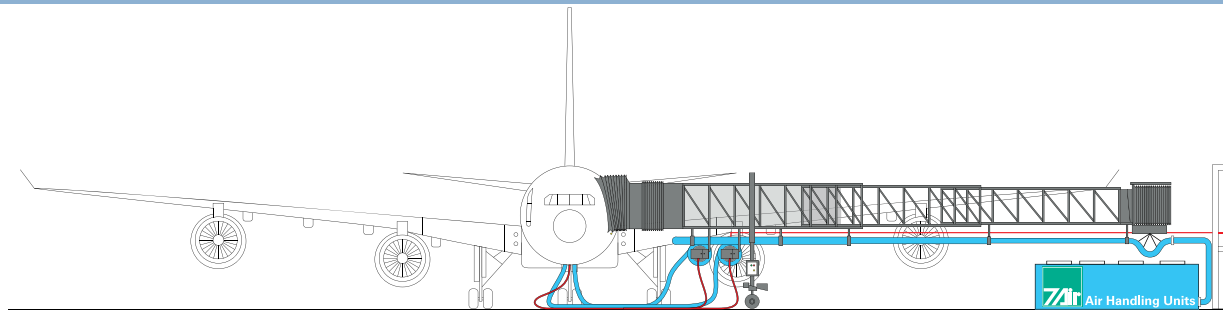


ISTinox PCA units

The cool solution

DXi



ISTinox PCA-units DXi



Do you have difficulties to cool down the aircrafts at your airport?

Are the aircrafts not pulled down fast enough?

Is the cabin too warm when passengers are boarding?

We have the solution: ISTinox PCA brings comfort into each aircraft – under all conditions.

- **ISTinox offers complete systems to supply aircrafts with PCA and 400Hz power**
- **ISTinox PCA units are designed to meet the requirements of all aircraft types under all climatic conditions**
- **ISTinox PCA units have a standard design and are built in modules. Therefore they can flexibly respond to the specific requirements of each airport**

ISTinox PCA-units DXi

Advantages



Environmentally friendly technology

maximum energy efficiency and low refrigerant volume.

Designed for extra longevity

All main components are made of high-quality materials; motors, compressors and fans are of the highest quality and efficiency; the housings casing isare made of extruded aluminium profiles and insulated double metal sheet panels.

Continuous air supply

The aircrafts are continuously supplied with cold air, which meansthus the aircraft cooling is never interrupted at any required cooling period- not even during defrosting.

Air flow range from 5'300 kg/hr to 15'000 kg/h

Maximum energy efficiency

The main components are equipped with variable speed drives (frequency converter) to minimize power consumption.

Temperature at unit outlet at -3°C to -6°C

The temperature of the pre-conditioned air at the unit outlet in cooling mode is leveled to -3°C / -6°C.

For aircraft types C/D/E/F

Use for aircrafts Code C/D/E/F. Two PCA units are required for the aircraft Airbus A380.



ISTinox PCA-units DXi

Type DXi 400

Device description

Casing in high quality

proven, double-walled monobloc housing considering specific requirements of high pressures. The casing insulation of 45 mm results in good thermal and sound insulation values. Easy to operate inspection doors with quick-release fasteners on all sides facilitate access for maintenance work. The profiles are thermally separated.

Outside air weather protection grill

aluminum version with drip nose and fly protection screen

Air filters

fixed by pressing device for easy and fast replacement from lateral. Filter cells in environmentally friendly wooden frame design.

High performance radial fan

consisting of radial impeller with backward curved impeller blades inclusive mounted electric motor for operation with frequency converter.

Refrigeration device

refrigeration system built into the unit, consisting of two semihermetic compact screw compressors with integrated frequency converter for continuous control of the refrigeration capacity; air heat exchanger with copper pipes and aluminum fins, mounted condenser with controlled EC-Axial fans.

Assembly of switchgear and controlgear

is equipped with the latest DDC control technology and is installed in a monobloc housing. The control contains all functions which are necessary for the according operation and regulation. The control cabinet and machine room temperature are constantly monitored; if required with control cabinet cooling.

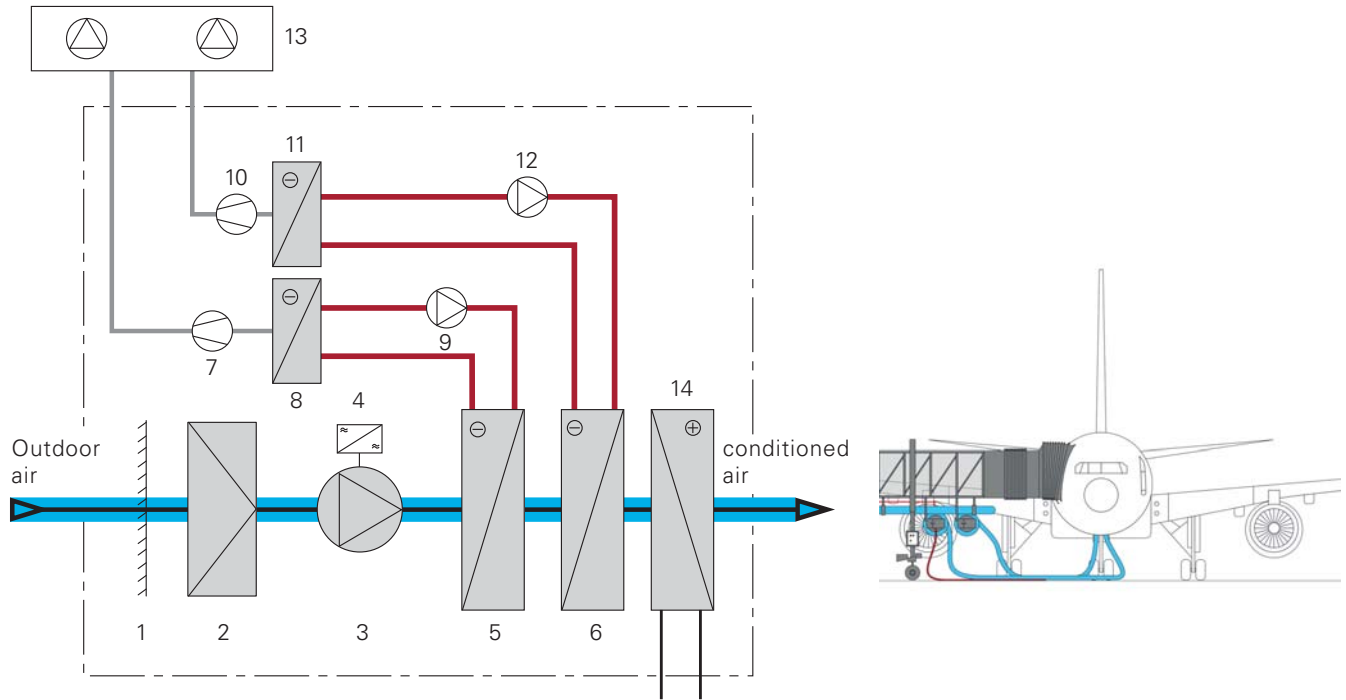
Technical data sheet for DXi 400; designed for climatic conditions of max 36°C/ 24.87 °C Tw

Aircraft Code		C/D/E/F (except A380)
Cooling capacity	[kW]	400
Heating capacity	[kW]	165
Type of refrigerant		134a
Weight of refrigerant	[kg]	ca. 195
cooling medium sole	Antifrogen N	30 %
heating medium sole	Antifrogen N	30 %
Air handling component		
Max outside air temperature / temperature wetbulb	[°C / °C Tw]	36 / 40
Min outside air temperature / temperature wetbulb	[°C / °C Tw]	-15 / 90
Supply air temperature (at PCA unit outlet)	[°C]	- 3
Static pressure at PCA unit outlet (@max air flow rate)	[Pa]	13'000
Unit air flow rate minimum / maximum	[kg/h]	5'300 / 15'000
Electrical power requirements		
Total power (nominal)	[kVA]	309
Operating current	[A]	446
Voltage / frequency	[V / Hz]	3x400/230 / 50
Dimensions / weights		
Length	[mm]	ca. 7'000
Width	[mm]	ca. 2'250
Height	[mm]	ca. 2'985
Weight	[kg]	ca. 10'100

Further units available for aircraft types B, C, D.

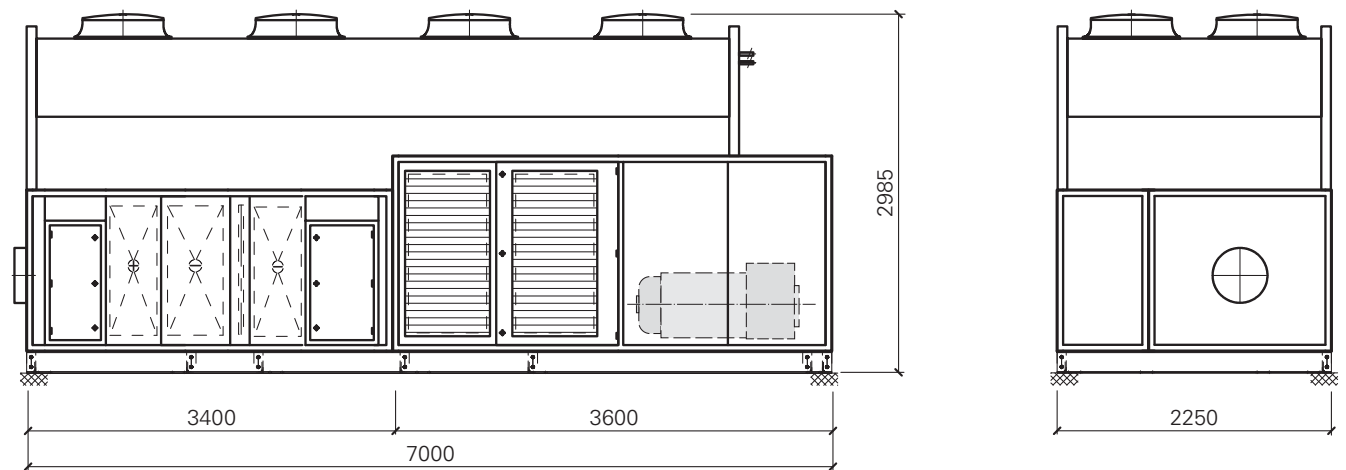
ISTinox PCA-units DXi

Type DXi 400



system diagram

- | | |
|-------------------------------------|------------------------------|
| 1) weather protection grill | 8) plate evaporator 1 |
| 2) fresh air filter | 9) circulation pump 1 |
| 3) high-performance centrifugal fan | 10) refrigeration compressor |
| 4) frequency converters | 11) plate evaporator 2 |
| 5) air heat exchanger 1 | 12) circulation pump 2 |
| 6) air heat exchanger 2 | 13) axial condenser |
| 7) refrigeration compressor 1 | 14) heat exchanger «heating» |



ISTinox PCA-units DXi

Type DXi 500

Device description

Casing in high quality

proven, double-walled monobloc housing considering specific requirements of high pressures. The casing insulation of 45 mm results in good thermal and sound insulation values. Easy to operate inspection doors with quick-release fasteners on all sides facilitate access for maintenance work. The profiles are thermally separated.

Outside air weather protection grill

aluminum version with drip nose and fly protection screen

Air filters

fixed by pressing device for easy and fast replacement from lateral. Filter cells in environmentally friendly wooden frame design.

High performance radial fan

consisting of radial impeller with backward curved impeller blades inclusive mounted electric motor for operation with frequency converter.

Refrigeration device

refrigeration system built into the unit, consisting of two semihermetic compact screw compressors with integrated frequency converter for continuous control of the refrigeration capacity; air heat exchanger with copper pipes and aluminum fins, mounted condenser with controlled EC-Axial fans.

Assembly of switchgear and controlgear

is equipped with the latest DDC control technology and is installed in a monobloc housing. The control contains all functions which are necessary for the according operation and regulation. The control cabinet and machine room temperature are constantly monitored; if required with control cabinet cooling.

Technical data sheet for DXi 500; designed for climatic conditions of max 46°C/ 29.64 °C Tw

Aircraft Code		C/D/E/F (except A380)
Cooling capacity	[kW]	500
Type of refrigerant		134a
Weight of refrigerant	[kg]	ca. 220

Air handling component

Max outside air temperature / temperature Tw	[°C / °C Tw]	46 / 30
Supply air temperature (at PCA unit outlet)	[°C]	- 6
Static pressure at PCA unit outlet (@max air flow rate)	[Pa]	13'000
Unit air flow rate minimum / maximum	[kg/h]	5'300 / 15'000

Electrical power requirements

Total power (nominal)	[kVA]	473
Operating current	[A]	683
Voltage / frequency	[V / Hz]	3x400/230 / 50

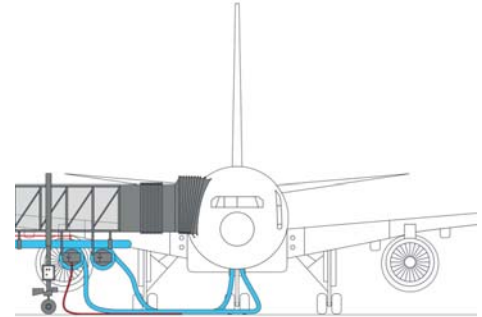
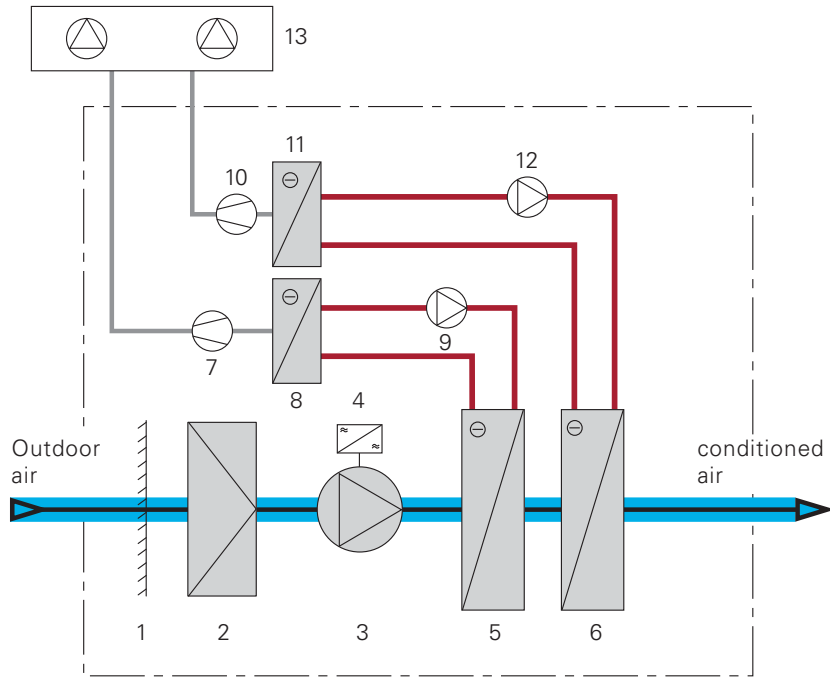
Dimensions / weights

Length	[mm]	ca. 6'600
Width	[mm]	ca. 2'250
Height	[mm]	ca. 2'990
Weight	[kg]	ca. 10'400

Further units available for aircraft types B, C, D.

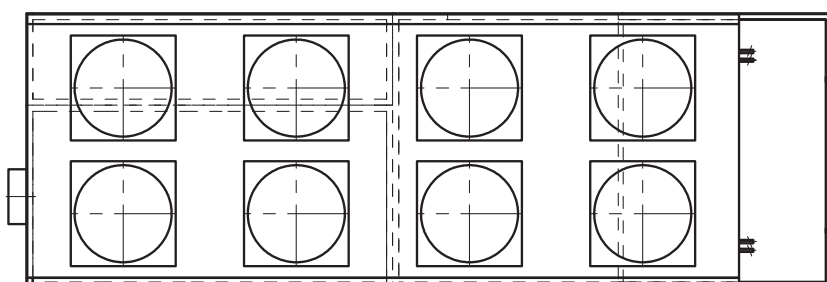
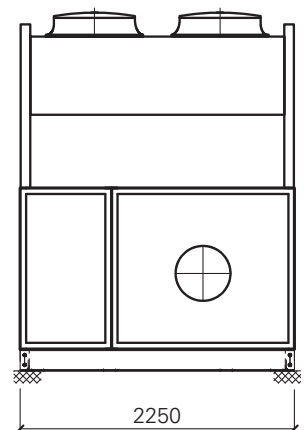
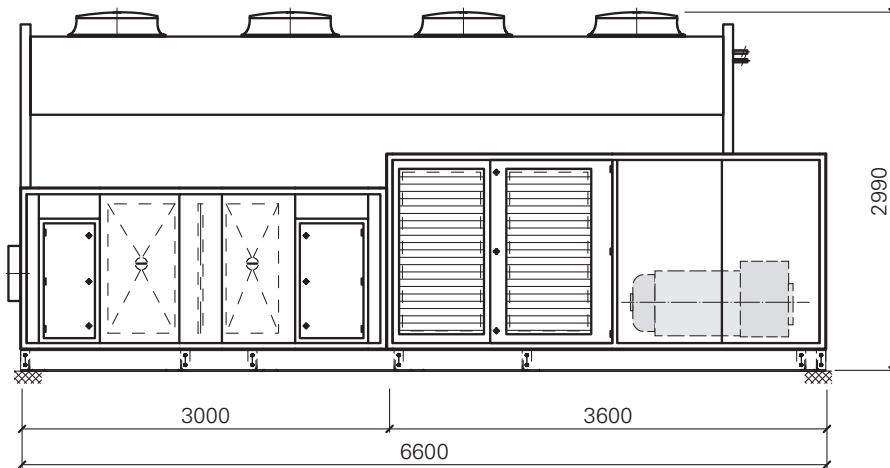
ISTinox PCA-units DXi

Type DXi 500



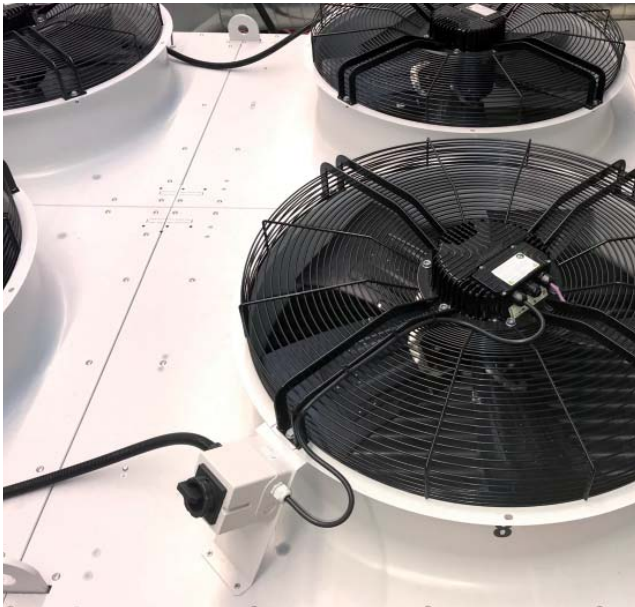
system diagram

- | | |
|-------------------------------------|------------------------------|
| 1) weather protection grill | 8) plate evaporator 1 |
| 2) fresh air filter | 9) circulation pump 1 |
| 3) high-performance centrifugal fan | 10) refrigeration compressor |
| 4) frequency converters | 11) plate evaporator 2 |
| 5) air heat exchanger 1 | 12) circulation pump 2 |
| 6) air heat exchanger 2 | 13) axial condenser |
| 7) refrigeration compressor 1 | |



ISTinox PCA-units DXi

System concept and functional description



▪ principle

The air volume is controlled according to the pre-selected aircraft manufacturer and aircraft type.

The air is optimally cooled based on two cooling stages - dehumidification and cooling.

▪ air volume control

After entering the aircraft type, the defined air volume is preset to the controller as set point value.

The static pressure is monitored at the air outlet of the unit. If there is a risk of overpressure, the fan speed is decreased accordingly.

▪ temperature control

The temperature is regulated via the power control of the refrigeration compressors.

The air outlet temperature is regulated to a fixed value. (-3°C/- 6°C). If an aircraft cabin temperature sensor is present, the cooling capacity is reduced if the cabin temperature falls below the setpoint value.

▪ de-icing function of the heat exchanger

If the second heat exchanger ices up, automatic defrosting takes place. The necessity of defrosting is measured by the pressure drop at the heat exchanger.

Cooling unit overrun:

A fan overrun function after the retraction of the supply hoses assures the deicing of the second heat exchanger and removes moisture from the unit.

In this way, the device is optimally prepared for the next cycle.

Daily hygiene flushing:

A daily hygiene flush removes standing air from the unit.

▪ cooling of internal device components

Electrical components, fan and compressors are permanently cooled with a minimum air volume.

▪ monitoring functions

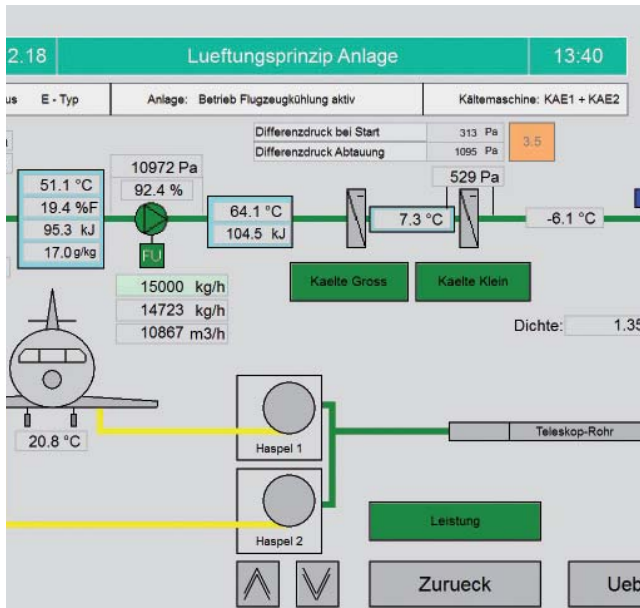
In standby mode: the temperature in the machine room and in the control cabinet is monitored. If a setpoint value is exceeded, an internal cooling cycle is enabled.

▪ shut-off at smoke detection

The fan is switched off immediately if smoke is detected in the supply air.

ISTinox PCA-units DXi

Operating and Alarm concept



▪ Manipulating by the operator (on site)

The airport operator can operate the PCA device on a control panel.

The PCA device is operated via switches and push-buttons.

▪ Service personnel

With the aid of a WEB-capable panel, integrated in the control cabinet, the service personnel can call up password-protected information, e.g. for service or fault diagnosis.

Graphically guided operation via touch panel e.g.:

- Graphic installation diagrams
- Selection of operating mode (ON - OFF - HAND)
- Parameterization (setpoints)
- Alarm list with alarm history

▪ Higher-level building control system (option)

Depending on the requirements and security standards at the airport, an interface to a higher-level control system can be defined and created in mutual agreement.

▪ Maintenance and repair

All important components are easily accessible for maintenance and cleaning purpose due to large inspection doors.

Low maintenance and operating costs due to uncompromising execution quality

Low operating costs due to high-quality materials are justifying an investment in ISTinox PCA devices.

Maintenance contract on request

▪ Alarm and emergency concept

Depending on the priority of a malfunction, subsystems or the entire system are switched off.

A function triggered via an external push-button moves the system into a safe status in shortest possible time. (switch-off for personnel safety against mechanical hazards).

A main switch on the PCA device safely disconnects all units except one "excluded circuit" as connecting socket (Shutdown for personnel safety against electrical hazards).

Alarms can be reported to a higher-level building control system via potential-free contact(s) (collective alarm) or via an optional interface.

ISTinox PCA-units DXi

Casing - characteristics



▪ Casing

Stable, screw-connected frame construction made of hollow aluminium profiles, screwed together externally.

Casing parts with thermally insulated frame profiles and corner joints as standard. Coupling points with circumferential plug-in guide frames which provide easy maintenance.

High-quality rubber gaskets are inserted in the frame and welded in the corners.

Doublewall version with intermediate environmentally friendly PU foam insulation.

The whole unit can be disassembled and reassembled at all times. All inspection doors are equipped with adjustable hinges and quickrelease fasteners; available with door locking device on the pressure side upon request.

Casing and installations in different material versions according to the quality level specification. Casing with 45mm panel thickness.



▪ Temperature resistant up to maximally 110 °C

▪ Life Cycle Assessment Monobloc Panels

The PIR composite panels show in comparison to mineral wool panels a 45% lower environmental impact. Life cycle assessment was prepared by IPSO ECO AG Unit Environment.

▪ Rigid foam insulation SEVEN-PIR®

CFC- and HFC-free (ODP = 0.0; GWP = 0.0008)
Free of chlorine and other halogens
non-toxic and non-carcinogenic
Thermal conductivity = 0.021 W/mK



▪ Casing classifications according to SN EN 1886 (M)

Thermal transmission coefficient	Klasse	T2
Thermal bridge factor	Klasse	TB2
Sound insulation at 250 Hz	[dB]	16
Deflection	Klasse	D1
Tightness	Klasse	L1

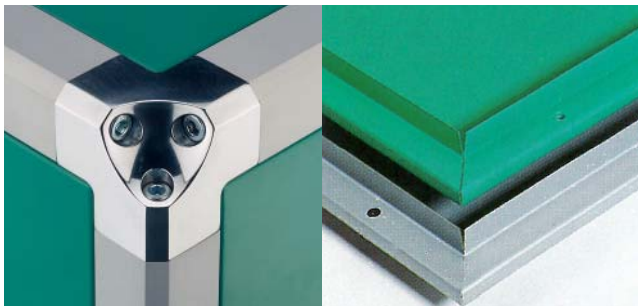
ISTinox PCA-units DXi

Casing - quality features



▪ Thermal isolation

Insulated and thermally disaggregated frame profiles ensure the loss of energy between warm air and cool air is low. In addition, water condensation is strongly embanked.



▪ Processing and coating

Cover sheets are first cut, processed and then finally coated. As a result, the panel has the highest possible corrosion resistance and a longer live cycle.



▪ Versatile door hinges

Three-dimensionally adjustable. The cover's contact pressure and alignment are easy to adjust → Less leakage air loss.

▪ Seven-Air door latch

Door contact pressure can be adjusted at any time, thus meaning that seal shrinkage is caught → Minimum air leak rate and lower operating costs.

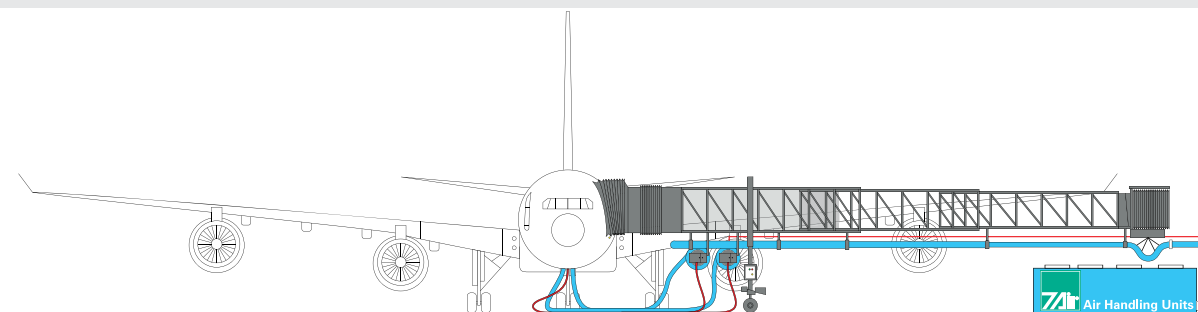




INOX-STEEL-TECHNOLOGY

SWISS MADE

As a Swiss producer, the company has committed itself to the "Swiss Quality" standard of excellence. In order to ensure that Swiss standards of quality are met in every sense, IST's products are exclusively produced by its qualified staff at its location in Switzerland.



IST-Edelstahl-Anlagenbau AG

Schorenstrasse 54

CH-3645 Thun-Gwatt

Tel.: +41 (0)33 334 26 00

Fax: +41 (0)33 336 72 66

E-Mail: ist@istinox.ch

www.istinox.ch

Switzerland

