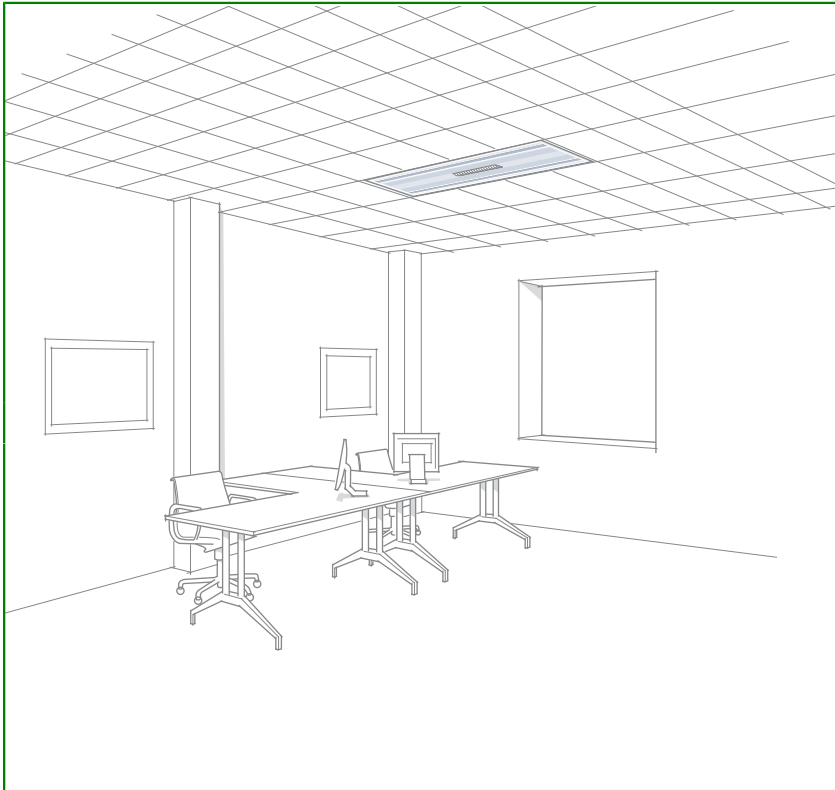


Chilled beam iQ Star ASTRA



Functions

- FPC
- High air flow
- Controls
- Lighting
- Comfort control
- Heating
- Sprinkler
- Boost-function

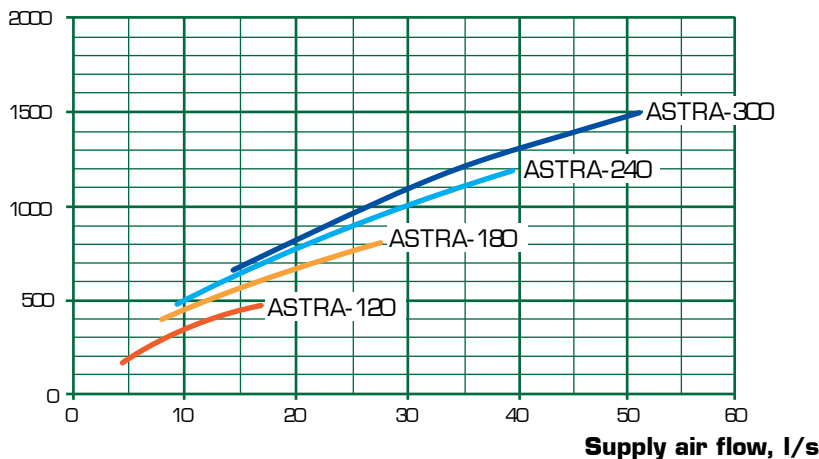


The chilled beam iQ Star ASTRA is an integrated system for ventilation, cooling and heating, fulfilling most needs for indoor climate. The chilled iQ Star ASTRA beam is a very flexible chilled beam that is available as a basic model, but can also be equipped with a number of functions to provide a multifunctional chilled beam. The following functions are available for iQ Star ASTRA: Boost, heating, comfort setting, Flow Pattern Control (FPC air deflector), high air flow, control and regulation equipment, lighting and provision for a sprinkler system. These various functions are described in separate parts in the catalogue.

iQ Star ASTRA has a covered upper side and is intended for flush-mounting in false ceilings and has dimensions adapted to a false ceiling module of 600 mm.

Quick Selection

Cooling effect in W incl supply air



The diagram shows the approximate cooling effect P_{tot} in W with water flow $q_w = 0.1$ l/s, temperature difference between room air and supply air $\Delta t = 8$ °C, pressure drop 70 Pa on the air side and max. sound pressure level $L_{A10} = 30$ dB(A).

Product Facts

- iQ Star ASTRA chilled beam for flushmounting in false ceilings
- Very flexible - available in a wide range of executions from basic to multifunctional
- Adapted for standard 600 mm false ceiling module
- Fastening brackets for rapid and simple installation - lift up - snap in place
- Available with the following functions: Boost, heating, comfort control, Flow Pattern Control (FPC air deflector), high air flow, control equipment, lighting and provision for a sprinkler system.

Product code example

Covered chilled beam
IQIE-240-1-1-01-01, standard.

Technical data for cooling and heating effect

Cooling effect for two-way chilled beam at static pressure drop 70 Pa on the air side

Beam length = 1.2 m (Coil length = 0.9 m)

Water flow, $q_w = 0.1$ l/s

Pressure drop water, $\Delta p_w = 3.9$ kPa

q_l , l/s	P_{tot} , W Δt , °C			P_{bat} , W Δt , °C			L_{A10} , dB(A)
	6	8	10	6	8	10	
5	160	195	235	115	150	190	<20
10	280	340	400	185	245	305	<20
15	365	440	510	220	295	365	<20

Beam length = 1,8 m (Coil length = 1,5 m)

Water flow, $q_w = 0.1$ l/s

Pressure drop water, $\Delta p_w = 4.7$ kPa

q_l , l/s	P_{tot} , W Δt , °C			P_{bat} , W Δt , °C			L_{A10} , dB(A)
	6	8	10	6	8	10	
10	340	425	505	245	330	410	<20
15	455	555	660	310	410	515	20
20	545	660	775	355	470	585	22
25	630	760	890	390	520	650	24

Beam length = 2,4 m (Coil length = 2,1 m)

Water flow, $q_w = 0.1$ l/s

Pressure drop water, $\Delta p_w = 5.3$ kPa

q_l , l/s	P_{tot} , W Δt , °C			P_{bat} , W Δt , °C			L_{A10} , dB(A)
	6	8	10	6	8	10	
15	530	660	785	385	515	640	<20
20	640	790	935	450	600	745	<20
25	735	900	1065	495	660	825	20
30	835	1015	1195	545	725	905	23
35	920	1115	1305	585	780	970	26

Beam length = 3.0 m (Coil length = 2.7 m)

Water flow, $q_w = 0.1$ l/s

Pressure drop water, $\Delta p_w = 6.2$ kPa

q_l , l/s	P_{tot} , W Δt , °C			P_{bat} , W Δt , °C			L_{A10} , dB(A)
	6	8	10	6	8	10	
20	655	805	960	465	615	770	26
25	785	965	1145	545	725	905	28
30	880	1080	1275	590	790	985	29
35	975	1190	1400	640	855	1065	29
40	1080	1305	1535	685	910	1140	29
45	1150	1390	1630	720	960	1200	31

Conditions for cooling effect tables

Total cooling effect of beam, P_{tot} = cooling effect of coil, P_{bat} + cooling effect of supply air, P_{luft} .

The assumed pressure drop on the air side is 70 Pa.

The cooling effect of supply air is based on an undertemperature of 8 °C for the supply air, when compared to the room temperature.

The effects for other water flows than 0.1 l/s can be found in the Fläkt Woods product selection program.

Note! The tables here are based on tests done according to the Nordtest method. The purpose of this method is to be able to compare different chilled beams on the same terms. The method requires a non-existing temperature difference between the air entering the beam coil and the air at 1.1 m above floor surface. To achieve this, the walls in the test room are cooled.

In actual conditions, the temperature difference is normally 1 - 2 °C. This is why the temperature difference t should be increased by 1 - 2 °C to avoid overdimensioning of the beam.

This means that the table value concerned can be increased by 10 - 20 %.

The chilled beam can be supplied with a special construction for higher air flows than listed in these tables.

Heating effect for two-way chilled beam ASTRA at static pressure drop 70 Pa on the air side

Heating effects can be found in separate catalogue section, Heating.

Definitions

q_l	Supply air flow, l/s
P_{tot}	Total cooling effect, W
P_{coil}	Cooling effect of the coil, W
$P_{coil heat}$	Heating effect of the coil, W
Δt	Difference between room air temperature and average water temperature, °C
Δp_w	Pressure drop water, kPa
Δt_w	Temperature change in the coil, °C. Calculated with the formula: $\Delta t_w = P_{coil} / 208$
L_{A10}	Sound pressure level in a room with 10 m ² room absorption, dB(A)

Technical data for other flow patterns, sound data

Technical data for flow patterns other than two-way air distribution

Beams with two-way air distribution utilize the coil in full, which is not the case in one-way distribution or middle positions. This effect factor can be found in the table below

For a particular beam and supply air flow, the obtained effect factor is multiplied by the value given in the effect tables on the previous page.

Type of distribution	Beam length, m	Max. supply air flow, l/s	Effect factor
One-way	1.2	5	0.8
	1.8	15	0.8
	2.4	20	0.8
	3.0	25	0.8
	1.2	10	0.9
70% - 30%	1.8	20	0.9
	2.4	25	0.9
	3.0	35	0.9

One-way

Requirements:

Beam of length = 2.4 m with one-way air distribution, air flow = 20 l/s, pressure drop air = 70 Pa, difference between room air temperature and average water temperature = 8° C and water flow = 0.1 l/s.

Result:

The table on the previous page gives coil effect $P_{coil} = 600$ W. Effect factor = 0.8

Coil effect for one-way air distribution =

$$0.8 \times 600 = 480 \text{ W}$$

Sound power level

ASTRA	Correction K _{oct} dB							
	Octave band, middle frequency, Hz							
	63	125	250	500	1000	2000	4000	8000
-120	4	0	-3	1	0	-4	-12	-8
-180	4	0	-3	1	0	-4	-12	-8
-240	4	0	-3	1	0	-4	-12	-8
-300	4	0	-3	1	0	-4	-12	-8
Tolerance	+/-	6	3	2	2	2	2	3

The sound power levels for every octave band are obtained by adding together the sound pressure level L_{A10} , dB(A), and the corrections K_{oct} given in the table above, according to the following formula:

$$L_W = L_{A10} + K_{oct}$$

The correction K_{oct} is the average in the area of application of the chilled beam ASTRA.

Sound attenuation

The average sound attenuation ΔL of chilled beam ASTRA from duct to room includes the end reflection of the connecting duct.

ASTRA	Sound attenuation in supply air duct of the beam ΔL , dB							
	Octave band, middle frequency, Hz							
	63	125	250	500	1000	2000	4000	8000
-120	21	13	7	7	9	11	12	13
-180	21	13	7	7	9	11	12	13
-240	21	13	7	7	9	11	12	13
-300	21	13	7	7	9	11	12	13
Tolerance	+/-	6	3	2	2	2	2	3

Construction and function

The chilled beam ASTRA is designed for ceiling mounting, and it is suited for ceiling modules of size 600 mm both in length and width, which means that it is flush with the ceiling surface.

The ASTRA chilled beam is a very flexible chilled beam that is available as a basic model, but can also be equipped with a number of functions to provide a multifunctional chilled beam. The following functions are available for ASTRA: heating, comfort control, Flow Pattern Control (FPC air deflector), function for high air flow, control equipment, lighting and provision for a sprinkler system and Boost-functionality.

The air flow can be adjusted by means of the patented adjusting rails (Comfort control, optional function, read more in separate catalogue section) with which the length of the holes in the supply air duct is changed. This can easily be done with normal adjustments.

The adjustable hole lengths allow different air distribution (two-way, one-way and middle positions).

The simple adjustment of air distribution and capacity makes it possible to adapt to changing conditions in the future. Before delivery, the hole lengths of standard beams are preset at the longest possible position to provide a starting position for later adjustment (if the beam have comfort control).

The beam can be supplied with a coil for heating water, read more in separate catalogue section Heating.

The purging nipple is a choice in the product code.

Material and surface finish

The casing is mainly made of galvanized steel sheet. The frontplate is powder painted in white. The standard colour RAL 9010, which corresponds to NCS 0502-Y, gloss level 30. Coil made of copper pipe with connection, $\varnothing_{out} = 15$ mm, and aluminium fins. Maximum working pressure 1.6 MPa.

Instructions

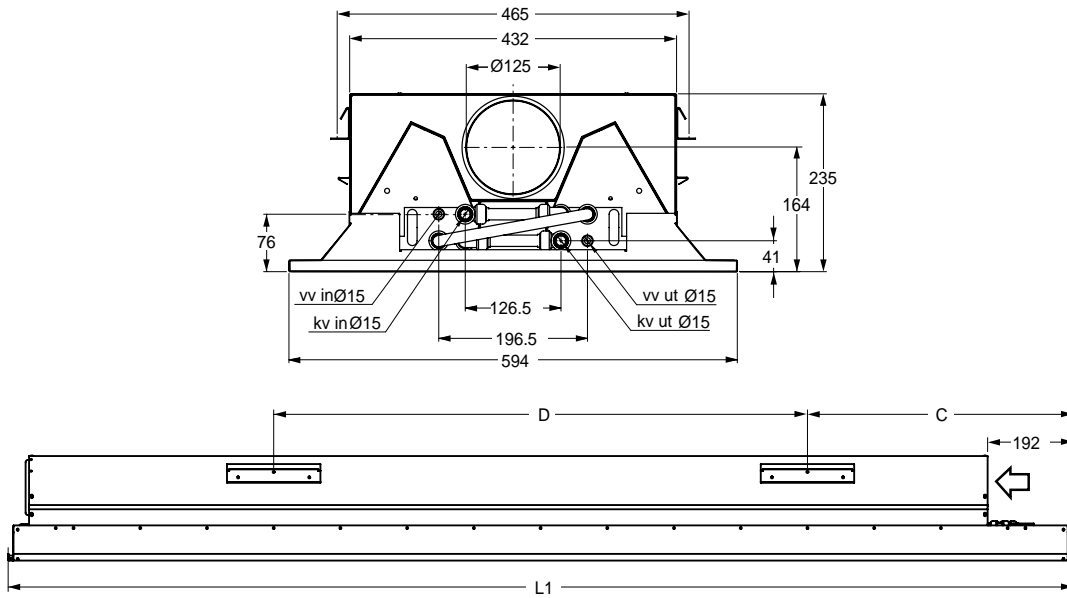
Instructions for installation, balancing and care are described in detail in our technical instructions which are supplied with every product. The instructions are also available on the Internet at www.flaktwoods.com

Technical data and dimensioning

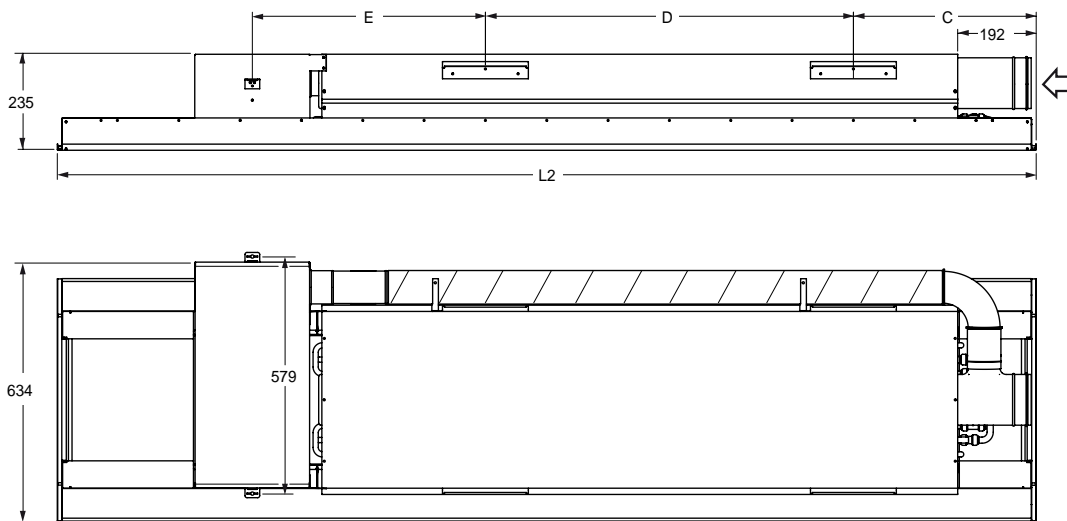
For complete dimensioning details, please see Fläkt Woods product selection program. Contact our nearest sales office for further information.

Dimensions and weights

Chilled beam ASTRA



Chilled beam ASTRA with Boost-function IQAZ-22



Dimensions

Size	L1	L2	C	D	E
IQIE-120-1-c-dd-ee	1194	1794	297	600	420
IQIE-180-1-c-dd-ee	1794	2394	447	900	570
IQIE-240-1-c-dd-ee	2394	2994	597	1200	720
IQIE-300-1-c-dd-ee	2994	3594	747	1500	870
IQIE-120-2-c-dd-ee	1794		897	600	
IQIE-180-2-c-dd-ee	2394		1047	900	
IQIE-240-2-c-dd-ee	2994		1197	1200	
IQIE-300-2-c-dd-ee	3594		1347	1500	

Weight

Weight per meter of chilled beam	kg/m
Beam dry weight	22.3
Beam water filled, cooling	23.2
Beam water filled, cooling and heating	23.7

Description and product code

Product code

Main code

Covered supply air beam, standard **IQIE-aaa-b-c-dd**

Nominal length (aaa) cm
120, 180, 240, 300

Connection alternative (b)
1 = Horizontally through gable
2 = Horizontally through gable, extended casing 600 mm on connection side

Coil construction (c)
1 = Cooling
2 = Cooling with purging nipple (right side)
3 = Cooling and heating
4 = Cooling and heating with purging nipple (right side)

Comfort control (dd)¹⁾
01 = With Comfort control, 1 hole row
02 = With Comfort control, 1 hole row and FPC
03 = With Comfort control, 2 hole rows
04 = With Comfort control, 2 hole rows and FPC
05 = Without Comfort control, 1 hole row
06 = Without Comfort control, 1 hole row, FPC
07 = Without Comfort control, 2 hole rows
08 = Without Comfort control, 2 hole rows and FPC

¹⁾ 1 hole row = standard air flow
2 hole rows = high air flow

False ceiling type (ee)
01 = Default, T24

Boost-function **IQAZ-22-bbb-c-dd-eee-ff**

Length (bbb)cm
(aaa as in chilled beam code)

Connection side Boost (c)
1 = Right side (default)
2 = Left side

Execution (dd)
01 = Default, ON/OFF
10 = 0...10 V continuous control signal (eee=024)*

Motor voltage (eee)
024 = 24 V
230 = 230 V

Beam type (ff)
01 = IQIE

* Only available together with STRA-14.

Fastening bracket, unpainted **QFAZ-18-3-1**



Set with 2 pcs.
1 set QFAZ-18-3-1 per beam.

Delivery execution

Protective film over painted surfaces and plastic covers for duct and pipe openings are standard.

Order example:

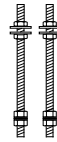
Covered chilled beam IQIE-240-1-1-01-01, standard.
Hole length = 18 + 18 mm.
Fastening bracket, unpainted QFAZ-18-3-1.

Special constructions

Describe the deviations from the standard model clearly and replace the product code letter standing for the construction part in question with an X.

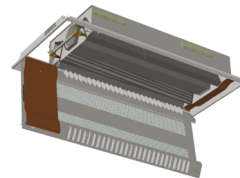
Accessories

Suspension rods M8 **QFAZ-12**



Set with 2 pcs. Length 500 mm.
2 sets QFAZ-12 per beam

Corner unit **IQAZ-17-bb-cc-d**



Execution (bb)
01 = Standard
02 = Extended 600mm

Beam type (cc)
01 = IQIE

Installation (d)
1 = Installed
2 = For post-installation

Heating, comfort control, Flow Pattern control (FPC), function for high air flow, control equipment, lighting, Boost-function and provision for a sprinkler system.

Descriptions included in a separate section of this catalogue.