**Technical data VRD2-L**

- **Nominal voltage**: AC 24 V, DC 24 V ("Modulating" mode only)
- **Nominal voltage range**: AC 19.2...28.8 V, DC 21.6...26.4 V
- **Power consumption**: 1.6 W (1.3 W in "Modulating" mode)
- **For wire sizing**: 3 VA (without damper actuator)
- **Reference value w1**: DC 0...10 V @ input resistance 100 kΩ
- **Reference value w2**: 0...20 V phasecut @ input resistance 8 kΩ
- **Reference value w1/w2**: 3-point signal (from air volume controller)
  - Selection: "0...10 V", "0...20 V" or "3-point" with jumper
- **Operating range**
  - *Modulating control input* U5: DC 2...10 V (DC 0...10 V changeover with ZEV)
  - *Actual-value signal for volumetric flow U5*: DC 0...10 V @ 0.6 mA
  - *Modulating control input U5*: DC 2...10 V @ 0.6 mA (DC 0...10 V changeover with ZEV)
- **Adjusting ranges**
  - $V_{\text{MAX}}$ (max. volumetric flow): 30...100% of adjusted reference value ($V_{\text{UOM}}$)
  - $V_{\text{MIN}}$ (min. volumetric flow): 0...80% of adjusted $V_{\text{MAX}}$
- **Sensor range**: 2... = 300 Pa (OEM-dependent)
- **Connection**: Screw terminals for 2 x 1.5 mm²
- **Protection class**: III safety extra-low voltage
- **Degree of protection**: IP40
- **Ambient temperature range**: 0... +50 °C
- **Storage temperature range**: -20... +80 °C
- **Humidity test**: to EN 60730-1
- **EMC**: CE according to 89/336/EEC
- **Mode of operation**: Type 1 (EN 60730-1)
- **Weight**: 400 g

**All-in-one pressure sensor and controller**

**Control input DC 0...10V, 0...20 V phasecut or "3-point"**

**Communication capacity (PP)**

**Application**

The VAV-Universal VRD2-L is used in conjunction with a suitable 0...24-V actuator or pressure-independent air flow control of VAV boxes. Since it can be combined with many different types of actuators, the VRD2-L can be used with different sizes of dampers.

**Construction**

The VAV-Universal VRD2-L circuit contains a dynamic differential-pressure sensor and an electronic measuring and control unit incorporating a microprocessor.

**Operation and adjustment**

The parameters for $V_{\text{MIN}}$ and $V_{\text{MAX}}$ are set by means of the appropriate potentiometers.

The VRD2-L is controlled with reference signals of DC 0...10 V (w1), 0...20 V phasecut (w2) or with a 3-point signal. "Modulating" or "3-point" modes can be selected by means of a jumper (accessible from the front of the unit).

The operating range and the actual-value signal range of the VRD2-L are set at DC 2...10 V ("Modulating" mode) by the manufacturer. These ranges can be changed to DC 0...10 V when necessary with the aid of the ZEV adjuster via the PP connector.

**Damper actuators**

NM24-V, SM24-V, AM24-V, GM24-V, LF24-V, AF24-V

**Important**

The manufacturer of the VAV boxes (i.e. the OEM) is responsible for the proper assembly and correct adjustment of the VRD2-L and the total accuracy of the VAV boxes.

**Dimensions**

![Diagram of VRD2-L dimensions](image)
Control

In order for a ventilation and air-conditioning system to be operated economically, it is important to be able to select the operating modes “MIN”, “MAX”, “OPEN” or “CLOSE”.

In the case of the VRD2-L, these functions can be accessed very easily as shown in the diagrams on the left.

The override control input z or input y overrides all signals from the reference inputs w1 or w2. Override control commands can also act on several controllers simultaneously.

“CLOSE” damper: For saving energy in unoccupied zones by closing the supply- and exhaust-air dampers.

“OPEN” damper: For smoke extraction or safety purposes. Note: Air volume control is inoperative in this case.

\( \text{MIN} \) – minimum volumetric flow

When individual zones are unoccupied, they can be switched to the standby mode so that there is minimum air flow through them and the consumption of energy is substantially reduced.

\( \text{MAX} \) – maximum volumetric flow

Maximum air flow can be directed to one or more rooms for short periods in order to provide extra ventilation, night cooling or fast morning warm-up.

Constant air volume control

If no reference signal w1/w2 is being fed to the VRD2-L controller, it will automatically maintain the constant value of volumetric flow that has been set with the \( V_{\text{MIN}} \) potentiometer.

If an AC 24 V signal is fed to the reference inputs 3 (w1), 4 (w2) or 7, the VRD2-L will maintain the constant value of volumetric flow that has been set with the \( V_{\text{MAX}} \) potentiometer.

This means that “dual volume control” is possible by means of a switch or contacts in the connecting circuit.