I D R O ENERGIA ITALIA

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QUICK INSTALLATION

QUICK INSTALLATION Art Top 450

Presentation

This manual describes in detail how to make the connections and settings in relation to the functions you want to enable.

Key to abbreviations

TA	room thermostat
TC	water temperature read by the probe in the boiler
T_pompa	temperature setting pump
T_caldaia	boiler temperature setting
T_ev	solenoid temperature setting
T AG	frost thermostat
T IS	safety thermostat
T EM	thermostat emergency
OUT_POMPA	pump output
OUT_ fan	output fan
OUT_ cochlea	Release auger
X	indifferent, whatever the state does not affect the final result

Legend alarms

ASA	Water sensor alarm	you receive the written notice *ASA* + sound;
ASR	Return water sensor alarm	you receive the written *ASR* + beep (if enabled);
	Temperature Alarm Security	TSI reached, activates the pump even if the TA is open;
		TEM reached you view the *ALL* written alternating the water temperature + beep;
ACT	Alarm à activities (accidental shutdown)	you receive the written *ACT* and everything stops, turn off and on to restart the unit
TAG	Antifreeze	activates the circulator at a temperature below 4 ° C
S_P	Sensor pellet	

Programs

There are 3 main programs of operation to be selected in Parameter 6 *BP6* Tour

    a.   *BP6 PRG 0*   program provides the mode of operation à Wood and Pellet.

    b.   *BP6 PRG 1*   Program 1 includes the operating mode à Wood and Pellet and Automatic without using spark ignition or hair dryer.

    c.   *BP6 PRG 2*   Program 2 provides for the mode of operation à Wood and Pellet and Automatic with spark ignition or hair dryer.

PRG BP6 0 Program

You select the mode of operation using the MODE button, it displays the *LEG* written for *PEL* and wood pellet fuel, or any other trite.

Mode Wood

the controller behaves as a simple control unit for activating only the circulator fireplace at the set temperature

You can turn the fan enabling it hanging in the *FLE* in *BP1* .

With the fan enabled the circulator is controlled only by the temperature of the water, also by the room thermostat. The fan remains on until the boiler temperature is reached provided that the TA is closed.

In mode *0 FLE* wood with *BP1* you can have it **spit** out, see the section on for more details.

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TABLE 1

Row N.		condition	TA	Out_pompa	Condition 2	Out_ventola
1	BP1 FLE 0	TC> = T_pompa	x	1		0
2	BP1 FLE 0	TC <**T_pompa**	x	0		0
3	BP1 FLE 1	TC> = T_pompa	1	1	TC> = T_caldaia	0
4	BP1 FLE 1	TC <**T_pompa**	1	0	TC <T_caldaia	1
5	BP1 FLE 1	TC> = T_pompa	0	0	TC> = T_caldaia	0
6	BP1 FLE 1	TC <**T_pompa**	0	0	TC <T_caldaia	0

Mode Pellets

In pellet mode activates the outputs of the fan and auger. They are subject to the temperature of water by the thermostat

T_caldaia and ambient temperature by contact TA

TABLE 2

n.riga	condition	TA	Out_pompa	Condition 2	Out_ventola	Out_coclea
1	TC> = T_pompa	1	1	TC> = T_caldaia	0	0
2	TC <**T_pompa**	1	0	TC <T_caldaia	1	1
3	TC> = T_pompa	0	0	TC> = T_caldaia	0	0
4	TC <**T_pompa**	0	0	TC <T_caldaia	0	0

Ventilation

The regulation of ventilation occurs through the *ventilation knob,* the fan is connected to terminal FAN and parameters is defined ventola1. The adjustment range is from 0, the fan stops at 50, the fan at 100%, to tighten the adjustment range should be adjusted to limit the maxi and min accessing hangings BP3 F1H and BP3 F1L.

Enabling ventola2

You can use the output OUT5 to control a second fan, to enable this feature you must set the parameter

BP1 OU5 to 10. The adjustment range can be determined by acting on the parameters BP3 F2H and BP3 F2L.

To change the ventilation to ventola2 ventilation must turn the knob until you get the beep beep of the unit and within one second press the MODE button, at this point appears for a moment before the written VE2 and then the adjustment value. If during the adjustment you repeatedly press the mode button you have the continuous passage from VE2 to VE1 and vice versa.

Power supply (auger)

The controller allows you to control the flow of fuel through direct implementation with single-phase motor with an inverter for 220 volts or 220 volts three-phase motor driver. In the first case the engine is operated in a cyclic manner by altering the timing of work and rest, then we talk about the drive pulse / pause. In the second case the motor runs continuously but at variable speed. The description of the hanging BP1 OU3 auger drive down the rules:

TABLE 3

BP1 OU3 0	Release auger control inverter output terminal OUT3 used as the source for the inverter
BP1 OU3 1	output relay screw on the knob adjusts the break working time is determined by the parameter BP4 TC0
BP1 OU3 2	output relay screw on the knob adjusts the work the pause time is set by the parameter BP4 TC0

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NB. For a better understanding please refer also to the section connections.

In pellet operation are also active integrated functions for **dynamic cleaning** of the brazier, **coals regeneration,** and **control activities** for the detection of failure or accidental shutdown. Refer to the sections dedicated for more details.

Pellet Sensor

If the sensor input pellet is open, meaning that the fuel is exhausted, you do not have the option of switching from wood and the other shows the message S_P. If you are working to end the fuel pellets and appears the word NO alternating PEL and everything stops until it is done refueling.

Rotisserie function

In order to have output "Rotisserie" you must set the output OUT4 or OUT5 to a value of $BP1 \; OUH \; 8$ or $BP1 \; OU5 \; 8$. Moreover, there should be excluded the operation of the fan during the burning mode $BP1 \; FLE \; 0$.Turning on or off with the pressing the MODE button for 1 second;

Clean Dynamics

when the boiler is in operation for some time, some ash deposits can affect the combustion by reducing the yield, and then periodically gets activate the fan for a few seconds at high power to remove or at least reduce these deposits in the brazier. Some parameters related to dynamic cleaning are described below:

TABLE 4

$BP1 \; OUH \; 1$	Activation of output OUT 4 during dynamic cleaning
$BP1 \; OU5 \; 1$	Activation OUT 5 during dynamic cleaning
$BP4$ ipd	Interval between cleaning cycles in minutes
$BP4$ dpd	cleaning cycles duration in seconds
$BP5 \; F1P$	1 power fan during cleaning dynamics
$BP5 \; F2P$	2 Power fan during cleaning dynamics

Regeneration embers

is enabled when the boiler stops because it has reached the set temperature by the boiler thermostat or why not stop by open surgery TA (thermostat). Remain idle for many minutes I can turn off the coals, so to prevent this from happening you leave at regular intervals for a set time, the cochlea, and possibly the fan, adding new fuel in the grate. Some parameters related to the regeneration coals are described below:

TABLE 5

$BP4$ irb	Range regeneration embers, each unit is set to 30 minutes
$BP4$ trb	Cyclical life or regeneration embers in seconds
$BP5 \; F1R$	1 fan power during regeneration embers
$BP5 \; F2R$	2 fan power during regeneration embers
$BP5 \; INR$	Inverter regulation during regeneration embers

$BP6$ **program** $PRG \; 1$

You select the mode of operation using the MODE button, it displays the LEG written for wood, pellet PEL or any other fuel AUT chopped and combined modality for wood / pellet.

We omit the descriptions for the methods and wood pellets as previously described.

Are presented in this section concerning the management capabilities combined wood / pellet defined as the $AUTO$ mode.

AUT mode "no spark"

Following the selection of the control mode, $AUTO$ mode performs the wood until detects the presence of fire, then when the wood runs out there is a change to automatic mode pellet in a definitive manner, so that a subsequent wood loading, you must manually reset the AUT mode.

How is the recognition of the presence of fire in the logic of the unit there is a timer that resets always active whenever the temperature rises one degree, until there is fire temperature increases and decreases depending on the status of the pump and amount of wood present, when the fuel runs out, the timer is not reset and move forward until you reach the parameter $BP6$ PAP, this condition starts **automatically switch to pellets.**

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BP6 **program** *PRG 2*

You select the mode of operation using the MODE button, it displays the *LEG* written for wood, pellet *PEL* or any other fuel *AUT* chopped and combined modality for wood / pellet.

We omit the descriptions for the methods and wood pellets as previously described.

Are presented in this section concerning the management capabilities combined wood / pellet defined as the *AUTO* mode with automatic ignition and burning of the pellets.

AUT mode "with electric igniter"

The description of this method is described schematically for ease of understanding:

a.   Check water temperature to determine the presence fire in the boiler (continuous assessment of the time *BP6 PAP*, for more details see the section: ***How is the recognition of the presence of fire*** in the description of the program 1)

a1) fire is not detected is running b);

a2) fire detected is running c);

b.   Turn on **ignition of the pellet through the glow plug** to serve as a trigger to 'ignition of wood, detected the ignition performs c);

c.   Performs mode until it is burning à detects the presence of fire, then when the wood runs out to switches)

d.   Switching to operating mode à pellet with activating the glow plug handled automatically;

e.   The operating status of the final pellet is why a subsequent loading of wood must be reset to *AUT*;

How is the 'spark* ignition of the pellet *by: power-management come into play several parameters to adjust the timing of the various stages leading power of the chopped material (pellets);

1.   the mode selection à *AUT* activates the 'dedicated output function plug (*BP1 OU4 6* or *BP1 OU5 6)* for the time set by parameter *BP 6 TPR* **preheating time** expressed in seconds, the stage door the display of the written *PRE*;

2.   after the preheating time you start the **phase of the ignition** where the electrode is maintained, and the cochlea mantien times or speed dial à established by the Food, ventilation is established by *BP* vestments *6 FA1* 1 for the fan and *BP 6 FA2* for the fan 2. Duration of the ignition phase is determined by the parameter *BP 6 TAC* expressed in minutes.

During this phase, the display reads *ACC*.

3.   spent the time you start the ignition **phase of the stabilization** where the glow plug is switched off, the auger keeps timing or speed dial à established by the Food, ventilation is established by *BP* vestments *6 FA1* 1 for the fan and *BP 6 FA2* for the fan 2. Duration of the ignition phase is determined by the parameter *BP 6 TST* in minutes.

During this phase is kept displaying the written *ACC*.

4.   after the stabilization time of the glow plug is switched off and the burning continues as normal mode à pellets.

Ancillary Functions

Output alarm signal

You can have external signaling of the alarm status of the control unit enabling the output out4 or out5 for this purpose by setting the parameters *BP1 OU4 0* or *BP1 OU5 0*.

Output loader

The output loader allows to start a secondary auger for filling the hopper whenever the sensor detects exhaustion of the fuel pellet. After the exit loader is active, it remains in this state for the time set by hanging *BP4* TL0, each unit corresponds to a set time of 10 seconds. You can enable output out4 or out5 to do this by setting the parameters *BP1 OU4 6* or *BP1 OU5 6*.

Input / output water level sensor

Some systems require automatic boiler filling by level sensor that activates a solenoid valve accordingly to 220 volts, you can enable this function outputs out4 or out5, enabling parameters *BP1 OU4 9* or *BP1 OU5 9*.

Enabling this function involves the use of a water level sensor (sensor specifications to be agreed, no product in the catalog) to be connected to the input terminals COM and S3.

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Functions related to the thermostat

The input terminal of the thermostat TA has the main task of controlling the pump function of the temperature of the air in homes and water temperature in the boiler. This function may be associated with other related to the management of the state of activity of the boiler, the following table describes these functions and their vestments control:

TABLE 6

BP2 CTA 0	No additional feature enabled the TA
BP2 CTA 1	With TA open the boiler works in relation to the temperature set by the hanging BP2 HE
BP2 CTA 2	With TA open the boiler door stop
	2 fan power during regeneration embers
HE BP2	Ta opened the boiler goes to sleep when the water temperature reaches the value ⁺ IS only available if **T_pompa** BP2 CTA = 1

NOTE: Setting this parameter to 1 CTA you have the possibility to maintain the boiler to a temperature which allows an immediate start of the circulator in the moment of closure of the TA with a considerable saving of fuel due to the lower heat losses produced in maintaining the water in the boiler at a lower temperature.

Parameter Programming

To facilitate access to the desired parameter map data has been divided into 6 groups, each group
define the parameters BP1 bench. . 6 in each bank are interested in selecting the parameter by means of written identification,
eg.: VTE is for setting Thermostat T AND V lettro good tube.

CAUTION: The procedure to follow to access the programming is intended for technical personnel.

1. Power cycle the unit;
2. in the first 5 seconds, press the **mode** button 5 times;
3. followed by 3 beeps, the written PAR for 1 second and then BP1;
4. At this point **the pump** by turning the **knob** you can choose ò BP1 to BP6;
5. s tabilito the counter parameters to which you want to access, press the **mode** button;
6. at this point, always with the **rotary pump** you select the parameter itself and with the **knob boiler** setting value;
7. to change a parameter in a different bank must return to step 4) by pressing the **power** button;
8. to store the data as soon as the impostat it takes about ten seconds, and the momentary appearance of the writing END.

Map parameters

TABLE 1 PARAMETERS			CONFIGURATIONS				
parameter code	Minimum limit	Maximum limit	option	**default**	unit	function	Details
ID_	0	1	0	**0**		0 = master	core identity
			1			1 = slave	
PRE	0	1	0	**0**		0 = TA and TIMER_PROG UNIT	ENABLE REMOTE CONNECTION
			1			1 = TA and TIMER_PROG PANEL	
ou3	0	2	0	**1**		Release auger control inverter	out PWM control enables and activates the mini relay, the relay out3 fixed for inverter Power Management
			1			output relay screw on the knob adjusts the break	direct output relay screw
			2			output relay screw on the knob adjusts the time on	direct output relay screw

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OU4	0	9	0	**2**		function in alarm	
			1			function in dynamic cleaning	
			2			function with state thermostat circulator on	
			3			function and output enable recirculation	
			4			with thermostat valve function was on "tev"	
			5			function with fan on	
			6			output spark	
			7			function loader	
			8			outlet grill	only wood-burning mode without spark PRG = 0
			9			water level sensor input on S3	

ou5	0	10	0	**10**		function in alarm	
			1			function in dynamic cleaning	
			2			function with state thermostat circulator on	
			3			function and output enable recirculation	
			4			with thermostat valve function was on "tev"	
			5			function with fan on	
			6			output spark	
			7			function loader	
			8			outlet grill	only wood with $FLE\ 0$
			9			water level sensor input on S3	
			10			output fan 2	

Fle	0	1		**0**		Fan operating a wood 0 = no 1 = yes	If Fle = 1 WOOD and opens the TA, it also stops the pump

TABLE 2 PARAMETERS   TEMPERATURES

parameter code	Minimum limit	Maximum limit	option	default	unit	function	Details
and v	30	80		**50**	° C	temperature thermostat valve surgery	
tsi	70	100		**85**	° C	active outputs for safety	Delta intervention to 2 degrees
tall	70	100		**95**	° C	active alarm state	Delta intervention to 2 degrees
dev	1	40		**2**	° C	Delta IV thermostat	
dci	1	40		**2**	° C	delta thermostat circulator	
dca	1	40		**2**	° C	delta boiler thermostat	
CTA	0	2		**1**		boiler control to open TA	
			0			no control, boiler operates only in relation to the boiler thermostat	
			1			TA open the boiler works in relation to the following parameter STA	
			2			TA to open the boiler is always in stop	
is	1	10		**2**	° C	stop boiler thermostat open temp = STA + pump	only available if CTA = 1

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parameter code	Minimum limit	Maximum limit	option	default	unit	function	Details
dri	1	10		2	° C	differential recirculation	
tri	30	60		35	° C	temperature recirculation intervention	

TABLE 3 PARAMETERS — SETTING LIMITS

parameter code	Minimum limit	Maximum limit	option	default	unit	function	Details
cih	30	90		70	° C	limit circulator high	
cil	30	90		40	° C	low limit circulator	
cah	30	90		80	° C	boiler high limit	
cal	30	90		50	° C	boiler low limit	
F1H	0	50		50		upper limit ventola1	
F1L	0	50		0		lower limit ventola1	
F2H	0	50		50		upper limit ventola2	
F2L	0	50		0		lower limit ventola2	
coh	0	200		60	sec	high limit screw	
with	0	200		0	sec	low limit screw	
inh	0	50		50	%	limit inverter high	
inl	0	50		0	%	lower limit inverter	

TABLE 4 PARAMETERS — TIMING

parameter code	Minimum limit	Maximum limit	option	default	unit	function	Details
tco	0	250		3	sec	break or work time in seconds	controls the work if OU3 = 1 break if check it OU3 = 2
irb	1 = 30 minutes	20 = 10 hours		3	val * 30min	regeneration interval embers	
trb	1	60		15	sec	regeneration time embers	
Tsa	0	60		30	min	time control accidental switching control 0 = not enabled	if the time set with circ off the temperature increases, the block operates
ipd	1	60		5	min	cleaning interval dynamics	
dpd	0	60		10	sec	Dynamic cleaning duration 0 = no PD	
TLO	1	250		6	10 sec *	output enable time loader 6 * 10 = 60 = one minute	establishes an appropriate time to replenish the hopper of the boiler through feed screw secondary
ral	5	250		30	sec	Alarm activation delay	

TABLE 5 PARAMETERS — POWERS

parameter code	Minimum limit	Maximum limit	option	default	unit	function	Details
F1s	0	50		0	%	ventola1in power stand-by	For standby means the state of boiler temperature is reached and then the operator is stopped, except regeneration cycles embers
F2s	0	50		0	&	ventola2in power stand-by	
F1R	0	50		3	%	ventola1 coals in power regeneration	
F2R	0	50		3	%	ventola2 coals in power regeneration	
inr	0	50		50	%	setting inverter regeneration embers	
F1P	0	50		50	%	ventola1 power in PD	
F2P	0	50		50	%	ventola2 power in PD	

TABLE 6 PARAMETERS — AUTOMATIC SWITCH

parameter code	Minimum limit	Maximum limit	option	default	unit	function	Details

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PRG	0	2	**0**		0 = Standard 1 = 2 lp = lp with spark plug	
PAP	1	60	**15**	min	automatic switching to pellet	Further descriptions in note 1
tpr	10	240	**120**	sec	Time preheating	
tac	1	30	**5**	min	Time ignition	
tst	0	30	**5**	min	Time stabilization	
FA1	0	50	**20**	%	Fan 1 power phase switching	the fan 2 only if enabled
FA2	2	50	**20**	%	fan power 2-phase power	

Wiring Diagram

SENSOR COMB. IF YOU DO NOT USE THE SENSOR BRIDGE BETWEEN 0V AND IN4

SONDA ACQUA

TIME PROGRAMMER if you are not using the bridge to put

FLOW na If not used, leave unplugged

THERMOSTAT If you are not using the bridge to put

coelte PELLET SENSOR
1 BROWN +12VOLT
2 BLUE   MASSA
3 BLACK   OUTPUT

1 Black -   0Volt potentiometer
2 White -   setting 0-5 (10) volt
3 Red   -   5 (10) volt potentiometer
4 Yellow -   contact na run
5 Green -   run common contact

UPPER CIRCUIT SEEN FROM BELOW

ANNOTATION

INVERTER

RUN
CONTROL
0/10 VOLT

Configurable triac output, (SEE TABLE BENCH parameters OU5 1) CAN 'BE LEFT OPEN

Configurable output relay (SEE TABLE BENCH parameters OU4 1) CAN 'BE LEFT OPEN

THERMOSTAT OR OTHER EMERGENCY SAFETY DEVICE NC

COCLEE OUTPUT 8 AMPERE MAX OR POWER INVERTER

FAN

PUMP

MAINS 220 VOLT

SOLENOID HEATING

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