

> COMFORTE CX2 VAV BASE MODULE

Comforte line



Characteristics

- part of the Comforte line
- compact
- modular construction
- integrated climate control, lighting and sunblind control
- flexibility
- programming, configuration and maintenance using Top Control
- efficient installation
- Roombus interface

Part of the Comforte line

The Comforte VAV is part of the Comforte line.

Compact

The Comforte VAV is a compact, multi-functional and modular room control unit that is specifically intended for working areas and accommodation in for example, office buildings, education institutions, care establishments or hotels. The Comforte VAV maintains an environment in each individual room that offers maximum comfort for working or other activities.

Modular construction

The Comforte VAV comprises three components: a base module with integrated pressure difference sensor with automatic zero-point correction, a damper servomotor and a power supply module for connection to 230 VAC. Thanks to the modular construction, the damper servomotor and/or power supply module can be linked on both the left or the right and connected to the base module using the standard plug.

Integrated climate control, lighting and sun protection

In addition to heating, cooling and ventilation, the Comforte line can also control lighting and sun blinds. This level of control integration offers greater individual comfort, reduced energy consumption and lower installation costs. Controlling the climate, heating and sun blinds requires only a single operating unit: the Comset CX. This enhances user-friendliness, is more attractive in terms of appearance and reduces installation effort and materials.

100% Priva Top Control

The automatic control and operating software for the Comforte line is programmed, configured and maintained using Priva Top Control, the complete software family for intelligent building control, in which applications work closely together with each other and with the Priva Blue ID controllers. The entire building can be effectively automated and managed from an integrated environment. Top Control is based on an extensive range of freely configurable control modules and a powerful and flexible graphical programming environment. Compiling and programming the automatic control software automatically creates the basis for the various operational modes. This results in highly maintainable systems, which can be tendered out with relative ease: the user's guarantee of controlled costs during the entire service life of the equipment. Priva hardware and software offers greater freedom and security.

Roombus interface

The Comforte CX2(E) and Comforte CX2 VAV are equipped with a Roombus interface. The Roombus interface is an interface for communicating with and supplying power to Priva Roombus devices. Examples of Priva Roombus devices include smart sensors, actuators and control terminals. The Roombus interface is Priva's own implementation of the Modbus interface.

Operation

The Comforte CX2(E) and Comforte CX2 VAV offer various control units. The user can easily control the climate in the room or zone using a single control unit. The control unit allows the user to read information or control the equipment for, for instance, heating or ventilation that controls the climate.

The Comforte CX2(E) and Comforte CX2 VAV support the following control units:

- Touchpoint One
- Touchpoint One Hotel
- Touchpoint Nano
- Comset CX

All of these control units are available in various designs. This allows the most suitable control unit to be selected for each room, zone or application.

Standard switchgear

If required, standard switchgear can be used to operate the Comforte line. A light switch for example. The switchgear needs only be connected to the digital and universal inputs of the Comforte line for this.

Efficient installation

The Comforte is suitable for mounting on a DIN rail or on a back plate. All modules are dimensioned to DIN 43880 and are a full number of standard units of measure wide. All connectors are freely accessible. The housing is equipped with integral eyes that can be used to fasten cable trusses in place using tie-wraps.

Modules with GST18 connectors are available for connecting low-voltage power supplies and controls. They can be installed quickly and prefabricated. These features make installing the Comforte in the area above the suspended ceiling a quick and convenient process. Moreover, as GST18 connectors are common to almost all electrical systems, a wide range of pre-assembled installation materials can be used. The intrinsic safety of the GST18 connector design obviates the need for an additional housing for the Comforte. At the same time, the GST18 connector acts as a local isolator and strain relief device, meaning that savings can be made in installation time and components. All Comforte modules can be supplied with spring clamps for specific applications. The Comforte CX2E base module and the power supply modules are also available with a pluggable terminal block.

There is no need to fit extra terminal strips when installing the Comforte CX, as an adequate number of terminals are provided for each individual input and output; common terminals are not used. Each I/O module has its own three-pin connection for the 230 VAC supply voltage. This means that the outputs of different Comforte modules can be fed via separate electrical groups.

Comforte VAV range

Name	Description
Comforte CX VAV Base Module	module with processor, memory, communication and I/O on the main circuit board
Comforte CX2 VAV Base Module	
Comforte CX VAV power supply module PS230-30 (GST/SC)	module for 24 VAC power supply to base module, actuator and any I/O modules and sensors
Roombus power supply module PS230-30-15RE (GST/terminal block)	module for: <ul style="list-style-type: none"> • 24 VAC power supply to base module, I/O modules and any sensors and actuators • 24 VDC power supply and neutral point connection of Roombus devices
Comforte CX VAV Actuator AC-5	module for opening/closing damper
Comset CX	Operating unit



You can connect the I/O modules from the Comforte to the Comforte VAV Base Module.

General specifications Comforte VAV-line

Housing	
Material	plastic
Colour	light grey / dark grey
IEC protection class	I (basic insulation with earth cable)
IP code	IP20 (NEN-EN-IEC 60529)
Flammability	V0
Recycle code	7
Installation	on air duct using 2x M3x30 self-tapping screws in an enclosed switch box, distribution box, above a suspended ceiling or in a public space

Environment	
Permitted ambient temperature during normal operation	0 – 45 °C
Permitted temperature during transport and storage	-20 – 70 °C
Permitted relative ambient humidity	80 % at T ≤ 30 °C, decreasing linearly to 50 % at T = 40 °C (non condensing)
Maximum installation height	2000 metres above sea level
Installation category	II
Permitted ambient pollution	pollution degree 2

Legislation and standards	
EC Declaration of Conformity	<p>The Comforte VAV is in accordance with the following directives and associated standards and normative documents.</p> <p>Low voltage directive 2006/95/EC:</p> <ul style="list-style-type: none"> • EN 61010-1 (2001) • EN 60950-1 (2006) <p>EMC directive 2004/108/EC:</p> <ul style="list-style-type: none"> • Emission: EN 61000-6-3 (2007) • Emission: EN 61000-3-2 (2006) • Emission: EN 61000-3-3 (1995) + A1 (2001) + A2 (2005) • Immunity: EN 61000-6-2 (2005) • WEEE directive 2012/19/EU • RoHS directive 2011/65/EU <p>A copy of the EC Declaration of Conformity is available via the Priva Support Portal: https://support.priva.nl (for registered partners only).</p>

I/O connections	
Type of connector (module dependent)	spring clamps or plug-in GST18 connector

Spring clamps	
Permitted cable cross section for use with spring clamps	0.5 to 2.5 mm ² (single core or flexible) 0.25 to 1.5 mm ² (flexible with ferrule connector to DIN 46228/1)

Roombus interface communication	
Protocol	Modbus RTU
Communication type	RS485
Baud rate	115k2 bps
Maximum total number of Roombus devices in one Roombus	10
Maximum number of Roombus devices of the same type in one Roombus	Multisensor MS4R: 8 DALI-S2R converter: 3 Other Roombus devices: 1
Data format	Data bits: 8 Parity: Even Stop bits: 1
Permitted network topology	bus or star network
Cable type	twisted pair, with 8 cores in accordance with TIA/EIA 568B
Type of connector	screened RJ45 8-8 V+: 1.5 0: 2,4,7,8 A: 3 B: 6
Maximum total cable length	100 m
Maximum cable length from Roombus devices to power supply	25 m
Maximum cable length between the two outermost Roombus devices	50 m
Maximum cable length between the end of the Roombus cable and the Roombus Termination Module	5 m
Maximum cable capacitance	< 50 pF/m
Cross section	0.2 ... 0.3 mm ² (24 ... 22 AWG)

Base module specifications

General		
Article	Comforte CX VAV Base Module	Comforte CX2 VAV Base Module
Article number	400331	400333
Dimensions	159 x 158.3 x 70 (WxHxD in mm)	
Weight	426 grams	
Indication	Green function LED indicates that the module is working correctly (LED1). Red error indication LED signals power supply connection problem (LED2).	

Power supply	
Supply voltage	24 VAC ±25 %
Required mains frequency	50 Hz / 60 Hz
Power supply connector type	4-pin connector
Earth wire cross section	2.5 mm ²
Maximum fuse value for external fuses (applies if the Comforte CX VAV PS230-30 power supply module is not used)	3.15 A(T) (in accordance with EN 60127-2 page III)
Maximum used power - base module*	5.8 VA
Maximum used power - base module including Comset CX, I/O modules and Roombus*	17 VA
Supply voltage for Comset CX, I/O modules and Roombus	16 V (-10%/+5%)
Available supply current for Comset CX, I/O modules and Roombus	310 mA

* Excluding the load on the DOC and 24~ terminals and the actuator AC-5.

Communication with Comforte I/O modules		
Maximum no. of I/O modules per base module	Total: Fan module RO1-3: Lighting module RO2-1L or RO2-1L NC: Sunblind module RO2-2 or RO2-2 DC: TRIAC output module SO4-1: Analogue output module AO2-1:	5 I/O modules * 1 3 2 1 2
Type of connector used for the connection between the base and I/O modules and from I/O module to I/O module	RJ45	
Maximum cable length between base and I/O modules and from I/O module to I/O module	100 cm (cable is included)	
Maximum cable length from I/O module to I/O module	15 cm (cable is included)	

* When 2 Sunblind modules are used a total of 4 I/O modules applies.

Communication with the operating unit	
Maximum number of Comset CX operating units	1
Type of connector	RJ45 8-8 or RJ45 8-6
Cable type	unshielded, with 6 or 8 cores (e.g. UTP)
Maximum cable length	25 m

Communication	
Protocol	BACnet MS/TP
Network designation	BACnet
Driver required (per RS485 port)	Priva Blue ID Comforte CX data network driver *
Article number	508411
Communication type	RS485
Baud rate	38k4 bps
Maximum number of Comforte VAV control units per S10 controller	75
Maximum number of Comforte VAV control units per C4 controller	75

*) Only suitable for the Comforte, i.e. not suitable for other BACnet devices.

Communication		
Permitted network topology	Bus network	
Required cable type	Twisted pair	CAT5e UTP CAT5e FTP*
Maximum cable length between the 2 outermost BACnet connections	-	-
Maximum total cable length	400 m	1000 m
Maximum cable capacitance	100 pF/m	-
Minimum core cross section	0.2 mm ²	-
Termination	None	None
No. of cores used	2: the system meets the requirements of EN 61000-6-1 3 (the Comforte CX is connected to the electrical earth via the communication cable): the system meets the requirements of EN 61000-6-2 (industrial standard)	

* The installation meets the requirements of EN 61000-6-2 (industrial standard)

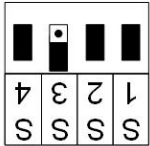
Reaction time	
Reaction time – Comset CX to Comforte	On average within 0.3 seconds
Reaction time – Comforte to another Comforte in the same BACnet	On average within 0.7 seconds*
Reaction time – Comforte to controller via BACnet	On average within 0.5 seconds*
Reaction time – controller to controller via BACnet	On average within 0.5 seconds*

* The reaction times indicated are based on data network loads during normal operation and do not apply during commissioning or during data collection when data transfer takes place. The reaction time for processing within the controller depends on the load such as software and serial communication. This reaction time can be determined by practical tests.

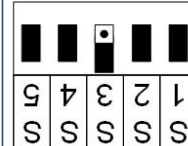
Pressure difference sensor	
Measurement range default setting	0 – 200 Pa
Measurement ranges (see jumper settings)	0 ... 1000 Pa
	0 ... 500 Pa
	0 ... 200 Pa (default setting)
	0 ... 100 Pa
Measurement characteristic in TC Engineer	SP-A95
Accuracy	+/- (1 Pa + 1 % of the measurement)
Temperature drift	< 0.1 % / K
Operating temperature	0 ... 45°C
Static overpressure	maximum 25 kPa
Zero-point calibration	automatic
Time constant (damping) (see jumper settings)	2s or 8s

Jumper settings

Jumpers on Comforte CX2 VAV (type PEL-PRI V3):



Jumpers on Comforte CX VAV (type SP-A95 & SP-A-00-PRI):



• Delay

8 s (default setting)

S1: set

2 s

S1: not set

• Measurement range

0 ... 1000 Pa

S2: set; S3: set; S4: set

0 ... 500 Pa

S2: not set; S3: set; S4: set

0 ... 200 Pa (default setting)

S2: set; S3: not set; S4: set

0 ... 100 Pa

S2: not set; S3: not set; S4: set

• Output signal

You do not need to set jumper 5 for type SP-A-00-PRI. Type PEL-PRI V3 does not have a jumper 5.

0 – 10 VDC (default setting)

S5: set

4 – 20 mA

S5: not set

Digital inputs specifications

Digital inputs	
Number	3
Connector type	spring clamps
Application	voltage-free contact to GND open collector output the digital inputs are not suitable for measuring AC signals
Configuration option	the digital inputs can be inverted in TC Engineer (software setting)
Internal pull-up resistor	10 kOhm
Nominal voltage on input without load	5 V
Minimum input voltage with open contact	3.4 V
Maximum input voltage with closed contact	1.6 V
Minimum resistance of the connected contact (including wires for the connection) with open contact	20 kOhm
Maximum resistance of the connected contact (including wires for the connection) with closed contact	5 kOhm
Nominal sampling time	8 ms
Protection	± 50 V

Specifications for universal inputs

Universal input analogue used	
Number	maximum 1 (Comforte CX VAV) maximum 3 (Comforte CX2 VAV) per input, choice of analogue or digital
Connector type	spring clamps
(UI1) Configurable measurement type	voltage via definable characteristic Belparts SP-A94, SP-A95 Betec NTC 10K DIN 43760 NI1000 temperature sensor ECS Versatemp IBK Honeywell 20 kOhm range Priva temperature sensor 50K Priva temperature sensor 3K PT1000 Sauter EGT335 potentiometer Siemens LG-NI1000 temperature sensor Siemens QAA25 potentiometer Siemens QAA27 potentiometer Staefa F-T1 Thermokon TK5000 NI1000 temperature sensor Linear potentiometer for temperature setting (twin wire connected via 0 and wiper), 1 or 10 kOhm, relative range (-3 to 3 °C) or absolute range (10 to 30 °C) Adjustable offset for the measurement result.
(UI2) Configurable pressure measurement type	SP-A95 (0 – 100 Pa) SP-A95 (0 – 200 Pa) SP-A95 (0 – 500 Pa) SP-A95 (0 – 1000 Pa)
Maximum input current leakage (0 to 5 V)	±20 nA
Maximum input current leakage (5 to 10 V)	± 20 nA + ((U _{ui} - 5)/5 mA)
Measurement range	0 to 10 VDC
Resolution	250 µV
Accuracy of voltage measurement (0 to 5 V)	± (2 mV + 0.5 % of measurement)
Accuracy of voltage measurement (5 to 10 V)	± (2 mV + 0.6 % of measurement)
Accuracy of resistance measurement (0 to 5 V)	± 2 mV
Maximum input voltage	-50 – +50 V
24~ power supply connection for active sensors	same as supply voltage

Universal inputs for digital use	
Number of universal inputs	maximum 1 (Comforte CX VAV) maximum 3 (Comforte CX2 VAV) per input, choice of analogue or digital
Connector type	spring clamps
Application	voltage-free contact to GND
Configuration option	the digital inputs can be inverted in TC Engineer (software setting)
Minimum open contact resistance	20 kOhm
Maximum closed contact resistance	5 kOhm
Maximum sample time	300 ms

Specifications for analogue outputs

Analogue output	
Number	1
Connector type	Spring clamps
Control range	0 -10 Vdc
Maximum load current per output	4 mA
Minimum load impedance	2.5 kOhm
Resolution	1 mV
Accuracy	±(20 mV +0.5% of the control)
Protection	Against short-circuit to GND Against connecting to voltage up to 30 Vac
Output characteristics	logarithmic light characteristic 0% - 100% = 0.0 - 10.0 V 0% - 100% = 10.0 - 0.0 V 0% - 1% - 100% = 0.0 - 2.0 - 10.0 V 0% - 99% - 100% = 10.0 - 1.8 - 0.0 V 0% - 100% = 2.0 - 10.0 V 0% - 100% = 10.0 - 2.0 V 0% - 1% - 99% - 100% = 0.0 - 5.0 - 7.5 - 10.0 V 0% - 1% - 99% - 100% = 10.0 - 7.5 - 5.0 - 0.0 V 0% - 100% = 1.0 - 10.0 V 0% - 0.01% - 100% = 0 - 1.0 - 10.0 V
Power supply connection 24~ for actuators	Equal to supply voltage

Specifications for digital outputs

Digital outputs	
Number	3
Connector type	spring clamps
Output type	solid-state
Configuration option	the digital outputs can be inverted in TC Engineer (software setting)
Switching voltage on DOC terminal	same as supply voltage
Maximum load current per output (continuous)	0.5 A
Maximum load current load per output (during 2 minutes)	0.8 A
Overload protection	In the event of an overload, the outputs are switched off and disabled. This lock can be lifted in TC Engineer.
Maximum current overload safety (per 3 outputs)	2.5 to 4 A

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Your Priva partner:

See www.priva.com for contact information of a Priva office or partner for your region.

