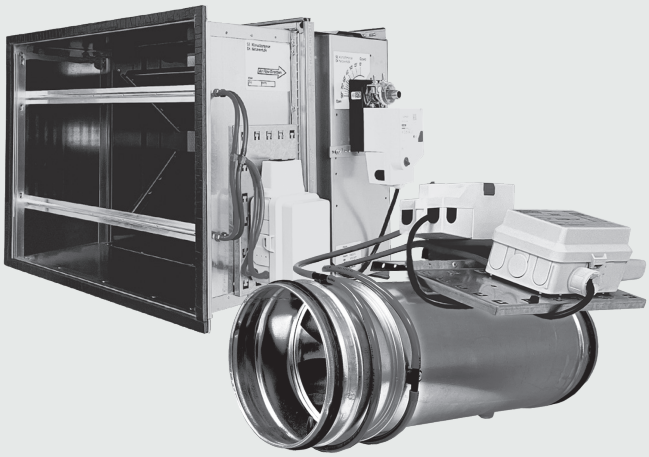
Duct products for
laboratory system solutions

CERTiQ



The images are for guidance only and does not show a specific embodiment.

General description

- **CERTiQ** is a complete range of duct products for use in safety ventilation applications, e.g. hospitals, clean rooms and laboratories. See table **T1** for included products.
- The product series is sold as part of Netavent's demand-controlled **uLAB** system, designed for laboratory and safety ventilation solutions.
- The units in the series, which are equipped with Netavent's multi-regulator type **QTRL**, offer many flexible configuration options for a wide range of laboratory applications.
- All of the products in the series are supplied in both circular and rectangular variants.
- See table **T2** for available circular sizes, and table **T14** for rectangular standard sizes.

T1: Product overview

Designation	Function
CERTiQ-M (Measuring)	Measuring unit
CERTiQ-F (Flow)	Damper unit for control of constant or variable air flow
CERTiQ-PM (Pressure & Measuring)	Pressure control damper with measuring function
CERTiQ-CS (Controller Sub unit)	Controlling sub unit for flow balancing with signal from CERTiQ-F, -PM or -M.
CERTiQ-D (X/T) (Damper)	Rotary/shut-off damper without regulator intended for laboratory applications

Key features

- Complete product package designed for lab environments
- Flexible configuration options via multi controller **QTRL**
- Fitted with high-speed actuators to meet safety requiements
- Supports communication via **Modbus RTU**
- Supplied in circular and rectangular variants

T2: Quick selection*2) – circular product

Size (Ø, mm)	Air Flow*1) (l/s) [m³/h] Min.	Rec. max.*3)	Max.
100	4 [14]	20 [72]	78 [280]
125	6 [22]	37 [133]	120 [432]
160	10 [36]	70 [252]	196 [705]
200	17 [60]	126 [454]	321 [1155]
250	25 [89]	221 [796]	481 [1733]
315	40 [143]	390 [1404]	769 [2769]
400	67 [241]	754 [2714]	1298 [4674]

*1) For expanded quick selection of circular products, please see table **T15**.
*2) Rec. max l/s (at duct sizing of 1 Pa/m).

T3: Example*4) T1: Quick selection – rectangular product

Size*4) (W x H, mm)	Air flow*1) (l/s) [m³/h] Min.		Max.*5) / Nom.	
200 x 200	32	[116]	394	[1420]
400 x 400	129	[464]	1580	[5688]
500 x 500	207	[746]	2535	[9127]
600 x 600	304	[1094]	3723	[13404]
800 x 700	460	[1657]	5634	[20282]
1000 x 400	322	[1160]	3944	[14197]
1200 x 500	497	[1790]	6087	[21913]
1400 x 600	709	[2552]	8683	[31260]
1600 x 700	921	[3315]	11280	[40608]

*3) Overview examples. For expanded and **complete** quick selection of rectangular standard sizes, please see table **T16**.
*4) Rec. max corresponds to V_{nom} at a measuring pressure of 150 Pa.

Usage

- Netavent's DCV system for laboratory ventilation **uLAB** enables solutions with precise requirements for e.g. air velocity control in hatch openings on fume hoods, correct pressure and flow direction in clean rooms and maintaining required flow at point extracts and exhaust cupboards.
- The damper units in the series are fitted with high-speed actuators (does not apply to CERTiC-DT) to meet safety requirements within safety ventilation.

Function

- The products in the series are equipped with a measuring rail for stable electronic air flow measurement (not CERTiC-D).
- In combination with the other system components and a full range of accessories, the products can be configured to form part of a variety of system solutions with requirements for speed, accuracy and monitoring. See the sections **System Components** respectively **Accessories**.
- The measuring unit **CERTiQ-M** can, in combination with **CERTiQ-F**, build autonomous zone functions, where variable extract air from several laboratory products is summarized and balanced with central supply air.
- Flow regulating damper CERTiQ-F is used in system solutions for e.g. point extract, exhaust cupboard and constant flows.
- Pressure regulation damper CERTiQ-PM is used in system solutions for LAF cabinets (MSC – microbiological safety cabinet) and pressure regulation for clean rooms.
- Rotary and shut-off damper CERTiQ-DX is used e.g. for point extract or exhaust cupboards with On/Off function or emergency stop function.
- Summarization and balancing can take place autonomously through so-called Dynamic Chain Sum (DCS) and Dynamic Chain Offset (DCO) without the need for a supervisory system. With DCS and DCO, real-time flow in several CERTiQ-F dampers can be summed up via an analog signal and the total flow balanced with CERTiQ-CS.
- Via external commands, the dampers can also be controlled to fully open, fully closed, or e.g. min or max flow.
- External setting of the set point is possible via a supervisory BMS, if the application permits it.

System components

- Multi controller **QTRL** is a programmable control unit for functions in Netavent's systems for demand-controlled ventilation (DCV), e.g. type **uLAB** for laboratory ventilation and **SYS** for comfort ventilation.
- Gateway **GATE** is used for communication and optimization funct–ions and enables communication with modbus TCP to a BMS.
- In combination with Netavent's SCADA system (Supervisory Control and Data Acquisition) **VIEW**, the system offers an intuitive and user-friendly interface for monitoring the system's various functions. VIEW is available in both a web-based version and as a locally installed application for PC.
- System **uLAB** can also be combined with other solutions from Netavent. In combination with **ControlAir SYS** and an assortment of **active diffusers** and **climate beams**, available for both ceiling and wall mounting, you can create customized solutions that meet both the requirements for safety ventilation and at the same time meet the needs of a modern demand-controlled indoor climate.

Accessories

- The products support the connection of accessories, either via the terminal on the board or the communication bus. This allows the connection of external sensors and detectors, e.g. occupancy detectors, temperature, CO_2 sensors, door contacts and interlock systems.
- The system also includes a touch panel for controlling and displaying applications, e.g. LAF bench (MSC), point extracts and exhaust cupboards.
- Products with integrated controller, also offer options for integrated temperature, humidity and occupancy detection. Similar accessories are also available in wall-mounted versions.

Material

- All products meet pressure class A with housing in tightness class C.
- Circular dampers have damper blades in tightness class 4 and rectangular dampers in tightness class 3.
- Standard versions of the products, feature housing, damper blade and damper shaft of hot-dip galvanized sheet steel in corrosivity class C3, with measuring rod in aluminum. Hoses and damper blade seals are of silicone rubber.
- On special order, the products can be delivered with a damper housing in oxygen-resistant stainless steel or Magnelis®, contact our sales for additional info.

Mounting

- The products require no maintenance, however free space should be taken into consideration in order to enable access for operation and maintenance purposes.
- The products are intended for indoor use and must not be used in damp, cold and aggressive environments.
- The products must not be installed in areas with an ambient temperature below +10 °C or above +50 °C.
- The products may not be used outside the specified operating area or in environments with a risk of explosion.

Mounting – circular variant

- The product is fitted with a rubber sealing gasket and is connected to circular ductel, and can be installed in any position.
- During installation, straight duct requirements **in airflow direction** must be taken into account, before and after the product in order to achieve the expected measurement accuracy and functionality, see table **T4**.

T4: Straight duct requirements – circular product

After*1) bend	After*1) T-piece
≥ 2 x ød	≥ 4 x ød

*1) ⚠ Before/after the product **viewed in direction of the air flow**.

Mounting – rectangular variant

- Rectangular variants of the product are supplied with a long-side flanged joint for easy installation in rectangular duct systems.
- Dampers in rectangular variants are intended to be mounted with the damper blades positioned horizontally. If the dampers require mounting with the blades vertically, this must be stated in the order.

- During installation, straight duct requirements **in airflow direction** must be taken into account, before and after the product in order to achieve the expected measurement accuracy and functionality, see table **T5**.

T5: Straight duct requirements – rectangular product

Before *1) Bend / diffuser / T-piece	After*1) Bend / T-piece / Attenuator with splitters
≥ 1 x W*2)	≥ 3 x W*2)

*1) ⚠ Before/after product **viewed in the direction of the air flow.**
*2) W refers to the width of the rectangular duct according to WxH (Width x Height).

Power supply, connections and commissioning

- The product must only be installed by qualified personnel. All regulations and rules issued by the authorities in the country where the product is to be used must be followed during installation.
- Products in standard version are delivered in 24 V DC versions with optional version featuring built-in transformer **IPS** (Internal Power Supply) for 230 V. Optional version must be specified at order placement.
- The product is delivered pre-configured for the specific project. The device settings must therefore not be changed under normal operating scenarios.
- All wiring must be made with the power supply disconnected.
- Products intended for 24V DC power supply must be connected via an isolated transformer.
- Specific connection and communication instructions are provided as part of system documentation in connection with project delivery.

Technical data and connections

T6: Electrical data – Controller

QTRL-IPS – variant with built-in power supply	
Primary voltage	230 V, 50-60 hz
Secondary voltage	24 V DC
Power supply*)	16 VA**) – 35 VA
Protection	Short circuit protection
QTRL – variant for external power supply	
Voltage range	24-35 V DC
Input current	20 mA (@ 24 V DC without additional load)
Protection	reverse polarity mode
Max. load at 24 V	i henhold til strømforsyningstype (12 VA - 35 VA)

*) Indbygget strømforsyning. / **) Standard for 230 V version.

T7: Connections – Controller

PORT 1-4 – Multifunction ports	
Possible modes	analog out, analog in, digital out, digital in (only one after configuration)
Output interval (analog in)	0-10 V DC
Output voltage (digital out)	0 / 24 V DC
Max load (analog out)	0.5 W (50 mA @ 10 V DC)
Max load (digital out)	2 W (90 mA @ 24 V DC)
Inputs	
Temperature sensor inputs	Analog, sensor type NTC 10k
Digital inputs	2 pcs, external contact
Analog inputs	1 pc, input interval, 0-10 V DC
Communication ports	
Port type	RS 485
Communication protocol – external bus	Modbus-RTU / iQNet 2.0
Communication protocol – internal bus	Modbus-RTU

Technical data – damper actuator

T8: Damper actuator (high-speed version)

Electrical data			
Nominal voltage		24 V DC, (50/60 Hz)	
Actuator connections (halogen-free)		Cable 1000 mm, 4 x 0,75 mm²	
Power consumption during operation		5 Nm 10 Nm	7,0 W 13,0 W
Power consumption in standby (end pos.)		5/10/20 Nm	1,0 W
Transformer sizing		5 Nm 10 Nm	9,0 VA 17,0 VA
Feedback signal		0(2) - 10 V DC (analog)	
Technical data			
Torque	Circular variant	Ø 100-315 mm Ø 400-630 mm	5 Nm 10 Nm
	Rectangular variant: Depending on dim. acc. to W x H (mm) for dampers with opposing blades		5/10 Nm
Rotational dir.	Counter-clockwise		
Uncoupling	Gearbox is released with a push button, can be locked		
Running time		5 Nm 10 Nm	2 s / 90° 3 s / 90°
Sound level			< 55 dB(A)

T9: Product data – CERTiQ

Operating data (ambient/airflow temperature)			
during normal operation (IEC 721-3-3)			10 - 40 °C
during storage / transport (IEC 721-3-2)			–20 - 80 °C
Humidity, ambient		5-95 % r.F., non-condensing	
Maintenance		Maintenance-free	
Safety classifications			
Enclosure class	CERTiQ-F/PM/CS/M CERTiQ-D	IP40 IP54	
Insulation class		III (acc. to EN 60730-1)	
Standards and directives			
Machinery safety	EN 60204-1 EN ISO 12100	MD	(2006/42/EG)
Electrical safety	EN 60335-1	LVD	(2014/35/EU)
Automatic control and regulation	EN IEC 60730-1 EN IEC 60730-2-14	LVD	(2014/35/EU)
Electromagnetic compatibility	EN IEC 61000-6-2 EN IEC 61000-6-3	EMC	(2014/30/EU)
Restriction of hazardous substances	EN 63000	RoHS	(2011/65/EU) (2015/863/EU) (2017/2102/EU)

Project planning

The CERTiQ product series is delivered exclusively as part of a system solution. For each individual project, Netavent's enterprise department takes an active role in the planning work for the project in question.

- Working area for airflow regulation is shown in diagrams **D1-9** (circular damper units) and diagram **D11** (rectangular damper units).
- Min. air flows should always be taken into account. When dimensioning, you should always check whether the damper's working area corresponds to the min. and max. flow for the duct dimension in question. Normally, it is the damper's min. flow that sets the limit for the working area. Therefore, it can sometimes be advantageous to locally reduce the duct dimension and choose a smaller damper that can handle a lower min. flow, whereupon the duct dimension is sized up to the current size again. However, the requirements for straight sections requirements should be taken into account in this case, see tables **T4** and **T5**.

Sizing

Sound data

The following applies to all reported sound data:

- Weightet sound effect level, L_{WA} dB(A) is read of the **Sizing diagrams** for **circular** and **rectangular** variants of **CERTiQ-F/PM/CS** and measuring unit **CERTiQ-M**.
- Measurements are in accordance to ISO 9614-2 & ISO 11691: 1995.

T10: Explanation – designations

Designation	Explanation	Unit
L_{WA}	A weightet sound efficiency level	dB (A)
P_t	$Pressure_{total}$	Pa
q	Air flow	l/s alt. m^3/h
K_{OK}	Correction factor	dB
L_W	Sound efficiency level	dB
A_F	Free area	m^2
L_{PA}	Sound pressure level (A weightet)	dB (A)
V_F	$Velocity_{Free\ area}$	m/s
α	Damper blade angle	0-90°
K_K	Correction factor, free area	dB
$\pm q_{min}$	Minimum flow tolerance	l/s alt. m^3/h

Sound data – circular products

The following applies for the presented sound data:

- Weightet sound effect level, L_{WA} dB(A) is read of the diagrams **D1-D7** for products CERTiQ-F/PM/CS, while diagram **D10** refers to measuring unit CERTiQ-M.
- Correction factor, K_{OK} dB for mid-frequency in each octave band is obtained from tables **T11** and **T12**.
- Sound effect level, L_W dB is calculated according to formula $L_W = L_{WA} + K_{OK}$.

T11: Correction K_{OK} dB – circular CERTiQ-F/PM/CS

Size	Octave band, Hz (dB)							
	63	125	250	500	1000	2000	4000	8000
100	-12	-16	-7	-5	-6	-11	-18	-26
125	-6	-16	-10	-6	-8	-11	-17	-23
160	-7	-13	-9	-7	-9	-18	-23	-19
200	10	0	-3	-4	-5	-10	-13	-15
250	12	-2	-5	-2	-6	-9	-14	-20
315	13	1	-5	-1	-7	-9	-16	-22
400	16	4	-5	-2	-8	-10	-13	-15

Tolerance ±3 dB

T12: Correction K_{OK} dB – circular CERTiQ-M

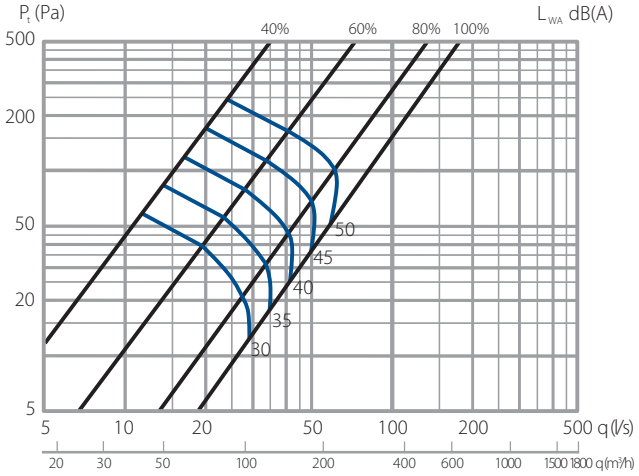
Size	Octave band, Hz (dB)							
	63	125	250	500	1000	2000	4000	8000
100	-12	-16	-7	-5	-6	-11	-18	-26
125	-6	-16	-10	-6	-8	-11	-17	-23
160	-7	-13	-9	-7	-9	-18	-23	-19
200	+10	0	-3	-4	-5	-10	-13	-15
250	+12	-2	-5	-2	-6	-9	-14	-20
315	+13	+1	-5	-1	-7	-9	-16	-22
400	+16	+4	-5	-2	-8	-10	-13	-15

Tolerance ±3 dB

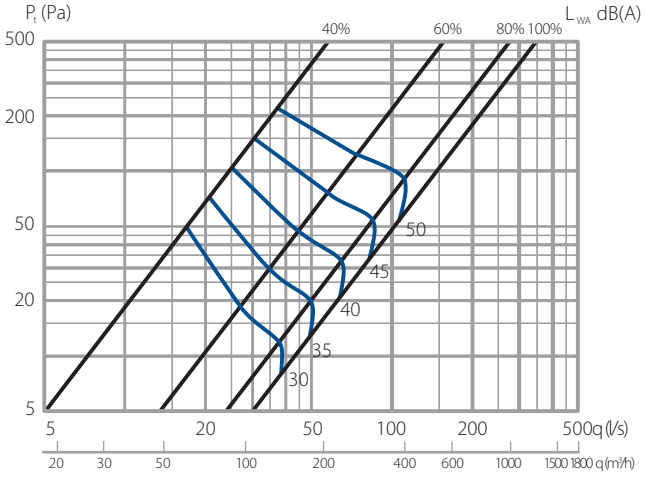
Sizing diagrams – damper units, circular variant

- The following diagrams refer to CERTiQ-F/PM/CS in circular variant.
- The diagrams correspond to A-weighted sound effect level, L_{WA} dB(A) where P_t (Pa) is the total pressure and q (l/s alt. m^3/h) is the air flow.
- Percentage indication in the diagrams refers to the damper blade opening, where 100% corresponds to open damper.

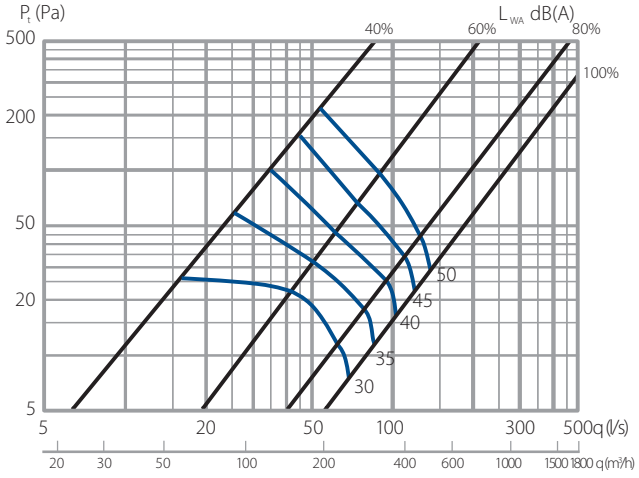
D1: CERTiQ-F/PM/CS 100



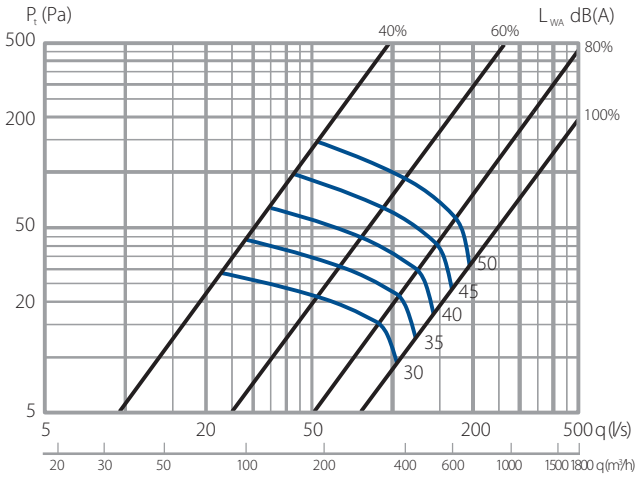
D2: CERTiQ-F/PM/CS 125



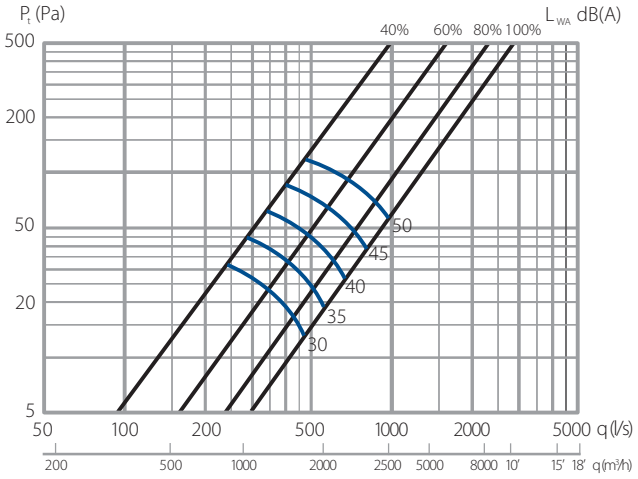
D3: CERTiQ-F/PM/CS 160



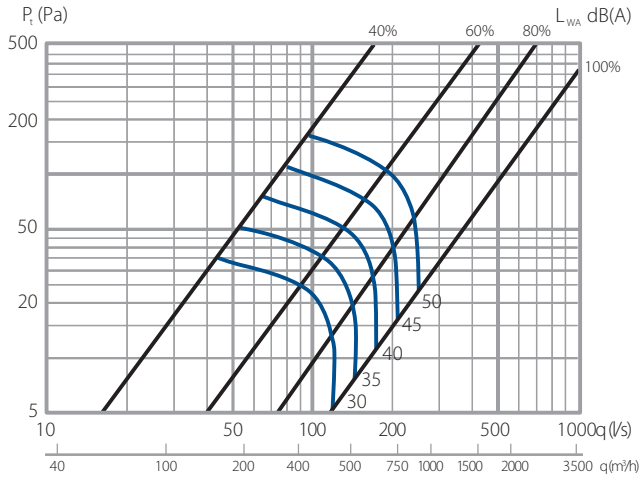
D4: CERTiQ-F/PM/CS 200



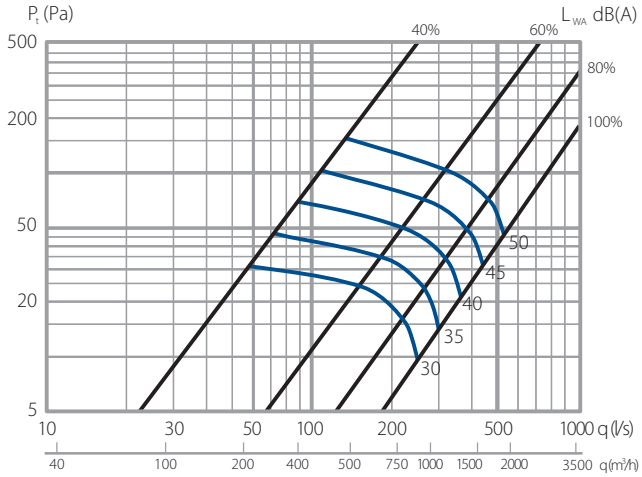
D7: CERTiQ-F/PM/CS 400



D5: CERTiQ-F/PM/CS 250



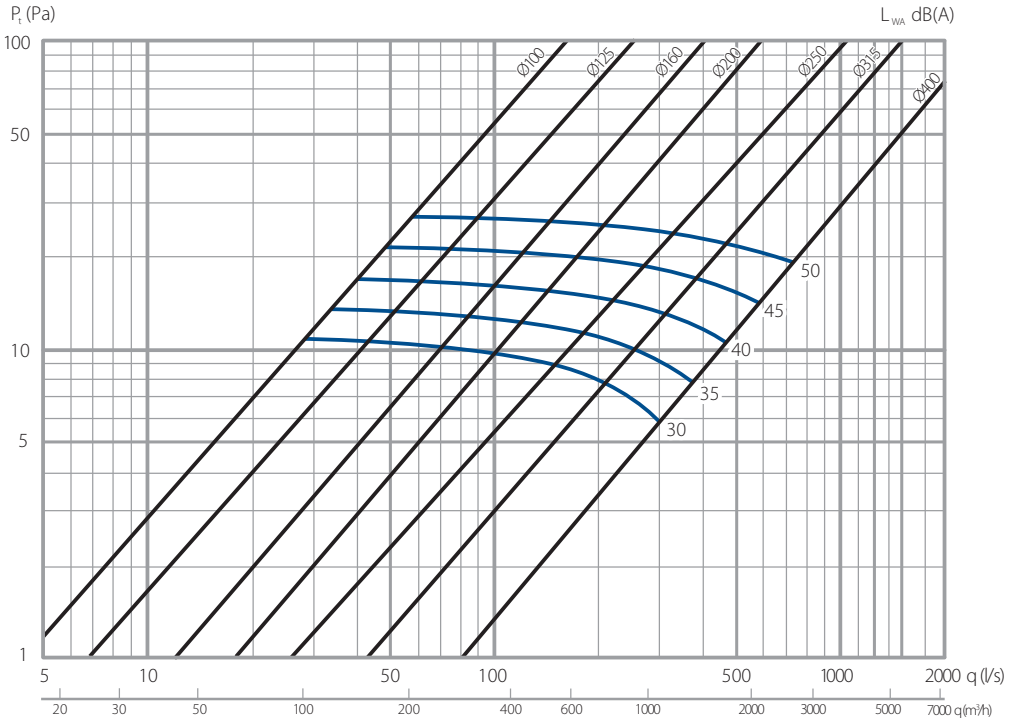
D6: CERTiQ-F/PM/CS 315



Sizing diagrams – measuring unit CERTiQ-M, circular variant

- The following diagrams refer to the measuring unit CERTiQ-M in circular variant
- The diagrams correspond to A-weighted sound effect level, L_{WA} dB(A) where P_t (Pa) is the total pressure and q (l/s alt. m^3/h) is the air flow.

D10: CERTiQ-M – Ø100...400



Sound data - rectangular products

The following applies for the presented sound data:

- Weightet sound effect level, L_{WA} dB(A) is read of diagram **D11** for product CERTiQ-F/PM/CS, while diagram **D12** refers to measuring unit CERTiQ-M.
- Correction factor, K_{OK} dB for mid-frequency in each octave band is obtained from tables **T13** and **T14**.
- Damper blade angle **α** (alpha) corresponds to fully open damper at 90°.
- Correction factor for free area, K_K (dB) for octave band is obtained from diagram **D13**.
- Sound effect level, L_W dB, for rectangular products, is calculated according to formula $L_W = L_{WA} + K_K + K_{OK}$. See also step-by-step principle for help with calculation:

1) Calculation of free area A_F (m^2) for the selected damper as made according to Width x Height (m), see table **T16** for available dimensions.
   NOTE: Dimensions (W x H), in the table are shown in millimeters, and must be converted to meters when calculating.

Air velocity calculation V_f (m/s) for the current air flow q (m^3/s), is carried out according to the formula: $q / A_F = V_f$.
NOTE! Air flow specified in l/s must be converted to m^3/s.

2) Based on the calculated air velocity V_f and the applicable total pressure drop P_t (Pa), the A-Weightet sound effect level L_{WA} dB (A) and the damper blade opening (%) are read of diagram **D11** (CERTiQ-F/PM/CS) or **D12** (CERTiQ-M). Damper blade opening reading only applies to the products CERTiQ-F/PM/CS.
3) Correction K_K (dB) for free area is read of diagram **D13** based on previously calculated free area A_F (m^2).
4) Correction K_{OK} (dB) for each oktave band is read of:
   – Table **T13** (for products CERTiQ-F/PM/CS) based on the damper blade opening percentage read of diagram **D11.**
   – Table **T14** for measuring unit CERTiQ-M.
5) Sound effect level, L_W dB is calculated according to formula: $L_W = L_{WA} + K_K + K_{OK}$.

T13: Correction K_{OK} dB – rectangular CERTiQ-F/PM/CS

Damper blade angle*) α (°)	Octave band, Hz (dB)							
	63	125	250	500	1000	2000	4000	8000
10° < α ≤ 30°	- 7	- 4	- 6	- 5	- 8	- 7	- 8	- 10
30° < α ≤ 50°	- 6	- 4	- 5	- 7	- 9	- 9	- 10	- 12
50° < α ≤ 70°	- 5	- 5	- 7	- 8	- 10	- 10	- 13	- 15
70° < α ≤ 90°	- 4	- 6	- 8	- 8	- 9	- 12	- 16	- 19

Tolerance ±3 dB
*) α 90° = 100% fully open damper.

T14: Correction K_{OK} dB – rectangular CERTiQ-M

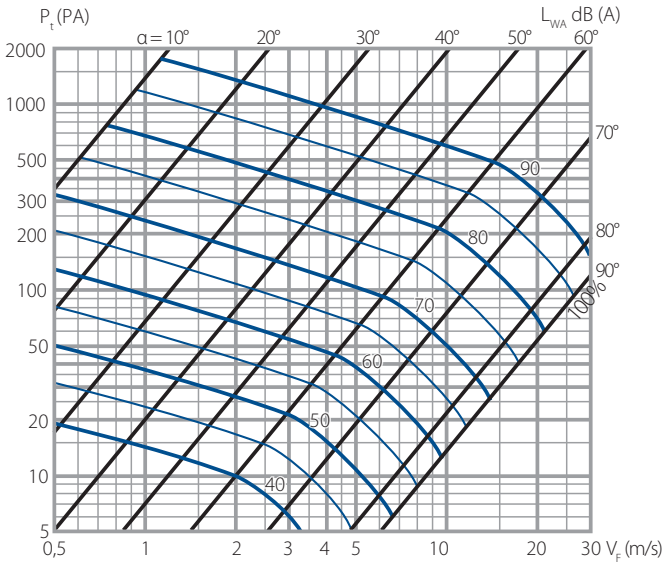
Size	Octave band, Hz (dB)							
	63	125	250	500	1000	2000	4000	8000
All sizes.	- 4	- 6	- 8	- 8	- 9	- 12	- 16	- 19

Tolerance ±3 dB

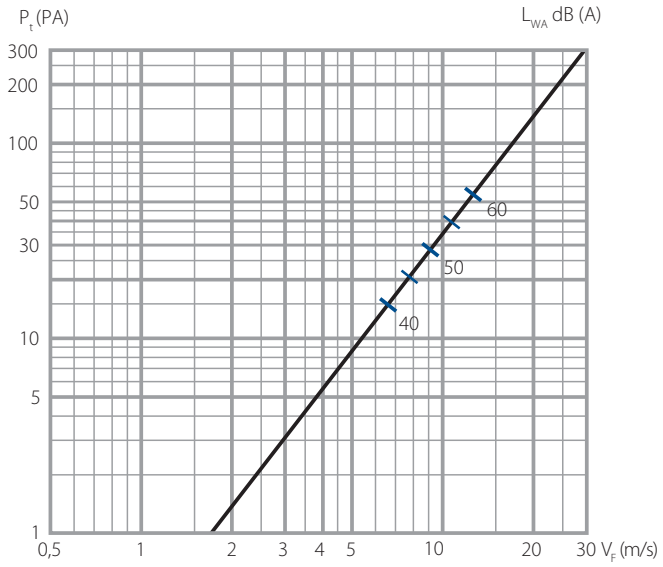
Sizing diagrams – rectangular products

- The following diagrams refer to rectangular variants of the products CERTiQ-F/PM/CS and measuring unit CERTiQ-M.
- The diagrams correspond to A-weighted sound effect level, L_{WA} dB(A) where P_t (Pa) is the total pressure amd V_F (m/s) is the air velocity.
- Percentage indication in diagram **D11** refers to the opening of the damper blade, where 100% (α = 90°) corresponds to fully open damper.

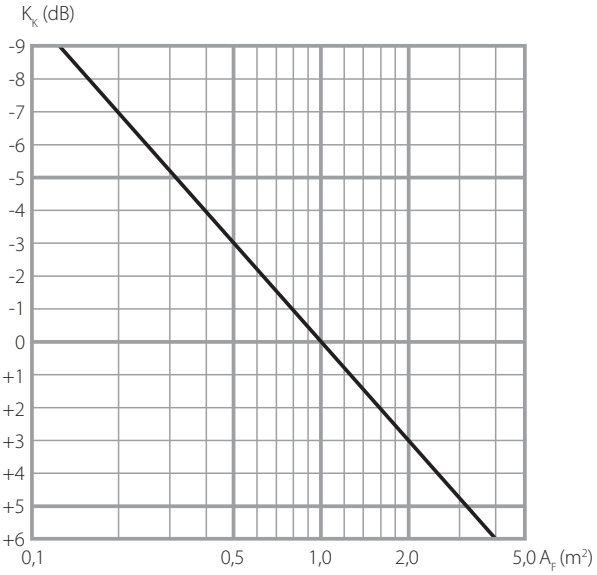
D11: Rectangular CERTiQ-F/PM/CS, all dimensions



D12: Rectangular CERTiQ-M, all dimensions



D13: Correction – free area



Expanded quick selection

- The tables **T15** and **T16** are available as additional support for product selection.
- Table **T16** displays the standard size span for the product. Please contact our sales support if you need product data on sizes other than those listed in the table.

T15 : Expanded quick selection – circular product

Size (Ø, mm)	Air flow						Measurement tolerance e*2) ±q_{min}	
	Min. (V_{min})		Rec. max*1) (V_{max})		Max. (V_{nom})			
	l/s	m³/h	l/s	m³/h	l/s	m³/h	l/s	m³/h
100	4	14	20	72	78	280	2	7
125	6	22	37	133	120	432	3	11
160	10	36	70	252	196	705	3	11
200	17	60	126	454	321	1155	4	14
250	25	89	221	796	481	1733	6	22
315	40	143	390	1404	769	2769	10	36
400	67	241	754	2714	1298	4674	14	50

*1) Rec. max l/s (for duct sizing at 1 Pa/m).
*2) Meas. accuracy for the product is max. ±5 %, however at least **±q_{min}** l/s [m³/h].

T16: Expanded quick selection – rectangular product

Size*3) (W x H, mm)	Air flow				Measuremnt. tolerance*2)	
	Min. (V_{min})		Max./Nom.*4) (V_{max}/V_{nom})		±q_{min}	
	l/s	m³/h	l/s	m³/h	l/s	m³/h
200 x 200	32,2	116	394	1420	9	32,4
300 x 200	48,3	174	592	2130	12	43,2
300 x 250	62,1	224	761	2738	15	54,0
300 x 300	76,0	274	931	3351	18	64,8
400 x 200	64,4	232	789	2839	16	57,6
400 x 250	82,9	298	1015	3655	20	72,0
400 x 300	101	365	1237	4453	24	86,4
400 x 350	111	398	1359	4894	30	108
400 x 400	129	464	1580	5688	36	130
500 x 200	80,6	290	987	3554	22	79,2
500 x 250	104	374	1274	4585	27	97,2
500 x 300	127	456	1555	5600	31	112
500 x 350	138	497	1690	6085	36	130
500 x 400	161	580	1972	7099	41	148
500 x 450	184	662	2254	8113	48	173
500 x 500	207	746	2535	9127	55	198
600 x 200	96,7	348	1184	4264	26	93,6
600 x 250	124	447	1519	5467	33	119
600 x 300	152	547	1862	6702	39	140
600 x 350	166	597	2033	7319	46	166
600 x 400	193	696	2364	8510	53	191
600 x 450	221	796	2707	9744	59	212
600 x 500	249	895	3050	10979	65	234
600 x 550	276	994	3380	12169	71	256
600 x 600	304	1094	3723	13404	76	274
700 x 200	113	406	1384	4982	29	104
700 x 250	145	522	1776	6393	38	137
700 x 300	177	638	2168	7804	47	169
700 x 350	193	696	2364	8510	53	191
700 x 400	226	812	2768	9965	59	212
700 x 450	258	928	3160	11375	68	245
700 x 500	290	1044	3552	12786	76	274
700 x 550	322	1160	3944	14197	84	302
700 x 600	355	1276	4348	15652	92	331
700 x 700	403	1450	4936	17769	102	367
800 x 200	129	464	1580	5688	34	122
800 x 250	166	597	2033	7319	42	151
800 x 300	203	729	2486	8950	49	176
800 x 350	221	796	2707	9744	58	209
800 x 400	258	928	3160	11375	66	238
800 x 450	295	1061	3613	13007	77	277
800 x 500	332	1193	4066	14638	88	317
800 x 550	368	1326	4507	16225	95	342
800 x 600	405	1458	4960	17857	101	364
800 x 700	460	1657	5634	20282	122	439
800 x 800	534	1922	6540	23544	139	500
900 x 200	145	522	1776	6393	38	137
900 x 250	186	671	2278	8201	48	173
900 x 300	228	820	2792	10053	57	205
900 x 350	249	895	3050	10979	67	241
900 x 400	290	1044	3552	12786	77	277
900 x 450	332	1193	4066	14638	86	310
900 x 500	373	1342	4568	16446	95	342
900 x 550	414	1491	5070	18254	107	385
900 x 600	456	1641	5585	20105	118	425
900 x 700	518	1864	6344	22839	134	482
900 x 800	601	2164	7361	26499	147	529
900 x 900	684	2462	8377	30158	157	565
1000 x 200	161	580	1972	7099	40	144
1000 x 250	207	745	2535	9127	52	187
1000 x 300	253	912	3099	11155	64	230
1000 x 350	276	994	3380	12169	76	274
1000 x 400	322	1160	3944	14197	88	317
1000 x 450	368	1325	4507	16225	98	353
1000 x 500	414	1491	5070	18254	107	385
1000 x 550	460	1656	5634	20282	118	425
1000 x 600	506	1823	6197	22310	128	461
1000 x 700	575	2071	7042	25352	153	551
1000 x 800	668	2403	8181	29453	179	644
1000 x 900	760	2736	9308	33509	189	680
1000 x 1000	760	2736	9308	33509	189	680
1200 x 200	193	695	2364	8510	49	176
1200 x 250	249	896	3050	10979	63	227
1200 x 300	304	1094	3723	13404	77	277
1200 x 350	331	1192	4066	14638	90	324
1200 x 400	387	1392	4740	17063	103	371
1200 x 450	442	1591	5413	19488	115	414
1200 x 500	497	1790	6087	21913	127	457
1200 x 550	552	1987	6761	24338	142	511
1200 x 600	608	2188	7446	26807	156	562
1200 x 700	691	2486	8463	30467	184	662
1200 x 800	801	2884	9810	35317	205	738
1200 x 900	912	3283	11170	40211	220	792
1200 x 1000	994	3580	12174	43826	234	842
1400 x 200	226	814	2768	9965	56	202
1400 x 300	354	1274	4348	15652	84	302
1400 x 400	451	1624	5524	19885	115	414
1400 x 500	580	2088	7104	25573	147	529
1400 x 600	709	2552	8683	31260	181	652
1400 x 700	806	2900	9871	35537	214	770
1400 x 800	935	3364	11451	41225	246	886
1400 x 900	1060	3816	12982	46736	276	994
1400 x 1000	1160	4176	14207	51145	306	1102
1600 x 200	258	929	3160	11375	62	223
1600 x 300	405	1458	4960	17857	95	342
1600 x 400	516	1856	6320	22751	132	475
1600 x 500	663	2386	8120	29232	173	623
1600 x 600	810	2917	9920	35714	211	760
1600 x 700	921	3315	11280	40608	245	882
1600 x 800	1070	3852	13105	47177	279	1004
1600 x 900	1220	4392	14942	53791	314	1130
1600 x 1000	1330	4788	16289	58641	349	1256

*2) Measurement accuracy for the total product max. ±5%, however at least **±q_{min}** l/s [m³/h].
*3) The table illustrates standard dimensions for the products according to **Width** (W) x **Height** (H). For dimensions other than those shown in the table within the range, please contact our sales department.*4) Rec. V_{max} corresponds to V_{nom} at a measuring pressure of 150 Pa.

Dimensions and weight – circular variants

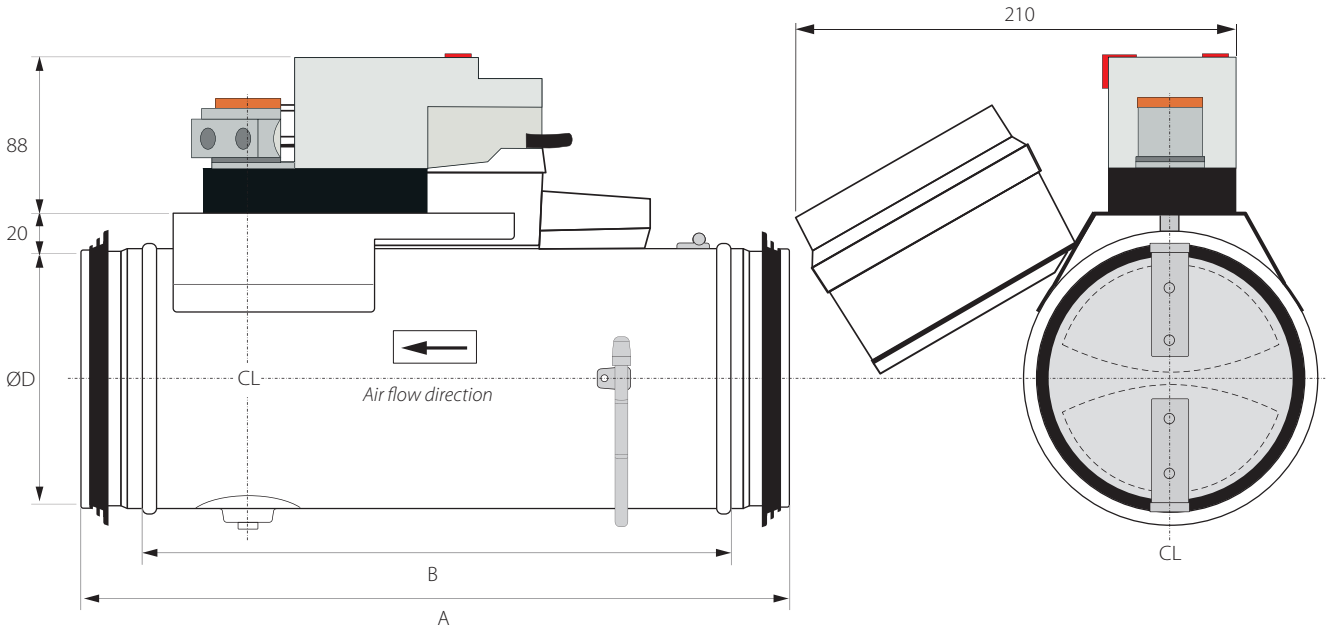


Image 2. Dimensions (mm), CERTiQ-F/PM/CS, circular variant.

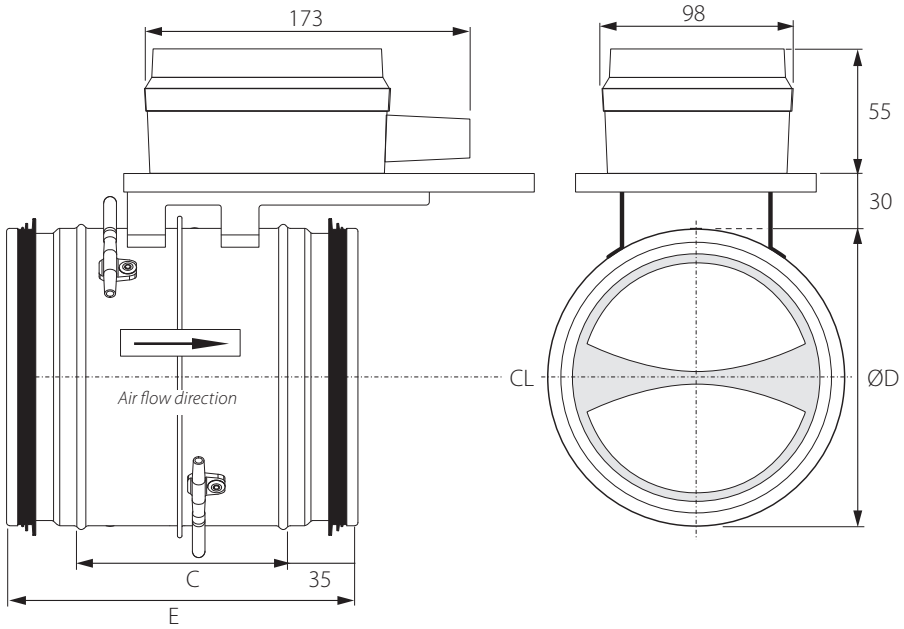


Image 4. Dimensions (mm), CERTiQ-M, circular variant.

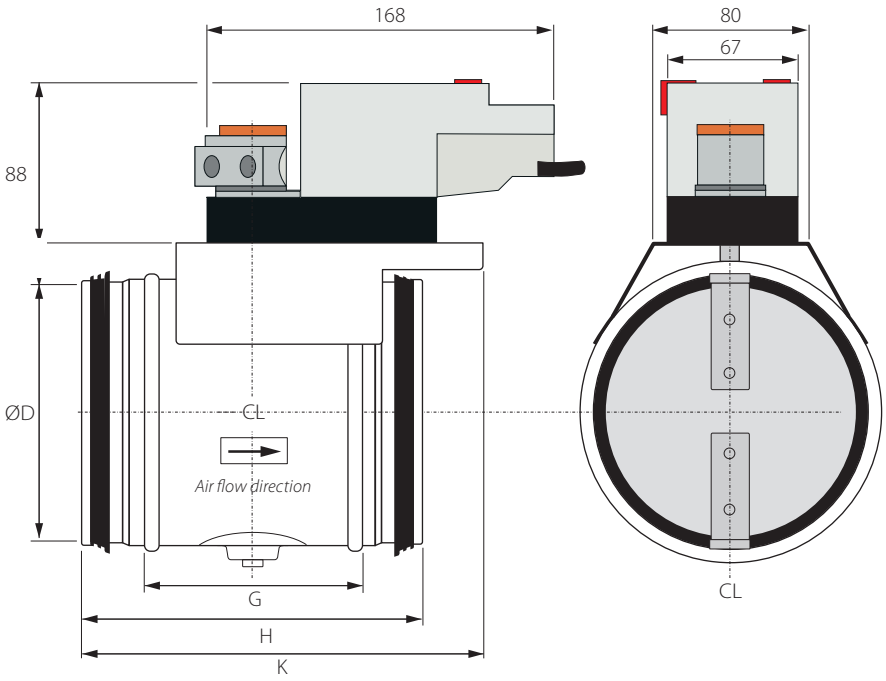


Image 6. Dimensions (mm), CERTiQ-D, circular variant.

T17: Dimensions and weight – circular products

Size (Ø, mm)	Dimensions [*vers.* c-b] (mm)							
	ØD	CERTiQ-F/CS/PM]		CERTiQ-M		CERTiQ-D		
		A	B	C	E	G	H	K
100	98	382	310	90	164	123	193	222
125	123	442	370	104	178	123	193	222
160	158	433	360	114	188	123	193	222
200	198	502	430	130	204	120	193	222
250	248	620	515	150	257	87	191	220
315	313	671	565	163	268	87	191	303
400	398	780	658	237	359	169	290	352

Dimensions and weight – rectangular variants

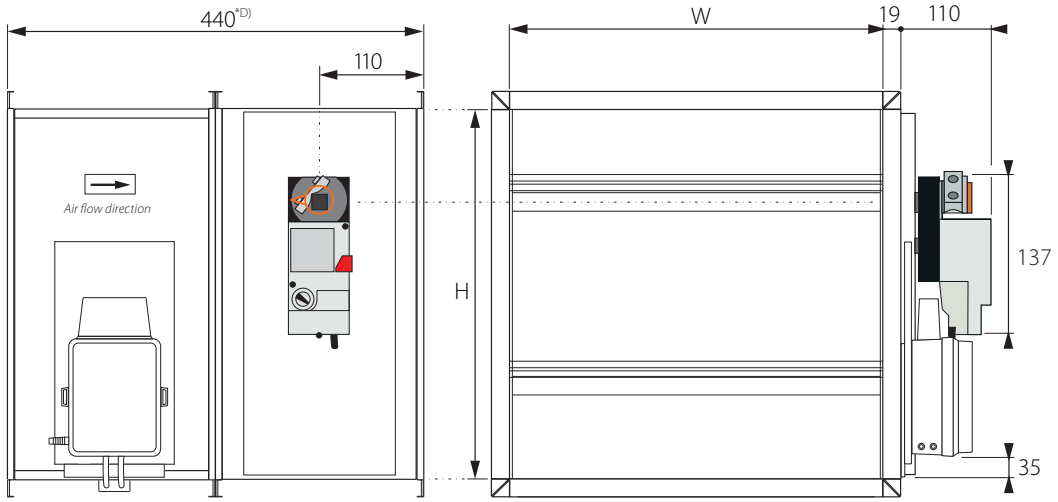


Image 7. Dimensions (mm), CERTiQ-F/PM/CS, rectangular variant.

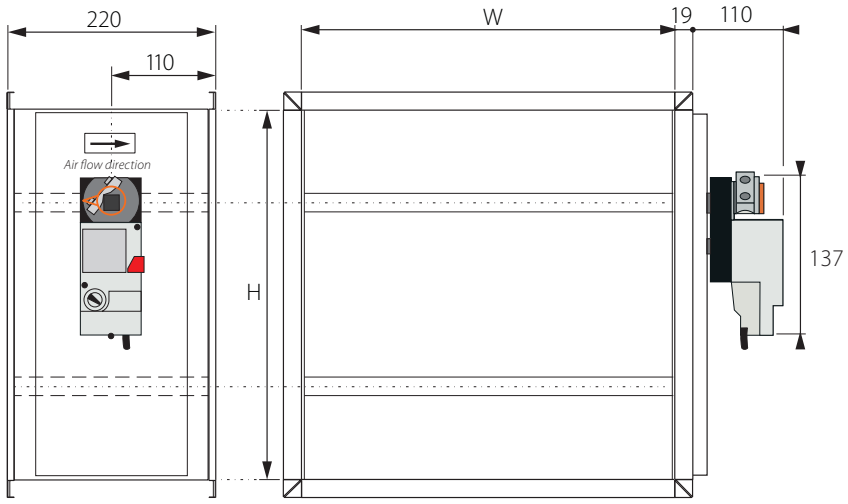


Image 8. Dimensions (mm), CERTiQ-D, rectangular variant.

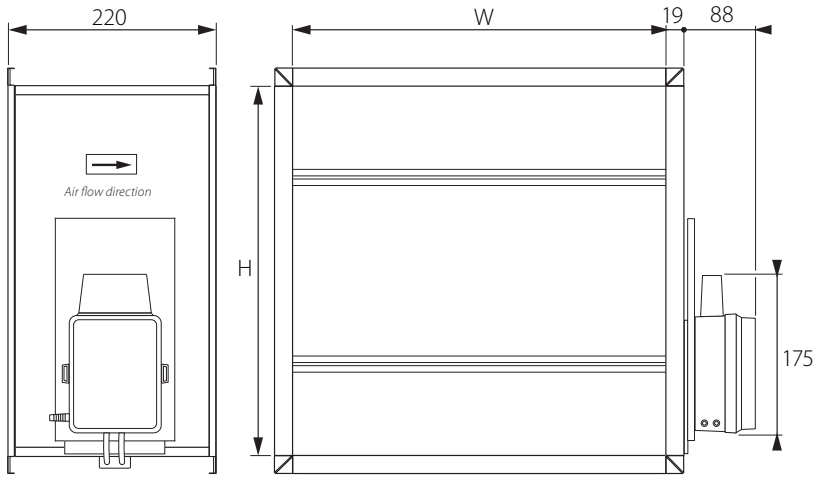


Image 9. Dimensions (mm), CERTiQ-M, rectangular variant.

T18: Standard dimensions – rectangular products

Height*) H (mm)	Width*) – W (mm) 200	300	400	500	600	700
200	●	●	●	●	●	●
250	—	●	●	●	●	●
300	—	●	●	●	●	●
350	—	—	●	●	●	●
400	—	—	●	●	●	●
450	—	—	—	●	●	●
500	—	—	—	●	●	●
550	—	—	—	—	●	●
600	—	—	—	—	●	●
700	—	—	—	—	—	●
800	—	—	—	—	—	—
900	—	—	—	—	—	—
1000	—	—	—	—	—	—

Height*) H (mm)	Width*) – W (mm) 800	900	1000	1200	1400	1600
200	●	●	●	●	●	●
250	●	●	●	●	—	—
300	●	●	●	●	●	●
350	●	●	●	●	—	—
400	●	●	●	●	●	●
450	●	●	●	●	—	—
500	●	●	●	●	●	●
550	●	●	●	●	—	—
600	●	●	●	●	●	●
700	●	●	●	●	●	●
800	●	●	●	●	●	●
900	—	●	●	●	●	●
1000	—	—	●	●	●	●

*) The table illustrates standard dimensions of the product, according to Width (W) x Height (H). Please contact our sales department if other dimensions are required, or 50 mm division within the max-min span, alternatively 100 mm division within the Width span (1000-1600 mm).

Maintenance

- ⚠ All service and maintenance must be carried out with the power supply disconnected.
- When necessary, the product can be cleaned with a damp cloth and a mild detergent without ammonia.
- The product must not be cleaned with liquids or equipment that can damage the damper or damper blade, e.g. brush.
- When necessary, the duct is cleaned to prevent the mesuring rod and pressure outlet from becoming clogged.
- In duct systems that require cleaning, the damper should be mounted with a sleeve coupling or sliding sleeve.
- The product must not be disposed of as household waste at the end of its life cycle. Always comply with local regulations and requirements for demolition and waste management.

Order specification*)

Ordering code	CERTiQ	-XX	-XXX	-XXXX-XXXX
Product name	CERTiQ			
Variant**)				
Flow control	F			
Pressure control with measuring function	PM			
Controlling Subunit	CS			
Mesuring unit	M			
Rotary damper (high-speed version)	DX			
On/off damper (2-pos. with spring return)	DT	XX		
Power supply				
External power supply, 24 V DC (Standard)	–			
Integrated power supply, 360 V	IPS	XXX		
Size, circular (Ø, mm)			100	
			125	
			160	
			200	
			250	
			315	
			400	XXX
Size, rectangular (mm), **Width** (W) x **Height** (H) See table **T18** for standard dimensions				
			min 200 x 200	
			…	
			max 1600 x 1000	XXXX-XXXX

*) The table only specifies available variants and standard dimensions. Relevant information about function, pressure, air volume, units, communication settings, etc. must be specified in plain text when ordering. This is because none of the units are sold as stand-alone products, only as part of a system solution..

**) Products for flow regulation are supplied with standard units setting at m^3/h, unless specificaily request for l/s setting. This must be specifically stated at order placement.

Example, circular product, Ø160 mm: CERTiQ-F-160
Example, rectangular product, 1000x500 mm: CERTiQ-F-1000-500