



United Technologies

turn to the experts



AQUAFORCE[®]

30XA/XQ

Air-Cooled Liquid Chiller

Reversible Air-to-Water Heat Pump

Nominal cooling capacity: 274–1518kW (30XA)

Nominal cooling capacity: 315–1471kW (30XQ)

Nominal heating capacity: 311–1412kW (30XQ)

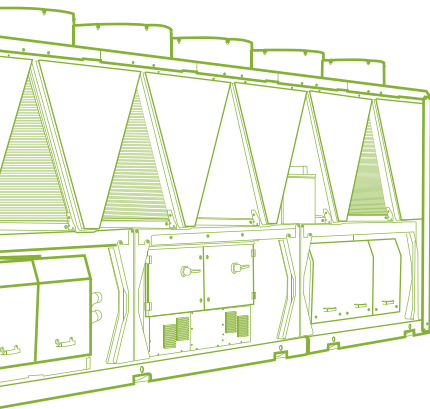
Environmental sound

- ✓ HFC-134a refrigerant
 - Refrigerant of the HFC group with zero ozone depletion potential.
- ✓ Leak-tight refrigerant circuit
 - Reduction of leaks as no capillary tubes and flare connections are used.
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge.



Easy and fast installation

- ✓ Integrated hydronic module (option)
 - Single or dual pump (as required) with operating time balancing and automatic changeover to the back-up pump if a fault develops.
 - Water filter protecting the water pump against circulating debris.
 - High-capacity membrane expansion tank ensures pressurization of the water circuit.
 - Thermal insulation.
 - Pressure gauge to check filter pollution and measure the system water flow rate.
 - Water flow control valve.
- ✓ Simplified electrical connections
 - Main disconnect switch with high trip capacity.
 - Transformer to supply the integrated control circuit (400/24V).
- ✓ Fast commissioning
 - Systematic factory operation test before shipment.
 - Quick-test function for step-by-step verification of the instruments, expansion devices, fans and compressors.

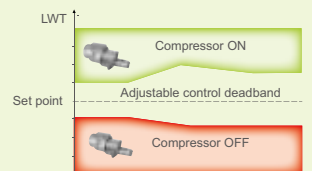


Absolute reliability

- ✓ Screw compressors
 - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
 - All compressor components are easily accessible on site minimizing down-time.
 - Electronic motor protection against overloads and power supply faults (loss of phase, phase reversal).
- ✓ Evaporator
 - Thermal insulation with aluminium cladding for perfect resistance against outside aggression (mechanical and UV protection).
- ✓ Exceptional endurance tests
 - Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
 - Transport simulation test in the laboratory on a vibrating table. The test is based on a military standard and equivalent to 4000 km by truck.
 - Salt mist corrosion resistance test in the laboratory for increased corrosion resistance.

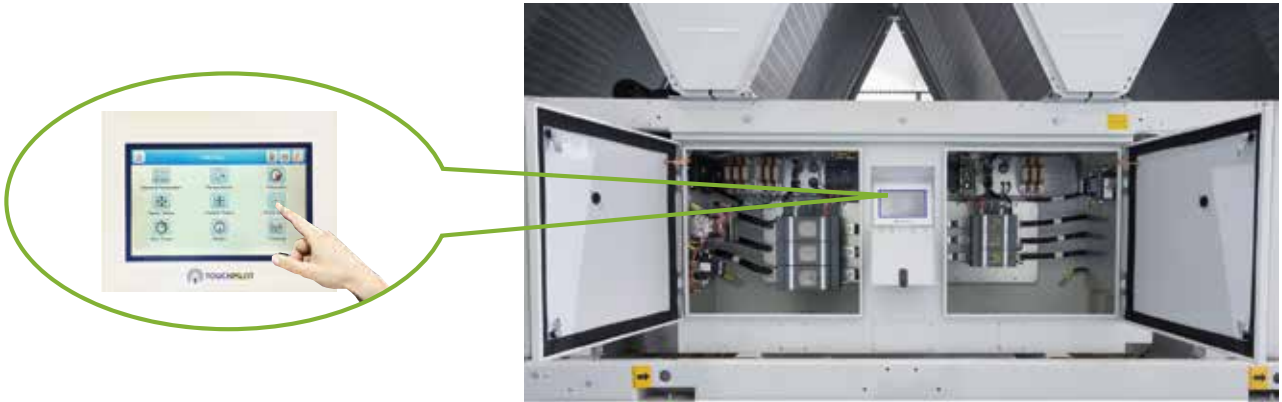


Cooler aluminium protective cladding



Technical Insight

Touch Pilot Control



General Features

- New innovative smart control features:
 - An intuitive and user-friendly, 5" colored interface (7" as option)
 - Screen-shots with concise and clear information in local languages
 - Complete menu, customized for different users (end user, service personnel and Carrier-factory technicians)
 - Easy access to the controller box with touch screen mounting to ensure legibility under any lighting conditions
 - Safe operation and unit setting: password protection ensures that unauthorized people cannot modify any advanced parameters
 - Simple and "smart" intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation
 - Night-mode: Cooling capacity management for reduced noise level.
- Energy management:
 - Internal time schedule clock controls chiller on/off times and operation at a second set-point
 - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations

Remote Management (Standard)

- Units with Touch Pilot control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- Equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), all components form a HVAC system fully-integrated and balanced through one of the Carrier's network system products, like the Chiller System Manager or the Plant System Manager (optional). The 30XA/XQ also communicates with other building management systems via optional communication gateways.

- The following commands/visualizations are possible from remote connection:
 - Start/Stop of the machine
 - Dual set-point management: Through a dedicated contact is possible to activate a second set-point (example: unoccupied mode)
 - Demand limit setting: To limit the maximum chiller capacity to a predefined value
 - Water pump control: These outputs control the contactors of on/off evaporator water pumps
 - Operation visualization: Indication if the unit is operating or if it's in stand-by (no cooling load)
 - Alarm visualization

Remote Management (EMM option)

- The Energy Management Module (EMM) offers extended remote control possibilities:
 - Room temperature: Permits set-point reset based on the building indoor air temperature (if Carrier thermostat are installed)
 - Set-point reset: Ensures reset of the cooling set-point based on a 4-20 mA or 0-10 V signal
 - Demand limit: Permits limitation of the maximum chiller power or current based on 0-10 V signal
 - Demand limit 1 and 2: Closing of these contacts limits the maximum chiller power or current to two predefined values
 - User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm
 - Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode)
 - Time schedule override: Closing of this contact cancels the time schedule effects
 - Out of service: This signal indicates that the chiller is completely out of service
 - Chiller capacity: This analogue output (0-10 V) gives an immediate indication of the chiller capacity
 - Alert indication: This volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault
 - Compressors running status: Set of outputs (as many as the compressors number) indicating which compressors are running.

Operating Range, 30XQ

Cooling mode

| Water heat exchanger (Evaporator) | Min.temperature | Max.temperature |
|---|-----------------|-----------------|
| Entering water temperature (at start) | - | 45°C |
| Entering water temperature (during operation) | 6.8°C | 21°C |
| Entering water temperature (during stop) | 3°C | 55°C |
| Leaving water temperature (during operation) | 4°C | 15°C |

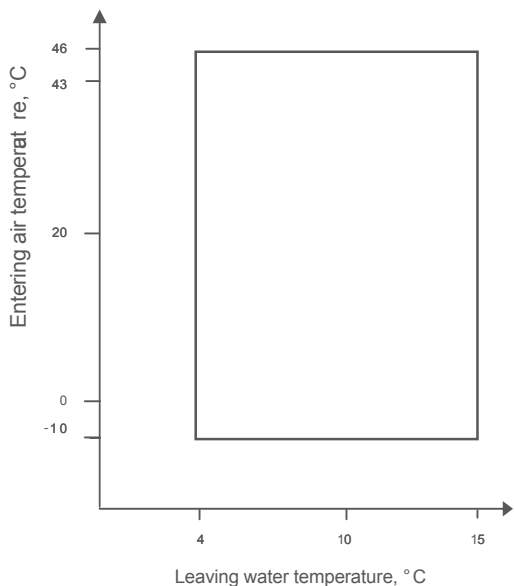
| Air heat exchanger (Condenser) | Min.temperature | Max.temperature |
|---------------------------------------|-----------------|-----------------|
| Outdoor air temperature | -10°C | 46°C |

Heating mode

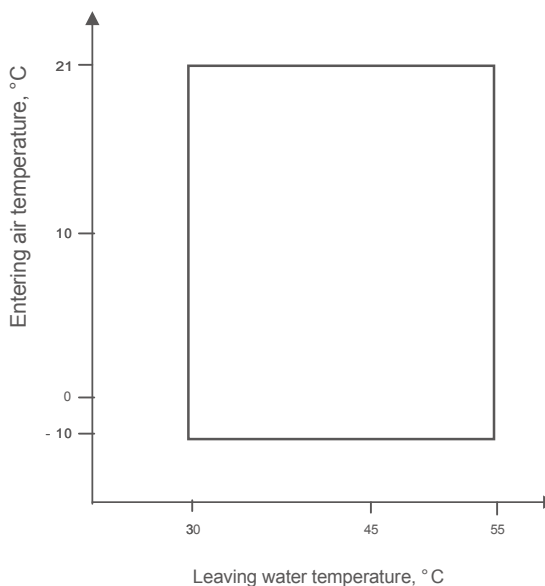
| Water heat exchanger (Condenser) | Min.temperature | Max.temperature |
|---|-----------------|-----------------|
| Entering water temperature (at start) | 3.4°C | 50°C |
| Entering water temperature (during operation) | 25°C | 50°C |
| Entering water temperature (during stop) | 3°C | 55°C |
| Leaving water temperature (during operation) | 30°C | 55°C |

| Air heat exchanger (Evaporator) | Min.temperature | Max.temperature |
|--|-----------------|-----------------|
| Outdoor air temperature | -10°C | 21°C |

Operating range - cooling mode



Operating range - heating mode



Technical Specifications

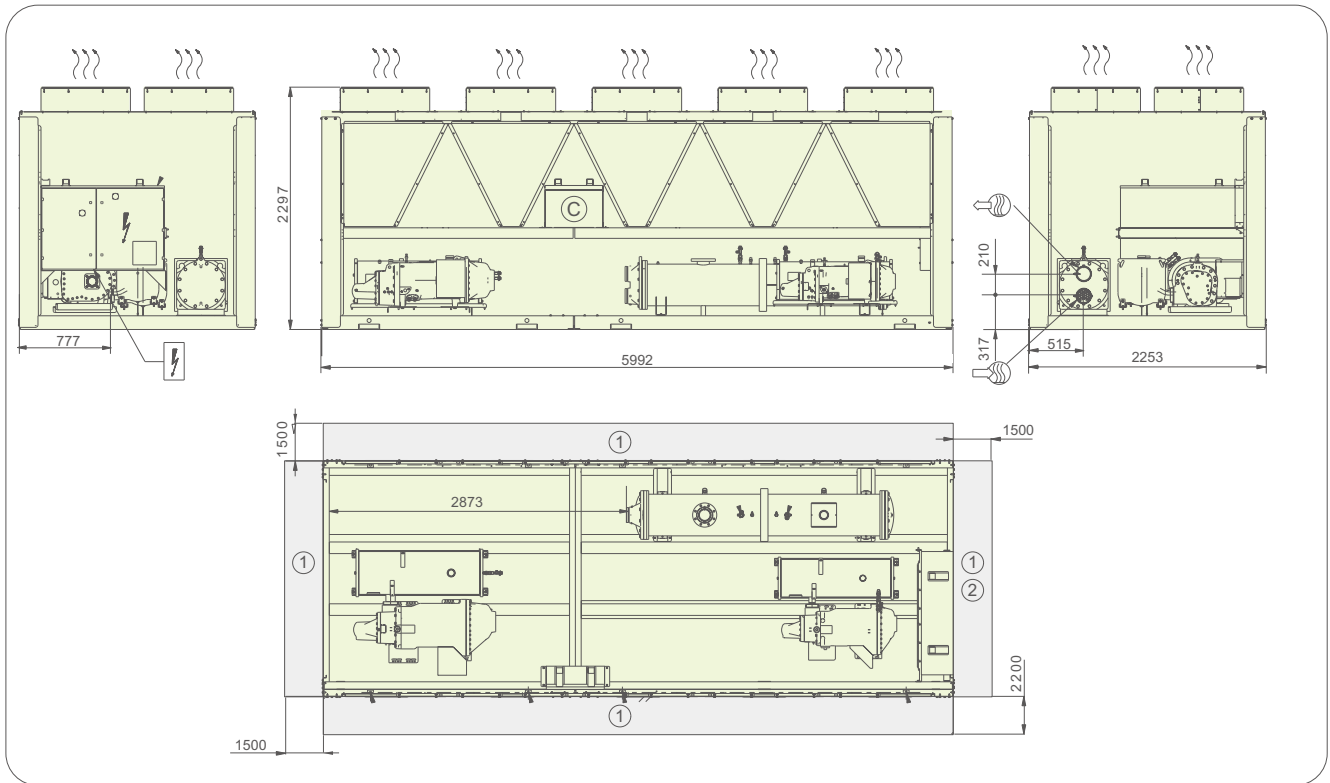
Unit with Cu/Al condenser coil

| 30XA | | 0252 | 0282 | 0302 | 0342 | 0352 | 0402 | 0442 | 0452 | 0482 | 0502 | 0602 | 0652 | 0702 |
|---|-----|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Nominal cooling capacity* | kW | 274 | 278 | 299 | 328 | 327 | 391 | 444 | 452 | 493 | 503 | 619 | 644 | 674 |
| Compressor input power | kW | 80.5 | 78.8 | 87.9 | 90.5 | 93.0 | 113.7 | 133.7 | 129.8 | 143.3 | 141.3 | 175.3 | 187 | 188.8 |
| EER | | 3.05 | 3.19 | 3.08 | 3.27 | 3.20 | 3.11 | 3.05 | 3.19 | 3.12 | 3.24 | 3.22 | 3.14 | 3.24 |
| Refrigerant | | HFC-134a | | | | | | | | | | | | |
| Circuit A | kg | 60 | 97 | 64 | 102 | 70 | 85 | 113 | 85 | 119 | 102 | 102 | 180 | 100 |
| Circuit B | kg | 64 | - | 64 | - | 56 | 56 | - | 56 | - | 56 | 88 | - | 95 |
| Circuit C | kg | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Compressor | | Semi-hermetic screw compressor | | | | | | | | | | | | |
| Circuit A | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Circuit B | | 1 | - | 1 | - | 1 | 1 | - | 1 | - | 1 | 1 | - | 1 |
| Circuit C | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum capacity | % | 15 | 30 | 15 | 30 | 15 | 15 | 30 | 15 | 30 | 15 | 15 | 30 | 15 |
| Control | | Touch Pilot™ control system, electronic expansion valve (EXV) | | | | | | | | | | | | |
| Condenser | | Cu/Al heat exchanger | | | | | | | | | | | | |
| Fans | | Axial Flying Bird with rotating shroud | | | | | | | | | | | | |
| Quantity | | 6 | 5 | 6 | 6 | 7 | 8 | 7 | 8 | 8 | 9 | 11 | 10 | 12 |
| Total air flow | l/s | 27083 | 22570 | 27083 | 27084 | 31597 | 36111 | 31598 | 36111 | 36112 | 40625 | 49653 | 45140 | 54167 |
| Fan speed | rpm | 950 | 950 | 950 | 950 | 950 | 950 | 950 | 950 | 950 | 950 | 950 | 950 | 950 |
| Evaporator | | Flooded multi-pipe | | | | | | | | | | | | |
| Water content | l | 58 | 49 | 61 | 54 | 61 | 66 | 76 | 70 | 77 | 77 | 79 | 78 | 94 |
| Nominal water flow | l/s | 13.1 | 13.3 | 14.2 | 15.6 | 15.6 | 18.6 | 21.2 | 21.5 | 23.5 | 24.0 | 29.5 | 31 | 32.1 |
| Nominal water pressure drop | kPa | 15 | 22 | 15 | 29 | 18 | 34 | 34 | 38 | 41 | 36 | 46 | 37 | 37 |
| Max. water-side pressure without hydronic module | kPa | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| Integrated hydronic module (option) | | Pump, victaulic screen filter, safety valve, expansion tank, purge valves etc. | | | | | | | | | | | | |
| Water pump | | Centrifugal pump | | | | | | | | | | | | |
| Water head external to chiller (single pump at nominal water flow rate) | kPa | 188 | 198 | 198 | 169 | 181 | 196 | 254 | 247 | 214 | 213 | - | - | - |
| Expansion tank | l | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | - | - | - |
| Max. water-side pressure with hydronic module | kPa | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | - | - | - |
| Water connection | | Victaulic | | | | | | | | | | | | |
| Nominal Diameter | DN | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 150 | 150 |
| Electrical data | | 400V-3Ph-50Hz | | | | | | | | | | | | |
| Nominal power supply | | Star-delta start | | | | | | | | | | | | |
| Start-up method | | 24V via internal transformer | | | | | | | | | | | | |
| Control power supply | | | | | | | | | | | | | | |
| Nominal unit current draw | | | | | | | | | | | | | | |
| Circuit A+B | A | 151 | 147 | 167 | 173 | 182 | 210 | 262 | 238 | 273 | 264 | 320 | 336 | 346 |
| Circuit C | A | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Maximum unit current draw | | | | | | | | | | | | | | |
| Circuit A+B | A | 208 | 180 | 226 | 229 | 243 | 284 | 314 | 316 | 367 | 350 | 423 | 415 | 457 |
| Circuit C | A | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Maximum start-up current | | | | | | | | | | | | | | |
| Circuit A+B | A | 274 | 275 | 274 | 308 | 292 | 407 | 504 | 510 | 587 | 510 | 583 | 629 | 616 |
| Circuit C | A | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Fan and control power | kW | 9.2 | 8.4 | 9.1 | 9.8 | 9.3 | 12.2 | 11.8 | 11.8 | 14.6 | 14.0 | 16.8 | 18.0 | 19.0 |
| Unit length | mm | 3604 | 3604 | 3604 | 3604 | 4798 | 4798 | 4798 | 4798 | 4798 | 5992 | 7186 | 5992 | 7186 |
| Unit width | mm | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 | 2253 |
| Unit height | mm | 2297 | 2297 | 2297 | 2297 | 2297 | 2297 | 2297 | 2297 | 2297 | 2297 | 2297 | 2297 | 2297 |
| Unit weight | kg | 3764 | 3523 | 3793 | 3820 | 4317 | 4761 | 4571 | 4823 | 4900 | 5393 | 6392 | 5250 | 6544 |
| Operating weight | kg | 3830 | 3578 | 3860 | 3875 | 4380 | 4830 | 4641 | 4900 | 4984 | 5470 | 6480 | 5328 | 6640 |

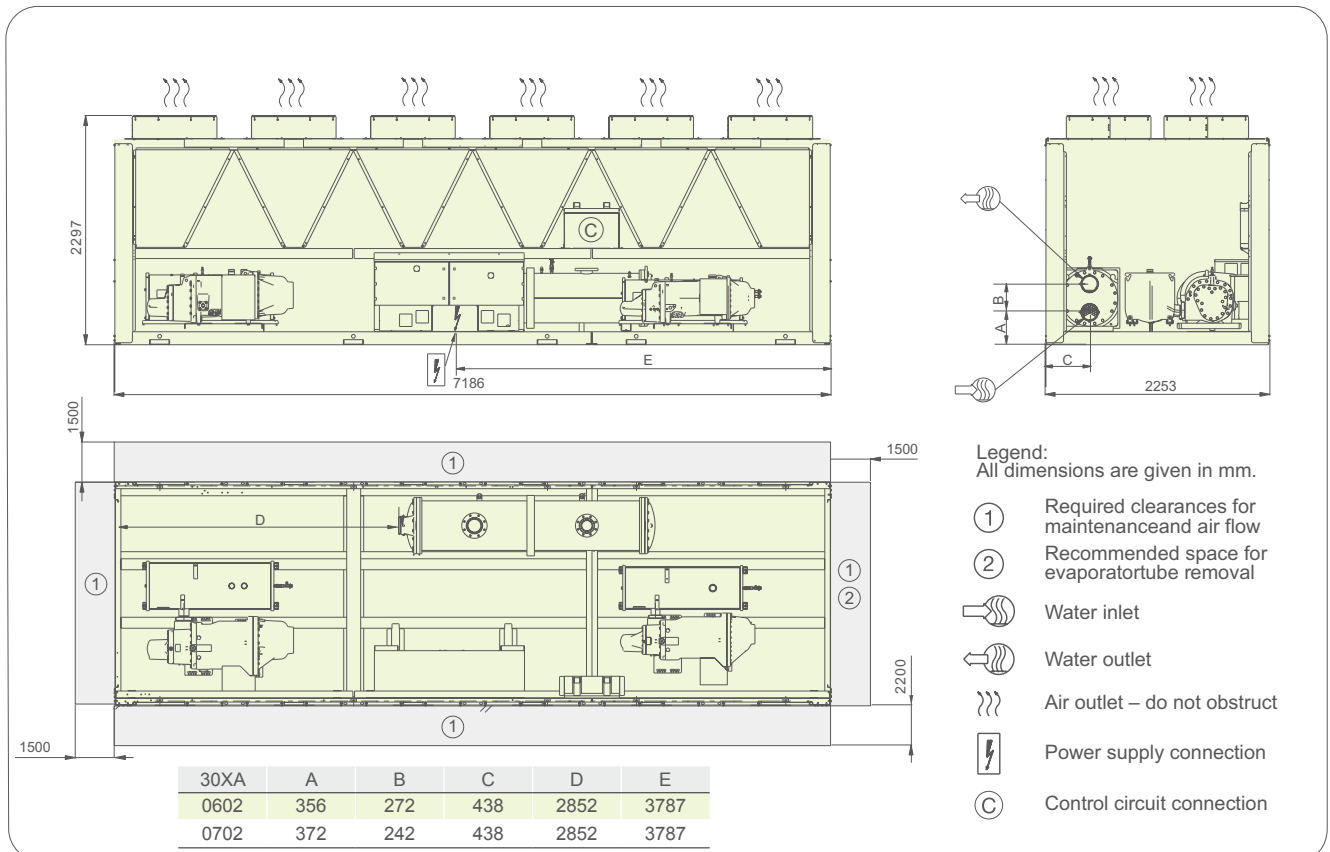
* Nominal conditions - evaporator entering/leaving water temperature 12/7°C, outdoor air temperature 35°C; Evaporator fouling factor 0.018m²K/kW

Dimensions/Clearances

30XA0502 - Cu/Al Condenser coils (option 254)

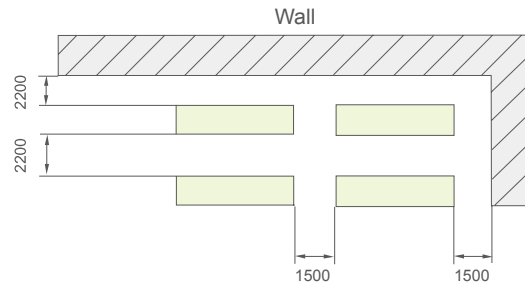
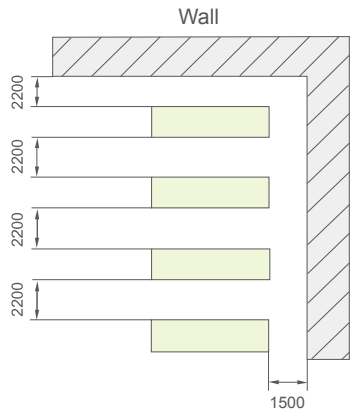


30XA 0602/0702 - Cu/Al Condenser coils (option 254)



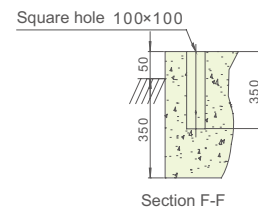
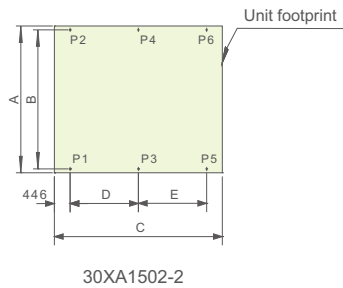
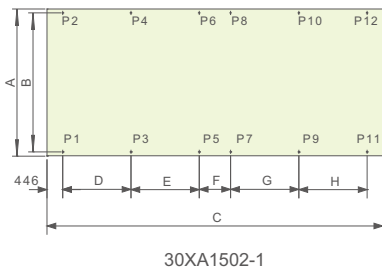
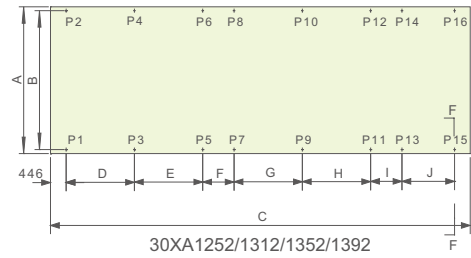
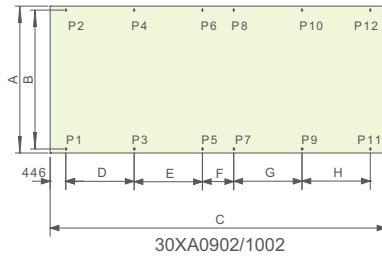
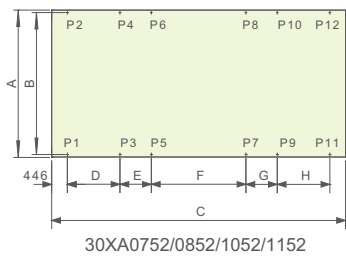
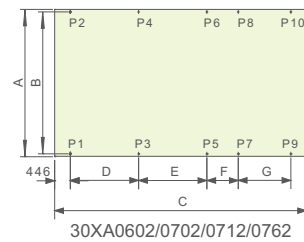
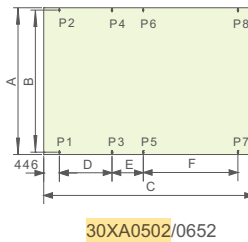
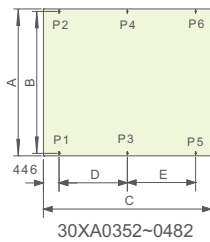
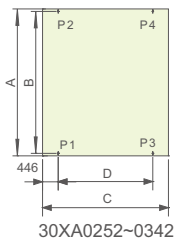
Note: Single point power connection, power cable arrive from bottom of electrical box, reserve at least 120mm height space below unit for 30XA0602~0702 power supply connection (unit aerial installation or cable slot)

Multiple Chiller Installation



Note: If the height of wall exceeds 2m, please contact local Carrier Sales & Service Corporation.

Weight Distribution, 30XA0252~1502

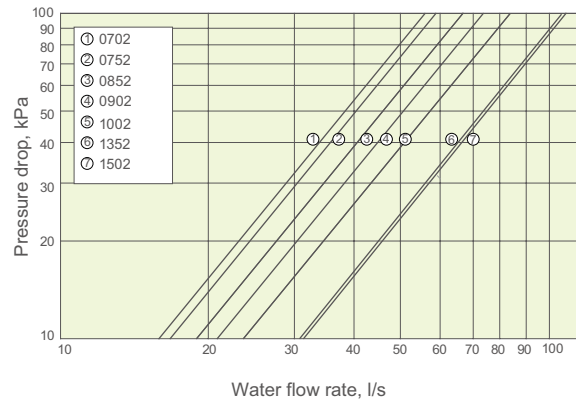
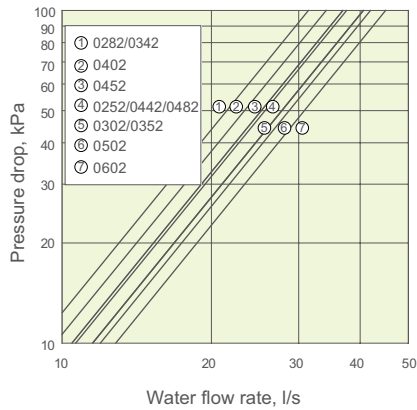


Weight Distribution, 30XA0252~1502

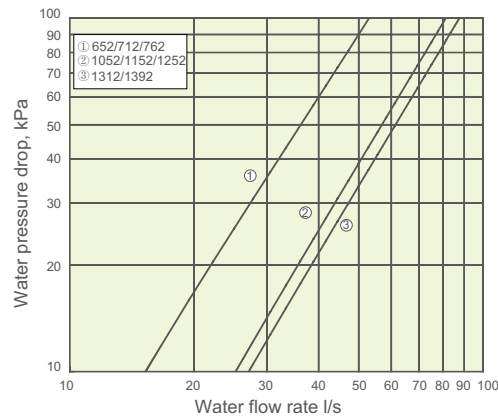
| Models | Dimensions, mm | | | | | | | | | | Weight distribution, kg | | | | | | | | | | | | | | | | Operating weight kg | |
|------------|----------------|------|-------|------|------|------|------|------|------|------|-------------------------|-----|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------------------|-------|
| | A | B | C | D | E | F | G | H | I | J | P1 | P2 | P3 | P4 | P5 | P6 | P7 | P8 | P9 | P10 | P11 | P12 | P13 | P14 | P15 | P16 | | |
| 30XA0252 | 2231 | 2157 | 3582 | 2690 | | | | | | | 930 | 901 | 1016 | 983 | | | | | | | | | | | | | | 3830 |
| 30XA0282 | 2231 | 2157 | 3582 | 2690 | | | | | | | 865 | 775 | 1015 | 923 | | | | | | | | | | | | | | 3578 |
| 30XA0302 | 2231 | 2157 | 3582 | 2690 | | | | | | | 942 | 835 | 1103 | 980 | | | | | | | | | | | | | | 3860 |
| 30XA0342 | 2231 | 2157 | 3582 | 2690 | | | | | | | 930 | 840 | 1100 | 1005 | | | | | | | | | | | | | | 3875 |
| 30XA0352 | 2231 | 2157 | 4776 | 1942 | 1942 | | | | | | 737 | 665 | 768 | 692 | 798 | 720 | | | | | | | | | | | | 4380 |
| 30XA0402 | 2231 | 2157 | 4776 | 1942 | 1942 | | | | | | 859 | 739 | 865 | 745 | 871 | 751 | | | | | | | | | | | | 4830 |
| 30XA0442 | 2231 | 2157 | 4776 | 1942 | 1942 | | | | | | 991 | 887 | 784 | 701 | 665 | 612 | | | | | | | | | | | | 4640 |
| 30XA0452 | 2231 | 2157 | 4776 | 1942 | 1942 | | | | | | 876 | 751 | 880 | 753 | 884 | 756 | | | | | | | | | | | | 4900 |
| 30XA0482 | 2231 | 2157 | 4776 | 1942 | 1942 | | | | | | 1080 | 976 | 874 | 790 | 663 | 601 | | | | | | | | | | | | 4984 |
| 30XA0502 | 2231 | 2157 | 5970 | 1496 | 892 | 2690 | | | | | 716 | 628 | 724 | 635 | 730 | 639 | 744 | 654 | | | | | | | | | | 5470 |
| 30XA0602 | 2231 | 2157 | 7164 | 1942 | 1942 | 892 | 1496 | | | | 698 | 601 | 697 | 599 | 697 | 599 | 697 | 599 | 695 | 598 | | | | | | | | 6480 |
| 30XA0652 | 2231 | 2157 | 5970 | 1496 | 892 | 2690 | | | | | 915 | 739 | 796 | 643 | 725 | 586 | 511 | 413 | | | | | | | | | | 5328 |
| 30XA0702 | 2231 | 2157 | 7164 | 1942 | 1942 | 892 | 1496 | | | | 709 | 615 | 709 | 618 | 710 | 618 | 711 | 618 | 713 | 619 | | | | | | | | 6640 |
| 30XA0712 | 2231 | 2157 | 7164 | 1942 | 1942 | 892 | 1496 | | | | 599 | 526 | 622 | 546 | 645 | 565 | 655 | 575 | 672 | 589 | | | | | | | | 5994 |
| 30XA0752 | 2231 | 2157 | 8358 | 1496 | 892 | 2690 | 892 | 1496 | | | 704 | 600 | 691 | 588 | 682 | 580 | 656 | 558 | 647 | 552 | 633 | 539 | | | | | | 7430 |
| 30XA0762 | 2231 | 2157 | 7164 | 1942 | 1942 | 892 | 1496 | | | | 591 | 542 | 616 | 565 | 641 | 588 | 652 | 598 | 671 | 616 | | | | | | | | 6080 |
| 30XA0852 | 2231 | 2157 | 8358 | 1496 | 892 | 2690 | 892 | 1496 | | | 739 | 644 | 724 | 631 | 716 | 622 | 687 | 598 | 678 | 591 | 662 | 578 | | | | | | 7870 |
| 30XA0902 | 2231 | 2157 | 9552 | 1942 | 1942 | 892 | 1942 | 1942 | | | 865 | 764 | 820 | 723 | 773 | 683 | 752 | 664 | 707 | 624 | 661 | 584 | | | | | | 8620 |
| 30XA1002 | 2231 | 2157 | 9552 | 1942 | 1942 | 892 | 1942 | 1942 | | | 899 | 793 | 847 | 749 | 796 | 704 | 772 | 683 | 722 | 639 | 671 | 595 | | | | | | 8870 |
| 30XA1052 | 2231 | 2157 | 10746 | 1496 | 892 | 2690 | 2834 | 1942 | | | 846 | 711 | 844 | 709 | 842 | 708 | 837 | 703 | 831 | 699 | 827 | 695 | | | | | | 9252 |
| 30XA1152 | 2231 | 2157 | 10746 | 1496 | 892 | 2690 | 2834 | 1942 | | | 862 | 707 | 858 | 705 | 857 | 704 | 853 | 701 | 848 | 697 | 845 | 695 | | | | | | 9332 |
| 30XA1252 | 2231 | 2157 | 11940 | 1496 | 892 | 1942 | 1942 | 892 | 1942 | 1942 | 605 | 541 | 618 | 553 | 626 | 560 | 643 | 575 | 661 | 590 | 668 | 597 | 686 | 613 | 703 | 628 | | 9867 |
| 30XA1312 | 2231 | 2157 | 11940 | 1496 | 892 | 1942 | 1942 | 892 | 1942 | 1942 | 800 | 626 | 782 | 612 | 771 | 601 | 747 | 585 | 724 | 566 | 713 | 558 | 689 | 539 | 666 | 521 | | 10500 |
| 30XA1352 | 2231 | 2157 | 11940 | 1942 | 1942 | 892 | 1942 | 1942 | 892 | 1496 | 792 | 711 | 793 | 712 | 794 | 712 | 796 | 713 | 794 | 713 | 797 | 713 | 796 | 714 | 796 | 714 | | 12060 |
| 30XA1392 | 2231 | 2157 | 11940 | 1496 | 892 | 1942 | 1942 | 892 | 1942 | 1942 | 800 | 626 | 782 | 612 | 771 | 601 | 747 | 585 | 724 | 566 | 713 | 558 | 689 | 539 | 666 | 521 | | 10500 |
| 30XA1502/1 | 2231 | 2157 | 9552 | 1942 | 1942 | 892 | 1942 | 1942 | | | 906 | 802 | 853 | 754 | 803 | 709 | 780 | 688 | 727 | 642 | 676 | 599 | | | | | | 8939 |
| 30XA1502/2 | 2231 | 2157 | 4776 | 1942 | 1942 | | | | | | 981 | 877 | 785 | 701 | 590 | 527 | | | | | | | | | | | | 4461 |

Note: (1) foot screw even hole number (far side) represent for evaporator side
 (2) foot screw, M20X300

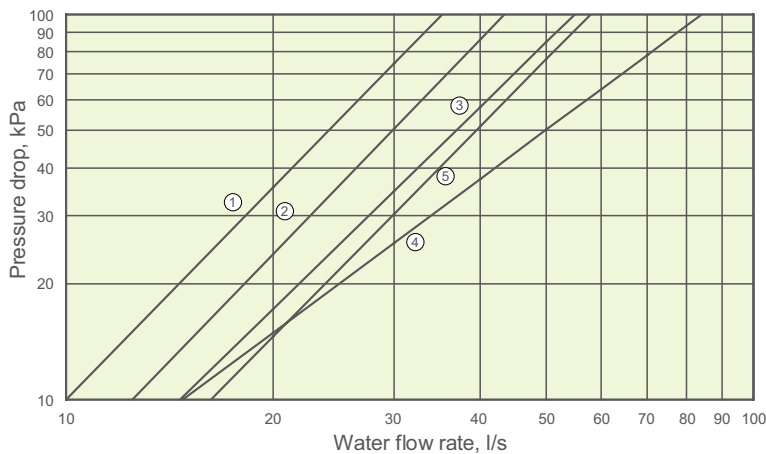
Evaporator Water Pressure Drop, 30XA0252~1502



Evaporator Water Pressure Drop, 30XA0652~1392



Heat exchanger Water Pressure Drop, 30XQ0330~1500



1. 30XQ0330
2. 30XQ0430, 30XQ0860 ModuleA/B, 30XQ0930 ModuleB, 30XQ1090 ModuleB
3. 30XQ0500, 30XQ0930 ModuleA, 30XQ1000 ModuleA/B, 30XQ1160 ModuleB, 30XQ1250 ModuleB
4. 30XQ0660, 30XQ1090 ModuleA, 30XQ1160 ModuleA, 30XQ1320 ModuleA/B, 30XQ1410 ModuleB
5. 30XQ0750, 30XQ1250 ModuleA, 30XQ1410 ModuleA, 30XQ1500 ModuleA/B