FUNCTIONAL DESIGN SPECIFICATION

Mercury Laboratory Ventilation

ISSUE 3 - Dated 14. April 2025

Project - 22-068 Mercury Laboratory Ventilation
Location - Southampton
System - Extract air Management
Client - LEONARDO UK

Associate	Name	Signature	Position	Date
Issued by CMR	Clemens Richter		Project Manager	20.September 2024
Approved				
Approved				
Approved				

This document forms the basis of acceptance by all parties who will sign this document to release the VAV control system for manufacture and installation

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This manual has been produced to guide through an overview and to understand the scope of works. Eventually this manual shall expand and show the installation schematics and technical specifications. The manual shall be updated from time to time and shall be issued in full with a new issue number and date.

This PDF book can be printed on A4, A3 or A2 Paper and the format is designed to present it on Teams, Webex and other conference meetings easily..

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REVISION HISTORY

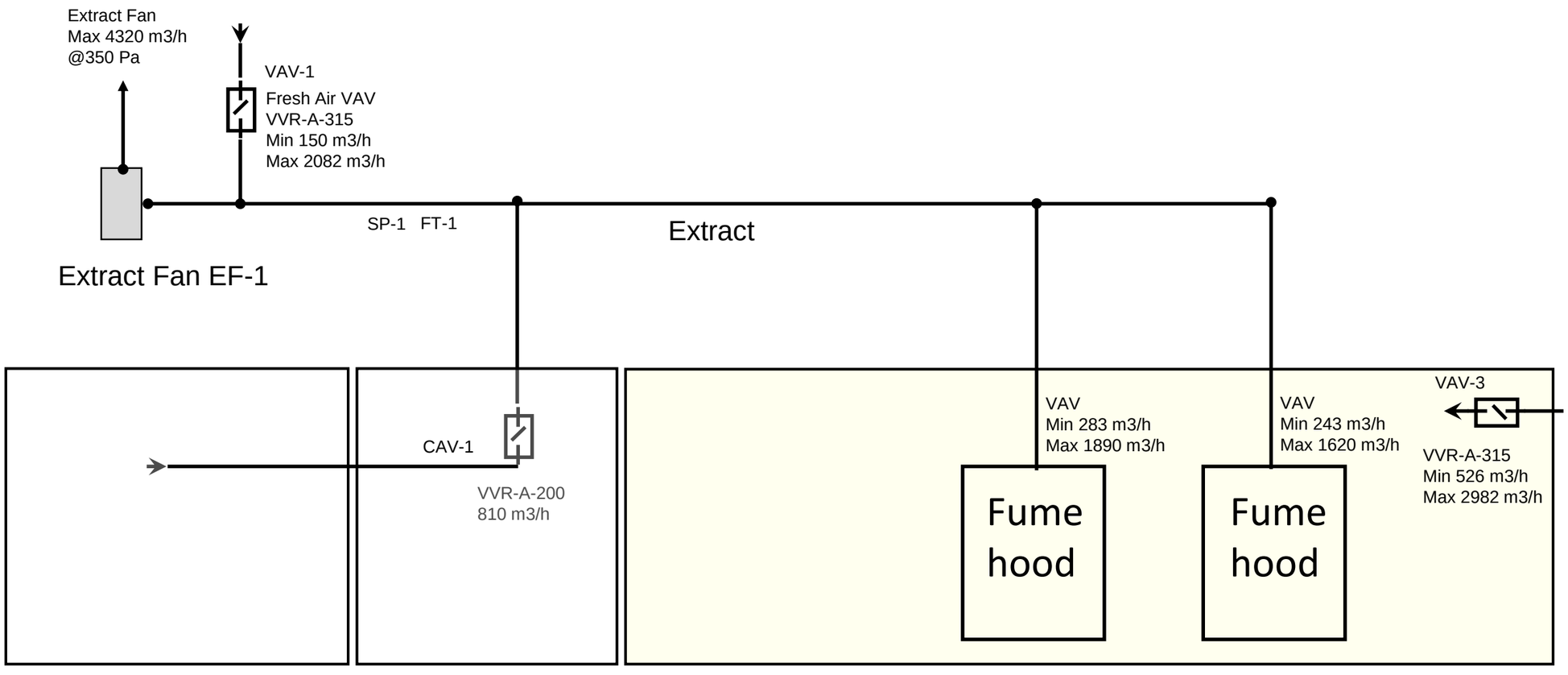
Date	Issue	Comments
21. September 2024	Issue 2	Added Fume Hoods supplied by others
14 April 2024	Issue 3	Removed fume hood control and motorised damper for storage room and Fresh Air inlet

Short Form	Explanation
AHU	Air Handling Unit
EF	Extract Fan
VSD	Variable Speed Drive
BMS	Building Management System (Standard Controls)
FT	Flow Transmitter
PT	Pressure Transmitter
AL	Alarm Plate
SF	Supply Fan
AFG	CMR Variable Volume Flowgrid and damper Assembly
AP	Air Probe Plate
ATG	VCD Damper
VSD	Variable Speed Drive
CMR	CMR CONTROLS

Short Form	Explanation
THS	Temperature and Humidity Transmitter
CAV	Constant Volume Valve
VAV	Variable Volume Valve
FH	Fume Hood
PS	Pressure Sensor
SV	Stack Velocity Sensor
VVS	Variable Volume Supply
VVE	Variable Volume Extract
VS	Volume Sensor
DPM	Volume Sensor Monitoring
THS	Temp/Hum Sensor Monitoring

CMR AIR MANAGEMENT SYSTEM

Laboratory Control Panel 1



CMR CONTROLS

EF-1 Extract Fan
The EF-1 is stopped and started by the Control Panel situated in the Corridor. The small HMI on the front has the facility to stop-start the Fan. Mute the Alarm.

SP-1 Duct Pressure
The duct pressure is measured with a pressure sensor mounted in the control panel and a green PVC tube is connected to the duct and the Panel. The panel is the reference datum. The duct Pressure is controlled with VAV-1 To keep the duct pressure constant. The fan runs at a fixed Speed.

CAV-1
The CAV-1 is a mechanical valve which controls a constant volume into the space..

FT-1
The FT-1 measures the total extract Volume. The room Pressure is controlled with the Apreco stabilisers through the wall. APP2-1 and APP-2-2 measures the Room Pressure.

The Fume Hoods have their own VAV controls.

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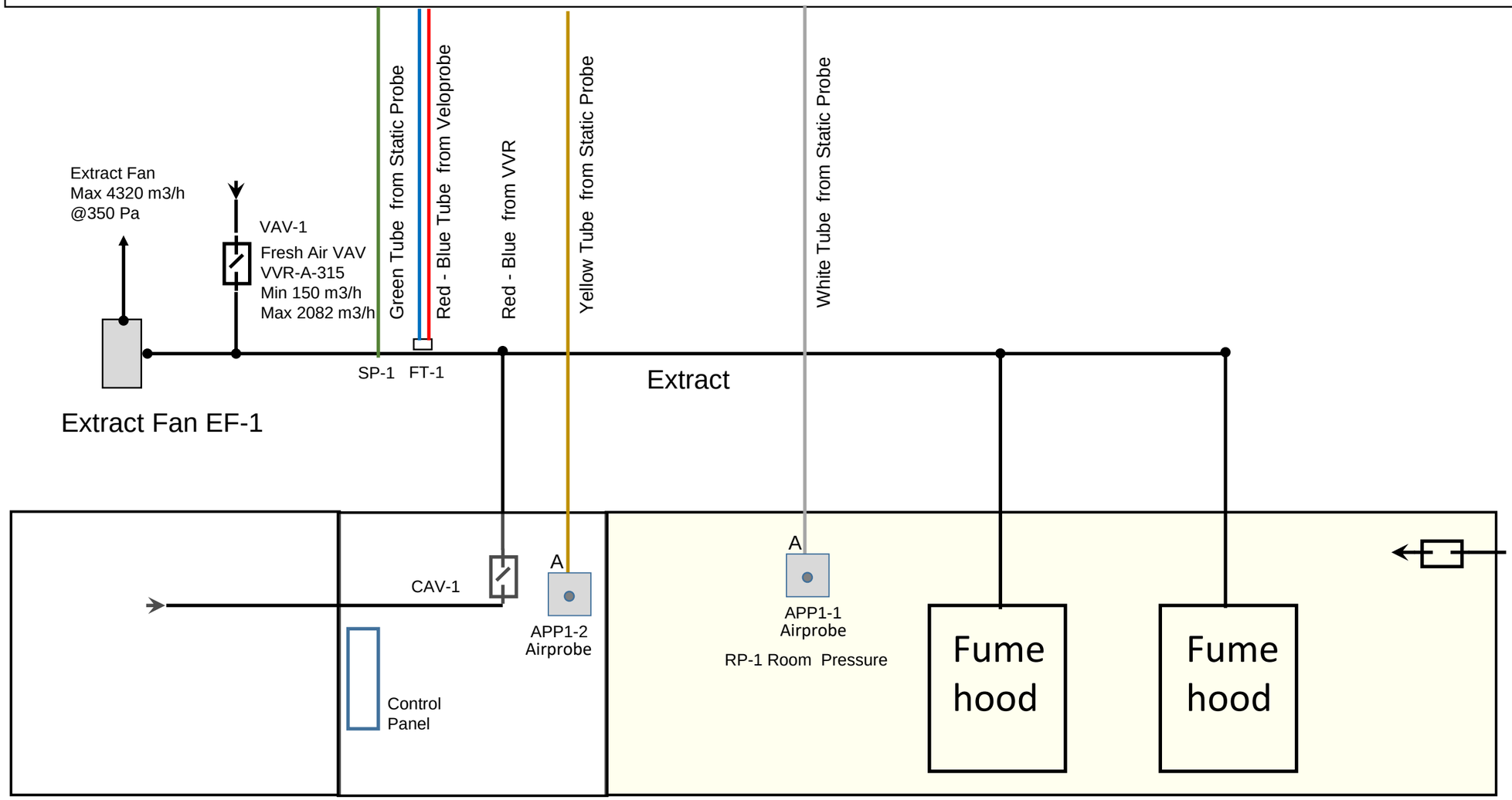
CMR AIR MANAGEMENT SYSTEM

CMR Control Panel 1

PVC Tube Installation



CMR CONTROLS

SP-1 Duct Pressure
The SP-1 duct pressure probe is connected to pressure sensor in the control panel via green PVC Tube. The reference is the Corridor.

FT-1
The FT-1 is the duct Veloprobe is connected with red and blue tube to the volume sensor built into the control panel which is the set-point for the fresh air control.

APP1-1
The APP1-1 is the room pressure measurement and connected with white PVC tube to the pressure sensor fitted in the control panel. APP1-2 is connected with Yellow PVC Tube and is the reference for the room pressure and connected to the control panel.

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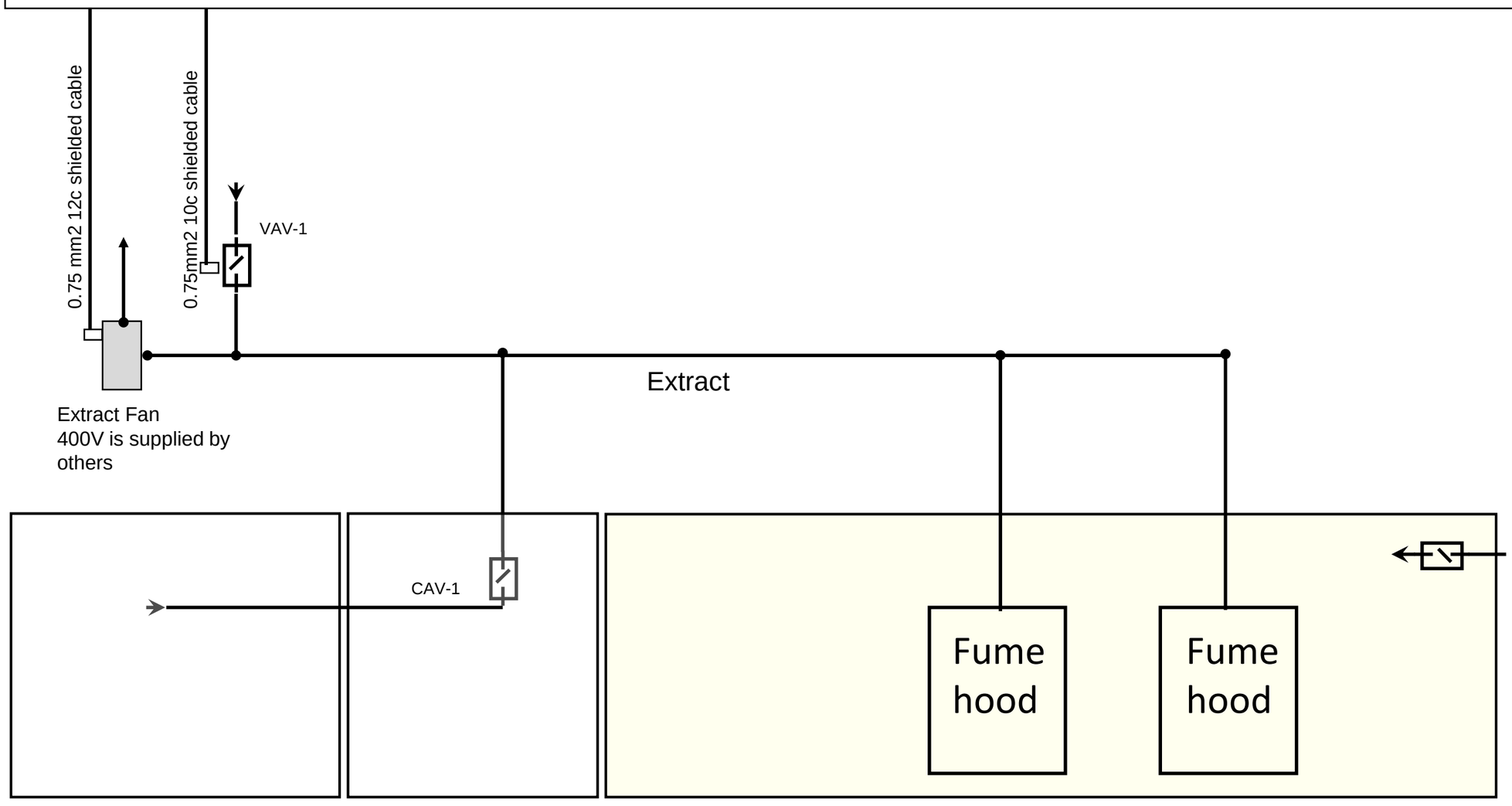
CMR Control Panel 1 — Cable Installation



CMR CONTROLS

EF-1 Extract Fan
The EF-1 iis equipped with an Inverter which the fan supplier provides. A 12 core 0.75mm2 shielded cable must be installed from the inverter to the CMR Control

VAV-1
A 0.75mm2 – 10 core shielded cable must be installed from the VAV-1 to the control panel. The actuator controls the duct pressure.

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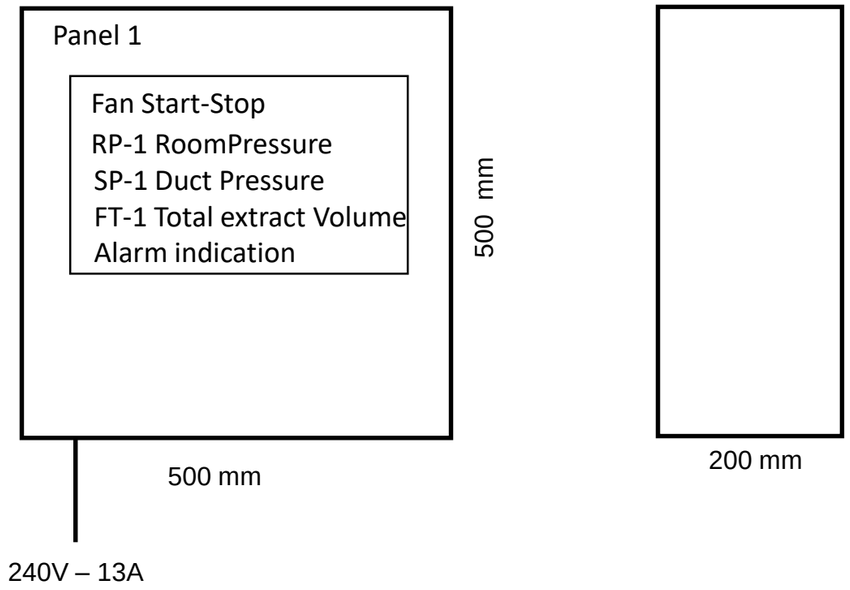
CMR Control Panel 1 — PLC and Display

LAB Control Panel 1



CMR CONTROLS

The control Panel is made by CMR and is equipped with a Siemens PLC and a small HMI display.

The power supply is a standard 240Vac 13A connection. Electrical Contractor must provide an external fuse connection.

The 400V Three phase for the fan motor is supplied by others and do not go through the CMR Panel.

EF-1 Extract Fan
The HMI has a stop/Start facility for the fan. The system runs 24/7/365.

The HMI shall display the SP-1 Duct pressure and total FT-1 extract volume.

All set points and Alarm set points are adjustable via the HMI.

A common Alarm relay is available for transmittal to other system.

A beacon is provided on the panel.. It can also be mounted remote. This is to be specified when placing the order.

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