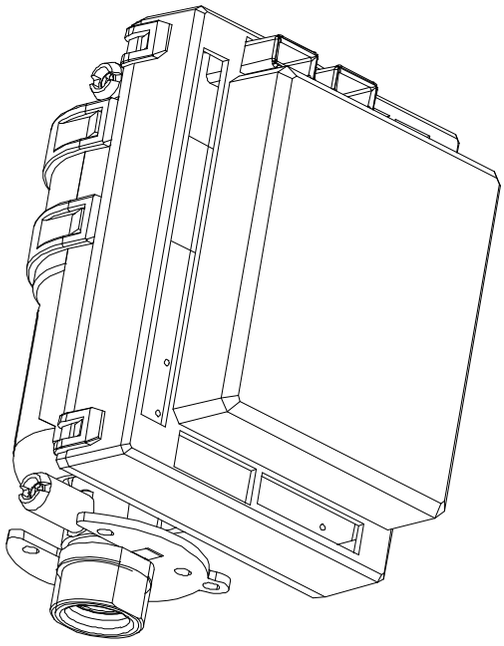
DV(M/E) SERIES
COMBINED UNITS

COMBINED UNITS FOR GAS APPLIANCES WITH ½" CONNECTION EQUIPPED WITH A DIGITAL IGNITION AND FLAME MONITORING DEVICE AND A MODULATING ADJUSTMENT SAFETY SOLENOID VALVE



APPLICATION

The DV(M/E) series microcontroller-based units are suitable to control atmospheric gas burners with or without fan in the combustion circuit.

These systems can be provided with non-volatile lockout (i.e. restart from the safety shutdown condition can only be accomplished by manually resetting the system) or with volatile lockout (the unit can be restarted by cutting off and then restoring the power supply).

The automatic control units of this series are suitable for:

- combi boilers;
- heating boilers;
- steam boilers;
- hot air generators;
- radiant tube heaters;
- fan convector heaters;
- water heaters;
- furnaces;
- monobloc burners.

The combined units of this series incorporate a BRAHMA Digital Microflat "N" series ignition and flame monitoring device and a BRAHMA modulating adjustment safety solenoid valve type VCM0X* xx 230VDC. The versatility of microcontroller-based technology offers several options regarding the operation sequence and settable times.

The systems of this series are suitable to be used in gas-fired hot air generators in accordance with the standards EN 525, EN 1020 and EN 1319.

FEATURES

Table 1 shows the main features of this series. Other important features are mentioned below:

– **EC** type examination certificate (CE PIN **0694BP0610**) in accordance with the European Gas Appliance Directive 2009/142/CE;
– in accordance with EN 298:2003-09 (European standard for automatic gas burner control and flame detection systems);
– microcontroller-based technology allowing accurate and repeatable setting times;
– two independent safety contacts for driving the gas valve;
– auxiliary output for the control of an auxiliary fan or acting as a N.O. auxiliary contact (this is not a SELV contact and is therefore not suitable to control circuits type SELV – Safety Extra Low Voltage, e.g. 24V –);
– possibility to incorporate a highly efficient, completely solid-state design ignition device equipped with an EMC filter;
– possibility to mount a (100 ÷ 470 Kohm) resistor in series to the lockout signal output to prevent any failures in the unit in case the connections are reversed by mistake;
– possible connection to a user interface module with diagnostic and modulation parameter setting functions (BRAHMA module type 807);
– flame detection by means of an electrode (ionization, exploiting the flame rectification effect) or through a BRAHMA sensor type FD(1/2)D;
– possibility to perform multiple re-ignition attempts (see option *Ynn*);
– possibility to be connected to live-live power supply systems.

ПРОМЭЛЕКТРОНИКА / sales@prom-elec.com

Table 1 – Main features of DV(M/E) units				
Type	***Reset***	***V* (1)**	***TS* (2)**	***EN 298 code***
DVM11	Manual			AMCLXN
DVM31	Manual	*		FMCLXN
DVE11	Electrical			AMCVXN
DVE31	Electrical	*		FMCVXN
DTVM11	Manual		*	AMCLXN
DTVM31	Manual	*	*	FMCLXN
DTVE11	Electrical		*	AMCVXN
DTVE31	Electrical	*	*	FMCVXN

(1) Combustion motor fan.

(2) Safety thermostat: failing any specific options, this contact opening causes recycling followed by lockout.

TECHNICAL DATA

Nominal power supply:	220-240 V @ 50-60 Hz
Power consumption:	30 VA
Operating temperature range:	-20 °C ÷ +70 °C
Humidity:	95% max at +40 °C
Protection degree:	IP00
Internal fuse rating:	4 A fast-blow type
External fuse rating (recommended):	3.15 A fast-blow type **(3)**
Max total weight:	200 g approx.

(3) The external fuse rating should be selected according to the max applied load. In any case, this value should never exceed the internal fuse rating.

Times

Waiting/pre-purge time (TW/TP):	0 ÷ 60 s
Safety time (TS):	3 ÷ 120 s
Spark ignition time (TSP):	(TS-1) s
Response time in case of flame failure:	< 1 s
Post-purge times:	
- for main combustion motor:	0 ÷ 1800 s
- for auxiliary motor (opt. *T1*):	0 ÷ 500 s
Inter-waiting or inter-purge time (opt. *Inn*):	1 ÷ 240 s
Auxiliary contact closing or auxiliary fan starting delay (opt. *Wnn*):	1 ÷ 1800 s
Lockout delay for extraneous light (opt. *Knn*):	0 ÷ 60 s
Lockout due to APS failure to close (opt. *Qnn*) (4):	3 ÷ 120 s
Pre-ignition time (opt. *Jnn*):	1 ÷ 60 s
Recycling attempts (opt. *Ynn*):	1 ÷ 10
Varnishing:	upon request

Max contact rating

Room thermostat:	0.5 A cos φ ≥ 0.4
Combustion fan:	0.5 A cos φ ≥ 0.4
Ignition transformer (5):	0.5 A cos φ ≥ 0.4
Cross flow fan – auxiliary output:	0.5 A cos φ ≥ 0.4
Lockout signal:	
– Standard **(6)**:	50 mA cos φ = 1
– With opt. R **(6)**:	0.5 mA cos φ = 1
– With opt. F **(7)**:	1.0 A cos φ = 1
User interface:	5 mA

(4) Air pressure switch

(5) In the versions with option "PR" and in oil versions only.

(6) Optotriac-driven load.

(7) Triac-driven load.

Under-voltage and over-voltage protection

In case the power supply voltage is lower than $165V_{AC}$ or higher than $290V_{AC}$ approx., the unit will go to safety condition. It will restart as soon as the voltage is again between $175V_{AC}$ and $280V_{AC}$ approx.

Max cable length for external components

Room thermostat:	20 m
Remote lockout signal – Reset:	20 m
Ignition device (high voltage)**:**	2 m
Any other cable (load power supply cables, air pressure switch cable and user interface board connection cable)**:**	1 m

Flame monitoring

The flame detection device exploits the rectification property of the flame.

An important safety aspect to note is that the control unit is more flame-sensitive at start-up or during the waiting/pre-purge time (negative differential switching).

Min ionization current:	0.5 µA
upon request:	1.2 µA
Recommended ionization current:	3 ÷ 5 times the min one
Min insulation resistance of detection cable and electrode to earth:	≥ 50 MΩ
Max electrode stray capacitance:	≤ 1nF
Max short-circuit current:	< 200µA AC

Integrated ignition device

Peak voltage (8):	15 kV
upon request:	18 kV
Peak current:	800 mA
Spark repetition rate (9):	25 Hz
upon request:	1 … 50 Hz
Recommended spark gap:	2 ÷ 4 mm
Power consumption:	2.5 VA
Spark energy:	20 mJ

(8) Value measured with 30 pF load.

(9) ATTENTION: the ignition device output is not safe to touch if the spark repetition rate is higher than 25Hz; in this case the appliance will have to be provided with further protection.

Construction

The plastic casing (and the PCB varnishing upon request) protect the control unit from any damage resulting from impacts, tampering, dust and contact with the external environment.

The electronic board equipped with surface mount components, representing the “logic core” of the system, and an innovative circuit **patented** by BRAHMA for the generation of the ignition spark (limiting electromagnetic interference to a minimum) have enabled to reduce the PCB dimensions; consequently, even the most complex versions are extremely compact.

A varistor protects the control unit from any voltage peaks which may arise in the mains supply and due, for example, to atmospheric discharges such as thunderbolts. An internal accessible fuse protects the relays of the unit in case of short circuit on the control outputs (valves, fan and lockout signal).

Connection

The use of non-reversible connectors with a different number of poles makes connection easy and reliable. One-pin fast-on connectors of different size for ignition and detection electrodes enable an easy installation and replacement. The double-output ignition device allows spark generation on one point (1a), two points (1b) or between two electrodes insulated from the metal frame of the burner (1c), as shown in Fig.1; the configuration (1c) ensures a more reduced emission of electromagnetic interference.

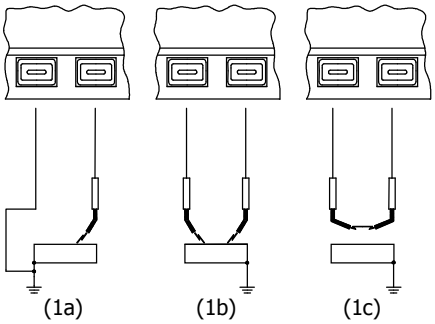


Fig. 1 – Ignition transformer connections

IMPORTANT NOTE

To further reduce irradiated interference and increase the immunity of the control unit, it is strongly recommended to mount a wire-wound power resistor with a value between 1kΩ and 4.7kΩ between the high voltage cables and the related spark electrodes.

Strain relieves and a sufficient number of earth and neutral terminals should be available in the appliance or in external connection boxes.

The control systems types DTV(M/E) are prearranged for the connection of a safety thermostat TS (see Fig.2) which stops the power supply to the EV1 gas valve and causes a safety shutdown after a delay which is the sum of waiting (or pre-purge) and safety times. If a self-resetting safety thermostat is used (option available in the versions with manual reset only), the restoration time of this thermostat in the appliance will have to be longer than the total time required for the max allowed number of re-ignition attempts before reaching lockout.

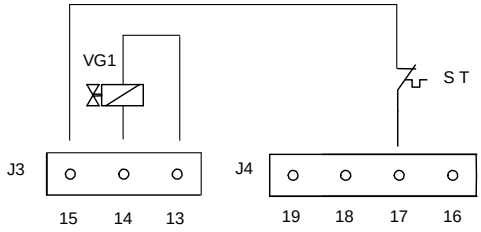


Fig. 2 – Safety thermostat connection

Standard accessories

The control systems are usually supplied with a kit of female connectors and/or a reset push-button (see Fig.3). Anyway, do not couple terminals and female connectors of different type.

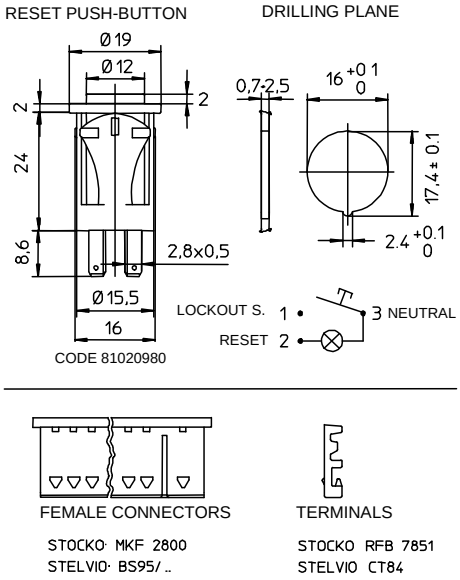


Fig. 3 – Standard accessories

Installation directions

- Ignition systems are safety devices; the manufacturer’s responsibility and guarantee are invalidated in case of Customer's tampering with the product;
- the system is designed to stay in running status for less than 24h (system for non-permanent operation). Reaching this limit causes a regulation shutdown to enable the unit to check its own efficiency;
- connect and disconnect the control unit only after switching off the power supply;
- the unit can be mounted in any position;
- avoid exposure to dripping water;
- a ventilated installation environment and a suitably low temperature ensure the longest life of the control system;
- before installing or replacing the unit, make sure that the type, code and times are correct;
- the appliance in which the control system is installed should provide adequate protection against the risk of electric shock (at least IP20).

Electrical installation

- Respect the applicable national and European standards regarding electrical safety (e.g. EN 60335-1/EN 50165);
- The devices can be equipped with a polarity recognition device. The non-observance of live-neutral polarity causes non-volatile lockout at the end of the safety time.
- before starting the system check the cables carefully. A wrong wiring can damage the unit and compromise the safety of the appliance.
- make sure that the earth terminal of the control system, the metal frame of the burner and the earth on the mains supply are well connected.
- avoid placing the detection cable close to power or ignition cables;
- use heat resistant detection cables and electrodes, and make sure that they are well insulated to the ground and protected from possible moisture or water in general;
- keep the ignition cable as short and straight as possible and place it far from other conductors to reduce the emission of electromagnetic interference (max length <2m and insulation voltage >25kV).

In case of a live-neutral network with unearthed neutral or a live-live network (with unearthed star centre), the control unit can operate as well thanks to an inbuilt resistor.
In case of a "partial" short circuit or bad insulation between live and earth, the voltage on the ionization probe can be reduced until it causes the lockout of the control unit due to impossibility of detecting the flame signal.

Checking at start-up

Check the control system before the first start-up, after any overhaul and after a long period of non-operation. Before any ignition attempt make sure that the combustion chamber is free from gas, then check the following:

- if the start-up attempt occurs without gas supply, the control system should go to lockout at the end of the safety time;
- when stopping the gas flow while the control system is running, the power supply to the gas valves should be interrupted within 1s, and the control system should proceed to lockout after a recycling attempt (or more than one up to 10 depending on the settings);
- operating times and sequence should correspond to those declared for the type of control unit you are using;
- the level of the flame signal should be high enough (see Fig.4 for the measuring method to adopt);
- the ignition probes should be adjusted in the most stable way for a spark gap between 2-4 mm;
- the intervention of limiters or safety devices should cause the lockout or safety shutdown of the control unit according to the type of application and the procedure provided for.

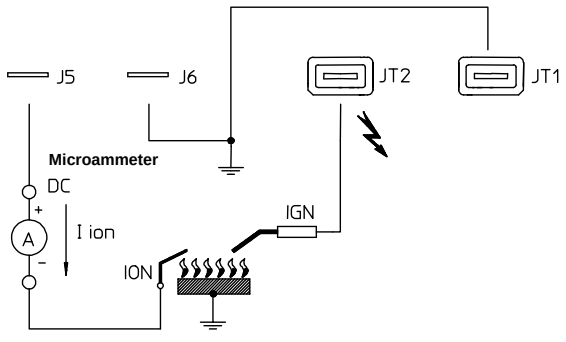


Fig. 4 – Flame signal measuring method

IMPORTANT NOTE

The ionization current can be measured in double-electrode control unit versions only.
In single-electrode versions, inserting a measuring instrument in series to the detection electrode creates a hazardous situation for the user.

Operation

The following description refers to control systems with standard operating cycle.
At every start-up the control system performs a self-checking of its own efficiency. During the waiting (TW) or pre-purge (TP) time the internal circuit tests the correct operation of the flame signal amplifier: extraneous light or a fault in the amplifier leading to flame simulation prevent the control system from starting.
In the types with fan control, before the pre-purge time (TP) starts, the air pressure switch contacts are checked to prove their "no-air-flow" condition. If this test is positive, the air pressure switch commutation allows the pre-purge time (TP) to begin. The test of the air pressure switch contacts is repeated at every operating cycle start-up.
At the end of the waiting (TW) or pre-purge (TP) time the EV1 gas valve is energized and the ignition device is operated. In this way the safety time (TS) begins.
If a flame signal is detected at the end of the safety time, the control unit de-energizes the ignition device and goes to running condition.
Else, if no flame signal is detected during the safety time, at the end of the same the control system goes to lockout, the EV1 gas valve is closed, the ignition device disabled and the lockout signal energized.
Flame failure during the safety time causes the ignition device to be activated within one second.
Please see the attached operating cycle diagrams to better understand the operation of each control unit.

Operating cycle variations

Followings are the available operating cycle variations of the control units:

- *Option 6 ("A", "B"): ignition mode*

The control unit can keep the ignition spark operating for the whole safety time TS (option "A") or switch it off immediately as soon as a flame signal is detected (Option "B").

- *Option 9 ("C3", "C4", "C5"): BRAHMA modulating valve type VCM01 with soft-start function*

The soft-start function enables to control the supply current value to the valve, avoiding its max opening in the following stages: during ignition (option "C3"); during ignition and the delay time to reach the second flow rate value (option "C4); during ignition, the delay time to reach the second flow rate value and in operating status (option "C5").

- *Option 11 ("X", "Wnn"): auxiliary fan or auxiliary contact opening mode*

The unit can enable this output at the end of the safety time (options "X") or with a delay (expressed in seconds) settable upon request (option "Wnn").

- *Option 12 ("K", "Knn"): lockout due to extraneous light*

If extraneous light is detected at start-up or during the safety/pre-purge time, the control unit will proceed to lockout immediately (option "K") or with a delay (expressed in seconds) settable upon request (option "Knn").

– *Option 13 ("Qnn"): insufficient or no air flow at start-up*

If insufficient or no air flow is detected at start-up or during the waiting/pre-purge time, the control unit will go to lockout within 3÷120 seconds (the time is settable upon request).

– *Option 14 ("S", "Snn"): insufficient or no air flow in running status*

In case of flame failure in running status, the control unit proceeds to lockout immediately (option "S") or after an "nn" number of events (option "Snn").

– *Option 15 ("V", "Vnn"): flame failure in running status*

In case of flame failure in running status, the control unit proceeds to lockout immediately (option "V") or after an "nn" number of events (option "Vnn").

– *Option 17 ("Pnn", "PTnn"): post-purge time on the main combustion motor fan*

A post-purge action on the main combustion motor fan is carried out (the time is settable upon request).

With option "Pnn", post-purge is carried out regardless of the heating demand status; with option "PTnn", post-purge can be interrupted by restoring the heating demand and having a new ignition cycle start.

– *Option 18 ("Onn"): post-purge time on the auxiliary motor*

A 1 to 500s post-purge action on the auxiliary fan is carried out (the time is settable upon request). This option can be implemented in the versions provided with auxiliary fan control only (option "T1").

– *Option 19 ("Ynn"): recycling attempts*

The control unit performs multiple recycling attempts after lockout (the number of attempts is settable upon request).

– *Option 20 ("Dnn"): recycling attempts after an ignition failure or a flame signal failure in running status*

The control unit carries out an "nn" number of recycling attempts after an ignition failure at the end of the safety time or after a flame failure in running status.

– *Option 21 ("Inn"): inter-waiting or inter-purge time*

A waiting or pre-purge time (expressed in seconds) is performed after a failed ignition attempt and before the next recycling attempt.

– *Option 23 ("G"): Air pressure switch or pre-heater thermostat checking*

The control unit starts the ignition cycle without checking the air pressure switch.

– *Option 24 ("Jnn"): pre-ignition time*

The transformer is switched on at the end of the waiting/pre-purge time and before the beginning of the safety time (the time is settable upon request).

Resetting the control unit

Non-volatile lockout (manual reset)

When the control unit goes to non-volatile lockout, to reset the system press the reset push-button till the lockout signal switches off.

Volatile lockout (electrical reset)

In case of volatile lockout, the unit can be reset by cutting off and then restoring the power supply. It is not possible to reset the system by switching off the heating demand device.

Communication interface

In case option *"U"* is requested, the ignition and flame monitoring device can send and receive data according to a low-speed communication protocol developed by BRAHMA.

The main function of this communication protocol is diagnosing the status of the control unit and setting the modulation parameters of the VCM0X modulating valve.

The following figure shows the wiring diagram for the connection of the control unit to a BRAHMA interface module.

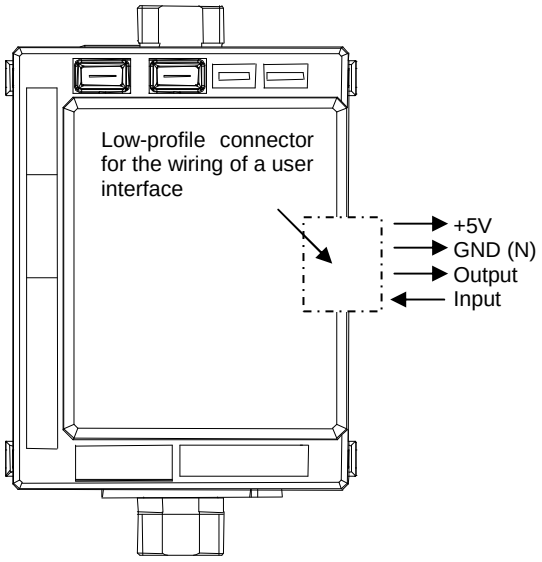


Fig. 5 – Communication connector of the DV(M/E) unit

NOTES ABOUT PRODUCT DISPOSAL

The device contains electronic components and cannot therefore be disposed of as normal household waste. For the disposal procedure, please refer to the local rules in force for special waste.

PART REFERENCES

Type **Options**

D (1) **V** (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26)

Type description

(1) **Safety thermostat (TS)**
- No letter: safety thermostat not available. Standard mode
- T: safety thermostat available

(2) **Type of lockout**
- M: non-volatile lockout
- E: volatile lockout

(3) **Combustion motor fan**
- 1: not available
- 3: available

(4) **Type of modulation**
- 1: ON-OFF
- 2: modulating with two different power values (ignition power and operation power)

Note: *shifting from ignition power to operation power occurs when a flame signal is detected. Upon request, the shifting can also occur at the end of the safety time or after a predefined delay from the end of the safety time.*

(5) **Ignition transformer**
- No letter: integrated ignition transformer. Standard mode
- PR: remote electronic ignition transformer

Options description

(6) **Ignition mode**
- No letter: the ignition spark operates for the whole TSP (TS-1) time. Standard mode
- A: the ignition spark operates for the whole TS time
- B: the ignition spark switches off as soon as a flame signal is detected

Note: *with options "A" or "B" the control unit cannot be used in single-electrode configuration*

(7) **Ignition voltage of the integrated ignition device**
- No letter: 15 kV. Standard mode
- H: 18 kV

(8) **Spark repetition rate of the integrated ignition device**
- No number: 25 Hz. Standard mode
- nn: see "Integrated ignition device" section in *TECHNICAL DATA* paragraph

(9) **Type of control on EV1 valve**
- No letter: BRAHMA valve type VCM0X without control
- C3: BRAHMA valve type VCM0X with soft-start control during ignition
- C4: BRAHMA valve type VCM0X with soft-start control during ignition and during the delay time to reach the second flow rate value
- C5: BRAHMA valve type VCM0X with soft-start control during ignition, during the delay time to reach the second flow rate value and in operating status

Note: *the soft-start function enables to check the modulation current value in order to keep it within a given range. This checking enables to detect any circuit failures. If the modulation current value is not within a predetermined range, the unit will perform a safety shutdown.*

(10) **Type of application for EV1 modulating valve**
- No letter: not available. Standard mode
- M1: valve used in intermittent-first-stage applications (see *TECHNICAL DATA* and *OPERATING CYCLES* paragraphs)
- M2: valve used in slow-opening applications (see *TECHNICAL DATA* and *OPERATING CYCLES* paragraphs)

(11) **Auxiliary fan or auxiliary contact opening with flame signal on**
- No letter: no delay. Standard mode
- X: at the end of the safety time TS
- Wnn: with delay settable upon request (see *TECHNICAL DATA* paragraph)

(12) **Lockout due to extraneous light**
- No letter: not available (the unit remains in permanent waiting/pre-purge status). Standard mode
- K: immediate lockout
- Knn: lockout with delay settable upon request (see *"TECHNICAL DATA"* paragraph)

(13) **Insufficient or no air flow at start-up**
- No letter: the unit remains in stand-by status. Standard mode
- Qnn: lockout with delay settable upon request (see *"TECHNICAL DATA"* paragraph)

(14) **Insufficient or no air flow in running status**
- No letter: safety shutdown followed by stand-by. Standard mode
- S: immediate lockout
- Snn: the unit goes to lockout after "nn" air pressure switch/pre-heater thermostat signal failures in running status

(15) **Flame failure in running status**
- No letter: recycling. Standard mode
- V: immediate lockout
- Vnn: the unit goes to lockout after "nn" flame signal failures in running status (see *"TECHNICAL DATA"* paragraph)

Options description

(16) **Power supply connection**

No letter: polarized live-neutral (phase-sensitive device). Standard mode
N: non-polarized device

(17) **Post-purge of the main motor fan**

No letter: no post-purge. Standard mode
Pnn: the post-purge is settable upon request (see *"TECHNICAL DATA"* paragraph) and cannot be interrupted in case of heating demand restoration
PTnn: the post-purge is settable upon request (see *"TECHNICAL DATA"* paragraph) and can be interrupted in case of heating demand restoration

(18) **Post-purge of the auxiliary motor (with option "T1" only)**

No letter: no post-purge. Standard mode
Onn: the post-purge is settable upon request (see *"TECHNICAL DATA"* paragraph) and cannot be interrupted in case of heating demand restoration

(19) **Recycling attempts after an ignition failure**

No letter: one recycling attempt after a safety shutdown. Standard mode
Ynn: multiple recycling attempts upon request (see *"TECHNICAL DATA"* paragraph)

(20) **Recycling attempts after an ignition failure or a flame signal failure in running status**

No letter: number of recycling attempts after an ignition failure and number of recycling attempts after a flame signal failure independent from each other. Standard mode
Dnn: number of recycling attempts after an ignition failure and number of recycling attempts after a flame signal failure dependent from each other.

(21) **Inter-waiting or inter-purge time**

No letter: no inter-waiting or inter-purge time. Standard mode
Inn: inter-waiting or inter-purge time settable upon request (see *"TECHNICAL DATA"* paragraph)

(22) **Lockout signal output**

No letter: high voltage output without any protection against incorrect wiring of the reset push-button. Standard mode
R: internal resistor for the protection of the reset push-button against reversed connection
F: output for controlling lockout signals with power consumption over 50 mA

(23) **Air pressure switch checking**

No letter: air pressure switch or pre-heater thermostat checking. Standard mode
G: no air pressure switch or pre-heater thermostat checking

Note: *option "G" is available for the control units designed for special applications where checking the air flow is not required by the reference standard.*

(24) **Pre-ignition**

No letter: no pre-ignition. Standard mode
Jnn: pre-ignition settable upon request (see *"TECHNICAL DATA"* paragraph)

Note: *option "J" is available in double-electrode versions only (separated ignition and flame detection electrodes).*

(25) **User interface**

No letter: no user interface. Standard mode
Un * BRAHMA user interface module available (see *"TECHNICAL DATA"* paragraph)

***** ***Note***: *the letter "n" indicates the user interface reference number representing a specific function. For further details, please refer to our data sheets about user interface modules for DMN series burner control units.*

(26) **Auxiliary output**

No letter: no auxiliary output. Standard mode
T1: combustion motor fan auxiliary output
T2: N.O. auxiliary contact (this is not a SELV contact and is therefore not suitable to control circuits type SELV - Safety Extra Low Voltage, e.g. 24V -)

WIRING DIAGRAMS

The following wiring diagrams refer to the most complete device versions and show which parts are available or different according to the options requested.



FUSE



MAIN SWITCH



ROOM THERMOSTAT



SAFETY THERMOSTAT



AIR PRESSURE SWITCH



REMOTE RESET **(note 1)**



LOCKOUT SIGNAL

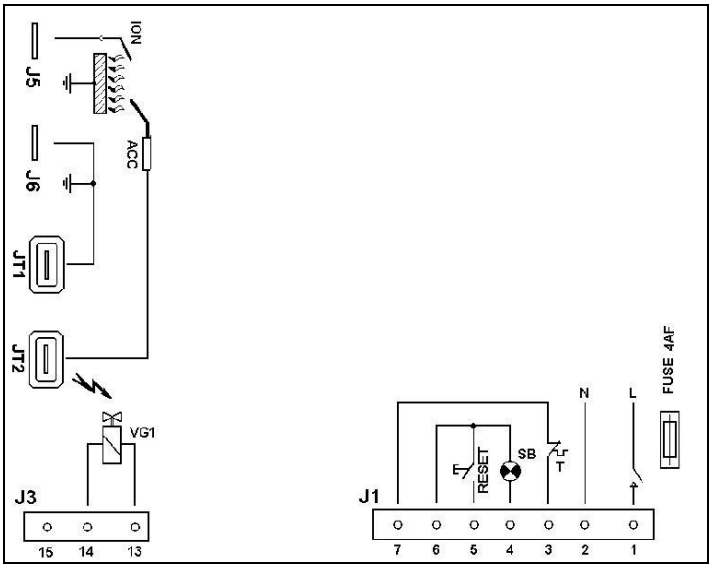


FAN

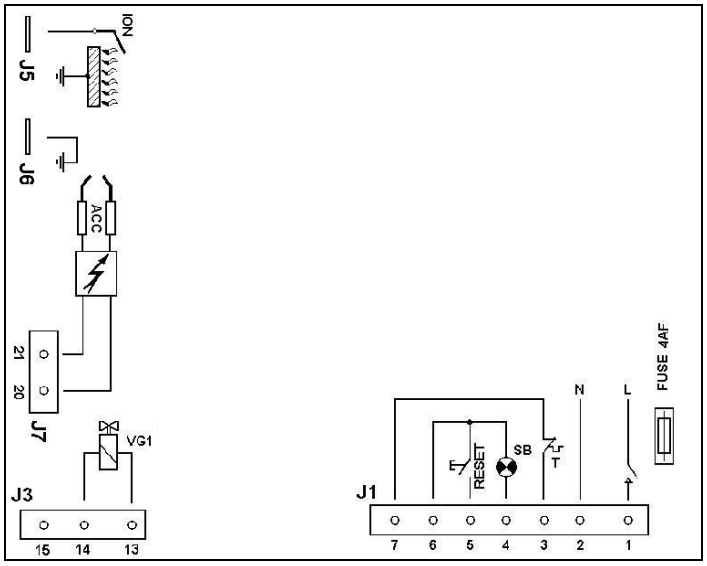


VCM01 VALVE

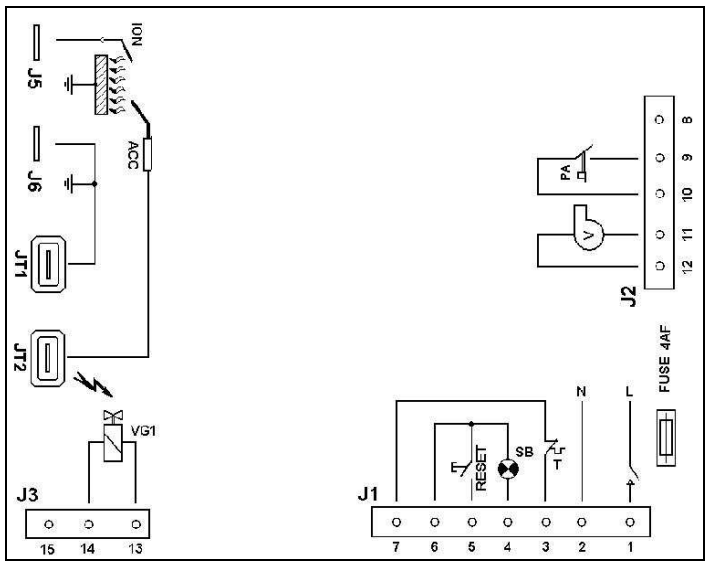
Note 1: not available in case of volatile lockout (option E)



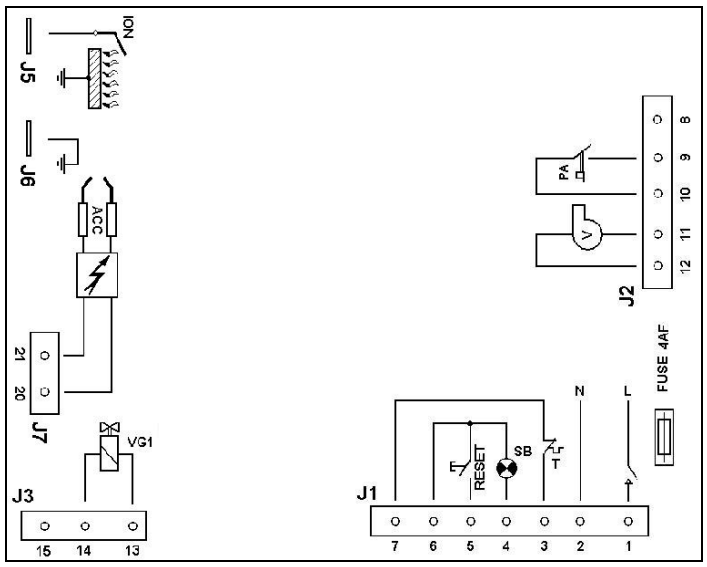
Type DVM11 – DVE11 - DVM12 – DVE12



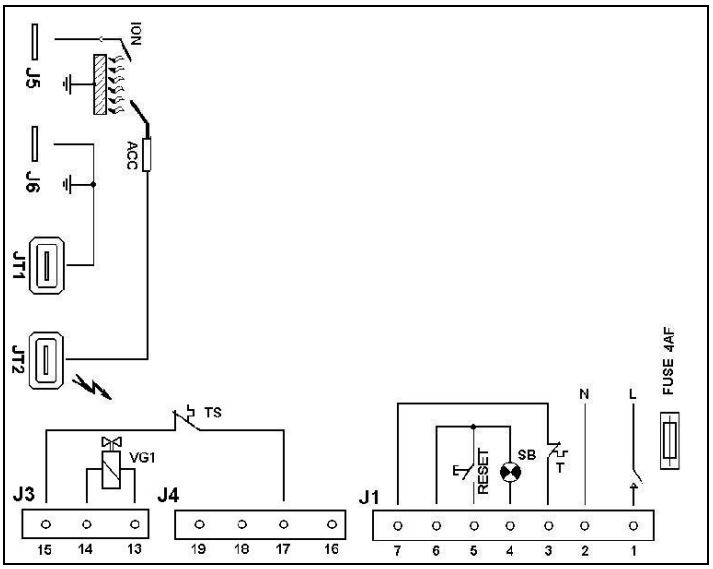
Type DVM11PR – DVE11PR - DVM12PR – DVE12PR



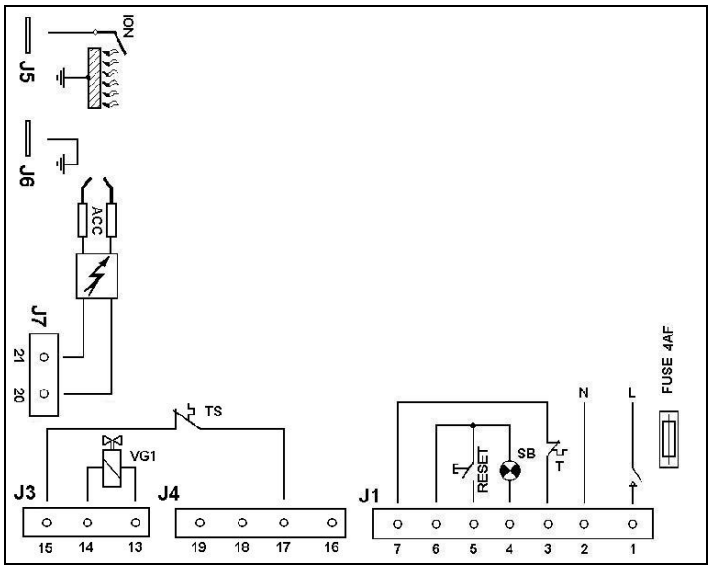
Type DVM31 – DVE31 - DVM32 – DVE32



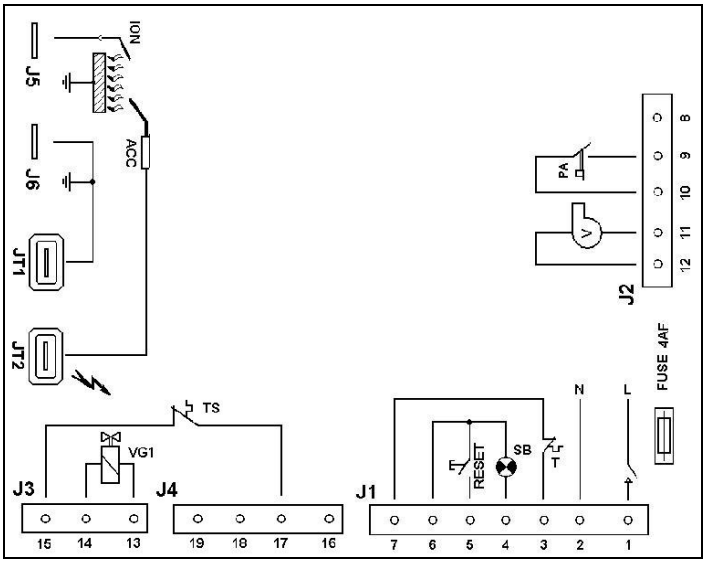
Type DVM31PR – DVE31PR - DVM32PR – DVE32PR



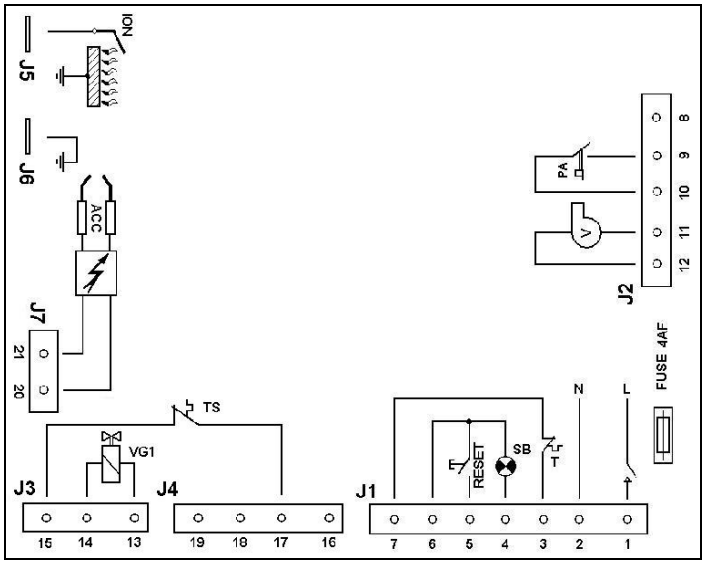
Type DTVM11 – DTVE11 - DTVM12 – DTVE12



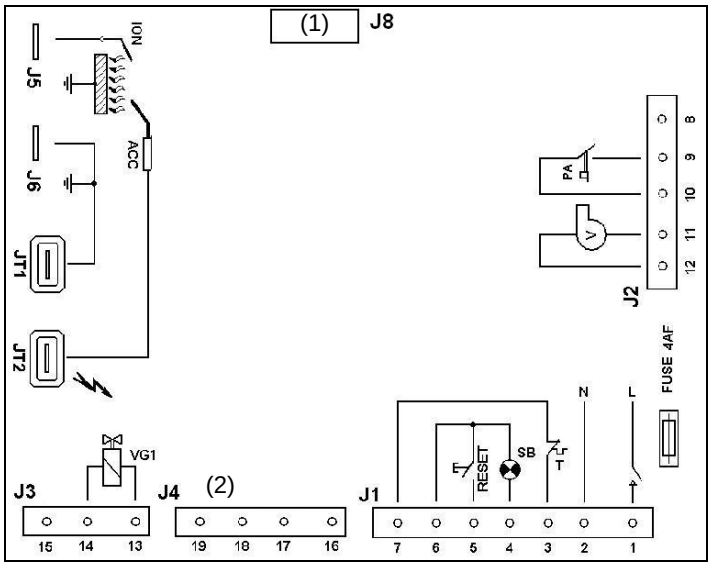
Type DTVM11PR – DTVE11PR - DTVM12PR – DTVE12PR



Type DTVM31 – DTVE31 - DTVM32 – DTVE32



Type DTVM31PR – DTVE31PR - DTVM32PR – DTVE32PR

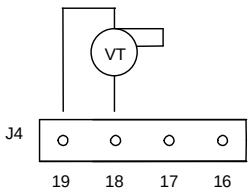


Wiring diagram modifications in case any options are requested

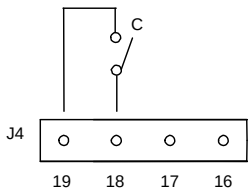
Notes:

(1) available in case of option "Un" only

(2) in case of option T1 or T2, the wiring diagram will be as follows:



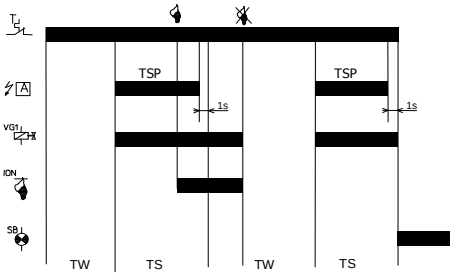
Option T1



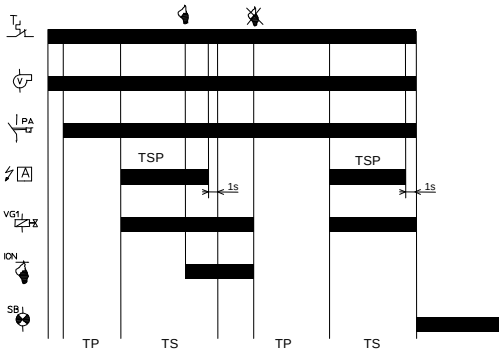
Option T2

OPERATING CYCLES

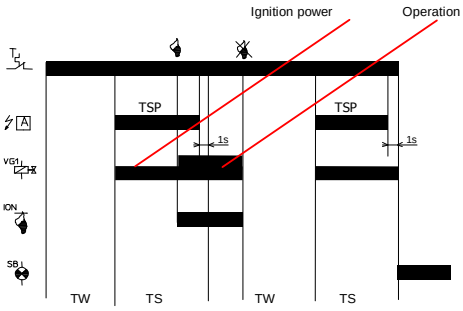
STANDARD VERSIONS WITHOUT SAFETY THERMOSTAT



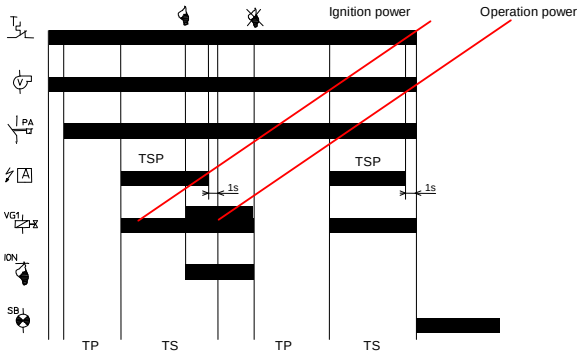
DVM11 - DVE11 – DVM11PR – DVE11PR



DVM31 – DVE31 – DVM31PR – DVE31PR

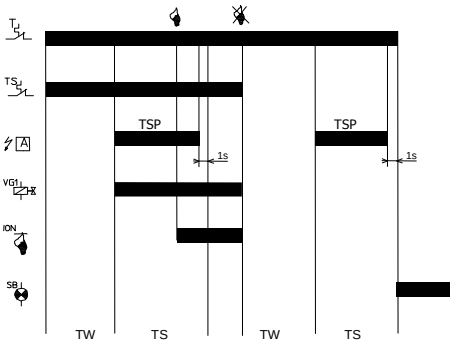


DVM12 - DVE12 – DVM12PR – DVE12PR

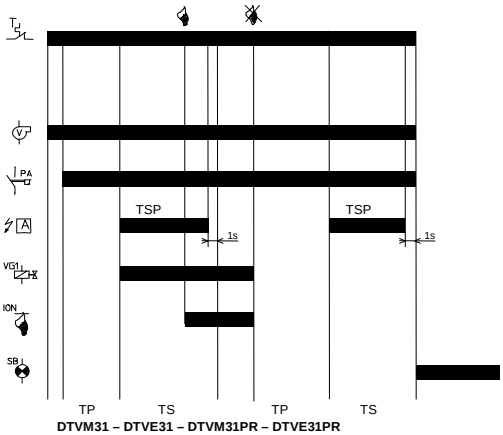


DVM32 – DVE32 – DVM32PR – DVE32PR

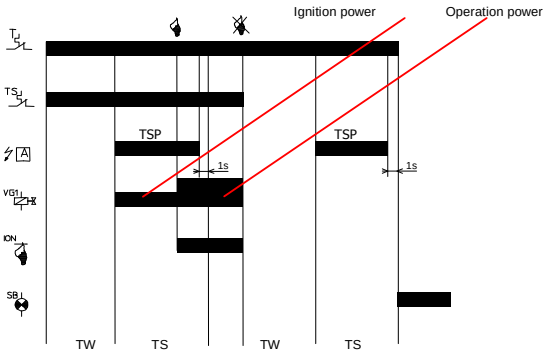
STANDARD VERSIONS WITH SAFETY THERMOSTAT



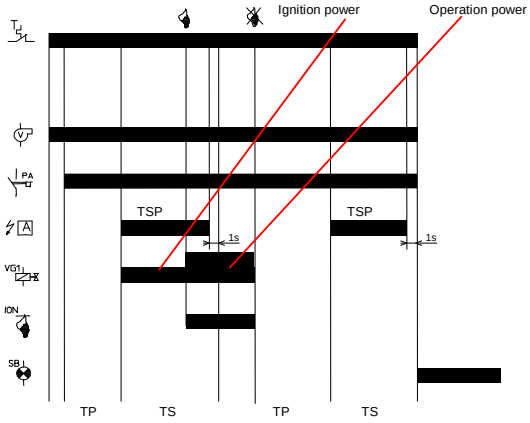
DTVM11 - DTVE11 – DTVM11PR – DTVE11PR



DTVM31 – DTVE31 – DTVM31PR – DTVE31PR



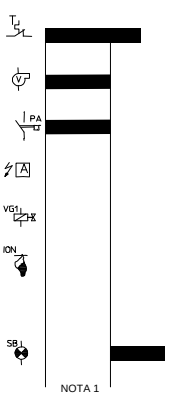
DTVM12 - DTVE12 – DTVM12PR – DTVE12PR



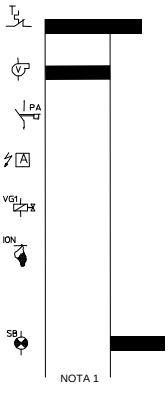
DTVM32 – DTVE32 – DTVM32PR – DTVE32PR

THERMOSTAT | FAN | AIR PRESSURE SWITCH | IGNITION DEVICE | FLAME SIGNAL | LOCKOUT SIGNAL | VALVE FIRST STAGE | AUXILIARY OUTPUT | SAFETY THERMOSTAT

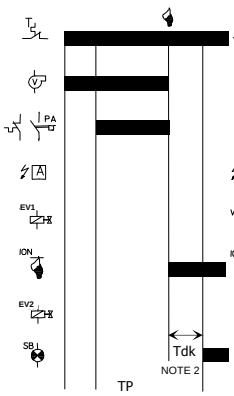
AVAILABLE OPTIONS



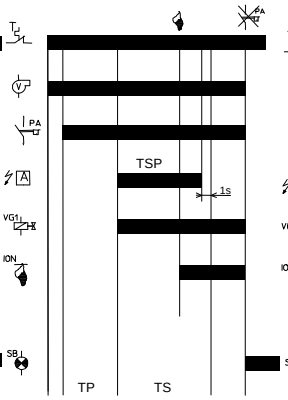
OPTION Q – Air pressure switch restoration failure



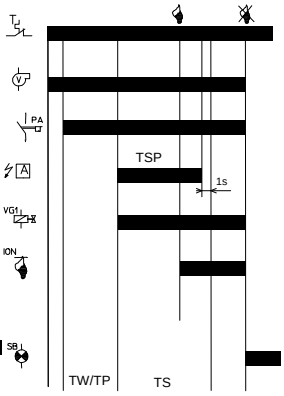
OPTION Q – Insufficient or no air flow



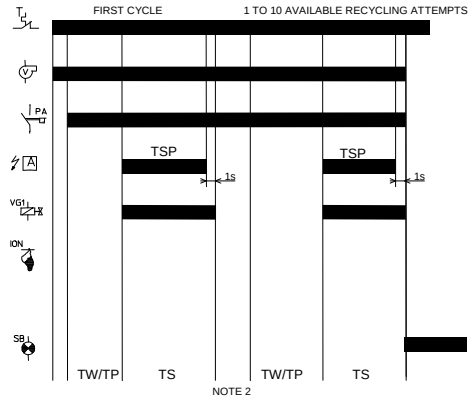
OPTION K and Knn



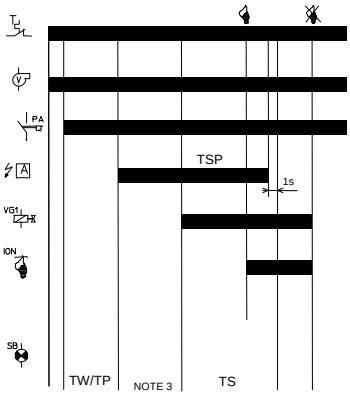
OPTION S



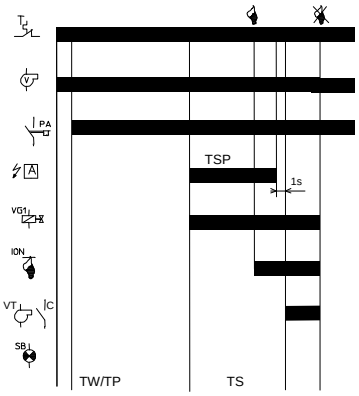
OPTION V



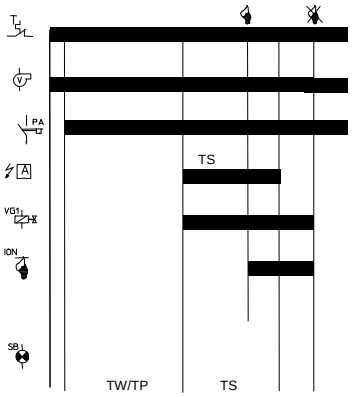
OPTION Y and I



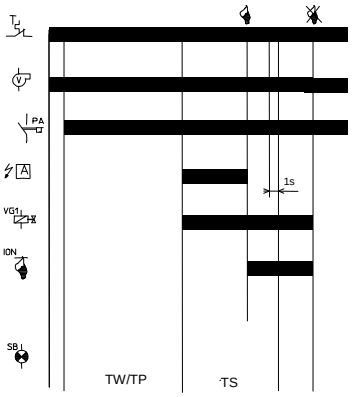
OPTION J



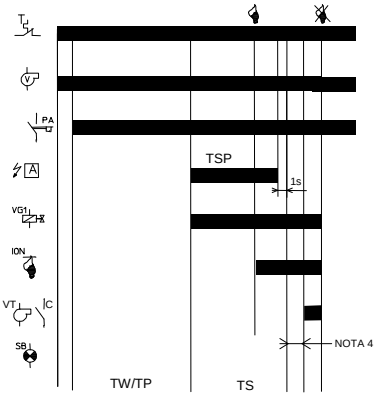
OPTION X



OPTION A



OPTION B



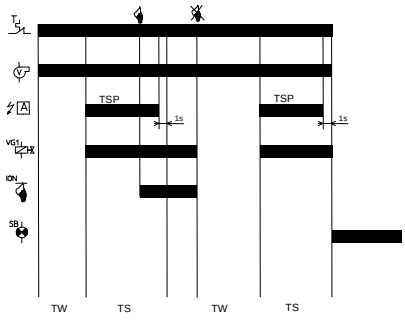
OPTION W

NOTES

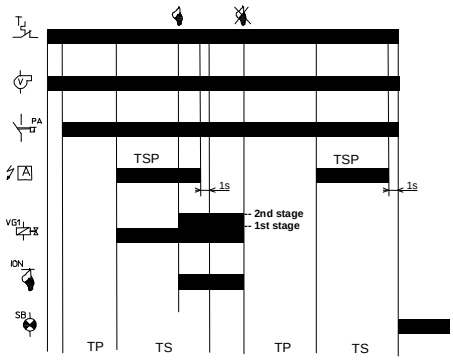
1. Lockout status with delay.
2. Inter-waiting or inter-purge time available.
   As special setting, the waiting/pre-purge time between different recycling attempts can be replaced by one waiting/pre-purge time if this operation sequence is allowed in the final appliance.
3. Pre-ignition time available.
4. Auxiliary output ignition delay available.



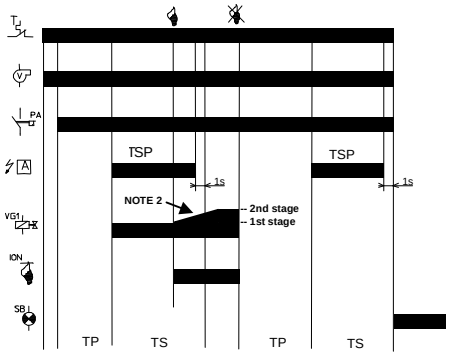
AVAILABLE OPTIONS



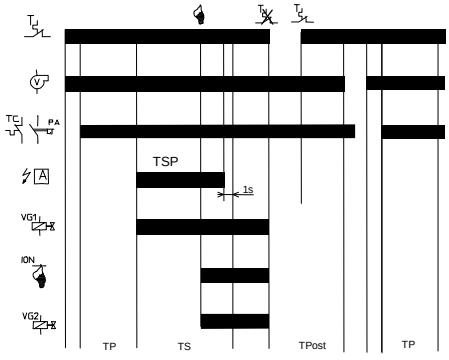
OPTION G



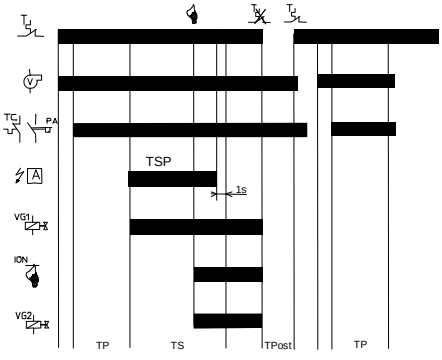
OPTION M1



OPTION M2



OPTION P (NOTE 1)



OPTION PT

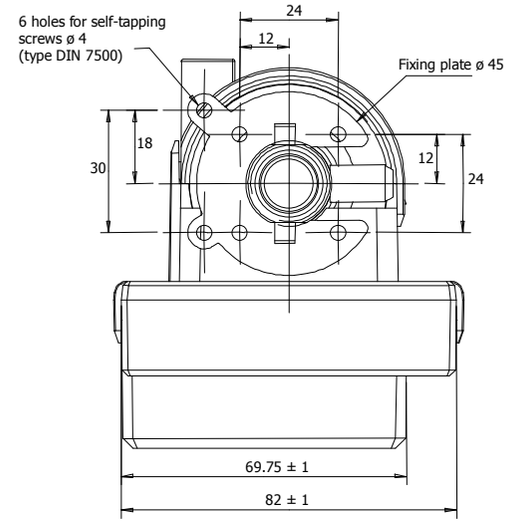
NOTES

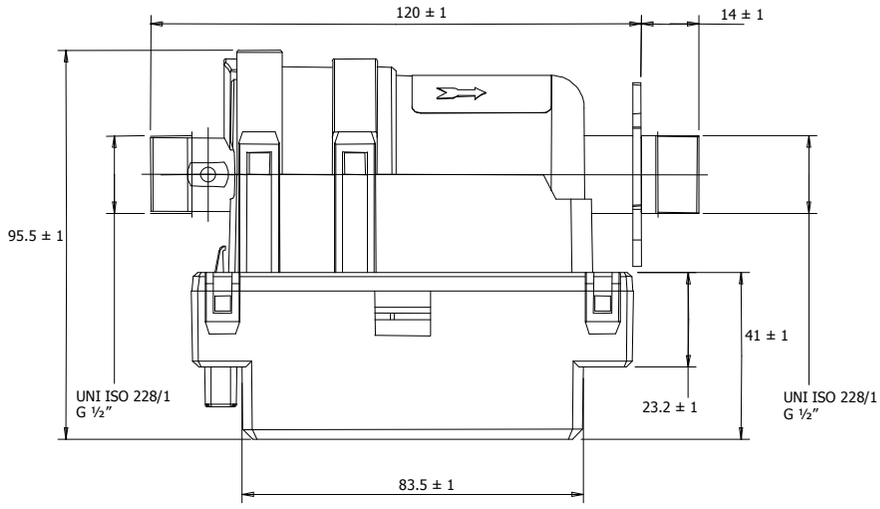
1. The same behaviour occurs for the auxiliary cross flow fan in case of option “Onn”.
2. The time required to shift from the first to the second modulation stage is settable upon request.

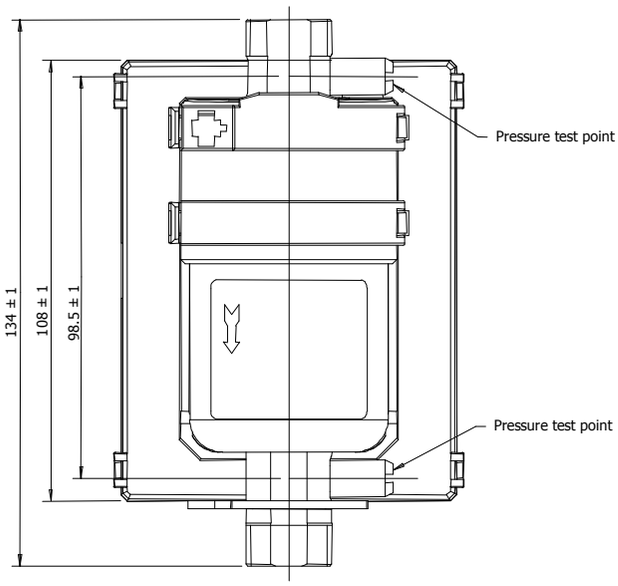


OVERALL DIMENSIONS

The overall dimensions of the device are shown below.







ATTENTION -> Company Brahma S.p.A. takes no responsibility for any damage resulting from Customer's tampering with the device.

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2012/06/15 Subject to amendments without notice

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