

# TS

# Air handling unit



- Very quiet
- Available units with heat exchanger with 3-4-6 rows
- Ductable units



## DESCRIPTION

The air-conditioning units of the TS series are intended for civil, commercial and hotel systems in small to medium sized environments. They are distinguished by their compactness (a necessary requisite for false ceiling applications) and low noise. The wide range of accessories meets various system requirements.

## STRUCTURE

### Case

Structure made of Galvanized steel 10/10 sheet steel and internally covered with sheets of polyethylene and polyester to obtain improved thermal and acoustic insulation.

### Ventilation group

Statically and dynamically balanced centrifugal fans:

- Three-speed electrical motor with running capacitor permanently activated and internal thermal protection
- Transmission system relay card for each speed (excluding the models TS13 and TS16)
- Useful static pressure available for any canalisation

### Heat exchanger coil

3, 4 or 6 row coils, powered with hot or cold water and made of copper piping with aluminium louvered fins blocked by mechanical expansion of the pipes. The threaded sleeves for the hydraulic connections and the air bleeding valve are supplied. The coils can be rotated on site.

The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.

### Condensate drip

Condensate drip tray in stainless steel AISI 304 with insulation.

## ACCESSORIES

**AERS03IR:** Flush-mounting thermostat with backlit display, capacitive keypad and infrared receiver, for controlling both brushless fan coils and those with an asynchronous motor. In 2-pipe systems, the thermostat can control standard fan coils or those equipped with an electric heater, with air purifying devices (Cold Plasma and germicidal lamp), with radiant plate or with FCZ-D twin delivery (Dualjet). In addition, it can control systems with radiant

panels or mixed (fan coil and radiant floor) systems. Being equipped with an infrared receiver, it can, in turn, be controlled by the VMF-IR remote control.

**FMT10:** Electronic thermostat for fan coil in to 2/4 pipe systems.

**SA5:** air probe kit (L = 15 m) with probe-locking cable grommet.

**SW5:** water probe kit (L = 15m) with probe-holder connection point, fixing clip and probe-holder from heat exchanger.

**TX:** Wall-mounting thermostat for controlling either brushless fan coils or those with asynchronous motors for 2/4 pipe. In 2-pipe systems, the thermostat can control standard fan coils or those equipped with an electric heater, with air purifying devices, radiant plate or FCZ-D twin delivery (Dualjet).

**WMT10:** Electronic thermostat, white, with thermostated or continuous ventilation.

**WMT16:** Electronic thermostat with thermostated ventilation.

**WMT16CV:** Electronic thermostat with continuous ventilation.

**TSBA:** 2-row coil for post-heating, contained in a delivery installation plenum.

**TSFA:** Air filter class Coarse 50%

**TSGA:** Horizontal suction grille with fixed louvers to produce suction from below together with the TSPA accessory.

**TSMX:** Section that mixes the recirculating air and the external air. Calibration of the mix via the damper, motorisation is possible.

**VCT:** These are 3-way ball valves made of bronze, with female/female connections Ø 1/2". That can be servo-activated via servo commands. The valves do not have fittings and pipes for water connections, which are the installer's responsibility.

**VCT:** These are 3-way ball valves made of bronze, with female/female connections Ø 1/2". That can be servo-activated via servo commands. The valves do not have fittings and pipes for water connections, which are the installer's responsibility.

**VCTA:** The VCT series valves can be combined with the actuators On-Off 230V. The actuator must be selected according to the type of system/adjustment provided.

**TSFM:** Delivery flange with rectangular section.

**VCTAM:** The VCT series valves can be combined with the actuators 24V modulating. The actuator must be selected according to the type of system/adjustment provided.

## ACCESSORIES COMPATIBILITY

### Control panels

| Model        | 13 | 16 | 23 | 34 | 36 | 43 | 46 | 53 | 56 | 63 | 74 | 76 |
|--------------|----|----|----|----|----|----|----|----|----|----|----|----|
| AER503IR (1) | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  |
| FMT10        | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  |
| SA5 (2)      | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  |
| SW5 (2)      | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  |
| TX (3)       | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  |
| WMT10 (3)    | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  |
| WMT16 (3)    | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  |
| WMT16CV (3)  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  | *  |

(1) Wall-mount installation.

(2) Probe for AER503IR-TX thermostats, if fitted.

(3) Wall-mounting. If the unit intake exceeds 0.7A, or several units need to be managed with a single thermostat, board SIT3 and/or SIT5 is required.

### 2-row coil for post-heating

| 13     | 16     | 23        | 34        | 36        | 43     | 46     | 53     | 56     | 63        | 74        | 76        |
|--------|--------|-----------|-----------|-----------|--------|--------|--------|--------|-----------|-----------|-----------|
| TSBA10 | TSBA10 | TSBA20/30 | TSBA20/30 | TSBA20/30 | TSBA40 | TSBA40 | TSBA50 | TSBA50 | TSBA60/70 | TSBA60/70 | TSBA60/70 |

### Air filter

| 13     | 16     | 23        | 34        | 36        | 43     | 46     | 53     | 56     | 63        | 74        | 76        |
|--------|--------|-----------|-----------|-----------|--------|--------|--------|--------|-----------|-----------|-----------|
| TSFA10 | TSFA10 | TSFA20/30 | TSFA20/30 | TSFA20/30 | TSFA40 | TSFA40 | TSFA50 | TSFA50 | TSFA60/70 | TSFA60/70 | TSFA60/70 |

### Intake grids

| 13     | 16     | 23        | 34        | 36        | 43        | 46        | 53        | 56        | 63        | 74        | 76        |
|--------|--------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| TSGA10 | TSGA10 | TSGA20/40 | TSGA20/40 | TSGA20/40 | TSGA20/40 | TSGA20/40 | TSGA50/70 | TSGA50/70 | TSGA50/70 | TSGA50/70 | TSGA50/70 |

### Section that mixes

| 13     | 16     | 23        | 34        | 36        | 43     | 46     | 53     | 56     | 63        | 74        | 76        |
|--------|--------|-----------|-----------|-----------|--------|--------|--------|--------|-----------|-----------|-----------|
| TSMX10 | TSMX10 | TSMX20/30 | TSMX20/30 | TSMX20/30 | TSMX40 | TSMX40 | TSMX50 | TSMX50 | TSMX60/70 | TSMX60/70 | TSMX60/70 |

### Plenum with suction

| 13     | 16     | 23        | 34        | 36        | 43     | 46     | 53     | 56     | 63        | 74        | 76        |
|--------|--------|-----------|-----------|-----------|--------|--------|--------|--------|-----------|-----------|-----------|
| TSPA10 | TSPA10 | TSPA20/30 | TSPA20/30 | TSPA20/30 | TSPA40 | TSPA40 | TSPA50 | TSPA50 | TSPA60/70 | TSPA60/70 | TSPA60/70 |

### Delivery plenum

| 13     | 16     | 23        | 34        | 36        | 43     | 46     | 53     | 56     | 63        | 74        | 76        |
|--------|--------|-----------|-----------|-----------|--------|--------|--------|--------|-----------|-----------|-----------|
| TSPM10 | TSPM10 | TSPM20/30 | TSPM20/30 | TSPM20/30 | TSPM40 | TSPM40 | TSPM50 | TSPM50 | TSPM60/70 | TSPM60/70 | TSPM60/70 |

### Delivery flange

| 13     | 16     | 23        | 34        | 36        | 43     | 46     | 53     | 56     | 63        | 74        | 76        |
|--------|--------|-----------|-----------|-----------|--------|--------|--------|--------|-----------|-----------|-----------|
| TSPM10 | TSPM10 | TSPM20/30 | TSPM20/30 | TSPM20/30 | TSPM40 | TSPM40 | TSPM50 | TSPM50 | TSPM60/70 | TSPM60/70 | TSPM60/70 |

### 2 way valve kit

| 13     | 16     | 23     | 34     | 36     | 43     | 46     | 53     | 56     | 63     | 74      | 76      |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| VCT102 | VCT102 | VCT102 | VCT102 | VCT102 | VCT202 | VCT202 | VCT202 | VCT402 | VCT402 | VCT402P | VCT402P |

### 3 way valve kit

| 13     | 16     | 23     | 34     | 36     | 43     | 46     | 53     | 56     | 63     | 74      | 76      |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| VCT103 | VCT103 | VCT103 | VCT103 | VCT103 | VCT203 | VCT203 | VCT203 | VCT403 | VCT403 | VCT403P | VCT403P |

### Actuator VCTA 230V

| 13   | 16   | 23   | 34   | 36   | 43   | 46   | 53   | 56   | 63   | 74   | 76   |
|------|------|------|------|------|------|------|------|------|------|------|------|
| VCTA | VCTA | VCTA | VCTA | VCTA | VCTA | VCTA | VCTA | VCTA | VCTA | VCTA | VCTA |

### Actuator 24V

| 13    | 16    | 23    | 34    | 36    | 43    | 46    | 53    | 56    | 63    | 74    | 76    |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| VCTAM | VCTAM | VCTAM | VCTAM | VCTAM | VCTAM | VCTAM | VCTAM | VCTAM | VCTAM | VCTAM | VCTAM |

## PERFORMANCE SPECIFICATIONS

### 2-pipe

|                                       | TS13              |             |      | TS16 |      |       | TS23  |       |       | TS34  |       |       | TS36  |       |       | TS43  |       |       |       |
|---------------------------------------|-------------------|-------------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                                       | 1                 | 2           | 3    | 1    | 2    | 3     | 1     | 2     | 3     | 1     | 2     | 3     | 1     | 2     | 3     | 1     | 2     | 3     |       |
|                                       | L                 | M           | H    | L    | M    | H     | L     | M     | H     | L     | M     | H     | L     | M     | H     | L     | M     | H     |       |
| Cooling performance 7 °C / 12 °C (1)  |                   |             |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Cooling capacity                      | kW                | 4,39        | 4,65 | 4,85 | 4,44 | 5,21  | 5,81  | 7,18  | 7,65  | 7,98  | 8,59  | 9,20  | 9,61  | 9,40  | 10,08 | 10,52 | 7,14  | 9,35  | 11,11 |
| Sensible cooling capacity             | kW                | 3,39        | 3,60 | 3,75 | 3,41 | 3,99  | 4,45  | 5,82  | 6,20  | 6,46  | 6,80  | 7,28  | 7,61  | 7,43  | 7,96  | 8,31  | 5,75  | 7,54  | 8,96  |
| Water flow rate system side           | l/h               | 754         | 800  | 835  | 764  | 896   | 999   | 1.235 | 1.315 | 1.372 | 1.478 | 1.583 | 1.653 | 1.617 | 1.733 | 1.809 | 1.227 | 1.608 | 1.912 |
| Pressure drop system side             | kPa               | 17          | 19   | 21   | 6    | 7     | 9     | 20    | 23    | 24    | 20    | 22    | 24    | 13    | 15    | 16    | 10    | 17    | 23    |
| Heating performance 70 °C / 60 °C (2) |                   |             |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Heating capacity                      | kW                | 8,89        | 9,43 | 9,83 | 9,75 | 11,34 | 12,61 | 14,14 | 15,04 | 15,67 | 17,71 | 18,92 | 19,76 | 19,36 | 20,71 | 21,60 | 14,24 | 18,33 | 21,67 |
| Water flow rate system side           | l/h               | 780         | 827  | 862  | 856  | 995   | 1.106 | 1.240 | 1.319 | 1.375 | 1.553 | 1.660 | 1.733 | 1.698 | 1.816 | 1.894 | 1.249 | 1.068 | 1.900 |
| Pressure drop system side             | kPa               | 10          | 12   | 13   | 5    | 7     | 8     | 10    | 12    | 12    | 17    | 19    | 21    | 11    | 13    | 14    | 8     | 13    | 18    |
| Fan                                   |                   |             |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Air flow rate                         | m <sup>3</sup> /h | 810         | 877  | 930  | 656  | 803   | 930   | 1316  | 1432  | 1518  | 1376  | 1507  | 1600  | 1376  | 1510  | 1601  | 1170  | 1631  | 2050  |
| High static pressure                  | Pa                | 68          | 80   | 90   | 27   | 41    | 55    | 77    | 91    | 102   | 62    | 75    | 85    | 33    | 40    | 45    | 37    | 72    | 114   |
| Input power                           | kW                | 0,1         | 0,1  | 0,2  | 0,1  | 0,1   | 0,2   | 0,2   | 0,3   | 0,3   | 0,2   | 0,3   | 0,3   | 0,2   | 0,3   | 0,3   | 0,3   | 0,3   | 0,4   |
| Type                                  | type              | Centrifugal |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Fan motor                             | type              | On-Off      |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Number                                | no.               | 1           |      |      | 1    |       |       | 2     |       |       | 2     |       |       | 2     |       |       | 2     |       |       |
| Diameter hydraulic fittings           |                   |             |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Type                                  | type              | Gas         |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Main heat exchanger                   | Ø                 | 3/4"        |      |      | 1"   |       |       | 3/4"  |       |       | 3/4"  |       |       | 1"    |       |       | 3/4"  |       |       |
| Power supply                          |                   |             |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Power supply                          | V/Ph/Hz           | 230V~50Hz   |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |

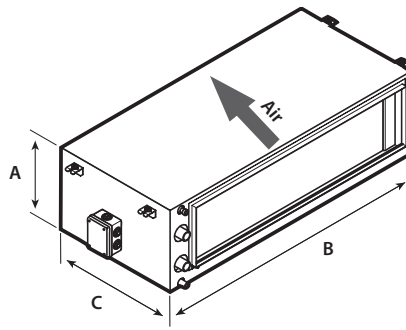
|                                       | TS46              |             |       | TS53  |       |       | TS56  |       |       | TS63  |       |       | TS74  |       |       | TS76  |       |       |       |
|---------------------------------------|-------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                                       | 1                 | 2           | 3     | 1     | 2     | 3     | 1     | 2     | 3     | 1     | 2     | 3     | 1     | 2     | 3     | 1     | 2     | 3     |       |
|                                       | L                 | M           | H     | L     | M     | H     | L     | M     | H     | L     | M     | H     | L     | M     | H     | L     | M     | H     |       |
| Cooling performance 7 °C / 12 °C (1)  |                   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Cooling capacity                      | kW                | 8,57        | 11,27 | 13,44 | 8,05  | 11,06 | 13,86 | 9,50  | 13,13 | 16,47 | 8,11  | 12,84 | 16,62 | 17,47 | 20,65 | 21,92 | 19,79 | 23,38 | 24,93 |
| Sensible cooling capacity             | kW                | 6,90        | 9,06  | 10,81 | 5,68  | 7,80  | 9,77  | 6,73  | 9,31  | 11,68 | 6,40  | 10,12 | 13,11 | 14,20 | 16,78 | 17,82 | 16,04 | 18,95 | 20,21 |
| Water flow rate system side           | l/h               | 1.474       | 1.938 | 2.311 | 1.385 | 1.902 | 2.384 | 1.633 | 2.260 | 2.833 | 1.395 | 2.208 | 2.858 | 3.006 | 3.551 | 3.771 | 3.405 | 4.022 | 4.289 |
| Pressure drop system side             | kPa               | 8           | 13    | 17    | 12    | 21    | 32    | 10    | 18    | 27    | 7     | 16    | 26    | 19    | 25    | 28    | 17    | 23    | 26    |
| Heating performance 70 °C / 60 °C (2) |                   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Heating capacity                      | kW                | 18,17       | 23,45 | 27,83 | 15,55 | 20,82 | 25,89 | 19,63 | 26,43 | 32,90 | 18,32 | 27,78 | 35,61 | 37,33 | 43,80 | 46,45 | 42,00 | 49,25 | 52,44 |
| Water flow rate system side           | l/h               | 1.593       | 2.056 | 2.440 | 1.364 | 1.826 | 2.270 | 1.722 | 2.321 | 2.886 | 1.607 | 2.436 | 3.123 | 3.274 | 3.841 | 4.073 | 3.683 | 4.319 | 4.599 |
| Pressure drop system side             | kPa               | 6           | 10    | 14    | 9     | 15    | 22    | 9     | 15    | 22    | 6     | 13    | 21    | 16    | 22    | 24    | 15    | 20    | 22    |
| Fan                                   |                   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Air flow rate                         | m <sup>3</sup> /h | 1173        | 1642  | 2076  | 1211  | 1775  | 2387  | 1202  | 1777  | 2391  | 1493  | 2570  | 3599  | 3117  | 3869  | 4200  | 3119  | 3869  | 4225  |
| High static pressure                  | Pa                | 24          | 48    | 76    | 26    | 57    | 104   | 18    | 38    | 69    | 20    | 61    | 120   | 63    | 97    | 115   | 41    | 63    | 75    |
| Input power                           | kW                | 0,3         | 0,3   | 0,4   | 0,3   | 0,4   | 0,5   | 0,3   | 0,4   | 0,5   | 0,3   | 0,4   | 0,6   | 0,7   | 0,8   | 0,8   | 0,7   | 0,8   | 0,8   |
| Type                                  | type              | Centrifugal |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Fan motor                             | type              | On-Off      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Number                                | no.               | 2           |       |       | 2     |       |       | 2     |       |       | 2     |       |       | 2     |       |       | 2     |       |       |
| Diameter hydraulic fittings           |                   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Type                                  | type              | Gas         |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Main heat exchanger                   | Ø                 | 1"          |       |       | 3/4"  |       |       | 1"    |       |       | 1"    |       |       | 1"    |       |       | 1"1/4 |       |       |
| Power supply                          |                   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Power supply                          | V/Ph/Hz           | 230V~50Hz   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |

(1) Room air temperature 27 °C d.b./19 °C w.b.; Water (in/out) 7 °C/12 °C;

(2) Room air temperature 20 °C d.b.; Water (in/out) 70 °C/60 °C;

**Unit designed to operate with all recirculating air or maximum 10% of external air.**

## DIMENSIONS



| Size                          |    | 13  | 16  | 23   | 34   | 36   | 43   | 46   | 53   | 56   | 63   | 74   | 76   |
|-------------------------------|----|-----|-----|------|------|------|------|------|------|------|------|------|------|
| <b>Dimensions and weights</b> |    |     |     |      |      |      |      |      |      |      |      |      |      |
| A                             | mm | 295 | 295 | 295  | 295  | 295  | 325  | 325  | 325  | 325  | 375  | 375  | 375  |
| B                             | mm | 645 | 645 | 1000 | 1000 | 1000 | 1100 | 1100 | 1345 | 1345 | 1345 | 1345 | 1345 |
| C                             | mm | 520 | 520 | 520  | 520  | 520  | 600  | 600  | 600  | 600  | 600  | 600  | 600  |
| Empty weight                  | kg | 25  | 27  | 35   | 38   | 42   | 42   | 46   | 48   | 52   | 56   | 61   | 67   |

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