

# HVAC Machines for Buildings: Chiller and AHU

Easy Reference Architecture Guide

### Objective

The purpose of this document is to provide architectural guidance for HVAC machines for buildings: chillers and air handling units (AHU), with focus on fit-for-purpose solution using Schneider Electric's cost-optimized range of products.

### Target Audience

This reference architecture guide is intended for Designers, OEMs, Contractors and Panel Builders who are responsible for designing HVAC systems for buildings.

### EcoStruxure™ Machine Overview

EcoStruxure™ Machine, an open, interoperable, IoT-enabled system architecture, helps OEMs quickly build smarter, cost-optimized HVAC control systems with onboard energy-efficiency solutions while reducing maintenance and improving reliability. EcoStruxure™ Machine encompasses key technologies for product connectivity and edge control on premises, using cloud technologies to provide analytics and digital services.

### Typical Design Characteristics: Chiller and AHU

#### HVAC system configuration

- Buildings from 500 m<sup>2</sup> to < 30,000 m<sup>2</sup>
- Chiller from 50 kW to 1 MW (thermal power)
- AHU from 1,000 to 100,000 m<sup>3</sup>/hr (amount of air handled by blower)

#### Network configuration

- Main LV switchboard
- Chiller electrical panel
- AHU electrical panel

#### Alternative power supplies

- UPS is proposed to maintain critical loads supply

### Optimized Performance by Fit-for-Purpose Design

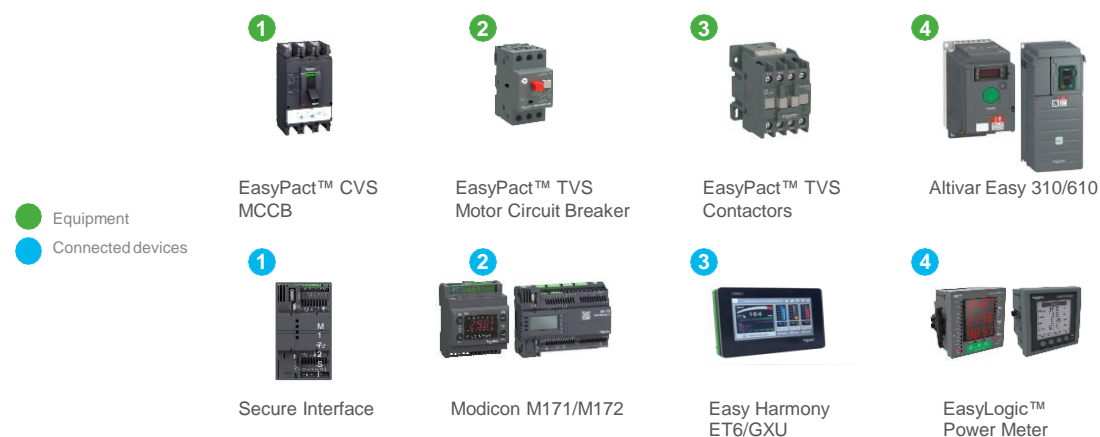
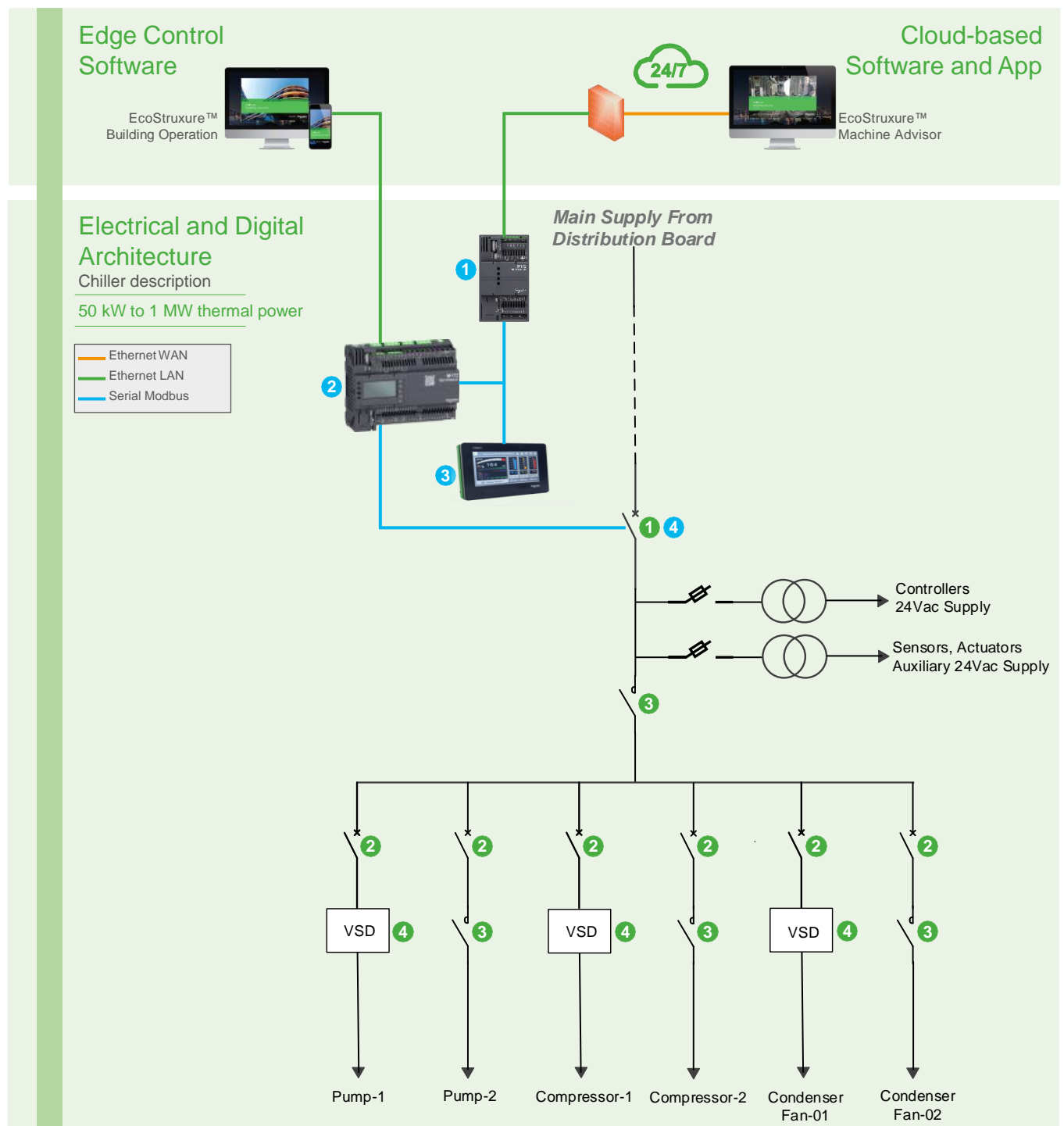
#### HVAC Machines

**H**eating, **V**entilation and **A**ir **C**onditioning (HVAC) machines such as cooling tower, air handling unit, terminal unit, pump, boiler and chiller are components associated with air conditioning system to deliver all processes required for thermal comfort and indoor air quality. Among these machines, we will focus on the chiller, which is the machine that provides "Production" of conditioned air and air handling unit (AHU), which is the machine that facilitates "Distribution" machine.

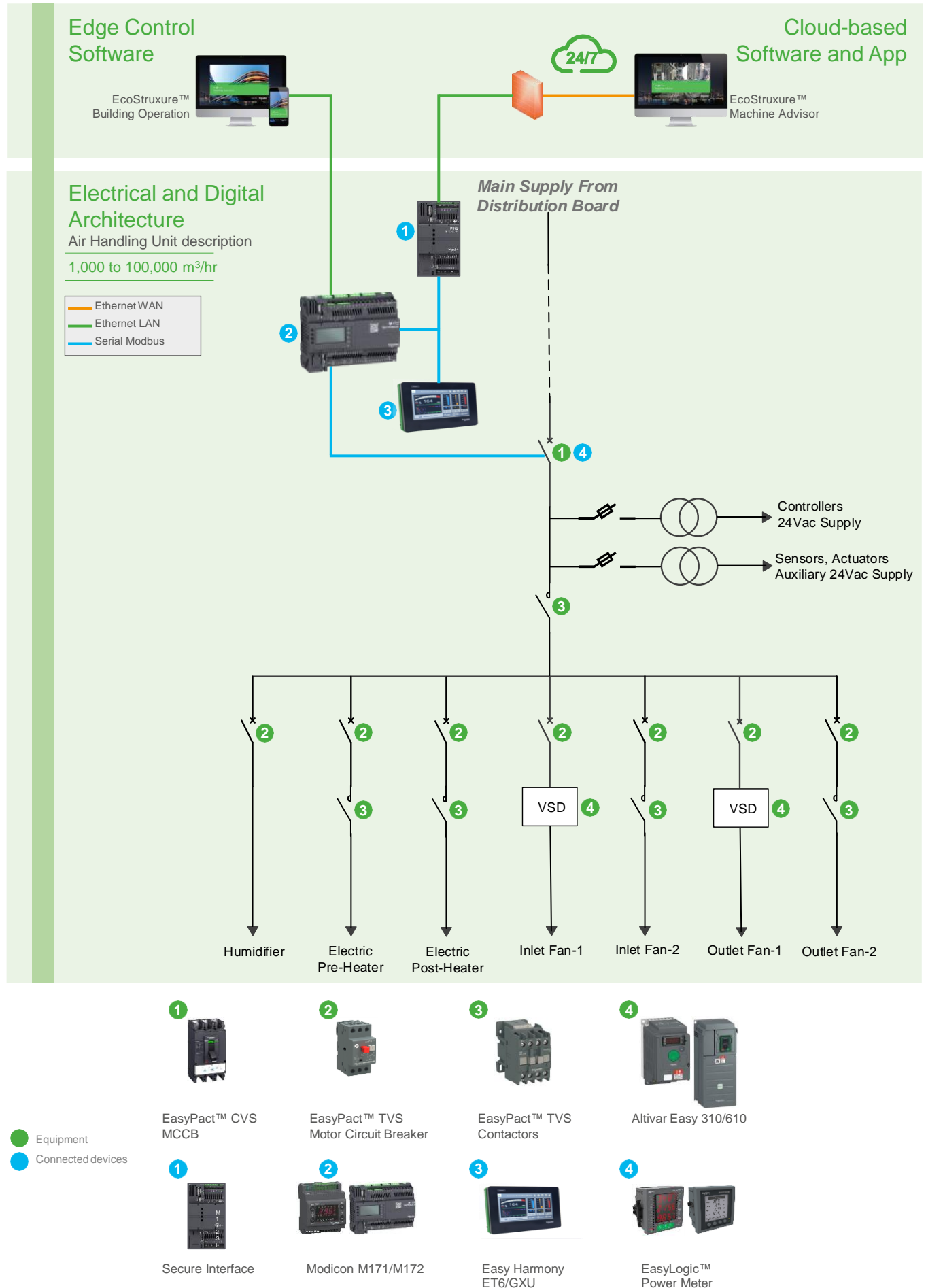
#### Digitalization

With the Agile approach of 'just enough design', and the selection of cost-conscious components together with ready-made templates forms the complete HVAC machines solution with M171 or M172 controllers that are dedicated for HVAC machines and Easy offer ranges for each part of the architecture: Human Machine Interface (HMI) HMIGXU or ET6, ATV310 drive for scroll compressor, fans and pumping application and low voltage components. The resulting infrastructure is scalable, expandable and future-ready. Optionally, with the addition of Secure Interface module, it is cloud-ready for EcoStruxure™ Machine Advisor.

## Electrical Distribution and Digital Architectures and System



## Electrical Distribution and Digital Architectures and System





## Schneider Electric Offers

Products		
Circuit Breakers	Description	More Information
EasyPact™ CVS	Molded Case Circuit Breaker 16 A to 630 A	<a href="#">Link</a>
EasyPact™ TVS	Thermal-magnetic motor circuit breaker up to 15 kW	<a href="#">Link</a>
Contactors	Description	More Information
EasyPact™ TVS	Contactors up to 630 A for AC3 and 1000 A for AC1 applications	<a href="#">Link</a>
Variable Speed Drive	Description	More Information
Altivar Easy 310	VSD up to 22 kW for Fan/Pump/Scroll Compressor applications	<a href="#">Link</a>
Altivar Easy 610	VSD > 22kW for Fan/Pump/Scroll Compressor applications	<a href="#">Link</a>
UPS	Description	More Information
Easy UPS Single Phase	Uninterruptible Power Supply 1 Ph	<a href="#">Link</a>
Easy UPS Three Phase	Uninterruptible Power Supply 3 Ph	<a href="#">Link</a>
Programmable Logic Controller	Description	More Information
Modicon M172 / M171	PLC controllers for HVAC machines	<a href="#">Link</a>
Human Machine Interface	Description	More Information
Easy Harmony ET6 / GXU	HMI 7 to 10.1 inch widescreen	<a href="#">Link</a>
Secure Connect	Description	More Information
Secure Interface	"Plug and Use" IIoT gateway	
Push Button	Description	More Information
Easy Harmony XA2	Plastic push-buttons, switches w/ metallic-look ring and pilot lights	<a href="#">Link</a>
Power Meters & Gateways	Description	More Information
EasyLogic™ PM1000	Digital Panel Meter, both LCD and LED displays available	<a href="#">Link</a>
EasyLogic™ PM2000	Digital Panel Meter, both LCD and LED displays available	<a href="#">Link</a>
Edge-Control and Cloud-based Software		
Software Systems	Description	More Information
EcoStruxure™ Building Operation	EcoStruxure Building Operation's open & secure integration framework allows collaboration across third-party systems to create innovative custom solutions. The platform natively supports standard open protocols out-of-the-box. Future-ready buildings ensure new technology expansions deploy easily all while: maximizing building efficiency, optimizing comfort & productivity, and increasing building value.	<a href="#">Link</a>
EcoStruxure™ Machine Advisor	EcoStruxure Machine Advisor is the new digital cloud-based services platform that enables machine builders to provide new services to machine operators for each installed machine in any production site worldwide.	<a href="#">Link</a>

## Useful Tools and Documentation



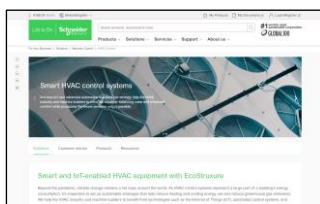
[Electrical Installation Guide](#)



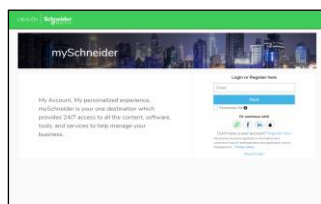
[EcoStruxure™ Power Build Easy](#)



[EcoStruxure™ Power Commission](#)



[Smart HVAC Control Systems](#)



[OEM Partner Portal](#)

se.com

Life Is On

Schneider Electric

### Legal Information

These Schneider Electric Content are intended to assist skilled electrical professional designing electrical installation for use of Schneider Electric products. You understand and agree that you remain responsible for using your independent analysis, evaluation and judgment in designing your applications. You represent that, with respect to the applications you will design, you have all the necessary expertise to create and implement it. In that regard you have full and exclusive responsibility to (1) select the appropriate Schneider Electric products for your application, (2) design, validate and test your application, and (3) ensure your application meets applicable standards, regulations and laws and any other safety, security, or other requirements.

Notwithstanding anything to the contrary herein, by downloading, accessing or using any particular Schneider Electric Content in any way, you (individually or, if you are acting on behalf of a company, your company) agree to use it solely subject to the terms of the [Terms & Conditions](#).

[se.com/ww/ecostruxure-power](https://se.com/ww/ecostruxure-power)

Life Is On



**Schneider Electric Industries SAS**

35, rue Joseph Monier - CS 30323  
92506 Rueil Malmaison Cedex

December 2021  
ESXPERA011EN

©2021 Schneider Electric. All Rights Reserved. Life Is On Schneider Electric is a trademark and the property of Schneider Electric SE, its subsidiaries and affiliated companies. All other trademarks are the property of their respective owners.