



**CLOSE CONTROL**

**CD Series**

**Aurwell**



## TECHNICAL SPECIFICATIONS

The air conditioners belonging to the “DATA” series have been specifically designed and manufactured for close control air conditioning where the handling almost exclusively sensible heat loads is a fundamental requirement. The typical applications are computer rooms, digital telephone exchanges, switch rooms, weather stations, medical laboratories, CAT and MR scanners, as well as any other application where a sensible heat load must be dissipated without modifying the relative humidity.

The series, which can be either upflow or downflow, offers a large range of accessories and variations in design, allowing for maximum flexibility in the use of the units. The overall noise level of the units is maintained at a low level by the use of “scroll” compressors, size of the fans used and the face area of the coils.

The compressor(s) and the refrigeration circuit(s) are positioned in a separate compartment out of the airflow ensuring a reduction in the transmission of noise and the possibility of maintenance with the machine in operation.

**CD SERIES****Standard Version**

**FRAME** in painted aluminium profiles. Painted aluminium alloy corner joints.

**PANELS** (external and internal) in galvanized sheet steel with an external plastic coating. Panels are mounted with stainless steel screws; inspection panels are fitted on hinges and equipped with easy to open locks requiring a separate key. Room air return grill in galvanized steel with an external plastic coating, for up-flow models only.

**AIR-TIGHT GASKETS** on panel edges in polyurethane with dual density.

**INTERNAL STRUCTURE** in galvanized sheet steel. Compressor section separate from the air flow.

**INTERNAL LINING**

**Doors:** thermal insulation between two aluminium sheets in rigid polyurethane foam class 1, non-flammable, 22 mm thickness, density of 47 kg/m<sup>3</sup> and a thermal conductivity of, 0.024 W/(m°C).

**Panels:** in thermo-acoustic open-cell expanded polyurethane, 22 mm thickness for the external panels and 15 mm for the internal ones, self-extinguishing class 1, density of 33 kg/m<sup>3</sup> and a thermal conductivity of, 0.036 W/(m°C).

**EVAPORATING COIL**, DX type in copper tubes mechanically expanded into aluminium fins; frame in galvanized steel.

**DRAIN PAN** in stainless steel with plastic connection to external discharge.

**AIR FILTER** cleanable type in synthetic fibre, stainless steel frame, G4 efficiency.

**SUPPLY AIR CENTRIFUGAL FAN** double inlet, forward inclined blades, impeller statically and dynamically balanced, directly coupled to electric motor with built-in overload protection.

**AIR FLOW SWITCH** on room supply air fan.

**HERMETIC COMPRESSOR "SCROLL"** type with built-in safety valve. 2-pole electric motor with integrated electronic overload protection. Mounted on rubber shock absorbers. Valves for welding mounted on suction and discharge connections (conf. 2).

**REFRIGERANT FILTER** with mechanical and desiccant action, molecular-sieve type.

**LIQUID SIGHT-GLASS** with colour-change for moisture indication.

**EXPANSION VALVE** with plastic external equalizer.

**REFRIGERANT CIRCUIT** in copper piping that has been brazed welded with silver alloy. Suction line insulated with closed-cell vapour-proof material.

**HIGH-PRESSURE SWITCH** with manual reset.

**LOW-PRESSURE SWITCH** with automatic reset.

**SAFETY DEVICE** in high-pressure section.

**ELECTRIC CONTROL PANEL** complete with:

- Main interlocking power switch.
- Automatic fuse protections are each single utility.
- Compressor motor contactor.
- Fan motor contactors.
- Auxiliary services transformer.
- Components and wiring in compliance with applicable IEC Norms.

**MICROPROCESSOR CONTROL** for single or multi-unit management system, with the following characteristics:

- room air temperature control through the activation of the compressor or the electric heater or the modulation of the three-way valve (the later are options)
- supply air temperature limit
- management of all alarm conditions
- remote start-stop
- general alarm
- password

**USER INTERFACE** for the display of unit conditions, status and operating parameters, with the following characteristics:

- display of room temperature and temperature set-point for supply air
- display of operating parameters
- control keyboard with two levels of “password”
- alarm reset and unit set-up
- on/off safety switch
- watchdog function

**R407C REFRIGERANT AND OIL CHARGE** (anti freeze oil type).

#### **FACTORY TESTS AND INSPECTION**

## **CONFIGURATIONS**

### **Configuration 1**

Packaged unit water cooled, coming from cooling tower, spring water or city water. It is recommended to use water-regulating valve in case of city or spring water operating to reduce the water consumption.

The unit, described as above, is complete with:

**CONDENSER** water cooled, welded-brazed stainless steel plates type.

### **Configuration 2**

Self-contained two sections unit, with air-cooled condenser for remote installation. The unit, described as above, is complete with:

**TAPS** on refrigerant pipes. Standard supply include also the remote condenser with electrical and pipe connection in field in charge at the mechanical contractor.

**AIR COOLED CONDENSER** with:

- **CASING** in prepainted aluminium sheet fixed with rivets, floor supports for air horizontal discharge.
- **PROPELLER FAN**, aluminium blades statically and dynamically balanced, protection grille on air discharge, directly coupled to external rotor electric motor.
- **CONDENSING COIL** made in copper tubes mechanically expanded into aluminium fins, copper header with threaded connection for rotalock valves.
- **TAPS** on refrigerant pipes.

### **Configuration 6**

Packaged unit cooled with water-glycol coming from dry-cooler or from water industrial cooling system. The unit is similar at Configuration 1 with the condenser oversized to allow increased temperature and density typical of water-glycol mixture operating.

## **ACCESSORIES AND OPTIONS**

**DIFFERENTIAL PRESSURE SWITCH** for clogged filter alarm.

**WATER LEAKAGE ALARM** complete with control relay and two sensors to be installed in the raised floor.

**FIRE ALARM** consist of an optical survey presence smoke directly wired to the microprocessor where the alarm can be customized.

**ELECTRIC REHEATING COIL**, one, two or three stages, available depending from the size, manufactured in extruded aluminium, complete with contactor, thermal overload protection and safety thermostat. It is managed from the microprocessor.

**HOT WATER REHEATING COIL** made with copper tubes mechanically expanded into aluminium fins, galvanized steel frame. Available with one row.

**HOT GAS REHEATING COIL** made with copper tubes mechanically expanded into aluminium fins, galvanized steel frame, complete with by-pass and check valves.

## ACCESSORIES AND OPTIONS

**THREE WAY VALVE** mounted as mixing on return of hot water, complete with 3-point (basic microprocessor) or modulating (advanced microprocessor) electric actuator.

**STEAM HUMIDIFIER**, immersed electrodes type, modulating version, complete with probe assembled on return air and microprocessor control card.

**DEHUMIDIFICATION SYSTEM**, made with fan speed and consequently air flow reduction. Humidity probe on return air.

**FRESH AIR INTAKE KIT**, separately supplied for field assembly. It is composed of a container with G4 air filter; the container is equipped with a circular connection (80 mm diam.) that has to be connected to the fresh air duct. Drilling and flexible connection are in charge of mechanical contractor. Max available air flow 0,04 m<sup>3</sup>/s.

**REAR RETURN AIR**, only for up-flow models. Closed front panel and return air intake on the rear side with flange for connection to the duct system.

**SUPPLY AIR CENTRIFUGAL FAN** single inlet, backward curved blades, impeller statically and dynamically balanced, directly coupled to electric motor (external rotor type) with built-in overload protection. Electrical supply from 4-speed autotransformer. Settings can be effected on site.

**AIR DELIVERY PLENUM** frame and panels in galvanized steel sheet with plastic coating and internally lined with thermo acoustic polyurethane open cell foam, complete with a diffuser having a double row of adjustable vanes. Can be supplied with front diffuser only or with front and sides diffusers.

**BASE FRAME** made in heavy steel profiles welded and painted is equipped with adjustable pedestals (adjustment 50 mm) and air deflector. The height, that has to be indicated from the mechanical contractor, is comprised from 150 to 700mm.

**NON-RETURN DAMPER** with aluminium fins fitted on nylon bushings. For down-flow version please contact our Sales Dept.

**SPEED CONTROL** on supply air fan, phase-cut type for forward blade fans or autotransformer type with four speed for backward blade fans. It can be field set.

**TEMPERATURE + HUMIDITY MICROPROCESSOR**, complete with card and probe for relative humidity control on return air. The accessory include also the dehumidification system above described.

**CLOCK MODULE**, microprocessor accessory, necessary for alarm report and timing.

**ADVANCED MICROPROCESSOR**, high performances 16 bit programmable control. It is used when customized programmes are required, or an increased number of alarms, or advanced functions for LAN connections.

**ADVANCED MICROPROCESSOR** for **TEMPERATURE + HUMIDITY** control, complete with card and probe for relative humidity control on return air and the dehumidification system.

**AIR FILTER** having efficiency F5 or F7 installed instead of the standard filters. Made in synthetic fiber with stainless steel frame are not washable type.

**PRESSURE ACTUATED WATER VALVE**, to control the condensing pressure can be used with water cooled configurations (1 and 6).

**SPECIAL COILS** with an anti corrosion surface treatment.

**SPECIAL REFRIGERANT**, R134a or R22 HCFC (only for export to non-EEC countries).

**INTERNAL LINING** of the panels in double layers of open-cell polyurethane foam with interposed lead sheet, weight of 6.3 kg/m<sup>2</sup>, 22 mm thickness for external panels and 15 mm for internal ones. It has the same thermal insulation characteristics of the standard and improves of 4 dB (A) the noise of the unit.

**SANDWICH PANELS** external in galvanized steel sheet plastic coated, internal in pre-painted galvanized steel sheet. Thermal insulation between the two metal sheets in rigid polyurethane foam class1, non-flammable, density 47 kg/m<sup>3</sup> and conductivity 0.024 W/(m °C). It has the same thermal insulation characteristics of the standard and improves of 4 dB (A) the noise of the unit. Can be used when high pressure fans are required

**SERIAL OUTPUT CARD RS 485** can be used with both models of microprocessor.



WATER AND REFRIGERANT CONNECTIONS

| Connection                            |     | SIZE |      |      |        |        |        |        |          |          |          |
|---------------------------------------|-----|------|------|------|--------|--------|--------|--------|----------|----------|----------|
|                                       |     | 31   | 41   | 51   | 61     | 71     | 91     | 101    | 72       | 82       | 102      |
| Condenser water connections (conf. 1) | "G  | 3/8" | 1/2" | 1/2" | 1/2"   | 1/2"   | 3/4"   | 3/4"   | 2 x 3/8" | 2 x 3/8" | 2 x 1/2" |
| Nominal pressure drop                 | kPa | 17.2 | 17.6 | 17.5 | 17.3   | 17.3   | 17.2   | 17.7   | 17.2     | 17.6     | 17.5     |
| Liquid line (conf. 2)                 | Ø   | 1/2" | 1/2" | 1/2" | 1/2"   | 5/8"   | 5/8"   | 5/8"   | 2 x 1/2" | 2 x 1/2" | 2 x 1/2" |
| Gas supply line (conf. 2)             | Ø   | 5/8" | 5/8" | 5/8" | 5/8"   | 7/8"   | 7/8"   | 7/8"   | 2 x 5/8" | 2 x 5/8" | 2 x 5/8" |
| Condenser water connections (conf. 6) | "G  | 3/4" | 1"   | 1"   | 1.1/4" | 1.1/4" | 1.1/4" | 1.1/2" | 2 x 3/4" | 2 x 1"   | 2 x 1"   |
| Nominal pressure drop                 | kPa | 16.6 | 16.6 | 17.1 | 17.7   | 17.9   | 17.9   | 20.1   | 16.8     | 17.4     | 18.2     |
| 3-way heating coil valve              | Ø   | 1/2" | 3/4" | 3/4" | 1"     | 1"     | 1"     | 1.1/4" | 1"       | 1"       | 1.1/4"   |
| Nominal pressure drop                 | kPa | 13   | 18   | 18   | 38     | 38     | 55     | 70     | 38       | 38       | 70       |
| Hot water connections                 | "G  | 1/2" | 3/4" | 1"   | 1"     | 1"     | 1"     | 1.1/4" | 1"       | 1"       | 1.1/4"   |
| Humidifier water supply               | "G  | 3/4" | 3/4" | 3/4" | 3/4"   | 3/4"   | 3/4"   | 3/4"   | 3/4"     | 3/4"     | 3/4"     |
| Min int. diam. humid. supply          | mm  | 6    | 6    | 6    | 6      | 6      | 6      | 6      | 6        | 6        | 6        |
| Humidifier water drain                | mm  | 32   | 32   | 32   | 32     | 32     | 32     | 32     | 32       | 32       | 32       |
| Condensate drain                      | mm  | 20   | 20   | 20   | 2 x 20 | 2 x 20 | 2 x 20 | 2 x 20 | 2 x 20   | 2 x 20   | 2 x 20   |

## MAIN TECHNICAL DATA

| Data Series                   | Size                          |                   | 031    | 041    | 051    | 061     | 071     |
|-------------------------------|-------------------------------|-------------------|--------|--------|--------|---------|---------|
| CONFIG. 1                     | TOTAL COOLING CAPACITY (1)    | kW                | 10.6   | 13.4   | 17.0   | 21.2    | 23.5    |
|                               | SENSIBLE COOLING CAPACITY (1) | kW                | 9.7    | 12.3   | 15.1   | 19.5    | 21.6    |
|                               | POWER INPUT                   | kW                | 2.32   | 2.78   | 3.57   | 4.72    | 5.31    |
| CONFIG. 2, 6                  | TOTAL COOLING CAPACITY (2)    | kW                | 10.0   | 12.8   | 15.3   | 20.5    | 22.1    |
|                               | SENSIBLE COOLING CAPACITY (2) | kW                | 9.3    | 12.0   | 13.9   | 19.3    | 20.5    |
|                               | POWER INPUT                   | kW                | 2.8    | 3.35   | 4.26   | 5.64    | 6.33    |
| SUPPLY FAN                    | NOMINAL AIR FLOW              | m <sup>3</sup> /s | 0.75   | 1.11   | 1.11   | 1.67    | 1.67    |
|                               | EXTERNAL STATIC PRESSURE      | Pa                | 20     | 20     | 20     | 20      | 20      |
|                               | POWER INPUT                   | kW                | 0.4    | 0.7    | 0.7    | 0.85    | 0.85    |
|                               | ENGAGED ELECTRIC POWER        | kW                | 0.5    | 0.736  | 0.736  | 2 x 0.5 | 2 x 0.5 |
| COOLING COIL                  | FACE AREA                     | m <sup>2</sup>    | 0.38   | 0.53   | 0.53   | 0.87    | 0.87    |
|                               | ROWS NUMBER                   | Nº                | 3      | 3      | 3      | 3       | 3       |
|                               | FIN SPACING                   | mm                | 1.6    | 1.6    | 1.6    | 1.6     | 1.6     |
| COMPRESSOR                    | NUMBER OF COMPRESSORS         | Nº                | 1      | 1      | 1      | 1       | 1       |
|                               | NOMINAL COMPRESSOR POWER      | HP                | 3.5    | 4      | 5      | 6.5     | 7.5     |
| CONF. 1 WATER COOLED CONDENS. | WATER FLOW                    | l/s               | 0.166  | 0.194  | 0.25   | 0.33    | 0.36    |
|                               | WATER PRESSURE DROP           | kPa               | 17.2   | 17.6   | 17.5   | 17.1    | 17.9    |
| CONF. 6 WATER COOLED CONDENS. | WATER-GLYCOL FLOW 30%         | l/s               | 0.72   | 0.94   | 1.08   | 1.55    | 1.64    |
|                               | WATER PRESSURE DROP           | kPa               | 16.6   | 16.6   | 17.1   | 17.7    | 17.9    |
| AIR COOLED CONDENSER MODEL    |                               |                   | CN-030 | CN-050 | CN-050 | CN-075  | CN-075  |
| OIL CHARGE PER CIRCUIT        |                               | L                 | 1.1    | 1.1    | 1.85   | 1.65    | 4       |
| REFRIGERANT CHARGE            | CONFIGURATION 1, 6            | kg                | 1.0    | 1.1    | 1.4    | 1.8     | 2.1     |
|                               | CONFIGURATION 2               | kg                | 3.1    | 3.6    | 4.5    | 5.8     | 6.3     |
| SOUND PRESSURE LEVEL          |                               |                   |        |        |        |         |         |
|                               |                               | UP-FLOW           | 52     | 55     | 55     | 55      | 56      |
|                               |                               | DOWN-FLOW (3)     | 48     | 51     | 51     | 51      | 52      |
| DIMENSIONS                    | LENGTH                        | mm                | 650    | 840    | 840    | 1238    | 1238    |
|                               | WIDTH                         | mm                | 650    | 650    | 650    | 650     | 650     |
|                               | HEIGHT                        | mm                | 1970   | 1970   | 1970   | 1970    | 1970    |
| OPERATING WEIGHT              | CONFIGURATION 1, 6            | kg                | 160    | 180    | 220    | 300     | 360     |
|                               | CONFIGURATION 2               | kg                | 155    | 175    | 215    | 290     | 350     |

Capacities referred to:  
Room air conditions +24°C/ 50%RH  
Condensing water temperature +15/35°C  
Room air conditions +24°C/ 50%RH  
Room air conditions +24°C/ 50%RH  
External air temperature +32°C  
Dry-cooler water temperature +35/40°C

Sound pressure level measured a 2 mt from the machine, 1 m from the ground, in free field conditions

The fan power input has not been subtracted from the capacities indicated above.

MAIN TECHNICAL DATA

| Data Series                   | Size                          |               | 091       | 101       | 072        | 082        | 102        |
|-------------------------------|-------------------------------|---------------|-----------|-----------|------------|------------|------------|
| CONFIG. 1                     | TOTAL COOLING CAPACITY (1)    | kW            | 29.4      | 32.9      | 21.6       | 25.9       | 32.1       |
|                               | SENSIBLE COOLING CAPACITY (1) | kW            | 26.1      | 30.1      | 19.6       | 23.5       | 29.5       |
|                               | POWER INPUT                   | kW            | 6.49      | 7.45      | 4.64       | 5.62       | 7.14       |
| CONFIG. 2, 6                  | TOTAL COOLING CAPACITY (2)    | kW            | 27.6      | 31.3      | 21.0       | 23.5       | 30.8       |
|                               | SENSIBLE COOLING CAPACITY (2) | kW            | 25.2      | 29.0      | 19.5       | 23.5       | 28.3       |
|                               | POWER INPUT                   | kW            | 7.76      | 8.92      | 5.56       | 6.76       | 8.52       |
| SUPPLY FAN                    | NOMINAL AIR FLOW              | m³/s          | 1.94      | 2.36      | 1.67       | 1.67       | 2.36       |
|                               | EXTERNAL STATIC PRESSURE      | Pa            | 20        | 20        | 20         | 20         | 20         |
|                               | POWER INPUT                   | kW            | 1.4       | 1.4       | 0.8        | 0.8        | 1.4        |
|                               | ENGAGED ELECTRIC POWER        | kW            | 2 x 0.736 | 2 x 0.736 | 2 x 0.5    | 2 x 0.5    | 2 x 0.736  |
| COOLING COIL                  | FACE AREA                     | m²            | 1.03      | 1.19      | 0.87       | 0.87       | 1.19       |
|                               | ROWS NUMBER                   | Nº            | 3         | 3         | 3          | 3          | 3          |
|                               | FIN SPACING                   | mm            | 1.6       | 1.6       | 1.6        | 1.6        | 1.6        |
| COMPRESSOR                    | NUMBER OF COMPRESSORS         | Nº            | 1         | 1         | 2          | 2          | 2          |
|                               | NOMINAL COMPRESSOR POWER      | HP            | 9         | 10        | 2 x 3.5    | 2 x 4      | 2 x 5      |
| CONF. 1 WATER COOLED CONDENS. | WATER FLOW                    | l/s           | 0.44      | 0.5       | 0.33       | 0.39       | 0.5        |
|                               | WATER PRESSURE DROP           | kPa           | 17.2      | 17.7      | 17.2       | 17.6       | 17.5       |
| CONF. 6 WATER COOLED CONDENS. | WATER-GLYCOL FLOW 30%         | l/s           | 1.94      | 2.30      | 1.53       | 1.75       | 2.25       |
|                               | WATER PRESSURE DROP           | kPa           | 17.9      | 20.1      | 16.8       | 17.4       | 18.2       |
| AIR COOLED CONDENSER MODEL    |                               |               | CN-100    | CN-100    | 2 x CN-030 | 2 x CN-050 | 2 x CN-050 |
| OIL CHARGE PER CIRCUIT        |                               | L             | 4         | 4         | 2 x 1.1    | 2 x 1.1    | 2 x 1.85   |
| REFRIGERANT CHARGE            | CONFIGURATION 1, 6            | kg            | 2.5       | 2.8       | 2.0        | 2.2        | 2.8        |
|                               | CONFIGURATION 2               | kg            | 8.1       | 9.0       | 6.2        | 7.2        | 9.0        |
| SOUND PRESSURE LEVEL          |                               |               |           |           |            |            |            |
|                               |                               | UP-FLOW       | 57        | 58        | 55         | 55         | 57         |
|                               |                               | DOWN-FLOW (3) | 53        | 54        | 51         | 51         | 53         |
| DIMENSIONS                    | LENGTH                        | mm            | 1428      | 1618      | 1238       | 1238       | 1618       |
|                               | WIDTH                         | mm            | 650       | 650       | 650        | 650        | 650        |
|                               | HEIGHT                        | mm            | 1970      | 1970      | 1970       | 1970       | 1970       |
| OPERATING WEIGHT              | CONFIGURATION 1, 6            | kg            | 380       | 440       | 320        | 340        | 450        |
|                               | CONFIGURATION 2               | kg            | 360       | 420       | 290        | 310        | 420        |

Capacities referred to:  
 Room air conditions +24°C/ 50%RH  
 Condensing water temperature +15/35°C  
 Room air conditions +24°C/ 50%RH  
 Room air conditions +24°C/ 50%RH  
 External air temperature +32°C  
 Dry-cooler water temperature +35/40°C

Sound pressure level measured a 2 mt from the machine, 1 m from the ground, in free field conditions

The fan power input has not been subtracted from the capacities indicated above.



**R407C COOLING CAPACITY**

**ROOM AIR CONDITIONS °C - %RH**

| Size | Conf. | 20-50 |      | 22-50 |      | 24-50 |      | 26-50 |      |
|------|-------|-------|------|-------|------|-------|------|-------|------|
|      |       | Ct    | Cs   | Ct    | Cs   | Ct    | Cs   | Ct    | Cs   |
|      |       | kW    | kW   | kW    | kW   | kW    | kW   | kW    | kW   |
| 31   | 1     | 9.4   | 9.2  | 10.1  | 9.5  | 10.6  | 9.7  | 11.2  | 9.9  |
|      | 2, 6  | 8.9   | 8.6  | 9.5   | 8.9  | 10.0  | 9.1  | 10.6  | 9.3  |
| 41   | 1     | 12.0  | 11.4 | 12.6  | 11.8 | 13.4  | 12.3 | 14.1  | 12.7 |
|      | 2, 6  | 11.5  | 10.9 | 12.0  | 11.2 | 12.8  | 11.7 | 13.5  | 12.1 |
| 51   | 1     | 15.1  | 14.3 | 16.0  | 14.6 | 17.0  | 15.1 | 17.9  | 15.4 |
|      | 2, 6  | 13.6  | 12.9 | 14.4  | 13.2 | 15.3  | 13.6 | 16.1  | 13.9 |
| 61   | 1     | 18.8  | 18.3 | 20.0  | 19.0 | 21.2  | 19.5 | 22.4  | 20.1 |
|      | 2, 6  | 18.2  | 17.8 | 19.4  | 18.4 | 20.5  | 18.9 | 21.6  | 19.5 |
| 71   | 1     | 20.9  | 20.4 | 22.1  | 21.0 | 23.5  | 21.6 | 24.9  | 22.1 |
|      | 2, 6  | 19.6  | 18.9 | 20.8  | 19.4 | 22.1  | 20.0 | 23.4  | 20.5 |
| 91   | 1     | 26.2  | 24.0 | 27.8  | 25.4 | 29.4  | 26.1 | 31.2  | 26.7 |
|      | 2, 6  | 24.6  | 23.4 | 26.1  | 24.2 | 27.6  | 24.8 | 29.3  | 25.3 |
| 101  | 1     | 29.3  | 28.5 | 31.1  | 29.4 | 32.9  | 30.1 | 34.7  | 30.8 |
|      | 2, 6  | 27.8  | 26.9 | 29.6  | 27.7 | 31.3  | 28.4 | 33.0  | 29.1 |
| 72   | 1     | 19.2  | 18.2 | 20.4  | 18.9 | 21.6  | 19.6 | 22.8  | 20.1 |
|      | 2, 6  | 18.6  | 17.7 | 19.8  | 18.4 | 21.0  | 19.1 | 22.2  | 19.6 |
| 82   | 1     | 23.0  | 22.3 | 24.4  | 22.9 | 25.9  | 23.5 | 27.3  | 24.0 |
|      | 2, 6  | 22.5  | 21.8 | 23.8  | 22.4 | 25.3  | 23.0 | 26.7  | 23.4 |
| 102  | 1     | 28.6  | 27.8 | 30.3  | 28.7 | 32.1  | 29.5 | 33.9  | 30.2 |
|      | 2, 6  | 27.4  | 26.2 | 29.1  | 27.0 | 30.8  | 27.8 | 32.5  | 28.5 |

**R22 COOLING CAPACITY**

**ROOM AIR CONDITIONS °C - %RH**

| Size | Conf. | 20-50 |      | 22-50 |      | 24-50 |      | 26-50 |      |
|------|-------|-------|------|-------|------|-------|------|-------|------|
|      |       | Ct    | Cs   | Ct    | Cs   | Ct    | Cs   | Ct    | Cs   |
|      |       | kW    | kW   | kW    | kW   | kW    | kW   | kW    | kW   |
| 31   | 1     | 10.2  | 9.5  | 10.4  | 9.6  | 11.0  | 9.9  | 11.5  | 10.0 |
|      | 2, 6  | 9.4   | 8.7  | 9.9   | 9.0  | 10.4  | 9.3  | 10.9  | 9.4  |
| 41   | 1     | 12.9  | 11.8 | 13.0  | 12.0 | 13.9  | 12.6 | 14.5  | 12.8 |
|      | 2, 6  | 12.1  | 11.0 | 12.6  | 11.4 | 13.3  | 12.0 | 13.9  | 12.2 |
| 51   | 1     | 16.3  | 14.8 | 16.5  | 14.8 | 17.7  | 15.4 | 18.4  | 15.6 |
|      | 2, 6  | 14.4  | 13.0 | 15.0  | 13.3 | 15.9  | 13.9 | 16.6  | 14.1 |
| 61   | 1     | 20.3  | 19.0 | 20.6  | 19.2 | 22.0  | 19.9 | 23.0  | 20.3 |
|      | 2, 6  | 19.3  | 18.0 | 20.2  | 18.6 | 21.4  | 19.3 | 22.3  | 19.7 |
| 71   | 1     | 22.5  | 21.1 | 22.8  | 21.2 | 24.4  | 22.1 | 25.5  | 22.4 |
|      | 2, 6  | 20.8  | 19.1 | 21.7  | 19.6 | 23.0  | 20.5 | 24.1  | 20.7 |
| 91   | 1     | 28.2  | 25.5 | 28.6  | 25.7 | 30.5  | 26.7 | 32.1  | 26.9 |
|      | 2, 6  | 26.0  | 23.7 | 27.2  | 24.4 | 28.8  | 25.4 | 30.2  | 25.6 |
| 101  | 1     | 31.5  | 29.5 | 32.0  | 29.7 | 34.2  | 30.8 | 35.7  | 31.2 |
|      | 2, 6  | 29.5  | 27.2 | 30.9  | 28.0 | 32.6  | 29.0 | 34.0  | 29.4 |
| 72   | 1     | 20.6  | 18.9 | 21.0  | 19.1 | 22.4  | 20.0 | 23.4  | 20.3 |
|      | 2, 6  | 19.7  | 18.0 | 20.7  | 18.6 | 21.9  | 19.5 | 22.8  | 19.8 |
| 82   | 1     | 24.8  | 23.0 | 25.1  | 23.2 | 26.9  | 24.0 | 28.0  | 24.2 |
|      | 2, 6  | 23.8  | 22.0 | 24.9  | 22.7 | 26.4  | 23.5 | 27.4  | 23.7 |
| 102  | 1     | 30.8  | 28.7 | 31.2  | 29.0 | 33.3  | 30.1 | 34.8  | 30.5 |
|      | 2, 6  | 29.1  | 26.5 | 30.4  | 27.3 | 32.1  | 28.4 | 33.5  | 28.8 |

Ct - Total cooling capacity  
Cs - Sensible cooling capacity

The fan power input has not been subtracted from the capacities indicated above.

**HOT WATER HEATING COIL CAPACITY**

| Size | Th    | ROOM AIR CONDITIONS °C |      |    |      |      |    |      |      |    |
|------|-------|------------------------|------|----|------|------|----|------|------|----|
|      |       | 15                     |      |    | 17   |      |    | 20   |      |    |
|      | °C    | Cr                     | Ph   | Dp | Cr   | Ph   | Dp | Cr   | Ph   | Dp |
| 31   | 80/70 | 16.8                   | 0.41 | 4  | 16.1 | 0.40 | 4  | 15.2 | 0.37 | 3  |
|      | 80/65 | 15.1                   | 0.25 | 2  | 14.5 | 0.24 | 1  | 13.6 | 0.22 | 1  |
| 41   | 80/70 | 24.9                   | 0.61 | 9  | 24.0 | 0.59 | 9  | 22.6 | 0.55 | 8  |
|      | 80/65 | 22.9                   | 0.37 | 4  | 22.0 | 0.36 | 4  | 20.6 | 0.34 | 3  |
| 51   | 80/70 | 24.9                   | 0.61 | 9  | 24.0 | 0.59 | 9  | 22.6 | 0.55 | 8  |
|      | 80/65 | 22.9                   | 0.37 | 4  | 22.0 | 0.36 | 4  | 20.6 | 0.34 | 3  |
| 61   | 80/70 | 40.4                   | 0.99 | 31 | 38.9 | 0.95 | 29 | 36.7 | 0.90 | 26 |
|      | 80/65 | 37.7                   | 0.62 | 14 | 36.2 | 0.59 | 13 | 34.1 | 0.56 | 11 |
| 71   | 80/70 | 40.4                   | 0.99 | 31 | 38.9 | 0.95 | 29 | 36.7 | 0.90 | 26 |
|      | 80/65 | 37.7                   | 0.62 | 14 | 36.2 | 0.59 | 13 | 34.1 | 0.56 | 11 |
| 91   | 80/70 | 48.0                   | 1.17 | 48 | 46.2 | 1.13 | 45 | 43.6 | 1.07 | 41 |
|      | 80/65 | 45.0                   | 0.73 | 21 | 43.2 | 0.71 | 20 | 40.6 | 0.66 | 18 |
| 101  | 80/70 | 57.1                   | 1.40 | 74 | 55.0 | 1.35 | 69 | 52.0 | 1.27 | 62 |
|      | 80/65 | 53.7                   | 0.88 | 33 | 51.6 | 1.84 | 31 | 48.6 | 0.79 | 28 |
| 72   | 80/70 | 40.4                   | 0.99 | 31 | 38.9 | 0.95 | 29 | 36.7 | 0.90 | 26 |
|      | 80/65 | 37.7                   | 0.62 | 14 | 36.2 | 0.59 | 13 | 34.1 | 0.56 | 11 |
| 82   | 80/70 | 40.4                   | 0.99 | 31 | 38.9 | 0.95 | 29 | 36.7 | 0.90 | 26 |
|      | 80/65 | 37.7                   | 0.62 | 14 | 36.2 | 0.59 | 13 | 34.1 | 0.56 | 11 |
| 102  | 80/70 | 57.1                   | 1.40 | 74 | 55.0 | 1.35 | 69 | 52.0 | 1.27 | 62 |
|      | 80/65 | 53.7                   | 1.88 | 33 | 51.6 | 0.84 | 31 | 48.6 | 0.79 | 28 |

Th - Water temperature (°C)    Cr - Heating capacity (kW)  
 Ph - Water flow (l/s)        Dp - Pressure drop (kPa)

**ELECTRIC HEATER CAPACITY**

|              |    | SIZE        |           |           |           |           |           |            |           |           |            |
|--------------|----|-------------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|------------|
|              |    | 31          | 41        | 51        | 61        | 71        | 91        | 101        | 72        | 82        | 102        |
| Single stage | Kw | 4.5         | 6         | 6         | 9         | 9         | 9         | 12         | 9         | 9         | 12         |
| Two stages   | Kw | 2.7/4.5     | 3.6/6     | 3.6/6     | 5.4/9     | 5.4/9     | 5.4/9     | 7.2/12     | 5.4/9     | 5.4/9     | 7.2/12     |
| Three stages | Kw | 1.8/2.7/4.5 | 2.4/3.6/6 | 2.4/3.6/6 | 3.6/5.4/9 | 3.6/5.4/9 | 3.6/5.4/9 | 4.8/7.2/12 | 3.6/5.4/9 | 3.6/5.4/9 | 4.8/7.2/12 |
| FLA*         | A  | 6.5         | 8.7       | 8.7       | 13.0      | 13.0      | 13.0      | 17.3       | 13.0      | 13.0      | 17.3       |

\* Referred to single stage heater

**HUMIDIFIER**

|                              |        | SIZE       |     |     |     |     |     |     |     |     |     |
|------------------------------|--------|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                              |        | 31         | 41  | 51  | 61  | 71  | 91  | 101 | 72  | 82  | 102 |
| Max steam production         | kg/h   | 3          | 3   | 3   | 3   | 3   | 8   | 8   | 3   | 3   | 8   |
| Full load power input        | kW     | 2.3        | 2.3 | 2.3 | 2.3 | 2.3 | 6.0 | 6.0 | 2.3 | 2.3 | 6.0 |
| Full load current            | A      | 3.3        | 3.3 | 3.3 | 3.3 | 3.3 | 8.7 | 8.7 | 3.3 | 3.3 | 8.7 |
| Water conductivity min-max   | µS/cm² | 125 - 1250 |     |     |     |     |     |     |     |     |     |
| Water supply pipe diam.      | "G     | 3/4"       |     |     |     |     |     |     |     |     |     |
| Min int. diam. humid. supply | mm     | 6          |     |     |     |     |     |     |     |     |     |
| Water drain pipe diam.       | mm     | 32         |     |     |     |     |     |     |     |     |     |

**AIR FILTERS**

|           |            |         | SIZE |     |     |     |     |     |     |     |     |     |
|-----------|------------|---------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|           |            |         | 31   | 41  | 51  | 61  | 71  | 91  | 101 | 72  | 82  | 102 |
| Upflow    | Quantity   | n       | 2    | 2   | 2   | 4   | 4   | 4   | 4   | 4   | 4   | 4   |
|           | Dimensions | mm x mm | 525  | 700 | 700 | 545 | 545 | 640 | 735 | 545 | 545 | 735 |
|           |            |         | 440  | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 | 440 |
| Thickness | mm         | 48      | 48   | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  |
| Downflow  | Quantity   | n       | 1    | 1   | 1   | 2   | 2   | 2   | 2   | 2   | 2   | 2   |
|           | Dimensions | mm x mm | 545  | 735 | 735 | 565 | 565 | 660 | 755 | 565 | 565 | 660 |
|           |            |         | 595  | 595 | 595 | 595 | 595 | 595 | 595 | 595 | 595 | 595 |
| Thickness | mm         | 98      | 98   | 98  | 98  | 98  | 98  | 98  | 98  | 98  | 98  | 98  |

**OPERATING RANGE**

|                          |                   |         | SIZE |      |      |      |      |      |      |      |      |      |
|--------------------------|-------------------|---------|------|------|------|------|------|------|------|------|------|------|
|                          |                   |         | 31   | 41   | 51   | 61   | 71   | 91   | 101  | 72   | 82   | 102  |
| Inlet air conditions     | °C-UR             | min     | 18   |      |      |      |      |      |      |      |      |      |
|                          |                   | max     | 30   |      |      |      |      |      |      |      |      |      |
| Total air flow           | m <sup>3</sup> /s | min     | 0.54 | 0.75 | 0.75 | 1.24 | 1.24 | 1.46 | 1.69 | 1.24 | 1.24 | 1.69 |
|                          |                   | max     | 0.93 | 1.30 | 1.30 | 2.12 | 2.12 | 2.51 | 2.90 | 2.12 | 2.12 | 2.90 |
| Max condenser water flow | l/s               | conf. 1 | 0.33 | 0.39 | 0.50 | 0.66 | 0.72 | 0.88 | 1.00 | 0.66 | 0.78 | 1.00 |
|                          |                   | conf. 6 | 1.4  | 1.9  | 2.2  | 3.1  | 3.3  | 3.9  | 4.6  | 3.1  | 3.5  | 4.5  |
| Hydraulic pressure       | kPa               | max     | 600  |      |      |      |      |      |      |      |      |      |

Please contact our Technical Dept. for 2-way valves limits.

**GLYCOL CORRECTION FACTORS**

| Glycol percentage    |    | 0% | 10%  | 20%  | 30%  | 40%  | 50%  |
|----------------------|----|----|------|------|------|------|------|
| Freezing point       | °C | 0  | -5   | -10  | -15  | -20  | -30  |
| Capacity factor      |    | 1  | 0.98 | 0.95 | 0.93 | 0.91 | 0.88 |
| Water flow factor    |    | 1  | 1.01 | 1.04 | 1.08 | 1.14 | 1.20 |
| Pressure drop factor |    | 1  | 1.05 | 1.13 | 1.21 | 1.26 | 1.32 |

**ELECTRICAL DATA**

|                       |                     |  | SIZE                 |      |      |       |       |       |       |      |      |      |
|-----------------------|---------------------|--|----------------------|------|------|-------|-------|-------|-------|------|------|------|
|                       |                     |  | 31                   | 41   | 51   | 61    | 71    | 91    | 101   | 72   | 82   | 102  |
| Full load power input | kW                  |  | 7.8                  | 10.4 | 11.3 | 15.8  | 16.5  | 19.8  | 23.9  | 15.7 | 17.1 | 22.4 |
| FLA                   | A                   |  | 18.3                 | 21.4 | 23.1 | 27.7  | 29.7  | 34.3  | 39.3  | 30.8 | 34.2 | 41.9 |
| LRA                   | A                   |  | 59.3                 | 65.3 | 80.8 | 118.5 | 116.5 | 142.8 | 151.1 | 71.8 | 78.1 | 99.6 |
| Copper wire size      | 5 x mm <sup>2</sup> |  | 10                   | 10   | 10   | 16    | 16    | 10    | 16    | 16   | 16   | 16   |
| Electrical supply     | V/ph/Hz             |  | 400 ± 10% / 3 + N/50 |      |      |       |       |       |       |      |      |      |

(1) - At the maximum operating admitted conditions  
Unit complete with humidifier and electric heater

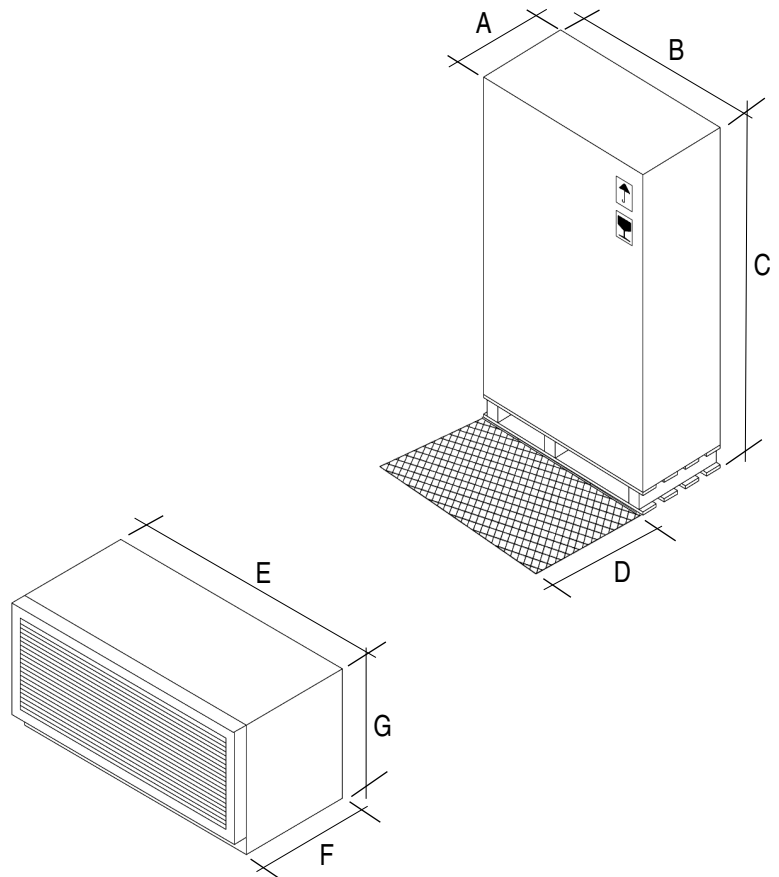
(2) - Wire size valid for distances up to 30 mt  
max. voltage drop 3%

For the operating data please refer to the unit wiring diagram.

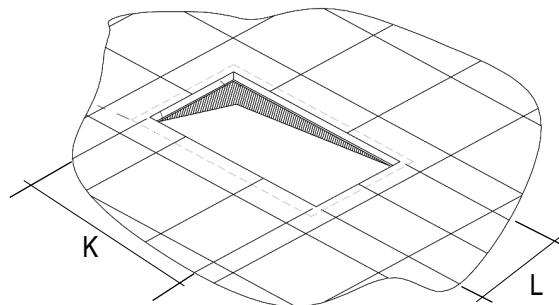
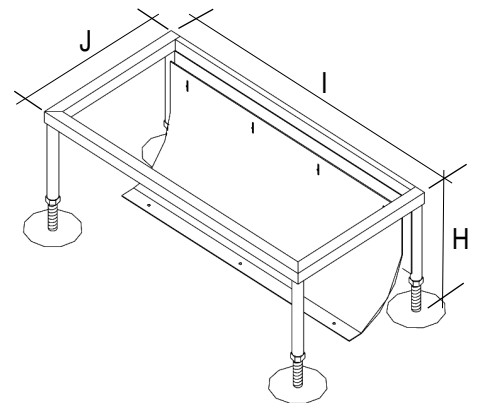
# DIMENSIONS AND WEIGHTS

**PACKING - PLENUM - BASEFRAME - FLOOR HOLE**

| SIZE (mm) |            |            |            |            |            |
|-----------|------------|------------|------------|------------|------------|
|           | 31         | 41         | 51         | 61         | 71         |
| A         | 700        | 700        | 700        | 700        | 700        |
| B         | 700        | 900        | 900        | 1300       | 1300       |
| C         | 2120       | 2120       | 2120       | 2120       | 2120       |
| D         | 650        | 840        | 840        | 650        | 650        |
| E         | 650        | 840        | 840        | 1238       | 1238       |
| F         | 650        | 650        | 650        | 650        | 650        |
| G         | 600        | 600        | 600        | 600        | 600        |
| H*        | 150<br>700 | 150<br>700 | 150<br>700 | 150<br>700 | 150<br>700 |
| I         | 590        | 780        | 780        | 1178       | 1178       |
| J         | 590        | 590        | 590        | 590        | 590        |
| K         | 550        | 740        | 740        | 1138       | 1138       |
| L         | 530        | 530        | 530        | 530        | 530        |
| Kg**      | 170        | 190        | 230        | 310        | 370        |



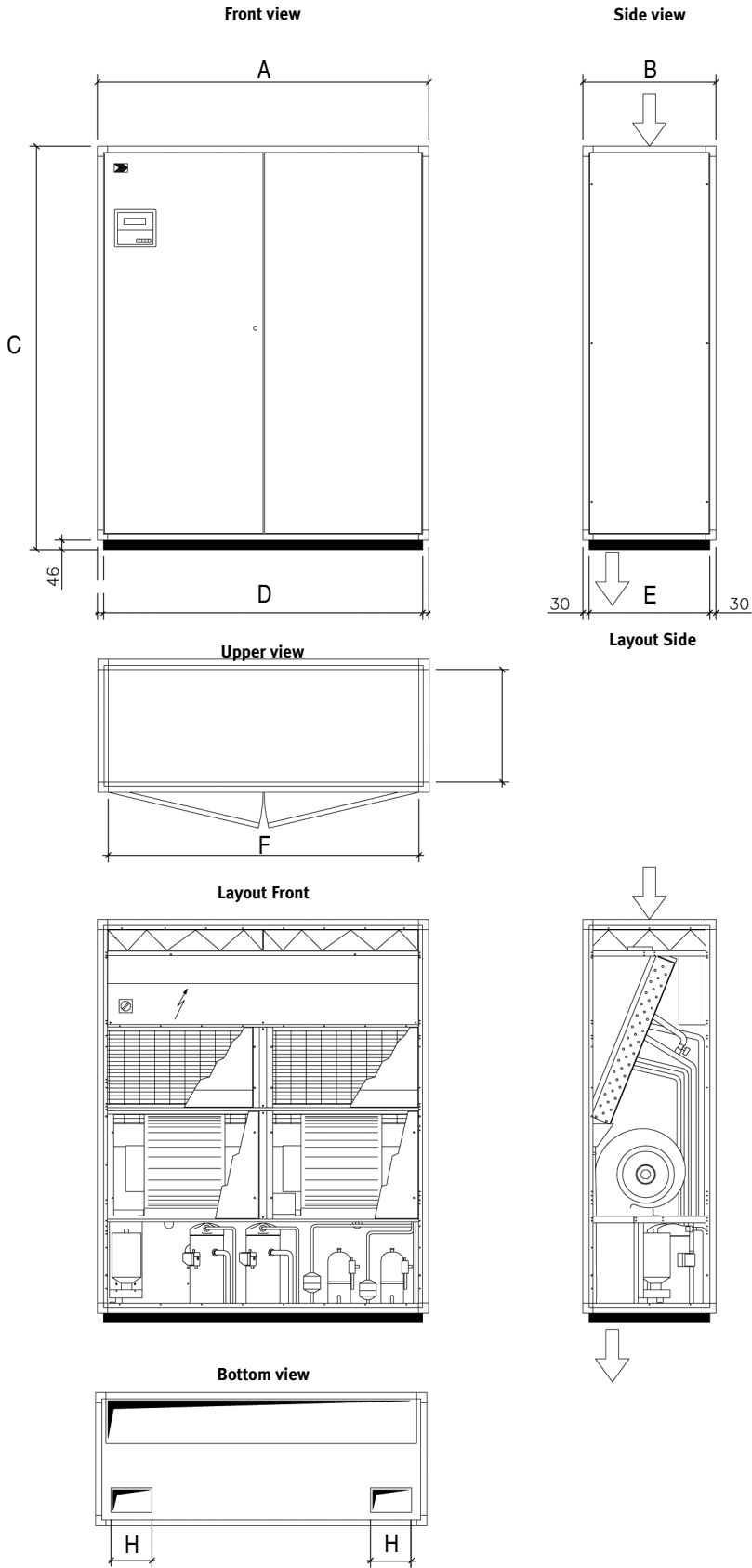
|      | 91         | 101        | 72         | 82         | 102        |
|------|------------|------------|------------|------------|------------|
| A    | 700        | 700        | 700        | 700        | 700        |
| B    | 1500       | 1700       | 1300       | 1300       | 1700       |
| C    | 2120       | 2120       | 2120       | 2120       | 2120       |
| D    | 840        | 840        | 650        | 650        | 840        |
| E    | 1428       | 1618       | 1238       | 1238       | 1618       |
| F    | 650        | 650        | 650        | 650        | 650        |
| G    | 600        | 600        | 600        | 600        | 600        |
| H*   | 150<br>700 | 150<br>700 | 150<br>700 | 150<br>700 | 150<br>700 |
| I    | 1368       | 1558       | 1178       | 1178       | 1558       |
| J    | 590        | 590        | 590        | 590        | 590        |
| K    | 1328       | 1518       | 1138       | 1138       | 1518       |
| L    | 530        | 530        | 530        | 530        | 530        |
| Kg** | 390        | 450        | 330        | 350        | 460        |



\* The eight has to be indicated by the mechanical contractor; adjustment 50 mm.

\*\* Shipping weight

## DOWN-FLOW VERSION

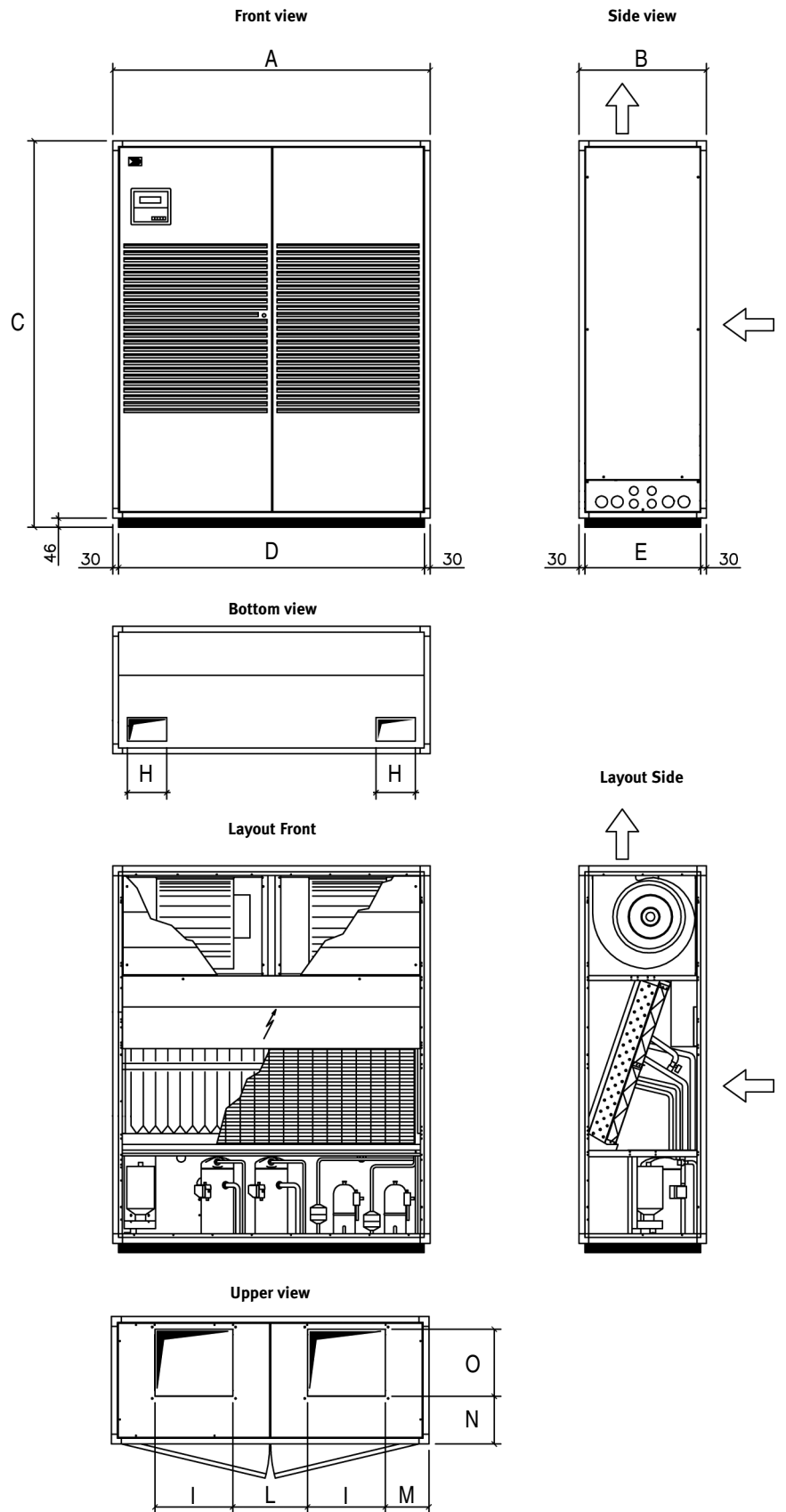


| SIZE (mm) |      |      |      |      |      |
|-----------|------|------|------|------|------|
|           | 31   | 41   | 51   | 61   | 71   |
| <b>A</b>  | 650  | 840  | 840  | 1238 | 1238 |
| <b>B</b>  | 650  | 650  | 650  | 650  | 650  |
| <b>C</b>  | 1970 | 1970 | 1970 | 1970 | 1970 |
| <b>D</b>  | 590  | 780  | 780  | 1178 | 1178 |
| <b>E</b>  | 590  | 590  | 590  | 590  | 590  |
| <b>F</b>  | 552  | 742  | 742  | 1140 | 1140 |
| <b>G</b>  | 552  | 552  | 552  | 552  | 552  |
| <b>H</b>  | 150  | 150  | 150  | 150  | 150  |
| <b>I</b>  | 325  | 400  | 400  | 306  | 306  |
| <b>L</b>  | -    | -    | -    | 282  | 282  |
| <b>M</b>  | 163  | 146  | 146  | 172  | 172  |
| <b>N</b>  | 282  | 243  | 243  | 245  | 245  |
| <b>O</b>  | 293  | 343  | 343  | 343  | 343  |

Please contact our Technical Dept. for detailed info about in/out position.

# UP-FLOW VERSION

|          | 91   | 101  | 72   | 82                      | 102  |
|----------|------|------|------|-------------------------|------|
| <b>A</b> | 1428 | 1618 | 1238 | 1238                    | 1618 |
| <b>B</b> | 650  | 650  | 650  | 650                     | 650  |
| <b>C</b> | 1970 | 1970 | 1970 | 1970                    | 1970 |
| <b>D</b> | 1368 | 1558 | 1178 | 1178 </td <td>1558</td> | 1558 |
| <b>E</b> | 590  | 590  | 590  | 590                     | 590  |
| <b>F</b> | 1330 | 1520 | 1140 | 1140                    | 1520 |
| <b>G</b> | 552  | 552  | 552  | 552                     | 552  |
| <b>H</b> | 150  | 150  | 150  | 150                     | 150  |
| <b>I</b> | 306  | 400  | 306  | 306                     | 400  |
| <b>L</b> | 414  | 379  | 282  | 282                     | 374  |
| <b>M</b> | 224  | 220  | 172  | 172                     | 220  |
| <b>N</b> | 243  | 243  | 245  | 245                     | 243  |
| <b>O</b> | 343  | 343  | 343  | 343                     | 343  |



Please contact our Technical Dept. for detailed info about in/out position.