



United Technologies

## PRODUCT SELECTION DATA



- 30WG optimized for cooling
- 61WG optimized for heating
  - Compact design
- Plug and play approach
  - High efficiency

Water-Cooled and Condenserless Liquid Chillers  
Water-Sourced Heat Pumps

# 61WG/30WG/30WGA



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**AQUASNAP**  
Heating

**AQUASNAP**

# Physical data, 30WGA units

| 30WGA  |    |                        |       | 020                                   | 025  | 030  | 035  | 040  | 045  | 050   | 060   | 070   | 080   | 090   |
|--|----|------------------------|-------|---------------------------------------|------|------|------|------|------|-------|-------|-------|-------|-------|
| <b>Standard unit</b>                                       | C1 | Nominal capacity       | kW    | 22.6                                  | 27.0 | 29.5 | 34.7 | 39.2 | 43.7 | 53.7  | 59.8  | 69.2  | 78.3  | 87.8  |
| <b>Full load performances*</b>                             | C1 | EER                    | kW/kW | 3.75                                  | 3.84 | 3.87 | 3.93 | 3.94 | 3.90 | 3.82  | 3.85  | 3.86  | 3.91  | 3.88  |
|  | C2 | Nominal capacity       | kW    | 32.1                                  | 38.1 | 41.9 | 48.9 | 55.2 | 63.1 | 75.9  | 83.9  | 98.1  | 110.5 | 124.6 |
|  | C2 | EER                    | kW/kW | 5.51                                  | 5.36 | 5.44 | 5.51 | 5.44 | 5.53 | 5.36  | 5.37  | 5.45  | 5.42  | 5.42  |
|  | C1 | Gross nominal capacity | kW    | 22.7                                  | 27.1 | 29.6 | 34.8 | 39.4 | 43.8 | 53.8  | 59.9  | 69.4  | 78.4  | 88.0  |
| <b>Full load performances**</b>                            | C1 | Gross EER              | kW/kW | 3.80                                  | 3.91 | 3.94 | 4.00 | 4.02 | 3.98 | 3.86  | 3.89  | 3.91  | 3.95  | 3.93  |
|  | C2 | Gross nominal capacity | kW    | 32.2                                  | 38.3 | 42.1 | 49.2 | 55.5 | 63.5 | 76.2  | 84.1  | 98.4  | 110.9 | 125.0 |
|  | C2 | Gross EER              | kW/kW | 5.67                                  | 5.52 | 5.62 | 5.69 | 5.63 | 5.72 | 5.47  | 5.48  | 5.58  | 5.55  | 5.54  |
|  |    |                        |       |                                       |      |      |      |      |      |       |       |       |       |       |
| <b>Operating weight<sup>(1)</sup></b>                      |    |                        | kg    | 164                                   | 171  | 171  | 177  | 180  | 185  | 321   | 324   | 332   | 339   | 354   |
| Operating weight with option 258 <sup>(1)</sup>            |    |                        | kg    | 171                                   | 178  | 178  | 184  | 187  | 192  | 334   | 337   | 345   | 352   | 367   |
| <b>Sound levels<sup>(2)</sup></b>                          |    |                        |       |                                       |      |      |      |      |      |       |       |       |       |       |
| Sound power level  |    |                        | dB(A) | 67.0                                  | 68.5 | 69.0 | 69.3 | 70.0 | 70.1 | 71.5  | 72.0  | 72.0  | 73.0  | 73.4  |
| Sound power level, option 257                              |    |                        | dB(A) | 65.0                                  | 65.8 | 65.8 | 66.6 | 68.4 | 68.4 | 68.4  | 68.6  | 69.0  | 69.0  | 69.9  |
| Sound power level, option 258                              |    |                        | dB(A) | 61.2                                  | 62.4 | 63.4 | 63.2 | 64.4 | 63.9 | 66.2  | 66.1  | 66.1  | 67.3  | 67.2  |
| Sound power level, option 257 + 258                        |    |                        | dB(A) | 60.4                                  | 61.8 | 62.3 | 62.4 | 63.7 | 62.9 | 64.9  | 64.8  | 65.1  | 66.0  | 66.0  |
| <b>Dimensions, standard unit<sup>(3)</sup></b>             |    |                        |       |                                       |      |      |      |      |      |       |       |       |       |       |
| Width  |    | mm                     |       | 600                                   | 600  | 600  | 600  | 600  | 600  | 880   | 880   | 880   | 880   | 880   |
| Length   |    | mm                     |       | 1044                                  | 1044 | 1044 | 1044 | 1044 | 1044 | 1474  | 1474  | 1474  | 1474  | 1474  |
| Height   |    | mm                     |       | 901                                   | 901  | 901  | 901  | 901  | 901  | 901   | 901   | 901   | 901   | 901   |
| <b>Compressors</b>   |    |                        |       |                                       |      |      |      |      |      |       |       |       |       |       |
|  |    |                        |       | Hermetic scroll 48.3 r/s              |      |      |      |      |      |       |       |       |       |       |
| Circuit A  |    |                        |       | 1                                     | 1    | 1    | 1    | 1    | 1    | 2     | 2     | 2     | 2     | 2     |
| Circuit B  |    |                        |       | -                                     | -    | -    | -    | -    | -    | -     | -     | -     | -     | -     |
| Number of capacity stages                                  |    |                        |       | 1                                     | 1    | 1    | 1    | 1    | 1    | 2     | 2     | 2     | 2     | 2     |
| Minimum capacity   |    | %                      |       | 100                                   | 100  | 100  | 100  | 100  | 100  | 50    | 50    | 50    | 50    | 50    |
| <b>Refrigerant</b>   |    |                        |       | R410A                                 |      |      |      |      |      |       |       |       |       |       |
| <b>Capacity control</b>                                    |    |                        |       | Pro-Dialog+                           |      |      |      |      |      |       |       |       |       |       |
| <b>Evaporator</b>  |    |                        |       | Direct-expansion plate heat exchanger |      |      |      |      |      |       |       |       |       |       |
| Water volume   |    | l                      |       | 3.3                                   | 3.6  | 3.6  | 4.2  | 4.6  | 5.0  | 8.4   | 9.2   | 9.6   | 10.4  | 12.5  |
| Water connections  |    |                        |       | Victaulic                             |      |      |      |      |      |       |       |       |       |       |
| Inlet/outlet   |    | in                     |       | 1.5                                   | 1.5  | 1.5  | 1.5  | 1.5  | 1.5  | 2     | 2     | 2     | 2     | 2     |
| Max. water-side operating pressure without hydronic module |    | kPa                    |       | 1000                                  | 1000 | 1000 | 1000 | 1000 | 1000 | 1000  | 1000  | 1000  | 1000  | 1000  |
| <b>Refrigerant connections</b>                             |    |                        |       |                                       |      |      |      |      |      |       |       |       |       |       |
| Discharge line diameter                                    |    | in                     |       | 7/8                                   | 7/8  | 7/8  | 7/8  | 7/8  | 7/8  | 1-1/8 | 1-1/8 | 1-1/8 | 1-1/8 | 1-1/8 |
| Liquid line diameter                                       |    | in                     |       | 5/8                                   | 5/8  | 5/8  | 5/8  | 5/8  | 5/8  | 7/8   | 7/8   | 7/8   | 7/8   | 7/8   |
| <b>Chassis paint colour</b>                                |    |                        |       | Colour code: RAL7035                  |      |      |      |      |      |       |       |       |       |       |

\* In accordance with standard EN14511-3:2013. Refrigerant piping equivalent length (without drier and valves) = 3 m.

\*\* Not in accordance with standard EN14511-3:2013. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger. Refrigerant piping equivalent length (without drier and valves) = 3 m

C1 Cooling mode conditions: evaporator entering/leaving water temperature 12 °C/7 °C, saturated condensing temperature 45 °C, subcooling 5 K, evaporator fouling factor 0 m<sup>2</sup> K/W.

C2 Cooling mode conditions: evaporator entering/leaving water temperature 23 °C/18 °C, saturated condensing temperature 45 °C, subcooling 5 K, evaporator fouling factor 0 m<sup>2</sup> K/W.

<sup>(1)</sup> Weight shown is a guideline only. Please refer to the unit nameplate

<sup>(2)</sup> In dB ref=10-12 W, (A) weighting. Declared dual number noise emission values in accordance with ISO 4871 (with an associated uncertainty of +/-3dB(A)). Measured in accordance with ISO 9614-1 and certified by Eurovent.

<sup>(3)</sup> The dimensions shown are for the standard unit. For other unit types please refer to the dimensional drawings.

## Electrical data notes and operating conditions:

- 61WG/30WG/30WGA units have a single power connection point, located immediately upstream of the main disconnect switch.
- The control box includes the following standard features:
  - a main disconnect switch,
  - the starter and motor protection devices for each compressor and the pumps
  - the control devices
- Field connections:
  - All connections to the system and the electrical installations must be in full accordance with all applicable local codes.
- The Carrier 61WG/30WG/30WGA units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60204-1 (machine safety - electrical machine components - part 1: general regulations - corresponds to IEC 60204-1) are specifically taken into account, when designing the electrical unit equipment.

## Notes:

- Generally the recommendations of IEC 60364 are accepted as compliance with the requirements of the installation directives. Conformance with EN 60204-1 is the best means of ensuring compliance with the Machines Directive § 1.5.1.
  - Annex B of EN 60204-1 describes the electrical characteristics used for the operation of the machines.
- The operating conditions for the units are specified below:
    - Environment\* - Environment as classified in EN 60721 (equivalent to CEI60721):
      - Indoor installation,
      - ambient temperature range: +5 °C for the temperature minimum to +40 °C, class 4K4H,
      - humidity range (non-condensing)\*:
        - 50% relative humidity at 40 °C
        - 90% relative humidity at 20 °C
      - altitude: ≤ 2000 m (see note for table 4.7 in the IOM)
      - indoor installation\*

- presence of water: class AD2 (possibility of water droplets)
  - presence of hard solids, class 4S2 (no significant dust present)
  - presence of corrosive and polluting substances, class 4C2 (negligible)
  - vibration and shock, class AG2, AH2
  - competence of personnel, class BA4\* (trained personnel - IEC 60364)
- Power supply frequency variation: ± 2 Hz.
  - The neutral (N) conductor must not be connected directly to the unit (if necessary use a transformer).
  - Over-current protection of the power supply conductors is not provided with the unit.
  - The factory-installed disconnect switch(es)/circuit breaker(s) is (are) of a type suitable for power interruption in accordance with EN 60947.
  - The units are designed for simplified connection on TN(s) networks (IEC 60364). For IT networks provide a local earth and consult competent local organisations to complete the electrical installation. Units delivered with speed drive (option 116V and 270V) are not compatible with IT network.
  - Derived currents: If protection by monitoring of derived currents is necessary to ensure the safety of the installation, the control of the cut-out value must take the presence of leak currents into consideration that result from the use of frequency converters in the unit. A value of at least 150 mA is recommended to control differential protection devices.

**NOTE: If particular aspects of an actual installation do not conform to the conditions described above, or if there are other conditions which should be considered, always contact your local Carrier representative.**

\* The protection level of the control boxes required to conform to this class is IPX1B (according to reference document IEC 60529). All 61WG/30WG/30WGA units fulfil this protection condition. Units equipped with front casing panel meet class IP23. If the casing panel has been removed, access to energised components is protected to level IPXXB.

| <b>30WGA without hydronic module</b>                        |         | <b>020</b> | <b>025</b> | <b>030</b> | <b>035</b> | <b>040</b> | <b>045</b> | <b>050</b> | <b>060</b> | <b>070</b> | <b>080</b> | <b>090</b> |
|---|---------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| <b>Power circuit</b>  |         |            |            |            |            |            |            |            |            |            |            |            |
| Nominal voltage   | V-ph-Hz | 400-3-50   |            |            |            |            |            |            |            |            |            |            |
| Voltage range   | V       | 360-440    |            |            |            |            |            |            |            |            |            |            |
| <b>Control circuit supply</b>                               |         |            |            |            |            |            |            |            |            |            |            |            |
| 24 V, via internal transformer                              |         |            |            |            |            |            |            |            |            |            |            |            |
| <b>Maximum start-up current draw (Un)*</b>                  |         |            |            |            |            |            |            |            |            |            |            |            |
| Standard unit   | A       | 98         | 142        | 142        | 147        | 158        | 197        | 161        | 163        | 172        | 185        | 228        |
| Unit with electronic starter option                         | A       | 53.9       | 78.1       | 78.1       | 80.9       | 86.9       | 108.4      | 96.8       | 97.9       | 104.1      | 112.3      | 137.4      |
| <b>Unit power factor at maximum capacity**</b>              |         |            |            |            |            |            |            |            |            |            |            |            |
| 0.83 0.82 0.84 0.83 0.82 0.84 0.82 0.82 0.82 0.83 0.82 0.84 |         |            |            |            |            |            |            |            |            |            |            |            |
| <b>Maximum operating power input**</b>                      |         |            |            |            |            |            |            |            |            |            |            |            |
| kW 9.7 11.4 12.8 14.7 16.6 18.7 22.8 25.6 29.4 33.2 37.4    |         |            |            |            |            |            |            |            |            |            |            |            |
| <b>Nominal unit operating current draw***</b>               |         |            |            |            |            |            |            |            |            |            |            |            |
| A 11.4 13.8 14.7 16.5 18.1 21.2 27.6 29.4 33.0 36.2 42.4    |         |            |            |            |            |            |            |            |            |            |            |            |
| <b>Maximum operating current draw (Un)****</b>              |         |            |            |            |            |            |            |            |            |            |            |            |
| A 14.7 17.7 19.3 21.7 24.1 27.5 35.4 38.7 43.5 48.1 55.0    |         |            |            |            |            |            |            |            |            |            |            |            |
| <b>Maximum operating current draw (Un-10%) †</b>            |         |            |            |            |            |            |            |            |            |            |            |            |
| A 16.2 19.5 21.3 23.9 26.5 30.3 39.0 42.6 47.8 53.0 60.6    |         |            |            |            |            |            |            |            |            |            |            |            |
| <b>Customer-side unit power reserve</b>                     |         |            |            |            |            |            |            |            |            |            |            |            |
| Customer reserve at the 24 V control power circuit          |         |            |            |            |            |            |            |            |            |            |            |            |
| <b>Short-circuit stability and protection</b>               |         |            |            |            |            |            |            |            |            |            |            |            |
| See table below "Short-circuit stability current"           |         |            |            |            |            |            |            |            |            |            |            |            |

- \* Maximum instantaneous start-up current at operating limit values (maximum operating current of the smallest compressor(s) + locked rotor current or limited start-up current of the largest compressor).  
\*\* Maximum power input at the unit operating limits.  
\*\*\* Values obtained at the following conditions: evaporator entering/leaving water temperature 12 °C/7 °C, condenser entering/leaving water temperature 45 °C.  
\*\*\*\* Maximum unit operating current at maximum unit power input and 400 V.  
† Maximum unit operating current at maximum unit power input and 360 V.

### Short-circuit stability current (TN system\*) - standard unit (with main disconnect switch)

| <b>61WG/30WG/30WGA</b>   |          | <b>020</b> | <b>025</b> | <b>030</b> | <b>035</b> | <b>040</b> | <b>045</b> | <b>050</b> | <b>060</b> | <b>070</b> | <b>080</b> | <b>090</b> |
|--|----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| <b>Value with non-specified upstream protection</b>                |          |            |            |            |            |            |            |            |            |            |            |            |
| Short-term current at 1 s - I <sub>cw</sub> - kA rms               | 3        | 3          | 3          | 3          | 3          | 3          | 3          | 3          | 3          | 3          | 3          | 3          |
| Admissible peak current - I <sub>pk</sub> - kA pk                  | 6        | 6          | 6          | 6          | 6          | 6          | 6          | 6          | 6          | 6          | 6          | 6          |
| <b>Maximum value with upstream protection (by circuit breaker)</b> |          |            |            |            |            |            |            |            |            |            |            |            |
| Conditional short-circuit current I <sub>cc</sub> - kA rms         | 40       | 40         | 40         | 40         | 40         | 40         | 40         | 40         | 40         | 40         | 40         | 40         |
| Schneider circuit breaker - Compact series                         | NSX 100N |            |            |            |            |            |            |            |            |            |            |            |
| Reference number**   | LV429795 |            |            |            |            |            |            |            |            |            |            |            |

- \* Earthing system type  
\*\* If another current limitation protection system is used, its time-current and thermal constraint (I<sup>2</sup>t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker. Contact your nearest Carrier office.  
The short-circuit stability current values above are in accordance with the TN system.

| <b>30WG</b>  |  | <b>110</b> | <b>120</b> | <b>140</b> | <b>150</b> | <b>170</b> | <b>190</b> |
|--|--|------------|------------|------------|------------|------------|------------|
| <b>Value with non-specified upstream protection</b>                |  |            |            |            |            |            |            |
| Short-term current at 1 s - I <sub>cw</sub> - kA rms               |  | 5,5        | 5,5        | 5,5        | 5,5        | 5,5        | 5,5        |
| Admissible peak current - I <sub>pk</sub> - kA pk                  |  | 20         | 20         | 20         | 20         | 20         | 20         |
| <b>Maximum value with upstream protection (by circuit breaker)</b> |  |            |            |            |            |            |            |
| Conditional short-circuit current I <sub>cc</sub> - kA rms         |  | 154        | 154        | 154        | 154        | 154        | 154        |
| Schneider circuit breaker - Compact series                         |  | NSX 100N   |            |            |            |            |            |
| Reference number**   |  | LV429795   |            |            |            |            |            |

- \* Earthing system type  
\*\* If another current limitation protection system is used, its time-current and thermal constraint (I<sup>2</sup>t) trip characteristics must be at least equivalent to those of the recommended Schneider circuit breaker. Contact your nearest Carrier office.  
The short-circuit stability current values above are in accordance with the TN system.

# Water flow rates

## Standard 61WG

| 61WG | Evaporator water flow rate, l/s |               |           |              |               |             |
|------|---------------------------------|---------------|-----------|--------------|---------------|-------------|
|      | Minimum*                        |               | Minimum** | Maximum***   |               | Maximum**** |
|      | Low pressure                    | High pressure |           | Low pressure | High pressure |             |
| 020  | 1.0                             | 0.9           | 0.5       | 3.1          | 3.6           | 3.8         |
| 025  | 1.0                             | 1.0           | 0.5       | 3.3          | 3.8           | 4.1         |
| 030  | 1.0                             | 1.0           | 0.5       | 3.3          | 3.8           | 4.1         |
| 035  | 1.1                             | 1.1           | 0.6       | 3.6          | 4.2           | 4.7         |
| 040  | 1.2                             | 1.1           | 0.6       | 3.8          | 4.4           | 5.0         |
| 045  | 1.2                             | 1.1           | 0.8       | 4.0          | 4.6           | 5.4         |
| 050  | 1.6                             | 1.4           | 0.8       | 5.4          | 7.8           | 9.2         |
| 060  | 1.5                             | 1.6           | 1.0       | 6.1          | 8.0           | 9.9         |
| 070  | 1.6                             | 1.5           | 1.1       | 6.2          | 8.1           | 10.3        |
| 080  | 1.6                             | 1.5           | 1.3       | 6.3          | 8.3           | 10.9        |
| 090  | 2.0                             | 1.6           | 1.5       | 7.8          | 8.7           | 12.5        |

- \* Units with hydronic module  
Flow rate for a maximum permitted temperature difference at the minimum leaving water temperature
- \*\* Units without hydronic module  
Flow rate for a maximum permitted temperature difference at the minimum leaving water temperature
- \*\*\* Units with hydronic module  
Maximum flow rate for an available pressure of 20 kPa (unit with low-pressure hydronic module) or 50 kPa (unit with high-pressure hydronic module)
- \*\*\*\* Units without hydronic module  
Maximum flow rate for a pressure drop of 100 kPa in the plate heat exchanger.

| 61WG | Condenser water flow rate, l/s |              |               |            |
|------|--------------------------------|--------------|---------------|------------|
|      | Minimum*                       | Maximum**    |               | Maximum*** |
|      |                                | Low pressure | High pressure |            |
| 020  | 0.3                            | 3.1          | 3.5           | 3.8        |
| 025  | 0.3                            | 3.3          | 3.8           | 4.1        |
| 030  | 0.3                            | 3.3          | 3.8           | 4.1        |
| 035  | 0.4                            | 3.5          | 4.1           | 4.7        |
| 040  | 0.4                            | 3.7          | 4.3           | 5.0        |
| 045  | 0.4                            | 3.9          | 4.5           | 5.4        |
| 050  | 0.4                            | 4.8          | 6.8           | 7.0        |
| 060  | 0.5                            | 5.5          | 7.0           | 7.5        |
| 070  | 0.5                            | 5.6          | 7.2           | 7.8        |
| 080  | 0.6                            | 5.8          | 7.4           | 8.2        |
| 090  | 0.6                            | 7.2          | 7.9           | 9.3        |

- \* Units with or without hydronic module  
Minimum flow rate for a water temperature difference of 18 K-  
Note: Operation permitted up to a value of 20 K.
- \*\* Units with hydronic module  
Maximum flow rate for an available pressure of 20 kPa (unit with low-pressure hydronic module) or 50 kPa (unit with high-pressure hydronic module)
- \*\*\* Units without hydronic module  
Maximum flow rate for a pressure drop of 100 kPa in the plate heat exchanger

## 61WG with option 272

| 61WG | Minimum evaporator glycol solution flow rate - option 272*, l/s |              |               |
|------|---|--------------|---------------|
|      | Minimum**   | Minimum***   |               |
|      |   | Low pressure | High pressure |
| 020  | 0.5   | 0.5          | 0.5           |
| 025  | 0.5   | 0.5          | 0.5           |
| 030  | 0.5   | 0.5          | 0.5           |
| 035  | 0.6   | 0.6          | 0.6           |
| 040  | 0.6   | 0.6          | 0.6           |
| 045  | 0.8   | 0.8          | 0.8           |
| 050  | 2.0   | 1.9          | 0.8           |
| 060  | 1.9   | 1.9          | 1.0           |
| 070  | 1.9   | 1.9          | 1.1           |
| 080  | 1.9   | 2.0          | 1.3           |
| 090  | 2.2   | 2.0          | 1.5           |

- \* Option 272: Condenser side high-temperature water production, evaporator side with glycol solution,
- \*\* Units with hydronic module  
Minimum flow rate for a maximum permitted temperature difference at the minimum leaving water temperature
- \*\*\* Units without hydronic module  
Minimum flow rate for a maximum permitted temperature difference at the minimum leaving water temperature

## Standard 30WG/30WGA

| 30WG<br>30WGA | Evaporator water flow rate, l/s |               |           |              |               |          |
|---------------|---------------------------------|---------------|-----------|--------------|---------------|----------|
|               | Minimum*                        |               | Minimum** | Maximum***   |               | Maximum† |
|               | Low pressure                    | High pressure |           | Low pressure | High pressure |          |
| 020           | 1.0                             | 0.9           | 0.5       | 3.1          | 3.6           | 3.8      |
| 025           | 1.0                             | 1.0           | 0.5       | 3.3          | 3.8           | 4.1      |
| 030           | 1.0                             | 1.0           | 0.5       | 3.3          | 3.8           | 4.1      |
| 035           | 1.1                             | 1.1           | 0.6       | 3.6          | 4.2           | 4.7      |
| 040           | 1.1                             | 1.1           | 0.6       | 3.8          | 4.4           | 5        |
| 045           | 1.2                             | 1.1           | 0.8       | 4.0          | 4.6           | 5.4      |
| 050           | 1.6                             | 1.4           | 0.8       | 5.4          | 7.8           | 9.2      |
| 060           | 1.5                             | 1.6           | 1.0       | 6.1          | 8.0           | 9.9      |
| 070           | 1.6                             | 1.5           | 1.1       | 6.2          | 8.1           | 10.3     |
| 080           | 1.6                             | 1.5           | 1.3       | 6.3          | 8.3           | 10.9     |
| 090           | 2.0                             | 1.6           | 1.5       | 7.8          | 8.7           | 12.5     |
| 110           | 2                               | 1,25          | 0,8       | 7,5          | 11,8          | 14,4     |
| 120           | 2                               | 1,25          | 0,9       | 7,6          | 12,5          | 16,7     |
| 140           | 2                               | 1,25          | 1         | 8,6          | 12,8          | 18,3     |
| 150           | 2                               | 1,25          | 0,8       | 8,6          | 12,5          | 16,1     |
| 170           | 2                               | 1,25          | 0,9       | 13,6         | 13,1          | 18,3     |
| 190           | 2                               | 1,25          | 1         | 14,0         | 13,3          | 20,3     |

- \* Units with hydronic module  
Flow rate for a maximum permitted temperature difference at the minimum leaving water temperature
- \*\* Units without hydronic module  
Flow rate for a maximum permitted temperature difference at the minimum leaving water temperature
- \*\*\* Units with hydronic module  
Maximum flow rate for an available pressure of 20 kPa (unit with low-pressure hydronic module) or 50 kPa (unit with high-pressure hydronic module)
- † Units without hydronic module  
Maximum flow rate for a pressure drop of 100 kPa in the plate heat exchanger.

| 30WG | Condenser water flow rate, l/s |              |               |            |
|------|--------------------------------|--------------|---------------|------------|
|      | Minimum*                       | Maximum**    |               | Maximum*** |
|      |                                | Low pressure | High pressure |            |
| 020  | 0.3                            | 3.1          | 3.5           | 3.8        |
| 025  | 0.3                            | 3.3          | 3.8           | 4.1        |
| 030  | 0.3                            | 3.3          | 3.8           | 4.1        |
| 035  | 0.4                            | 3.5          | 4.1           | 4.7        |
| 040  | 0.4                            | 3.7          | 4.3           | 5.0        |
| 045  | 0.4                            | 3.9          | 4.5           | 5.4        |
| 050  | 0.4                            | 4.8          | 6.8           | 7.0        |
| 060  | 0.5                            | 5.5          | 7.0           | 7.5        |
| 070  | 0.5                            | 5.6          | 7.2           | 7.8        |
| 080  | 0.6                            | 5.8          | 7.4           | 8.2        |
| 090  | 0.6                            | 7.2          | 7.9           | 9.3        |
| 110  | 0,5                            | 11,4         | 11,7          | 13,1       |
| 120  | 0,5                            | 12,5         | 12,4          | 15,0       |
| 140  | 0,6                            | 13,2         | 12,9          | 16,7       |
| 150  | 0,5                            | 12,6         | 13,8          | 16,4       |
| 170  | 0,5                            | 13,6         | 14,4          | 18,9       |
| 190  | 0,6                            | 14,0         | 14,7          | 20,6       |

- \* Units with or without hydronic module  
Minimum flow rate for a water temperature difference of 18 K-  
Note: Operation permitted up to a value of 20 K.
- \*\* Units with hydronic module  
Maximum flow rate for an available pressure of 20 kPa (unit with low-pressure hydronic module) or 50 kPa (unit with high-pressure hydronic module)
- \*\*\* Units without hydronic module  
Maximum flow rate for a pressure drop of 100 kPa in the plate heat exchanger

## 30WG with option 6

| 30WG | Minimum evaporator glycol solution flow rate - option 6*, l/s |              |               |
|------|---|--------------|---------------|
|      | Minimum**   | Minimum***   |               |
|      |   | Low pressure | High pressure |
| 020  | 1.4   | 1.3          | 0.5           |
| 025  | 1.5   | 1.3          | 0.5           |
| 030  | 1.5   | 1.3          | 0.5           |
| 035  | 1.6   | 1.5          | 0.6           |
| 040  | 1.7   | 1.5          | 0.6           |
| 045  | 1.8   | 1.5          | 0.8           |
| 050  | 2.5   | 2.2          | 0.8           |
| 060  | 2.2   | 2.3          | 1.0           |
| 070  | 2.2   | 2.4          | 1.1           |
| 080  | 2.3   | 2.4          | 1.3           |
| 090  | 2.5   | 2.5          | 1.5           |
| 110  | 2   | 1,4          | 1,5           |
| 120  | 2   | 1,4          | 1,5           |
| 140  | 2   | 1,4          | 1,5           |
| 150  | 2   | 1,4          | 1,5           |
| 170  | 2   | 1,4          | 1,5           |
| 190  | 2   | 1,4          | 1,5           |

- \* Option 6: Glycol solution production, very low temperature
- \*\* Units with hydronic module  
Minimum flow rate for a maximum permitted temperature difference at the minimum leaving water temperature
- \*\*\* Units without hydronic module  
Minimum flow rate for a maximum permitted temperature difference at the minimum leaving water temperature

# Variable water flow system (VWF)

Variable water flow is a hydronic control function package that permits control of the water flow rate.

The VWF not only ensures control at full load, a specific Carrier algorithm linked to an electronic frequency converter also continuously modulates the flow rate to minimise pump consumption at full load as well as part load.

The hydronic module includes pressure transducers that permit intelligent measurement of the water flow rate and real-time display on the Pro-Dialog+ interface. All adjustments can be made directly on the interface, speeding up start-up and maintenance.

As VWF acts directly on the pump, the system no longer requires the control valve at the unit outlet. However, for applications with two-way valves a bypass system must be kept to guarantee the minimum flow rate.

## Operating logic

### ■ Full-load setpoint

The flow rate control at full load uses the Pro-Dialog+ & TouchPilot Junior interface, reducing the pump speed. This first control saves energy that would normally be dissipated in the control valve. For example, if the pressure supplied by the pump is reduced by 20% the power consumption of the pump is reduced by the same ratio, compared to a traditional installation.

### ■ Operating mode at part load

Pro-Dialog+ & TouchPilot Junior includes two part-load operating modes:

- Constant outlet pressure control
- Constant delta T control.

#### 1 – Constant unit outlet pressure control

The control continuously acts on the pump speed to ensure a constant outlet pressure.

This solution is suitable for installations with two-way valves. When these close, the water speed will accelerate in the system branches that are still open. For a fixed-speed pump this results in an unnecessary increase of the pressure at the pump outlet.

The outlet pressure control mode ensures that each circuit branch always has a uniform supply, without unnecessary energy waste.

In industrial processes such as plastic injection moulding, this solution ensures that each terminal unit has the correct pressure supply.

#### 2 – Constant delta T control

The VWF algorithm maintains a constant delta T no matter what the unit load, reducing the flow rate to the minimum.

This solution can be used for systems with two-way or three-way valves and achieves higher energy savings than the “Constant unit outlet pressure control” mode. It is suitable for the majority of comfort applications.

# Guide specification, 61WG/30WG/30WGA

## Quality assurance

- The water-sourced units shall be designed for indoor installation in a plant room.
- The water-sourced units shall use ozone-friendly refrigerant R410A and include scroll compressors.
- The design and manufacturing site of the units shall be certified in accordance with the quality management system ISO 9001.
- The development test site of the units shall be certified to the quality management system ISO 17025.
- The design and manufacturing site of the units shall be certified in accordance with the environmental management system ISO 14001.
- The published performances for the units shall be Eurovent-certified and all units are factory-tested before shipment.
- The units shall meet the following product quality standards: 2014/35/UE, 2014/30/UE, 2014/68/UE, 2011/65/UE "RoHS 2", 2012/19/EU "WEEE", 2008/28/EC "Ecodesign", EN14511.

## 61WG product features

- The hot-water production unit shall have a heating capacity of \_\_\_\_ kW, a maximum power input of \_\_\_\_ kW and a COP of \_\_\_\_ kW/kW.
- The evaporator leaving water temperature shall be \_\_\_\_ °C with a temperature difference of \_\_\_\_ K and a condenser leaving water temperature of \_\_\_\_ °C with a temperature difference of \_\_\_\_ K.
- The hot-water production unit shall be able to produce hot water up to 65 °C and cold water to class \_\_\_\_ in accordance with Eurovent.
- The hot-water production unit shall have weather compensation control, controlling a needle valve and permitting hot-water production at a second setpoint of \_\_\_\_ °C, controlled by a clock.
- It shall control a supplementary 4-stage electric heater and be able to manage a relief boiler (heat pump stopped).
- A second circulation pump shall be controlled by the hot-water production unit.

## 30WG product features

- The chilled-water production unit shall have a cooling capacity of \_\_\_\_ kW, a maximum power input of \_\_\_\_ kW and an ESEER of \_\_\_\_ kW/kW.
- The evaporator leaving water temperature shall be \_\_\_\_ °C with a temperature difference of \_\_\_\_ K and a condenser leaving water temperature of \_\_\_\_ °C with a temperature difference of \_\_\_\_ K.
- The chilled-water production unit shall be able to produce hot water up to 60 °C and class \_\_\_\_ heating in accordance with Eurovent.
- The chilled-water production unit shall be connected by communication bus to a drycooler.

## 30WGA product features

- The refrigerant circuit of the condenserless unit shall include a check valve on the discharge line piping, a solenoid valve on the liquid line piping and a nitrogen holding charge.
- The unit shall be capable of delivering cooling capacity with a saturated condensing temperature of up to 62 °C.
- The chiller shall be connected to a remote condenser via communication bus.
- Fan control on the remote condenser shall be possible via a digital output (up to 8 steps possible) or via an analogue 0-10 V output signal for variable-speed fans.
- Fan operation shall be controlled remotely based on the outside temperature and the saturated refrigerant discharge temperature

## Common 61WG/30WG/30WGA unit features

- The unit shall have water connections at the top/back and a footprint size of \_\_\_\_ m<sup>2</sup>.
- The hydronic kit, located in the upper unit section shall include all required hydronic components including an expansion tank of \_\_\_\_ litres.
- The circulation pumps have fixed speed/variable water flow with a minimum frequency of 25 Hz. The evaporator water pressure drop shall be \_\_\_\_ kPa and the condenser water pressure drop shall be \_\_\_\_ kPa.
- All hydronic and refrigerant circuit components of the unit shall be compatible with a condenser leaving water temperature of 65 °C.
- The unit shall be stackable in pairs, controlled in master/slave configuration for a total capacity of \_\_\_\_ kW (sizes 020 to 090).
- The unit shall operate with 400 V-3 ph-50 Hz (400 V ± 10%) without neutral and it shall only have one connection point.
- The main control panel shall be protected by a glass panel and shall only be opened with a special tool.
- The unit control circuit voltage shall be 24 V maximum, supplied by a factory-installed transformer. The compressor shall offer quick keyed electrical connection.
- The unit shall include numerical control, with the possibility of remote control. It shall ensure the control of the compressors, evaporator and condenser water pumps and the fans (drycooler).
- The numerical control shall include a patented auto-adaptive Carrier algorithm that controls the operation of the compressors and permanently adjusts to the application characteristics including the water loop inertia.
- Dangerous compressor cycles are reduced to six per hour.
- The control menus shall permit direct access to all unit data including the history of possible faults.