Air-Cooled Scroll Chillers

with refrigerant R407C & R22
Voltas is the pioneer and a leading provider of integrated end-to-end solutions in the field of electromechanical and refrigeration. We are committed to provide customers with technology that suits their needs and have introduced a wide variety of air-cooled scroll chillers with R 22 and R 407 C refrigerant options.

With ISO 9001 standard certified factories, Voltas possesses total capability in the manufacture of scroll chillers. These chillers are available in a wide range of capacities from 11 TR to 90 TR. They are easy to install and commission and can handle varying cooling requirements, aided by multiple compressor configurations.

Voltas scroll chillers have become an ideal choice for various air conditioning applications including, office spaces, banks, hotels, hospitals, shopping malls, multiplexes, commercial complexes and process cooling requirements.

**MODEL NOMENCLATURE**

<table>
<thead>
<tr>
<th>AC</th>
<th>D</th>
<th>S</th>
<th>048</th>
<th>D</th>
<th>P</th>
<th>M</th>
<th>N</th>
<th>2</th>
<th>2</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIR - COOLED</td>
<td>DX CHILLERS</td>
<td>SCROLL COMPRESSOR</td>
<td>CAPACITY CODE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Example:

**4STR Standard Model**
ACDS 048DPMN2X2

**4STR Special Model** (with Pr. Transducer)
ACDS048DPMN2X2D
FEATURES:
Volts chillers are available in a wide range of models, with R 407C & R 22 refrigerants.

<table>
<thead>
<tr>
<th>SCROLL CHILLERS</th>
<th>Air - Cooled Chillers (Nominal Capacity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R407C</td>
<td>11 TR 22 TR 34 TR 45 TR 56 TR 68 TR 75 TR 87 TR</td>
</tr>
<tr>
<td>R22</td>
<td>12 TR 24 TR 36 TR 48 TR 60 TR 72 TR 80 TR 90 TR</td>
</tr>
</tbody>
</table>

Energy Efficiency
A range of sophisticated components such as highly energy efficient imported compressor, superior design of air-cooled condenser & chiller, internally grooved, cross-hatched copper tube coil with matched circuitry and a microprocessor controller, results in low power consumption.

Higher energy efficiency – Tandem compressor models
Scroll chillers from 48 TR to 90 TR use compressors operating in tandem. This improves the operating efficiency during part load periods, since the entire condenser area is utilized for the heat rejection even though only one compressor may be in operation.

Capacity Modulation
Multiple compressors are used in most of the models, with independent refrigerant circuits. The microprocessor controller ensures that only the required number of compressors operate during part load conditions, thereby saving power.

Operating Reliability
The compressor is a no contact scroll design with the motor cooled by the suction gas. Higher capacity scroll chillers use tandem compressors with suction gas distribution restrictor which allows balanced operation of compressor. The chillers are charged & tested in the factory prior to despatch, ensuring operating reliability.

Quiet Operations
The chillers use ultra quiet, high efficiency scroll compressors. The condenser fans are designed for low noise levels.

Easy to install
The chillers are pre-wired, fully charged and run tested at the factory, saving installation and start up time.

Voltas Countrywide After Sales Service
A nationwide service network backs every unit. After the initial warranty period, Voltas offers annual service schemes. More than 90% of the customers have opted for these schemes. You cannot get a better insurance.
MICROPROCESSOR - BASED CONTROLLER

Specially designed controller has multiple features with following benefits:

Three modes of operation:
- **Local mode**: Start / Stop & control through
- **Remote mode**: Remote Start / Stop through
  Digital input connected through cables
- **BMS Mode**: Remote data access through MODBUS
  RTU protocol. Available communication port
  RS485 can be linked to Building Management System (BMS)
- **MMI**: 4.3" TFT Touch Screen Color Display

Equalization of Compressor Runtime:
- The Microprocessor Controller ensures equal running of compressors in multiple compressors units.
  This ensures longer life of compressors

Safety & Protection:
- **Microcomputer Motor Protection Device (MPD)**: Protects chiller from
  - Phase unbalance • Phase loss • Phase reversal • Overload • Underload
- **Microcomputer Voltage Protection Device (VPD)**: Protects chiller from
  - Phase loss • Phase reversal
- Safety features protect the system from:
  - Freezing • Low Pressure • Anti Recycle • Low Chilled Water Temperature
  - High Pressure • Sensor Error • Low Water Flow in Chiller

Touch Pad:
- Provides user friendly interface with graphical display
- Gives visual annunciation for safety trips
- Sturdy design for all environment
  - 4.3" Resistive Touch Screen • 65536 colours TFT - LCD Display • Resolution: 480 x 272
  - Humidity: 10%-85% non condensing • Operating Temperature: -20°C to + 60°C
  - Protection level: IP55 (surface)

Self diagnosis Function
- Digital Display of all digital inputs & output such as Outlet temperature for Chillers, Current, Voltage &
  Compressor run hours, low water flow, etc
- Diagnose mode for easy trouble shooting – shows alarm history for the last 100 trips with Date, Time
  & Cause of failure
**Controls & Interlocks**
- The chilled water pump is interlocked with compressors
- The safety controls are preset at factory while operating controls are field adjustable, depending on actual operating requirements

**Optional Features:**
- Dual-mode chillers for thermal storage system
- Condenser coil with anti-corrosion coating
- Suction & discharge pressure transducers & pressure display
- Control panel as per NEMA standard

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### TECHNICAL DATA A/C SCROLL CHILLER (R407C)

<table>
<thead>
<tr>
<th>Unit Model No.</th>
<th>ACDS 012DPMN</th>
<th>ACDS 024DPMN</th>
<th>ACDS 036DPMN</th>
<th>ACDS 048DPMN</th>
<th>ACDS 060DPMN</th>
<th>ACDS 072DPMN</th>
<th>ACDS 080DPMN</th>
<th>ACDS 090DPMN</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Nom. Capacity (TR)</em></td>
<td>11</td>
<td>22</td>
<td>34</td>
<td>45</td>
<td>56</td>
<td>68</td>
<td>75</td>
<td>87</td>
</tr>
</tbody>
</table>

#### COMPRESSOR

| Compressor Type | | Hemiscroll |
|-----------------|-----------------|
| Compressor Qty. | 1 | 2 | 3 | 4 | 3 | 6 | 4 | 4 |
| Rpm | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 | 2900 |
| Unit Capacity Reduction Steps in % | 100/75 | 100/75 | 100/66.7/33.3 | 100/66.7/33.3 | 100/66.7/33.3 | 100/66.7/33.3 | 100/66.7/33.3 | 100/66.7/33.3 |
| Max. Allowable Operating Current Per Compr. (Amps At 400 volts) | 35 | 35 | 35 | 35 | 69 | 69 | 69 | 12 |
| Operating Current per Compr. Amps | 23 | 23 | 23 | 23 | 37 | 23 | 37 | 44 |

#### EVAPORATOR

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<tr>
<th>Evaporator Type</th>
<th>Shell &amp; Tube - DX</th>
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<tr>
<td>Water Flow Rate (USgpm)</td>
<td>29</td>
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<td><strong>Water Nozzle Size NB (mm)</strong></td>
<td>50</td>
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#### CONDENSER

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<tr>
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<td>2</td>
</tr>
<tr>
<td>Total CFM</td>
<td>11,000</td>
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</table>

#### UNIT DIMENSION

| | Length (mm) | 2500 | 2535 | 2535 | 2625 | 2625 | 2625 | 2625 | 3000 |
| | Width (mm) | 650 | 1270 | 1270 | 2236 | 2236 | 2236 | 2236 | 2236 |
| | Height (mm) | 1400 | 2340 | 2340 | 2340 | 2400 | 2400 | 2400 | 2400 |

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**Note 1:** *Capacity rated for evap. inlet water temp 12°C, leaving water temp 7°C at design ambient of 35°C Evaporator & Condenser.
Water side fouling factor of 0.000018 m²°C/W.

**Power & control supply voltage is 360 - 440 V & 210-240 V respectively and frequency is 50Hz.*

**Note 2:** *Size of water piping to be done at site to be determined based on operating tonnage & available pump head.*

**Note 3:** For chilled water outlet allowable temperature range is 5°C to 12°C. For other temperature, higher ambient / other duty / flow application please refer to Voltas Sales Team.

**Note 4:** Product development is a continuous process in Voltas, hence specifications and technical data are subject to alterations without notice.
## TECHNICAL DATA A/C SCROLL Chiller

### VOLTAS

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<tr>
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<th>ACDS 012DMN 1X1</th>
<th>ACDS 024DMN 2X1</th>
<th>ACDS 036DMN 3X1</th>
<th>ACDS 048DMN 2X2P</th>
<th>ACDS 060DMN 3X2</th>
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<tr>
<td>Unit Capacity Reduction Steps in %</td>
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<td>100/75/50/25</td>
<td>100/66.7/33.3</td>
<td>100/81.3/66.7/50/33.3/16.7</td>
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G. A DRAWING OF CHILLER PACKAGE MODEL
ACDS012DPMN1X1 | ACDS012DMN1X1

G. A DRAWING OF CHILLER PACKAGE MODEL
ACDS024DPMN2X1 | ACDS024DMN2X1
G. A DRAWING OF CHILLER PACKAGE MODEL
ACDS036DPMN3X1 | ACDS036DMN3X1

AIR FLOW
NO OBSTRUCTION ALLOWED ABOVE UNIT AT ANY HEIGHT

CHILLER IN/OUTLET 3"NPS
LIFTING HOLE

1.5M
MINIMUM CLEARANCE

1.5M
MINIMUM CLEARANCE

CONTROL PANEL

2.2M
EVAPORATOR SERVICE CLEARANCE

2.2M
EVAPORATOR SERVICE CLEARANCE

1M

2840

G. A DRAWING OF CHILLER PACKAGE MODEL
ACDS048DPMN2X2 | ACDS048DMN2X2P

AIR FLOW
NO OBSTRUCTION ALLOWED ABOVE UNIT AT ANY HEIGHT

CHILLER IN/OUTLET 4"NPS
CUMULUS PANEL

CLEARANCE = 2.2M
SERVICE CLEARANCE - 2.2M

CLEARANCE = 1.5M IF OPEN FENCE OR 50" OPEN WALL, 1.8M IF SOLID WALL.

LIFTING HOLE
POS-6 NPS

350
APPROX

2425

2346
G. A DRAWING OF CHILLER PACKAGE MODEL
ACDS060DPMN3X1 | ACDS060DMN3X1

G. A DRAWING OF CHILLER PACKAGE MODEL
ACDS072DPMN3X2 | ACDS072DMN3X2