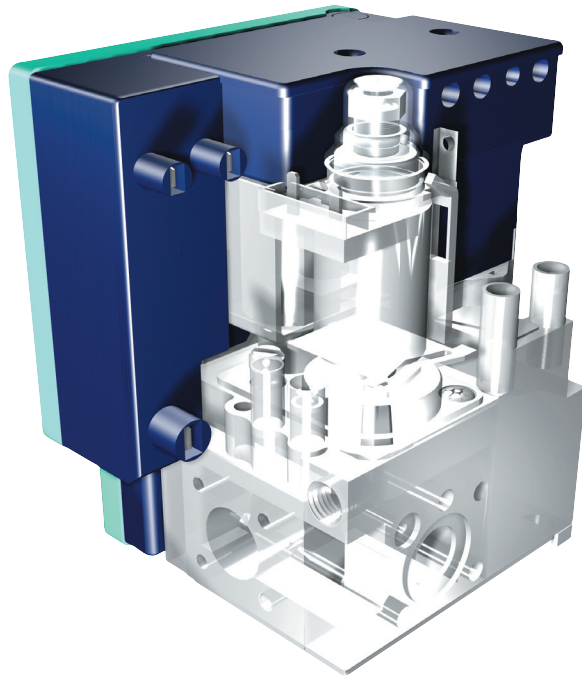# 579 DBC

ELECTRONIC BURNER CONTROL DEVICE WITH MICROPROCESSOR FOR INTEGRAL MOUNTING ON SIT SIGMA MULTIFUNCTIONAL CONTROLS

Field of application

Home gas appliances such as boilers (with natural or forced draught including dynamic control of the air pressure switch), water heaters, hot air generators and gas radiators.

Main features

Gas burner ignition and control functions integrated and managed by digital technology (microprocessor).

Reference standards

EN 298 with reference to the "Gas Appliance Directive" (GAD 90/396/EEC).

579 DBC

DESCRIPTION AND APPLICATION

The 579 Digital Burner Control is a family of electronic devices with integrated functions for the safety and the control of combustion in home gas appliances and has the same functions of 537 ABC family, with which it is interchangeable.
The 579 DBC is dedicated in particular to boilers, water heaters and hot air generators with both natural draught and fan assisted burners.

All the functions are managed by a microprocessor and the product has obtained the certification of conformity with the most severe safety requirements.
The microprocessor structure combines the traditional features of reliability with high flexibility for the needs of the appliance and a wide range of possibilities for further customisation with adds-on such as timers, multiple attempts and so on.

The 579 DBC family of products has been specifically designed for fixing on SIT 840, 845 and 848 SIGMA multifunctional controls by means of an exclusive plastic box which integrates itself with the valve body and simplifies the connection of the solenoid valves.

Further customisation is easy to achieve thanks to the digital technology.

All the hardware and software architecture has been designed by SIT and innovative concepts and technologically advanced solutions have been implemented so as to enhance the device's reliability and performances.

BASIC FEATURES

- Compact design
- Direct assembly on the gas control
- Incorporated igniter with EMC filter
- Direct burner ignition (DBI) or by intermittent pilot (IP)
- Manual reset function and remote signalling of the non-volatile lockout state
- Multiple plug-in connectors
- Utilises well established electronic technology for high reliability of operations
- Precise and repeatable timings
- Multiple ignition attempts
- Flame detection by ionization
- CE approval according to EN 298:2003
- Repetition of the cycle after loss off flame during operation
- Permanent lock-out visualization, a without thermostat input being present
- Suitable for applications at wide ambient temperature range

Options available

- Fan and air pressure switch control
- Volatile lockout version for specific applications
- 230 Vac flame presence signal
- Possibility to connect an automatic safety thermostat in series with the
  solenoid valve with manual lockout following its opening
- Protection degree IP40 or IP44
- Several pre-purge and safety timings can be tailored to the application.
- Different frequency of ignition
- Possibility of connection on phase-phase main supply power lines

579 DBC

OPERATION

Normal operation (natural draught or fan assisted)

During the waiting or purge time, Tw or Tp, the unit verifies that there is no parasitic flame signal present, and that the internal circuitry is operating correctly. If the unit is used on a fan-assisted application, the air pressure switch is verified to be in the N.C. (normally closed) or "no flow" position.

Upon powering the fan, the unit will not begin the operating sequence until the N.O. (normally open) or "flow" position is activated on the air pressure switch. After the scheduled waiting time Tw, or purge time Tp, the built-in igniter and the gas valve are energized. This commences the safety time, Ts. The ignition spark will ignite the gas and the flame will be sensed by the electrode.
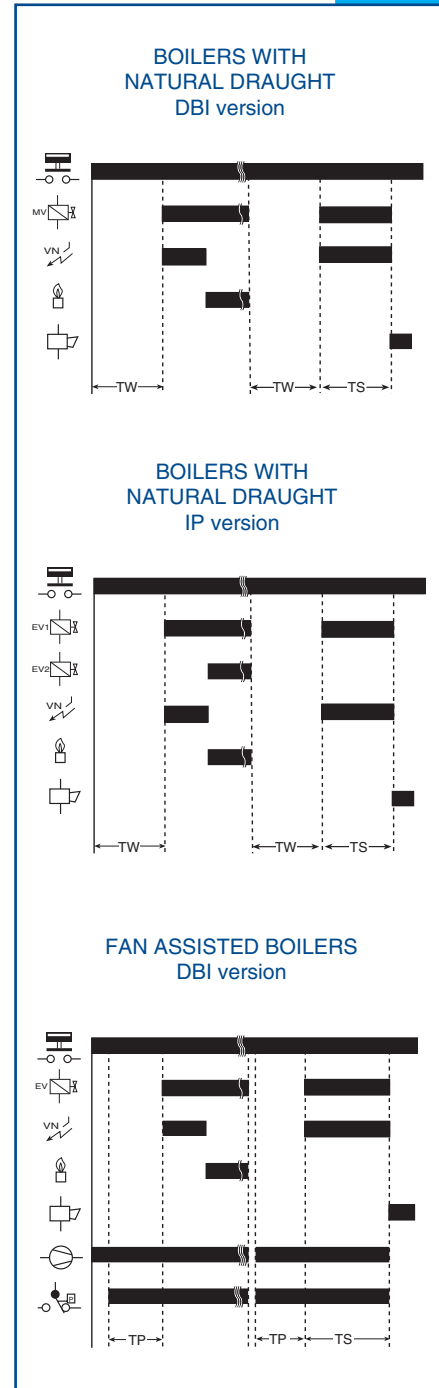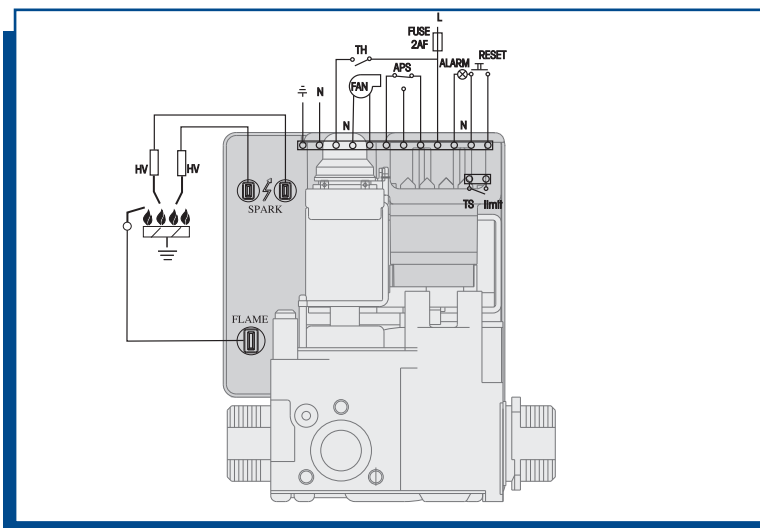
If there is no flame the system repeats the ignition cycle, after a defined interpurge time, for a definite number of times and it goes definitively on lockout position in case there is no flame.

Upon sensing the flame, the HV spark will be suppressed and the gas valve will remain energized. When the thermostat is open, the valve and fan are de-energized and the control returns to the stand-by mode. The safety time of the 579 DBC has a constant duration in all operating conditions and, in particular, does not depend on the moment the pressure switch is switched over.

Resetting the unit

To reset the unit the reset switch is depressed for one second at least and then released.

WIRING DIAGRAM

BOILERS WITH
NATURAL DRAUGHT
DBI version

BOILERS WITH
NATURAL DRAUGHT
IP version

FAN ASSISTED BOILERS
DBI version

579 DBC

TECHNICAL DATA

AMBIENT WORKING TEMPERATURE
-20 °C to +60 °C
HUMIDITY
90 % max at 40 °C (not condensing)
SUPPLY VOLTAGE
230 Vac - 15 %, + 10 %, 50-60 Hz
POWER CONSUMPTION
12 VA
ELECTRICAL RATINGS
Gas valves: 230 Vac, 0.5 A, $\cos\varphi \geq 0.4$
Fan: 230 Vac, 1 A, $\cos\varphi \geq 0.6$
Alarm: 230 Vac, 1 A, $\cos\varphi = 1$
          230 Vac, 0.5 A, $\cos\varphi \geq 0.6$
ELECTRICAL CONNECTIONS
High voltage probe: male fast-on connector 2.8 x 0.5 mm
Flame detection probe: male fast-on connector 4.8 x 0.8 mm
Other connections: male Molex series 2599 suitable for female Molex series
3001 and 3002 or compatible.

PROTECTION DEGREE
Standard IP 40
IP 44 with gaskets
TIMING
Minimum waiting time Tw or purge time Tp: 1 ... 240 sec.
Maximum safety time Ts: 3 ... 120 sec.
Ignition attemps 1 ... 10
Relative interpurge time 0 ... 240 sec.

FLAME SENSING
Minimum flame current: 0.9 µA
Recommended flame current: > 3 times the minimum current
FUSING
Internal: 2.5 A fast.
External: maximum 2 A fast or less depending on the electrical loads. This fuse
protects the device in the event of overloading or short circuits and prevents the
intervention of the internal fuse.
IGNITION
Ignition voltage: 15 KV at 30 pF load
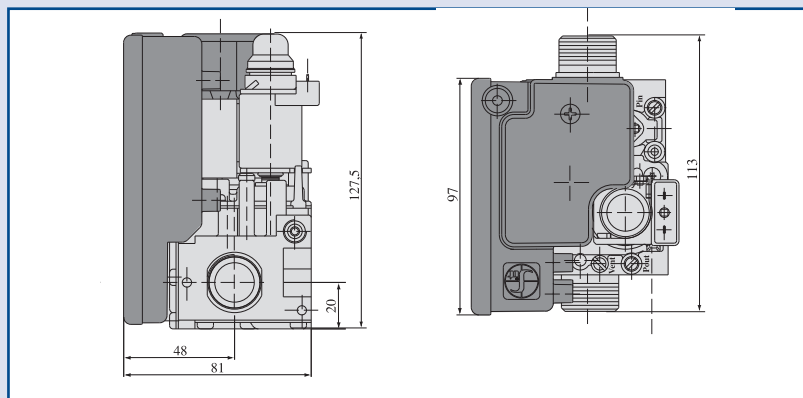Repetition rate: 25 Hz standard (4 ÷ 50 Hz)
Max. length of the cable: 1 m
Spark gap recommended: 2-4 mm
MOUNTING
Integrated on SIT SIGMA multifunctional gas controls.

DIMENSIONS- 579 DBC with 845 SIGMA VERSION G3/4 ISO 228