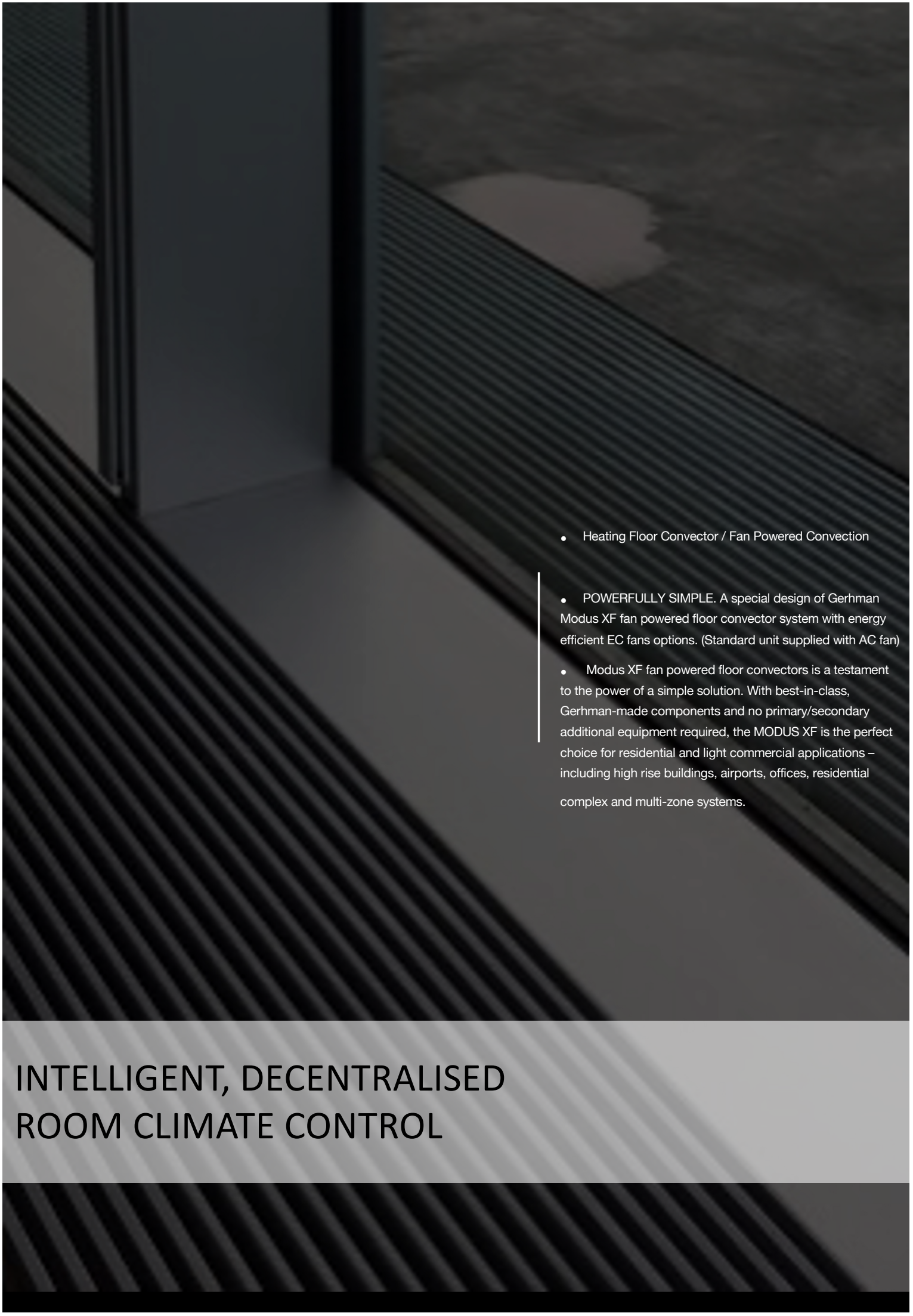
GERHMAN

Trench Technology

MODUS XF

Fan Powered Floor Convector

EN EURONORM 442



- Heating Floor Convector / Fan Powered Convection

- POWERFULLY SIMPLE. A special design of Gerhman Modus XF fan powered floor convector system with energy efficient EC fans options. (Standard unit supplied with AC fan)

- Modus XF fan powered floor convectors is a testament to the power of a simple solution. With best-in-class, Gerhman-made components and no primary/secondary additional equipment required, the MODUS XF is the perfect choice for residential and light commercial applications – including high rise buildings, airports, offices, residential complex and multi-zone systems.

INTELLIGENT, DECENTRALISED ROOM CLIMATE CONTROL

Trench Technology

MODUS XF

POWERFULLY SIMPLE. The Modus XF, floor convector is a testament to the power of a simple solution. With best-in-class, Gerhman-made components and no additional primary/secondary equipment required, the Modus is the perfect choice for residential and light commercial applications – including high rise buildings, airports, residential applications, offices and multi-zone systems

- **Decentralized climate** concepts differ from centralized systems because they are planned and installed 'room by room'. The space to be ventilated can be extended to several rooms by taking clever additional measures.

There are many reasons for using decentralized climate systems:

•Protection and conservation of the building fabric
•Assistance in eliminating moisture damage
•Domestic ventilation according to DIN1946-6 in the living area and the basement in order to achieve a good air quality
•Preservation of a constant climate to protect the valuables in museums and archives
•and many more

Energy-efficient solution

A much more energy-efficient and reliable solution is an intelligent indoor climate control system.

A higher level of efficiency is achieved with energy efficient EC tangential fans with noise-optimized commutation electronics, resulting in energy- savings of up to 60% compared with conventional fans!

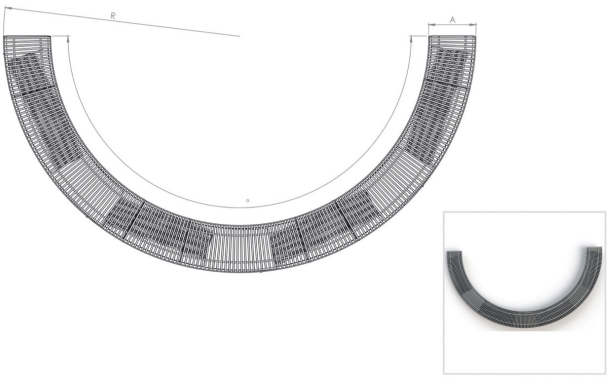
Flow-optimized barrel impellers ensure quiet operation and guarantee that air flows through the coil along its entire length.

ectechnology

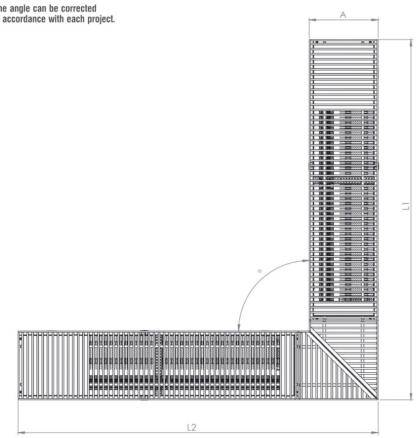
EURONORM EN 442

MITRED CORNERS

CURVED TRENCH TECHNOLOGY

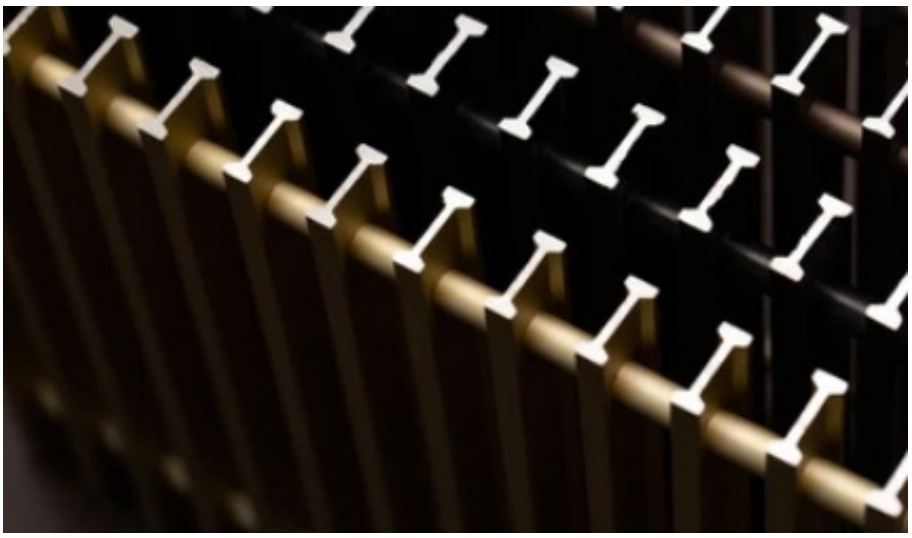


The angle can be corrected in accordance with each project.



GRILLS

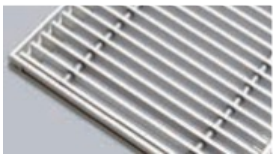
MODUS



ALUMINIUM GRILLS

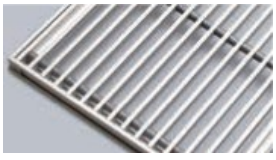
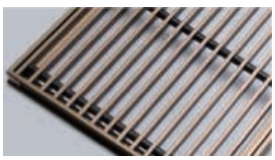
ROLL-UP GRILLS

The spacing between spring loaded transverse lamellas of aluminium alloy is delimitated by residual rollers made of cured plastic. The lamellas have anodized and tinted surface. Any RAL shade may be reached by powder colour coating.



LINEAR GRILLS

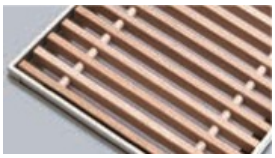
Lengthwise perforated aluminium lamellas are linked by carrying steel bar. Residual rollers of cured plastic delimitate the spacing.

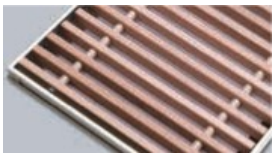




WOODEN GRILLS

ROLL-UP GRILLS

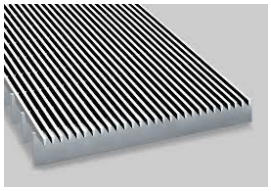
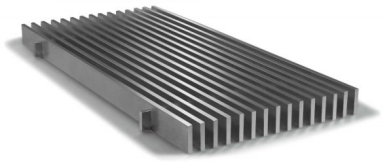
The spacing between spring loaded oak or beech lamellas is delimitated by residual rollers made of cured plastic. The surface is raw or stained.



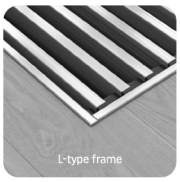


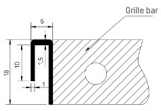
STAINLESS STEEL GRILLS

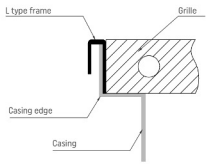
Stainless steel rectangular profiles are linked by steel drawbars. The spacing of lamellas is delimitated by residual metal rollers. A fix non-rolling grill.

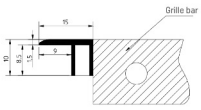




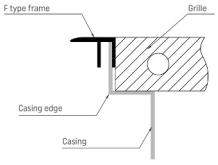
FRAMES











Information on design

MODUS XF are suitable for use in all kinds of buildings.

They are generally positioned directly in front of the external facade without a large gap. MODUS XF can provide cost-effective heating, particularly in front of large areas of glazing.

Heat performance
The heat outputs were calculated based on EN442-2

Outlet
MODUS XF are positioned with output on the façade side. If it is arranged on the room side, the high air output would result in lower levels of comfort in the occupied zone.

Sound Level
When designing a system, it should be noted that disruptive noise may occur at higher fan speeds. The respective sound power levels of MODUS XF are indicated in the tables (see "Technical data"). The sound pressure levels were calculated with an assumed room insulation of 8 dB(A). This corresponds to a distance of 2m, a room volume of 100m3 and a reverberation time of 0.5 s (in accordance with VDI 2081).

Modus:
Heating from the floor with 2 pipe system units.

Product data

MODUS XF 31 / 32 / 33

- Fan powered floor convectors
- AC tangential fan in standard
- Energy-saving EC tangential fan with flow-optimised impellers optional
- Range up to 12 kW
- They are distinguished for their silent operation.
- Extensive range of control accessories
- Roll-up and linear grilles with colour-coordinated spacers
- Sound-decoupled fixing of the tangential fan, easy removal without tools

Performance data

Heat output (W)[1]	226 -12434
Sound pressure level (db (A))[2]	20-48
Sound power level (db (A))[2]	28-57

1.) at LPHW 90/70 °C, tL1 = 20 °C
2) The sound pressure levels were calculated with an assumed room insulation of 8 dB(A). This corresponds to a distance of 2 m, a room volume of 100 m3 and a reverberation time of 0.5 s (in accordance with VDI 2081)

Operating limits

` Max. operating pressure: 12 bar

` Max. entering water temperature: 120 °C ` Min. entering water temperature: 5 °C ` Inlet air temperature: 40 °C

` Max. glycol volume: 50 %

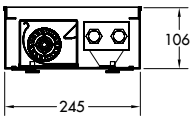
Quick selection

	Model	Heat output (W)	Height (mm)	Width (mm)	Length (mm)
Mono Unit	Modus XF 31.106	1636	106	213	1250
	Modus XF 32.106	2070	**106**	245	1250
	Modus XF 33.106	2569	**106**	338	1250

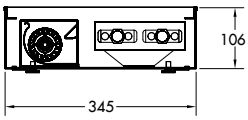
1) at LPHW 90/70 °C, tL1 = 20 °C,
2) 100% fan capacity

Technical drawing

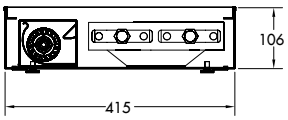
Modus XF 31.106



Modus XF 32.106



Modus XF 33.106



Height
106 mm

Performance data I Modus XF — Height 106 mm

Concevtor Type		90 / 70°C									80 / 60°C								
		Modus XF 31			Modus XF 32			Modus XF 33			Modus XF 31			Modus XF 32			Modus XF 33		
Fan Speed		0	700	1400	0	700	1400	0	700	1400	0	700	1400	0	700	1400	0	700	1400
Casing Length (mm)	Coil Length (mm)	Heating Capacity (W)																	
950	650	226	730	1119	351	951	1416	453	1230	1776	159	601	922	248	778	1159	321	1000	1445
1250	950	331	1067	1636	513	1390	2070	662	1798	2569	233	879	1348	363	1137	1694	470	1462	2112
1550	1250	436	1404	2153	675	1830	2724	872	2366	3416	307	1157	1774	478	1497	2229	619	1924	2779
1850	1550	540	1740	2669	837	2269	3377	1081	2933	4235	380	1434	2199	592	1856	2763	767	2385	3445
2150	1850	645	2077	3186	999	2708	4031	1290	3501	5055	454	1712	2625	707	2215	3298	916	2847	4112
2450	2150	749	2414	3703	1161	3147	4685	1499	4069	5875	528	1990	3051	822	2574	3833	1064	3309	4779
2750	2450	854	2751	4219	1323	3586	5339	1709	4637	6695	601	2267	3477	936	2934	4368	1213	3771	5446
3050	2750	959	3088	4736	1485	4026	5992	1918	5205	7515	675	2545	3902	1051	3293	4903	1361	4232	6113
3350	3050	1063	3425	5253	1647	4465	6646	2127	5773	8335	749	2823	4328	1166	3652	5438	1510	4694	6780
3650	3350	1168	3762	5770	1809	4904	7300	2336	6340	9154	822	3100	4754	1281	4011	5973	1658	5156	7447
3950	3650	1273	4099	6286	1971	5343	7954	2546	6908	9974	896	3378	5180	1395	4371	6508	1807	5618	8114
4250	3950	1377	4436	6803	2133	5782	8607	2755	7476	10794	970	3656	5606	1510	4730	7043	1956	6079	8781
4550	4250	1482	4773	7320	2295	6222	9261	2964	8044	11614	1043	3933	6031	1625	5089	7578	2104	6541	9448
4850	4550	1587	5110	7836	2457	6661	9915	3174	8612	12434	1117	4211	6457	1739	5449	8113	2253	7003	10115

Heating Capacity (W)

Functions

•Room heating (primary or secondary heating),

•Maintenance of uniform air circulation field in the room, and thereby, uniform distribution of heat throughout the room,

•Increasing of cold areas surface temperature,

•Prevention of condensation build-up on glass surfaces,

•Prevention of ingress of cold outside air through big glass surfaces,

1.Values rounded up within the measurement tolerances.
2. The sound pressure levels were calculated with an assumed room insulation of 8 dB(A). This corresponds to a distance of 2 m, a room volume of 100 m3 and a reverberation time of 0.5 s (in accordance with VDI 2081) Sound pressure level < 20 dB (A) and sound power level < 28 dB (A) outside the usual measuring and audible range.
3.Performance tested according to EN442-2

Performance data I Modus XF — Height 106 mm

Convector Type		70 / 55°C									55 / 45°C								
		Modus XF 31			Modus XF 32			Modus XF 33			Modus XF 31			Modus XF 32			Modus XF 33		
Fan Speed		0	700	1400	0	700	1400	0	700	1400	0	700	1400	0	700	1400	0	700	1400
Casing Length (mm)	Coil Length (mm)	Heating Capacity (W)																	
950	650	117	505	775	182	651	969	237	831	1201	59	349	535	94	444	660	123	560	808
1250	950	171	739	1133	266	951	1416	346	1215	1756	87	510	782	137	649	965	180	818	1181
1550	1250	225	973	1492	351	1252	1864	456	1599	2311	115	672	1030	181	854	1271	237	1077	1555
1850	1550	279	1206	1850	435	1552	2311	565	1982	2865	142	833	1277	224	1058	1576	293	1335	1928
2150	1850	333	1440	2208	519	1852	2758	674	2366	3420	170	994	1524	267	1263	1881	350	1593	2301
2450	2150	387	1673	2566	603	2153	3206	784	2750	3974	197	1155	1771	311	1468	2186	407	1852	2674
2750	2450	441	1907	2924	687	2453	3653	893	3134	4529	225	1317	2018	354	1673	2491	464	2110	3047
3050	2750	495	2140	3282	772	2754	4100	1003	3517	5084	253	1478	2266	398	1878	2796	521	2369	3421
3350	3050	549	2374	3640	856	3054	4548	1112	3901	5638	280	1639	2513	441	2083	3101	578	2627	3794
3650	3350	603	2607	3998	940	3355	4995	1222	4285	6193	308	1800	2760	485	2288	3406	635	2886	4167
3950	3650	657	2841	4356	1024	3655	5442	1331	4669	6748	335	1962	3007	528	2493	3711	692	3144	4540
4250	3950	711	3074	4714	1109	3956	5890	1440	5052	7302	363	2123	3254	571	2698	4016	748	3403	4913
4550	4250	765	3308	5072	1193	4256	6337	1550	5436	7857	391	2284	3502	615	2903	4321	805	3661	5287
4850	4550	819	3541	5430	1277	4557	6784	1659	5820	8412	418	2446	3749	658	3108	4626	862	3920	5660

Heating Capacity (W)

Functions

•Room heating (primary or secondary heating),

•Maintenance of uniform air circulation field in the room, and thereby, uniform distribution of heat throughout the room,

•Increasing of cold areas surface temperature,

•Prevention of condensation build-up on glass surfaces,

•Prevention of ingress of cold outside air through big glass surfaces,

1.Values rounded up within the measurement tolerances.

2. The sound pressure levels were calculated with an assumed room insulation of 8 dB(A). This corresponds to a distance of 2 m, a room volume of 100 m3 and a reverberation time of 0.5 s (in accordance with VDI 2081) Sound pressure level < 20 dB (A) and sound power level < 28 dB (A) outside the usual measuring and audible range.

3.Performance tested according to EN442-2

Performance data I Modus XF

Fan control and sound power

1.Values rounded up within the measurement tolerances.
2. The sound pressure levels were calculated with an assumed room insulation of 8 dB(A). This corresponds to a distance of 2 m, a room volume of 100 m3 and a reverberation time of 0.5 s (in accordance with VDI 2081) Sound pressure level < 20 dB (A) and sound power level < 28 dB (A) outside the usual measuring and audible range.

Length	0-10V control	Power consumption	Air flow	Sound pressure level	Sound power level
(mm)	(V)	(W)	[m3/h]	(db (A))	(db (A))
950	10	7,8	174	35	43
	8	6,5	144	30	38
	6	5,5	108	24	31
	4	4,9	77	20	27
	2	4,6	46	20	27
1250	10	11,2	292	37	45
	8	8,4	236	32	40
	6	6,4	185	25	33
	4	5,2	133	20	27
	2	4,9	82	20	27
1750	10	16,5	472	37	45
	8	12,5	425	35	43
	6	9,2	352	28	36
	4	6,7	249	20	27
	2	5,0	152	20	27
2150	10	22,5	617	40	48
	8	16,8	503	35	43
	6	12,9	390	28	36
	4	10,6	276	20	28
	2	9,9	168	20	27
2550	10	27,7	812	40	48
	8	20,9	704	37	45
	6	15,6	547	30	38
	4	12,0	390	21	29
	2	10,0	233	20	27
3050	10	32,9	1001	40	48
	8	24,8	904	38	46
	6	18,3	698	31	39
	4	13,4	498	22	30
	2	10,1	298	20	27

Control options

Heating and cooling MODUS XF units are designed to be installed in a floor void. One can distinguish two basic models of this product that are different through the way they are build and function:

2-PIPES MODUS XF UNITS
The heat exchanger has only a single pipe circuit that can be used for heating. Only one set of valves and thermal actuator is required.

As MODUS XF is a part of the heating system in the building they proper operation rely on:

- central heating installation being fitted correctly
- the valves and controls have been fitted, connected and configured properly.

The complete set of controls includes:

- room air controller that should be connected to the thermal actuators and fans
- 24 V DC rail power supply (transformer) Thanks to the built-in temperature sensor Room Temperature Controller measure the ambient temperature to keep it on the constant, required level:
- by adjusting the thermostatic valve opening/closing angle
- by adjusting the fan speed.

Due to the ambient temperature sensor the Room Temperature Controller should not be covered by any obstacles such as furniture or curtains.

Each heating/ cooling zone should be controlled by the single Room Temperature Controller.

For BMS systems Room Controller and Temperature sensor is usually split into 2 separate devices.

Due to the use of electric safe fans and low-voltage actuators, fan assisted units must be supplied with 24 V DC power converter.

The 24 V DC power supply should be protected by an appropriate overcurrent circuit breaker and an installation switch off that allows the power cut off while conducting service work on GERHMAN products.

It is forbidden to connect the unit directly to the 230 V AC power grid.

NOTE! Electric wiring should be done only by the electrical skilled worker who can confirm his membership in an approved self-certification scheme. Power can only be switched back on when the correctness of the whole wiring was checked and approved.

UNIT OPERATIONS IN VARIOUS SYSTEMS

MODUS XF are suitable for any building, and they are easy to select thanks to a variety of available options controlling the unit.

CONTROLLING BY STANDARD ROOM AIR CONTROLLER

Each heating zone has a separate controller, which is responsible for readout of the temperature in the room and controlling the work of connected heating/cooling units. The controllers are not connected to each other, while each of them must be programmed separately.

BUILDING MANAGEMENT SYSTEM (BMS)

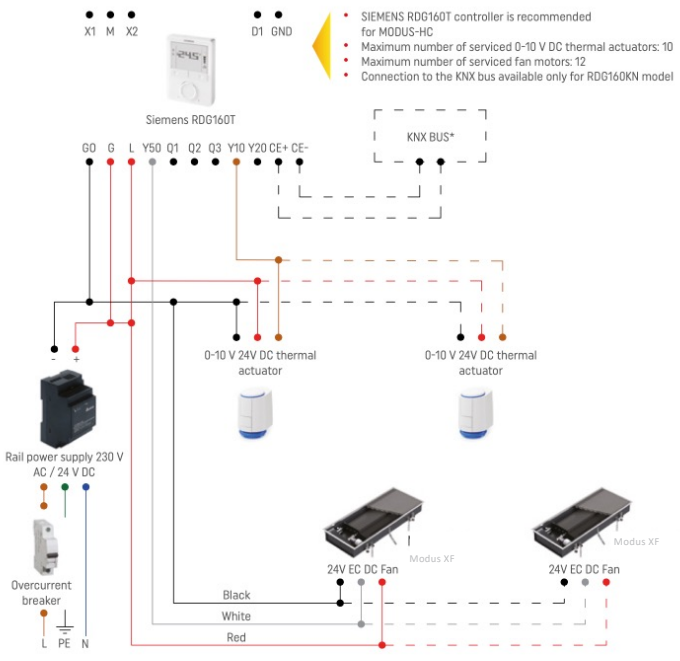
The system that integrates the various technical installations in the building to allow single point of management is commonly known as the BMS. BMS is quite practical in the office and commercial buildings, yet these days might be also met in residential housing installations. When concerning connecting the MODUS XF units into the BMS system, please be aware of such a solution benefits

- combining the operation of multiple home technical appliances into one management scheme by coordination the work between window blinds, lighting, audio / video devices etc.
- better management of your heating system i.e. by more flexible and quicker temperature control from a central communication point
- more flexibility for open space heating/ cooling functions such as re-arranging the heating zones when complementing open space re-arrangements.

GERHMAN offers solutions that enable connecting MODUS XF units into the following BMS systems:

- KNX
- BACnet
- Modbus

Control options



Configuration of RDG160T basic work parameters for MODUS-HC units		
Configuration of switches inside the controller		
DIP1	ON	ON 1 2 3 4 5
DIP2	OFF	
DIP3	OFF	
DIP4	OFF	
DIP5	OFF	
Recommended settings of individual work parameters		
Parameter	Setting	Description
P01	0	Heating only
	1	Cooling only
P05	-3...3 K	Temperature sensor calibration
P30	0,5...6 K	P-band/switching differential in heating mode
P31	0,5...6 K	P-band/switching differential in cooling mode
P38	0	No additional external sensor
P40	0	
P42	0	
P46	2	Output of 0-10 V DC thermal actuator
P52	1	Fan operation - Active
P60	89 min	Fan kick interval in Comfort mode
P61	359 min	Fan kick interval in Economy mode

SETTING OF OPERATION PARAMETERS RDG160T

Press the two buttons on the regulator for at least 3 seconds. Then release both but- tons and press the left button for another more than 3 seconds. Without releasing, turn the controller's knob half a turn anti-clockwise. The display will show the symbol of parameter, that confirms the entry into the service settings mode. The parameter is selected by turning the knob and confirming with the right button (OK). Use the knob to set the desired value, eg changing the setting P52=1, after changing P52=2. Use the right button to accept the selection. After finishing the settings, press the left button (ESC).

GERHMAN

gerhman.com

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MODUS XF

24 • +90 0850 303 4766

• info@gerhman.com

www • gerhman.com