



VRP-M V3.x

MP-Bus Integration

English

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Introduction

These instructions describe the MP-Bus integration of the VRP-M system solution in a UK24LON.

The integration supports both VRP-M functions:

- Air volume applications in VAV mode
- Channel and room pressure applications in STP mode

The bus function and connection of the VRP-M solution are described in detail in the VRP-M Product Information. These instructions contain supplementary information specific to the integration of the STP function.

The VRP-M system solution is adjusted and parameterised by the manufacturer of the VAV or pressure control system.

Note

For technical data, a description of functions and details of connections and wiring, refer to the following Product Information:

VRP-M V3.x system solution - VAV and STP applications

Version overview - VRP-M system solution

This document is based on the following versions:

- VRP-M controller V3.05
- VRP-M Tool V2.00.03

Up-to-date information about compatibility, versions and functions can be found on the Internet at www.belimo.eu

Safety notes

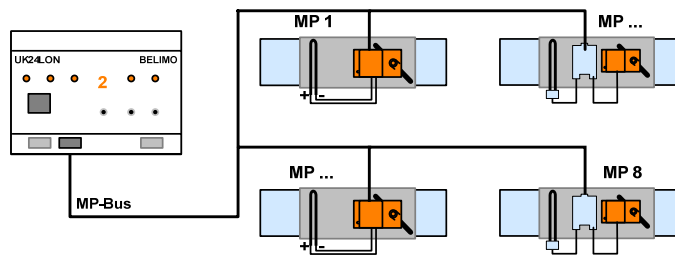
- The VRP-M system solution is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only components explicitly approved for this purpose by Belimo are allowed to be used for the VRP-M system solution.
- The equipment configuration and settings form part of the unit or damper manufacturer's system solution (OEM) and are not allowed to be modified without prior authorisation. All changes are liable to disrupt operation and cause damage to the system or injury to persons!
- Attention must be paid to the following during the planning phase and before the VRP-M system solution is operated:
The compatibility of the VFP-.. sensor with the medium to be controlled must be verified.
The specifications supplied by the VAV unit or damper manufacturer (design, installation site) must be consulted. All local regulations must be observed.
- If the VRP-M system solution is operated in a bus system, the cycle times of the MP-Bus and the higher-level system must be taken into account.
- Applications with fast-running actuator NMQB24-SRV-ST: The actuator moves into the 'CLOSED' position when the supply voltage is switched on, in the event of a power failure >5 s or if the manual disengagement pushbutton is pressed. The VRP-M control function is deactivated for the duration of this movement.
When the synchronisation process has finished, the actuator moves into the position defined by the VRP-M controller.
- The manufacturer of the VAV or damper (OEM) is responsible for ensuring that the VRP-M system solution is installed and set correctly as well as for the overall precision of the control system. If replacement devices are ordered, they are configured by the OEM at the factory according to the installed system.
The VRP-M system solution is sold exclusively via the OEM channel for this reason.

MP-Bus integration

MP-Bus cycle time

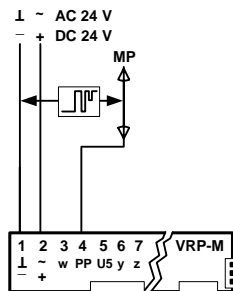
The cycle time of the MP-Bus must be noted when integrating setpoints and actual values. It is typically 2...8 s, depending on the number of connected bus users and integrated sensors. The local VRP-M control function is not affected by the cycle time. The cycle time of the MP-Bus must always be taken into account, however, when selecting setpoints via the MP-Bus.

Typical application: UK24LON with VRP-M



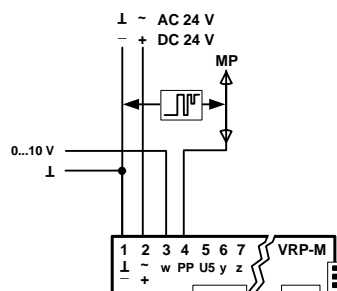
VRP-M – MP-Bus connection

Detailed documentation about the bus topology, wiring and connections can be found in the Product Information for the VRP-M system solution and the UK24LON and UK24EIB.



Sensor integration (VRP-M V3.0 or higher)

The sensor signal is connected to the reference value input that is not used in MP-Bus mode (connection 3). The VRP-M only supports active sensors with a 0 ... 10 V output, i.e. no switches or passive sensors (resistance elements) can be integrated.



VRP-M integration with VAV function

This integration basically functions in the same way as with the VAV-Compact.

The damper position (nvoAbsAngle) is now available when VRP-M V3.0 is used with the new VAV actuators (xM24A-V-ST). It allows the VRP-M to be integrated in fan controls with an optimised damper position, such as the Belimo Fan Optimiser COU24-A-MP or DDC with an integrated MP interface.

For more information, see www.belimo.eu

- Product information VAV-Compact
- Product information VRP-M system solution
- Product information UK24LON and UK24EIB
- Tool connections

VRP-M integration with STP function

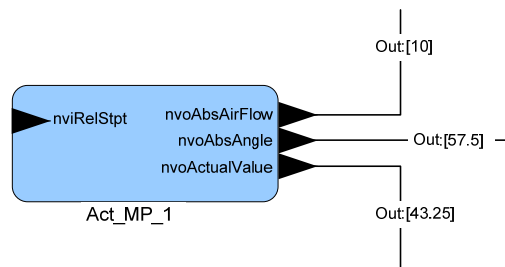
Read / write data with damper actuator object #8110

The STP function is integrated in basically the same way as the VAV function with damper actuator object #8110.

- *SCPTnomAirFlow (57)* and
- *nvoAbsAirFlow SNVT_flow*

These values are consequently shown in l/s and must be multiplied by a factor of 3.6 to obtain the pressure in [Pa]. The actual value can be displayed directly in [Pa] using the workaround described below (see b).

Damper actuator object #8110

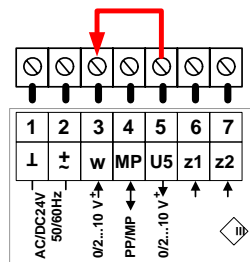


| Item | VRP-M | VRP-M Tool | LONmaker | Comment |
|------------------------------------|-----------------|--|-----------------------------------|---|
| SCPToemType (61) | OEM string | | Ditto | |
| SCPTlocation (17) | Position string | | Ditto | |
| SCPTnomAirFlow (57) | P'nom | in Pa | <i>in l/s</i> | The l/s value must be multiplied by 3.6; the result corresponds to the Pa value displayed in the VRP-M Tool |
| SCPTmaxSetpoint (50) | P'max | Display and setting in Pa or as % of P'nom | Display and setting as % of P'nom | Display correct as % of P'nom |
| SCPTminSetpoint (53) | P'min | Display and setting in Pa or as % of P'nom | Display and setting as % of P'nom | Display correct as % of P'nom |
| nviRelStpt SNVT_lev_percent | Setpoint | P'min...P'max | 0 %...100% | Function correct |
| nvoAbsAirFlow SNVT_flow | Actual value | in Pa | <i>in l/s</i> | The l/s value must be multiplied by 3.6; the result corresponds to the Pa value displayed in the VRP-M Tool |
| nvoActualValue SNVT_lev_percent | Actual value | 0...P'nom | 0...100% | Display correct as % of P'nom |
| nvoAbsAngle SNVT_angle_deg | Position | 0...100% | 0...90° | Damper position in ° (VRP-M in %) |
| nviManOvrd SNVT_hvac_overid | | | ON, OFF, AUTO | |

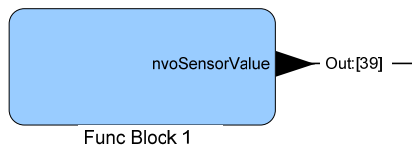
Read data with LON application open loop sensor object #1

By wiring input 3 [w] of the VRP-M to the actual pressure signal [U5], it is possible to display the pressure measured by the sensor (0...10 V = 0...P'nom) directly as a Pa value in the LON system with open loop sensor object #1.

Connection



Sensor object #1 SNVT_press_p



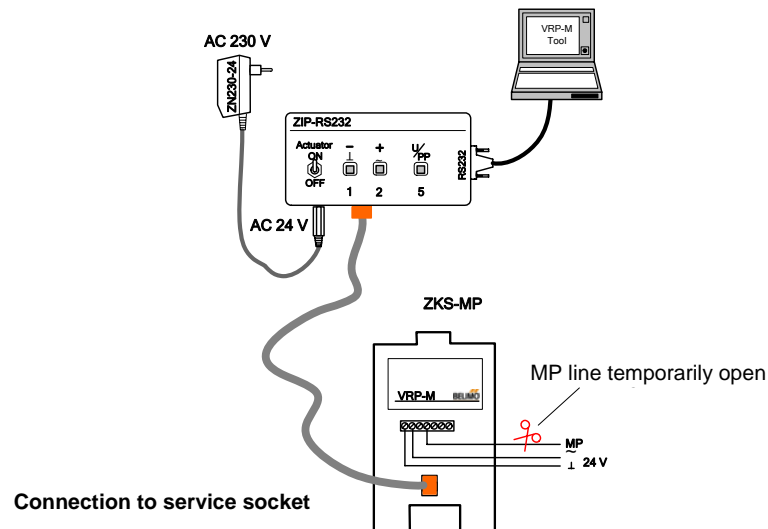
| Item | VRP-M | LONmaker | Action/test | Comment |
|--------------|----------|----------------------------|-------------|---|
| SNVT_press_p | 0...10 V | 0...P'nom Sensor scale: | | Caution: The mode setting on the VRP-M must match the sensor signal |
| | | 0 V = 0 Pa / 10 V = P'nom | | Mode setting: 0...10 V |

Connection of the VRP-M-Tool

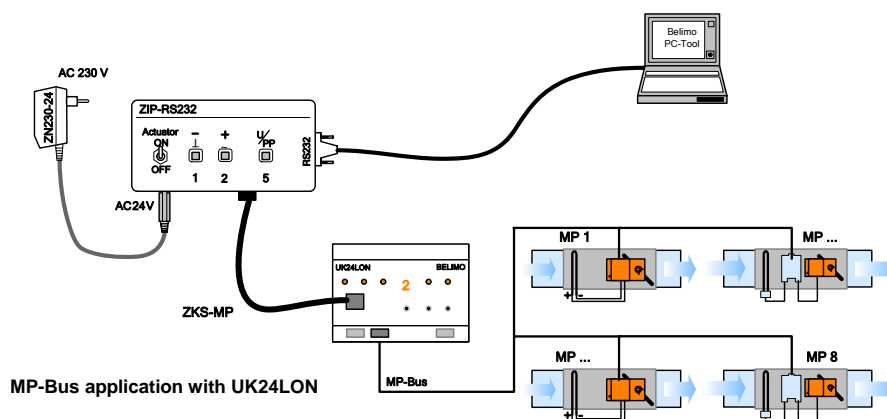
The VRP-M-Tool can be connected either directly to the 3-pole service socket on the VRP-M controller or via the PP connection (terminal 4). Several different level converters can be used for communication, e.g. a ZIP-RS232.

Local connection

The VRP-M Tool can only be connected via the bus master during MP-Bus operation because otherwise two MP masters will be connected on the same MP-Bus. Alternatively, the VRP-M can be temporarily disconnected from the MP-Bus.



MP-Bus operation (MP)



For more information, see www.belimo.eu

- System documentation VRP-M V3.x - VAV / STP applications
- Product information UK24LON and UK24EIB
- Tool connections

MP-Bus address

If the VRP-M system solution is integrated in an MP-Bus system, each integrated VRP-M must be assigned an MP address.

Address range: MP1...MP8

The addresses are assigned either via the MP-Bus master system, e.g. UK24LON, or via the VRP-M or PC-Tool V3.2.

Example with the VRP-M Tool:

Addressing on the VRP-M Tool

Start the addressing procedure on the VRP-M-Tool.

Select 'Extras | VRP-M address...' or press function key <F2>:

There are two possible addressing methods:

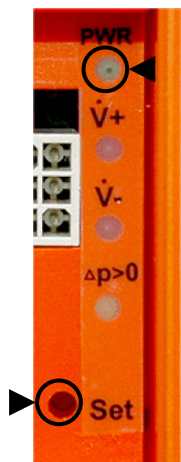
1) Addressing with serial number

Enter or confirm the serial number of the VRP-M (sticker on VRP-M, displayed in VRP-M-Tool).

2) Addressing with acknowledgement on VRP-M

Acknowledge the selected address by pressing the 'Set' pushbutton on the corresponding VRP-M.

The power LED (green) blinks when the 'Set' pushbutton is pressed.



De-addressing on the VRP-M Tool

De-addressing resets a VRP-M from MP-Bus to conventional operation.

The VRP-M is assigned the address **PP** for this purpose as described above.

Notes

For more information, see www.belimo.eu