



BRAHMA

**COMPONENTI E SISTEMI PER IL RISCALDAMENTO
COMPONENTS AND SYSTEMS FOR HEATING**

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TECHNICAL SPECIFICATIONS FOR D PC1F
 MANAGEMENT DEVICE FOR ELECTRONIC 1-BURNER GAS OVENS

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1. DESCRIPTION

The DPC1F device allows to manage a combi gas oven with grill. This device operates together with Brahma VPC01 valves, enabling the flow rate adjustment of the gas burner. Besides, the device is composed of a user interface with 7-segment display and touch keyboard.

2. GENERAL FEATURES

The device is normally customizable and its basic features are the following:

- Red 7-segment display and LEDs indicating the flow rate level of each burner, as well as time and settings
- Touch keyboard with 9 touch-sensitive areas for the selection of each burner level, settings, keyboard lock and turn-on/off functions
- Three 24Vdc outputs for Brahma VPC01 modulating valves
- 24Vdc output for Brahma VPC01 main valve located upstream of the gas collector
- RS232 interface useful for system diagnostics
- Three fast-on inputs for the burner flame detection electrodes
- Voltage-free contact output for ignitor driving
- Management of the modulation levels preset on a FLASH memory
- Possibility to manage two modulation tables (natural gas – LPG)
- Device-integrated procedure for the adjustment of each burner min. level
- Power supply board made by using switching technology
- 24h-format daily clock

3. TECHNICAL DATA

Supply voltage: 100-240V a.c. ±10%
Frequency: 50-60Hz
Power consumption: 27VA
Ignition transformer output contacts: 220-240V a.c. ±10% – 250mA – cosφ = 0,4
Flame detection electrode connection: Fast-on 2,8x0,8 mm
Operating temperature range: -10°C ÷ +80°C
NB: the upper side of the device (keyboard - display) should never operate at a temperature exceeding 50 °C, as this may cause operation failures in the keyboard.
Protection rating: IP 00
EN298 classification code:

Character	Specification	Code
1°	Atmospheric	A
2°	Main burner direct ignition	M
3°	Recycling	C
4°	Non-volatile lockout	L
5°	Fixed times	X
6°	Non-permanent operation	N

Max. cable length for external components: ≤1m

Flame monitoring:

The flame detection device exploits the flame rectification property.

Min. ionization current: 0,2μA_{DC}
 Max. ionization current: 5,66μA_{DC}
 Recommended ionization current: 3÷5 times the min. one
 Max. cable length: 1 m
 Min. insulation resistance of detection cable and electrode to earth: ≥ 50MΩ
 Max. electrode stray capacitance: ≤1nF
 Max. short-circuit current: < 200μA_{AC}

Dimensions: 240 x 68 x 40 mm
Weight: 440g approx.
Housing material: black TPA6 V0

4. TIMES

- waiting time (TW):	1s
- safety time (TS):	4s
- reaction time on flame failure: (according to EN 30-1-4)	3s
- inter-waiting or inter-purge time:	10s
- waiting time for lockout due to extraneous light:	10s
- pre-ignition time:	0s
- number of ignition attempts:	3

5. FUNCTIONS

The main functions of the device are the following:

- Stand-by mode
- Keyboard lock to prevent any unwanted ignition/setting
- Safety lockout with manual reset through the keyboard
- A procedure to adjust the flow rate min. level of each burner
- Setting of the employed fuel type
- Setting of the turn-off time for each burner
- Max. operating time for each burner preset on a FLASH memory and corresponding to 4 hours
- Temperature detection on the electronic board
- Anomaly/failure management through a series of codes appearing on the display.

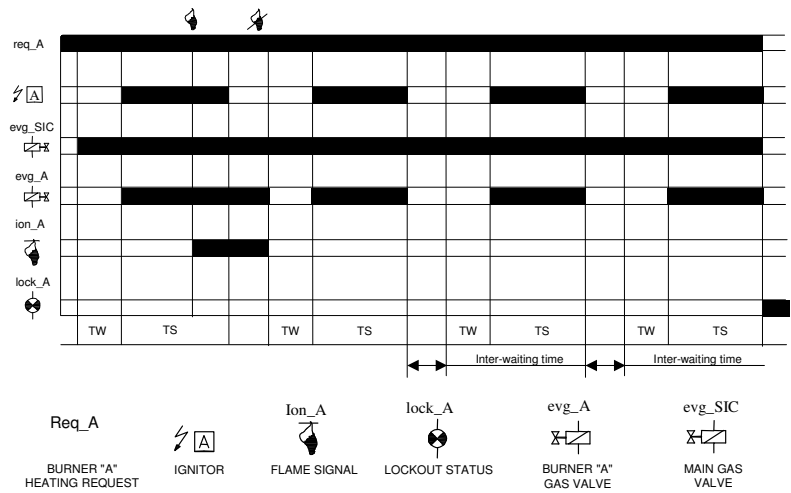
6. DIRECTIONS FOR INSTALLATION

- The device is designed to stay in running position for less than 24h (system for non-permanent operation). Reaching this limit causes a regulation shutdown to enable the device to check its own efficiency.
- This automatic device is a safety appliance and should not be modified. The manufacturer's responsibility and guarantee are invalidated in case the device is tampered with by the user.
- Respect the applicable national and European standards regarding electrical safety (e.g. EN 60335-1/EN 60335-2-102).
- Connect **live** and **neutral** correctly. The non-observance of **live-neutral** polarity may create hazardous conditions.
- Before starting the system check the cables carefully: a wrong wiring can damage the unit and compromise the safety of the appliance.
- Connect and disconnect the DPC1F device only after switching off the power supply.
- The system can be mounted in any position.
- Avoid exposing the system to dripping water.
- Avoid placing valve cables together with ignition transformer high voltage cables.
- Make sure that nothing is placed on the hob, especially in the control panel area, before ignition.
- After turning the DPC1F on, wait a few seconds till the keyboard automatic calibration procedure is completed.
- The extra low voltage circuit (ELV) is not safe to touch (only main insulation according to EN60730-1), therefore the installation should ensure a protection rating against electric shock equivalent to the double insulation of the user interface.

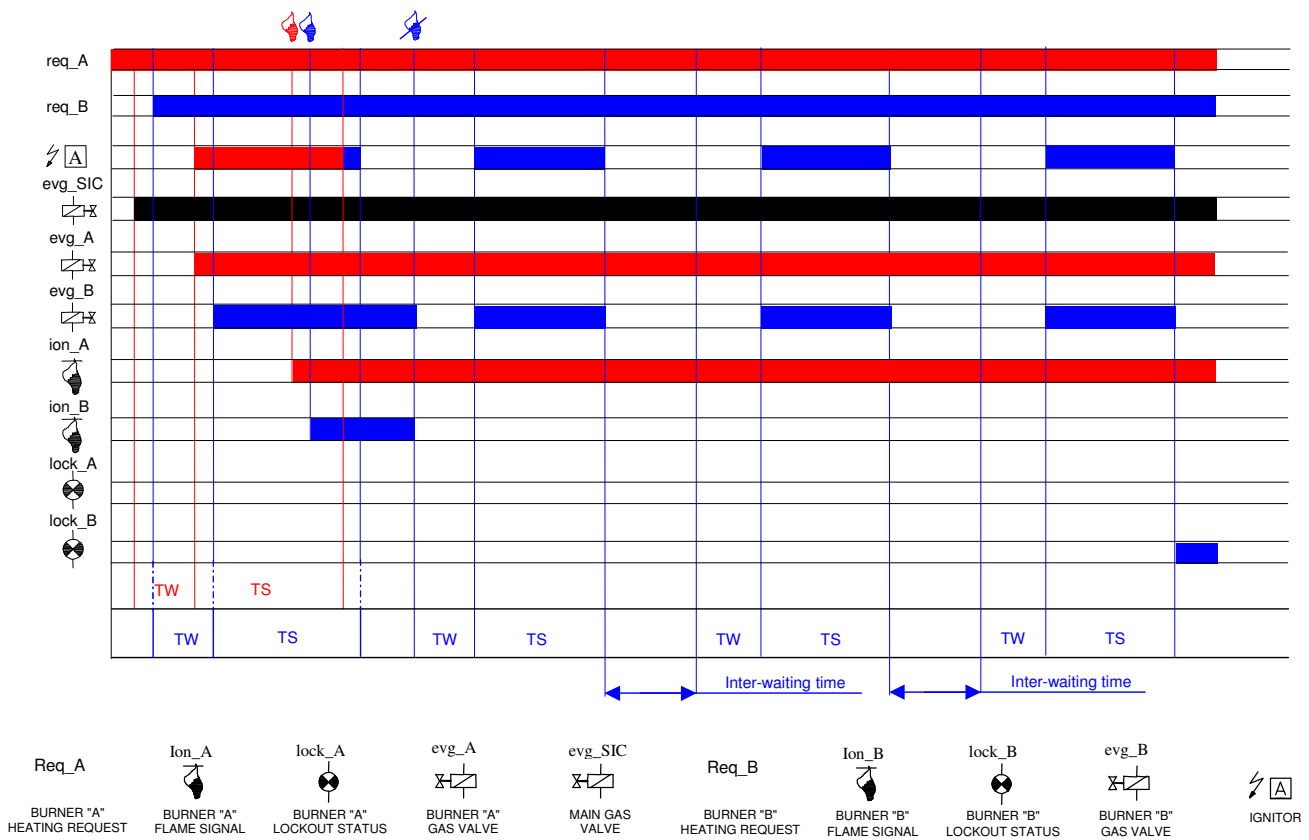
**NOTES ABOUT PRODUCT DISPOSAL**

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.

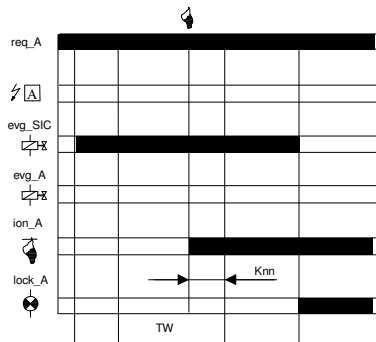
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8. OPERATING CYCLE DIAGRAM (WITH HEATING REQUEST BY TWO BURNERS, E.G. BURNERS "A" – "B")

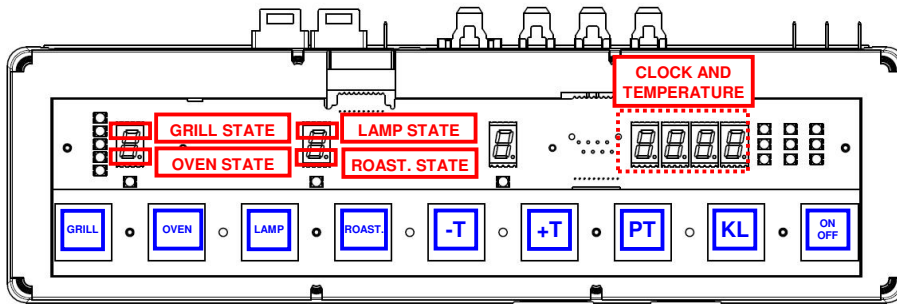
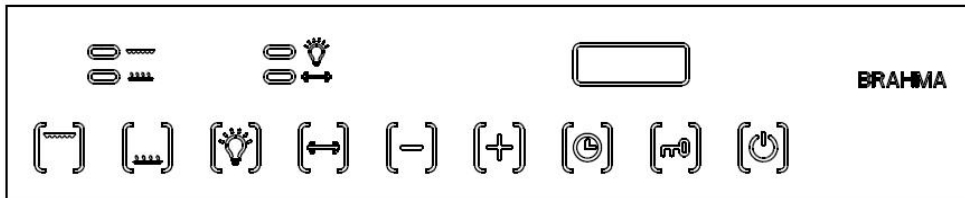


9. OPERATING CYCLE DIAGRAM (WITH ACTIVATED OPTION Knn – LOCKOUT DUE TO FLAME SIMULATION)



OPTION Knn
(lockout due to extraneous light)

10. OPERATION



10.1. Stand-by mode

After the DPC1F device has been energized, it performs a short self-diagnostics and touch keyboard calibration procedure (all displays and LEDs remain turned on for a few seconds). At the end of this procedure the display is totally turned off. In this mode it is possible to switch the device on by pressing the ON/OFF key only.

10.2. Device turning on

To switch the DPC1F device on, keep the ON/OFF key pressed for at least 2 seconds. The DPC1F device will switch on and grill state, oven state, lamp state and roaster state displays are off, indicating that corresponding loads are in off state. The temperature display will indicate the setpoint temperature equal to 100 °C.

10.3. Timeout activation standby

If the device has been turned on by pressing the ON / OFF key and are grill, roaster and internal light are in off state, the device after 60 seconds of inactivity, will enter in standby mode (low power) and will only display the daily clock.

10.4. Gas oven turning on

To turn on the gas oven, press OVEN key on the control panel. The key should be pressed continuously for at least 1 second. As soon as the burner turns on, the oven state display is active (oven is switched on) and the setpoint temperature will be 100 °C (temperature display).

If the oven timer is not programmed, the burner will automatically turn off after 4 hours of continuous operation.

WARNING: if the grill was turned on before turning on the gas burner, the grill will be automatically turned off before switching on the burner.

10.5. Oven temperature adjusting

When gas oven is active, to increase the cooking temperature press the +T key; conversely, to decrease the desired temperature, press the button -T. The temperature can be varied in increments or decrements of 10 °C. To obtain a continuous variation of the temperature, simply keep pressed the +T or -T key. The temperature can be set from + 100 °C to + 250 °C.

If the oven has reached the setpoint temperature, the degree symbol on the temperature display will be permanently on, or if the oven has not reached the setpoint temperature, the degree symbol on the temperature display will blink.

10.6. Gas oven turning off

To turn gas oven burner off, press OVEN key for a short time.

10.7. Power off the device

To turn off of the device, just press the ON / OFF button, so the device DPC1F will go into standby condition.

10.8. Programming the switch-off time of the gas oven

The DPC1F device enables to set up a specific time, after which the oven turns off automatically. To set up the timer programming of, press the PT key. The time display will show the word "Time"; by pressing the -T or +T keys, the word "Time" disappears and the indication 0.00 is displayed.

The blinking digit on the left side of the dot indicates the hours, the one on the right side refers to the minutes. Press the +T or -T keys to increase or decrease the number of operating hours from 0 to 9. By keeping the + or - keys pressed, the hour number changes continuously.

To specify the number of minutes, press the PT key again. The digits on the right side of the separator dot will start blinking. To set up the minutes, proceed as described for the hours.

During the time programming, the current setting can be reset at any time by pressing the +T and -T keys simultaneously. A time equal to zero disables the burner timer. To confirm the time appearing on the display, press the PT key. Now the indicators displays GRILL STATE or OVEN STATE will blink to confirm the timer is active.

Pressing the PT key enables to go back to the timer programming mode in order to display the remaining turn-off time or to modify current settings. If no key is pressed for more than 10 seconds in the programming stage, the setting procedure is interrupted automatically and the main display is restored. Any ongoing setting procedures in the selected burner are lost.

The timer can be programmed both with the oven off and with the oven on, and time counting starts immediately after the set up time has been confirmed. At the end of the time counting, the oven is turned off and at the same time a sequence of sound impulses is emitted.

If the user turns off the oven, the related timer will be disabled.

10.9. Clock adjustment

Further to a power supply cut-off, the time displayed by the inside clock of the DPC1F device will have to be set up. To adjust the clock, press the PT and KL keys simultaneously for at least 3 seconds with oven in off condition.

The blinking digit on the left side of the dot indicates the hours, the one on the right side indicates the minutes. Pressing the +T or -T keys enables to increase or decrease the hours, while keeping the +T or -T keys pressed makes the hour number change continuously.

To adjust the minutes, press the PT key again. The digits on the right side of the separator dot will start blinking; to change the minutes, proceed as described for the hours. Pressing the PT key again enables to save the set up time.

10.10. Burner reset from lockout

If the oven is in lockout status, the temperature display shows the message "FT0A". Reset from lockout can be performed by pressing the OVEN and KL keys simultaneously and continuously for at least 2 sec. At the end of the lockout procedure the oven will be ready for a new start-up and the OVEN STATE display will show 0 level.

N.B: if the reset procedure is repeated for 5 consecutive times in a 15-minute period, the device will display Ft06 and will not accept any further reset request for the next 15 minutes.

10.11. Keyboard lock

It is activated by pressing the KL key for at least 2 seconds. All oven settings will remain unchanged.

The keyboard lock status is signalled by the message "Lock" on the temperature display, alternating with the setpoint temperature. During the keyboard lock status, the burner levels or the timer settings cannot be changed any more, but it is possible to turn off the oven by pressing the ON/OFF key.

It is not possible to reset the oven in lockout condition while the keyboard lock is enabled. It is therefore necessary to unlock the keyboard before carrying out the burner reset procedure.

10.12. Keyboard unlock

The keyboard can be unlocked by pressing the KL and LAMP keys for at least 2 sec.

10.13. Procedure for regulating the minimum capacity level of the gas oven

This procedure allows to the technician to change the default minimum capacity level to adapt each the burner to the features of the gas supply to which the oven is connected to.

The procedure starts by pressing the keys marked +T , -T and KL for 3 seconds while burner and grill are not operating.

The starting of the procedure is signaled on the display of the timer trough the word "MIN". Now the burner turns on at minimum level and it is possible to increase or decrease the capacity level by pressing the +T or -T keys.

During the flow rate regulation of a capacity level, the OVEN STATE display shows "-" indication if the minimum set corresponds with the factory setting, and the indication will change in "∩" or "∪" in flashing mode, indicating a flow rate respectively higher or lower than the default.

To confirm the desired capacity it is necessary to press the button marked PT. The capacity level is stored in the memory of the device and used during the normal use of the oven.

10.14. Gas fuel type selection

The gas oven can be configured for LPG or natural gas operation. To activate the gas fuel type selection procedure, the oven should be turned on but the gas burner and grill must be in off state.

Now the operator just needs to press the +T, -T and PT keys together for at least 3 seconds. The beginning of the gas fuel type selection procedure is signalled by the symbols "Met" or "Gpl" appearing on the timer displays depending on the currently used configuration. The requested setting can be selected by pressing the +T and -T keys. To terminate the procedure, the operator should press the PT key.

The activation of this function causes the cancellation of any previously programmed burner turn-off times.

10.15. Display testing procedure

It is possible to constantly turning on all displays by simultaneously pressing the keys GRILL and OVEN for 1 second within a 5-second interval after the device has been energized. This is useful to check that all of the displays work correctly and aligned to the glass serigraphic. It is not possible to start this procedure more than 5 seconds after switching on. If the procedure is started, the keyboard of the device is disabled therefore to exit from the procedure it is necessary to unplug the device from the electricity supply.

10.16. Grill turning on / off

To turn on / off the grill, simply press the corresponding GRILL button. When the grill is turned on, the STATE GRILL display is turned on.

If the OVEN timer is not programmed, the grill will turn off automatically after 4 hours of continuous operation.

WARNING: If the gas burner was active before turning on the grill, the gas burner is automatically switched off before turning on the grill.

If the grill is on, the standby mode is not activated (low consumption) after 60 seconds of keyboard inactivity.

10.17. Roaster turning on / off

To turn on / off the roaster, simply press the corresponding ROASTER button when the device was turned on with the ON / OFF button (it's not possible turning on the roaster during standby mode). When the roaster is turned on, the roaster led turns on. If the roaster is on, the standby mode is not activated (low consumption) after 60 seconds of keyboard inactivity.

10.18. Internal light turning on / off and standby timeout activation

To turn on / off the light inside the oven, simply press the corresponding LAMP button when the device was turned on with the ON / OFF button (it's not possible turning on the light during standby mode).

If the internal light is on, the standby mode is not activated (low consumption) after 60 seconds of keyboard inactivity.

10.19. Probe temperature display

To visualize on the timer display the temperature detected by the probe inside the oven, press simultaneously the keys -T, +T, for 2 seconds.

An eventual error message "t cA" corresponds to open circuit probe, while the "t cc" error corresponds to short circuit probe. In these two cases, it's not possible to turn on the burner.

10.20. Electronic self-diagnostics

Electronic boards perform a continuous check of their own status. Should any hardware problems or internal failures occur which may jeopardize the end user's safety, the device will go to a "safe" condition where the solenoid valves are de-energized and a code indicating the type of failure appears on the display.

Displayed error	Type of anomaly	Possible cause	Possible solution
b	One burner in lockout status	No gas supply	Restore the gas supply and then reset the burners from lockout
		The ionization electrode needs to be cleaned or is not in contact with the flame	Clean the electrode or adjust its position and then reset the burners from lockout
		Device not connected to earth	Check the wiring and then reset the burners from lockout
F	Extraneous light / flame detection circuit anomaly on a single burner	Ionization electrode incorrect wiring	Check the wiring
		Circuit failure	Replace the device
Ft00	Main valve control circuit anomaly	Circuit failure	Replace the device
Ft01	Reference voltage circuit anomaly	Circuit failure	Replace the device
Ft02	Watchdog circuit anomaly	Circuit failure	Replace the device
Ft03	Microcontroller port anomaly	Circuit failure	Replace the device
Ft04	EEPROM anomaly	Circuit failure	Replace the device
Ft05	Valve driving circuit anomaly	Circuit failure	Replace the device
FtA5	Driving anomaly on valve A	Valve A incorrect wiring	Cut off the power supply, check valve A wiring and then restore the power supply
FtB5	Driving anomaly on valve B	Valve B incorrect wiring	Cut off the power supply, check valve B wiring and then restore the power supply
FtC5	Driving anomaly on valve C	Valve C incorrect wiring	Cut off the power supply, check valve C wiring and then restore the power supply
FtF5	Driving anomaly on valve F	Valve F incorrect wiring	Cut off the power supply, check valve F wiring and then restore the power supply
Ft06	Max. limit of 5 resets in 15 minutes exceeded	The burner reset procedure has been carried out more than 5 times in 15 minutes	Wait 15 minutes and then reset the burners from lockout
Ft08	Power supply circuit anomaly	Circuit failure	Replace the device
Ft09	Generic anomaly	The power supply to the device has been cut off further to another type of failure previously occurred	Reset the burners from lockout
	Resonator anomaly	Circuit failure	Replace the device
Ft0A	All burners in lockout status	No gas supply	Restore the gas supply and then reset the burners from lockout
		The ionization electrodes need to be cleaned or are not in contact with the flame	Clean the electrodes or adjust their position and then reset the burners from lockout
		Device not connected to earth	Check the wiring and then reset the burners from lockout
		Gas leakage from a valve causing the unwanted ignition of a second burner during the ignition of the first one. The flame on in the second burner for more than 10 seconds causes this type of anomaly.	Replace the faulty valve
Ft0C	Control logic communication errors	Circuit failure	Replace the device
Ft0E	Keyboard control error	A mechanical deformation may have jeopardized the keyboard good positioning on the glass surface	Wait a few seconds for the keyboard recalibration; if the error persists, cut off and then restore the power supply; if the error still persists, replace the device
Ft1E	Keyboard hardware error	Circuit failure	Make sure that the keyboard card is correctly inserted into the connector. If yes, replace the device
Ft2E	Keyboard hardware error	Circuit failure	Make sure that the keyboard card is correctly inserted into the connector. If yes, replace the device
Ft0t	Communication error with loads device module	Circuit failure or incorrect wiring in the communication bus	Check the wiring or replace the device

11. WIRING DIAGRAM

