● FLAME SAFEGUARD SYSTEM

Burner Controller ┃ BC-R20

BC-R20 Series burner controllers are combustion safety controllers specifically designed for batch operation (systems which start and stop at least once within 24 hours).

They ensure safety by automatically controlling the ignition, combustion monitoring, and fuel shutoff of oil and gas burners with on-off control. They are also equipped with a 7-segment display that can be used in maintenance, a trial operation mode that is convenient for trial operation and adjustment, and other features.

Additionally, the BC-R25 is equipped with host communications (RS-485) and Smart Loader Package functions, allowing troubleshooting and more detailed observation of status.

Specifications

Application		Batch-operated combustion systems burning gas, oil, or gas/oil mixture				
Compatible flame detector		AUD100/110/120 series UV sensor, flame rod				
Sequence	Sequence timing	Prepurge	Pilot ignition (Main ignition)*1	Pilot only (Hi solenoid valve ignition standby)*1	Main ignition (Hi solenoid valve ignition)*1	Postpurge
		35 s, 45 s, 3 min (select by model number)	4.5±0.5 s	8.5±1 s	4.5±0.5 s	20±2 s
	Flame response	AUD100/110/120 series UV sensor		Flame rod		
		2 s max (nominal 1.5 s) (when flame voltage is 3 V)		2 s max (nominal 1.5 s) (when flame voltage is 2 V)		
	Reset timing	1 s or longer (main unit reset switch or contact reset input)*2				
	Warning detection timing	False flame	Airflow switch error 1	Airflow switch error 2	Interlock error	POC (shutoff valve closure check) error
		5 s	1 s	180 s	1 s	3 s
	Ignition failure	Lockout				
	Flameout	Lockout				
	Airflow switch monitoring	Yes (checks for switch error #1, error #2)				
	Ignition failure	Lockout				
	Flameout	Lockout				
Electrical specifications	Rated power supply	100 Vac or 200 Vac (depending on the model), 50 Hz or 60 Hz				
	Allowable power supply voltage	85 to 110 % of rated power supply				
	Voltage resistance	1500 Vac for 1 min, or 1800 Vac for 1 s Between each terminal and ground (the DIN rail clamp), except for combustion sensor connection terminals (terminals 14, 15)				
	Insulation resistance	At least 50 MΩ, 500 Vdc megger Between each terminal and ground (the DIN rail clamp), except for combustion sensor connection terminals (terminals 14, 15)				
	Contact rating	Blower motor (electromagnetic breaker)	Ignition transformer	Pilot valve (main valve Lo solenoid valve)*1	Main valve (main valve Hi solenoid valve)*1	Warning
		100 VA	300 VA	200 VA	200 VA	75 VA
	Monitor outputs	4, maximum 30 mA each				
	Combustion detection level	AUD100/110/120 series UV sensor		Flame rod		
		When ignition is detected: 1.5 to 4.5 Vdc When detected as extinguished: 0.2 to 0.6 Vdc		When ignition is detected: 1.5 to 4.5 Vdc When detected as extinguished: 0.0 to 0.2 Vdc		
	Flame voltage output	Recommended flame voltage: Must be stable at 2 Vdc or above Flame voltage output range: 0.2 to 4.5 Vdc		Recommended flame voltage: Must be stable at 2 Vdc or above Flame voltage output range: 0.0 to 4.5 Vdc		
	Input	Startup, lockout interlock, contact reset, airflow switch, POC (shutoff valve proof of closure) * Each input is a non-voltage contact input, with allowable contact resistance up to 500 Ω				
	Lifespan	10 years when used for eight hours per day, or 100,000 start/stop cycles (at 25 °C, constant temperature, rated voltage)				
Host communication specifications	Communications standard	RS-485				
	Transmission route	3-wire system				
	Transmission speed	4,800, 9,600, 19,200 bps				
	Transmission distance	Max. 500 m				
	Communication method	Semi-duplex				
	Synchronization method	Asynchronous				
	Data format	8 data bits, 1 stop bit, even parity, odd parity 8 data bits, 2 stop bits, even parity, odd parity				
	Device address	1 to 32				
General specifications	Protective structure	IP40 (with a sideboard (81447515-001) attached to the sub-base (BC-R05)) IP10 (sub-base (BC-R05) only)				
	Excess voltage category	II				
	Pollution degree	PD2				
	Case color	Black				
	Case material	Denatured PPE resin (UL94-V0 PTI materials group IIIa)				
	Structure	8 sub-base and a main unit				
	Mounted orientation	Vertical or horizontal However, in horizontal mounting the 7-segment display must face directly upward (DIN rail mounting or direct mounting through base screw holes)				
	Standards	JIS C 9730-2-5: 2010 (Automatic Electrical Controls For Household And Similar Use - Part 2-5: Particular Requirements For Automatic Electrical Burner Control Systems) Compliant with JIS C 9730-1: 2010 (Automatic Electrical Controls For Household And Similar Use - Part 1: General Requirements)				
	Weight	Approximately 600 g (incl. sub-base)				

*1. Item in ( ) is for the case of direct ignition.
*2. In the case of postpurge when there is a warning, no reset input is accepted until postpurge is complete.
   Also, reset input is not accepted if no warning has occurred.

Burner Controller | BC-R20

Model No. configuration

(Note: The dedicated sub-base and sideboard are not provided with the BC-R20 series controller. Order them separately.)

Direct ignition type   Ex.: BC-R20B1J0500

Basic model No.	Communication functions	Combustion sensor	Power supply	Function code	Timing code	Additional functions	Description
BC-R2							Burner Controller
	0						No communications functions
	5						Host communications (RS-485)/Smart Loader Package function
		B					Flame rod
		C					UV sensor
			1				100 Vac
			2				200 Vac
				J			Direct ignition type
					050		Prepurge time 35 s
					086		Prepurge time 45 s
					158		Prepurge time 3 min
						0	None
						D	With inspection record (with data)

Interrupted pilot type   Ex.: BC-R20C1G0500

Basic model No.	Communication functions	Combustion sensor	Power supply	Function code	Timing code	Additional functions	Description
BC-R2							Burner Controller
	0						No communications functions
	5						Host communications (RS-485)/Smart Loader Package function
	*1	C					UV sensor
			1				100 Vac
			2				200 Vac
				G			interrupted pilot type
					050		Prepurge time 35 s
					158		Prepurge time 3 min
						0	None
						D	With inspection record (with data)

Optional parts (sold separately)

*1. Flame rod cannot be selected with the interrupted pilot type.

Name	Model No.	Notes
Dedicated sub-base for BC-R	BC-R05A100	Required for all products in the BC-R20 series
Connector for front wiring	81447514-001	Weidmueller model number: BL3.5/11F, compatible wire: 0.2-1.5 mm² (AWG28-14)
Connector for front wiring (For right-side wiring)	81447514-002	Weidmueller model number: BL3.5/11/270F, compatible wire: 0.2-1.5 mm² (AWG28-14)
Sideboards	81447515-001	Contains two. Not included in the sub-base.

| Name	Model No.	Notes
Smart Loader Package (no cable)	SLP-BCRJ71	Compatible with BC-R25 (with communications functions)
USB loader cable	81441177-001	
Analog flame meter	FSP136A100	
Jack cover	81447519-001	(Included with the controller.)
Front connector cover	81447531-001	Packaged with mounting screws (Included with the controller.)

External Dimensions

BC-R20 Burner Controller   **Sub-base BC-R05A100 (sold separately)**   (Unit: mm)
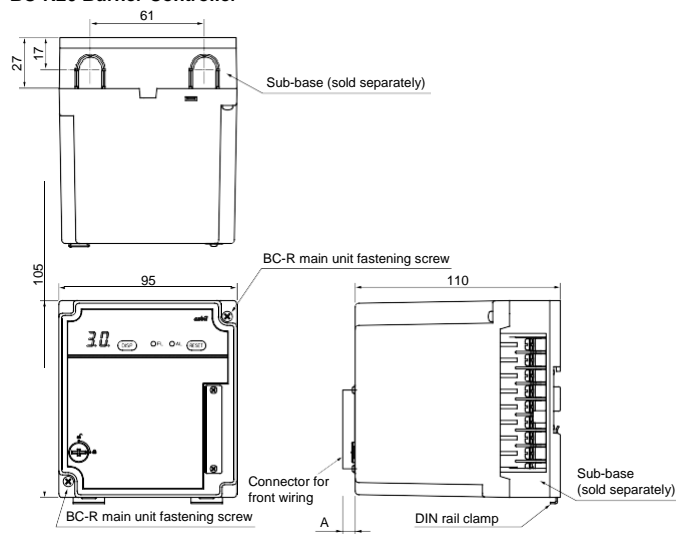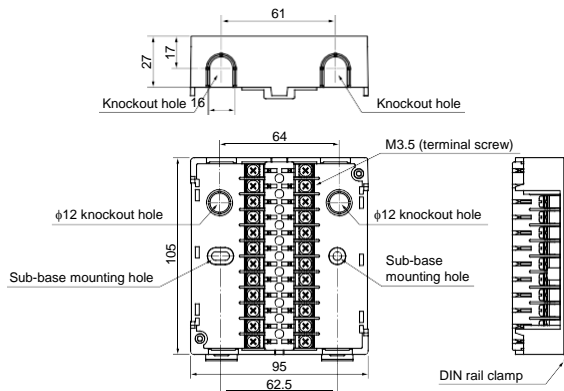
Model No.	A
81447514-001	10.6
81447514-002	14.6