LRP
Ventilation Control Processor
The one with a twist

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LRP
Ventilation Control Processor –

Graphic Display

The graphic display guides the user in the form of plaintext. Trend values are represented graphically. The display is lit.

Single Knob Operation

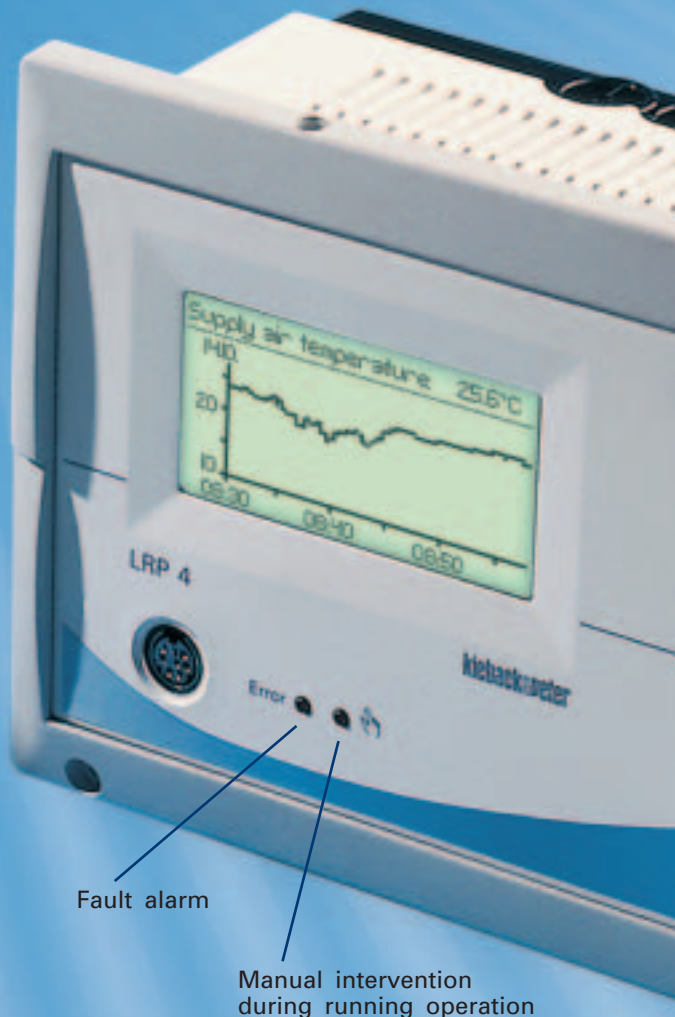
The dialog-led manual operation level of the control processor is composed of the graphic display and the single knob operation. The single control knob enables all operational steps to be menu-driven, rendering a user manual superfluous.

Bus Capability

Up to eight control processors can be connected via the CAN-Bus to a HRP/LRP bus system. The bus communication makes all important system values available to all LRP units.

Remote Operation

Remote operation of a control processor is possible from any other control processor within the LRP bus system. The system parts can be selected in plaintext via the single knob operation.



Fault alarm

Manual intervention during running operation is signalized by the hand sign.

Diagnosis

The diagnosis box enables data to be read using a PC. The data is used for data security purposes, for saving trend values, and for facilitating system diagnosis.

BMS Connection

HRP/LRP units, as well as HRP/LRP bus systems, can each be connected via a RS 232 serial interface to the BMS control center. Communication occurs via the Kieback&Peter standard P90 protocol.

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Set Key

The set key is used to confirm an operational step.

Trend Function

The LRP trend function assists in logging important system trend values within the control processor. The collected LRP trend values can be viewed locally at the control processor, or if required, per modem transfer to the BMS control center.

System Macros

By setting LRP system macros, the control processor can be completely configured. The LRP software menus are automatically set, the parameters programmed and the input and output signals allocated.

Fault Alarms to a Mobile

Important reports can be sent via modem to a mobile telephone (GSM-SMS service).

Minitel

Minitel facilitates complete LRP remote operation functions with no additional software costs, either directly via any PC or per modem. A system-specific password protects system access from misuse.

Esc Key

With the "Esc" key, it is possible to undo one operational step at any time.

Modem-Enabled

The LRP Ventilation Control Processor is modem-enabled, rendering remote maintenance and diagnosis possible. Data transfer occurs per modem to the BMS control center

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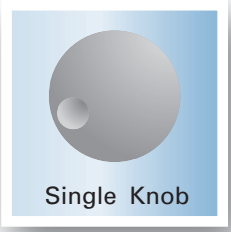
The LRP Ventilation Control Processor

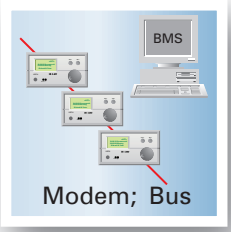
Why is the LRP so special?



Single Knob Operation

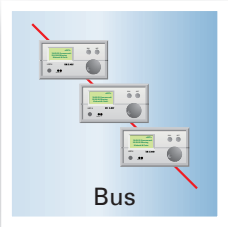
The single knob operation, together with the graphic, lit display make the LRP Ventilation Control Processor very easy to handle. The manual operation level of the LRP Ventilation Control Processor is setting new standards.

The user is guided through the menu system by means of plaintext dialog, rendering a manual superfluous. Everything is self-explanatory.



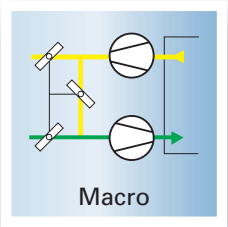
Modem-Enabled

The LRP Ventilation Control Processor is modem-enabled, making remote maintenance and diagnosis possible. The logging of important system and values occurs locally in the LRP Ventilation Control Processor. Data transfer occurs via modem to the higher level BMS control center. Important messages can be also sent via modem to a mobile telephone (SMS service). To achieve this, customer-specific plaintext can be set up for forwarding within the LRP.



Bus-Enabled

The LRP Ventilation Control Processor is bus-enabled. Up to 8 Ventilation Control Processors can be connected to the HRP/LRP bus, resulting in important system values being made available to all Ventilation Control Processors via the bus communication. Remote operation of a Ventilation Control Processor is possible from any other LRP within the HRP/LRP bus system.



LRP System Macros

System macros are integrated in the LRP Ventilation Control Processor. By setting LRP system macros, the new LRP Ventilation Control Processor is completely configured. That means that with every LRP system macro, the corresponding LRP software menus are automatically set, the parameters programmed, and the input and output signals allocated. Corresponding functional descriptions and connection instructions form part of each system macro. Several system macros are available.

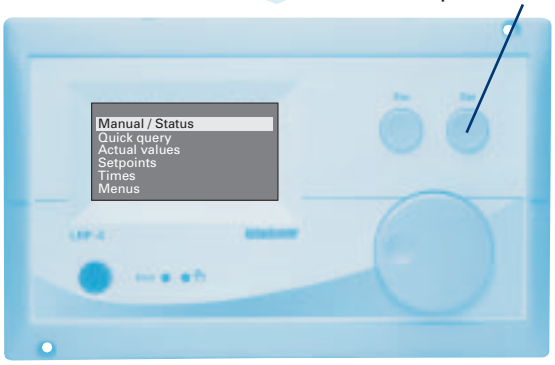
Single Knob Operation

The manual operation level of the LRP Ventilation Control Processor is setting new standards. The single knob operation and the graphic, lit display render the LRP Ventilation Control Processor simple to use. The user is guided through the menu system by means of plaintext, making an operation manual superfluous. Everything is self-explanatory.

Actual Value Display

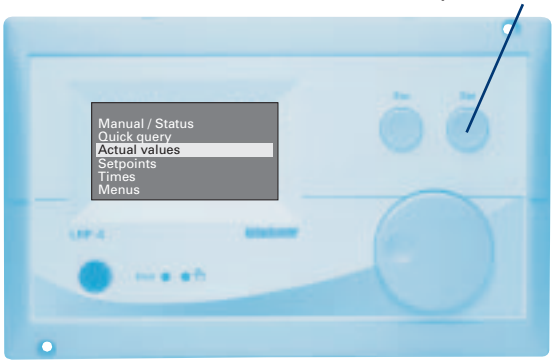
1 Start screen

press SET

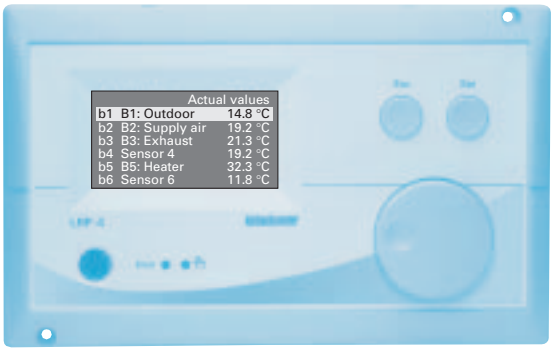


2 Initial menu display

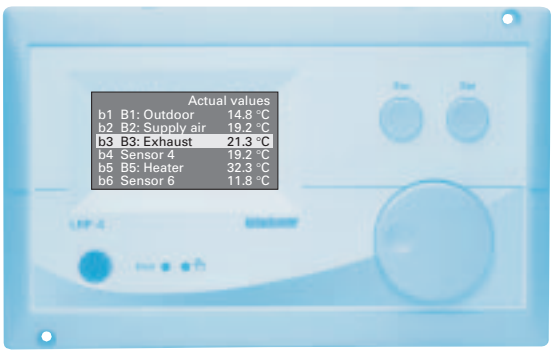
press SET



3 Twist the knob to "Actual Value"

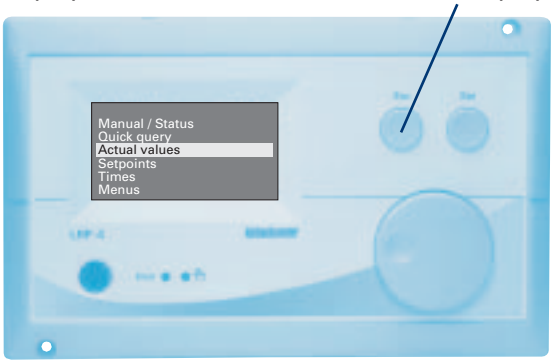


4 Actual value display "b1 B1: Outdoor 14.8 °C"



5 Twist knob to "Exhaust Air 21.3 °C"

press ESC to exit from the "Actual Value" display and return to the initial menu display



6 Initial menu display

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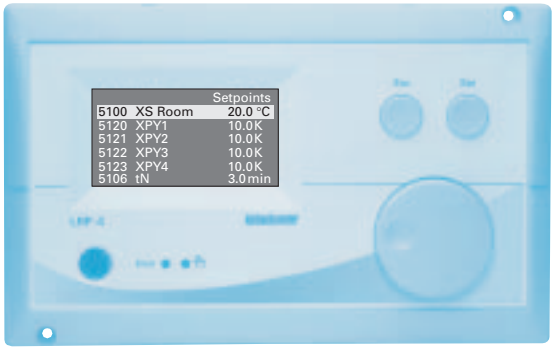
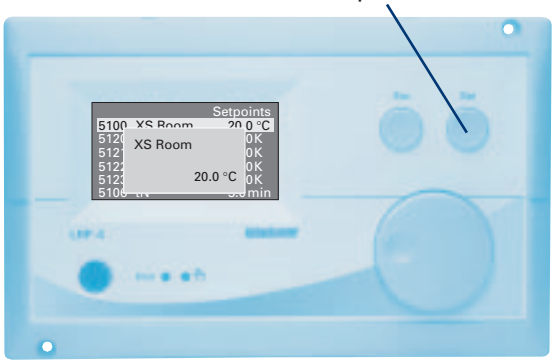
Further LRP Functions

Adjusting the Setpoint



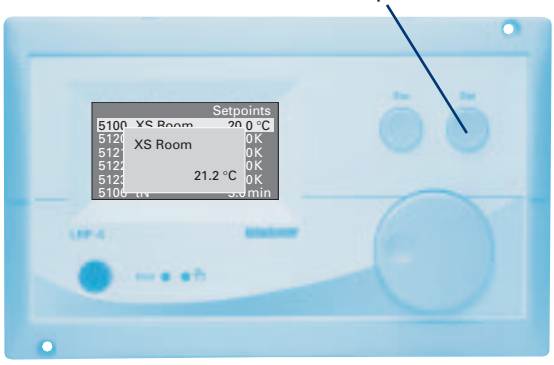
1 Follow the same steps as for the "Actual Value". Twist knob to "XS: Room"

press SET twice



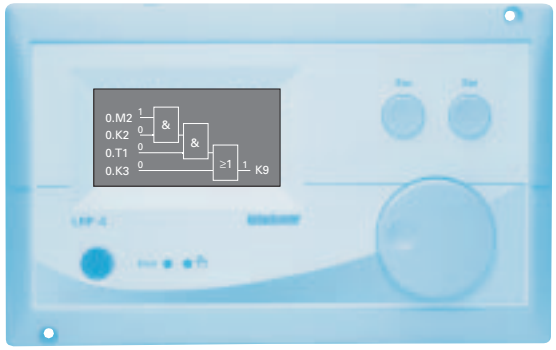
2 Display: "XS Room 20.0°C"

press SET to confirm the new setpoint of 21.2 °C



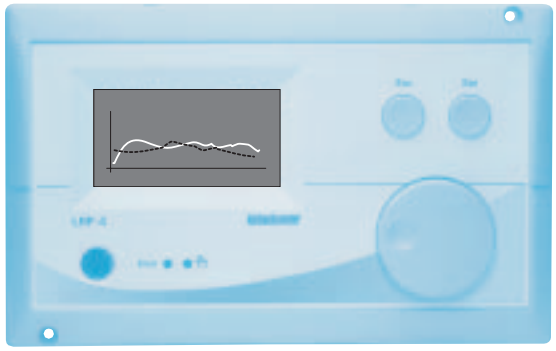
3 Twist knob to the new setpoint of 21°C

Viewing the Control System



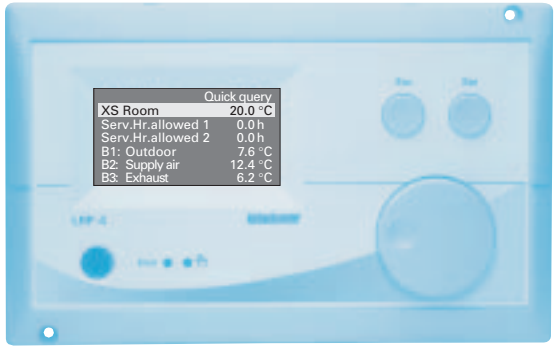
Control links can be parameterised easily. The status of the digital outputs and internal relays is displayed.

Viewing Trend Values

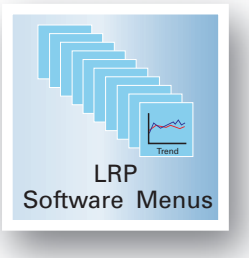


A maximum of two LRP values can be displayed at the same time on the LRP graphic display. Trend values from 1 day up to 7 days can be chosen depending on the resolution.

Viewing Quick Request

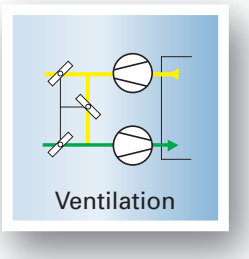


LRP Menus



LRP Software Menus

The basic program of the LRP Ventilation Control Processor is extended by the multitude of LRP software menus available to it. These ensure that adaptations to meet the differing demands placed on ventilation systems is a given. The LRP software menus Modem, GSM-SMS, as well as the trend function of the LRP Ventilation Control Processor, all provide the means of communication with a higher level BMS control center and also ensure continual monitoring of the ventilation system. The LRP software menus come delivered with the LRP Ventilation Control Processor.



Ventilation

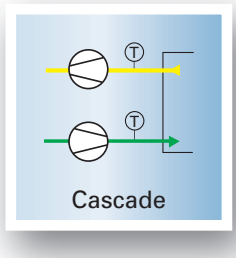
The LRP basic program makes up to four Y-outputs available to the LRP control loop. The calculation of the control loops occurs when the control loop is in the "regulation" operating mode. The desired setpoint for the regulation is set in the LRP basic program. For every Y-output, a minimum and maximum limit value (Minimum Air Rate) can be parameterised.

The values for the Y-outputs calculated by the LRP basic program may be overwritten manually or by means of the LRP software menus.

Various sequences of the individual Y-outputs are programmable via LRP parameters. Deadzones can be established between the Y-outputs.

Serial Perfection.

The LRP software menus facilitate the universal application of the LRP Ventilation Control Processor.

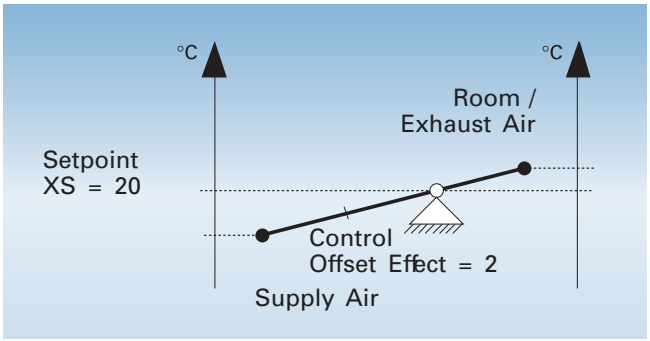


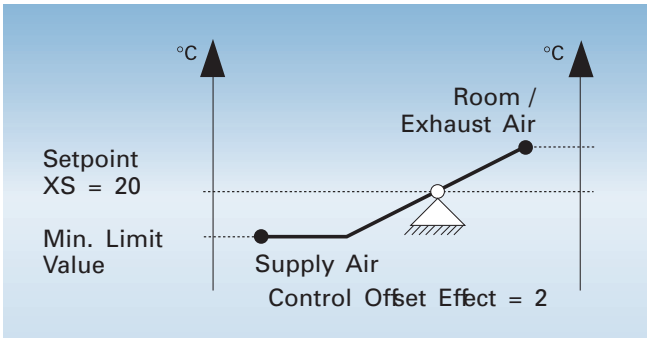
Cascade

The menu "Cascade" is an extension of the basic function "Ventilation". The cascade control calculates the setpoint for the supply air temperature independently of the control offset from the exhaust air setpoint. The minimum and maximum limit values of the supply air temperature are changeable LRP parameters. In high rooms temperature stratification can be prevented via a programmable maximum temperature difference.

The function of the cascade control can be compared to a rocker. The right-hand lever of the rocker controls the room temperature and the temperature of the exhaust air. With the left-hand lever, the supply air can be increased or lowered.

The length of the the supply air lever can be compared with the "Control Offset Effect" setting. When the control offset effect = 3, the supply air lever would be 3 times longer than the exhaust air lever; when the control offset effect = 5, it would be 5 times longer.





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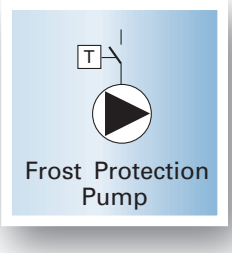
LRP Menus

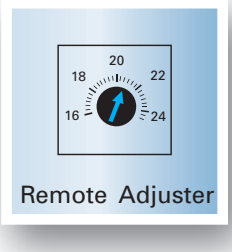
Continuous Frost Protection

The menu "Continuous Frost Protection" is implemented in ventilation systems to continuously monitor frost protection. When the ventilation system is switched on, continuous frost protection occurs in control operation, independently of an analog temperature signal.



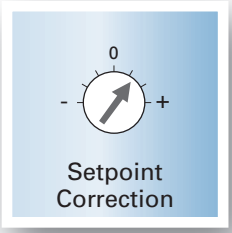
Frost Protection Pump

Via the menu "Frost Protection Pump", an internal contact is activated dependently of an analog temperature signal. This internal contact can be used for the activation of the heater battery pumps. Upon the hysteresis of 3 K being exceeded, this internal contact is switched back again.



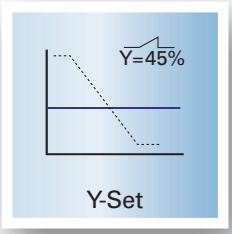
Remote Adjuster

With the menu "Remote Adjuster", an analog source is addressed to which a remote adjuster is connected and from which a scaled analog value can be read. This analog value replaces the setpoint of the LRP control loop. The calculated setpoint is displayed on the parameter XS remote programmer.



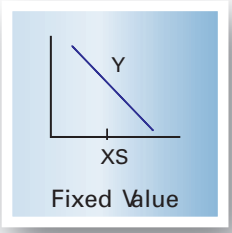
Setpoint Correction

The setpoint correction works in conjunction with the basic program. A set-point correction can occur, for example, via a correction programmer within a room. The correction area is established by a LRP parameter, e. g. +5...-5 K.



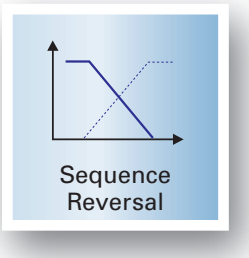
Y-Set

The menu "Y-Set" allows individual analog outputs to be taken out of the regulation and set in a targeted way to a definable value. The menu "Y-Set" is activated via an internal contact and has priority over the menu "Y-Limit".



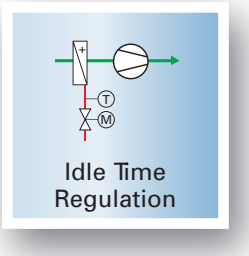
Fixed Value

The menu "Fixed Value Controller" is, in its basic function, a PID controller with one Y-output. The controlled variable sensor is defined in the controlled variable fixed value parameter. Two setpoints can be switched between independently of a binary source. The output signal of the fixed value controller has an effect on the YFW which can be allocated a free Y-output per source allocation.



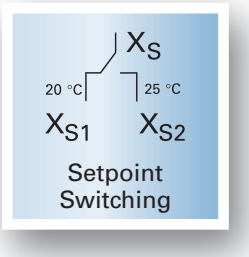
Sequence Reversal

With the menu "Sequence Reversal", the Y-outputs identified in this LRP software menu are reversed in their effect when the digital source for the Y-output is set to active.



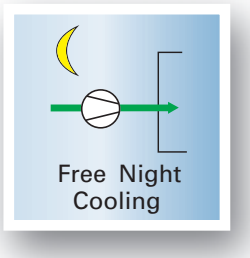
Idle Time Regulation

The menu "Idle Time Regulation" is implemented in ventilation systems to offer comprehensive freeze protection through the regulation of a minimum temperature in the heating medium. During winter operation, a LRP setpoint for the regulation of a minimum temperature in the heating medium is effective when the ventilation system is switched off. The actual value is captured by an additional temperature sensor in the heating medium.



Setpoint Switching

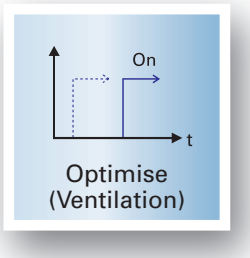
The menu "Setpoint Switching" is used in heating and ventilation systems that are regulated with alternating setpoints. Irrespective of usage times or by means of operational switch-overs, the regulation switches over to another setpoint.



Free Night Cooling

Via the menu "Free Night Cooling" the ventilation system is switched on during the night when summer operation is active in order to cool the room air temperature by means of the outside air.

The room temperature is monitored when the ventilation system is switched off. During summer operation, the system is switched on before the start of usage time if the room temperature lies above the room setpoint and the outside temperature is lower than the inside temperature. Once the ventilation system has been switched on, the outside air dampers are opened for the purpose of cooling and thus free cold energy from outside is utilized.



Optimise (Ventilation)

The menu "Optimise (Ventilation)" is used prior to usage for calculating the optimal switching on time so that the programmed setpoint is reached as soon as usage begins. Should the outside temperature deviate from the room setpoint, the switching on time is brought forward. The optimisation function is active in heating and cooling modes. An energy comparison determines whether pure circulating air or pure outside air will be used to achieve rapid heating or cooling.

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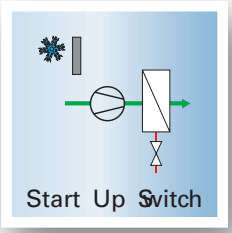
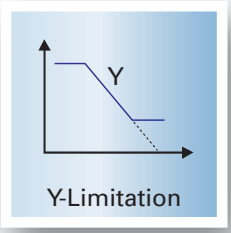
LRP Menus



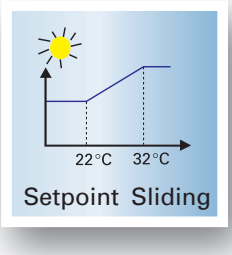
Start Up Switch

The menu "Start Up Switch" is used in ventilation systems during winter operation in order to avoid temperatures falling below optimal levels. A time-delayed activation of the ventilation system occurs during winter operation. The heating valve is opened according to set times before the ventilation system is switched on.



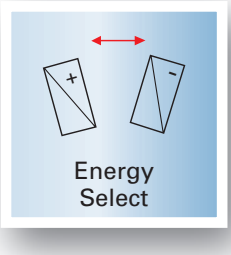
Y-Limitation

With the menu "Y-Limitation" a minimum or maximum limit value is applied in heating and ventilation control loops. A continuous minimum and maximum limitation occurs independently of any limit value.
The limit setpoint can glide according to the outside temperature. With multiple sequences, the limit function has an effect on one selected sequence.



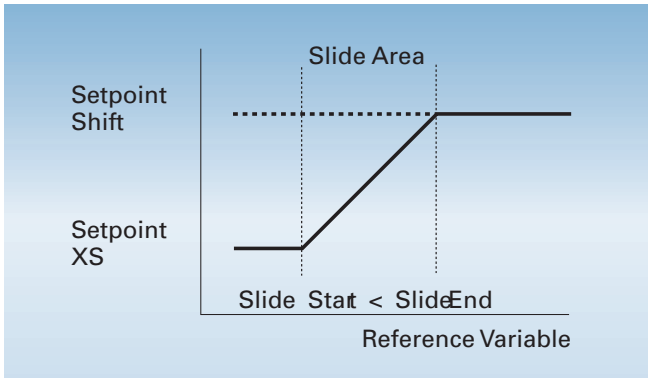
Setpoint Sliding

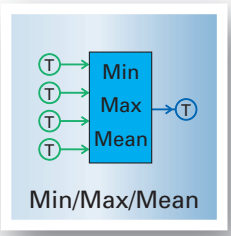
The menu "Setpoint Sliding" causes a setpoint shift dependently of a reference variable for the ventilation control loop. Via a command signal, the control setpoint is raised or lowered. LRP parameters for setting "Slide Start", "Slide End" and "Influence" determine the influence of the command signal on the setpoint shift.



Energy Select

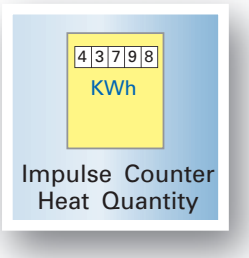
The menu "Energy Select" enables the optimal use of the energy on offer in ventilation systems with incorporated heat recovery features. The menu "Energy Select" compares two freely selectable measurement values for energy choice. A reversal of effect occurs with respect to various analog outputs, and an internal switching point is set that can be further processed in logical links. Via LRP parameters, the measuring signal difference and the hysteresis can be set.





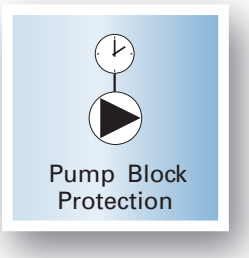
Min/Max/Mean

The menu "Min/Max/Mean" enables the simultaneous calculation of the smallest value, the largest value and the mean value from up to 4 random analog signals. Each of the 4 analog signals can be given a weighing factor.



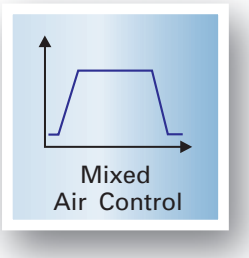
Impulse Counter Heat Quantity

This menu provides pulse and heat quantity meter reading (up to 20 Hz). The heat quantity meter reading (pulse meter reading) 1 is firmly allocated to the input contact K7. The heat quantity meter reading (impulse meter reading) 2 is firmly allocated to the input contact K8. Heat quantity and heat output are allocated by a set factor to each pulse. The pulses are multiplied with the factor. A meter reading always occurs at the left-hand edge.



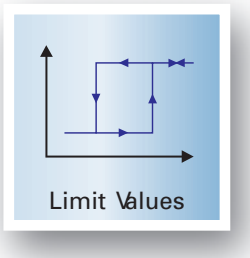
Pump Block Protection

The menu "Pump Block Protection" guarantees pump antiblocking protection in ventilation systems that are to be completely switched off for a longer period of time (min. 24 hours). A forced activation of the circulating pump thereby occurs once in 24 hours with a programmable time of activation and minimum running time.



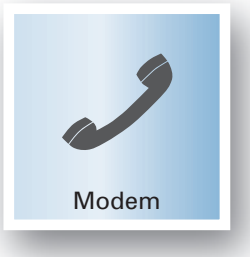
Mixed Air Control

This menu lays a trapezoid characteristic curve on a freely selectable Y-output. The allocated outside temperature serves as the reference variable. The Y-output upon which the menu should take effect is established.



Limit Values

In order to create limit values, any analog value of the LRP system (sensors, measurement and calculation values) can be accessed per source parameterisation. Upon exceeding the limit value 1, the digital parameter "Result Limit Value 1" is set to 1. This value can be parameterised as a digital source in control links.



Modem

With the aid of the LRP software menu "Modem", it is possible to connect the LRP Ventilation Control Processor to the higher level BMS control center via the telephone network. Remote transfer and maintenance of the ventilation system is thus enabled. Automatic dialing to the BMS control center can be parameterised for certain important alarm messages in the ventilation system.

GSM-SMS

Important alarm messages from the operating system are transmitted with the aid of the LRP software menu "GSM-SMS" to a mobile telephone. 160 is the maximum number of characters allowed for each SMS message. Users of the LRP Ventilation Control Processor thus have at their disposal yet another method of monitoring the operating system with a high level of transmission security.

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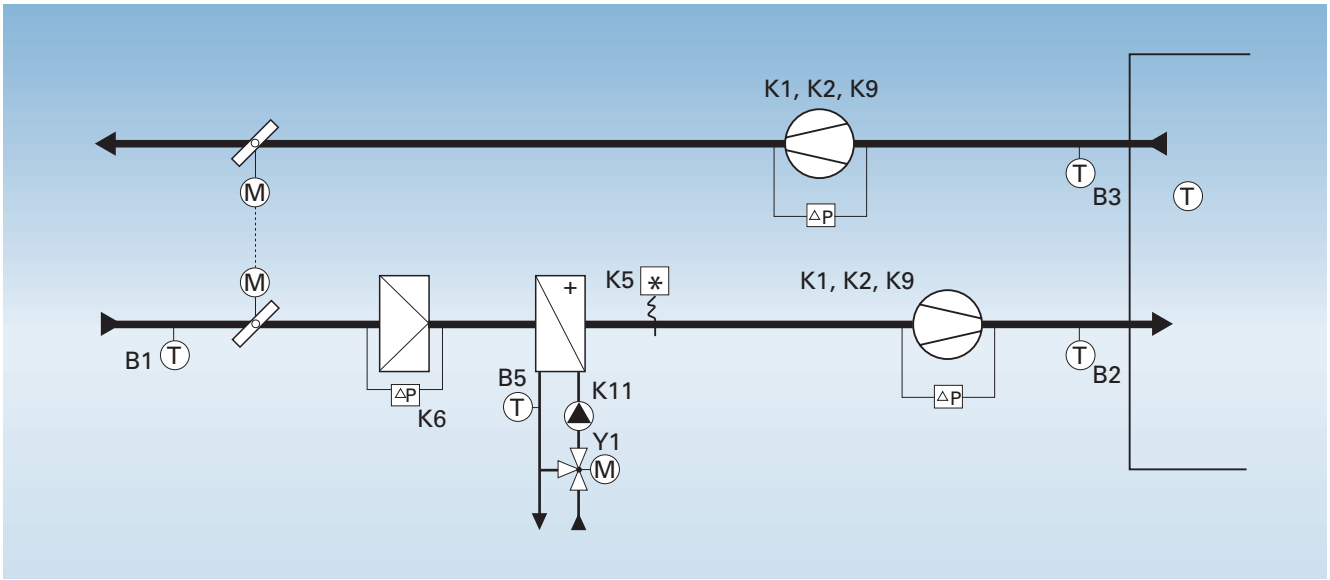
LRP System Macro 1

- Exhaust Air Temperature Control with Heater
- 1-Step Supply and Exhaust Air Ventilators with Air Heating Pump



LRP Macro Function:

The ventilators and the pump are activated via time programs.

The start-up switch opens the valve (Y1) for the air heater and activates the circulating pump (K11). The sensor (B5) captures the return temperature of the heating medium. Should the limit value for the return temperature be reached, the outside and exhaust air dampers are opened and the supply and exhaust air ventilator (K9) activated. With the acknowledgment (K1), the regulation is enabled.

The sensor (B3) logs the exhaust air temperature, while the sensor (B2) captures the supply air temperature. Based on the control offset from the exhaust air setpoint, the cascade control calculates the setpoint for the supply air temperature and activates the regulating valve for the air heater (Y1) until the desired setpoint is reached. The minimum and maximum limit values of the supply air temperature are programmable.

When there is a danger of frost, the frost protection guard (K5) switches off the ventilators, closes the outside and exhaust air dampers, opens the valve (Y1) for the air heater and switches on the pump (K11).

When the system is switched on the continuous frost protection feature takes effect. The sensor (B5) opens the valve (Y1) continuously, even when the frost protection temperature is above that which was set.

The filter control is enabled via the differential pressure guard (K6).

The ventilator control is designed for 1-step ventilators.

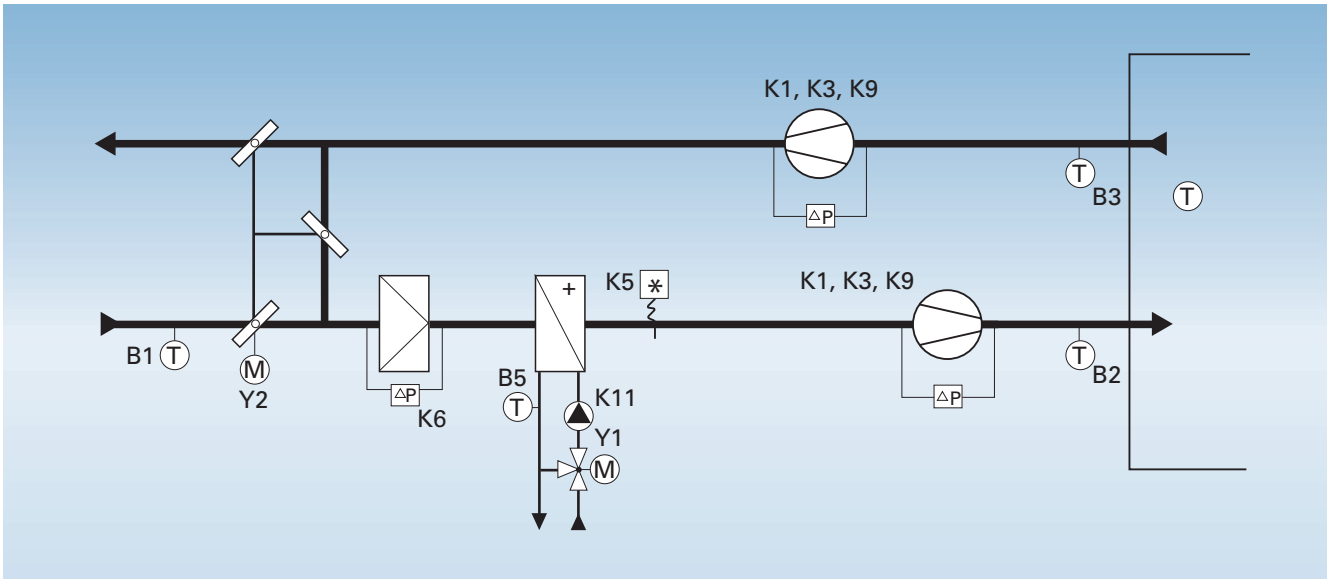
An interval switch (pump block protection) prevents the blocking of the pumps during system shutdown.

Set LRP Menus:

Cascade, Start-Up Switch, Y-Limitation 1, Setpoint Sliding, Continuous Frost Protection, Idle Time Regulation, Y-Set 1, Operating Hours 1, Operating Hours 2, Pump Block Protection, Limit Value 1.

LRP System Macro 3

- Exhaust Air Temperature Control with Heater, Mixed Air Dampers
- 1-Step Supply and Exhaust Air Ventilators with Air Heating Pump



LRP Macro Function:

The ventilators and the pump are activated via time programs.

The start-up switch opens the valve (Y1) for the air heater and activates the circulating pump (K11). The sensor (B5) captures the return temperature of the heating medium. Should the limit value for the return temperature be reached, the supply and exhaust air ventilator (K9) is activated. With the acknowledgment (K1), the regulation is enabled.

The sensor (B3) logs the exhaust air temperature (alternatively, the room temperature), while the sensor (B2) captures the supply air temperature. Based on the control offset from the exhaust air setpoint, the cascade control calculates the setpoint for the supply air temperature and activates the outside, exhaust and circulating air dampers (Y2), as well as the regulating valve for the air heater (Y1) in turn until the desired setpoint is reached. The minimum and maximum limit values of the supply air temperature are programmable. The minimum outside air rate can also be set.

When there is a danger of frost, the frost protection guard (K5) switches off the ventilators, closes the outside and exhaust air dampers, opens the valve (Y1) for the air heater and switches on the pump (K11).

When the system is switched on the continuous frost protection feature takes effect. The sensor (B5) opens the valve (Y1) continuously, even when the frost protection temperature is above that which was set.

The filter control is enabled via the differential pressure guard (K6).

The ventilator control is designed for 1-step ventilators.

An interval switch (pump block protection) prevents the blocking of the pumps during system shutdown.

Set LRP Menus:

Cascade, Start-Up Switch, Y-Limitation 1, Setpoint Sliding, Energy Select, Continuous Frost Protection, Idle Time Regulation, Y-Set 1, Operating Hours 1, Pump Block Protection, Limit Value 1.

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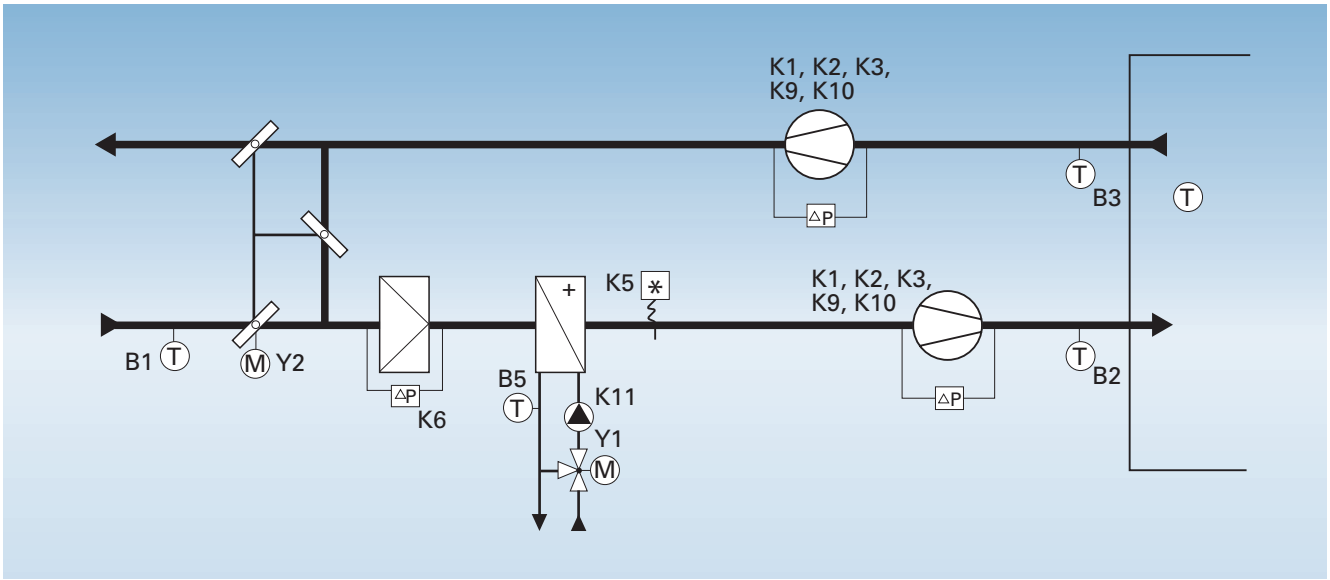
LRP System Macro 4

- Exhaust Air Temperature Control with Heater, Mixed Air Dampers
- 2-Step Supply and Exhaust Air Ventilators with Air Heating Pump



LRP Macro Function:

The ventilators and the pump are activated via time programs (N1 Level 1, N2 Level 2).

The start-up switch opens the valve (Y1) for the air heater and activates the circulating pump (K11).

The sensor (B5) captures the return temperature of the heating medium. Should the limit value for the return temperature be reached, the supply and exhaust air ventilator (K9, K10) is activated. With the acknowledgment (K1/ 2), the regulation is enabled.

The sensor (B3) logs the exhaust air temperature (alternatively, the room temperature), while the sensor (B2) captures the supply air temperature. Based on the control offset from the exhaust air setpoint, the cascade control calculates the setpoint for the supply air temperature and activates the outside, exhaust and circulating air dampers (Y2), as well as the regulating valve for the air heater (Y1) until the desired setpoint is reached. The minimum and maximum limit values of the supply air temperature is programmable. The minimum outside air rate can also be set.

When there is a danger of frost, the frost protection guard (K5) switches off the ventilators, closes the outside and exhaust air dampers, opens the valve (Y1) for the air heater and switches on the pump (K11).

When the system is switched on, the continuous frost protection feature takes effect. The sensor (B5) opens the valve (Y1) continuously, even when the frost protection temperature is above that which was set.

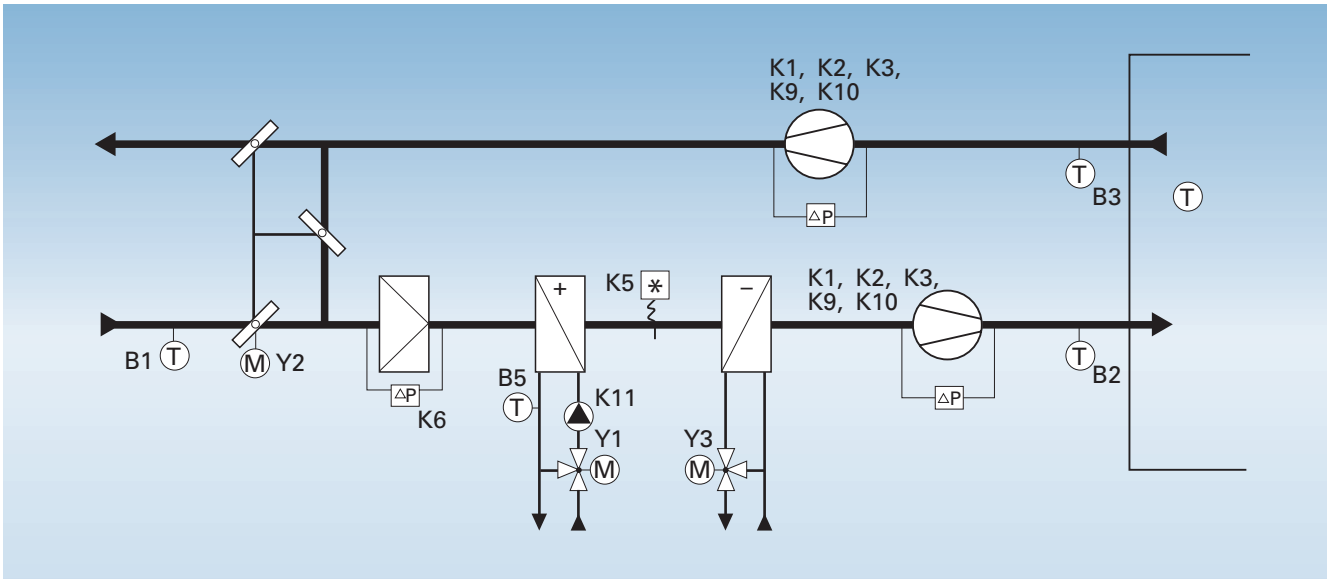
The filter control is enabled via the differential pressure guard (K6).

The ventilator control is designed for 2-step ventilators. The activation of step 2 occurs at a time delay above step 1. Time levels are integrated to avoid supersynchronous deceleration during return switching from the higher to the lower rotational speed. They prevent the V-belts of the ventilators from decelerating.

Set LRP Menus:
Cascade, Start-Up Switch, Y-Limitation 1, Setpoint Sliding, Energy Select, Continuous Frost Protection, Idle Time Regulation, Y-Set 1, Operating Hours 1, Operating Hours 2, Pump Block Protection, Limit Value 1.

LRP System Macro 6

- Exhaust Air Temperature Control with Heater, Mixed Air Dampers, Cooler,
- 2-Step Supply and Exhaust Air Ventilators with Air Heating Pump



LRP Macro Function:

The ventilators and the pump are activated via time programs (N1 Level 1, N2 Level 2).

The start-up switch opens the valve (Y1) for the air heater and activates the circulating pump (K11). The sensor (B5) captures the return temperature of the heating medium. Should the limit value for the return temperature be reached, the supply and exhaust air ventilator (K9/10) is activated. With the acknowledgment (K1/2), the regulation is enabled.

The sensor (B3) logs the exhaust air temperature (alternatively, the room temperature), while the sensor (B2) captures the supply air temperature. Based on the control offset from the exhaust air setpoint, the cascade control calculates the setpoint for the supply air temperature and activates the mixed air dampers (Y2), the regulating valves for the air heater (Y1) and the air cooler (Y3) in turn until the desired setpoint is reached. The minimum and maximum limit values of the supply air temperature are programmable. The minimum outside air rate can also be set.

The energy select switch compares the exhaust air temperature (B3) with the outside air temperature (B1) and controls the mixed air dampers (Y2) according to the energy provided by the outside air.

The outside temperature comes into effect as a reference variable via a sensor (B1) for raising the room temperature during summer operation (DIN 1946).

When there is a danger of frost, the frost protection guard (K5) switches off the ventilators, closes the outside and exhaust air dampers, opens the valve (Y1) for the air heater and switches on the pump (K11).

When the system is switched on, the continuous frost protection feature takes effect. The sensor (B5) opens the valve (Y1) continuously, even when the frost protection temperature is above that which was set.

The filter control is enabled via the differential pressure guard (K6).

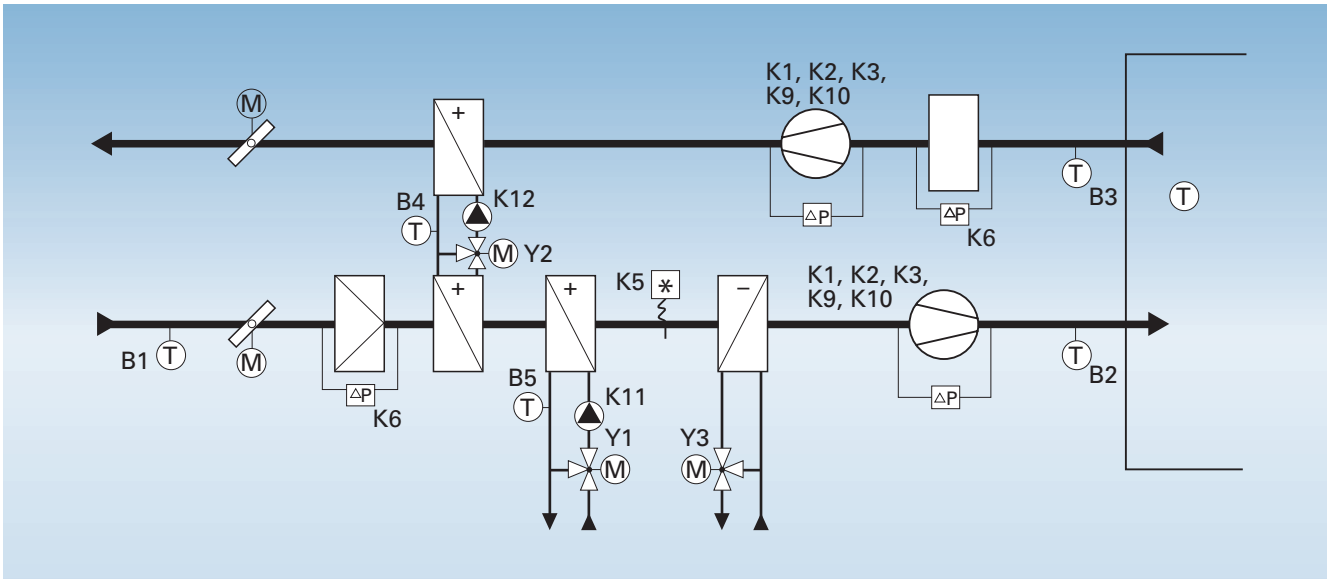
The ventilator control is designed for 2-step ventilators. The activation of step 2 occurs at a time delay above step 1. Time levels are integrated to avoid supersynchronous deceleration during return switching from the higher to the lower rotational speed. They prevent the V-belts of the ventilators from decelerating.

An interval switch (pump block protection) prevents the blocking of the pumps during system shutdown.

Set LRP Menus:
Cascade, Start-Up Switch, Y-Limitation 1, Setpoint Sliding, Energy Select, Continuous Frost Protection, Idle Time Regulation, Y-Set 1, Operating Hours 1, Operating Hours 2, Pump Blck Protection, Limit Value 1.

LRP System Macro 8

- Exhaust Air Temperature Control with Heater, Recuperative Heat Exchanger and Cooler
- 2-Step Supply and Exhaust Air Ventilators with Air Heating Pump



LRP Macro Function:

The ventilators and the pumps are activated via time programs (N1 Level 1, N2 Level 2).

The start-up switch opens the valve (Y1) for the air heater and activates the circulating pump (K11). The sensor (B5) captures the return temperature of the heating medium. Should the limit value for the return temperature be reached, the supply and exhaust air ventilator (K9/ 10) is activated. With the acknowledgment (K1/ 2), the regulation is enabled.

The sensor (B3) logs the exhaust air temperature (alternatively, the room temperature), while the sensor (B2) captures the supply air temperature. Based on the control offset from the exhaust air setpoint, the cascade control calculates the setpoint for the supply air temperature and activates the heat recovery function (Y2), the control valves for the air heater (Y1) and the air cooler (Y3) in turn until the desired setpoint is reached. The minimum and maximum limit values of the supply air temperature are programmable.

The energy select switch compares the exhaust air temperature (B3) with the outside air temperature (B1) and controls the valve (Y2) of the recuperative heat exchanger (heat recovery) according to the energy provided by the outside air.

The outside temperature comes into effect as a reference variable via a sensor (B1) for raising the room temperature during summer operation (DIN 1946).

The ice accretion protection sensor (B4) prevents the recuperative heat exchanger from accumulating ice on the air flow side. Upon reaching a set limiting value, the valve (Y2) is closed. The circulating pump (K12) switches on / off independently of the valve position (Y2).

When there is a danger of frost, the frost protection guard (K5) switches off the ventilators, closes the outside and exhaust air dampers, opens the valve (Y1) for the air heater and switches on the pump (K11).

When the system is switched on, the continuous frost protection feature takes effect. The sensor (B5) opens the valve (Y1) continuously, even when the frost protection temperature is above that which was set.

The filter control is enabled via the differential pressure guard (supply air / exhaust air K6).

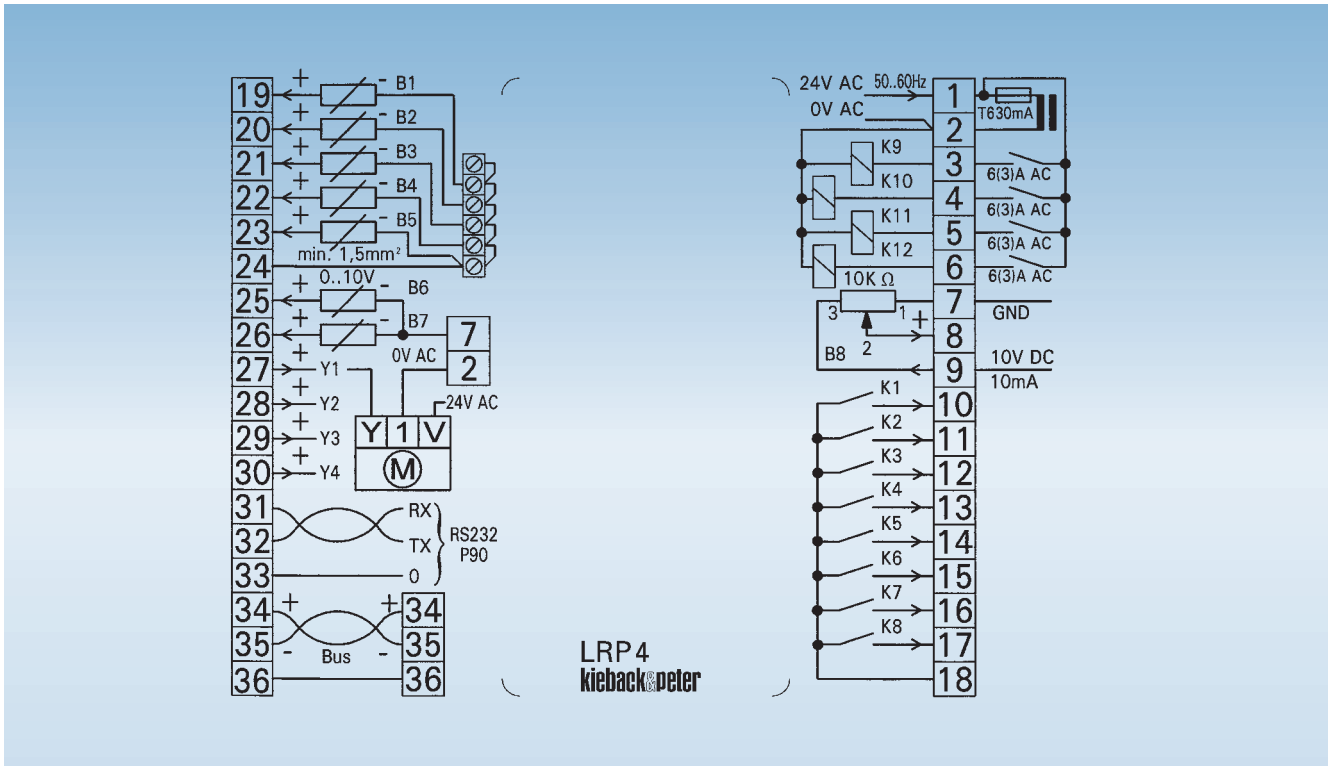
The ventilator control is designed for 2-step ventilators. The activation of step 2 occurs at a time delay above step 1. Time levels are integrated to avoid supersynchronous deceleration during return switching from the higher to the lower rotational speed. They prevent the V-belts of the ventilators from decelerating.

An interval switch (pump block protection) prevents the blocking of the pumps during system shutdown.

Set LRP Menus:
Cascade, Start-Up Switch, Y-Limitation 1, Y-Limitation 2, Setpoint Sliding, Energy Select, Continuous Frost Protection, Idle Time Regulation, Y-Set 1, Operating Hours 1, Operating Hours 2, Pump Block Protection, Limit Value 1, Limit Value 2.

Connection Diagram/ Technical Specifications

LRP4



Digital Inputs	8 x potential-free contact inputs (including two 20 Hz pulse inputs
Digital Outputs	4 x relay outputs, max. 6(3) A 24 V AC
Analog Inputs	6 x KP10 active measurement system 3 x continuous 0..10 V
Analog / Digital Conversion	10 Bit
Actuator Output	4 x continuous 0..10 V (5 mA at 10 V)
Serial Interface	RS 232 for connection of BMS control center or modem
Bus Connection	CAN bus for connection of up to a maximum of 8 LRP to one bus system
Rated Voltage	230 VAC ± 10%; 50..60 Hz
Rated Power	12 VA, 450 mA at 24 V AC
Displays	Backlit graphic display, LED-Display for error messages and manual operation mode
Diagnosis Box	Diagnosis / data security
Fuses	S1 630 mA (T)
Degree of Protection	IP20
Ambient Temperature	0..45 °C
Ambient Humidity	20..80 % relative humidity while in operation, condensation not possible 5..90 % relative humidity while not in operation, condensation not possible
Enclosure	Plastic housing, flame-retardant
Dimensions	110.0 mm high x 198.5 mm wide x 73 mm deep
Front Panel Section	200.4 mm x 112.0 mm
Weight	1.0 kg
Identification Sign	CE

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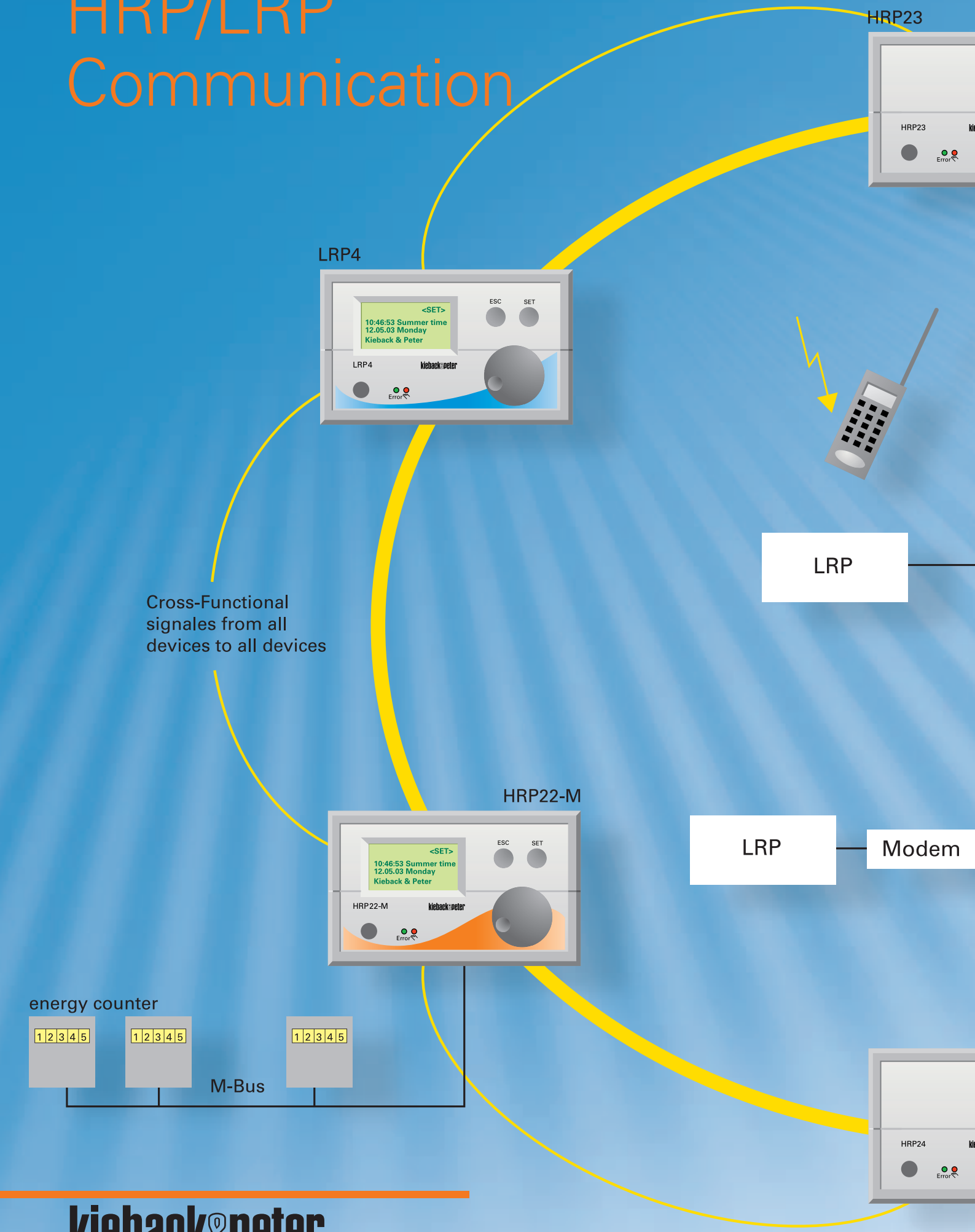
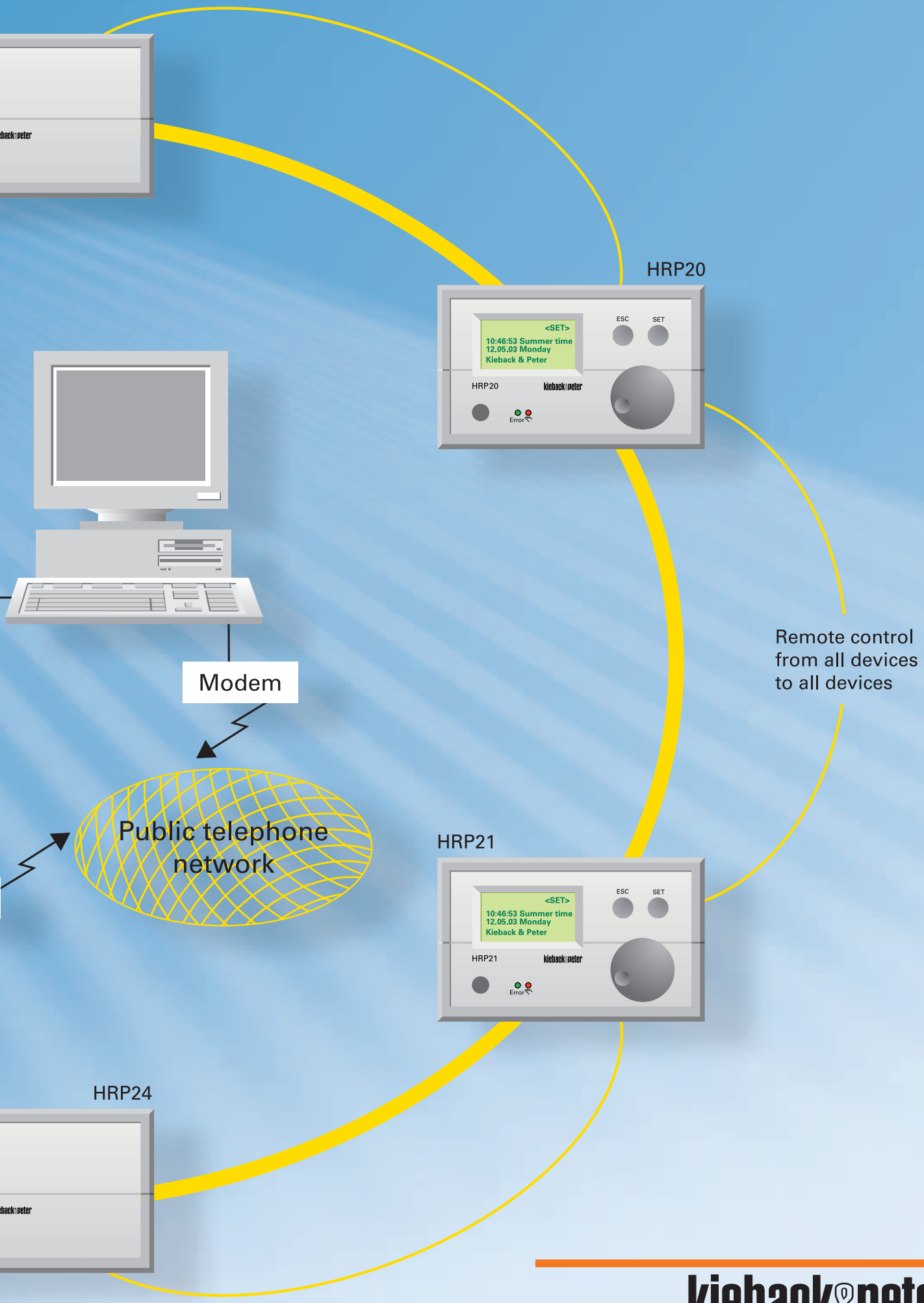
HRP/LRP Communication





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