



## Replacement Kits for Series 05-21, 05-24, and 05-32 Hot Surface Ignition Systems

Installation Instructions

Effective February 2008

### GENERAL INFORMATION

The Fenwal 35-65 series replacement part kits are designed to replace both 05-21, 05-24, and 05-32 series Hot Surface Ignition Controls. These replacement controls feature the same safety timings and operating sequence as the controls they are designed to replace.

REPLACEMENT KIT NUMBERS	REPLACEMENT CONTROL	OBSOLETE PART NUMBER
35-655800-003	35-655600-003	05-21222X-103 05-329002-053
35-655801-013	35-655605-013	05-246266-203 05-329003-053
35-655802-007	35-655600-007	05-21222X-107 05-329004-055

**CAUTION:** Both 24 VAC and 120 VAC are required for this system. Interrupt both supplies before proceeding.

### WIRING

Replacement of 05-32 or 35-65 controls should be wired in the same manner as the old control. Noting that TH on the 05-32 is renamed W on the 35-65. The MV2 wire, if present, should be connected to GND. Refer to the Fenwal 05-31/32 to 35-66 Conversion Guide for more information.

#### IMPORTANT: ADAPTOR CARD 05-080225-004

**DISCONTINUED** Replacement on units originally supplied with 05-21 and 05-24 controls was facilitated with adaptor card 05-080225-004 depicted in Figure 1 on Page 2. If the adaptor card is present and not damaged it may be used. This card plugs into the 9 pin edge connector and provides spade connections to the 35-65 as shown in Figure 1 on Page 2.

If the adaptor card is NOT present, wires must be cut from the edge connector and re-terminated with female spade terminals. Please note that the MV1 and GND wires use .187 inch (3/16in) spades and the remaining connections are .250 inch (1/4in) spades. This helps prevent miswiring of the gas valve.

**PLEASE REFER TO PAGE 2 - INSTRUCTIONS FOR 05-21 and 05-24 REPLACEMENT WITHOUT 05-080225-004 ADAPTER**

### REPAIRS

**WARNING:** The Kidde-Fenwal Series 35-65 Hot Surface Ignition Module is NON-REPAIRABLE. Any modification or repairs to this gas ignition module will invalidate Kidde-Fenwal's standard warranty as well as agency certification and MAY CREATE HAZARDOUS CONDITIONS THAT COULD RESULT IN PROPERTY DAMAGE, PERSONAL INJURY OR EVEN DEATH FROM FIRE, EXPLOSION AND/OR TOXIC GASES. Faulty units should be replaced with a new unit.

### PART NUMBERS

#### INITIAL CHECKOUT

1. Check Installation. Check position of the Hot Surface Element.
2. With the gas supply manually shut off, apply power to the appliance and cycle the thermostat above room temperature.
3. Insure that the Hot Surface Element glows during the 30 second heat-up period and trial-for-ignition time. For kit 35-655801-013 the ignitor will automatically recycle 3 times, before lockout.
4. Set the thermostat to the lowest setting.
5. Wait 5 seconds then manually turn on the gas supply and advance the thermostat above room temperature to recycle the system.
6. Check that ignition has been accomplished. The element  glow  will diminish once flame has been established. At this stage the control is sensing the presence of flame.
7. If the system ignites but fails to hold-in, check for proper grounding of the 24 VAC circuit to the burner.
8. While the system is operating, manually shut off the gas supply. The gas valve will de-energize immediately, and following a short delay, the element will be re-energized and glow brightly. The ignition control will recycle one time and lockout (three times for 35-655801-013).

#### TROUBLESHOOTING GUIDE

SYMPTOM	CAUSE/ RECOMMENDED ACTIONS
1. Dead	A. No 24 VAC input B. Check system wiring C. Check Thermostat, transformer, limits, circuit breakers, etc.
2. Hot surface element does not heat but unit cycles	A. No 120 VAC input B. Check system wiring C. Check for broken or cracked hot surface element
3. Hot surface element heats up but no voltage at gas valve during the TFI Period.	A. Check wiring between valve and module. B. Check MV1 output on ignition module.
4. Hot surface element heats, 24 VAC to gas valve, flame established but does not stay on.	A. Check system ground (24 VAC supply). B. Hot surface element improperly located. C. Check all wiring connections.
5. Hot surface element heats, 24 VAC to gas valve, but system fails to ignite.	A. Gas supply off. B. Check valve functions. C. Burner adjustment D. Hot surface element incorrectly located

TABLE 1					
Terminal	Terminal Designation			Terminal Type	
	05-21/ 05-24 Pin Number	05-21222X-103	35-655800-003 05-329002-053	05-21222X-103	35-655800-003 05-329002-053
		05-246266-203	35-655801-013 05-329003-053	05-246266-203	35-655801-013 05-329003-053
		05-21222X-107	35-655802-007 05-329004-055	05-21222X-107	35-655802-007 05-329004-055
+ AC Input	Pin 1	L1	L1	Nine-pin Edge	1/4 Q.C
Hot Surface Element	Pin 2	S1	S1	Nine-pin Edge	1/4 Q.C
Open	Pin 3				
Hot Surface Element	Pin 4	S2	S2 [FS/S2, 05-32]	Nine-pin Edge	1/4 Q.C
-AC Input	Pin 5	L2	L2	Nine-pin Edge	1/4 Q.C
Open	Pin 6	-			
Valve	Pin 7	Valve	MV1	Nine-pin Edge	3/16 Q.C
Power / Thermostat	Pin 8	Power	W [TH, 05-32]	Nine-pin Edge	1/4 Q.C
Ground	Pin 9	Ground	GND	Nine-pin Edge	3/16 Q.C
Ground (05-32 Only)			MV2 [05-32 Only]		Extra GND, 05-32 Only
NC (05-32 Only)			NC [05-32 Only]		Not Required

## INSTRUCTIONS FOR 05-21 and 05-24 REPLACEMENT WITHOUT 05-080225-004 ADAPTER

9. If all operation is normal, manually enable gas supply.

Converting from the 05-21, 05-24 & 05-32 to the 35-65 referenced in table 1 above requires the removal of the nine pin edge connector and installation of the designated quick connectors on the individual wires. The quick connectors need to be selected by the individual performing the conversion to match the wire size(s) used. Refer to the following:

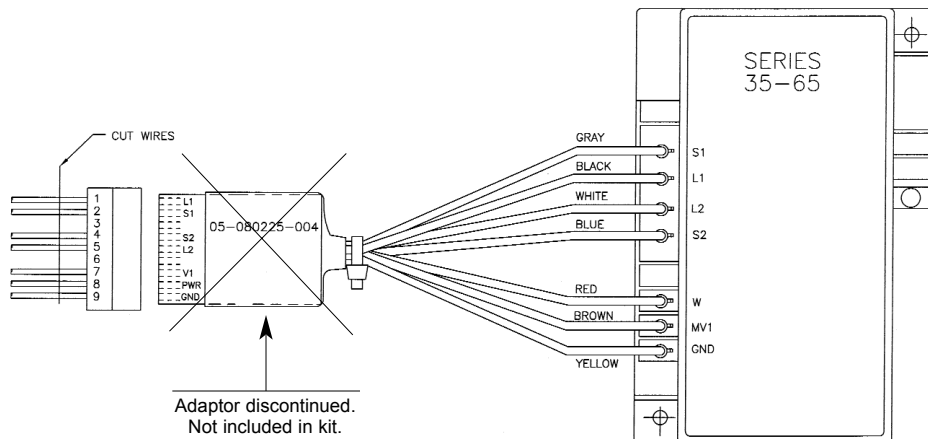
### Required Materials:

- Qty (5) 1/4" Female Quick Connect Terminals
- Qty (2) 3/16" Female Quick Connect Terminals
- Wire Cutter / Stripper
- Terminal Crimping Tool

### Procedure:

1. Before removing edge connector from ignition controller appropriately label all edge connector lead wires; L1, L2, S1, S2, Power, Valve and Ground.
2. Leaving a small amount of wire in the nine pin connector for identification purposes, cut all leads connected to the edge connector.
3. Strip typically 1/8 inch (use the strip length required by the terminal's manufacturer if different) of the insulation off all of the leads.
4. On the Valve and Ground Terminals insert and crimp a 3/16" quick connector on each lead.
5. On the L1, L2, S1, S2, and Power Terminals insert and crimp a 1/4" quick connector on each lead (5). Following table 1 install the connectors on the applicable 35-65 controller's terminals.

**FIGURE 1 - EDGE-CONNECT WIRING DIAGRAMS**

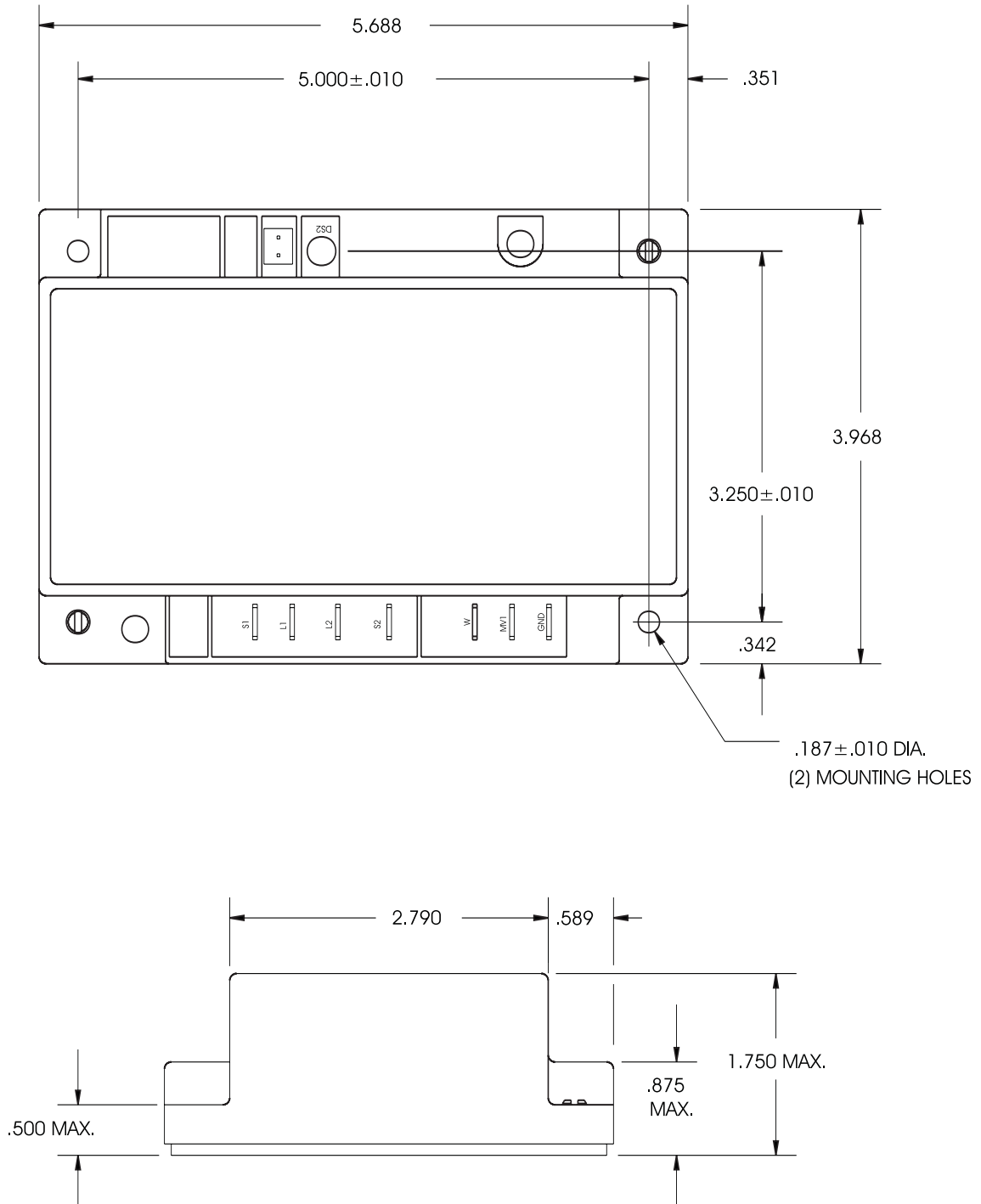


## MOUNTING

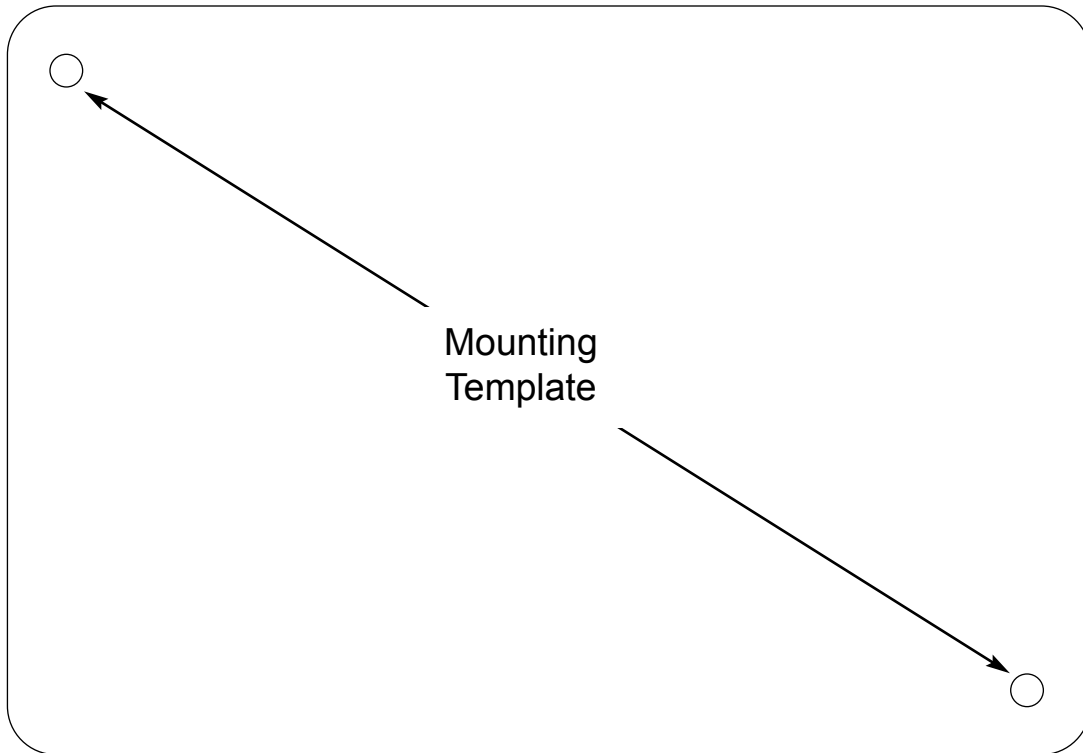
The Series 35-65 replacement control should be mounted in the same location as the old control for ease of wiring. However, it is not position sensitive and can be mounted

in any location using #8 hardware. See Figure 2 below for outline dimensions. See Figure 3 on Page 4 for control mounting template.

### FIGURE 2 - OUTLINE DIMENSIONS



**FIGURE 3 - MOUNTING TEMPLATE**



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These instructions do not purport to cover all the details or variations in the equipment described, nor do they provide for every possible contingency to be met in connection with installation, operation and maintenance. All specifications are subject to change without notice. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to KIDDE-FENWAL, Inc., Ashland, Massachusetts.