

DDC Control Systems and FBR Room Automation

takes you to a New Dimension



DDC-Based Building Automation

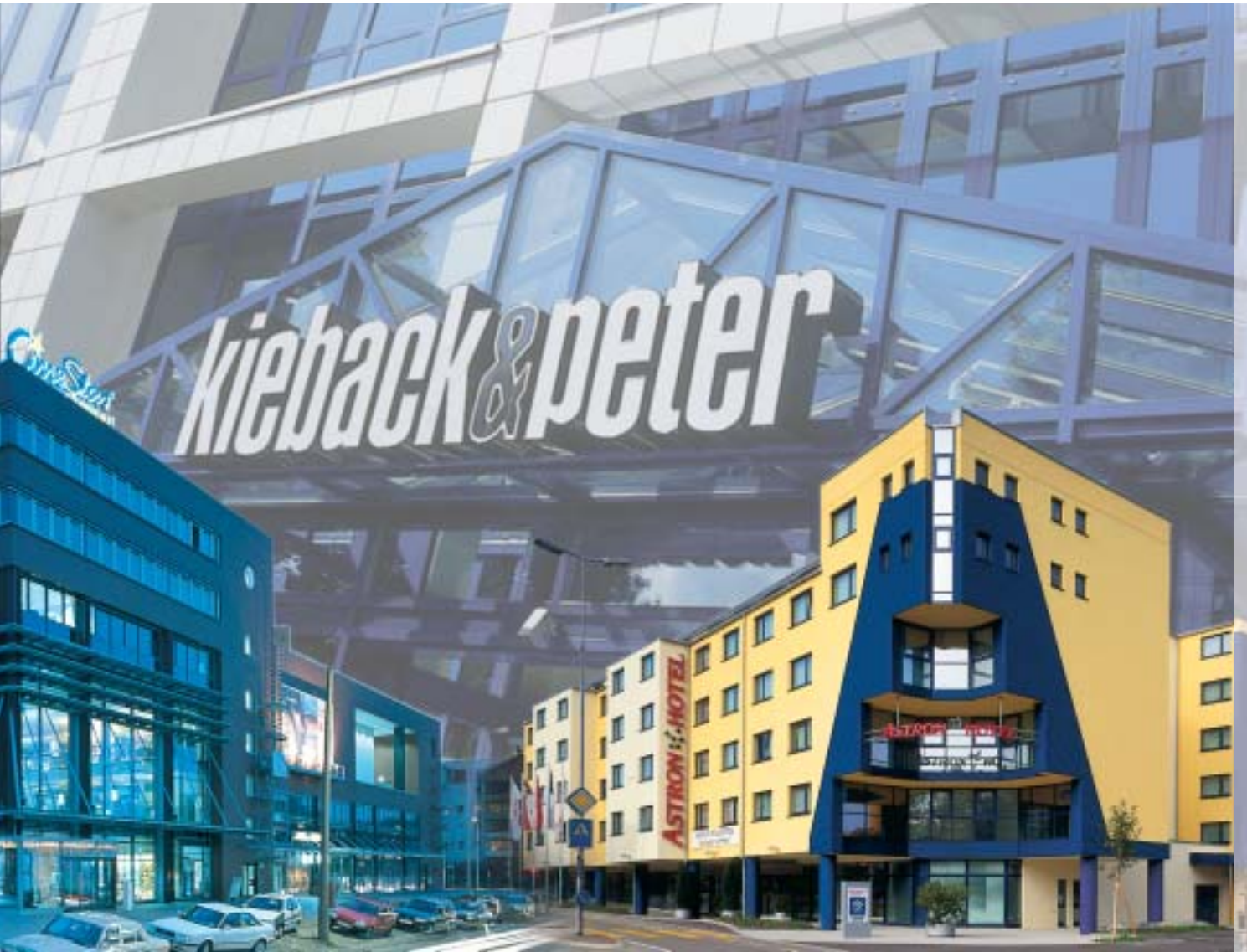
A Concept for all Applications



Buildings are characterized not only by the quality of their architecture, functional room concepts and solid construction. Rather factors such as operational and maintenance costs, efficient energy consumption, as well

as comfort and flexibility for building owners, operators and users, are also increasingly gaining in significance. Of great importance is the integration of various systems into one single, intelligent, all-encompassing

building automation system. The DDC system from Kieback&Peter offers the ideal solution: reliable and invisible to the user, it ensures that the heating, ventilation and air conditioning systems work together in an



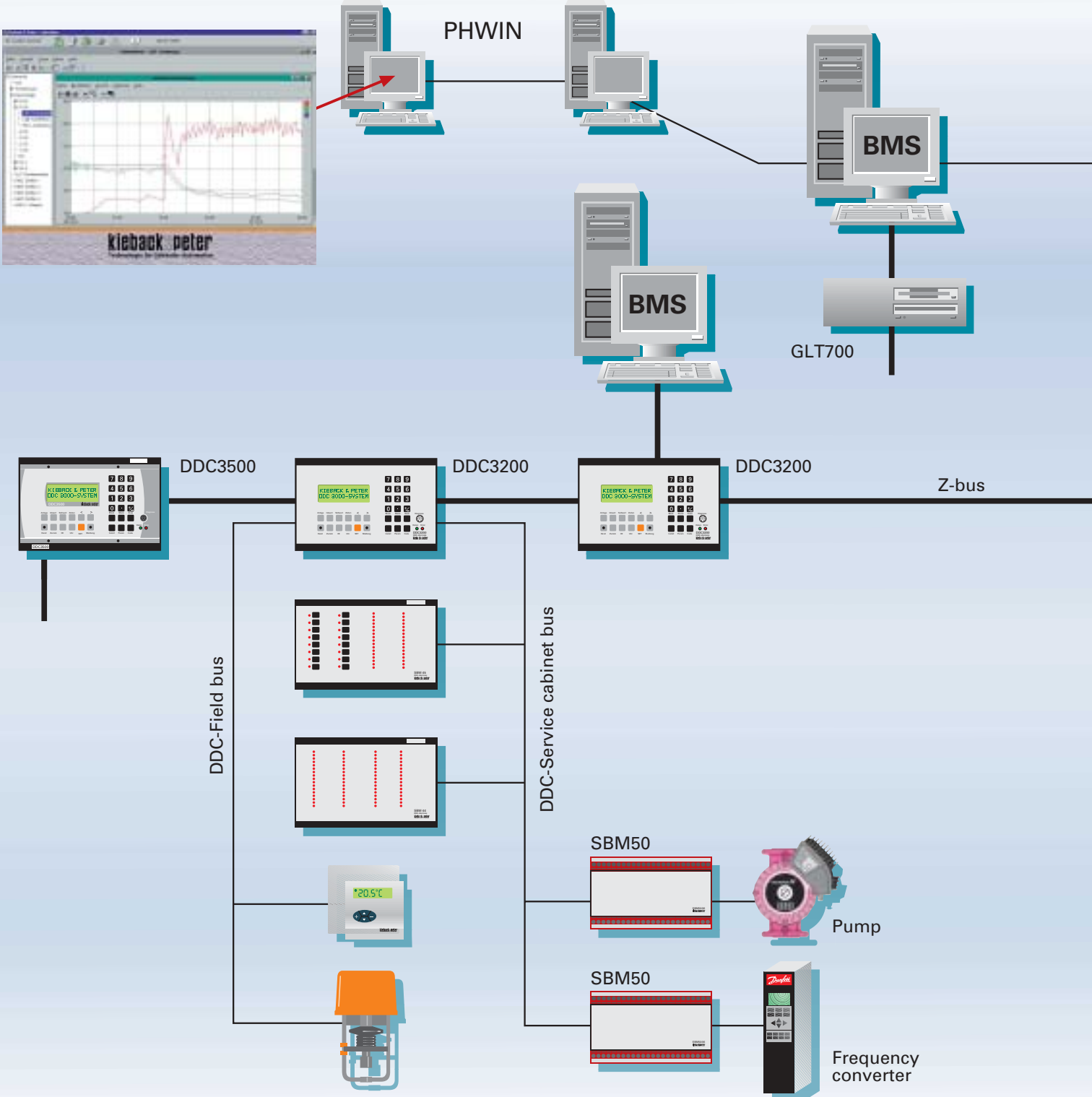
optimal way, providing a very good price-performance ratio. The results are significant energy savings and the best comfort levels possible. In addition to heating, ventilation and air conditioning, many

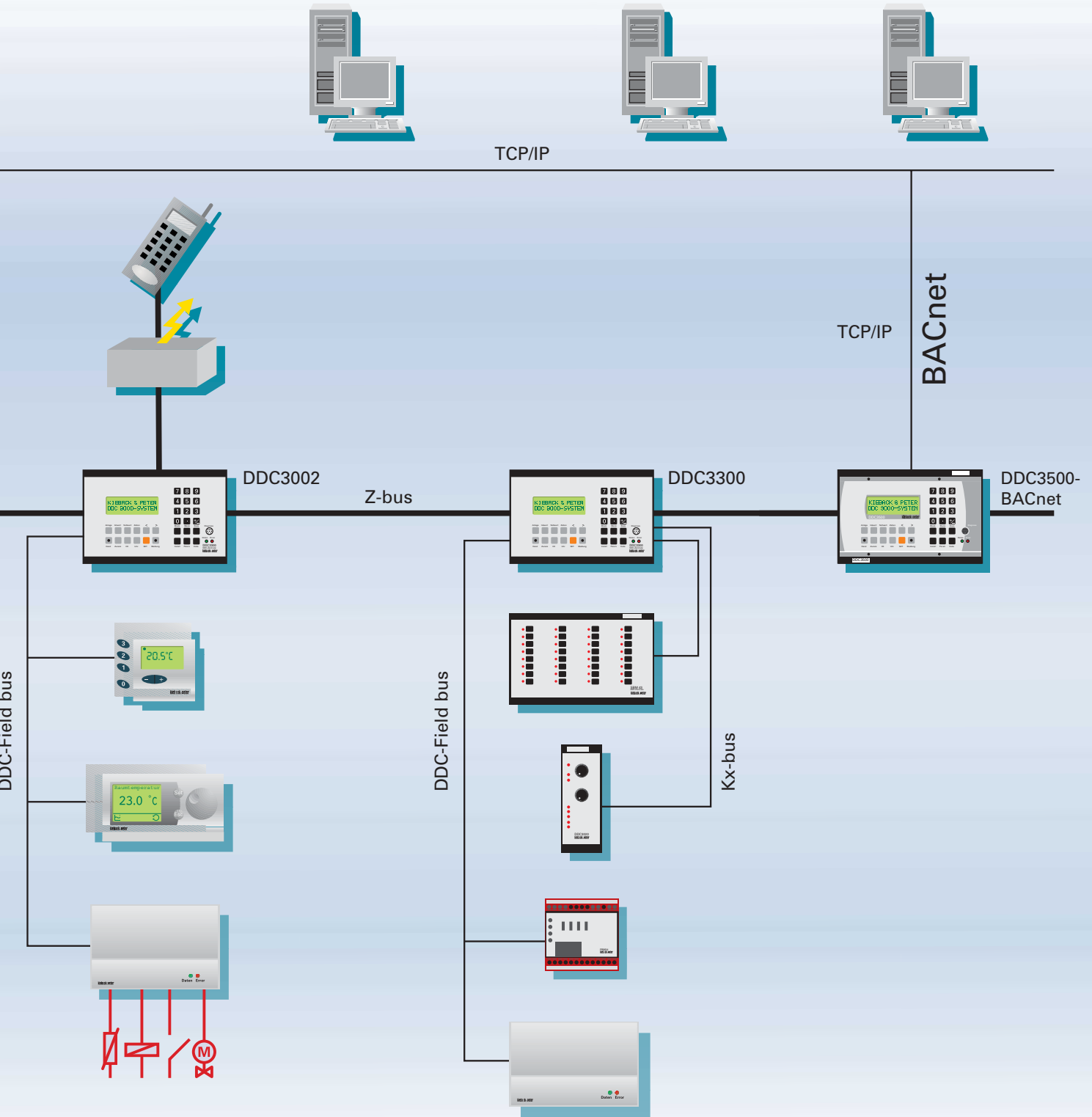
other functions can also be integrated, such as lighting and shading, elevator control, fire and smoke systems, access control functions, as well as monitoring systems. Remote operation and maintenance are further features.

All data is available up-to-date and stored in databases for the facility management, as well as for carrying out functions such as consumption cost calculations.

DDC System

Overview with details





The DDC Central Unit

All Functions Integrated Centrally



DDC3200

Each DDC central unit forms an autonomous sub-station equipped with control, optimization and monitoring functions. It possesses a manual operation feature, complete with keyboard and back-lit display. From here, it is possible not only to operate and parameterize the local sub-station, but also every other sub-station connected to the system.

The DDC central units are compatible with each other

regarding hardware and software. Thus it is possible to select an optimal DDC central unit for every application.

The simple parameterization features allow the user to carry out adaptations at any time during running DDC operation. The DDC software menus come complete with every DDC central unit. In contrast to free programming, no specialist knowledge is needed. The

software menus incorporated in the device enable expansion of functions. The central unit can be parameterized in the English language.

Each DDC central unit has an RS232 interface, allowing connection to the BMS, either directly or via a modem.

Via a central bus, up to 99 DDC central units can be connected to each other.

■ DDC Central Unit DDC3200

With DDC field bus, with DDC service cabinet bus

Autonomous DDC central unit for regulation, optimization, control and monitoring functions. ■ Direct connection of input and output signals. ■ Up to 12 DDC control loops for heating and ventilation. Expandable to 21 DDC control loops via DDC software menus. ■ PLC functions. Weekly and yearly programs. Battery buffered clock module. ■ DDC central unit bus for the connection of up to 99 DDC3000 central units. The DDC field bus is equipped for the connection of 63 FBM field bus modules or FBR field bus regulators. ■ DDC service cabinet bus for the connection of 16 SBM service cabinet bus modules. ■ RS232 interface for direct connection to the BMS control center or for modem connection. Manual operation feature with keyboard and illuminated LCD-display. ■ DDC engineering with flash-PROM technology. ■ Network failure safeguard longer than 10 years. ■ Direct connection: 16 DI, of which 2 pulse counters 80 Hz, 8 DO, 8 DO/DI, 16 AI, 8 AO.

■ DDC Central Unit DDC3002

With DDC field bus, with DDC service cabinet bus

Autonomous DDC central unit for regulation, optimization, control and monitoring functions. ■ Direct connection of input and output signals. ■ Four DDC control loops for heating and ventilation. ■ Expandable to seven DDC control loops via DDC software menus. ■ PLC functions. Weekly and yearly programs. Battery buffered clock module. ■ DDC central unit for the connection of up to 99 DDC3000 central units. ■ The DDC field bus is equipped for the connection of 63 FBM field bus modules or FBR field bus regulators. ■ DDC service cabinet bus for the connection of 16 SBM service cabinet bus modules. ■ RS232 interface for direct connection to the BMS control center or for modem connection. Manual operation feature with keyboard and illuminated LCD-display. ■ DDC engineering with flash-PROM technology. ■ Network failure safeguard longer than 10 years. ■ Direct connection: 16 DI, of which 2 pulse counters 80 Hz, 8 DO, 8 DO/DI, 16 AI, 8 AO.

■ DDC Central Unit DDC3300

with DDC field bus, with DDC service cabinet bus,
with DDC cassette bus

The DDC3000 Central Control Center is used for regulation, optimization, control and monitoring functions. DDC cassette bus for the additional connection of 16 DDC control loop cassettes. Connection to the BMS control center, either directly or via a modem. ■ Manual operation feature with keyboard and illuminated LCD-display. 12 DDC control loops. DDC software menus enable expansion of functions. PLC functions. Further control loops and PLC functions facilitated by DDC control loop cassettes. State-of-the-art DDC expertise with flash-PROM technology.

DDC3200



DDC3002



DDC3300



DDC3550-L



■ Technolon® DDC3550-L

Automation station with a LONWORKS bus interface via a FFT-10 transceiver. ■ Standard Network Variables via a Plug-In. ■ Up to 1,000 parameters (Standard Network Variables) can be allocated.

- With DDC fieldbus
- With DDC service cabinet bus
- With DDC central unit bus

The technolon® DDC3550-L is an autonomous DDC central unit for regulation, optimization, control and monitoring functions.

- 12 DDC control loops for heating / ventilation, expandable to 21 DDC control loops via DDC software menu preset.
- Expansion of functions via DDC software menus. ■ Extensive PLC functions as well as time programs. ■ Processing of the LONWORKS parameters takes place on a separate processor

DDC3500-BACnet



■ DDC3500-BACnet

Native BACnet automation station for up to 2000 BACnet objects ■ DDC Central and Communication Server with a multi processor architecture ■ Control panel with keyboard and illuminated LCD-display 4x20 digit

Communication Interfaces:

- DDC central bus to connect up to 99 DDC Centrals
- DDC service cabinet bus to connect up to 16 bus modules
- DDC field bus to connect up to 63 bus modules
- 10 Base-T/Ethernet interface
- V.24/RS-232 serial interface via a 9-Pol/D-Sub plug

The automation station carries out the functions of a BAAC (BACnet Advanced Application Controller) and carries out the client functions, supports the COV function (notification of value changes) and Intrinsic-Alarming (alarm and event notification)

DDC3500-EIB



■ DDC3500-EIB

Automation station with a EIB interface ■ DDC Central and Communication Server with a multi processor architecture

- Control panel with keyboard and illuminated LCD-display 4x20 digit

Communication Interfaces:

- DDC central bus to connect up to 99 DDC Centrals
- DDC service cabinet bus to connect up to 16 bus modules
- DDC field bus to connect up to 63 bus modules
- Integrated interface from the EIB/Instabus to the Kieback&Peter DDC system for 1000 data points. The interface has the task of implementing the protocols, that way data between both systems can be communicated in both directions.

DDC Central Unit Overview

		DI	DI DO	DO	AI	AO	Service Cabinet bus	Field bus	Kx- bus	EIB	BAC net	LON
	DDC3200	16	8	8	16	8	●	●				
	DDC3002	16	8	8	16	8	●	●				
	DDC3002E	16	8	8	16	8	●	●				
	DDC3300	2		2			●	●	●			
	DDC3003(B)						●	●				
	DDC3350	2		2			●	●				●
	DDC3500-EIB	2		2			●	●		●		
	DDC3500-BACnet	2		2			●	●			●	
	DDC3550-L	2		2			●	●				●

technolon[®] DDC110-L

Open Communication in Individual Room Control

The technolon[®] DDC110-L room module is a display and operating module for individual room control. Communication occurs via the LonTalk protocol. It is possible to choose between two applications: room operating device or individual room controller. The applications can be loaded into the device using commercially available network management tools (e.g. LonMaker). A Plug-In facilitates the simple configuration of the technolon[®] DDC110.

technolon[®] DDC110-L as a Room Operating Device

The foundation is the LONMARK profile #8090. The room operating device consists of a temperature sensor and keys for setpoint correction, as well as for presence and ventilator control. It serves as a remote control device for individual room controllers, for fan coils, for VVS and other controllers.

technolon[®] DDC110-L as an Individual Room Controller

The foundation is the LONMARK profile #8060. Constructed as a PID-controller for heating and cooling, it features Day, Night, Standby and Bypass modes. The setpoint correction, presence and ventilator control are all possible via the keys. Decentralized control drives and I/O modules can be controlled via the LONWORKS network using Standard Network Variables.



Manual setting of the room setpoint



Switching of three ventilation levels



Change-over to Day/Night or to Standby operation



Manual setting of the room setpoint, Switching of three ventilation levels, Change-over to Day/Night or to Standby operation

Technical Specifications

Network:	24 V AC/DC \pm 10 %, 10 mA (without I/O-modules flush-mounting UP)
Bus Connection:	LONWORKS FTT10 Bus for I/O modules flush-mounting UP via plug contact
Measurement Values:	Room temperature in living and working rooms
Measurement System:	Integrated digital room sensor
Measurement Range:	0..45°C
Connection:	Terminal chamber, max, 2.5 mm2
Display:	LCD-display - Room actual value 0..45,0°C, resolution 0.1 K - Room set value 0..45,0°C, resolution 0.1 K - Symbol display for operation types
Housing:	Plastic housing, colour RAL9010 (pure white), special colours on request
Environment temperature:	0..45°C,
Environment conditions:	Non-condensing air humidity
Protection Class:	IP30
Dimensions:	Width x Height x Depth: 82.5 x 82.5 x 30 mm
Mounting:	Wall-mounting/flush-mounting
Weight:	110 g

I/O Modules for the technolon® DDC110-L

The technolon® DDC110-L has its own I/O modules. These can be installed into commercial switch sockets (outlet sockets). Connection to the room module occurs via a flat ribbon cable. The I/O modules come as separate accessory items.

The following types are available:

Varieties	Type 1	Type 2	Type 3	Type 4
2 Thyristor switching outputs 24V-AC/1A 1 x heating, 1 x cooling	●	●		
2 outputs 0-10V 10mA 1 x heating, 1 x cooling			●	●
2 digital inputs for connection window contact/dew-point indicator and to window contact	●	●	●	●
3 relay outputs (6A 250V AC) for three-level ventilator		●		●

Supply	5 V DC, 24 V DC, 10 – 20 mA	from DCC110-L
Inputs	2 x digital inputs for connection of potentially free contacts	
Outputs	Thyristor (Ventilation)	24 V AC 1A
	Relais (fans)	250 V AC 6A
Temperature	Area temperature	-25 ... +50°C
	Surrounding temperature	0 ... +50°C

The SBM Service Cabinet Bus Module

Extensive Data Collection



SBM42

Concentrated Input and Output of Several Data points

The DDC service cabinet bus module facilitates concentrated input and output of many data points, thereby guaranteeing a highly favorable price-performance ratio. The service cabinet bus can accommodate up to 16 SBM service cabinet bus modules. A spatial distance of up to 200 m from the DDC3000 central unit is possible. The SBM service cabinet bus module comes complete with a manual operation feature that can be parameterized and that consists of a switch/key and LEDs.

SBM Manual Operation with Parametrization Feature

The DDC manual operation













feature of the SBM service cabinet bus module can be individually parameterized. Each switch/key has a position feedback. A grouping of the switches with mutual locking can be parameterized. Each LED has three status reports: off/permanent light/flashing light. Digital output signals can be parameterized to switch to digital input signals.

Flexible Extensions

The SBM service cabinet bus modules enable flexible extension of the DDC system. Depending on requirements, further digital and analog input and output signals can be connected to and processed in the DDC3000 system in a cost-efficient way. Many DDC

data points can thus be fed to the DDC3000 central unit. The SBM service cabinet bus modules are available in the tried and tested 19" plug-in system for front installation. The service cabinet bus is based on the widespread CAN bus controller. The rapid data transmission within the service cabinet bus system lies at 100 kBaud. Within an existing DDC3000 system the software and hardware compatibility enable the SBM service cabinet bus modules to be expanded step-by-step, without incurring any additional software costs. The various device types of the SBM service cabinet bus module lead to a flexible expansion of the DDC3000 systems.

Overview of the Service Bus Module (SBM)

		DI	DI DO	DO	AI	AO	Keys	LED	
	SBM20	8							
	SBM21	16	12					32	
	SBM22	16	12				8	16	
	SBM23						16		
	SBM30				21	7		7	
	SBM31				16				
	SBM41	40	24					64	
	SBM42	40		24			16	32	
	SBM43						32		
	SBM44							64	
	SBM45						16	32	
	SBM8	4	8						

The DDC Field Bus System

Savings Through Intelligent Cabling



Greatly Reduced Cabling

The intelligent DDC field bus system is based on the widespread CAN bus that is to be found in control technology applications and in the car industry. The DDC field bus system collects together individual DDC data points that are located at a great distance from the DDC3000 central unit. This leads to greatly reduced cabling compared with traditional systems.

The Flexible Way to Capture Widely Branched DDC Data points

63 FBM field bus modules can be connected to a field bus in any desired combination. The DDC field bus system bridges large distances of up to 2,000

meters, thus enabling building system data to be captured across extensive plants at a low cost.

Less Cabling = Lower Installation Costs

Even at the electrical planning stage increased convenience is achieved through the variable installation of the FBM. Digital and analog input and output signals can be processed with the FBM. Furthermore, pulse counters for logging flow volume and heat quantity can be connected. The DDC field bus system facilitates the flexible extension of the DDC system. The processing of further analog and digital inputs and outputs in the DDC3000 system is possible, if necessary. Fewer cable
















entries and input terminals are required in the service cabinet. Thus the costs associated with the service cabinet decrease.

The digital activation and deactivation signals of the FBM can be incorporated into the PLC functions of the DDC3000 central unit, used as operational and fault alarms or for logging operating times.

Local Emergency Operation Level

The FBM for incorporation into electrical distributors features an emergency operation level that allows digital and analog output signals to be directly worked with on site. Upon manual intervention, a message is sent automatically to the DDC3000 central unit.

Overview of the Field Bus Module FBM

		DI	DO	AI	AO	LED	
	FBM14	4					
	FBM14W	4					
	FBM18	8					
	FBM20	4					
	FBM21	3	1				
	FBM24		4				
	FBM24W		4				
	FBM34			4x (KP10, 0..10V)			
	FBM34W			4x (KP10, 0..10V)			
	FBM44				4		
	FBM44W				4		
	FBM01					64	
	FBK34			4x (0..10V, Ni1000, Pt100)			
	FBK36			4x (0..10V, 0-20mA, 4-20mA)			
	MC200BUS	3		2			

FSM Front Service Modules and FBM Field Bus Modules

The Direct Operating Level



FSM44



FBM45

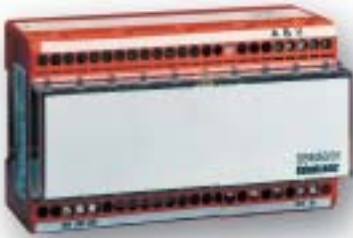
Nowadays, building automation is based largely on networks and BUS technologies. Via BUS systems, DDC automation control units are able to control decentrally installed functional units. A combination of conventional and intelligent controls ensure that targeted system functions remain in operation during disturbances to, or failure of, the communication infrastructure. Such functionalities were previously summarized under the term "emergency operating level". According to European standards this term can, however, no longer be used, as it could be potentially mistaken for the term "emergency stop". Instead, a new term has been introduced, namely "direct operating level". The direct operating element at this level facilitates manual command entry, direct display, as well as fixed

display, measurement, switching and regulating functions. It is thus possible to operate, to a limited extent, the technical building facilities, irrespective of any defaults set at the automation or management levels. It is precisely for carrying out this task that Kieback&Peter developed the FSM front service modules. They are designed not only for optimal incorporation into the Kieback&Peter DDC system, but also for implementation independent of the DDC system. Depending on the model, the FSM modules enable analog variables, three-point or multi-level outputs to be operated with priority. Manual intervention, irrespective of any automation system defaults, is thereby possible. The new field bus modules were especially designed for the FSM modules, the two being connected

via a four-wire connection. The four-wire connection is completely independent of the field bus. This guarantees a defined level of functionality, as well as autonomous operation at the front service modules, even in the case of field bus failure, e.g. due to mechanical damage of the lines. Switches, light-emitting diodes and rotary encoders on the front service modules are laid out ergonomically and practically. The front panels can be labeled according to the customer's wishes. By means of light-emitting diodes (LED), input and output signals are displayed directly on the front service module. In combination with Kieback&Peter products, such as the MD200Y actuator, reports from the actuator can be shown directly on the front service module, without the need for additional cabling.

Open Communication With a Wide Choice of Interfaces

Type



	Manufacturer	Comments
SBM50/01	Grundfos	Pumps via Genibus
SBM50/02	Wilo, KSB	Single or double pumps of PLR connections
SBM50/03	Viessmann	Viessmann Dekamatik
SBM50/04	M-Bus to DIN EN 1434-3	max. 8 meters via M-Bus
SBM51/04	M-Bus to DIN EN 1434-3	max. 32 meters via M-Bus
SBM52/04	M-Bus to DIN EN 1434-3	max. 99 meters via M-Bus
SBM50/05	Berg-network monitoring	
SBM50/06	Danfoss	Frequency converter VLT 6000
SBM51/07	Buderus	Boiler ECOMATIC 4000
SBM50/09	Vectron	Frequency converter VCB 400
SBM50/11	Lenze	Frequency converter 8200 vector, 8200 motec
SBM52/12	Trox	AS-i fire protection components
SBM51/13	Gossen Metrawatt	Energy monitoring modules A2000
SBM51/15	Belimo	MP-Bus for drives
SBM51/16	Sontx	Heat quantity meters (series Supercal 432)

It is frequently desired and necessary within the area of building automation to conveniently combine the visualization and operation of different devices and systems. In cases where other system manufacturers have made their protocol open to view, Kieback&Peter has created a whole series of interfaces. This

enables fire alarm systems, access control systems, and personnel call systems, to name but a few, to be incorporated into the whole concept. And the number of possibilities is growing continually. At the field level, Kieback&Peter integrate protocols via the SBM50 service cabinet bus module (for mounting within a service cabinet on DIN mounting rails). Here it

is possible to decentrally connect multi-vendor heat quantity meters, for example, or pump systems, frequency converters and boilers. Kieback&Peter is continuously developing new connections in order to offer the user the highest level of flexibility possible. Just ask us!

The FBR Regulator System

The New Dimension in Room Management



The FBR field bus regulators with connection to the CAN bus are components of the DDC3000 system. FBR field bus regulators are implemented within the area of individual room control. No matter if it is under-floor or radiator heating that is required, or variable volume flow systems, induction devices, ventilator convectors, or chilled ceilings, the FBR field bus regulators offer extensive implementation possibilities just about everywhere. Within the DDC3000 field bus system, it is possible to install the FBR field bus regulators in any combination with the FBM field bus modules. The combination of the FBR field bus regulators and the FBM field bus modules allows any number of functions, such as regulation,

light control, blind control, fire protection messages or heat quantity metering, to occur via the DDC field bus system.

Independent Regulation Function of the Field Bus Regulator.

Up to 63 FBR field bus regulators can be connected via the field bus to a DDC3000 central unit, either to the DDC3002, DDC3200, DDC3300 or the DDC3003. The DDC field bus system bridges great distances of up to 2,000 meters. The autonomous regulation function of the field bus regulator results in increased system security. The intrinsic program guarantees that the regulation function will continue to work even when the field bus connection to the DDC3000 central unit is interrupted.

DDC3000 Central Unit with Complete FBR Operation

All parameters are called up by the DDC3000 central unit at the manual operation level using a keyboard and lit LCD-display. Customer-specific plaintext can be allocated to each parameter. The basic regulation functions of the FBR can be extended with DDC software menus to include optimization, set-point glide, limit monitoring, min.-max. average value selection, system messaging, and change-over operation. An individual weekly program is available to every field bus regulator. The yearly programs are allocated to the regulators. Thanks to the P90 system interface, a BMS control center can be connected directly to the DDC3000 control unit.

Building Blocks of FBR Room Automation

Room Operating Devices with BUS Connection

Various room operating devices are available for using the FBR regulator, depending on the type and quantity of the incorporated devices and on the wishes of the customer. The data can be transmitted via a field bus to the corresponding field bus regulators and processed within the whole DDC3000 digital control system.

■ The Universal Operating Device DDC130 Room Module

The extensive software menus facilitate adaptation to all room-specific demands. The manual operating device is dialog-led and simple to use. It consists of a graphical display, two keys and a one-button operation that has already enjoyed outstanding resonance in combination with other Kieback&Peter products. Alongside the room sensor (with an integrated trend function) is a binary input that can be freely used. Altering control parameters, activating the peripheral systems, or changing weekly control programs, are made possible in a clear and intuitive way.

■ With LCD-Display and Keyboard DDC110S Room Module

This device for logging room temperature has four function keys for set-point correction and timer functions. It also has an additional input for connection to a window-contact or presence detector.

■ With LCD-Display and Keyboard DDC110-3 Room Module

This device for logging room temperature has four function keys that mutually actuate each other, e.g. for controlling a ventilator. The set-point value can be altered using the attractive ellipsoidal multi-function keys. This module, too, has an additional input for connection to a window-contact or presence detector.

DDC130



DDC110S



DDC110-3



Technical Specifications for the Field Bus Regulator FBM

Flexible Adaption Possibilities

User demands on room infrastructure are very diverse. The controller needs to be equipped to carry out everything from the simplest heating regulation tasks on the basis of shift programs, right up to extensive automation of all technical processes. Data of various kinds needs to be captured and processed. The possibility to control actuators from the HVAC area, as well as for lighting and blinds, for example, needs to be available.

By offering a range of controllers with cascading switching possibilities and features, Kieback&Peter has the ability to adapt to differing customer needs. By coupling the controllers with other field bus modules, a flexible expansion of the features offered is possible.

The easy-to-change system configuration enables the functionality of the controller to be adapted quickly and simply to changes in usage as they arise in future running operation.

FBR1



■ FBR1

Individual room controller with integrated room sensor. Triac-output, pulse-controlled for thermo drives.

BI Binary Inputs: 1
BO Binary Outputs: 1 x 24 V AC, 630 mA Triac

FBR2



■ FBR2

Individual room controller with integrated sensor and set-point correction adjuster. Set-point correction -3,5..3,5°C. Triac-output, pulse-controlled for thermo drives.

BI Binary Inputs: 1
BO Binary Outputs: 1 x 24 V AC, 630 mA Triac

FBR3



■ FBR3

Individual room controller with connection for a sensor and set-point adjuster. Inputs for window-contact, extension of usage time, or switching to day/night operation mode. 1 transistor output for LED status message. 1 potential-free relay output change-over contact. Analog outputs for heating, cooling 0..10 V

BI Binary Inputs: 3
BO Binary Outputs: 1 relay 230 V/6(3) A change-over contact
AI Analog Inputs: 2 1 x KP 10/1 x 0..10 KΩ
AO Analog Outputs: 2 0..10 V DC

■ FBR4

Individual room controller with connection for a room sensor and set-point adjuster. Inputs for window-contact, extension of usage time, or switching to day/night operation mode.

1 transistor output for LED status report.

1 BO potential-free relay output change-over contact.

Triac-outputs, three-point for heating/cooling, can be switched to two-point outputs.

BI Binary Inputs:	3
AI Analog Inputs:	2 1 x KP 10/1 x 0..10 KΩ
BO 2/3-point:	4 Triac 24 V AC, Y1, also pulse/pause
BO Binary Outputs:	1 relay 230V/6(3) A change-over contact

■ FBR5

Individual room and ventilation controller. Analog inputs for room temperature, supply air temperature, remote adjuster, various sensors. Inputs for window-contact, extension of usage time, or switching to day/night operation mode.

Potential-free relay output switcher.

Analog outputs for heating, cooling 0..10 V.

BI Binary Inputs:	4
BO Binary Outputs:	3 relay 230 V/6(3) A change-over contacts
AI Analog Inputs:	5 2 x KP 10/0..10 V, 2 x KP 10, 1 x 0..10kOhm
AO Analog Outputs:	4 0..10 V DC

■ FBR6

Individual room and ventilation controller. Analog inputs for room temperature, supply air temperature, remote adjuster, various sensors. Inputs for window-contact, extension of usage time, or switching from day/night operation mode.

Potential-free relay outputs, change-over contact outputs three-point for heating/cooling, can be switched to two-point output (Triac), pulse operation possible.

BI Binary Inputs:	4
AI Analog Inputs:	5 2 x KP 10/0..10 V, 2 x KP 10, 1 x 0..10
BO Binary Outputs:	3 relay 230 V/6(3) A change-over contacts
BO 2/3 point Triac:	2 24 V AC, 630 mA

FBR4



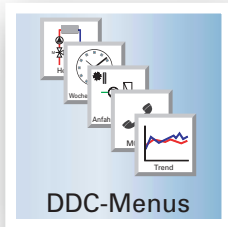
FBR5



FBR6



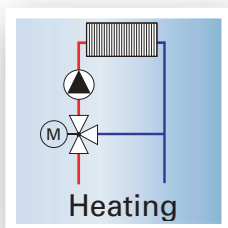
Selected DDC Menus



■ Freely Selectable DDC Software Menus

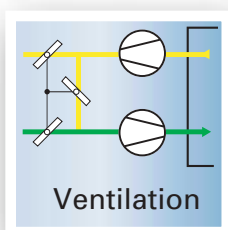
The software within the DDC system is structured in a menu-oriented way and stored in the DDC3000 central units and DDC control loop cassettes. The DDC software menus can be parameterized and are constructed in an application-specific manner. In combination with freely programmable DDC control functions (PLC) and with the associated possibilities offered by logical links, the software menus are in a position to cover the demands placed by the entire instrumentation and control systems technology. The DDC software menus of the DDC3000 central units can be set multiple times. Via a digital source it is possible to switch the DDC menus into active or passive mode.

The DDC software menus are parameterized and the PLC control functions with logical links are freely programmed. Programming languages for the system are not necessary.



■ Basic Program "Heating"

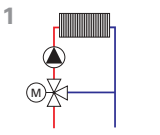
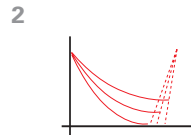
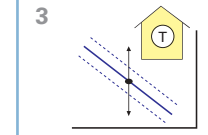
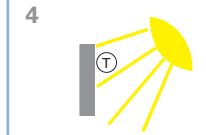

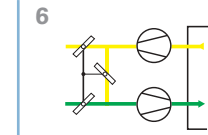
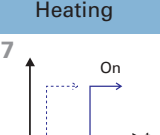
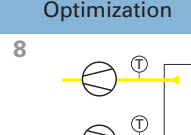
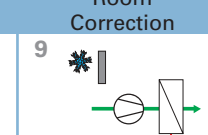
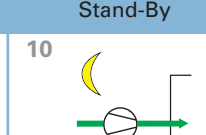

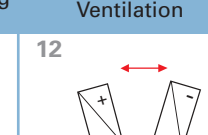
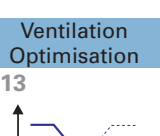
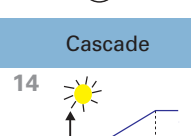
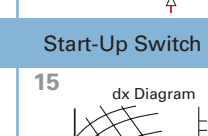
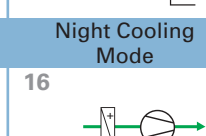

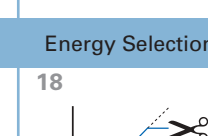
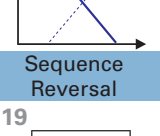
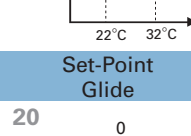
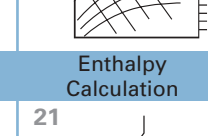
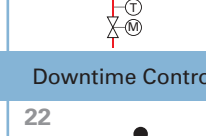
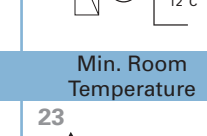
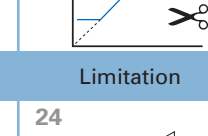
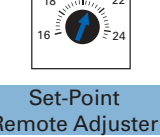
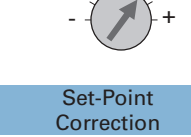
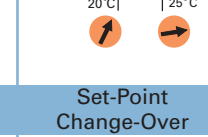
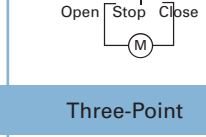
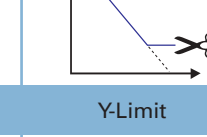

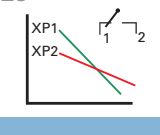
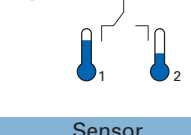
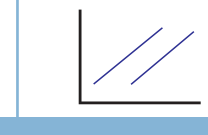
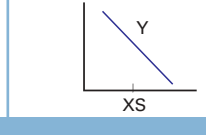

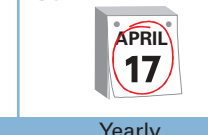
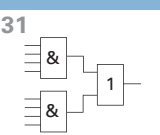

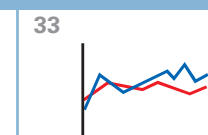
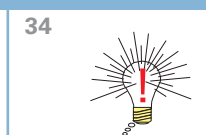

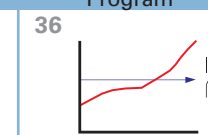
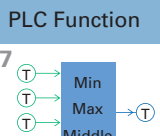
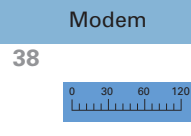
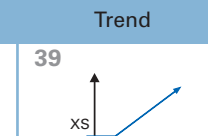
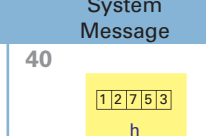
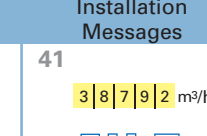
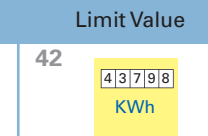
The DDC basic program "Heating" is a weather-based inlet temperature control device with a continuous Y-output. The management of the inlet set-point occurs according to the delayed outside temperature or the actual outside temperature. The inlet set-point is calculated according to the programmed heating characteristic curve. This set-point can be altered via DDC software menus (e.g. set-point change-over). Furthermore, minimum and maximum limits can be programmed for the inlet temperature. A weekly and a yearly program can be assigned to the heating control loop. The Y-output calculated by the basic program can be overwritten either manually or via the DDC software menus (e.g. Y-Set). DDC software menus also enable additional functions, such as "stand-by," "pump anti-plugging protection," "frost protection," etc., to influence the control function within the basic program "Heating".



■ Basic Program "Ventilation"

The DDC basic program "Ventilation" offers up to four continuous Y-outputs for the DDC control loop. The calculation of the Y-outputs occurs when the DDC control loop is in the "Regulation" operating mode. The DDC set-point desired for the regulation is programmed within the DDC basic program "Ventilation". This set-point can be changed or overwritten via various DDC software menus (e.g. set-point management, set-point change-over). A minimum and maximum limit can be parameterized for each Y-output (e.g. minimum outside air rate). The values for the Y-outputs, calculated by the DDC basic program "Ventilation", can be overwritten either manually or via the DDC software menus. Various sequences of the individual Y-outputs can be set via DDC parameters. Dead bands between the Y-outputs can be established.

Overview of the DDC Menus

1 	2 	3 	4 	5 	6 
Heating	Optimization	Room Correction	Stand-By	Pump anti-plugging protection	Ventilation
7 	8 	9 	10 	11 	12 
Ventilation Optimisation	Cascade	Start-Up Switch	Night Cooling Mode	Continuous Frost Protection	Energy Selection
13 	14 	15 	16 	17 	18 
Sequence Reversal	Set-Point Glide	Enthalpy Calculation	Downtime Control	Min. Room Temperature	Limitation
19 	20 	21 	22 	23 	24 
Set-Point Remote Adjuster	Set-Point Correction	Set-Point Change-Over	Three-Point	Y-Limit	Y-Set
25 	26 	27 	28 	29 	30 
XP Change-Over	Sensor Change-Over	Sequence	Fixed Value	Weekly Program	Yearly Program
31 	32 	33 	34 	35 	36 
PLC Function	Modem	Trend	System Message	Installation Messages	Limit Value
37 	38 	39 	40 	41 	42 
Min. Max. Mean	Scaling	Time lapse	Operating Time	Pulse Counting	Heat Quantity Metering
43 	44 	45 	46 	47 	48 
Arithmetic	Binary Evaluation	Ring Counter	Table Function	Energy Management	Maximum Load Limitation

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