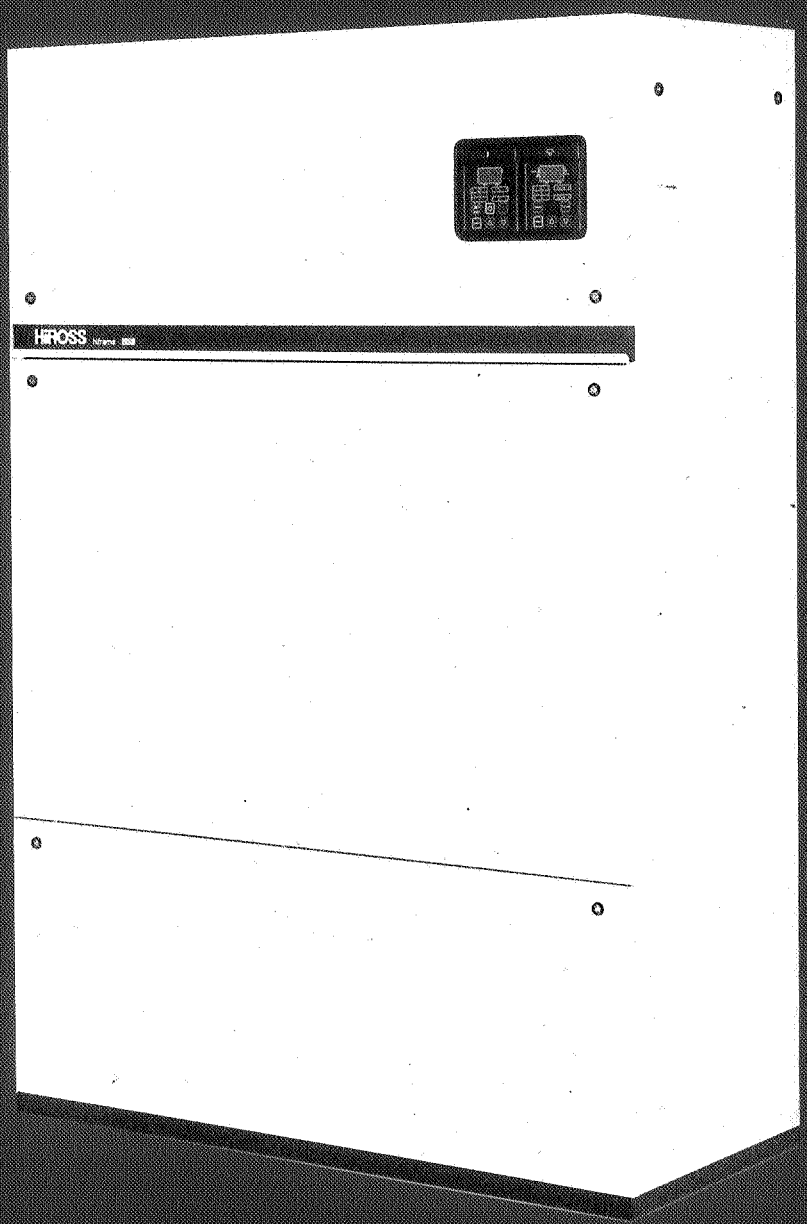
hiframe

microprocessor controlled
air conditioning system
for medium computer centres

HiROSS leader in environment control of computer rooms
electronic telephone exchanges and digital equipment



hiframe

Innovation and continuity

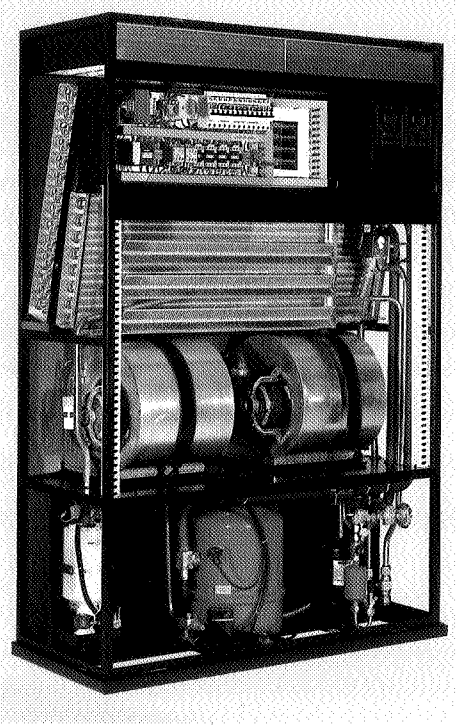
hiframe is a new series of medium capacity close control air conditioners, continuing the strong innovative design criteria, high performance, and reliability of Hiross. **hiframe** is our response to the modern demands of all technological environments. The **hiframe** guarantees close control of temperature, humidity, and air purity, essential for the correct operation of computers, telecom, and other related equipment, while maintaining low noise levels to avoid undue discomfort to personnel within the room. Therefore, the **hiframe** integrates perfectly into each individual installation.

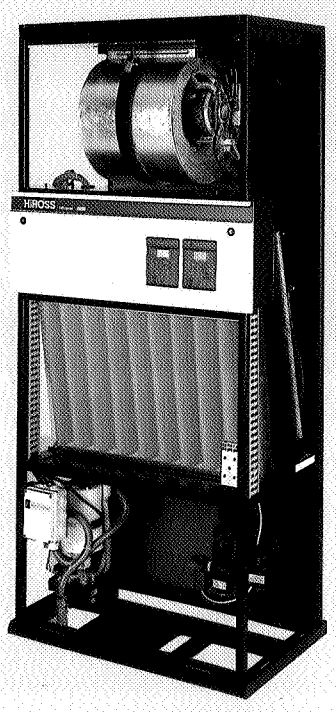
Wide range: 22 models

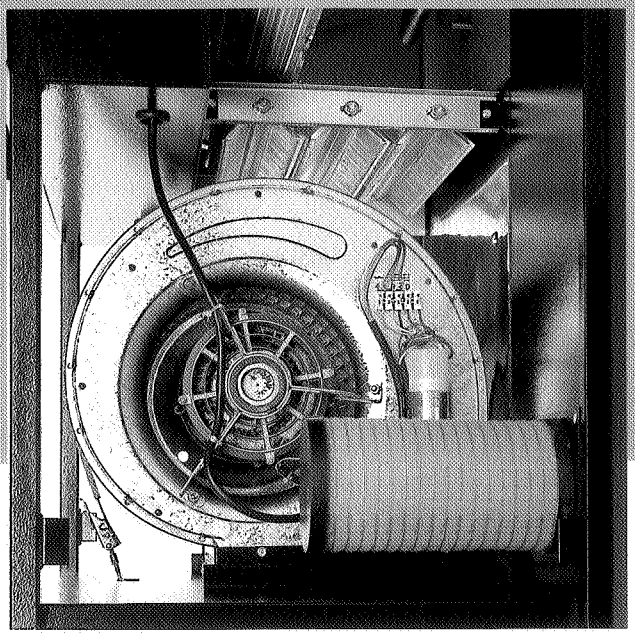
22 different models are available:

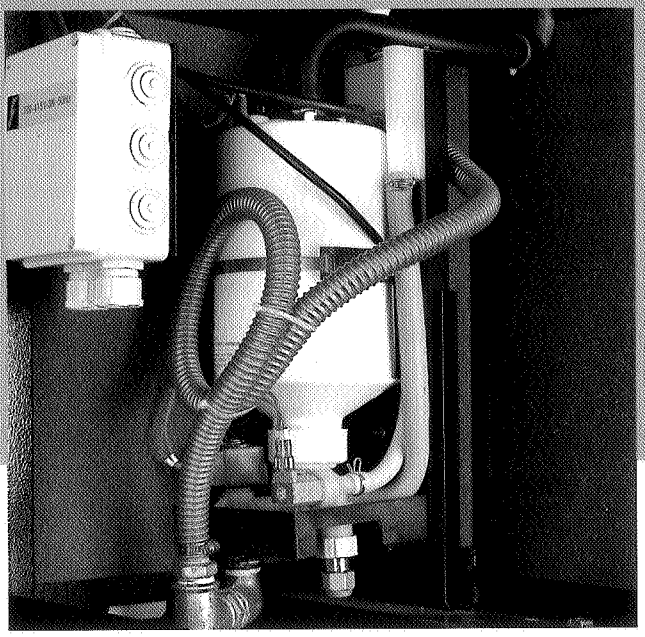
- direct expansion
  - air cooled (A)
  - water cooled (W) (open circuit)
  - water/glycol cooled (W) (close circuit)
- chilled water (C)

All models are available as down flow pattern (under = U) and up flow pattern (over = O).









Quality assurance

hiframe as all the other Hiross units satisfies the strongest quality standards. The high standard is assured by exhaustive run testing under operating conditions. All components are thoroughly examined to guarantee they meet demanding standards for performance under even the most adverse conditions. Hiross produces according to EN 29000, the European norm for total equipment quality.

Reduced noise levels

The fans totally isolated from metallic contact with the frame, the compressor fitted in a separated compartment and the acoustic lining were key points in developing such a low noise level units.

Fans

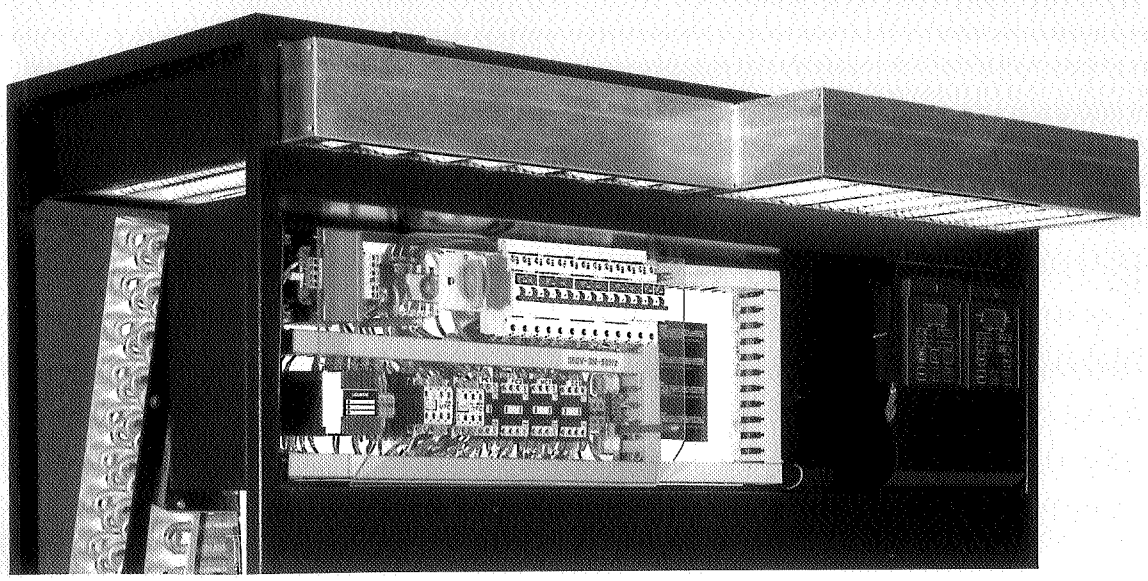
Direct driven six-pole centrifugal fans are standardly fitted. As optional special fans are available for external static pressures up to 250 Pa approx. Special care has been dedicated to the study of the fan assembly in order to reduce any contact with the frame.

Clean steam

The electronic steam boiler humidifier considerably reduces maintenance and operating costs. It produces clean, particle free steam almost suddenly by passing an electric current through water in a disposable plastic cylinder.
The capacity is adjustable up to 5 kg/h.

Modularity and easy maintenance

Full frontal access for ordinary maintenance, refrigerant, electrical, humidifier feed, bottle, and drain connections from the base to simplify and reduce installation time. This means that it is possible to install several units side by side for modular application.



Space saving: only 55 cm depth

With a depth of only 55 cm giving the **hiframe** a vertical shape, footprints are from only 0.47 to 0.71 square metres. The extremely reduced depth of only 55 cm allows the installation even in narrow area.

Clean air

Full frontal access for the filter section. Filtration efficiences from Eurovent EU3 to EU5 according to EUROVENT 4/5 standard are available in metallic frames for fitting within the **hiframe** without any frame modification.

Advanced controller

A microprocessor controller is standardly fitted to manage every function in order to achieve the room control requirements while continuously monitoring the status of the critical parameters for alarms. An RS422 communications port is available as optional.

Electric panel

Electric board produced according to IEC norms includes general switch, MCB (magnetic circuit breaker), 24V AC control circuit. Volt-free contacts for:

- on/off
- general alarm
- fire alarm

are easily available on a terminal block.
Base stub connection terminal box with frontal access has been provided to ease the power connection.

Special air flow sensor

A special PTC air flow sensor is fitted in order to single out any possible fan fault sending an alarm signal directly to the control system.

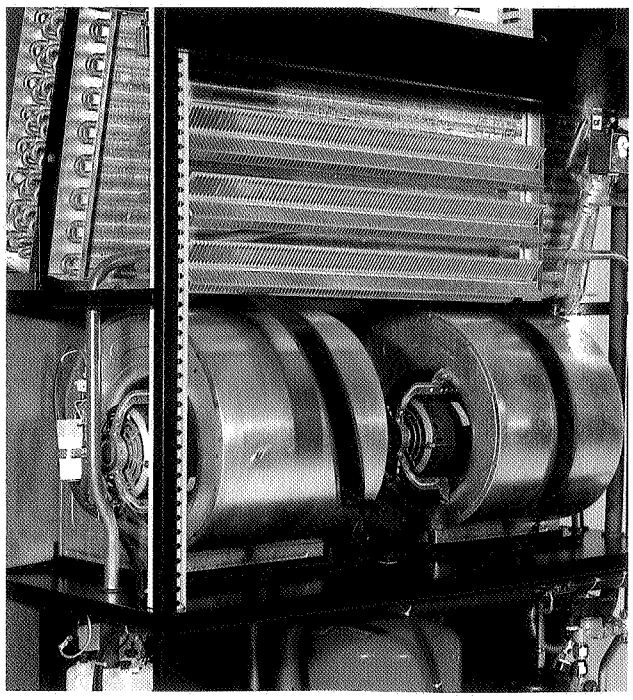
Heating and reheating system

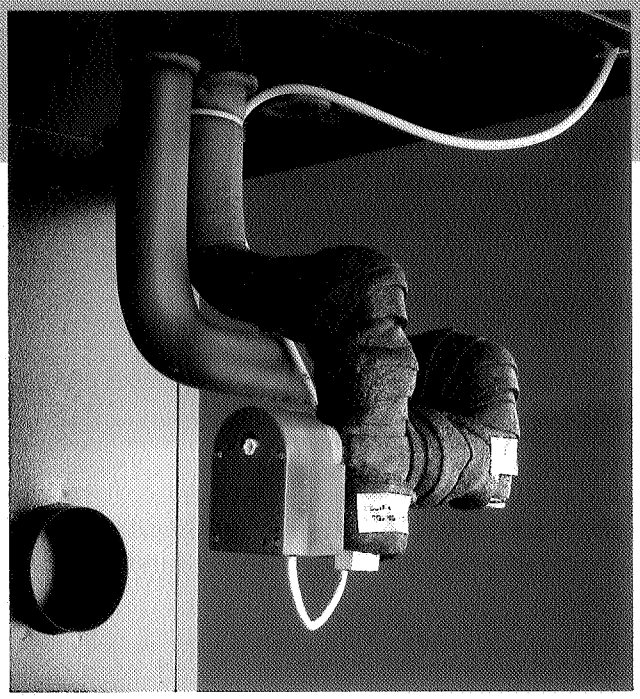
Three different systems are available:

- hot gas
- hot water
- aluminium balanced 3-stage progressively operating, 3-phase, electric reheaters have a low surface temperature in order to avoid problems due to ionization.

Reliable refrigeration

The generous air flow, to permit a large number of air changes so ensuring the rapid removal of the heat load, the high Sensible Heat Ratio, the well dimensioned fans optimized with a static pressure recovery plenum, were key points in developing **hiframe** in order to achieve an excellent EER. A full refrigeration circuit is installed with the main components separated from the air stream.

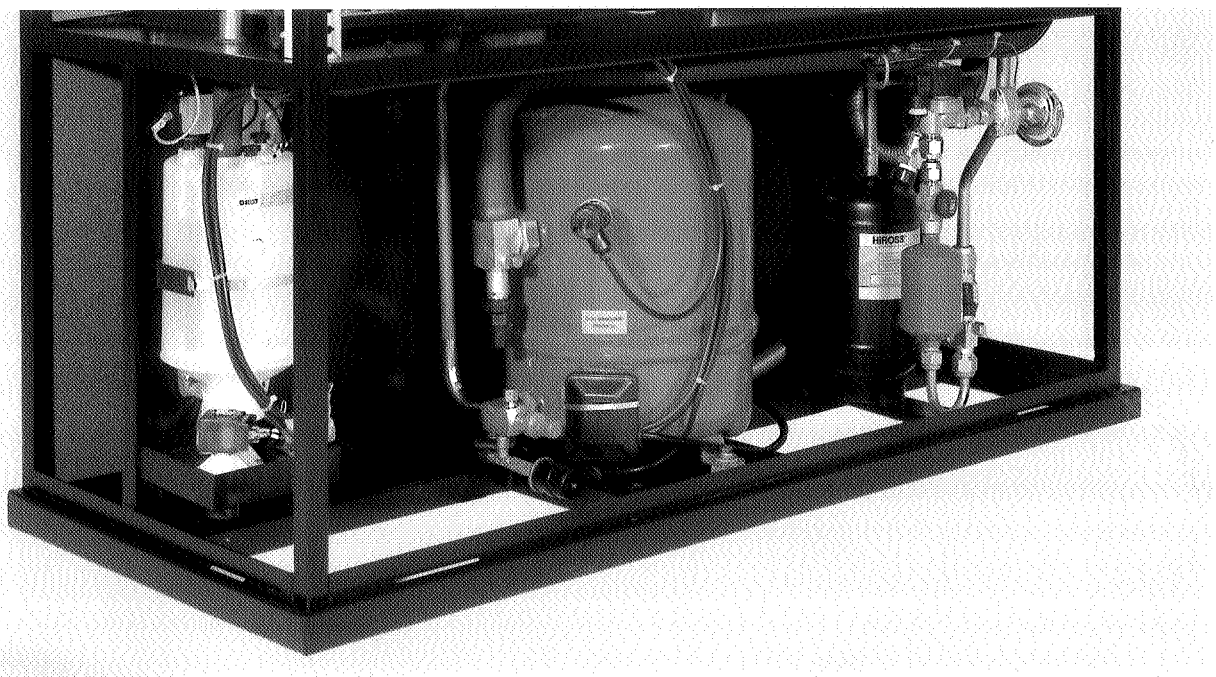




The circuit includes:

- fully hermetic compressor with crankcase heater and internal thermal protection completely isolated from the air stream to allow inspection during the A/C unit operation
- Rotalocks on the fully hermetic anti-vibration mounted compressor, and on the liquid receiver
- externally equalized TEV (thermostatic expansion valve)
- solenoid valve
- evaporative coil finned-tube type
- stainless steel built-in plate condenser (water cooled version only = W)
- filter dryer
- sight glass
- LP and HP pressure switches
- R22 charging points

All the A/C units are pre-charged (not completely) and tested with R22 and refrigerant oil.



cooling capacity data

	Model			U11	U17	U22	O11	O17	O22
AIR COOLED	discharge air pressure = 20 Pa under models discharge air pressure = 0 Pa over models								
	Return air conditions								
	22°C/50% RH (1)	Total	kW	11.9	15.8	20.3	11.7	15.8	20.3
		Sensible	kW	11.6	15.8	20.3	10.7	15.8	19.3
	24°C/50% RH (1)	Total	kW	12.4	16.6	21.5	12.3	16.6	21.5
		Sensible	kW	12.0	16.5	20.7	11.0	16.4	19.8
	26°C/50% RH (1)	Total	kW	13.2	17.6	22.7	13.0	17.5	22.5
		Sensible	kW	12.4	17.3	21.1	11.3	17.0	20.3
(OPEN CIRCUIT) WATER COOLED	22°C/50% RH (2)	Total	kW	12.9	16.9	21.5	12.5	16.7	21.2
		Sensible	kW	12.2	16.9	20.7	11.1	16.4	19.7
	24°C/50% RH (2)	Total	kW	13.7	17.9	22.8	13.3	17.9	22.5
		Sensible	kW	12.5	17.3	21.2	11.4	17.2	20.2
	26°C/50% RH (2)	Total	kW	14.6	19.1	24.1	14.2	18.9	23.7
		Sensible	kW	12.9	18.0	21.7	11.7	17.7	20.8
(CLOSED CIRCUIT) W/GLYCOL COOLED	22°C/50% RH (3)	Total	kW	11.4	15.6	19.5	10.9	15.4	19.3
		Sensible	kW	11.4	15.6	19.5	10.4	15.4	18.8
		Water/glycol flow rate	l/s	0.630	0.801	1.005	0.60	0.66	0.99
		Total pressure drop	kPa	40	70	72	46	73	73
	24°C/50% RH (3)	Total	kW	12.0	16.4	20.6	11.6	16.2	20.1
		Sensible	kW	11.7	16.4	20.2	10.8	16.1	19.3
		Water/glycol flow rate	l/s	0.678	0.858	1.083	0.660	0.710	1.070
		Total pressure drop	kPa	51	86	76	47	86	85
	26°C/50% RH (3)	Total	kW	13.2	17.6	21.7	12.2	17.0	21.1
		Sensible	kW	12.4	17.2	20.9	11.0	16.9	19.7
		Water/glycol flow rate	l/s	0.739	0.943	0.171	0.710	0.760	1.140
		Total pressure drop	kPa	68	90	97	54	43	94
CHILLED WATER	22°C/50% RH (4)	Total	kW	11.5	n.a.	17.0	9.8	n.a.	16.0
		Sensible	kW	11.5	n.a.	17.0	9.8	n.a.	16.0
		Chilled water flow rate	l/s	0.55	n.a.	0.18	0.47	n.a.	0.76
		Total pressure drop	kPa	20	n.a.	20	15	n.a.	18
	24°C/50% RH (4)	Total	kW	16.0	n.a.	23.8	13.6	n.a.	22.3
		Sensible	kW	13.6	n.a.	21.0	11.6	n.a.	19.7
		Chilled water flow rate	l/s	0.76	n.a.	1.13	0.65	n.a.	1.06
		Total pressure drop	kPa	35	n.a.	36	27	n.a.	32
	26°C/50% RH (4)	Total	kW	20.7	n.a.	30.9	17.7	n.a.	29.1
		Sensible	kW	15.3	n.a.	23.7	13.1	n.a.	22.3
		Chilled water flow rate	l/s	0.99	n.a.	1.47	0.84	n.a.	1.39
		Total pressure drop	kPa	57	n.a.	56	43	n.a.	51

NOTE:
(1) External air temperature 35°C
(2) Condensing water on temperature 30°C
(3) External air temperature 35°C / glycol percentage 30%
(4) Chilled water temperature in/out 7°C/12°C; glycol percentage 0%

hiframe accessories

air condensers

3 types of condenser are available

- STANDARD VERSION WITH AXIAL FANS (ACN) (4 pole electric motors)
- SILENCED VERSION WITH AXIAL FANS (ACL) (8 pole electric motors)
- CONDENSERS WITH CENTRIFUGAL FANS (ACV)

rad coolers

3 types of rad cooler are available

- STANDARD VERSION WITH AXIAL FANS (ARN) (4 pole electric motors)
- SILENCED VERSION WITH AXIAL FANS (ARL) (8 pole electric motors)
- CONDENSERS WITH CENTRIFUGAL FANS (ARV)

accessories installed on-board on request

- ELECTRIC REHEAT
- HOT GAS REHEAT
- HOT WATER REHEAT
- HUMIDIFICATION AND DEUMIDIFICATION SYSTEM
- WATER REGULATING VALVE
- OPERATION HOUR COUNTER

supplied as separeted kits on request

- HIGH EFFICIENCY (EU4 OR EU5) FILTER
- CLOGGED FILTER
- FRESH AIR INTAKE WITH EU3 FILTRATION

technical data

Model		U11A/W	U17A/W	U22A/W	O11A/W	O17A/W	O22A/W	U11C	U22C	O11C	O22C
Fans						direct driven					
Airflow	m³/s	1.05	1.46	1.63	0.88	1.40	1.50	1.96	1.63	0.79	1.50
Number		1	2	2	1	2	2	1	2	1	2
Power input	kW	0.82	1.06	1.32	0.65	1.00	1.10	0.78	1.32	0.61	1.10
Available static pressure	Pa	20	20	20	0	0	0	20	20	0	0
Pole	no.	6	6	6	6	6	6	6	6	6	6
Compressor				hermetic			-	-	-	-	-
Number		1	1	1	1	1	1	-	-	-	-
Refrigerant		R22	R22	R22	R22	R22	R22	-	-	-	-
Evaporating coil											
Face area	m²	0.46	0.77	0.77	0.46	0.77	0.77	0.46	0.77	0.46	0.77
Fins/tubs		Cu/Al	Cu/Al	Cu/Al	Cu/Al	Cu/Al	Cu/Al	Cu/Al	Cu/Al	Cu/Al	Cu/Al
FPI	no.	12	12	12	12	12	12	12	12	12	12
Rows	no.	4	4	5	4	4	5	5	5	5	5
Type						inclined					
Hot gas reheat coil (1)											
Face area	m²	0.26	0.44	0.44	0.26	0.44	0.44	n.a.	n.a.	n.a.	n.a.
Capacity	kW	7.6	10.7	11.5	7.4	10.7	11.4	n.a.	n.a.	n.a.	n.a.
Electric reheat											
Type						finned					
No. of elements		3	3	3	3	3	3	3	3	3	3
No. of stages		3	3	3	3	3	3	3	3	3	3
Capacity (1+2+3 stages)	kW	5.85	10.35	10.35	5.85	10.35	10.35	5.85	10.35	5.85	10.35
Capacity (1+2 stages)	kW	3.90	6.90	6.90	3.90	6.90	6.90	3.90	6.90	3.90	6.90
Capacity (1 stage)	kW	1.95	3.45	3.45	1.95	3.45	3.45	1.95	3.45	1.95	3.45
Hot water reheat coil											
Face area	m²	0.26	0.44	0.44	0.26	0.44	0.44	0.26	0.44	0.26	0.44
Capacity (2)	kW	12.40	21.40	23.00	11.20	21.10	21.90	12.40	23.00	11.20	21.90
Hot water flow rate	l/s	0.203	0.350	0.375	0.183	0.344	0.358	0.203	0.375	0.183	0.358
Valve						modulating					
Type						3-way					
Coil pressure drop	kPa	1	2	3	2	4	5	1	3	2	5
Total pressure drop	kPa	2	6	7	3	8	9	2	7	3	9
Humidifier											
Type						electrode boiler					
Capacity	kg/h	5	5	5	5	5	5	5	5	5	5
Filters						pleated syn. fib.					
Number		1	2	2	1	2	2	1	2	1	2
Efficiency Eurovent 4/5		EU3	EU3	EU3	EU3	EU3	EU3	EU3	EU3	EU3	EU3
Dimensions											
Height	mm	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lenth	mm	850	1300	1300	850	1300	1300	850	1300	850	1300
Width	mm	550	550	550	550	550	550	550	550	550	550
Weight air/water	kg	242/240	315/328	338/350	242/240	315/328	338/350	200	285	200	285
Noise (3)	dB (A)	51.0	51.0	50.5	51.0	51.0	50.5	48.0	50.0	59.0	60.5

(1) Room conditions 24°C - UR 50%
(2) Room conditions 24°C - UR 50% - 80/65°C hot water inlet temp.
(3) At 2m referred to free field conditions

- WATER DETECTION KIT
- FIRE AND SMOKE ALARM KIT
- EXTENSION HOODS TO DUCT INTO FALSE CEILING
- BASE FRAME FOR RAISED FLOOR APPLICATION
- BASE MODULE
- AUTOMATIC CONDENSATE PUMP
- NON RETURN VALVES
- ASM2 ADAPTER FOR BUS COMUNICATION IN 422 STANDARD

special features

- INDIVIDUALLY BELT DRIVEN FANS (model VFANO8 and VFAN15)
- 4 - POLE INDIVIDUALLY DIRECT DRIVEN FANS
- 220/3 ph/50 Hz SUPPLY VOLTAGE

technical characteristics

MODEL	CONFIGURATION	VOLTAGE SUPPLY 380 - 415 / 3 / 50			220 - 240 / 3 / 50		
		OA	FLA	LRA	OA	FLA	LRA
O/U11A/W	Cooling only	10.5	13.9	46.0	15.3	20.8	84.0
	Electric reheat	-	8.9	-	-	15.4	-
	Humidifier	-	6.0	-	-	6.6	-
O/U17A/W	Cooling only	11.2	13.1	48.7	17.5	20.5	108.7
	Electric reheat	-	15.7	-	-	27.2	-
	Humidifier	-	6.0	-	-	6.6	-
O/U22A/W	Cooling only	15.3	27.5	77.0	24.0	33.5	143.0
	Electric reheat	-	15.7	-	-	27.2	-
	Humidifier	-	6.0	-	-	6.6	-
O/U11C	Cooling only	3.8	4.5	8.0	3.8	4.5	8.0
	Electric reheat	-	8.9	-	-	15.4	-
	Humidifier	-	6.0	-	-	6.6	-
O/U22C	Cooling only	3.3	4.5	8.0	3.3	4.5	8.0
	Electric reheat	-	15.7	-	-	27.2	-
	Humidifier	-	6.0	-	-	6.6	-

air cooled condensers and rad coolers selection

The below tables are only indicative. For a more accurate choise of the matching units please see the relevant EDM.

MODEL	EXT. TEMP. 32°C		EXT. TEMP. 36°C		EXT. TEMP. 40°C		EXT. TEMP. 46°C	
Air cooled	ACN	ACL	ACN	ACL	ACN	ACL	ACN	ACL
O/U11	1x103	1x105	1x103	1x105	1x105	1x108	1x108	1x110
O/U17	1x103	1x108	1x105	1x108	1x108	1x110	1x110	1x115
O/U22	1x105	1x108	1x108	1x110	1x108	1x112	1x110	1x115
Water cooled	ARN	ARL	ARN	ARL	ARN	ARL		
O/U11	1x109	1x118	1x109	1x118	1x118	1x127		
O/U17	1x118	1x118	1x118	1x127	1x127	1x136		
O/U22	1x118	1x127	1x118	1x127	1x127	1x136		

HiROSS

- **Close-control air conditioners**
- **Access floor**
- **Flexible Space System**
- **Compressed air accessories & industrial cooling products**

Hiross is served by production centres in Austria, Canada, Italy, and United States.
Associated companies in Austria, Canada, Czechoslovakia, France, Germany, Italy, Poland, Singapore, Spain, Sweden, Switzerland, United Kingdom and United States.
Agents or representatives covering other countries worldwide.

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