Interoperable Applications with an IRC Controller for LonWorks

Belimo Gateway MP/LonWorks® UK24LON combined with an IRC Controller for LonWorks

This document is describing typical applications where an IRC Controller for LonWorks is used in conjunction with the Belimo Gateway UK24LON and the corresponding connected MP-actuators.

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Documentations and LNS plug-ins

**Documentation**

Documentations are available for the following equipment and devices:
- UK24LON (Gateway MP/LonWorks)
- NMV-D2-MP (VAV air volume controller)
- LR24A-MP (actuators for control ball valves)

**LNS plug-ins**

Two LNS plug-ins (sensor and actuator plug-in) will be available for the UK24LON gateway.

*For documentations and LNS plug-ins please contact your local Belimo representation or visit the Belimo website (www.belimo.ch).*
Plants with supply air volume controller and re-heater with window switch and additional room temperature sensor (e.g. Pt1000).

The window switch and the room temperature sensor are optional. In case where no additional room temperature sensor is used, the IRC controller is measuring the room temperature by means of the internal sensor.

**Wiring diagram**

Plants with supply air volume controller and re-heater with window switch and additional room temperature sensor (e.g. Pt1000).

The window switch and the room temperature sensor are optional. In case where no additional room temperature sensor is used, the IRC controller is measuring the room temperature by means of the internal sensor.
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</tr>
<tr>
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<tr>
<td>sensor</td>
<td>temperature sensor e.g. Pt1000</td>
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</table>

**Interoperable binding**

**Room topology**

Totally four control loops with one Gateway UK24LON are applied.
Plants with supply air volume controller and radiator heating

Plants with supply air volume controller, radiator heating, window switch and additional room-temperature sensor (e.g. Pt1000). The window switch and the room temperature sensor are optional. In case where no additional room temperature sensor is used, the IRC controller is measuring the room temperature by means of the internal sensor.

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**Wiring diagram**

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**Functional diagram**
**Interoperable binding**

**List of materials**

**Device** | **Description** | **Remarks**
--- | --- | ---
NMV-D2-MP | VAV air volume controller for supply air |  
LR24A-MP | actuator for radiator valve | for 2-way or 3-way ball valve
UK24LON | Gateway MP / LonWorks® | certified according to LonMark
controller | IRC controller for LonWorks® |  
window switch | optional |  
sensor | temperature sensor e.g. Pt1000 | optional
Plants with supply air and exhaust air volume controller, Master/Slave configuration

Plants with supply air and exhaust air volume controller including window switch and additional active room temperature sensor (e.g. 0...50°C / 0...10 V)

Supply air volume controller = Master, Exhaust air volume controller = Slave

The window switch and the room temperature sensor are optional. In case where no additional room temperature sensor is used, the IRC controller is measuring the room temperature by means of the internal sensor.

Wiring diagram
Plants with supply air and exhaust air volume controller, Master/Slave configuration

Interoperable binding

**MP1 = UK24LON Objects 0**
- Damper Actuator Object #8110
  - nviRelStpt
  - SNVT_lev_percent
  - nviActuatState
  - SNVT_switch
  - nviManOvrd
  - SNVT_hvac_overid
  - nvoActualValue
  - SNVT_lev_percent
  - nvoAbsAngle
  - SNVT_angle_deg
  - nvoAbsAirFlow
  - SNVT_flow

**MP2 = UK24LON Objects 1**
- Damper Actuator Object #8110
  - nviRelStpt
  - SNVT_lev_percent
  - nviActuatState
  - SNVT_switch
  - nviManOvrd
  - SNVT_hvac_overid
  - nvoActualValue
  - SNVT_lev_percent
  - nvoAbsAngle
  - SNVT_angle_deg
  - nvoAbsAirFlow
  - SNVT_flow

**MP1 = UK24LON Sensor Objects 0**
- Open Loop Sensor Object #1
  - nvoSensorValue
  - SNVT_temp_p

**MP2 = UK24LON Sensor Objects 1**
- Open Loop Sensor Object #1
  - nvoSensorValue
  - SNVT_switch

**Room topology**
- Room 1
  - 20.00°
- Room 2
  - 20.00°
- Room 3
  - 20.00°
- Room 4
  - 20.00°
- UK24LON

Totally four control loops with one Gateway UK24LON are applied.

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<td>A passive sensor can also be attached, e.g. Pt1000.</td>
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Plants with supply air and exhaust air volume controller, Parallel control

Plants with supply air and exhaust air volume controller including window switch and additional active room temperature sensor (e.g. 0 ... 50°C / 0 ... 10 V).
Supply air volume controller and exhaust air volume controller are controlled in parallel.
The window switch and the room temperature sensor are optional. In case where no additional room temperature sensor is used, the IRC controller is measuring the room temperature by means of the internal sensor.

Wiring diagram
Interoperable binding

**MP1 = UK24LON Objects 0**

- **Open Loop Sensor Object #1**
  - `nvoSensorValue` SNVT_temp_p

- **Room Temperature** Controller
  - `nviSetpoint` SNVT_temp_p
  - `nviSpaceTemp` SNVT_temp_p

- **Room topology**
  - Room 1
  - Room 2
  - Room 3
  - Room 4

- **Totally four control loops with one Gateway UK24LON are applied.**

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Plants with supply air and exhaust air volume controller, Master/Slave configuration and radiator heating

Plants with supply air and exhaust air volume controller, radiator heating, window switch and additional room-temperature sensor (e.g. Pt1000).
Supply air volume controller = Master, Exhaust air volume controller = Slave
The window switch and the room temperature sensor are optional. In case where no additional room temperature sensor is used, the IRC controller is measuring the room temperature by means of the internal sensor.

Functional diagram

Wiring diagram
Interoperable binding

MP1 = UK24LON Objects 0
Damper Actuator Object #8110

mpnRelStpt
nviRelStpt
SNVT_lev_percent

mpnActualValue
nviActualValue
SNVT_lev_percent

mpnManOvrd
nviManOvrd
SNVT_hvac_overid

MP2 = UK24LON Objects 1
Damper Actuator Object #8110

mpnRelStpt
nviRelStpt
SNVT_lev_percent

mpnActualValue
nviActualValue
SNVT_lev_percent

mpnManOvrd
nviManOvrd
SNVT_hvac_overid

MP3 = UK24LON Objects 2
Damper Actuator Object #8110

mpnRelStpt
nviRelStpt
SNVT_lev_percent

mpnActualValue
nviActualValue
SNVT_lev_percent

mpnManOvrd
nviManOvrd
SNVT_hvac_overid

MP3 = UK24LON Sensor Objects 0
Open Loop Sensor Object #1

mpnSensorValue
nvoSensorValue
SNVT_temp_p

Room topology

Setpoint can be defined from the network. Otherwise the controller takes its internal setpoint.

* As soon as this variable has been bound the value of the internal Temp_Sensor will be overridden.

Room 1

20.00°

MFT

Room 2

20.00°

MFT

Controller

LonWorks®

Totally two control loops with one Gateway UK24LON are applied.
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Plants with supply air and exhaust air volume controller, Master/Slave configuration and re-heater

The window switch and the room temperature sensor are optional. In case where no additional room temperature sensor is used, the IRC controller is measuring the room temperature by means of the internal sensor.
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SNVT_flow

MP2 = UK24LON Objects 1
Damper Actuator Object #8110
nviRelStpt
SNVT_lev_percent
nviActualValue
SNVT_lev_percent
nviActuatState
SNVT_switch
nvoAbsAngle
SNVT_angle_deg
nviManOvrd
SNVT_hvac_overid
nvoAbsAirFlow
SNVT_flow

MP3 = UK24LON Objects 2
Damper Actuator Object #8110
nviRelStpt
SNVT_lev_percent
nviActualValue
SNVT_lev_percent
nviActuatState
SNVT_switch
nvoAbsAngle
SNVT_angle_deg

MP3 = UK24LON Sensor Objects 0
Open Loop Sensor Object #1
nvoSensorValue
SNVT_temp_p

Setpoint can be defined from the network. Otherwise the controller takes its internal setpoint.

As soon as this variable has been bound the value of the internal Temp_Sensor will be overridden.

Room topology

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