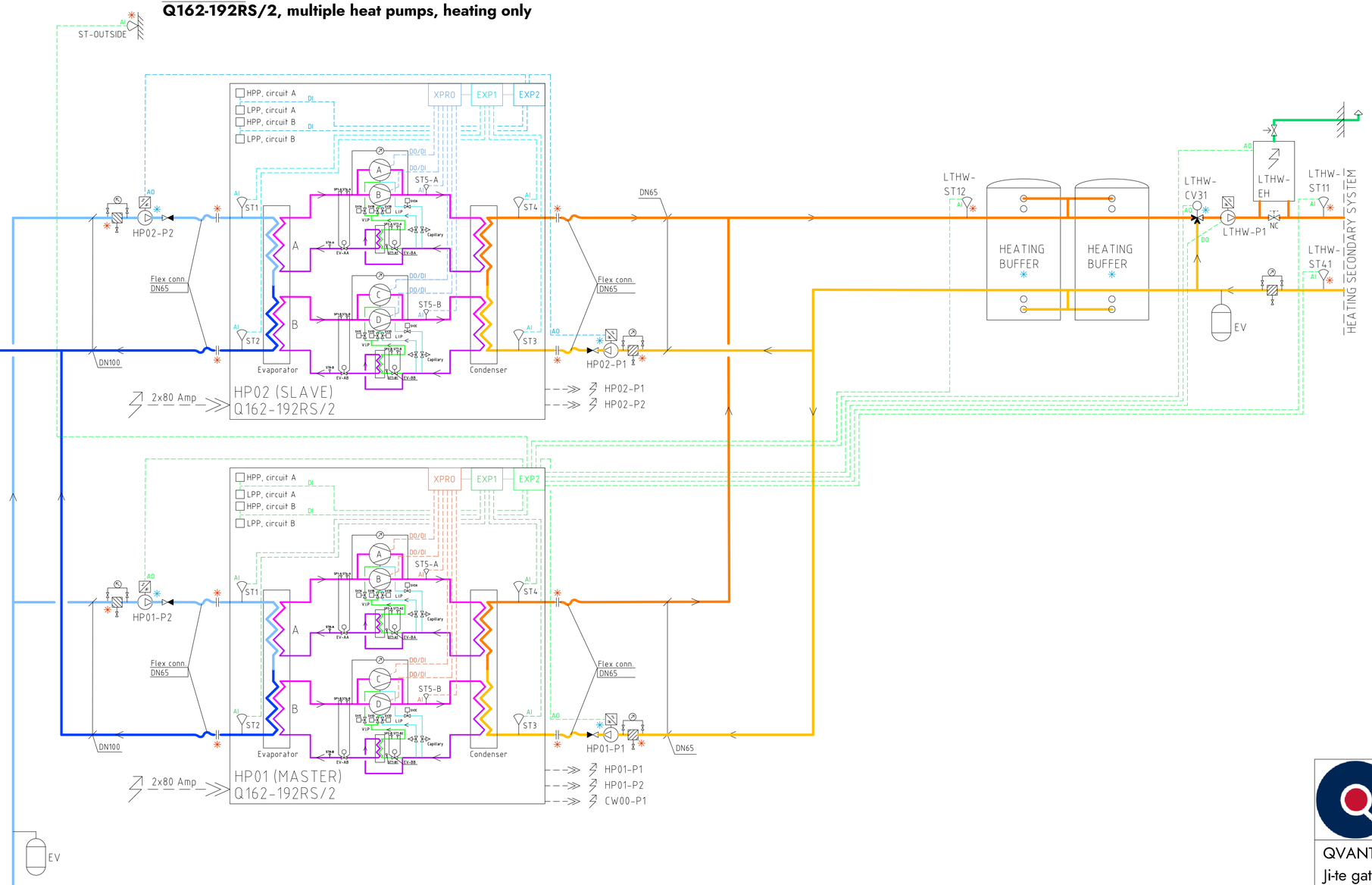
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IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

Information
Q162-192RS/2, multiple heat pumps, heating only



DISCLAIMERS

Space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

- – – – – DI, DO, AI & AO signals
- —·— Modbus TCP/IP
- —·–·— Modbus RTU
- ✳ Components supplied by Qvantum
- ✳ Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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HEAT PUMPS FOR SUSTAINABLE CITIES

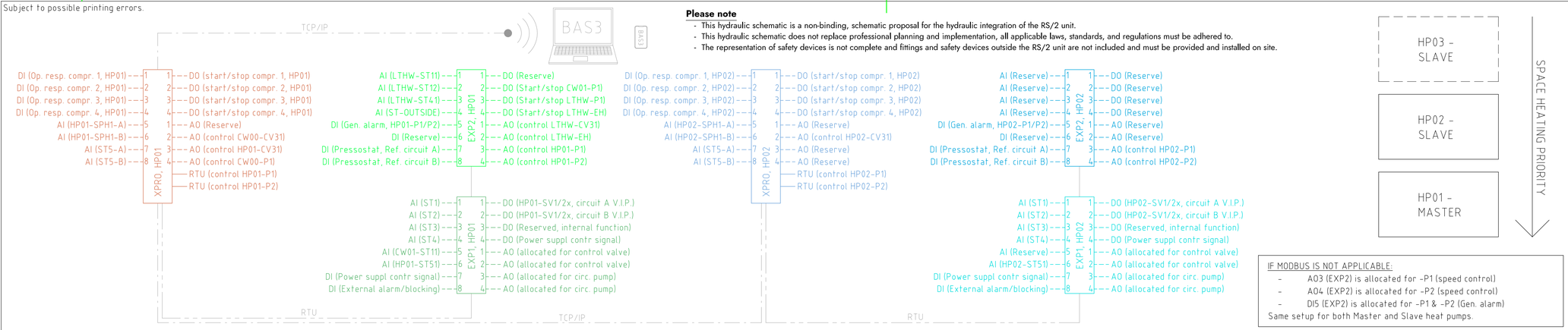
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HP03 - SLAVE

HP02 - SLAVE

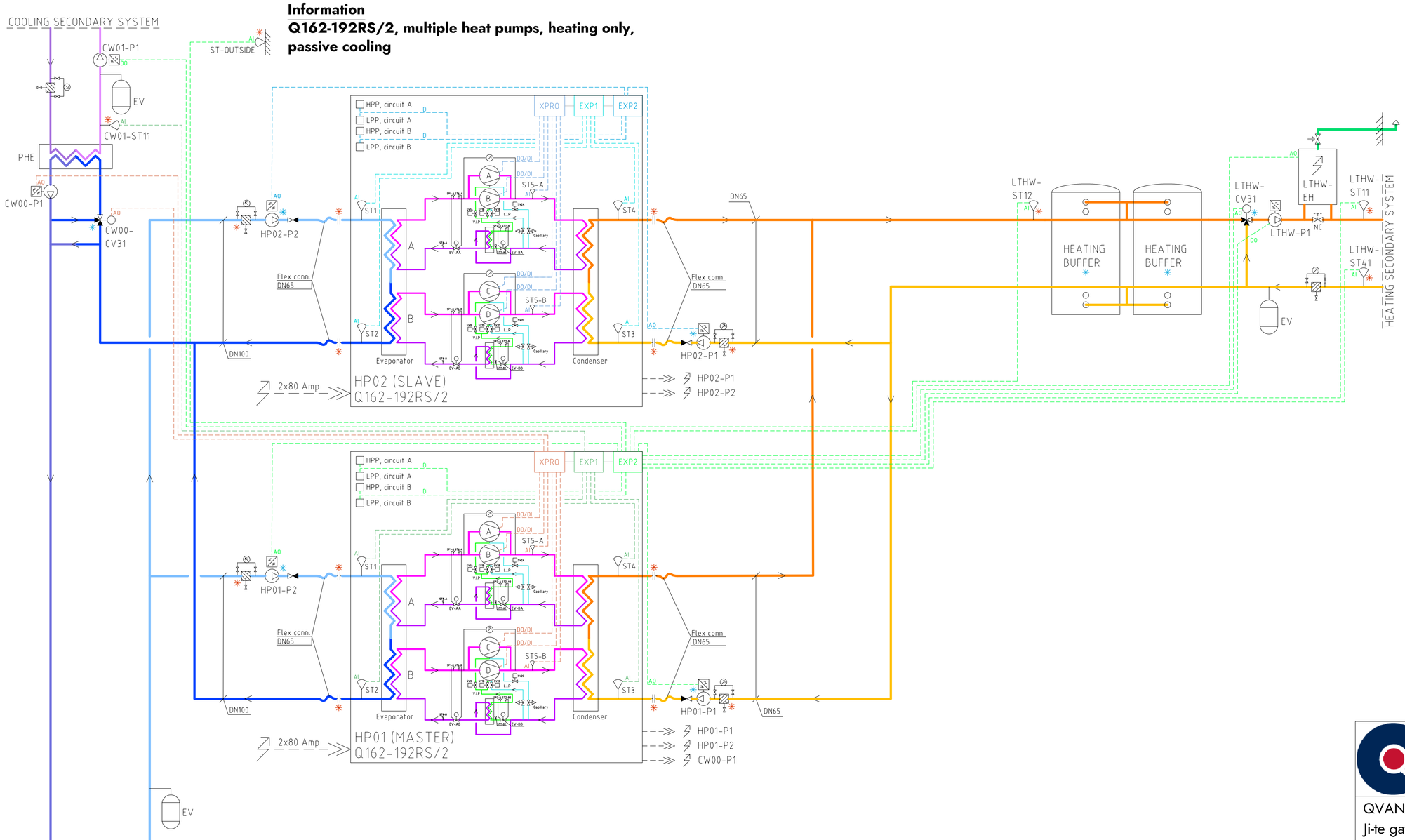
HP01 - MASTER

SPACE HEATING PRIORITY

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

Information
Q162-192RS/2, multiple heat pumps, heating only, passive cooling



DISCLAIMERS

Space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

DI, DO, AI & AO signals

Modbus TCP/IP

Modbus RTU

Components supplied by Qvantum

Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

Circulation pump

Temperature sensor

3-way control valve

Isolation valve

Non return valve

Strainer

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HEAT PUMPS FOR SUSTAINABLE CITIES

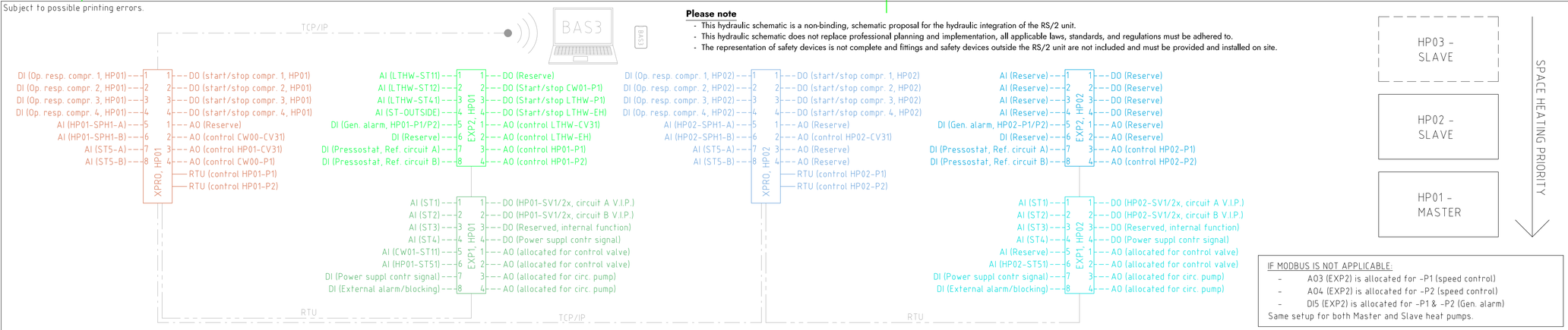
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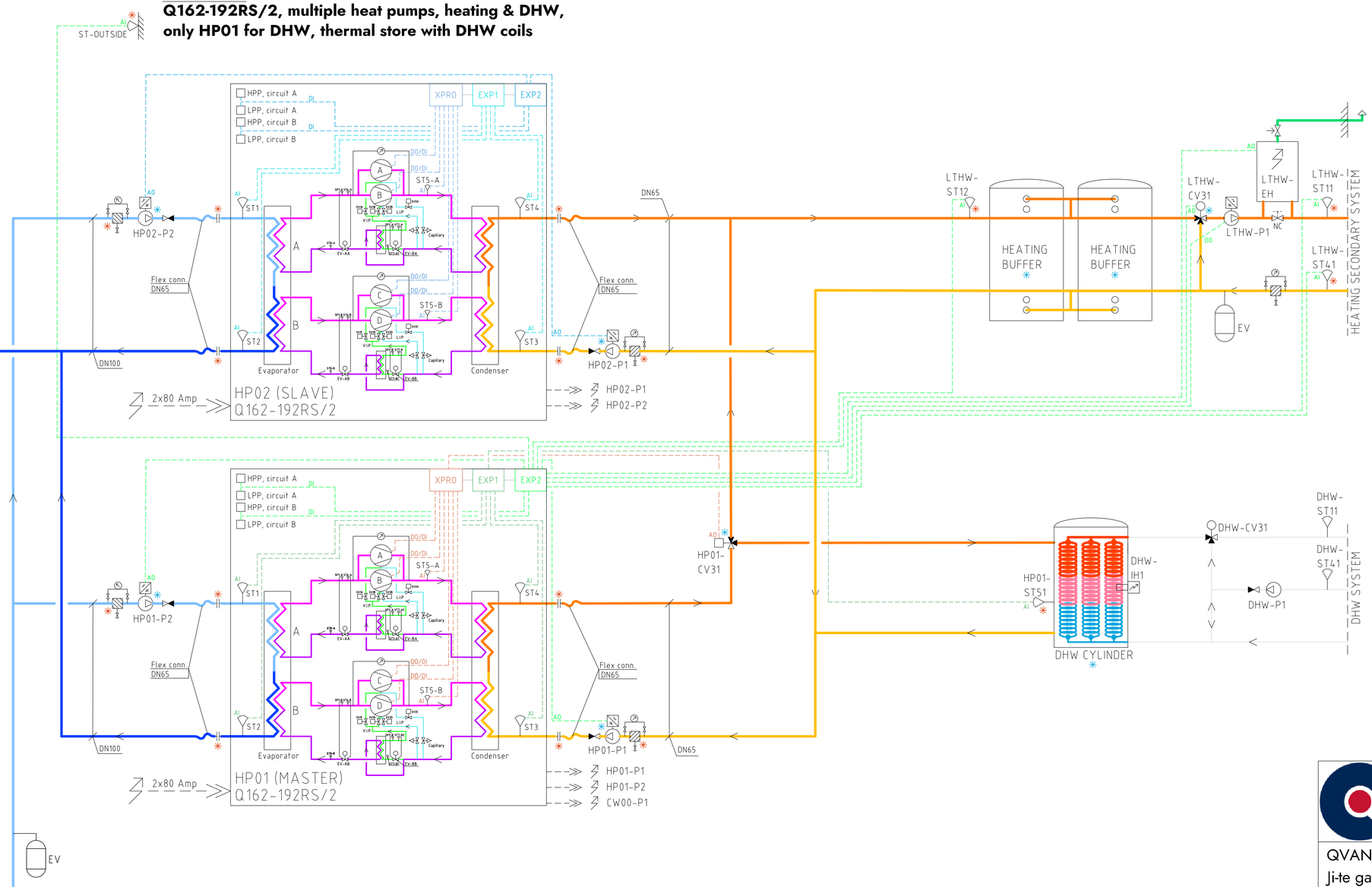
Please note
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IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

Information
Q162-192RS/2, multiple heat pumps, heating & DHW, only HP01 for DHW, thermal store with DHW coils



DISCLAIMERS

Space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that could be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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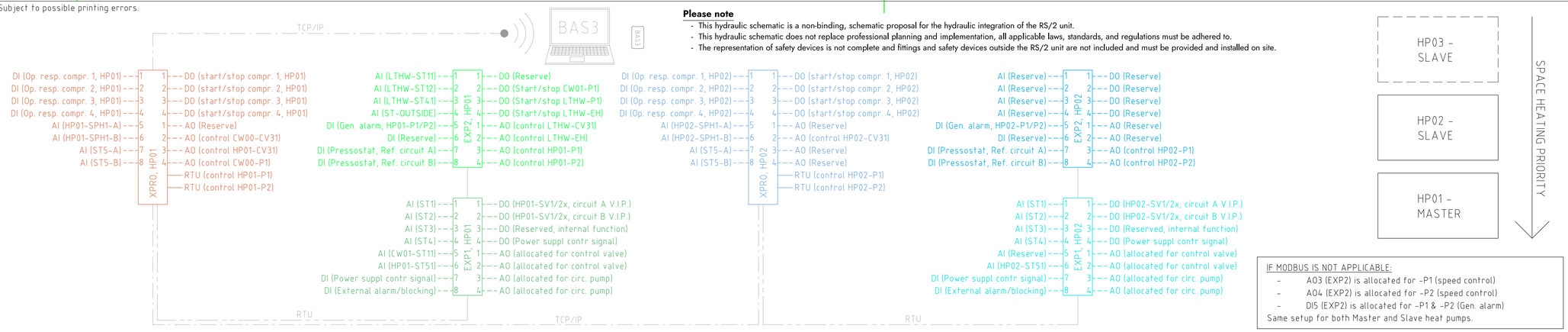
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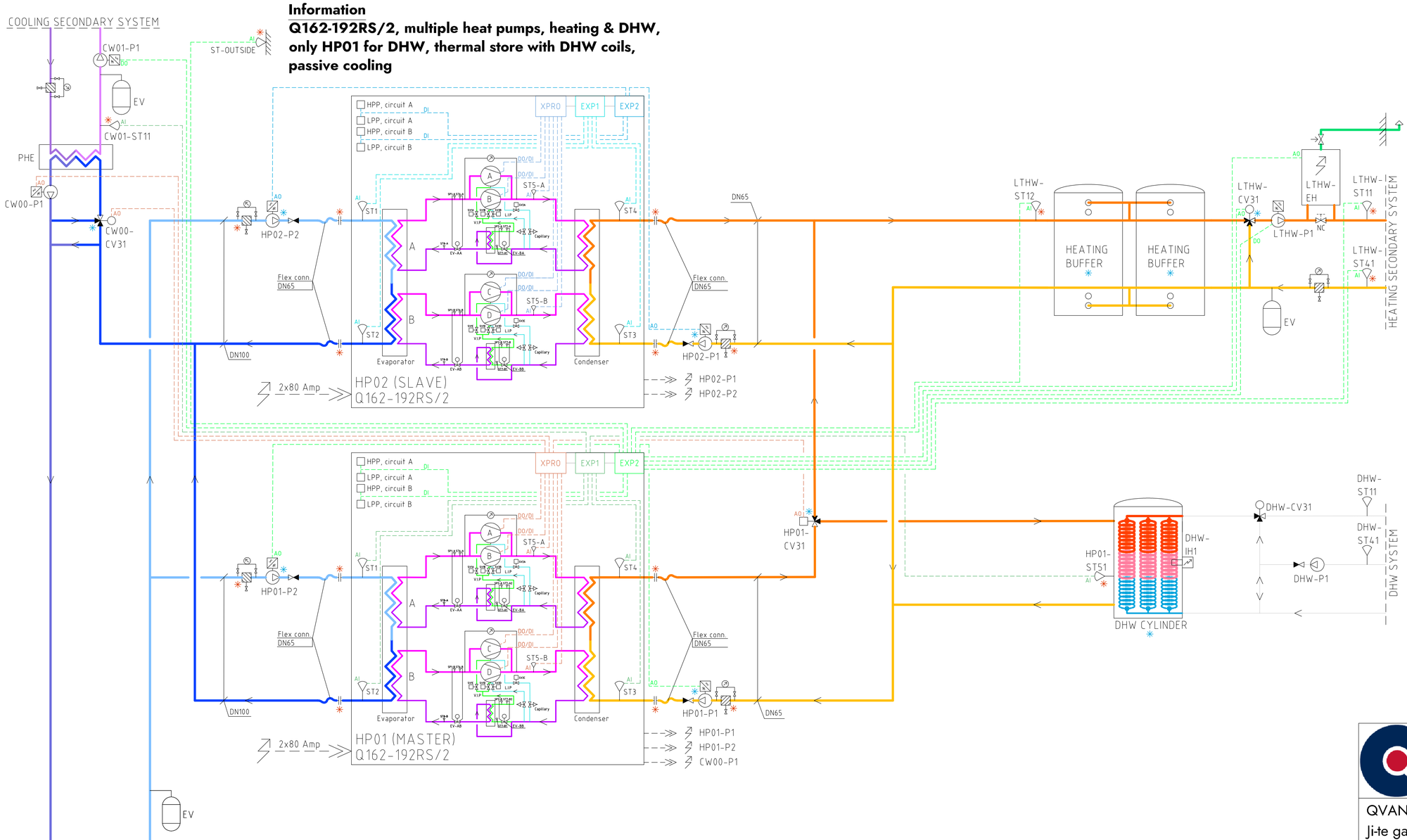
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Same setup for both Master and Slave heat pumps.

Information
Q162-192RS/2, multiple heat pumps, heating & DHW, only HP01 for DHW, thermal store with DHW coils, passive cooling



DISCLAIMERS

Space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

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Example shown with No. 1 DHW cylinders, however same control setup applies for additional cylinders.

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- Modbus RTU
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- Components that could be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

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COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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HEAT PUMPS FOR SUSTAINABLE CITIES

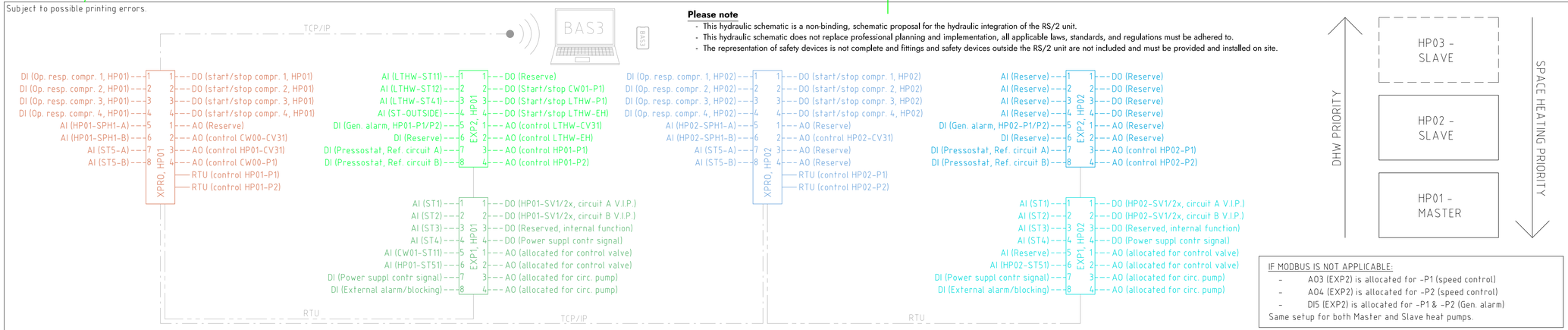
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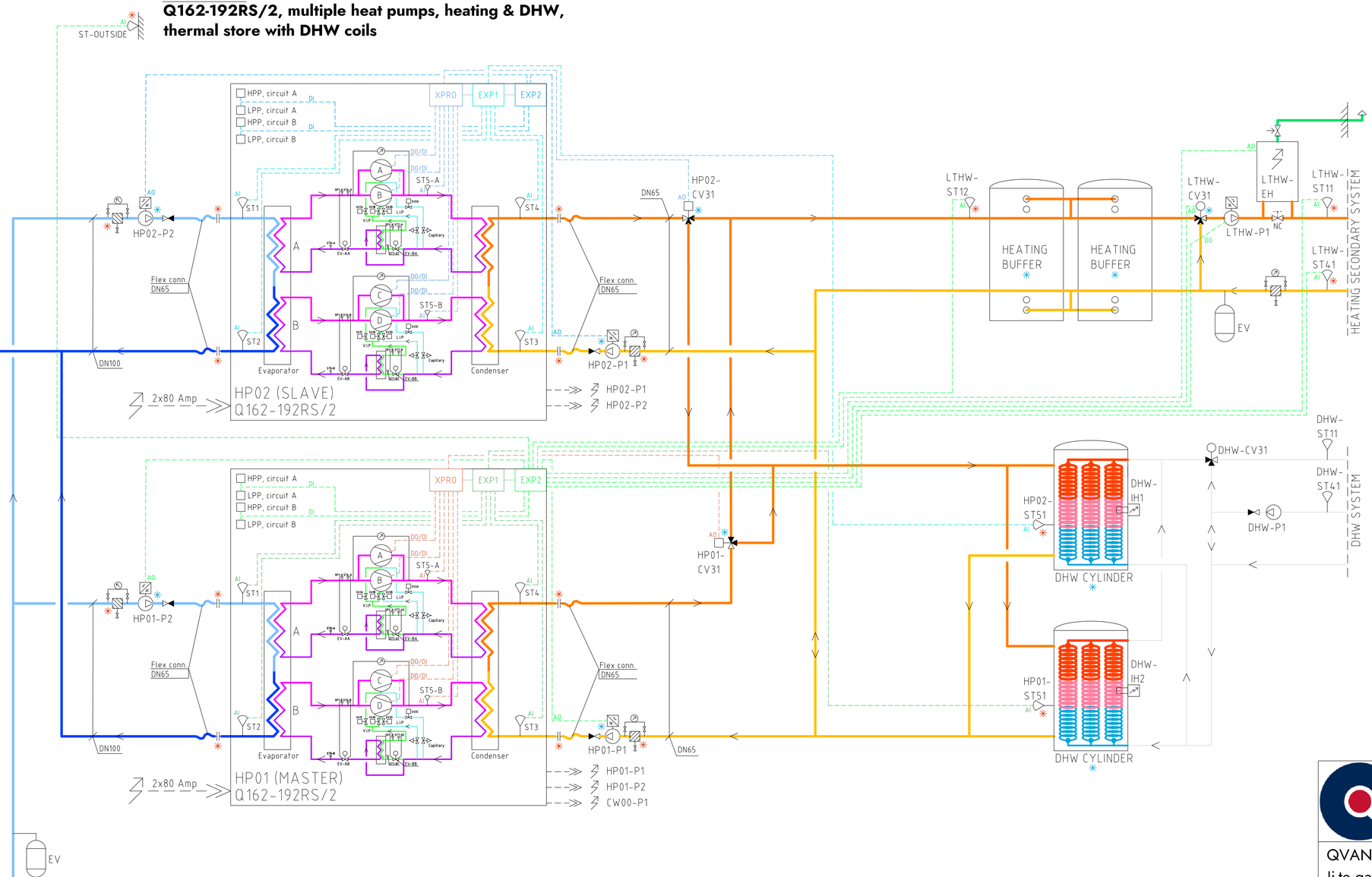
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Same setup for both Master and Slave heat pumps.

Information
Q162-192RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils



DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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TCP/IP — BAS3 — SX16

XPRO, HP01
- DI (Op. resp. compr. 1, HP01) — DO (start/stop compr. 1, HP01)
- DI (Op. resp. compr. 2, HP01) — DO (start/stop compr. 2, HP01)
- DI (Op. resp. compr. 3, HP01) — DO (start/stop compr. 3, HP01)
- DI (Op. resp. compr. 4, HP01) — DO (start/stop compr. 4, HP01)
- AI (HP01-SPH1-A) — AO (Reserve)
- AI (HP01-SPH1-B) — AO (control CW00-CV31)
- AI (ST5-A) — AO (control HP01-CV31)
- AI (ST5-B) — AO (control CW00-P1)
- RTU (control HP01-P1)
- RTU (control HP01-P2)

EXP2, HP01
- AI (LTHW-ST11) — DO (Reserve)
- AI (LTHW-ST12) — DO (Start/stop CW01-P1)
- AI (LTHW-ST41) — DO (Start/stop LTHW-P1)
- AI (ST-OUTSIDE) — DO (Start/stop LTHW-EH)
- DI (Gen. alarm, HP01-P1/P2) — AO (control LTHW-CV31)
- DI (Reserve) — AO (control LTHW-EH)
- DI (Pressostat, Ref. circuit A) — AO (control HP01-P1)
- DI (Pressostat, Ref. circuit B) — AO (control HP01-P2)

EXP1, HP01
- AI (ST1) — DO (HP01-SV1/2x, circuit A V.I.P.)
- AI (ST2) — DO (HP01-SV1/2x, circuit B V.I.P.)
- AI (ST3) — DO (Reserved, internal function)
- AI (ST4) — DO (Power suppl contr signal)
- AI (CW01-ST11) — AO (allocated for control valve)
- AI (HP01-ST51) — AO (allocated for control valve)
- DI (Power suppl contr signal) — AO (allocated for circ. pump)
- DI (External alarm/blocking) — AO (allocated for circ. pump)

RTU — TCP/IP

XPRO, HP02
- DI (Op. resp. compr. 1, HP02) — DO (start/stop compr. 1, HP02)
- DI (Op. resp. compr. 2, HP02) — DO (start/stop compr. 2, HP02)
- DI (Op. resp. compr. 3, HP02) — DO (start/stop compr. 3, HP02)
- DI (Op. resp. compr. 4, HP02) — DO (start/stop compr. 4, HP02)
- AI (HP02-SPH1-A) — AO (Reserve)
- AI (HP02-SPH1-B) — AO (control HP02-CV31)
- AI (ST5-A) — AO (Reserve)
- AI (ST5-B) — AO (Reserve)
- RTU (control HP02-P1)
- RTU (control HP02-P2)

EXP2, HP02
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- DI (Gen. alarm, HP02-P1/P2) — AO (Reserve)
- DI (Reserve) — AO (Reserve)
- DI (Pressostat, Ref. circuit A) — AO (control HP02-P1)
- DI (Pressostat, Ref. circuit B) — AO (control HP02-P2)

EXP1, HP02
- AI (ST1) — DO (HP02-SV1/2x, circuit A V.I.P.)
- AI (ST2) — DO (HP02-SV1/2x, circuit B V.I.P.)
- AI (ST3) — DO (Reserved, internal function)
- AI (ST4) — DO (Power suppl contr signal)
- AI (Reserve) — AO (allocated for control valve)
- AI (HP02-ST51) — AO (allocated for control valve)
- DI (Power suppl contr signal) — AO (allocated for circ. pump)
- DI (External alarm/blocking) — AO (allocated for circ. pump)

DHW PRIORITY

HP03 - SLAVE

HP02 - SLAVE

HP01 - MASTER

SPACE HEATING PRIORITY

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
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Same setup for both Master and Slave heat pumps.

Information
Q162-192RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive cooling

COOLING SECONDARY SYSTEM

CW01-P1 — EV — CW01-ST11 — PHE — CW00-P1 — CW00-CV31 — ST-OUTSIDE — HP02-P2 — HP01-P2

HP02 (SLAVE) Q162-192RS/2

HP01 (MASTER) Q162-192RS/2

HPP, circuit A; LPP, circuit A; HPP, circuit B; LPP, circuit B — XPR0 — EXP1 — EXP2

ST1 — ST2 — ST3 — ST4 — ST5-A — ST5-B — Evaporator — Condenser

Flex conn. DN65 — DN100 — 2x80 Amp

HP02-CV31 — HP01-CV31 — DN65

HP02-P1 — HP01-P1

LTHW-ST12 — HEATING BUFFER — HEATING BUFFER — LTHW-CV31 — LTHW-EH — LTHW-P1 — LTHW-ST11 — LTHW-ST41 — EV — HEATING SECONDARY SYSTEM

HP02-ST51 — HP01-ST51 — DHW CYLINDER — DHW CYLINDER — DHW-IH1 — DHW-IH2 — DHW-CV31 — DHW-P1 — DHW-ST11 — DHW-ST41 — DHW SYSTEM

EV

CLOSED LOOP/OPEN LOOP/AMBIENT LOOP

DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

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Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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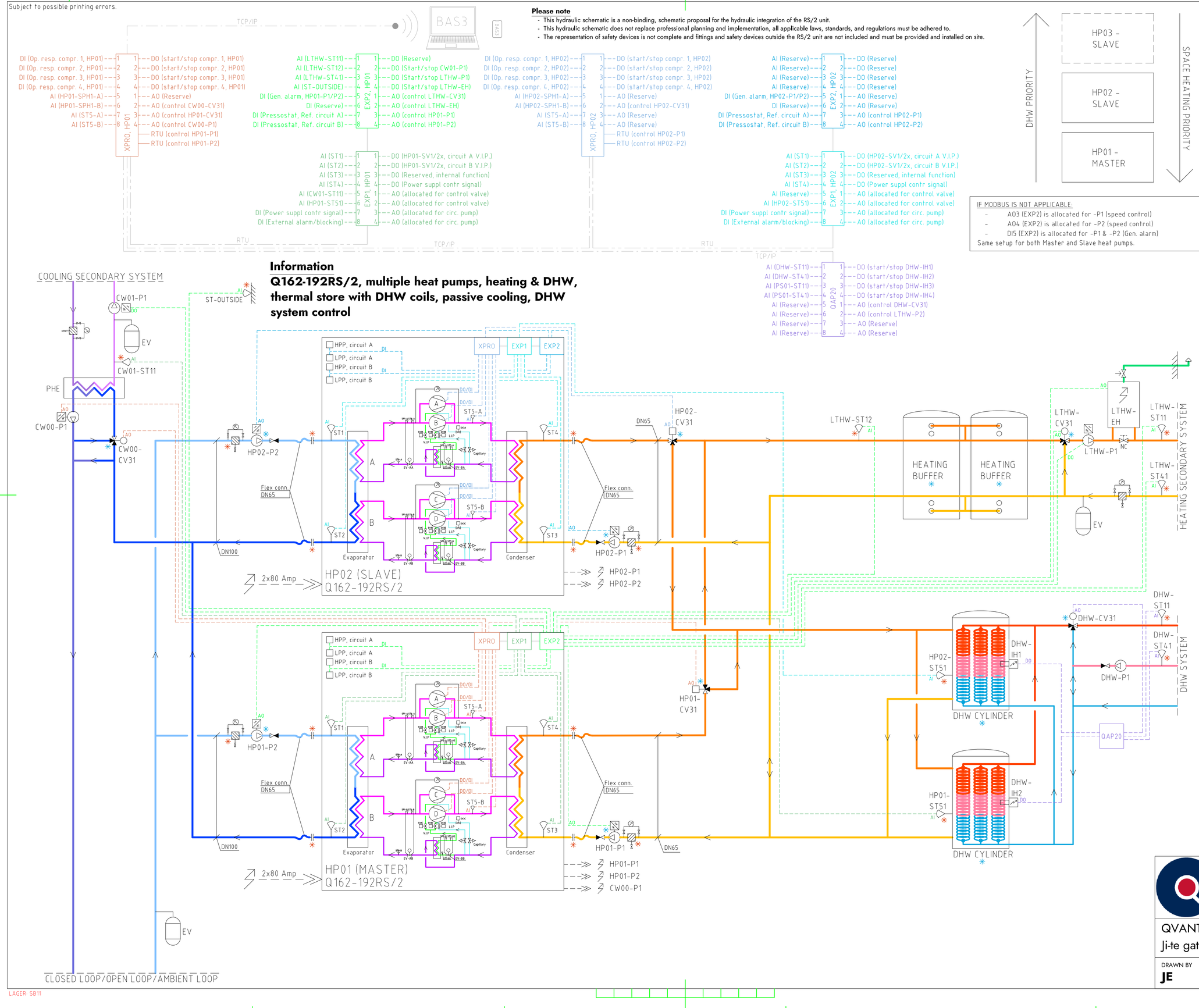
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Subject to possible printing errors.

Information
Q162-192RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive cooling, DHW system control

Please note
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- 3-way control valve
- Isolation valve
- Non return valve
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Information
Q162-192RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive cooling, DHW system control, pool system control

TCP/IP
BAS3
SS1:8

XPRO, HP01
- DI (Op. resp. compr. 1, HP01) — DO (start/stop compr. 1, HP01)
- DI (Op. resp. compr. 2, HP01) — DO (start/stop compr. 2, HP01)
- DI (Op. resp. compr. 3, HP01) — DO (start/stop compr. 3, HP01)
- DI (Op. resp. compr. 4, HP01) — DO (start/stop compr. 4, HP01)
- AI (HP01-SPH1-A) — AO (Reserve)
- AI (HP01-SPH1-B) — AO (control CW00-CV31)
- AI (ST5-A) — AO (control HP01-CV31)
- AI (ST5-B) — AO (control CW00-P1)
- RTU (control HP01-P1)
- RTU (control HP01-P2)

EXP2, HP01
- AI (LTHW-ST11) — DO (Reserve)
- AI (LTHW-ST12) — DO (Start/stop CW01-P1)
- AI (LTHW-ST41) — DO (Start/stop LTHW-P1)
- AI (ST-OUTSIDE) — DO (Start/stop LTHW-EH)
- DI (Gen. alarm, HP01-P1/P2) — AO (control LTHW-CV31)
- DI (Reserve) — AO (control LTHW-EH)
- DI (Pressostat, Ref. circuit A) — AO (control HP01-P1)
- DI (Pressostat, Ref. circuit B) — AO (control HP01-P2)

EXP1, HP01
- AI (ST1) — DO (HP01-SV1/2x, circuit A V.I.P.)
- AI (ST2) — DO (HP01-SV1/2x, circuit B V.I.P.)
- AI (ST3) — DO (Reserved, internal function)
- AI (ST4) — DO (Power suppl contr signal)
- AI (CW01-ST11) — AO (allocated for control valve)
- AI (HP01-ST51) — AO (allocated for control valve)
- DI (Power suppl contr signal) — AO (allocated for circ. pump)
- DI (External alarm/blocking) — AO (allocated for circ. pump)

XPRO, HP02
- DI (Op. resp. compr. 1, HP02) — DO (start/stop compr. 1, HP02)
- DI (Op. resp. compr. 2, HP02) — DO (start/stop compr. 2, HP02)
- DI (Op. resp. compr. 3, HP02) — DO (start/stop compr. 3, HP02)
- DI (Op. resp. compr. 4, HP02) — DO (start/stop compr. 4, HP02)
- AI (HP02-SPH1-A) — AO (Reserve)
- AI (HP02-SPH1-B) — AO (control HP02-CV31)
- AI (ST5-A) — AO (Reserve)
- AI (ST5-B) — AO (Reserve)
- RTU (control HP02-P1)
- RTU (control HP02-P2)

EXP2, HP02
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- DI (Gen. alarm, HP02-P1/P2) — AO (Reserve)
- DI (Reserve) — AO (Reserve)
- DI (Pressostat, Ref. circuit A) — AO (control HP02-P1)
- DI (Pressostat, Ref. circuit B) — AO (control HP02-P2)

EXP1, HP02
- AI (ST1) — DO (HP02-SV1/2x, circuit A V.I.P.)
- AI (ST2) — DO (HP02-SV1/2x, circuit B V.I.P.)
- AI (ST3) — DO (Reserved, internal function)
- AI (ST4) — DO (Power suppl contr signal)
- AI (Reserve) — AO (allocated for control valve)
- AI (HP02-ST51) — AO (allocated for control valve)
- DI (Power suppl contr signal) — AO (allocated for circ. pump)
- DI (External alarm/blocking) — AO (allocated for circ. pump)

QAP20
- AI (DHW-ST11) — DO (start/stop DHW-IH1)
- AI (DHW-ST41) — DO (start/stop DHW-IH2)
- AI (PS01-ST11) — DO (start/stop DHW-IH3)
- AI (PS01-ST41) — DO (start/stop DHW-IH4)
- AI (Reserve) — AO (control DHW-CV31)
- AI (Reserve) — AO (control LTHW-P2)
- AI (Reserve) — AO (Reserve)
- AI (Reserve) — AO (Reserve)

HP03 - SLAVE
HP02 - SLAVE
HP01 - MASTER
DHW PRIORITY
SPACE HEATING PRIORITY

IF MODBUS IS NOT APPLICABLE:
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- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

COOLING SECONDARY SYSTEM
CW01-P1
EV
CW01-ST11
PHE
CW00-P1
CW00-CV31
ST-OUTSIDE
HP02-P2
Flex conn. DN65
DN100
HPP, circuit A
LPP, circuit A
HPP, circuit B
LPP, circuit B
XPRO
EXP1
EXP2
ST1
ST2
ST3
ST4
ST5-A
ST5-B
Evaporator
Condenser
DN65
HP02-CV31
HP02-P1
HP02 (SLAVE)
Q162-192RS/2
2x80 Amp
HP01-P2
HP01-CV31
HP01-P1
HP01 (MASTER)
Q162-192RS/2
CW00-P1
EV
CLOSED LOOP/OPEN LOOP/AMBIENT LOOP

LTHW-ST12
HEATING BUFFER
HEATING BUFFER
LTHW-P2
LTHW-CV31
LTHW-EH
LTHW-P1
LTHW-ST11
LTHW-ST41
EV
HEATING SECONDARY SYSTEM
PHE
PS01-ST11
PS01-ST41
PS01-P1
POOL SYSTEM
DHW-ST11
DHW-CV31
DHW-ST41
DHW-P1
DHW SYSTEM
HP02-ST51
DHW-IH1
DHW CYLINDER
HP01-ST51
DHW-IH2
DHW CYLINDER
QAP20

DISCLAIMERS

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- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

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COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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- The representation of safety devices is not complete and fittings and safety devices outside the RS/2 unit are not included and must be provided and installed on site.

Information
Q162-192RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to boreholes

HP03 - SLAVE
HP02 - SLAVE
HP01 - MASTER
DHW PRIORITY
SPACE HEATING PRIORITY

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

DISCLAIMERS
DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS
- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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HEAT PUMPS FOR SUSTAINABLE CITIES

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Ji-te gatan 7, 265 38 Åstorp

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Information
Q162-192RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to boreholes, DHW system control

TCP/IP — BAS3 — SW18

XPRO, HP01
- DI (Op. resp. compr. 1, HP01) — DO (start/stop compr. 1, HP01)
- DI (Op. resp. compr. 2, HP01) — DO (start/stop compr. 2, HP01)
- DI (Op. resp. compr. 3, HP01) — DO (start/stop compr. 3, HP01)
- DI (Op. resp. compr. 4, HP01) — DO (start/stop compr. 4, HP01)
- AI (HP01-SPH1-A) — AO (Reserve)
- AI (HP01-SPH1-B) — AO (control CW00-CV31)
- AI (ST5-A) — AO (control HP01-CV31)
- AI (ST5-B) — AO (control CW00-P1)
- RTU (control HP01-P1)
- RTU (control HP01-P2)

EXP2, HP01
- AI (LTHW-ST11) — DO (Reserve)
- AI (LTHW-ST12) — DO (Start/stop CW01-P1)
- AI (LTHW-ST41) — DO (Start/stop LTHW-P1)
- AI (ST-OUTSIDE) — DO (Start/stop LTHW-EH)
- DI (Gen. alarm, HP01-P1/P2) — AO (control LTHW-CV31)
- DI (Reserve) — AO (control LTHW-EH)
- DI (Pressostat, Ref. circuit A) — AO (control HP01-P1)
- DI (Pressostat, Ref. circuit B) — AO (control HP01-P2)

EXP1, HP01
- AI (ST1) — DO (HP01-SV1/2x, circuit A V.I.P.)
- AI (ST2) — DO (HP01-SV1/2x, circuit B V.I.P.)
- AI (ST3) — DO (Reserved, internal function)
- AI (ST4) — DO (Power suppl contr signal)
- AI (CW01-ST11) — AO (allocated for control valve)
- AI (HP01-ST51) — AO (allocated for control valve)
- DI (Power suppl contr signal) — AO (allocated for circ. pump)
- DI (External alarm/blocking) — AO (allocated for circ. pump)

XPRO, HP02
- DI (Op. resp. compr. 1, HP02) — DO (start/stop compr. 1, HP02)
- DI (Op. resp. compr. 2, HP02) — DO (start/stop compr. 2, HP02)
- DI (Op. resp. compr. 3, HP02) — DO (start/stop compr. 3, HP02)
- DI (Op. resp. compr. 4, HP02) — DO (start/stop compr. 4, HP02)
- AI (HP02-SPH1-A) — AO (Reserve)
- AI (HP02-SPH1-B) — AO (control HP02-CV31)
- AI (ST5-A) — AO (Reserve)
- AI (ST5-B) — AO (Reserve)
- RTU (control HP02-P1)
- RTU (control HP02-P2)

EXP2, HP02
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- AI (Reserve) — DO (Reserve)
- DI (Gen. alarm, HP02-P1/P2) — AO (Reserve)
- DI (Reserve) — AO (Reserve)
- DI (Pressostat, Ref. circuit A) — AO (control HP02-P1)
- DI (Pressostat, Ref. circuit B) — AO (control HP02-P2)

EXP1, HP02
- AI (ST1) — DO (HP02-SV1/2x, circuit A V.I.P.)
- AI (ST2) — DO (HP02-SV1/2x, circuit B V.I.P.)
- AI (ST3) — DO (Reserved, internal function)
- AI (ST4) — DO (Power suppl contr signal)
- AI (Reserve) — AO (allocated for control valve)
- AI (HP02-ST51) — AO (allocated for control valve)
- DI (Power suppl contr signal) — AO (allocated for circ. pump)
- DI (External alarm/blocking) — AO (allocated for circ. pump)

QAP10
- AI (CW00-ST11) — DO (control LTHW-CV32)
- AI (CW00-ST12) — DO (start/stop DC01-P1)
- AI (CW00-ST41) — DO (Reserve)
- AI (CW00-ST42) — DO (Reserve)
- AI (LTHW-ST42) — AO (control CW00-CV32)
- AI (LTHW-ST43) — AO (control CW00-P2)
- AI (DC01-ST41) — AO (control LTHW-CV33)
- AI (Reserve) — AO (control DC01-P1 or dry cooler)

QAP20
- AI (DHW-ST11) — DO (start/stop DHW-IH1)
- AI (DHW-ST41) — DO (start/stop DHW-IH2)
- AI (PS01-ST11) — DO (start/stop DHW-IH3)
- AI (PS01-ST41) — DO (start/stop DHW-IH4)
- AI (Reserve) — AO (control DHW-CV31)
- AI (Reserve) — AO (control LTHW-P2)
- AI (Reserve) — AO (Reserve)
- AI (Reserve) — AO (Reserve)

DHW PRIORITY ↑ — SPACE HEATING PRIORITY ↓
- HP03 - SLAVE
- HP02 - SLAVE
- HP01 - MASTER

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
- DI5 (EXP2) is allocated for -P1 & -P2 (Gen. alarm)

Same setup for both Master and Slave heat pumps.

COOLING SECONDARY SYSTEM
- CW01-P1
- ST-OUTSIDE
- EV
- CW01-ST11
- PHE
- CW00-P1
- CW00-CV31
- CW00-ST12
- COOLING BUFFER
- HP02-P2
- Flex conn. DN65
- DN100
- HPP, circuit A
- LPP, circuit A
- HPP, circuit B
- LPP, circuit B
- XPR0 — EXP1 — EXP2
- ST1 — ST2 — ST3 — ST4 — ST5-A — ST5-B
- Evaporator — Condenser
- 2x80 Amp
- HP02 (SLAVE) Q162-192RS/2
- HP02-P1
- HP02-CV31
- DN65
- HP01-P2
- HP01-P1
- HP01-CV31
- HP01 (MASTER) Q162-192RS/2
- CW00-ST41
- CW00-CV32
- CW00-P2
- CW00-ST11
- CW00-ST42
- EV
- CLOSED LOOP/OPEN LOOP/AMBIENT LOOP

LTHW-ST12 — LTHW-CV32 — HEATING BUFFER — HEATING BUFFER — LTHW-CV31 — LTHW-EH — LTHW-ST11 — LTHW-P1 — LTHW-ST41 — EV — HEATING SECONDARY SYSTEM

HP02-ST51 — DHW-IH1 — DHW-CV31 — DHW-ST11 — DHW-P1 — DHW-ST41 — DHW CYLINDER — QAP20 — HP01-ST51 — DHW-IH2 — DHW CYLINDER — DHW SYSTEM

DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

Example with electric boiler as supplementary heat source. Solution may vary due to specific conditions.

Depending on size of electric boiler normally closed isolation valve or balancing valve is used to direct flow over the boiler.

Control for DHW distribution is excluded, hence grey flow lines and unidentified components.

Solution for DHW may vary due to country specific regulations.

Example shown with No. 2 DHW cylinders, however same control setup applies for additional cylinders.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Modbus RTU
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

For meausurements and other information regarding the heat pump, see separate documents and drawings.

Connections on evaporator and condenser are based on thin-walled copper pipe SS EN 1057 R290.

Pipe size on evaporator side is based on stainless steel EN 1.4301 (ISO).

Pipe size on condenser side is based on Geberit Mapress Electro-galvanized Steel.

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
- Isolation valve
- Non return valve
- Strainer

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HEAT PUMPS FOR SUSTAINABLE CITIES

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Information

Q162-192RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to boreholes, DHW system control, pool system control

HP03 - SLAVE
HP02 - SLAVE
HP01 - MASTER
DHW PRIORITY
SPACE HEATING PRIORITY

IF MODBUS IS NOT APPLICABLE:
- AO3 (EXP2) is allocated for -P1 (speed control)
- AO4 (EXP2) is allocated for -P2 (speed control)
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Same setup for both Master and Slave heat pumps.

DISCLAIMERS

DHW priority from Master to Slave and space heating priority from Slave to Master.

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Information
Q162-192RS/2, multiple heat pumps, heating & DHW, thermal store with DHW coils, passive & active cooling, heat dump to both boreholes & dry cooler/exhaust air

HP03 - SLAVE
HP02 - SLAVE
HP01 - MASTER
DHW PRIORITY
SPACE HEATING PRIORITY

IF MODBUS IS NOT APPLICABLE:
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Information

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HP01 - MASTER
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Same setup for both Master and Slave heat pumps.

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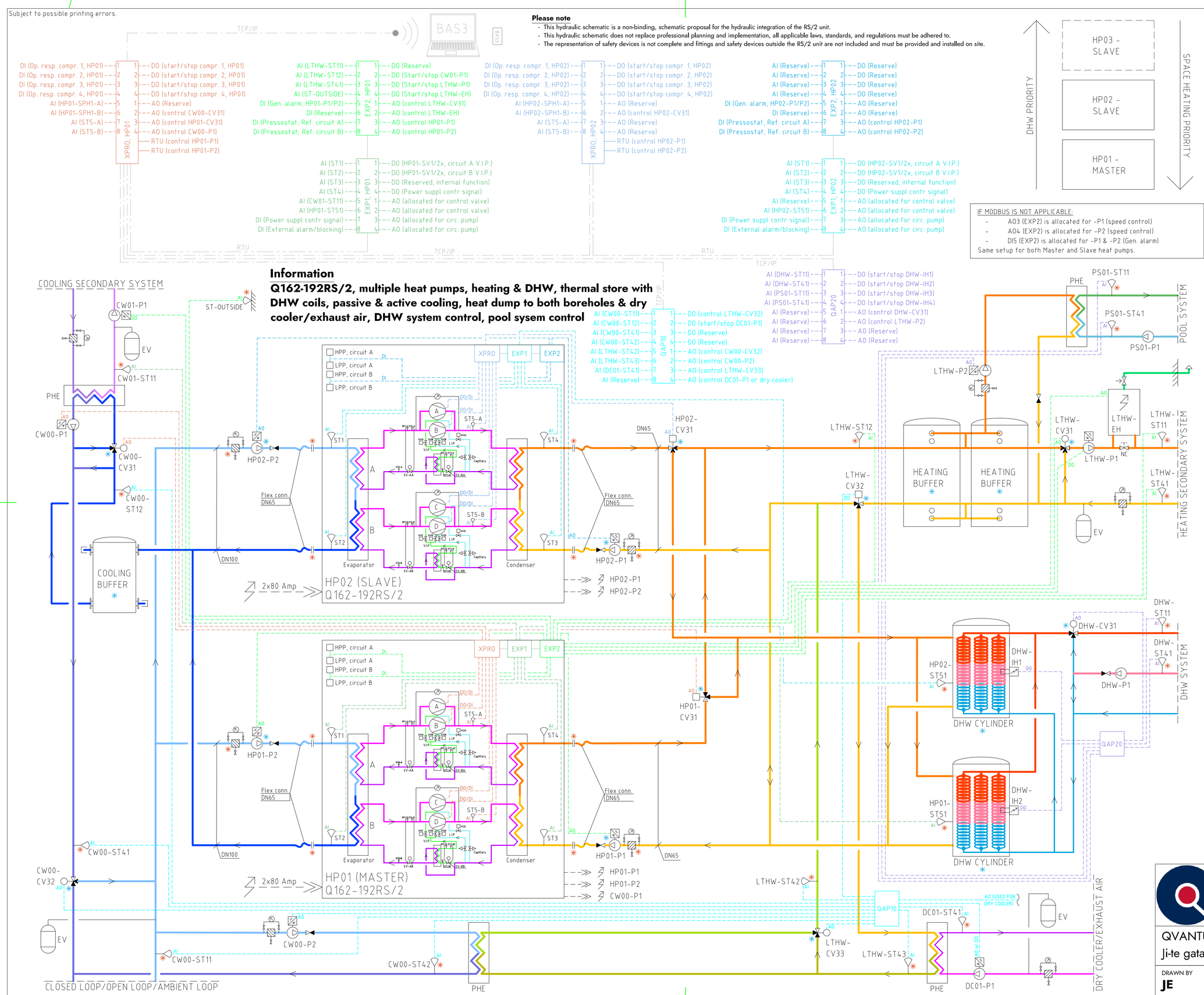
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Information

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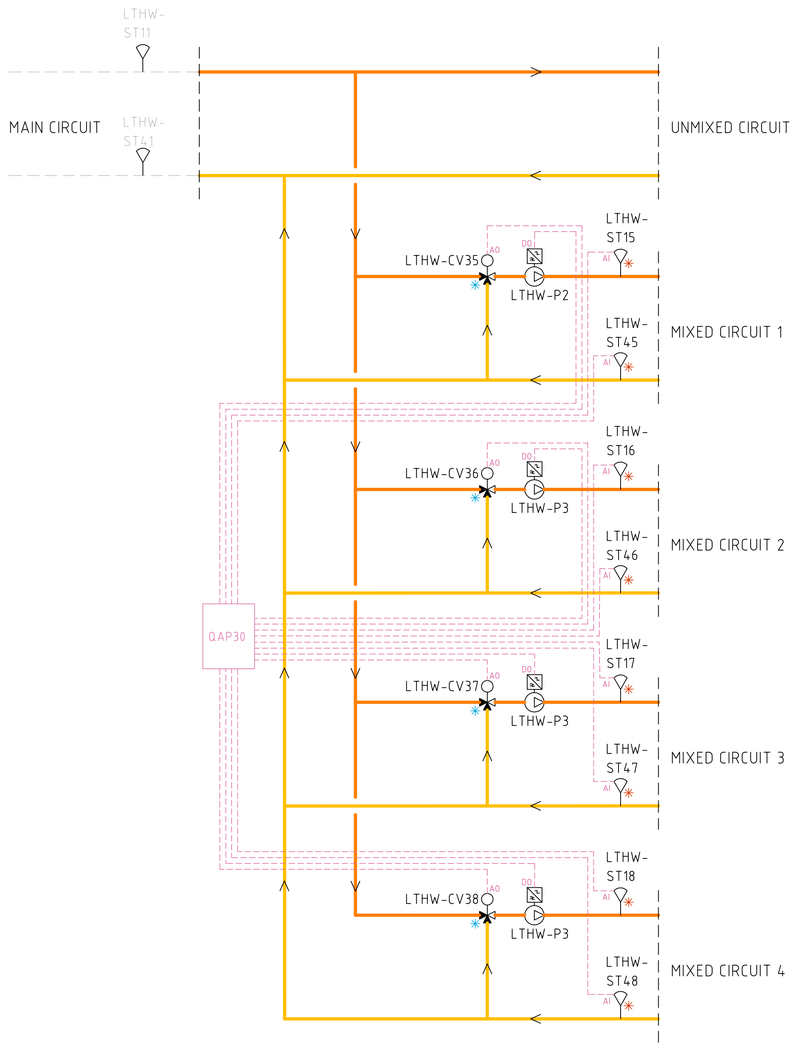
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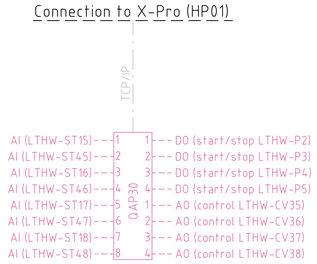
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Information
QAP30 - mixed circuits



Connection to X-Pro (HP01)



DISCLAIMERS

Accessories package QAP30 showing 1 main unmixed ciruit and 4 mixed circuits all connected to the main circuit.

- DI, DO, AI & AO signals
- Modbus TCP/IP
- Components supplied by Qvantum
- Components that can be supplied by Qvantum

COMPONENT SYMBOLS

- Circulation pump
- Temperature sensor
- 3-way control valve
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