

# Vertiv™ Liebert® XD Pumping Unit (XDP) with Vertiv™ Liebert® iCOM™ Control GUIDE SPECIFICATIONS

## 1.0 GENERAL

### 1.1 Summary

These specifications describe requirements for an air conditioning system designed for cooling of high heat density equipment. The system shall be designed to maintain conditions within the space with heat-emitting equipment. The manufacturer shall design and furnish all equipment to be fully compatible with heat-dissipation requirements of the site.

### 1.2 Design Requirements

The fluid circulating system shall be a Liebert® XD Pumping Unit (XDP) factory-assembled unit. The unit shall be designed for connection to cooling modules in the Liebert® XD product family.

### 1.3 Submittals

Submittals shall be provided with the proposal and shall include Dimensional, Electrical and Capacity data, typical Piping and Electrical Connection drawings.

### 1.4 Warranty

The system shall be provided with a warranty against defects in material and workmanship.

### 1.5 Quality Assurance

The specified system shall be factory-tested before shipment and designed to meet NRTL requirements. The system shall be designed and manufactured according to world-class quality standards. The manufacturer shall be ISO 9001 certified.

## 2.0 PRODUCT

### 2.1 Standard Features Vertiv™ Liebert® XDP

The Liebert® XDP shall include a heat exchanger, pumps, microprocessor control, modulating control valve, disconnect switch and associated factory-installed piping.

#### 2.1.1 Cabinet

The Liebert® XDP components shall be enclosed in a cabinet with powder painted doors. Two (2) doors shall hinge from the front for service access.

#### 2.1.2 Pumps

The pumps shall be factory-piped and factory-wired in the Liebert® XDP module.

#### 2.1.3 Heat Exchanger

The heat exchanger shall be brazed-plate type, constructed of 316 stainless-steel plates. The primary side shall be piped to a chilled water source with entering fluid temperature of 45°F (7.2°C), with a design flow rate of 140 gpm (32 m<sup>3</sup>/h). The secondary side shall be piped to cooling module(s) in the Vertiv™ Liebert® XD product family. A strainer shall be installed upstream of the Liebert® XDP, on the primary (building) chilled water side.

#### 2.1.4 Chilled Water Valve

A modulating, two-way chilled water valve shall control the flow of chilled water on the primary side of the heat exchanger. The valve actuator shall respond to changes in room dew point temperature to control the supply temperature for optimum cooling with no condensation.

#### 2.1.5 Vertiv™ Liebert® iCOM™ Control

The Liebert® iCOM™ unit control shall be factory-set for Intelligent Control which uses “fuzzy logic” and “expert systems” methods. Proportional and Tunable PID shall also be user selectable options. Internal unit component control shall include the following:

1. System Auto Restart - The auto restart feature will automatically restart the system after a power failure. Time delay is programmable.
2. Sequential Load Activation - On initial startup or restart after power failure, each operational load is sequenced with a minimum of one second delay to minimize total inrush current.
3. System View - Status Overview: “System View” shall display a summary of operation for the total number of operating units within a Unit-to-Unit (U2U) configuration.
4. Spare Parts List: Menu shall include a list of critical spare parts, their quantity and part numbers.
5. Unit Diary - Menu shall include a free field area within the unit memory where unit history may be stored for reference.

The Liebert® iCOM™ control shall be compatible with all Liebert remote monitoring and control devices. Options are available for BMS interface via MODbus, Jbus, BACNet, Profibus and SNMP.

The Liebert® iCOM™ control processor shall be microprocessor based with a 320x240 dot matrix graphic front monitor display and control keys for user inputs mounted in an ergonomic, aesthetically pleasing housing. The display & housing shall be viewable while the unit panels are open or closed. The controls shall be menu driven. The display shall be organized into three main sections: User Menus, Service Menus and Advanced Menus. The system shall display user menus for: active alarms, event log, graphic data, unit view/status overview (including the monitoring of room conditions, operational status in % of each function, date and time), total run hours, various sensors, display setup and service contacts. A password shall be required to make system changes within the service menus.

Service menus shall include: setpoints, standby settings (lead/lag), timers/sleep mode, alarm setup, sensor calibration, maintenance/wellness settings, options setup, system/network setup, auxiliary boards and diagnostics/service mode. A password shall be required to access the advanced menus which include the factory settings and password menus.

**The User Menus Shall be Defined as Follows:**

1. **Active Alarms:** Unit memory shall hold the 200 most recent alarms with time and date stamp for each alarm.
2. **Event Log:** Unit memory shall hold the 400 most recent events with id number, time and date stamp for each event.
3. **Graphic Data View:** Eight graphic records shall be available: return air temperature, return air humidity, supply air temperature, outdoor temperature and four custom graphs.
4. **Unit View - Status Overview:** Simple or Graphical “Unit View” summary displays shall include temperature and humidity values, active functions (and percent of operation) and any alarms of the host unit.
5. **Total Run Hours:** Menu shall display accumulative component operating hours for major components.
6. **Display Setup:** Customer shall pre-select the desired grouping of display languages at the time of the order from the following choices:
  - Group 1: English, French, Italian, Spanish, German
  - Group 2: English, Russian, Greek
  - Group 3: English, Japanese, Chinese, Arabic

**Service Contacts:** Menu shall allow display of local service contact name and phone number.

**The Service Menus Shall be Defined as Follows:**

1. **Setpoints:** Menu shall allow setpoints within the following ranges:  
Minimum Room Temperature Setpoint 50-80°F (10-27°C) \*
2. **Alarm Setup:** Menu shall allow customer settings for alarm notification (audible/local/remote). The following alarms shall be available:
  - High Room Temperature
  - Low Room Temperature
  - High Dew Point
  - High Refrigerant Temperature
  - High Chilled Water Temperature
3. **Audible Alarm:** The audible alarm shall annunciate any alarm that is enabled by the operator.
4. **Common Alarm:** A programmable common alarm shall be provided to interface user selected alarms with a remote alarm device.
5. **Remote Monitoring:** All alarms shall be communicated to the Liebert monitoring system with the following information: Date and time of occurrence, unit number and present temperature and humidity.

6. **Sensor Calibration:** Menu shall allow unit sensors to be calibrated with external sensors.
7. **Maintenance/Wellness Settings:** Menu shall allow reporting of potential component problems before they occur.
8. **Options Setup:** Menu shall provide operation settings for the installed components.
9. **Auxiliary Boards:** Menu shall allow setup of optional expansion boards.
10. **Diagnostics/Service Mode:** The Vertiv™ Liebert® iCOM™ control shall be provided with self-diagnostics to aid in troubleshooting. The microcontroller board shall be diagnosed and reported as pass/not pass. Control inputs shall be indicated as on or off at the front display. Control outputs shall be able to be turned on or off from the front display without using jumpers or a service terminal. Each control output shall be indicated by an LED on a circuit board.

#### **Advanced Menus**

1. **Factory Settings:** Configuration settings shall be factory-set based on the pre-defined component operation.
2. **Change Passwords:** Menu shall allow new passwords to be set or changed.

## 3.0 EXECUTION

### 3.1 Installation of Vertiv™ Liebert® XDP

#### 3.1.1 General

Install unit in accordance with manufacturer's installation instructions. Maintain recommended service clearances as outlined in installation instructions.

#### 3.1.2 Electrical Wiring

Furnish copy of manufacturer's electrical connection diagram submittal to the electrical contractor.

#### 3.1.3 Piping Connections

Install and connect devices furnished by the manufacturer but not specified to be factory mounted. Furnish a copy of manufacturer's piping connection diagram submittal to the piping contractor.

#### 3.1.4 Piping

Connect supply and return connections from the Liebert® XDP to the Vertiv™ Liebert® XD cooling modules.

### 3.2 Field Quality Control

#### 3.2.1 Startup

Start air conditioning unit in accordance with manufacturer's startup instructions. Test controls and demonstrate compliance with requirements.

**NOTE: These Guide Specifications comply with the outlines of the Construction Specifications Institute per CSI MP-2-1 and MP-2-2. In correspondence, reference Liebert document SL-16645\_REV1\_09-21.**