

## Intrinsically Safe Terminal Enclosures



### General Information

Adalet's Intrinsically Safe Terminal Enclosures are available in (33) standard enclosure sizes of Stainless Steel 316L, Stainless Steel 304, Steel Powder Coated and Fiberglass Reinforced Polyester materials. Adalet can also supply custom size enclosures and terminal rail configurations to meet your Intrinsically Safe applications. These enclosures are suitable for areas where ignitable concentration of flammable gases, vapors, liquids, and dusts can exist under normal operating conditions. They are also ideal for indoor and outdoor areas where dampness and highly corrosive atmospheres are present such as refineries, water treatment, food processing, coating, salt, and chemical facilities.

### Basic Principle of Intrinsically Safe

Intrinsic safety is intended for product in which the level of electrical energy circulating or stored in the product is insufficient to ignite a surrounding explosive atmosphere even under fault conditions.

**Note:** No one device or wiring is intrinsically safe by itself (except self-contained devices i.e. pagers, portable gas detectors, etc.) but is intrinsically safe when incorporated into a properly designed intrinsically safe system.

### Areas of Use

**Zone Classified Areas** - U.S., Canada, Europe

Intrinsically Safe 'ia': Zones 0, 1 and 2

Intrinsically Safe 'ib': Zones 1 and 2

**Division Classified Areas** - U.S.

Intrinsically Safe (2 fault): Class I, II, and III, Division 1

**ATEX - EU Directive 94/9/EC**

Equipment Groups I and II

Intrinsically Safe 'ia': Category 1GD or M1

Intrinsically Safe 'ib': Category 2GD or M2

### Applicable Standards

**Europe:** EN50014, EN50020

**U.S.:** UL2279 pt 11, ANSI/UL 913

**Canada:** CSA-E79-0, CSA-E79-11

**International:** IEC60 079-0, IEC60 079-11

### Key Design Features

**Intrinsically Safe** equipment must not be capable of causing ignition of a surrounding explosive atmosphere under specified conditions including:

two countable faults: Category 'ia'

one countable fault: Category 'ib'

**Enclosures** must provide at least IP20 protection in accordance with EN60529, with higher levels of protection required for certain applications. (i.e. an enclosure containing intrinsically safe terminals and increased safety terminals would require an increased safety enclosure 'e' and minimum IP54 rating.)

**Temperatures** of wiring and small components must be limited to the specified values according to the T-Class of the equipment.

**Separation** of conductive parts must be achieved in terms of specified clearances and creepage distances. Particular attention is required for separation of intrinsically safe circuits from non-intrinsically safe circuits.

**Components** on which intrinsic safety depends must be of specified rating and construction.

**Blue** is the internationally recognized color for intrinsically safe wiring and terminal blocks.

**The Adalet Engineering Department is available to assist in your Intrinsically Safe Terminal Enclosure Selection**

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## Intrinsically Safe Terminal Enclosures - TSC & TFG Series

### Options

#### Gland Plates (TSC Series Only):

For enclosures with depths greater than 6"

These removable plates offer great flexibility for the end user to drill holes without having to remove the entire enclosure from the installation site.

Add the following Suffixes:

- A: Gland Plate installed on top of box.
- B: Gland Plate installed on bottom of box.
- C: Gland Plate installed on left of box.
- D: Gland Plate installed on right of box.

For multiple gland plates omit dashes  
(i.e. TSC4X-101006-**ABCD**)

#### EMC Shielding (TSC Series Only):

For stainless steel enclosures only

EMC shielding is available on the TSC4X (SS304) and TSC4X6 (SS316L) enclosures with a shielding effectiveness of >50dB through out the frequency range of 1MHz to 100MHz. For EMC shielding add the prefix **-EMC** to the catalog text string, immediately following the enclosure size.  
(i.e. TSC4X-101006-**EMC**)

*Note: This option is not available on enclosures with gland plates installed.*

#### Hinged Cover (TFG Series Only):

A stainless steel piano type hinge is available by adding an **H** to the end of the catalog string. (i.e. TFG-201407**H**)

#### Earthing Stud Assembly (TFG Series Only):

An Internal/External Earthing Stud can be provided upon request. Please specify on the request for quote.

#### Conduit/Cable Entries:

Entries can be provided per a customer sketch or with detailed information on the entry locations. Please refer to Entry Spacing Tables at the end of the Increased Safety Section in the CENELEC Product Catalog. *Note: This information is important and could affect the size of the enclosure you selected.*

#### Close-up Plugs:

Any unused entries must be plugged with a Certified Close-Up Plug. Adalet can provide close-up plugs in various styles and materials. Please indicate on the sketch or provide detailed information of holes to be plugged.

#### Enclosure Labeling:

Adalet can provide additional enclosure labeling with custom silk screening or various colors of Lamacoid™ nameplates. Please provide detailed information of the logo or text required.

#### Breather Drains:

Breather Drains can be provided per customer request. They are available in Brass or Stainless Steel 316L. Please indicate on a sketch or provide detailed information for locations.

#### Grounding Busbars:

Some applications might require grounding points to be terminated in the enclosure. With the use of a Ground Busbar System this can be accomplished, consult factory for options.

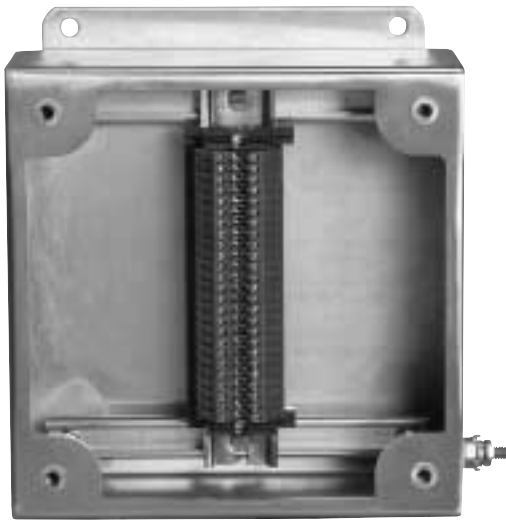
#### Mounting Pans:

As an alternative to the universal rail mounting system, mounting pans are available in steel/powder coated, stainless steel, and aluminum. Please indicate when requesting quote.

#### Terminal Strip Assemblies:

Various options (i.e. marking tags, protective covers, jumpers, partitions...) are available. Please provide detailed information requesting quote.

## TSC Series - Intrinsically Safe Circuits



### Certifications

CE 0539 II 2GD

EEx e II T6 (T5 Tamb +55°C) (T4 Tamb +70°C)

Ex e II T6 (T5 Tamb +55°C) (T4 Tamb +70°C)

Class I, Zone 1, AEx e II T6 (T5 Tamb +55°C) (T4 Tamb +70°C)

Class II, Division 2

IEC60529: IP66

UL50: Type 4, 4X (Stainless Steel only), 12, & 13



### Technical Details

Maximum Working Voltage: 600 Volts

Maximum Current: 5 Amps

Terminal Blocks: EN50019 Certified - Blue Colored

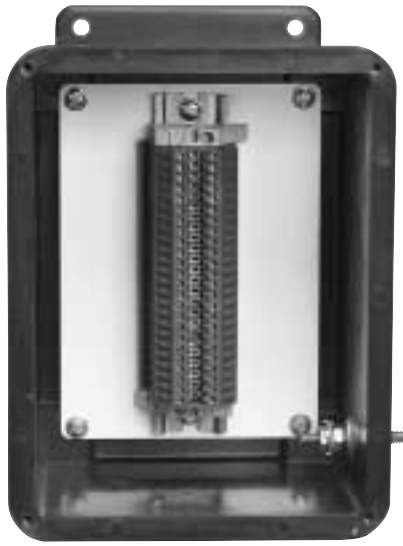
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| 2.5mm5 Terminals |           | 4mm5 Terminals |           | SS316L Catalog Numbers | For Enclosure Dimensions see Catalog Page |
|------------------|-----------|----------------|-----------|------------------------|---|
| Max. Qty.        | # of Rows | Max. Qty.      | # of Rows |                        |   |
| 12               | 1         | 10             | 1         | TSC4X6-060604I         | 3B-48                                     |
| 18               | 1         | 14             | 1         | TSC4X6-070704I         | 3B-49                                     |
| 22               | 1         | 19             | 1         | TSC4X6-080804I         | 3B-50                                     |
| 32               | 1         | 27             | 1         | TSC4X6-101006I         | 3B-51                                     |
| 32               | 1         | 27             | 1         | TSC4X6-101008I         | 3B-52                                     |
| 42               | 1         | 35             | 1         | TSC4X6-120604I         | 3B-53                                     |
| 42               | 1         | 35             | 1         | TSC4X6-120605I         | 3B-54                                     |
| 42               | 1         | 35             | 1         | TSC4X6-120805I         | 3B-55                                     |
| 42               | 1         | 35             | 1         | TSC4X6-120806I         | 3B-56                                     |
| 84               | 2         | 70             | 2         | TSC4X6-121206I         | 3B-57                                     |
| 84               | 2         | 70             | 2         | TSC4X6-121208I         | 3B-58                                     |
| 114              | 2         | 96             | 2         | TSC4X6-151506I         | 3B-59                                     |
| 114              | 2         | 96             | 2         | TSC4X6-151508I         | 3B-60                                     |
| 124              | 2         | 104            | 2         | TSC4X6-161206I         | 3B-61                                     |
| 124              | 2         | 104            | 2         | TSC4X6-161208I         | 3B-62                                     |
| 180              | 3         | 150            | 3         | TSC4X6-161606I         | 3B-63                                     |
| 180              | 3         | 150            | 3         | TSC4X6-161608I         | 3B-64                                     |

- All quantities shown are for terminal blocks installed in vertical rows.
- For Stainless Steel 304 assemblies substitute TSC4X6 prefix with **TSC4X** prefix.
- For Steel Powder Coated assemblies substitute TSC4X6 prefix with **TSC4** prefix.
- For Gland Plates (available only on enclosures with depths greater than 6 inches) add the following suffixes:
  - A: Gland Plate installed on top of box
  - B: Gland Plate installed on bottom of box
  - C: Gland Plate installed on left of box
  - D: Gland Plate installed on right of box

For multiple Gland Plates omit dashes. (i.e. TSC4X6-161608I-ABCD)

## TFG Series - Intrinsically Safe Circuits



### Certifications

CE 0539 II 2GD

EEx e II T6 (T5 Tamb +55°C) (T4 Tamb +70°C)

Ex e II T6 (T5 Tamb +55°C)

Class I, Zone 1, AEx e II T6 (T5 Tamb +55°C) (T4 Tamb +70°C)

Class II, Division 2

IEC60529: IP66

UL50: Type 4X, 12, & 13



### Technical Details

Maximum Working Voltage: 600 Volts

Maximum Current: 5 Amps

Terminal Blocks: EN50019 Certified - Blue Colored

| 2.5mm5 Terminals |           | 4mm5 Terminals |           | Catalog Numbers | For Enclosure<br>Dimensions see<br>Catalog Page |
|------------------|-----------|----------------|-----------|-----------------|---|
| Max. Qty.        | # of Rows | Max. Qty.      | # of Rows |                 |   |
| 10               | 1         | 8              | 1         | TFG-060604I     | 3B-80   |
| 10               | 1         | 8              | 1         | TFG-060606I     | 3B-81   |
| 20               | 1         | 18             | 1         | TFG-080604I     | 3B-82   |
| 20               | 1         | 18             | 1         | TFG-080606I     | 3B-83   |
| 30               | 1         | 25             | 1         | TFG-100804I     | 3B-84   |
| 30               | 1         | 25             | 1         | TFG-100806I     | 3B-85   |
| 40               | 1         | 35             | 1         | TFG-121005I     | 3B-86   |
| 40               | 1         | 35             | 1         | TFG-121006I     | 3B-87   |
| 100              | 2         | 80             | 2         | TFG-141206I     | 3B-88   |
| 100              | 2         | 80             | 2         | TFG-141207I     | 3B-89   |
| 120              | 2         | 100            | 2         | TFG-161406I     | 3B-90   |
| 120              | 2         | 100            | 2         | TFG-161407I     | 3B-91   |
| 210              | 3         | 180            | 3         | TFG-181608I     | 3B-92   |
| 210              | 3         | 180            | 3         | TFG-181610I     | 3B-93   |
| 240              | 3         | 210            | 3         | TFG-201608I     | 3B-94   |
| 240              | 3         | 210            | 3         | TFG-201610I     | 3B-95   |

1. All quantities shown are for terminal blocks installed in vertical rows.

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