

# EFS explosionproof control stations

Fully assembled factory sealed devices for Group B applications

Cl. I, Div. 1 & 2, Groups B, C, D  
Cl. II, Div. 1, Groups E, F, G  
Cl. II, Div. 2, Groups F, G  
Cl. III  
NEMA 3, 7BCD, 9EFG

Explosionproof  
Dust-ignitionproof  
Raintight  
Wet Locations

4C

## Applications:

Factory sealed control stations are installed in a rigid metallic conduit system for surface mounting adjacent to, or remote from, equipment being controlled, and are used:

- In areas which are hazardous due to the presence of flammable vapors, gases or highly combustible dusts
- To prevent arcing of enclosed device from causing ignition of a specific hazardous atmosphere, or atmospheres, external to the enclosure
- In industrial areas such as chemical plants, oil and gas refineries, paint and varnish manufacturing plants, gasoline bulk loading terminals, grain elevators, grain processing industries, coal processing or handling areas, or metal handling or finishing areas
- In non-hazardous areas where sturdy, durable enclosures are required

Pushbutton control stations are used:

- In conjunction with magnetic starters or contactors for control of motors

Pilot lights are used:

- To visually indicate at a remote location that the desired function is being performed

## Features:

- Factory sealed devices have many distinct advantages:
  - Reduce installation problems
  - Eliminate external seals
  - Lower installation costs
  - Improve safety
- Small, compact enclosures with accurately ground flange on both body and cover for flamtight joint
- Mounting lugs and taper tapped hubs with integral bushings
- Large machine screws for fastening covers to bodies
- Lockout provisions on front operated pushbutton (marked "STOP" and "OFF") and selector switch covers
- Close tolerances in machining of wide, mating flanges and journalled shafts and bearings for front button operation, produces flamtightness of enclosure joints
- Dead end (EFS) or through feed (EFSC) hubs – 1/2" to 1" sizes
- When "STOP" is indicated, button is automatically red; when "START" is indicated, button is automatically green; otherwise, black buttons are standard

## Standard materials:

- Bodies and covers – Feraloy iron alloy or copper-free aluminum
- Operating shafts and shaft bushings – stainless steel
- Pushbutton guards – type 6/6 nylon

## Standard finishes:

- Feraloy iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – natural
- Type 6/6 nylon – black
- Stainless steel – natural



## Certifications and compliances:

### NEC/CEC:

- Class I, Divisions 1 & 2, Groups B, C, D
- Class II, Division 1, Groups E, F, G
- Class II, Division 2, Groups F, G
- Class III

### UL standard:

- UL1203

### CSA standard:

- C22.2 No. 30

### Environmental ratings:

- NEMA/EMAC 3, 7BCD, 9EFG
- -25°C to +40°C standard; -50°C to +60°C with optional suffix (see below)

## Options:

| Description                                                       | Suffix |
|-------------------------------------------------------------------|--------|
| • Bodies and covers – copper-free aluminum.....                   | SA     |
| • Extended temperature range (-50°C to +60°C).....                | XT     |
| Available on pushbuttons, pilot lights and selector switches only |        |

### Pushbuttons:

- Momentary red emergency "STOP" button.....**S111**  
*Front operated mushroom button, breaks normally closed contacts only*
- Lockout provision on front operated pushbutton cover.....**S153**  
*Standard on buttons marked "OFF" and "STOP"*
- Maintained red emergency "STOP" button with lockout.....**S769**  
*Front operated mushroom button breaks normally closed and makes normally open contacts (push to stop)*  
*Lockout is standard (will not fit with a pilot light if transformer is required)*

### Pilot lights:

- LED pilot lights in place of standard incandescent pilot lamps.. **LED**
- 24 VDC operation on pilot lights.....**S300**

### Three-position selector switches with modified operation:

- Momentary contact clockwise operation, spring return to center, maintained contact counterclockwise operation.....**S634**
- Momentary contact counterclockwise operation, spring return to center, maintained contact clockwise operation.....**S635**
- Spring return to center from left and right.....**S842**

## Accessories (ordered separately):

| Description                      | Cat. #     |
|----------------------------------|------------|
| • Stainless steel ID holder..... | DSD SID K1 |

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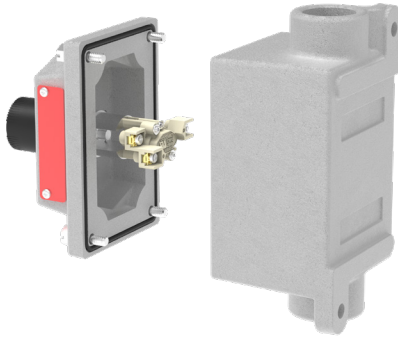
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## Methods of factory sealing:

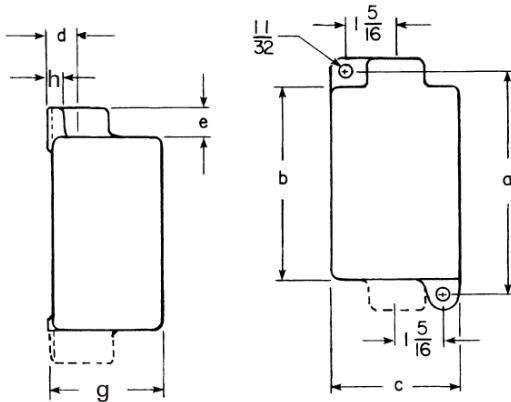
### EFS

Factory sealed EFS pilot light, pushbutton and selector switch control stations do not need external sealing<sup>A</sup>. Device contacts are factory sealed in explosionproof ESWP contact blocks. Small, compact enclosures have accurately ground wide flanges on both the body and cover for a flamtight joint.



## Dimensions (in inches):

### Back boxes

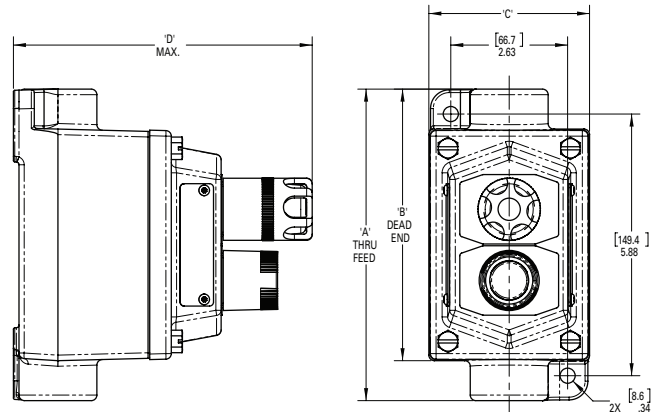


Typical body side view

Front view

| Control station type | a    | b    | c    | d    | e    | g    | h    |
|----------------------|------|------|------|------|------|------|------|
| EFS single-gang      | 5.88 | 5.03 | 3.44 | 1.00 | 0.94 | 2.47 | 0.47 |

### Control stations



| Control station type | A    | B    | C    | D max. |
|----------------------|------|------|------|--------|
| EFS single-gang      | 6.78 | 6.03 | 3.44 | 6.79   |

<sup>A</sup>For control stations with 1" hub size, external conduit seal required in Division 1, Group B applications within 5 feet (1.5 meters) of enclosure.

<sup>B</sup>Dimensions are approximate, not for construction purposes.

# EFS explosionproof control stations

Fully assembled factory sealed pushbutton stations

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## Pushbutton stations – front operated, 600 VAC heavy duty



**EFS2192**  
(standard black pushbutton)



**EFSC215**

## Ordering information<sup>Ⓐ</sup>:

| Number of buttons | 1                   | 2                    | 2                                     | 1                    | 1                       |
|-------------------|---------------------|----------------------|---------------------------------------|----------------------|-------------------------|
| Normal position   | 1 circuit universal | 2 circuits universal | 2 circuits <sup>Ⓑ</sup>               | 2 circuits universal | 2 circuits <sup>Ⓑ</sup> |
| Marking           | Specify             | Specify              | START-STOP unless otherwise specified | Specify              | Specify                 |
| Diagram           |                     |                      |                                       |                      |                         |

| Hub size            | Cat. #                | Cat. #                | Cat. #               | Cat. #                | Cat. #                |
|---------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|
| <b>Dead end</b>     |                       |                       |                      |                       |                       |
| 1/2"                | EFS1184 <sup>Ⓐ</sup>  |                       | EFS115 <sup>Ⓐ</sup>  |                       | EFS1155 <sup>Ⓐ</sup>  |
| 3/4"                | EFS2184 <sup>Ⓐ</sup>  | EFS2190 <sup>Ⓐ</sup>  | EFS215 <sup>Ⓐ</sup>  | EFS2192 <sup>Ⓐ</sup>  | EFS2155 <sup>Ⓐ</sup>  |
| 1"                  | EFS3184 <sup>Ⓐ</sup>  | EFS3190 <sup>Ⓐ</sup>  | EFS315 <sup>Ⓐ</sup>  | EFS3192 <sup>Ⓐ</sup>  | EFS3155 <sup>Ⓐ</sup>  |
| <b>Through feed</b> |                       |                       |                      |                       |                       |
| 1/2"                | EFSC1184 <sup>Ⓐ</sup> | EFSC1190 <sup>Ⓐ</sup> | EFSC115 <sup>Ⓐ</sup> | EFSC1192 <sup>Ⓐ</sup> | EFSC1155 <sup>Ⓐ</sup> |
| 3/4"                | EFSC2184 <sup>Ⓐ</sup> | EFSC2190 <sup>Ⓐ</sup> | EFSC215 <sup>Ⓐ</sup> | EFSC2192 <sup>Ⓐ</sup> | EFSC2155 <sup>Ⓐ</sup> |
| 1"                  | EFSC3184 <sup>Ⓐ</sup> | EFSC3190 <sup>Ⓐ</sup> | EFSC315 <sup>Ⓐ</sup> | EFSC3192 <sup>Ⓐ</sup> | EFSC3155 <sup>Ⓐ</sup> |

<sup>Ⓐ</sup>Specify indicating plate markings, if desired. Typical indicating plate markings are listed below:

|           |       |       |           |
|-----------|-------|-------|-----------|
| START     | OFF   | RESET | LIGHT ON  |
| STOP      | RUN   | TRIP  | HAND      |
| ON        | JOG   | TEST  | AUTOMATIC |
| EMERGENCY | OPEN  | DOWN  | RAISE     |
| FORWARD   | CLOSE | IN    | LOWER     |
| REVERSE   | UP    | OUT   |           |

## Options:

| Description                                                                                                  | Suffix      |
|--------------------------------------------------------------------------------------------------------------|-------------|
| Bodies and covers – copper-free aluminum.....                                                                | <b>SA</b>   |
| Extended temperature range (-50°C to +60°C).....                                                             | <b>XT</b>   |
| Momentary red emergency "STOP" button.....                                                                   | <b>S111</b> |
| <i>Front operated mushroom button, breaks normally closed contacts only</i>                                  |             |
| Lockout provision on front operated pushbutton cover.....                                                    | <b>S153</b> |
| <i>Standard on buttons marked "OFF" and "STOP"</i>                                                           |             |
| Maintained red emergency "STOP" button with lockout.....                                                     | <b>S769</b> |
| <i>Front operated mushroom button breaks normally closed and makes normally open contacts (push to stop)</i> |             |
| <i>Lockout is standard</i>                                                                                   |             |

<sup>Ⓐ</sup>For pushbuttons with 1" hub size, external conduit seal required in Division 1, Group B applications within 5 feet (1.5 meters) of enclosure.

<sup>Ⓑ</sup>Two universal contact blocks, must be wired as two circuits, with one normally open and one normally closed.

# EFS explosionproof control stations

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## Pilot lights – 110-600 VAC; 24V AC/DC (optional)

Pilot lights listed below are factory sealed and do not require external seals<sup>A</sup>.

Lamps are 6 watt, miniature bayonets, incandescent lamps for use on 110-125 volt circuits. LED pilot lights can be provided in place of standard incandescent lamps by adding suffix 'LED' after the color symbols.

Enclosures with single pilot covers **only** can be equipped with a transformer for each lamp for high voltages as shown.



EFS21524 J1



EFS21561 J1 J3

## Ordering information:

### Enclosure with single pilot light

| Hub size            | Cat. #      |
|---------------------|-------------|
| <b>Dead end</b>     |             |
| 1/2"                | EFS11524 ①  |
| 3/4"                | EFS21524 ①  |
| 1"                  | EFS31524 ①  |
| <b>Through feed</b> |             |
| 1/2"                | EFSC11524 ① |
| 3/4"                | EFSC21524 ① |
| 1"                  | EFSC31524 ① |

### Enclosure with double pilot lights

| Hub size            | Cat. #      |
|---------------------|-------------|
| <b>Dead end</b>     |             |
| 1/2"                | EFS11561 ①  |
| 3/4"                | EFS21561 ①  |
| 1"                  | EFS31561 ①  |
| <b>Through feed</b> |             |
| 1/2"                | EFSC11561 ① |
| 3/4"                | EFSC21561 ① |
| 1"                  | EFSC31561 ① |

#### ① Add color symbol for each pilot light

| Color | Symbol |
|-------|--------|
| Red   | J1     |
| Green | J3     |
| Amber | J6     |
| Clear | J10    |
| Blue  | J11    |

Example: EFS11561 with red and green lights is EFS11561 J1 J3.

## Options:

| Description                                                        | Suffix          |
|--------------------------------------------------------------------|-----------------|
| • Bodies and covers – copper-free aluminum.....                    | SA              |
| • Extended temperature range (-50°C to +60°C).....                 | XT              |
| • LED pilot lights in place of standard incandescent pilot lamps.. | LED             |
| • 24V AC/DC operation on pilot lights.....                         | S300            |
| • Pilot lights for circuit voltages up to 600V maximum.....        | See table below |
| Standard voltage range 110-125V                                    |                 |

## Transformers – voltages above 125:

| Nom. volts 50-60 Hz transformer | Primary voltage range | Suffix |
|---------------------------------|-----------------------|--------|
| 220/110                         | 220-240               | T2     |
| 440/110                         | 440-480               | T4     |
| 550/110                         | 550-600               | T5     |

<sup>A</sup> For pilot lights with 1" hub size, external conduit seal required in Division 1, Group B applications within 5 feet (1.5 meters) of enclosure.

# EFS explosionproof control stations

Fully assembled factory sealed selector switches

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## Selector switches – maintained contact, 600 VAC heavy duty

Furnished with pushbuttons, cam actuated by a maintained contact selector mechanism to operate in the sequences shown in the diagrams below.

Specify indicating plate markings. See table below listings.



EFS21274

### Ordering information<sup>A</sup>:

#### Single-gang

| Style                                        | Switch position |            |            | Enclosure with switch |                    |                        |
|----------------------------------------------|-----------------|------------|------------|-----------------------|--------------------|------------------------|
|                                              | Position 1      | Position 2 | Position 3 | Hub size              | Cat. #<br>Dead end | Cat. #<br>Through feed |
| Two-position,<br>two circuit                 | A1              |            |            | 1/2"                  | EFS11271 ①         | EFSC11271 ①            |
|                                              | A2              |            |            | 3/4"                  | EFS21271 ①         | EFSC21271 ①            |
|                                              |                 |            |            | 1"                    | EFS31271 ①         | EFSC31271 ①            |
| Two-position,<br>four circuit                | A1              |            |            | 1/2"                  | EFS11272 ①         | EFSC11272 ①            |
|                                              | A2              |            |            | 3/4"                  | EFS21272 ①         | EFSC21272 ①            |
|                                              | B1              |            |            | 1"                    | EFS31272 ①         | EFSC31272 ①            |
| Three-position,<br>two circuit <sup>B</sup>  | A1              |            |            | 1/2"                  | EFS11273 ①         | EFSC11273 ①            |
|                                              | A2              |            |            | 3/4"                  | EFS21273 ①         | EFSC21273 ①            |
|                                              |                 |            |            | 1"                    | EFS31273 ①         | EFSC31273 ①            |
| Three-position,<br>four circuit <sup>B</sup> | A1              |            |            | 1/2"                  | EFS11274 ①         | EFSC11274 ①            |
|                                              | A2              |            |            | 3/4"                  | EFS21274 ①         | EFSC21274 ①            |
|                                              | B1              |            |            | 1"                    | EFS31274 ①         | EFSC31274 ①            |
|                                              | B2              |            |            | 1/2"                  | EFS11275 ①         | EFSC11275 ①            |
|                                              | A1              |            |            | 3/4"                  | EFS21275 ①         | EFSC21275 ①            |
|                                              | A2              |            |            | 1"                    | EFS31275 ①         | EFSC31275 ①            |
|                                              | B1              |            |            | 1/2"                  | EFS11275 ①         | EFSC11275 ①            |
|                                              | A2              |            |            | 3/4"                  | EFS21275 ①         | EFSC21275 ①            |
|                                              | B2              |            |            | 1"                    | EFS31275 ①         | EFSC31275 ①            |

① Specify indicating plate markings, if desired. Typical indicating plate markings are listed below:

| Two-position          |                  |              |
|-----------------------|------------------|--------------|
| RUN, JOG              | FAST, SLOW       | IN, OUT      |
| HAND, AUTOMATIC       | OPEN, CLOSE      | RAISE, LOWER |
| FORWARD, REVERSE      | UP, DOWN         | START, STOP  |
|                       | ON, OFF          |              |
| Three-position        |                  |              |
| RUN, OFF, JOG         | 1, OFF, 2        |              |
| HAND, OFF, AUTOMATIC  | OPEN, OFF, CLOSE |              |
| FORWARD, OFF, REVERSE | UP, OFF, DOWN    |              |
| FAST, OFF, SLOW       |                  |              |

### Options:

| Description                                                                                                          | Suffix |
|----------------------------------------------------------------------------------------------------------------------|--------|
| Bodies and covers – copper-free aluminum.....                                                                        | SA     |
| Extended temperature range (-50°C to +60°C).....                                                                     | XT     |
| <b>Three-position selector switches with modified operation:</b>                                                     |        |
| • Momentary contact clockwise operation, spring return to center, maintained contact counterclockwise operation..... | S634   |
| • Momentary contact counterclockwise operation, spring return to center, maintained contact clockwise operation..... | S635   |
| • Spring return to center from left and right.....                                                                   | S842   |

<sup>A</sup> For selector switches with 1" hub size, external conduit seal required in Division 1, Group B applications within 5 feet (1.5 meters) of enclosure.

<sup>B</sup> Suffixes S634, S635 and S842 may be used with these catalog numbers.