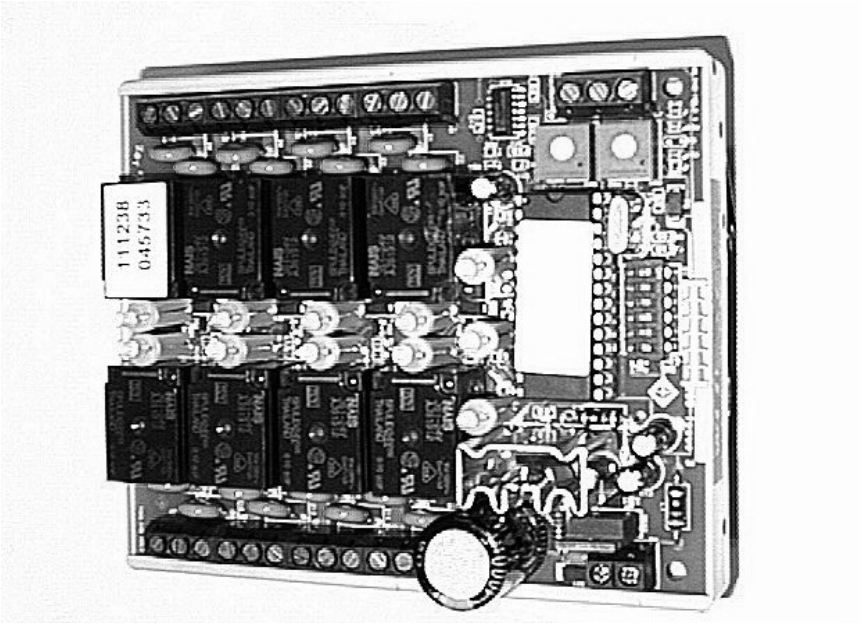
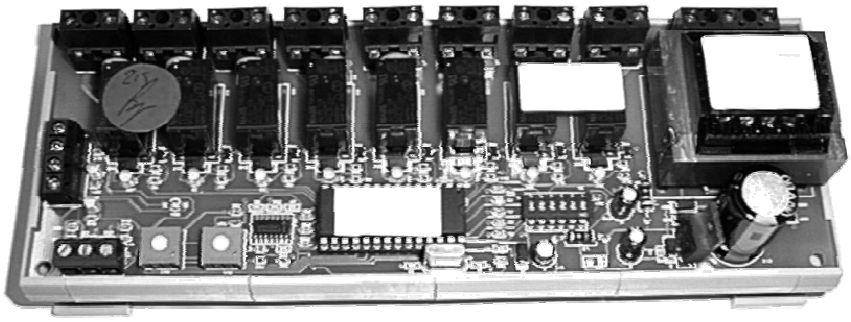
Honeywell

191180 / 191238

STEP CONTROLLER 24V & 240V

INSTALLATION / USER GUIDE





EN1B-0031UK07 R0604

PRODUCT PART NUMBER

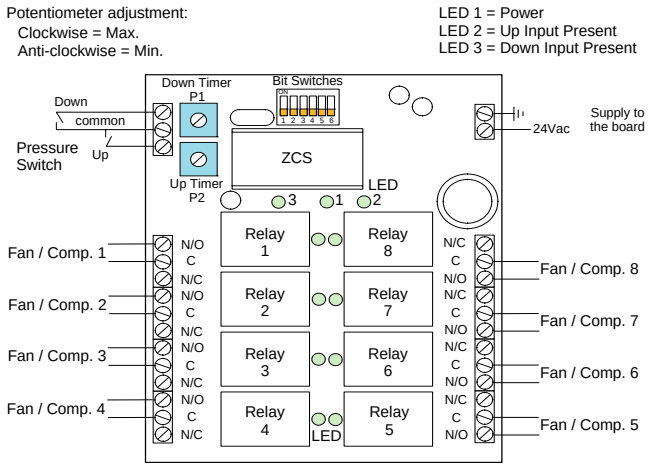
24V Combined Step Controller **191238-ZCS**

FEATURES

- Provides 8 volts-free normally-open relay contacts for simple step control of up to 8 fans or compressor stages
- Sequential or cyclic switching sequence
- Easily set switching delays
- Six-minute interval between successive starts of any compressor stage
- Built-in exercise routines for fault-finding

Bit Switch Settings (Fig.1) (Shaded area = Switch position)				
		Off	**On**	
Select maximum number of steps	**1**			See table Below
	2			
	3			
Normal mode	**4**			Cycle mode
Compressor mode	**5**			Fans mode
Normal Operation	**6**			Test mode

Maximum number of steps	Bit switch 1	Bit switch 2	Bit switch 3
1	OFF	OFF	OFF
2	ON	OFF	OFF
3	OFF	ON	OFF
4	ON	ON	OFF
5	OFF	OFF	ON
6	ON	OFF	ON
7	OFF	ON	ON
8	ON	ON	ON



COMMISSIONING

1. Check all electrical connections (Fig. 2)
2. Make sure that the controller software is ZCS
3. Set the Bit Switches (Fig. 1)
4. Switch the controller ON
5. If you choose normal mode:
   The first relay is switched on when there is a demand increase (pressure switch UP), and will be the last to be switched off when demand decreases (pressure switch DOWN)
   If you choose cycle mode:
   The first relay is switched on when there is a demand increase (pressure switch UP), and will be the first to be switched off when demand decreases (pressure switch DOWN)
6. Set the two potentiometers to put a minimum time limit (i.e. full anti-clockwise), between steps going up and going down.
   - In Fan mode, pot range = 0 to 180 seconds
   - In Compressor mode, pot range 20 to 180 seconds

   Note: In Compressor mode, same relay cannot activate twice in six minutes.
7. Faults ?…See 'Fault Finding'

FAULT FINDING

To exercise the step controller:

- Switch OFF power to the controller
- Set Bit Switches 1 to 5 OFF
- Set Bit Switch 6 ON – for test mode
- Switch ON power to the controller – Power LED 1 illuminates
- By setting up the combinations of bit switch positions, shown in the table you can energise each relay
- Switch OFF power to the controller
- If you are not going to check the timers, switch all Bit Switches OFF now

Bit Switch						Relay / LED ON
1	2	3	4	5	6	
ON	OFF	OFF	OFF	OFF	ON	1
ON	ON	OFF	OFF	OFF	ON	2
ON	ON	ON	OFF	OFF	ON	3
ON	ON	ON	ON	OFF	ON	4
ON	ON	ON	ON	ON	ON	5
OFF	ON	ON	ON	ON	ON	6
OFF	OFF	ON	ON	ON	ON	7
OFF	OFF	OFF	ON	ON	ON	8
OFF	OFF	OFF	OFF	ON	ON	ALL
OFF	OFF	OFF	OFF	OFF	ON	NONE

TO CHECK THE TIMERS

Make sure Bit Switch 6 is ON

- Switch OFF power to the controller
- Switch ON power to the controller – Power LED illuminates
- Turn Timer 1 (DOWN potentiometer) slowly until Relay LEDs 1, 2, 3 and 4 illuminate. This should occur around the centre of the pot range.
  Return the pot to the 20 seconds setting. Relay LEDs 1, 2, 3 and 4 will extinguish.
- Turn Timer 2 (UP potentiometer) slowly until Relay LEDs 5, 6, 7 and 8 illuminate. This should occur around the centre of the pot range.
  Return the pot to the 20 seconds setting. Relay LEDs 5, 6, 7 and 8 will extinguish.
- Switch OFF power to the controller
- After the test, remember to switch Bit Switch 6 OFF to return to normal operation.

PRODUCT PART NUMBER

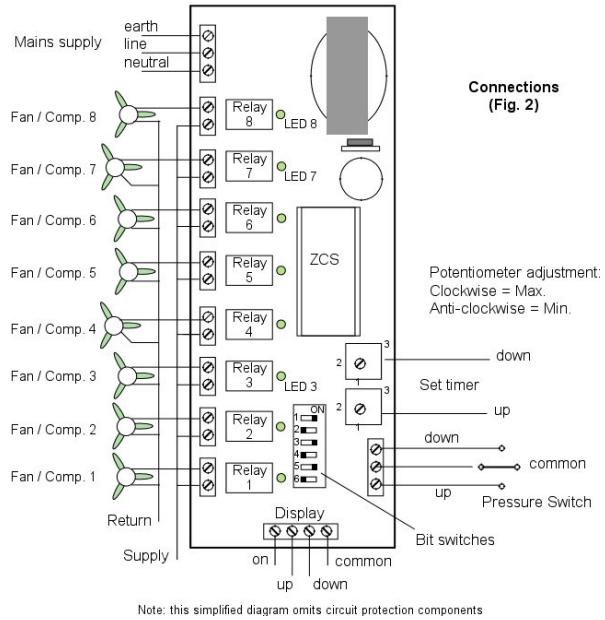
240V Combined Step Controller **191180-ZCS**

FEATURES

- Provides 8 volts-free normally-open relay contacts for simple step control of up to 8 fans or compressor stages
- Sequential or cyclic switching sequence
- Easily set switching delays
- Six-minute interval between successive starts of any compressor stage
- Built-in exercise routines for fault-finding

Bit Switch Settings (Fig.1) (Shaded area = Switch position)				
		Off	**On**	
Select maximum number of steps	**1**			See table Below
	2			
	3			
Normal mode	**4**			Cycle mode
Compressor mode	**5**			Fans mode
Normal Operation	**6**			Test mode

Maximum number of steps	Bit switch 1	Bit switch 2	Bit switch 3
1	OFF	OFF	OFF
2	ON	OFF	OFF
3	OFF	ON	OFF
4	ON	ON	OFF
5	OFF	OFF	ON
6	ON	OFF	ON
7	OFF	ON	ON
8	ON	ON	ON



Note: this simplified diagram omits circuit protection components

COMMISSIONING

1. Check all electrical connections (Fig. 2)
2. Make sure that the controller software is ZCS
3. Set the Bit Switches (Fig. 1)
4. Switch the controller ON
5. If you choose normal mode:
   The first relay is switched on when there is a demand increase (pressure switch UP), and will be the last to be switched off when demand decreases (pressure switch DOWN)
   If you choose cycle mode:
   The first relay is switched on when there is a demand increase (pressure switch UP), and will be the first to be switched off when demand decreases (pressure switch DOWN)
6. Set the two potentiometers to put a minimum time limit (i.e. full anti-clockwise), between steps going up and going down.
   - In Fan mode, pot range = 0 to 180 seconds
   - In Compressor mode, pot range 20 to 180 seconds

   Note: In Compressor mode, same relay cannot activate twice in six minutes.
7. Faults ?…See 'Fault Finding'

FAULT FINDING

To exercise the step controller:

- Switch OFF power to the controller
- Set Bit Switches 1 to 5 OFF
- Set Bit Switch 6 ON – for test mode
- Switch ON power to the controller – Power LED 1 illuminates
- By setting up the combinations of bit switch positions, shown in the table you can energise each relay
- Switch OFF power to the controller
- If you are not going to check the timers, switch all Bit Switches OFF now

Bit Switch						Relay / LED ON
1	2	3	4	5	6	
ON	OFF	OFF	OFF	OFF	ON	1
ON	ON	OFF	OFF	OFF	ON	2
ON	ON	ON	OFF	OFF	ON	3
ON	ON	ON	ON	OFF	ON	4
ON	ON	ON	ON	ON	ON	5
OFF	ON	ON	ON	ON	ON	6
OFF	OFF	ON	ON	ON	ON	7
OFF	OFF	OFF	ON	ON	ON	8
OFF	OFF	OFF	OFF	ON	ON	ALL
OFF	OFF	OFF	OFF	OFF	ON	NONE

TO CHECK THE TIMERS

Make sure Bit Switch 6 is ON

- Switch OFF power to the controller
- Switch ON power to the controller – Power LED illuminates
- Turn Timer 1 (DOWN potentiometer) slowly until Relay LEDs 1, 2, 3 and 4 illuminate. This should occur around the centre of the pot range.
  Return the pot to the 20 seconds setting. Relay LEDs 1, 2, 3 and 4 will extinguish.
- Turn Timer 2 (UP potentiometer) slowly until Relay LEDs 5, 6, 7 and 8 illuminate. This should occur around the centre of the pot range.
  Return the pot to the 20 seconds setting. Relay LEDs 5, 6, 7 and 8 will extinguish.
- Switch OFF power to the controller
- After the test, remember to switch Bit Switch 6 OFF to return to normal operation.

SPECIFICATION

	24V	240V
Product Type	Combined Step Controller for small to medium refrigeration applications	Combined Step Controller for small to medium refrigeration applications
Power Supply	24VAC	198-264VAC, 50Hz, 4VA
Relay Contacts	SPNO volts-free 240VAC, 10A resistive, 2A deductive	SPNO volts-free 24VAC, 5A resistive, 2A deductive
Input	External volts-free SPCO, common earth	External volts-free SPCO, common earth
Step Interval	Adjustable: Fans – 0 to 3 seconds Compressors – 20 seconds to 3 minutes	Adjustable: Fans – 0 to 3 seconds Compressors – 20 seconds to 3 minutes
Dimensions	112 mm x 93 mm x 30 mm	200 mm x 73 mm x 43 mm
Fixing	Four 4 mm holes @ 102 x 83 or DIN rail mounting	Four 4 mm holes @ 190 x 60
Reset	Controller resets (all output contacts open) when power is interrupted	Controller resets (all output contacts open) when power is interrupted

ASSOCIATED DOCUMENTS

EN0B-0022UK07 R0604 **Combined Step Controller Datasheet**

APPLICATIONS

- Industrial or commercial refrigeration packs and condensers.

ORDERING INFORMATION

191238-ZCS **Combined Step Controller 24V**

191180-ZCS **Combined Step Controller 240V**

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