DIGITAL EURO-OIL SERIES TYPES DR1 DR2

AUTOMATIC OIL BURNER CONTROL SYSTEM



APPLICATION

This range of electronic oil burner controls has been specifically designed for oil burners for non permanent operation.
The automatic burner controls of this series are suitable for:

- monobloc oil burners;
- power washers;
- warm air generators;
- steam boilers;
- kilns.

Due to the technical and structural characteristics and to the variety of models they can be used for oil burner operated appliances for domestic and industrial applications.

MAIN FEATURES

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

- In accordance with EN298:2012 (European Standard for automatic gas and oil burner control systems and flame detection) and with EN60730-2-5 (European Standard for automatic controls with C class software);
- for fuel throughput < 30 kg/h (TS_{MAX} = 10s) or fuel throughput from 30 to 100 kg/h (TP_{min} = 15s e TS_{MAX} = 5s);
- in compliance also with the standard DIN EN 13842:2004-10 for warm air generators (WLE, versions with TP = 20s e TS = 5s);
- visible light detection (by photo-sensor type FT.., FC.. or through UV emission detection by photodiode FD..)
- two independent safety contacts for oil valve control;
- electrical service life at max load >250.000 operations;
- simple wiring and installation;
- precise and repeatable setting times;

Table 1

Standard Types	*Single flame*	*Dual flame*	*Pre-heater*	*Normal operation in case of pre-heating thermostat opening*	*On-board reset*	*External remote reset*	*Lockout due to spurious light*	*Flame detectors FC.. / FT..*
DR2 opt.K10		*	(1)	(1)	*	*	*	*

NOTE:

1. this option is possible only by an external connection.

TECHNICAL DATA

Supply voltage:	220÷240V~ +10/-15% @ 50/60Hz ±6%
On request:	110÷120V~ +10/-15% @ 50/60Hz ±6%
Operating temperature range:	-20℃ ÷ +70℃
Ambient humidity:	95% max @ 40℃
Protection degree (with socket):	IP 40

Times:

- Pre-purge time (TP)[1]:	0÷175s
- Inter-purge time (opt. Inn):	0÷175s
- Pre-ignition time (opt. Jnn):	0÷74s
- Safety time (TS)[1]:	3÷10s
- Post-ignition time (with opt. Ann):	1÷74s
- Post-ignition time (with opt. Bnn):	1÷74s
- Post-Combustion time (opt. Cnn/CTnn):	0÷3180s
- Lockout delay due to spurious light (opt. Knn):	0÷74s
- Dropout time on running flame failure:	< 1 s
- Lockout on TC failure switching(opt. Qnn):	3s÷53min
- Lockout due to under/over voltage (opt. QPnn):	3s÷4min
Recycling attempts (opt. Ynn and Vnn)	0÷14

Power consumption:

- for supply voltage of 220÷240V_{AC}:	18 VA
- for supply voltage of 110÷120V_{AC}:	9 VA

Contact rating:	Imax
- Terminal 1:	4,0 A cosφ > 0,4
- Room thermostat (T):	4,0 A cosφ > 0,4
- Pre-heater thermostat (TC)[2]:	3,5 A cosφ > 0,4
- Pre-heater (RISC):	0,5 A cosφ = 1,0
- Fan (MB):	2,0 A cosφ > 0,4
- Ignition transformer (TR):	1,0 A cosφ > 0,4
- First valve (EV1):	0,5 A cosφ > 0,4
- Second valve (EV2):	0,5 A cosφ > 0,4
- Alarm (SB):	1,0 A cosφ = 1,0

Maximum length of external components cables:

- Thermostats (T - TC):	20 m
- Reset and alarm (RE - SB):	10 m
- All the others:	1 m
Internal fuse rating:	6.3 A delayed
External fuse rating:	6.3 A fast blow
Weight (including socket):	about 132 g

NOTES

1. The times given on the burner control label correspond to the values guaranteed. The actual values slightly differ from the values given, as prepurge time can be longer and safety time shorter than their nominal values.
2. In case of presence of the pre-heater.

Under/Over voltage protection:

When the power supply level is less than about 155Vac (about 78Vac in the 110-120Vac versions), the device will move to the safety mode during the normal operation. The device will restart when the power supply value will be more that about 165Vac (about 83Vac in the 110-120Vac versions).

When the power supply value is more than about 290Vac (about 145Vac in the 110-120Vac versions), the device will move to the safety mode during the normal operation. The device will restart when the power supply value will be less than about 280Vac (about 140Vac in the 110-120Vac versions)

Safety lockout, with closed thermostats, if the power supply value is wrong for more than 60 seconds (it can be changed with opt. QP).

CONTROLS FOR SPECIAL APPLICATIONS

On request it is possible to meet special requirements concerning times and operating cycles.

CONSTRUCTION

The particular construction and the use of the surface mounted components allow to have reduced overall dimensions.

The enclosure made of plastic material protects the control from possible damages resulting from crashes, incautious opening, dust and contact with the external environment.

A varistor protects the control from voltage transients on the electric network.

An inbuilt fuse protects the internal relays of the control box in case of short circuit on the outputs (valves, ignition transformer, motor and lockout signal).

OVERALL DIMENSIONS

The following figure (Fig.1) shows the overall dimensions of the control.

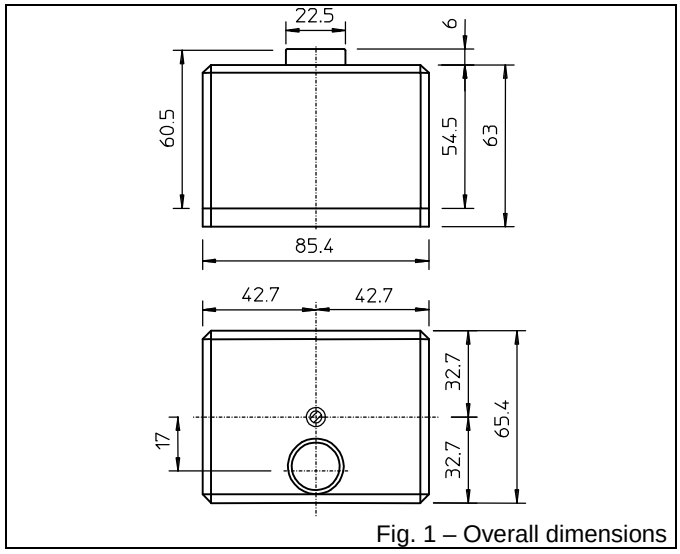


Fig. 1 – Overall dimensions

CONNECTION

For the connection of the external components the control can be fitted either with socket type N code 18210095 (see Fig. 2), provided with a screw terminal board which allows a simple and safety connection. To fix the sockets it is advisable to use screws type M4. To fix the control to the socket use the pin supplied with the control box.

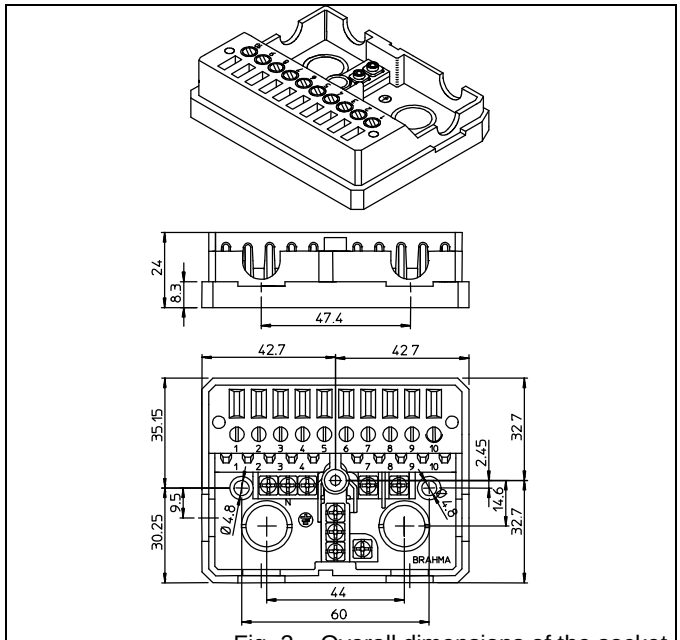


Fig. 2 – Overall dimensions of the socket

For the connection of the external components refer to ht paragraph "CONNECTION DIAGRAM".

ACCESSORIES

The following data are useful to choose the most suitable flame detector for the application and the control box used.

Types[4] FC.. / FT..	Sensitivity	Side
FC11 / FT11	1,5 ÷ 6,5 lux	Lateral and Frontal
FC13 / FT13 red (/R)	1,5 ÷ 6,5 lux	Lateral and Frontal
FC13 / FT13 blue (/A)	1,5 ÷ 3 lux	Lateral and Frontal
FC14 / FT14 red (/R)	1,5 ÷ 6,5 lux	Lateral and Frontal
FC14 / FT14 blue (/A)	1,5 ÷ 3 lux	Lateral and Frontal

NOTE

4. The suffix indicates the colour of the photosensor enclosure (red [/R], blue [/A]).

It is also possible to use the UV sensor BRAHMA type FD1/N or FD2/N (frontal or lateral viewing) that is specifically designed for burners with blue flame.
The following figures show the types and fixing systems of the available flame detectors.
To fix the flame detector screws diameter 4 are suggested.

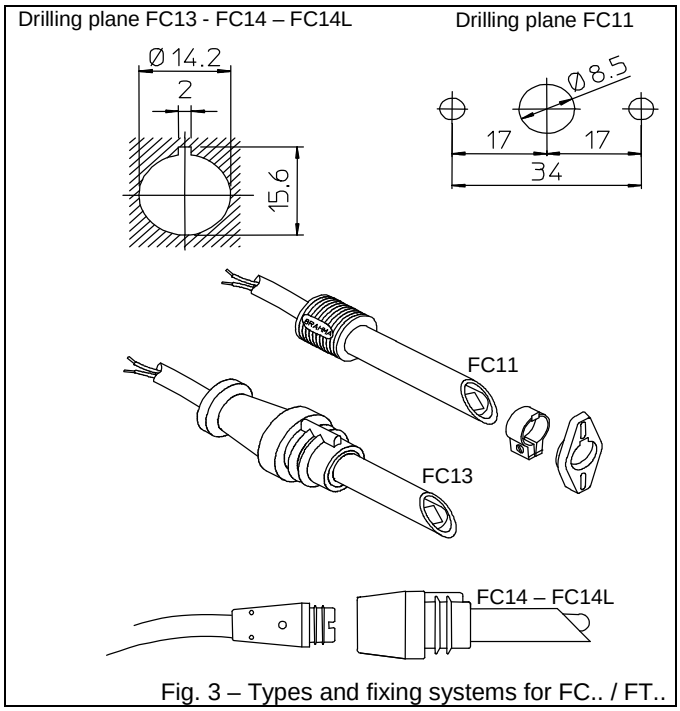


Fig. 3 – Types and fixing systems for FC.. / FT..

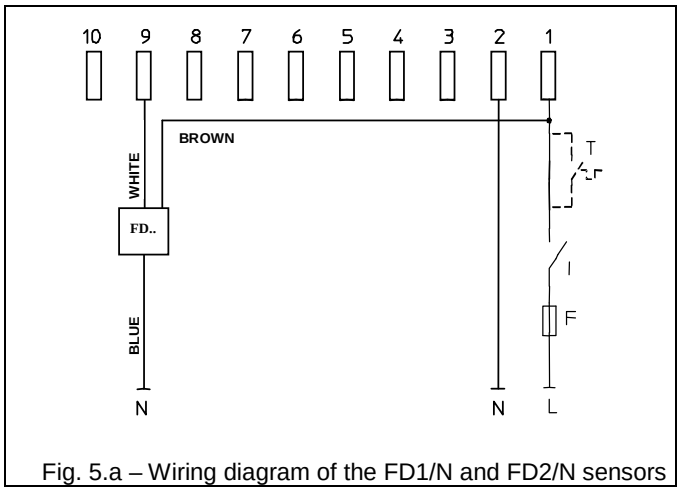


Fig. 5.a – Wiring diagram of the FD1/N and FD2/N sensors

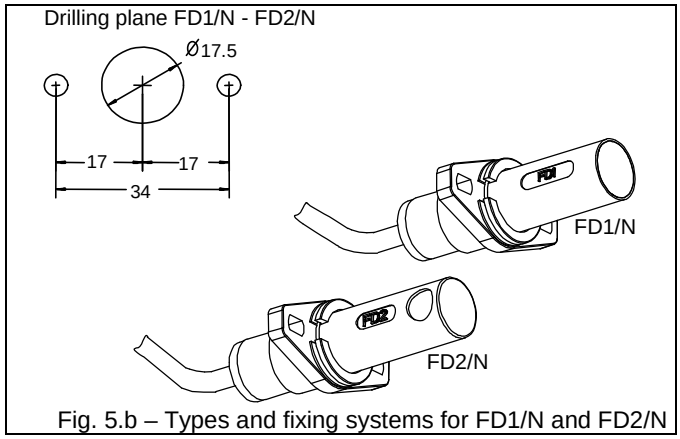


Fig. 5.b – Types and fixing systems for FD1/N and FD2/N

Cable holders and core hitches

Cable holders and core hitches can be fitted on the sides of the enclosure and the connecting sockets. These accessories can be supplied upon request (see Fig.6).

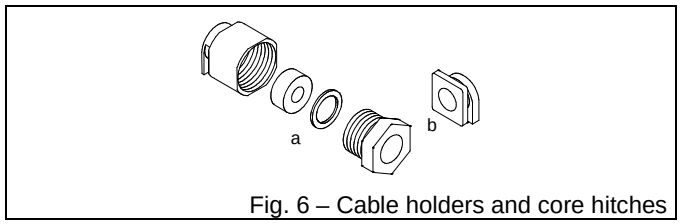


Fig. 6 – Cable holders and core hitches

To order accessories (fig.6), see to the following codes:

- core hitches code 18210200 (fig. 6 a);
- core hitches code 80536550 (fig. 6 b).

DIRECTIONS FOR USE

- This automatic control box is a safety device and must not be modified. Responsibility and guarantee of the manufacturer will be debarred if the controller is opened by the user.
- The system is designed to stay in running position for less than 24h (system for non-permanent operation). Reaching this limit causes a regulation shutdown in order to allow the controller to check its efficiency.
- The controller must be connected and disconnected to the socket without power supply.
- In order to maintain the IP40 protection degree the device must be connected to the N socket (fig. 2) with core hitches (fig. 6).
- The controller can be mounted in any position.
- Avoid exposure to dripping water.
- In order to optimize the controller duration it's preferable a quite low ventilation temperature.
- Before installing or replacing the controller, make sure that type, times and code are those required.
- EMC emission requirements, according to the directive EN55014-1, shall be tested after the incorporation of the burner control system into the equipment.

ELECTRICAL INSTALLATION

- The applicable national and European standards (e.g. EN 60335-1 / EN 60335-2-102) regarding electrical safety must be respected.
- **Live** and **neutral** should be connected correctly; a mistake could cause a dangerous situation, as the internal safety devices can be ineffective in case the connecting wires of thermostats and valves are not isolated.
- Before starting the control unit check the cables carefully. Wrong connections can damage the control and compromise the safety of the application.
- The earth terminal of the control, the metal frame of the burner and the earth of the electric system must be well connected.
- Avoid putting detection cables close to power or ignition cables.
- Protect the control with a fast fuse suitable to the load connected and never exceeding 6.3A.
- The appliance in which the control is installed must provide adequate protection against the risk of electrical shock.

CHECKING AT START

Always check the control before the first start and also after any replacement or a long period of non operation of the system.

Before any ignition attempt make sure that the combustion chamber is free from oil. Then make sure that:

- if the starting attempt occurs with the flame detector obscured the control performs a lockout after safety time;
- if start up takes place with extraneous light the control performs a cycle stop or lockout with Knn option;
- when the flame detector is obscured in running position, supply to the oil valves is interrupted within 1 second and after a recycling the control proceeds to lockout;
- the intervention of limiters or safety devices cause a safety shutdown according to the application;
- operating times and sequence are suitable to the control box used.

OPERATION

At every start the control unit supplies the burner motor and the ignition transformer and proceeds to a self-checking of its own components. During the prepurge time TV the internal circuit makes a test of the flame signal amplifier circuit. Extraneous light or a fault in the amplifier cause a cycle stop or lockout with Knn option.

At the end of prepurge time the control output of the first oil valve is energized; if a flame signal is detected at the end of safety time, the control unit deenergizes the ignition transformer and goes to running position.

At the end of safety time in the controls with two flame levels the ignition transformer is deenergizes and the second oil valve is supplied. If no flame signal is detected during safety time, the control goes to lockout, the control outputs of the valve, the ignition transformer and the burner motor are switched off while the lockout signal is supplied.

The controls prearranged for the use of an oil pre-heater supply the pre-heater when the ambient thermostat and/or the boiler (T) switches on. In this way the starting sequence begins when the pre-heater thermostat (TC) switches on.

The thermostat opening does not cause the burner shutdown: if the pre-heater is used (if possible), the thermostat opening causes the repetition of the starting sequence after the heating stage (RISC) of the pre-heater; if the pre-heater is no used the starting sequence is repeated when the ambient thermostat and/or the boiler (T) switches on.

In case of device with option “GZ” (type DR1) the pre-heater thermostat opening during running state is not considered.

The diagrams in the "OPERATING CYCLE" are useful to understand how each control operates.

Operation cycle variations

The cycle diagrams in the "AVAILABLE OPTIONS" section are useful to understand the following operation cycle variations of the devices:

- *Option 1 (“Ann”, “Bnn”): ignition mode*

Standard mode; the ignition device output is activated during all safety time TS. On request the spark can be;

  - deactivated with delay TSP=nn seconds (“Ann” option).
  - deactivated, with flame detection, with delay T_{db}=nn seconds (“Bnn” option).

In DR2 devices the solenoid valve EV2 is power-off at shutdown of the ignition spark.

- *Option 2 (“K”, “Knn”): Lockout due to parasite flame*

Standard mode; if a spurious flame is detected at start-up or during waiting/prepurge/preignition time, the device stops the cycle, without lockout (without limit, continuous prepurge stage). On request; the device proceeds to immediate lockout (“K” Option) or with a delay (settable upon request) of nn seconds (“Knn” Option).

- *Option 3 (“Qnn”): preheater thermostat failure to close at start-up*

Standard mode; if the device detects no commutation of the preheater thermostat during stat-up, it stops the cycle, without lockout (without limit, continuous waiting). On request; the device proceeds to lockout with delay (settable upon request) of nn seconds (“Qnn” Option).

- *Option 4 (“QPnn”): Under/over voltage protection at start-up*

Standard mode; if the device detects under/over voltage, with closed thermostats, the device proceeds to lockout with after 60 seconds. On request; the device stops the cycle, without lockout (“QP” Option, continuous waiting/prepurge) or proceeds to lockout with a delay (settable upon request) of nn seconds (“QPnn” Option).

- *Option 5 (“V”, “Vnn”): Flame failure in running position*

Standard mode; recycle without lockout (without limit, continuous prepurge) with flame failure in running position. On request; the device proceeds to immediate lockout (“V” Option) or lockout after nn losses of flame during operation (“Vnn” Option).

- *Option 6 (“Cnn”, “CTnn”): post-combustion time of the motor fan*

Standard mode; without any post-combustion time on the motor fan output in case of heating demand failure. On request; post-combustion of nn seconds due to shut off in running position (settable upon request) (“Cnn” or “CTnn” Options). With “Cnn” option post-combustion is effected regardless of heating demand; conversely, with “CTnn” option post-combustion can be interrupted by the heating demand restoration and consequently the device goes to an ignition cycle. During lockout state, with “Cnn” or “CTnn” options, the external lockout signaling is switched off for all post-combustion time.

- *Option 7 (“Ynn”, “YnnRmm”): recycle attempts due to ignition failure*

Standard mode; the device proceeds to immediate lockout (without recycle) if the flame isn’t detected at the end of safety time. On request; the device proceeds to lockout after “nn” recycle attempts (“Ynn” Option, the attempts number is settable upon request). On request, with “YnnRmm” option, the “nn” attempts number is restored with “mm”, upon flame failure during the running condition the attempts number is “mm”.

– *Option 8 ("Inn"): inter-purge time*

Standard mode; without interpurge. On request; with "Inn" option, it is possible to set the interpuge time during the ignition recycles (only in combination with "Ynn" or "YnnRmm" options).

– *Option 9 ("G", "GZ"): Check of preheater thermostat*

Standard mode; the device performs the ignition cycle and checks the preheater thermostat (TC). On request, with "G" option, the device performs the ignition cycle without any check. On request, with "GZ" option, the device performs the ignition cycle without preheater thermostat (TC) checking during running position. When the signal fails to switch during start-up, the device stops the cycle (or it locks out only in combination with "Q" Option).

– *Option 10 ("Jnn"): pre-ignition*

Standard mode; with pre-ignition (the pre-ignition time coincides with the pre-purge time). On request, only with DR1 devices, it is possible to modify the pre-ignition time and activate the ignition transformer nn seconds before the beginning of safety time TS ("Jnn" Option).

TESTING THE FLAME SIGNAL

It is extremely important to test the flame signal level before having the burner operate.

Arrange one cable connected to each terminal of the photoresistor as shown in figure 7. These cables should be accessible when the control is mounted on the socket; then, with the burner in running position, the voltage between terminals must be < 1,6V.

This value guarantees a safe operation; it corresponds to a light intensity 50% beyond the limit value (about 3,2V). In case the tested voltage is higher, try to better orientate the photocell or to clean it.

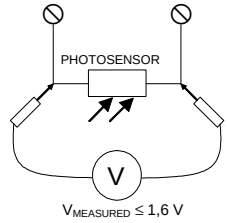


Fig. 7 – Testing the flame signal during running position

ERROR DIAGNOSTIC

If the controller is in lockout condition while the ambient thermostat is closed, the diagnostic routine is energized, by pressing for about 5 seconds the reset button, visualizing the reason behind the lockout condition. When the same button is pressed again it resets the controller and thus the diagnostic routine ends. The following table shows the description of the diagnostic messages through the red led blinking arranged in correspondence of the onboard lockout signaling:

Error Code Table

Blinks code of alarm signal (red led • =ON • =OFF)	Description of possible cause
1 off blink every 2 seconds	Under or over voltage protection
2 off blinks every 2 seconds	No establishment of flame at the end TS
4 off blinks every 2 seconds	Supervision of Preheater thermostat, timeout (only versions with Qnn option)
5 off blinks every 2 seconds	Extraneous light/Flame simulation at start (only versions with Knn option)
7 off blinks every 2 seconds	too many losses of flame during operation (only versions with Vnn option)
10-15 off blinks every 2 seconds	Internal error

EXAMPLE with 2 blinks:

1 2 PAUSE 1 2 PAUSE

In diagnosis conditions the device remains disabled. To reactivate the device and start a new cycle, push for 1 sec. (<3 sec) and release the button.

SIGNALS DURING OPERATION

In the various operation conditions the controller is able to signal the operation state through a red LED arranged in correspondence of the onboard lockout signaling. The blinks legend is as follows:

Code Table

Blinks code of alarm signal (red led • =ON • =OFF)	Status
Continuously off	Waiting heat request
3 on blinks every 2 seconds	Extraneous light on burner start-up
4 on blinks every 2 seconds	Waiting preheater thermostat
6 on blinks every 2 seconds	Under/Over voltage
Continuously on	Lockout alarm

CONTROLLERS RESET

When the controller proceeds to a volatile lockout, it is possible to reset immediately the system pressing the reset button till the lockout signal is shut off (this condition occurs in about two seconds when ambient thermostat is closed, it's not possible to reset the system while ambient thermostat is open).

NOTES FOR THE DISPOSAL OPERATION

The controller contains electronic components and it must not be disposed of as a domestic waste. For the disposal operation refer to the local rules concerning special waste.

CONTROLLERS DENOMINATION

Type	Options
DR (a) (b)	**(1) … (12)**

Model description

a) 1: application device with direct ignition (one valve, single-stage)

b) 2: application device with intermittent first stage (two valve, double-stage)

Options description:

(1) Ignition and Post-Ignition mode*:
- **No letter**: ignition spark operates during TS. Standard mode.
- **Ann:** ignition spark operates for TSP=nn (nn seconds)
- **Bnn**: ignition spark is switched off after T_{db}=nn seconds after flame detection.
- ** Remark : In DR2 devices, EV2 opening after power-off of the ignition spark.*

(2) Lockout due to spurious light:
- **No letter**: cycle shut down, without lockout (no limit, continuous waiting condition). Standard mode
- **K**: lockout without delay during prepurge/interpurge/preignition time.
- **Knn**: lockout with delay during start-up (see paragraph TECHNICAL FEATURES)

(3) Preheater thermostat supervisor, failure at start:
- **No letter**: Cycle shut down, without lockout (no limit, continuous pre-purge condition). Standard mode.
- **Qnn**: Lockout in nn seconds, set upon request (see paragraph TECHNICAL FEATURES)

(4) Under or over voltage protection at start:
- **No letter**: Lockout after 60 seconds (see paragraph TECHNICAL FEATURES). Standard mode.
- **QP**: Cycle shut down, without lockout (no limit, continuous pre-purge condition).
- **QPnn**: Lockout after nn seconds, set upon request (see paragraph TECHNICAL FEATURES)

(5) Flame failure in running position:
- **No letter**: recycle, without lockout (no limit). Standard mode.
- **V**: immediate lockout.
- **Vnn**: lockout after nn losses of flame during operation (see paragraph TECHNICAL FEATURES).

(6) Post-Combustion of the motor fan
- **No letter:** No post-combustion time. Standard mode
- **Cnnnn***: post-combustion time of nnnn seconds due to shut-off in running position, it cannot be interrupted by the heating demand restoration
- **CTnnnn***: post-combustion time of nnnn seconds due to shut-off in running position, it can be interrupted by the heating demand restoration
- *Remark: The versions with preheater thermostat, the contact must remain closed for all post-combustion time.*
- ** Remark: During lockout state, the external lockout signaling is switched off for all post-combustion time. In DR2 devices, ignition spark operates for all post-combustion time.*

(7) Recycle attempts:
- **No letter**: lockout without recycle attempt. Standard mode.
- **Ynn**: multiple recycle attempts upon request (see paragraph TECHNICAL FEATURES).
- **YnnRmm*:** nn multiple recycle attempts, with restoring of mm recycle attempts in operation (see “TECHNICAL DATA” paragraph)
- ** Remark: i.e. Y3R0 3 recycles according to EN676 and EN746-2, single attempt to recycle upon flame failure during the running condition.*

(8) Interpurge time:
- **No letter**: No inter-waiting or interpurge time. Standard mode.
- **Inn**: interpurge time is set upon on request

(9) Pre-heater switch:
- **No letter**: Pre-heater switch checking. Standard mode.
- **G***: without Pre-heater switch checking
- **GZ*:** without Pre-heater switch checking during running position.
- ** Remark: Not available in DR2 devices.*

(10) Pre-ignition:
- **No letter**: pre-ignition during all the pre-purge time. Standard mode.
- **J***: no pre-ignition.
- **Jnn***: nn seconds of pre-ignition is set upon request (see paragraph TECHNICAL FEATURES).
- ** Remark: available only in DR1 devices without opt. GZ.*

(11) Wiring accessories:
- **No letter**: with remote reset and photo-sensor type FT/FC11/13. Standard mode.
- **OR**: without remote reset and photo-sensor type FT/FC11/13.
- **GF**: without remote reset and photo-sensor type FC07/08.

(12) Compensation of the spurious light:
- **No letter**: No compensation. Standard mode.
- **FC:** spurious light (photosensor) is compensated at start-up of the burner.
- *Remark: The device, during the start-up of burner compensates the spurious light. In case of spurious light, the minimum value of the sensitivity of the device is the declared value. In case of the spurious light, the minimum value of the sensitivity of the device is automatically compensated during the start-up sequence up to about 37KΩ (about 165KΩ with photo-sensor type FC07/08, GF option)*

(36**)** Writing timing and parameters to non-volatile memory.
- **No letter:** writing timing and parameters disabled. Standard mode.
- **WP:** writing timing and parameters enabled.
- *Remark: option available during the development for memory writing, by user interface, of some operating timers and parameters.*

Time table and settings for program sequence DR... with WP option

Type	Times in seconds								
DR...	tw	Tp/Ti min.	Tj min.	TS max.	TSP/Tdb min.	Tpost min.	1)	2)	3)
Requirements	2.5	See TP value on the device label	See nn value of Jnn option on the device label	See TS value on the device label	See nn value of Ann or Bnn option on the device label	See nnnn value of Cnnnn or CTnnnn option on the device label	---	---	---
Factory setting	---	Tp/Ti+2%+0.3	Tj+2%+0.3	TS-2%-0.3	TSP-2%-0.3	TPost+2%	---	---	---
Max.	2.5	175+2%+0.3	74+2%+0.3	10-2%-0.3	74-2%-0.3	3180+2%	1	1.45	0.45
Min.	---	0+0.3	0+0.3	3-2%-0.3	1	0	0.3	0.3	---
Step size	---	1	1	1	1	1	---	---	---

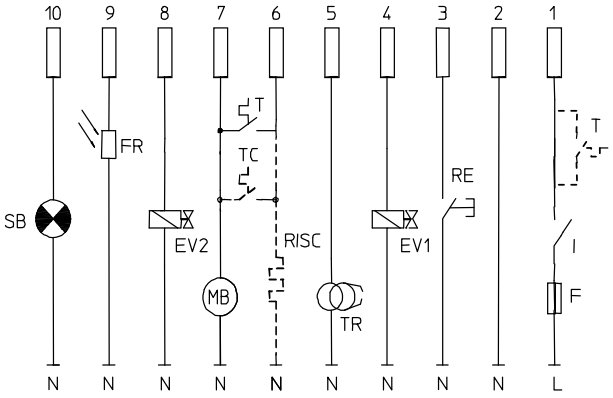
	Function parameter	Parameter	Factory setting
1	Repetition in the event of loss of flame during operation	Vnn	See nn repetition value of Vnn option on the device label
2	Repetition in the event of no flame at the end of TS safety time	Ynn	See nn repetition value of Ynn option on the device label
3	Restoring attempts in the event of loss of flame during operation	YnnRmm	See mm restoring attempts value of YnnRmm option on the device label
4	Lockout, with nn seconds of delay, due to failure preheater thermostat during start-up	Qnn	See nn delay value of Qnn option on the device label
5	Lockout, with nn seconds of delay, due to spurious light during start-up	Knn	See nn delay value of Knn option on the device label
6	lockout due to spurious light without delay during prepurge/interpurge/preignition time	K	See K option on the device label

Legend

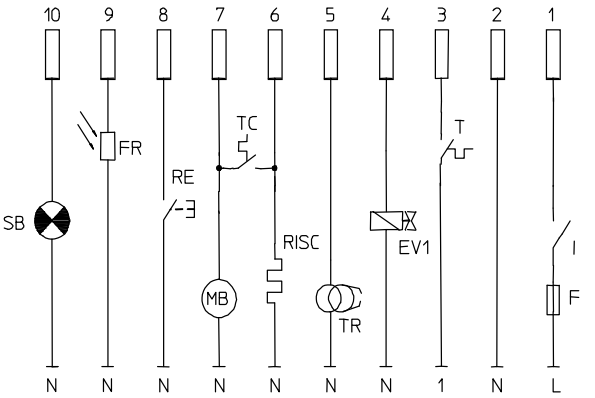
tw	Waiting time	TS	Safety time
Tp	Prepurge time	TSP/Tdb	Postignition time
Ti	InterPrepurge time	Tpost	Postpurge time
Tj	Preignition time		

1) Response time in the event of loss of flame
2) Reaction time at change of signal by inputs (e.g. preheater thermostat (PH))
3) Flame detection time

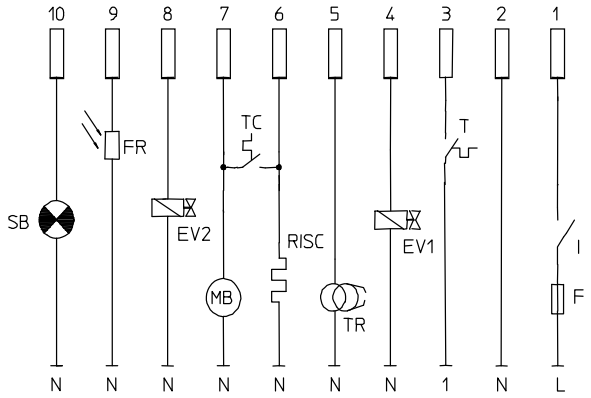
CONNECTION DIAGRAMS



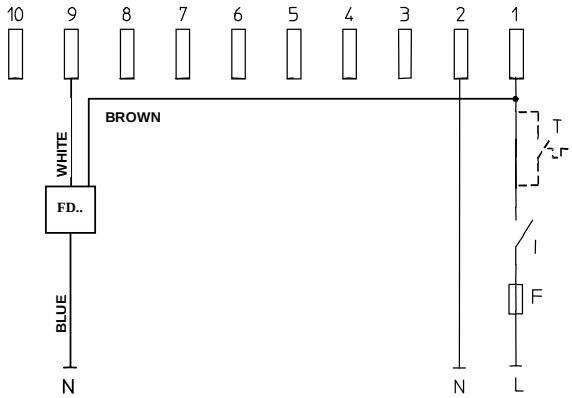
TYPE DR2



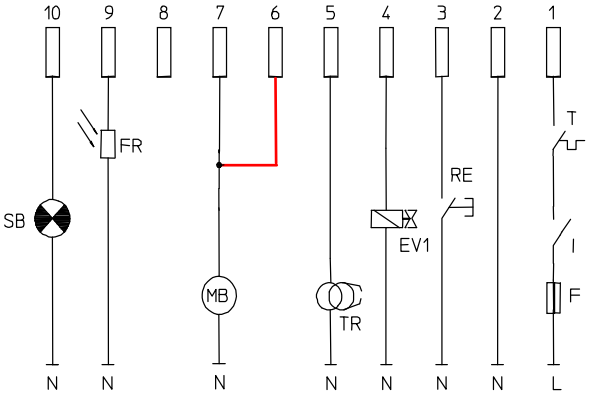
TYPE DR1 opt. C/CT GZ



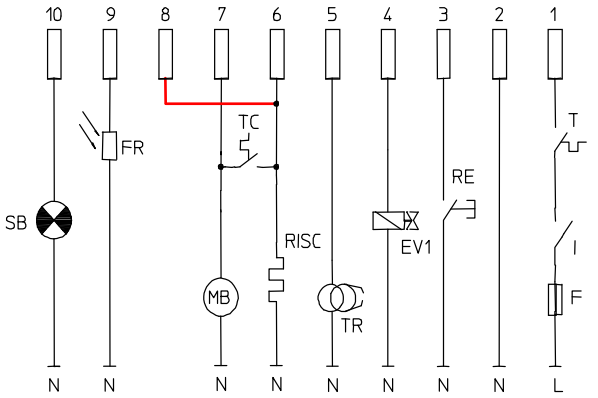
TYPE DR2 opt. C/CT OR/GF



CONNECTION WITH A FLAME SENSOR BRAHMA type FD1/N - FD2/N

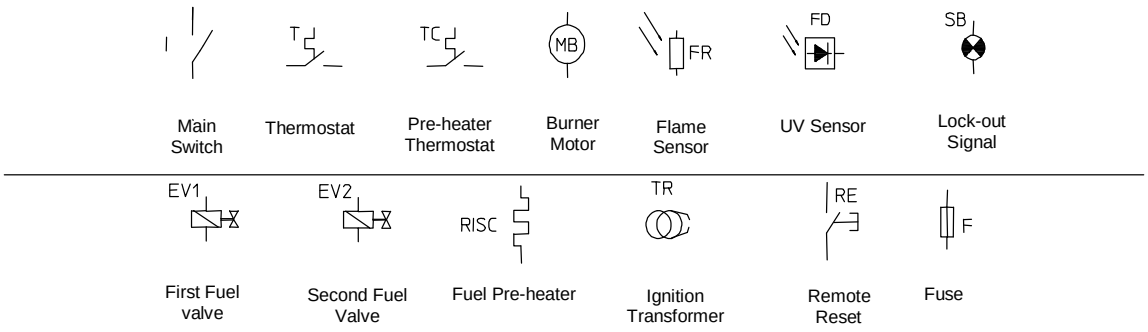


TYPE DR2
CONNECTION FOR PRE-HEATER EXCLUSION

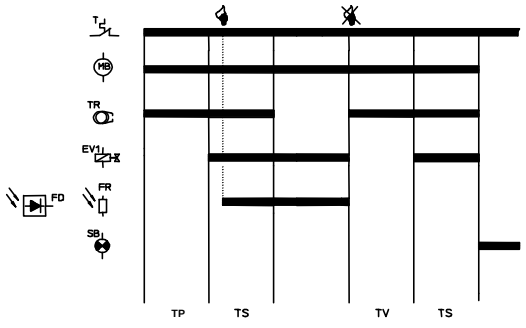


TYPE DR2
CONNECTION FOR PRE-HEATER CHECK EXCLUSION DURING OPERATION

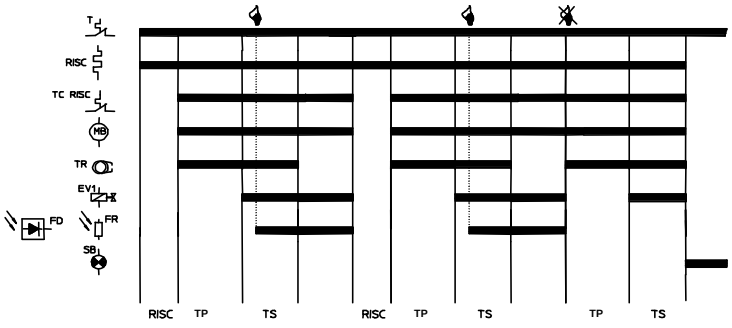
Remark: the dashed link shows the proper connection of the preheater and the preheater thermostat of the DR1 and DR2 devices.



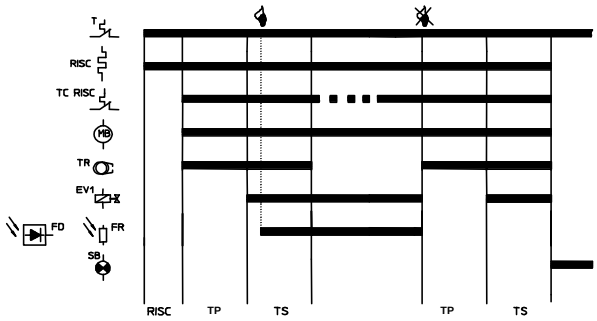
OPERATING CYCLES



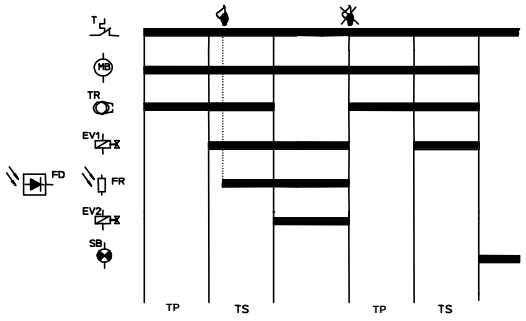
TYPE DR1



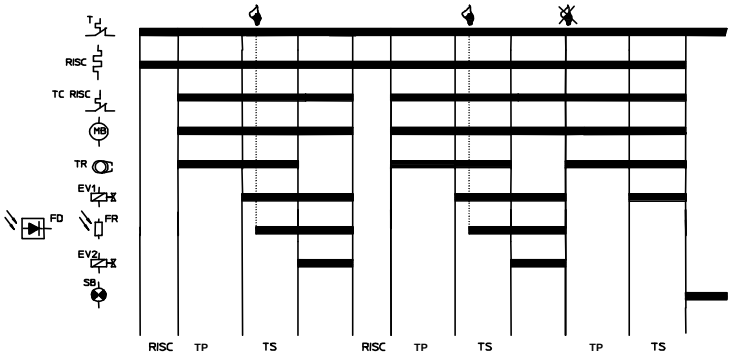
TYPE DR1 (WITH PRE-HEATER)



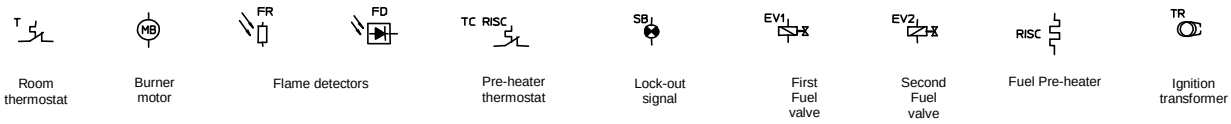
TYPE DR1 opt. GZ



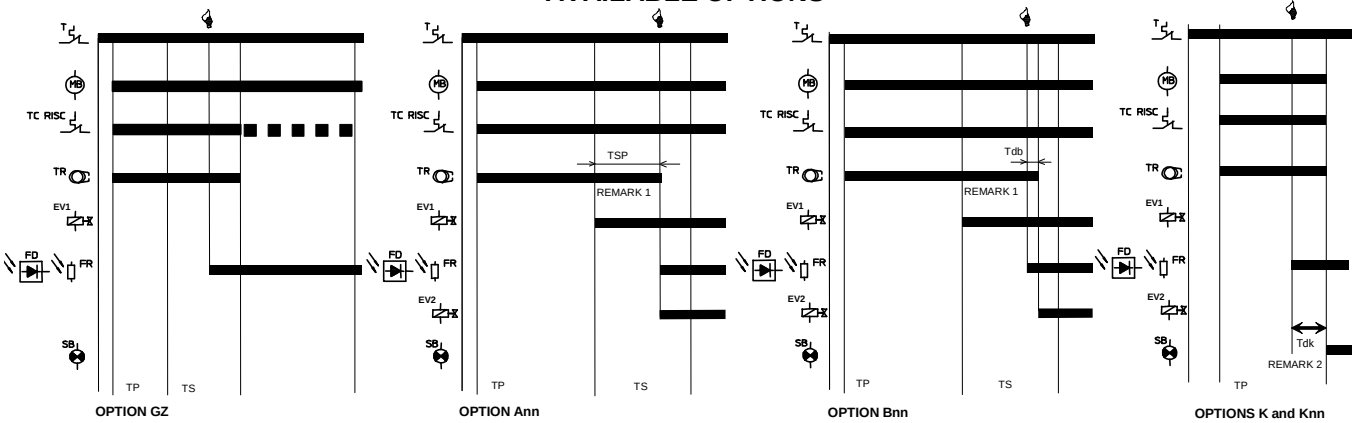
TYPE DR2



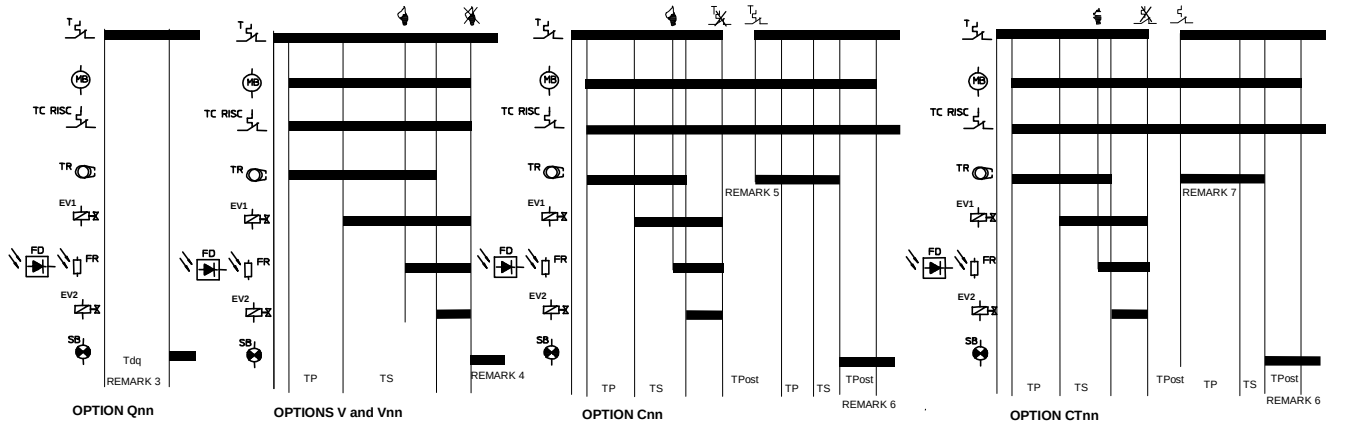
TYPE DR2 (WITH PREHEATER)



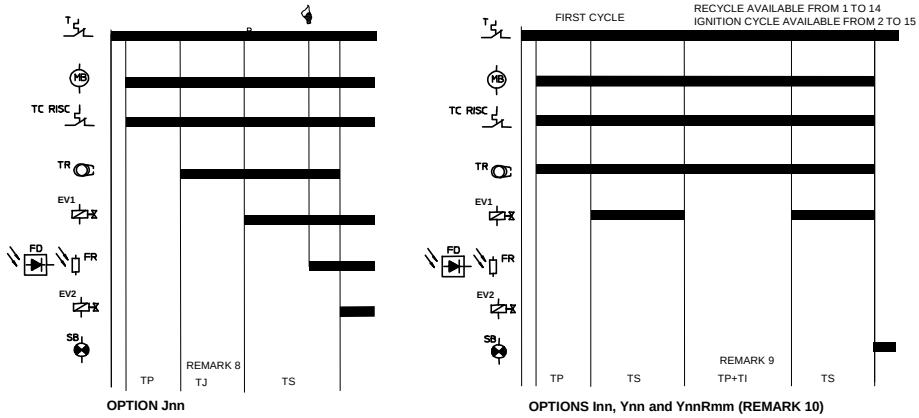
AVAILABLE OPTIONS



OPTION GZ | **OPTION Ann** | **OPTION Bnn** | **OPTIONS K and Knn**



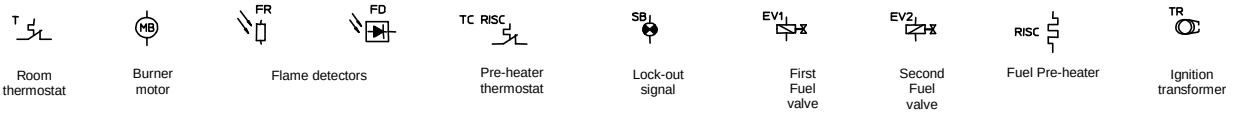
OPTION Qnn | **OPTIONS V and Vnn** | **OPTION Cnn** | **OPTION CTnn**



OPTION Jnn | **OPTIONS Inn, Ynn and YnnRmm (REMARK 10)**

REMARKS:

1. Igniter is switched off with delay TSP (Post-ignition available with opt. Ann) or with delay Tdb (Post-ignition available with opt. Bnn)
2. Lockout without (opt. K) and with (opt. Knn) delay Tdk.
3. Lockout without (opt. Q) and with (opt. Qnn) delay Tdq.
4. Lockout without (opt. V) and with (opt. Vnn) "nn" recycles due to flame failure in running position.
5. Post-Combustion is not interrupted by the heating demand (only with Cnn). In DR2 devices, ignition spark operates for all post-combustion time.
6. Lockout Post-Combustion.
7. Post-Combustion is interrupted by the heating demand (only with CTnn). In DR2 devices, ignition spark operates for all post-combustion time.
8. Pre-ignition time available (opt. Jnn), igniter is supplied TJ seconds before the safety time TS. Not available in DR2 devices.
9. Inter-purge TI time available. As special setting, the prepurge time between each recycling attempts may be replaced by an inter-purge TP+TI, if this sequence is allowed in the final application.
10. The "nn" number of recycling attempts may be reset in operation to "mm" value with YnnRmm option, upon flame failure during the running condition the attempts number is "mm".



Room thermostat | Burner motor | Flame detectors | Pre-heater thermostat | Lock-out signal | First Fuel valve | Second Fuel valve | Fuel Pre-heater | Ignition transformer

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

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