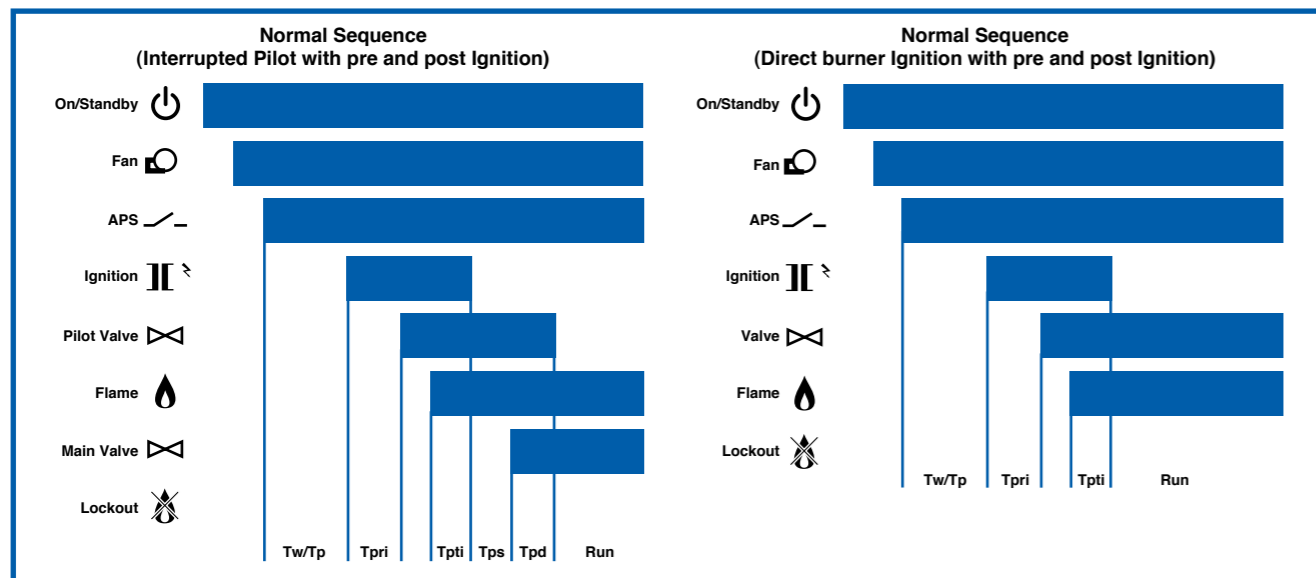
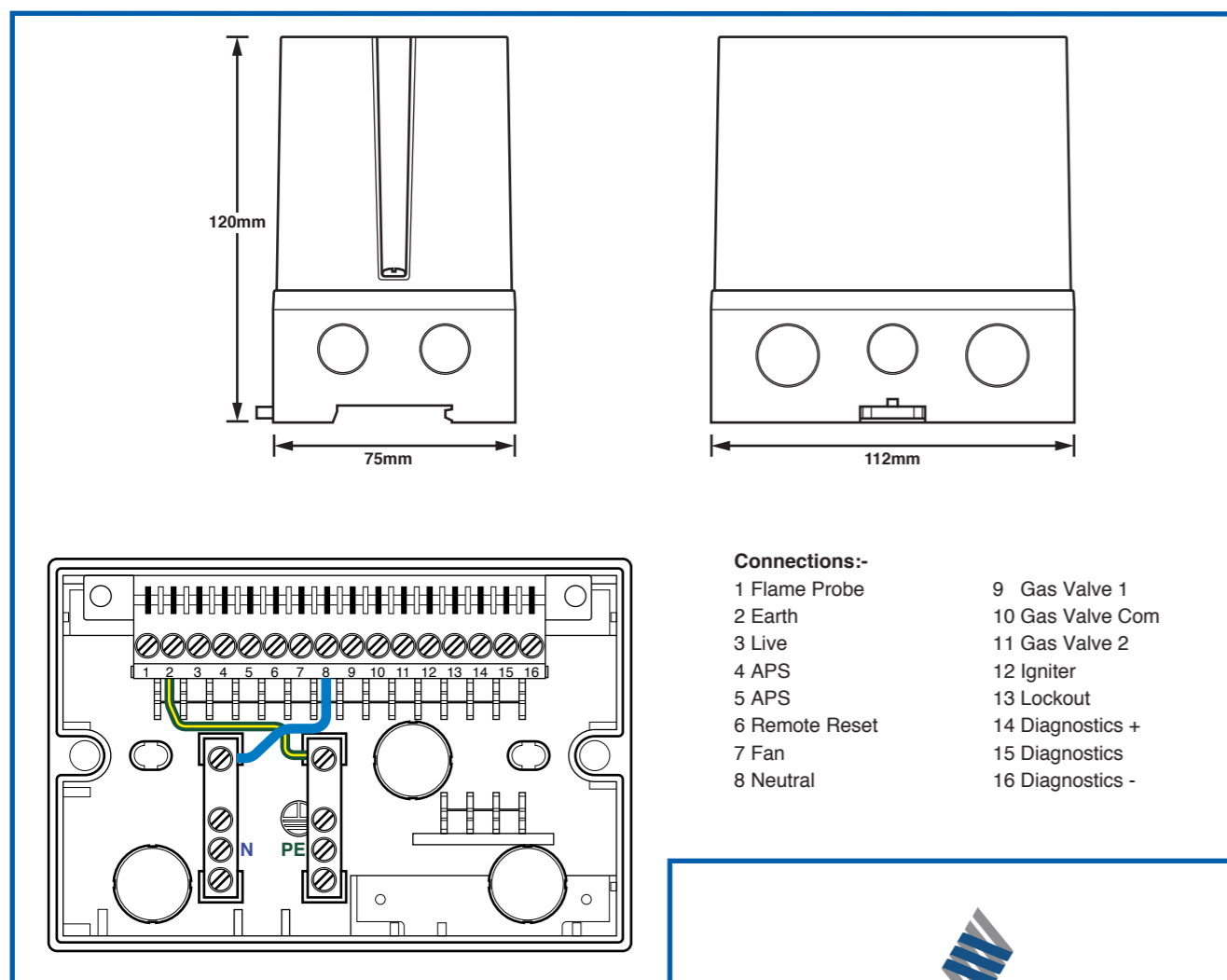


SYSTEM OPERATION SEQUENCE (CONTINUED)



MECHANICAL DETAILS



Pactrol Controls Limited reserve the right to change the specification of this product range without notice.

EMERSON
Climate Technologies

CSI SERIES

A RANGE OF ADVANCED FULL SEQUENCE CONTROLLERS FOR INDUSTRIAL APPLICATIONS

Certified to EN298:2003

TYPICAL APPLICATIONS

The CSI range of controls is designed to meet the exacting standards of all industrial users, where safety, performance, reliability, and robust construction are paramount. Pactrol's proven record in safe and reliable digital design has been combined with a comprehensive array of options. Packaged in a sturdy housing, the control units are suitable for a wide range of industrial applications including:

- Large ovens
- Industrial process dryers
- Kilns
- Furnaces

KEY FEATURES

- Suitable for Continuous and non-Continuous Operation
- Self Checking Flame Detector
- Non-phase sensitive
- Intermittent Pilot, Interrupted Pilot or Direct Burner Ignition
- Multiple Ignition Attempts
- Digital Timing
- Atmospheric or Fanned (with or without air proving)
- Air Proving (single pole contact)
- Volatile or Non-volatile Lockout
- Alarm Output
- Remote Reset (reset via switched neutral allowing several units to be connected to a common reset line)
- Front panel status (on/standby, lockout, flame)
- Front Panel On/Standby selector
- Front panel Reset
- IP44 housing
- -15 to +70°C operating range
- Separate base with wiring terminals
- CE Approval

OPTIONS

- UV flame sensor
- USB Diagnostics interface
- Integral spark generator
- Other options available on request

HOUSING

The CSI is supplied in a two part housing, the base is detachable and includes all the connections needed to wire the control to the appliance. The housing dimensions are H 120mm X L 112mm X W 75mm. The housing offers IP44 protection when installed with suitable cable glands/seals.

The base includes four M12 (Pg9) and three M16 (Pg11) gland knockouts around the edge and three cable entry knockouts in the bottom. The control can be mounted using an integral DIN rail clip or using two screws through knockout holes in the base. Slotted mounting holes with allow easy replacement of existing controls (70...80mm centres).



PACTROL
CONTROLS

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PACTROL
CONTROLS

TECHNICAL SPECIFICATION

Supply	Voltage Options	• 230V~ +10%/-15% • 120V~ +10%/-15%
	Frequency	50/60Hz
	Consumption	< 1W (Standby)
	Fuse	4A T HRC (ceramic slow-blow)
Ambient	Temperature	-15°C...+70°C,
	Humidity	0...95%RH (Condensing when installed with suitable cable glands)
Housing	Dimensions	H 120mm, L = 115mm, W = 75mm
	IP rating	IP44 (when installed with suitable cable glands)
	Mounting	Flush or DIN clip
Ignition	External	• Switched live 0.5A output
	Internal Spark Sequence	• >25kV, >8mJ (30pF load) Pre and post ignition sequence timers
Flame Detector	Probe Type	Flame ionisation (measurement range 0...10µA)
	Sensitivity options	• 0.4µA • 2µA • 4µA The flame detector is self checking (suitable for continuous operation)
Burner	Valving	• Pilot (intermittent) • Pilot (Interrupted) • Direct (1 stage)
	Type	• Atmospheric • Fanned (with APS) • Fanned (no APS)
Sequence	Ignition attempts	Programmable (up to 5)
	Timings	All timings are factory programmable
Loads	Total Load	230V~ 4A
	Fan	230V~ 2A
	Gas valves	Pilot = 230V~ 2A, Main = 230V~ 2A
	Lockout	230V~ 1A
Lockout	Type	• Non-volatile • Volatile
	Reset options	• Local pushbutton • Remote (switched N, max cable length 100m)
Standard features	Diagnostics	Local (via front panel) Service/repair diagnostic port (access to base required)
	Optional features	USB Computer interface (option kit) UV sensor kit

SYSTEM OPERATION SEQUENCE (NORMAL IGNITION)

Intermittent Pilot

With power applied to the control, switch from standby to on via the pushbutton on the front pane (the indicator turns from red to green). Note that the control latches the on/standby status and, in the event of loss of power, restoring the supply will return the control to the last state.

The APS (on fanned models) is safe-start tested before the fan is energised. Air flow is then proved via the APS contact before the combustion chamber is purged (Tp). At the end of the purge time the igniter is energised for the pre-ignition time (Tpi). The pilot valve is opened after the Tpi has expired and a trial for ignition is made. On successful ignition the igniter remains energised for the post ignition time (Tpti). After the post ignition period a pilot stabilisation timer (Tps) delays the opening the main valve to ensure the pilot flame is stable.

During the ignition sequence several flame guard checks take place to ensure that the flame status is correct.

Interrupted Pilot

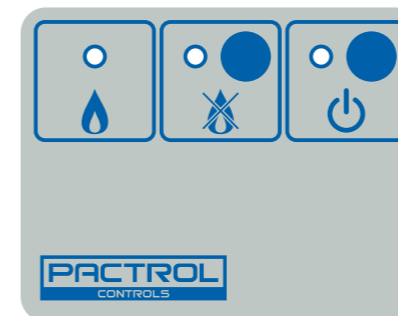
The sequence is as for the intermittent pilot until the post ignition timer (Tps) has finished, at this point the main valve opens and a Pilot delay timer Tpd period is entered, after which the pilot valve is turned off.

Direct Burner Ignition

For direct burner ignition pilot valve output is used for the main valve. The main valve output is not present.

Atmospheric Burners

The sequence is as shown but the fan and APS are not fitted and there is a delay between switching on and the sequence starting (Tw).



Fascia

The fascia has three status LEDs (Power, Lockout and flame) and two pushbuttons (On/standby and Lockout Reset).

Pressing the Power pushbutton will toggle between ON and STANDBY. In standby mode the Power indicator is red, in ON mode the indicator is green.

If the control is in lockout then the Lockout indicator will illuminate red. Lockout can be reset either via the pushbutton or via the remote reset terminal (switched neutral).

A flame indicator (blue) flashes during ignition and illuminates when the burner lights.

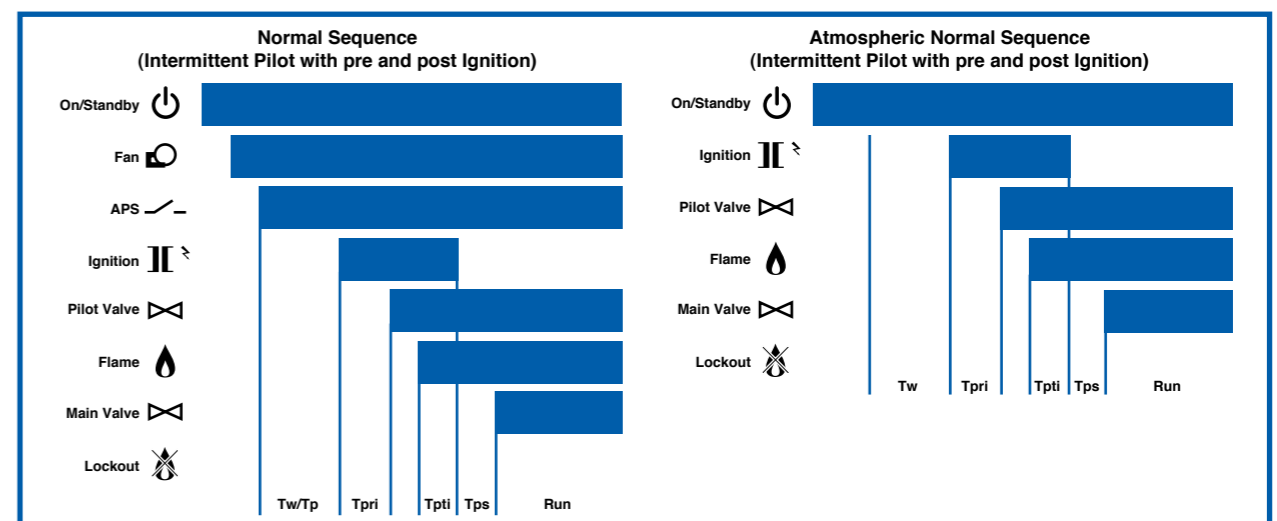
Ignition Options

A pre-ignition timer allows the igniter to be switched on before opening the gas valve, a post-ignition timer keeps the igniter on after a flame is detected to allow the flame to stabilise.

Internal Spark Igniter

An optional internal spark igniter is available

SYSTEM OPERATION SEQUENCE



CONTINUOUS DEVELOPMENT

New models are continuously under development. For further information visit our Website www.pactrol.com or contact the sales team sales@pactrol.com

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