Automatic control equipment for HVAC systems

Products for domestic and industrial installations

In buildings, the main aim of the installations is to guarantee and maintain a comfortable ambient.

Watts Cazzaniga offers high quality products for various types of installation, including:

- Control valves
- Electrothermic actuators
- Mechanical and electronic thermostats

Watts Industries
Technology by nature
Watts Industries Europe B.V. is the European headquarter of Watts Water Technologies Inc., a world leader in manufacturing and distribution of products designed for control and safety of technological installations in both residential and industrial buildings.

Watts Water Technologies Inc. is quoted on the New York Stock Exchange (NYSE).

In Europe, Watts Industries develops and produces a wide range of products for the plumbing sector and modern air conditioning installations. It cooperates with leading companies in the sector and is present on the market with the top heating and plumbing material distributors.

Watts Industries Europe is represented throughout Europe by more than 20 production units and sales outlets, a team of 1,350 employees and turnover of 200 million euros.

In Italy, Watts Industries has a several of production sites and is a leader in the heating, air conditioning and plumbing market.

Technology by nature

It's time to go back to our roots.

Watts Industries is present throughout the world with several companies, each of them with its own history, market and product line. Although different, all companies in the Watts Group share the common objective of intensive technological development. Each heating, plumbing, water protection and control product is a model of synergy between technology, innovation and environmental protection. These are the roots which companies in the Watts Industries share by their very nature and it is these roots which have earned the Group a place on the market as a strong and reliable partner with the motto "Technology by nature"
Watts Cazzaniga, is traditionally known for making valves for technological installations. The Company’s constant commitment to innovation enables it to produce cutting edge components and systems acknowledged as milestones in the evolution and rationalisation of air conditioning installations.

Today, with skill and enthusiasm, Watts Cazzaniga continues to design and produce successful components to control and run installations, with an integrated series of accessories for vector fluid control.

High quality products recognised everywhere!

Since the 1970s, the Company has been active in the segment of automatic control devices for terminal units, with a wide range of products at all levels for the domestic and industrial applications.

A pioneer in this market, it first produced pneumatic actuators, then went on to gradually supplement these with electromechanical and electronic actuators. Its work in the specific sector of electrothermic actuators is particularly innovative.

The experience and professionalism gained down the years represents a solid foundation for the research and innovation of today.

In Italy and throughout the world, Watts Cazzaniga fulfils the dual role of both producer and partner.

It offers its customers a wide range of services from a logistics strategy enabling orders for an unequalled range of products to be fulfilled correctly and rapidly to technical assistance and design to the customer’s specifications.

Thanks to its recognised capabilities in both products and installations, Watts Cazzaniga has the approval of leading companies in the air conditioning sector.

Quality certification:
Significantly, the companies in the WATTS INDUSTRIES Group present in Italy have obtained company certification according to the new ISO 9001:2000 (VISION 2000) standards.
Automatic control, a comfortable choice

In buildings, the main aim of the installations is to maintain the best possible conditions inside the rooms while at the same time also optimising use of available energy resources.

Conditions of comfort are obviously correlated to the specific use made of the rooms. In residential applications, they contribute to the quality of life while in the work place, they also help ensure optimum performance.

In both these particular situations and for the various types of civil and industrial installation, Watts Cazzaniga develops dedicated products and systems such as control valves, electrothermic actuators and mechanical and electronic thermostats.

**Automatic control, a comfortable choice**

**Set-point Temperature**
- ROOM THERMOSTAT
- ACTUATOR
- VALVE
- TERMINAL UNIT
- ROOM (temperature)

**ROOM THERMOSTATS**

**ELECTROTHERMIC ACTUATORS**

**CONTROL VALVES**

**ROOM TERMINAL UNITS**

**RESIDENTIAL**

**SERVICE AND LIGHT COMMERCIAL**

**WATTS INDUSTRIES**
AUTOMATIC CONTROL EQUIPMENT

ERGONOMIC DESIGN

FAN COMFORT 2T
FAN COMFORT 4T

SILENT

ETE

COMPACT

TRADITIONAL LINE
VU SERIES

VBM SERIES

GUARANTEED COMFORT

FAN HEATERS,
AIR TREATMENT MODULES, HEAT EXCHANGERS
LARGE SIZE

INDUSTRIAL
Electrothermic actuators
Compact Line 22C Series

The 22C electrothermic actuator coupled to valves in the compact line by means of a simple metal ring nut controls the heat emission of individual terminal units on the basis of an on/off control. When in standby, the valve with the head mounted on, assumes the configuration of the actuator (Normally Closed NC - Normally Open NO).

Thanks to the extremely compact size of the valve body and 22C actuator assembly, it is particularly suitable for use with coils of single terminal units (fan coils, ventilating units). They can be used for all-or-nothing remote control by means of a wax thermostatic element which causes the plug of the valve body to move when activated by a signal from the room thermostat. The actuators are available either in 230V or 24V versions and with two or four wires (NO4 - NC4). The latter are fitted with an auxiliary microswitch.


A transparent window on the cap enables to check the status of the on/off actuator by a mobile coloured indicator:
Red = Valve closed
Black = Valve open

Technical specifications
- Stroke: 3.5 mm
- Opening time: 230V version 90 sec. (start) 3 min. (end)
- Protection class: IP44 (EN60529)
- Power consumption: 2.5W
- Plug thrust: 100N (NC vers.) 80N (NO vers.)
- Room temperature: 0-50 °C
- Cable: 1m (ø 7.2 mm) ENEC (ø 5.5 mm)
- Switching capacity of auxiliary switch: 700 mA

Electrothermic actuators
Traditional line ETE series

The ETE electrothermic actuators are designed for coupling to VU and VBM series control valves. The servomotor coupled to the valve bodies controls the heat emission of the individual terminal units with a two position (on/off) action.

Operation of the servocontrol thermal expansion electric actuator with automatic limit switch is absolutely silent and reliable. It is mounted on the valve body by means of a simple bayonet coupling.

When in standby, the valve with the head mounted on assumes the configuration of the actuator (NC). A special lever device enables the valve to be opened manually (80% of its stroke). A normally open auxiliary microswitch enables switching between other equipment (pump, fan, etc...). The ETE actuator is available in 230V and 24V versions.

In conformity with EN60730-1:95, EN60730-2-8:95 and future integrations Directive 89/336/CEE, B.T. 73/23/CEE and future changes, EN55014-1

Technical specifications
- Stroke: 5.5 mm
- Opening time: 4 minutes
- Protection class: IP20
- Power consumption: 18W
- Plug thrust: 250N
Control valves
Compact line 2131, 3131, 4131 Series

Compact line control valves for terminal units automatically control the flow of hot or cold water in heating and/or air conditioning installations on the basis of an on/off control.

The extremely small size of the valves makes them particularly suitable for use with coils of single terminal units (fan coils, ventilating units).

The valves serve to shut off (2131 2-way) or divert with by-pass (3131, 4131 3-way, 3-way with four ports) the flow of the heat carrier to the terminal unit controlled by the control device (thermostat).

The valves can be used either in diverting or mixing and can be easily coupled to the 22C electrothermic actuators by a threaded ring nut.

Technical specifications
Maximum working pressure 16 bars
Maximum differential pressure 0.5 - 0.8 bars
Maximum fluid temperature 110 °C
Nominal stem raising 2.5 mm

Materials
Body Brass CW617N
Stem and spring Stainless steel
Rubber plug EPDM

*In accordance with size or application (mixing/diverter)

Hydraulic characteristics

<table>
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<th>Part No.</th>
<th>DN</th>
<th>Kvs</th>
<th>Kv by-pass</th>
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<td>2.5 (Mx) 2.8 (Dv) 1.8</td>
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</table>
Control valves
Traditional line VU and VBM Series

VU and VBM control valves are designed to automatically control the flow of hot or cold water in heating and/or air conditioning installations using an on/off control.

This series is particularly suitable for applications with medium-sized terminal units such as fan heaters, coils and heat exchangers.

In standby, the valve and ETE series actuator assembly is in the normally closed (NC) position. It is mounted on the valve body by a simple bayonet coupling. Operation of this valve is completely silent and reliable.

VU and VBM control valves differ in type of body, range and hydraulic characteristics.

### Technical specifications
- Maximum working pressure: 16 bars
- Close-off: 1.5 bars
- Maximum fluid temperature: 110 °C
- Nominal stem stroke: 4 mm

### Materials
- Body VU: Brass
- Body VBM: Bronze
- Stem and spring: Stainless steel
- O-ring: EPDM

### Hydraulic characteristics

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**Electromechanical and electronic Fan Comfort series thermostats for 2-4 pipe installations**

Fan Comfort room thermostats are two-position (on/off) control devices that automatically maintain the temperature at a preset value (set point) in the rooms where they are installed, for use with electothermic valves.

These thermostats are available in electromechanical and electronic versions and differ as follows:

- 1-2 sequential valve control outputs
- manual selection of three fan speeds
- automatic or manual summer/winter switching
- on/off switch.

Conforms to EEC 89/336, EEC 73/23

### Technical specifications

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<tr>
<th>Specification</th>
<th>Description</th>
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<td>Temperature differential</td>
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<td>Contact capacity inductive (resistive)</td>
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<td>Power supply</td>
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</table>

**FAN OPEN**

Mechanical thermostat with on/off switch.
Three fan-speed selector

**FAN COMFORT**

Mechanical thermostat with on/off switch.
Three fan-speed selector. Manual S/W switching

2 independent outputs for controlling the hot and cold valves

**FAN COMFORT 2T**

Mechanical thermostat with on/off switch.
Three fan-speed selector. Manual S/W switching

1 valve control output

**FAN COMFORT 4T**

Electronic thermostat with on/off switch. Three fan-speed selector. Automatic S/W switching

Dead zone adjustment (1-10 °C)

2 independent outputs for controlling the hot and cold valves
Products for industry
Connection kit for terminal units

Watts Cazzaniga is a leader in partnerships with the world major air conditioning manufacturer for the integrated design and subsequent supply of connection kits for terminal units.

Kit includes all the elements required for the hydraulic connection of the control valve to the coil and mains supply - preformed pipes, valves and lockshield valves and tight unions.

Kits are available for all types of installation (2-pipe, 4-pipe) and any type of fan-coil, with a wide range of products unequalled on the market.

EXAMPLE OF EXPLODED DIAGRAM :
Composite kit for 2-pipe coil

Accessories

A series of accessories are available for the control devices in this brochure, including:

- Soft seal tailpieces (Art. 840)
- T-fitting (Art. VU4) to create the by-pass in VU 3-way valves
- Fittings for copper, polyethylene and multilayer piping (Art. 872M - 873M - 817M - 817MS)
- Seasonal thermostatic switch (Art. CH30)
- Bimetal contact micro-thermostat for fan coils (Art. MTV)
- By-pass valves (Art. USVR), (Art. 466)
- Ball (Art. 210) or butterfly (Art. 3800) shut-off valves
Hydraulic characteristics: Volumetric flow coefficient $K_v$

The hydraulic characteristics (flow rate-pressure drops) of each valve are defined by the $K_v$ coefficient. This expresses the flow rate through the valve in m³/h generating a pressure drop between upstream and downstream equal to 1 bar (100 kPa). The coefficient with the valve fully open is known as $K_{vs}$.

This coefficient, specific to each product, is measured in accurate laboratory tests and verified on the series produced to guarantee the actual value of each valve, within normal tolerances.

The ratio between flow rate, pressure drop and $K_v$ is given alongside. When two elements are known, appropriate use of this formula enables the missing value to be calculated.

Alternatively, the graph below can be used.

Principal relation and unit of measurement

$$K_v = \frac{q}{\sqrt{\Delta p}} \quad \left[ \frac{m^3}{\text{bar}} \right]$$

Derived formulas

$$\Delta p = \left( \frac{q}{K_v} \right)^2 \quad q = K_v \sqrt{\Delta p}$$

FLOW COEFFICIENTS

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FLOW

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The description and photographs in this brochure are intended as purely indicative and are not binding. Watts Cazzaniga reserves the right to introduce any modifications to the technical characteristics or appearance of its products.
Product range Watts Industries

- System disconnectors
- Backflow protection devices
- Check valves
- Safety units
- Safety relief valves
- Pressure reducing valves
- Automatic control valves
- Butterfly valves
- Shut off valves
- Measuring gauges

- Temperature control
- Expansion vessels
- Process switches
- Fuel products
- Gas products
- Electronic controls
- Installation protection products
- Radiator valves
- System products
- Manifolds and fittings