Industrial Components B210-400 & B130-001 I.S. Relays

The model B210-400 and B130-001 are low cost MSHA approved intrinsically safe relays. The model B210-400 is a 4 channel I.S. relay with a visible LED for each channel. The model B130-001 is a 1 channel I.S. relay that can also used as and intrinsically safe barrier in our communication systems.

Safety Introduction:

When operating any piece of electrical equipment the possibility of personal injury and equipment damage is always present. In order to minimize these risks we will review possible hazards and describe the appropriate operation and maintenance of the B210-400 and B130-001 I.S. relays.

Safety Hazards and Precautions:

When operating electrical equipment there is always the possibility of electrical shock through current flow, electrical arcs from faulty or improperly installed equipment, or direct burns from overheated or faulty electrical equipment. To avoid these situations it is important to take the following precautions:

- When operating electrical equipment remove all metallic objects from the user.
- When operating electrical equipment, work from an insulating mat to prevent the adverse effects static electricity may cause.
- When using hand tools on electrical equipment make sure that the tools are fully insulated and the power is off on the electrical unit.
- Do not operate electrical equipment that is clearly marked “Out of Service” or “Do Not Operate”.
- Be familiar with the environment which the electrical equipment is located.
- Do not attempt maintenance on the electrical equipment unless under the advice of a qualified engineer from Industrial Components.
- Never perform maintenance in an isolated location by yourself.

General Operation of the B210-400 I.S. Relay

This relay provides the user with 4 independent intrinsically safe channels. Each channel has two input terminals on the I.S. side (input), and a set of Form-C contacts on the non-I.S. side (output). In order to change the state of the output contacts the two I.S. input

terminals must be connected together with either a silicon diode or LED. Polarity of the termination diode or LED does not matter. The user may change the state of the relay's channels by either shorting the termination diode or breaking the diode's connection. This can be accomplished with any type of switch or contact. Termination LED's, if used, will flash to show activity when the connection to the I.S. terminals is not broken or shorted. Channel LED's, located on the relays top cover, will also show an active channel by lighting when the termination of the same channel is completed.

Input Voltage:	90-125 VAC
Power Consumption:	<= 300 mW
Relays (4 channels):	<= 250V and <= 5 amps
Operating Temp:	-20 to +60 C
Storage Temp:	-45 to +85 C
Enclosure Type:	Plastic Case (Optional: Stainless Steel Box)
Dimensions:	1.75" x 6.0" x 1.5"
Mounting (a):	2 holes, (2) #10 screws, or Standard DIN Rail
Mounting (b):	Stainless Steel Box, 4 holes, (4) #10 screws
Weight:	1 lb without Stainless Steel Box, 2 lb with Stainless Steel Box

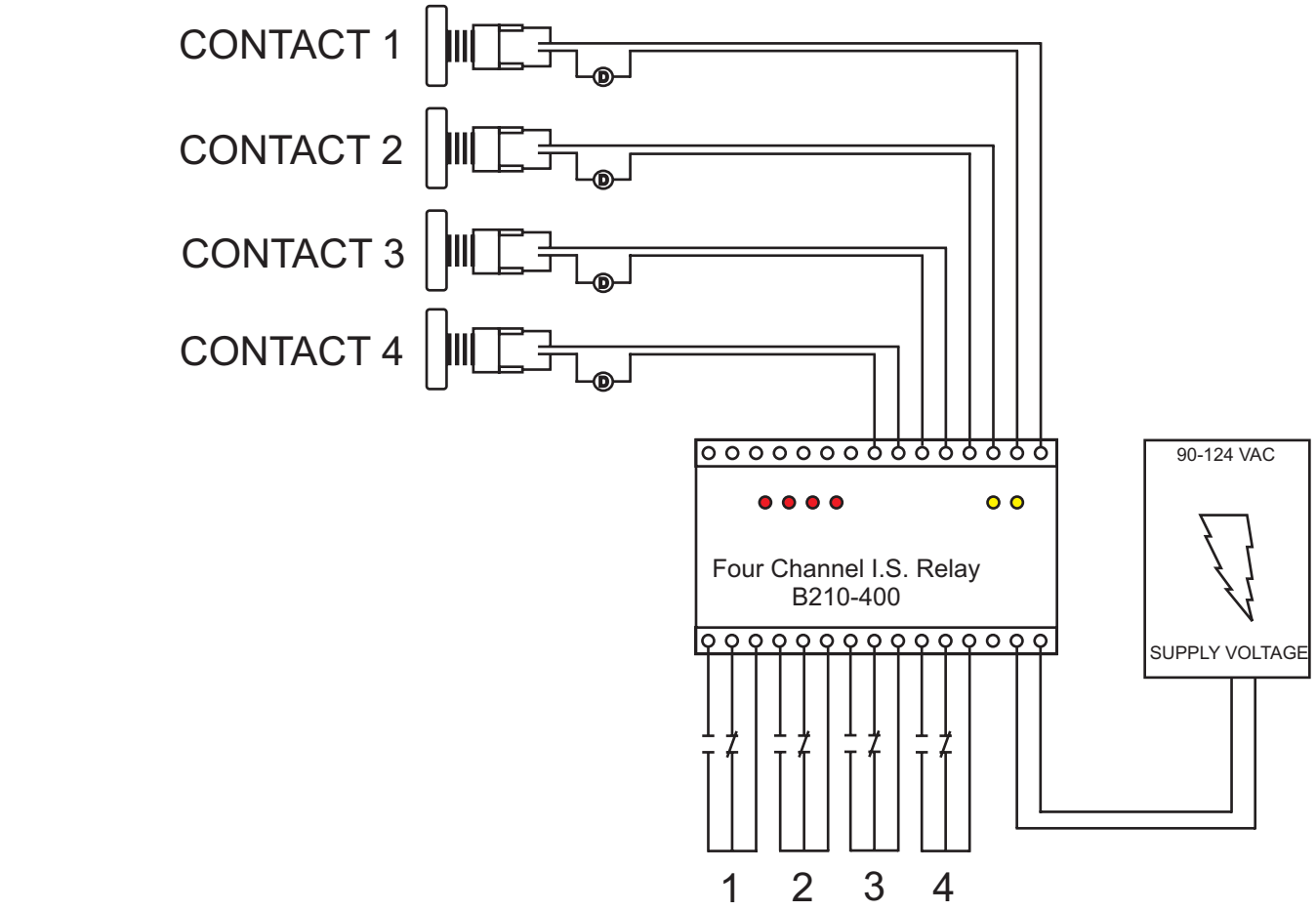
General Operation of the B130-001 I.S. Relay

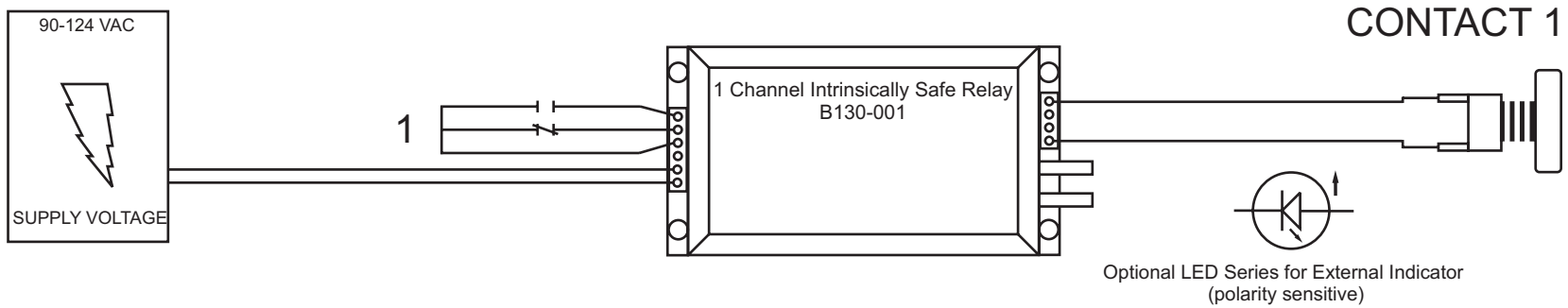
This relay provides the user with 1 independent intrinsically safe channel. The channel has two input terminals and a ST multi-mode fiber optic connection on the I.S. side (input), and a Form-C contact on the non-I.S. side (output). The user may change the state of the relay's channel by shorting or breaking the connection on the input side either through the copper input terminals or the ST multi-mode fiber optic connection. This can be accomplished with any type of switch or contact. A termination diode or LED is not required to change the state of the relay's channel, however, if a termination diode or LED is used it is polarity sensitive. (See typical installation diagram for further details).

This relay also operates as an Intrinsically Safe Data Barrier. The I.S. Data Barrier provides MSHA approved isolation between the Standard Data Encoder (B130-006) and termination devices. The Standard Data Encoder is a small module that can encode up to 20 digital I/O inputs, 8 analog inputs, 2 LED indicators, and 1 power indicator. The I.S. Data Barrier takes signals from the Standard Data Encoder through a 3 wire connection (Power, Common, and Data) and encodes the signals to a ST multi-mode fiber optic connection that is interpreted by a termination device (USB Output Module (B130-007), Relay Output Module (B130-005), Multi-Data Decoder Router (B135-007), etc.). The Common wire from the Standard Data Encoder can be hooked to a chassis ground as long as it is the same chassis ground as the Intrinsically Safe Data Barrier. This configuration reduces the wiring between the Standard Data Encoder and the Intrinsically Safe Data Barrier from 3 wires to 2 wires. The I.S. Data Barrier provides three levels of isolation: user from the control voltage, user from the equipment, and equipment from the line voltage. (See typical installation diagram for further details).

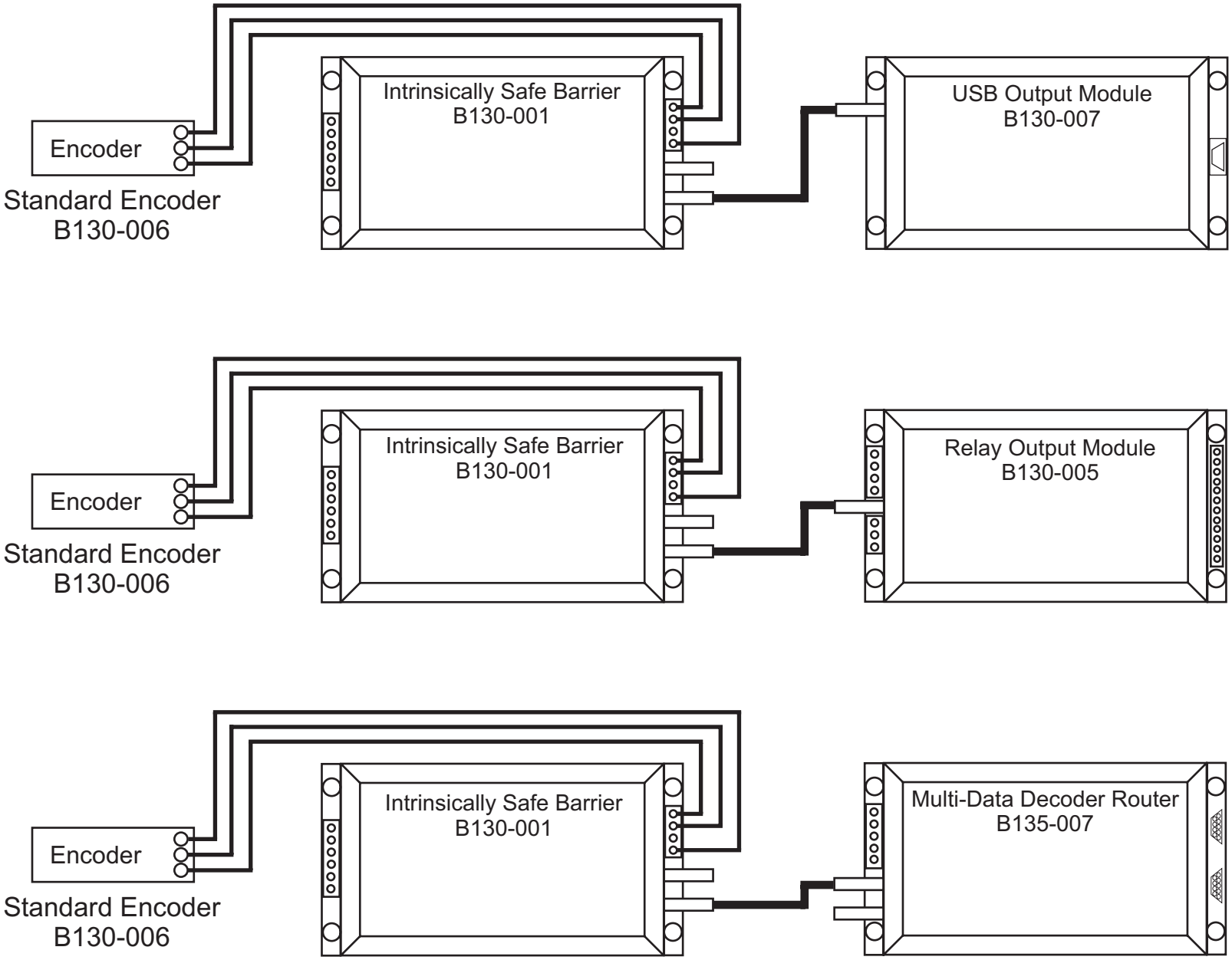
Input Voltage:	90-125 VAC
Power Consumption:	<= 300 mW
Relay (1 channel):	<= 250V and <= 5 amps
Operating Temp:	-20 to +60 C
Storage Temp:	-45 to +85 C
Enclosure Type:	Stainless Steel Box
Dimensions:	1.75” x 6.0” x 1.5”
Mounting:	4 holes, (4) #10 screws
Weight:	1 lb

TYPICAL INSTALLATION DIAGRAM FOR 4 CHANNEL I.S. RELAY B210-400 AND TYPICAL INSTALLATION DIAGRAM FOR 1 CHANNEL I.S. RELAY B130-001

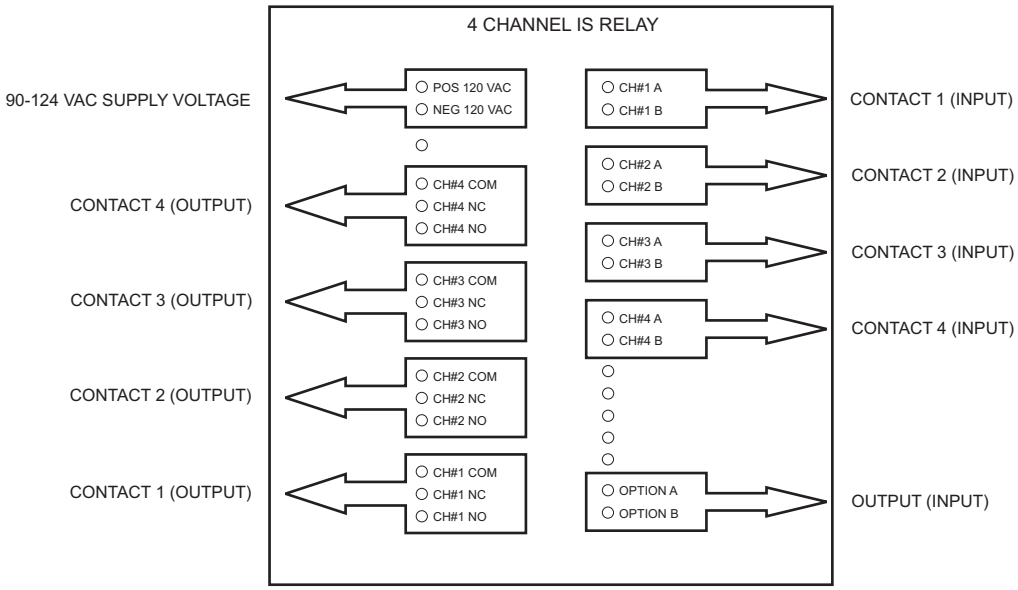


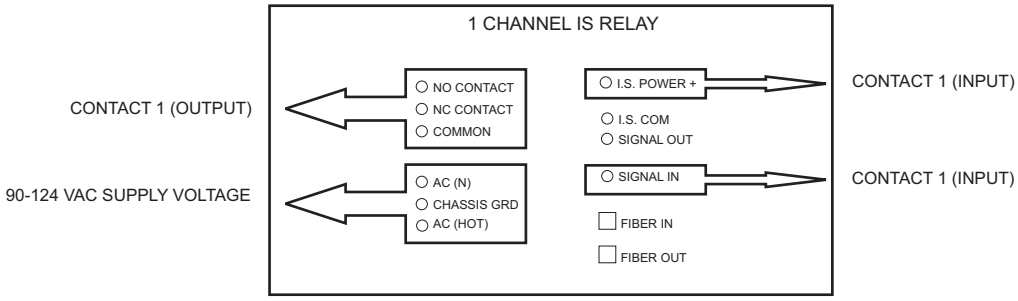


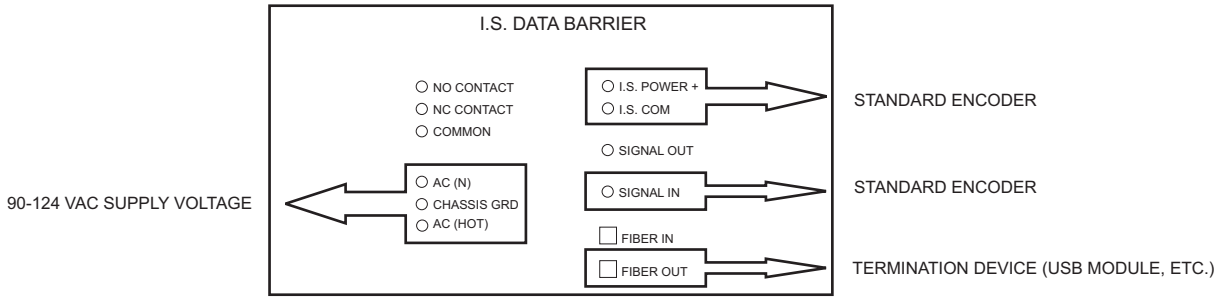
TYPICAL INSTALLATION OF 1 CHANNEL I.S. RELAY B130-00 AS A DATA BARRIER

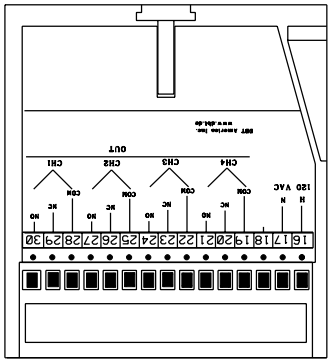


CONNECTION DIAGRAM FOR B210-400 4 CHANNEL I.S. RELAY, B130-001 1 CHANNEL I.S. RELAY, AND B130-001 I.S DATA BARRIER

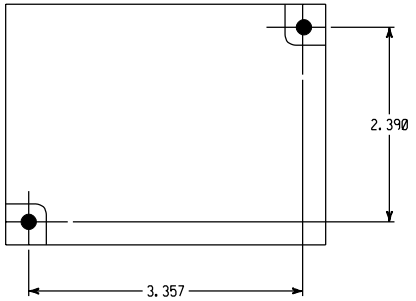




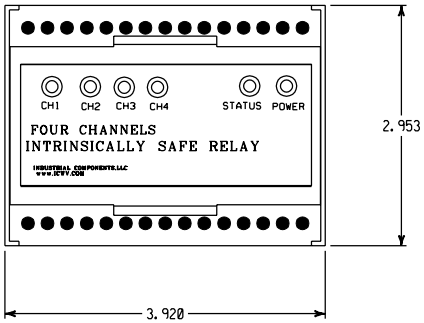




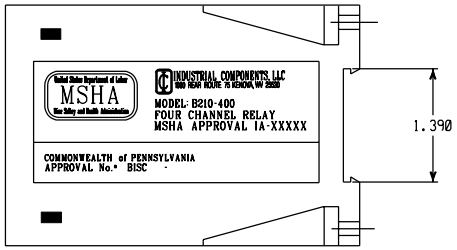
PANEL MOUNT FOOTPRINT
MOUNT WITH 8-32 SCREWS



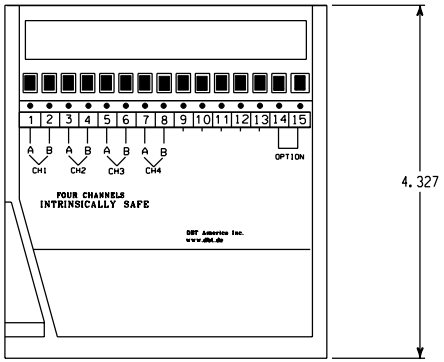
FRONT VIEW



SIDE VIEW



BOTTOM VIEW



MSHA REF. DRAWING NUMBER 23

DO NOT CHANGE WITHOUT MSHA APPROVAL

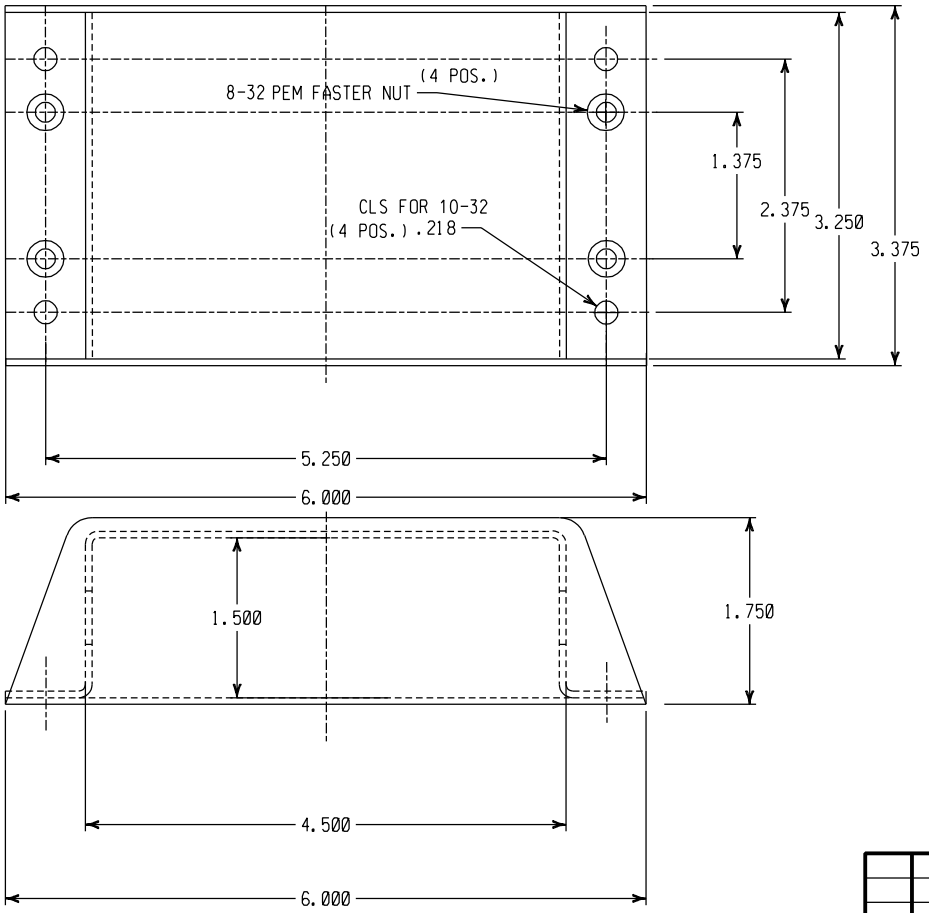
SYM	DATE	REVISIONS	BY

INDUSTRIAL COMPONENTS
KENOVA, WEST VIRGINIA 25530

TITLE
INTRINSICALLY SAFE RELAY
FOUR CHANNEL

DWN. BY	DATE	DWG. NO.
DRB	04/12/04	B210-004
CHK'D BY	SCALE	SHEET OF
	FULL	

TOLERANCES UNLESS OTHERWISE NOTED
1 PLACE DECIMAL \ .1 2 PLACE DECIMAL \ .03 3 PLACE DECIMAL \ .005
ANGLES \ 1^ DO NOT SCALE DRAWING MILLIMETER \



MATERIAL: 16GA STAINLESS STEEL .060
OPT. MATERIAL ALUMINIUM
OPT.MATERIAL HRS

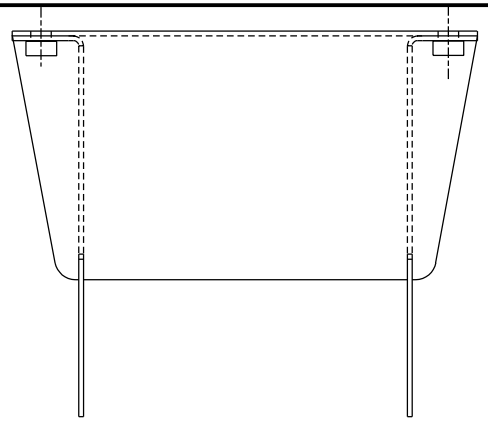
SYM	DATE	REVISIONS	BY

INDUSTRIAL COMPONENTS
KENOVA, WEST VIRGINIA 25530

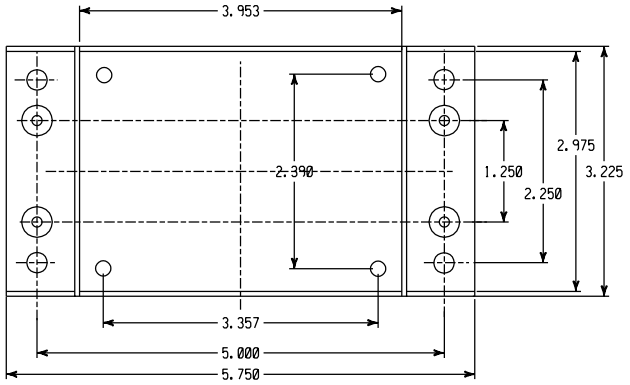
TITLE
ENCLOSURE
INTRINSICALLY SAFE RELAY SINGLE CONFIGURATION

DWN. BY DRB	DATE 12/12/04	DWG. NO.
CHK'D BY	SCALE	SHEET OF

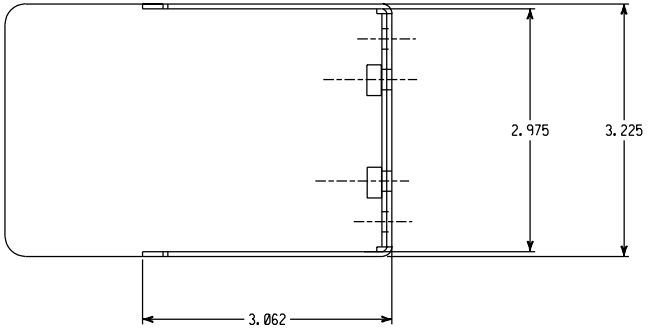
TOLERANCES UNLESS OTHERWISE NOTED
1 PLACE DECIMAL \ .1 2 PLACE DECIMAL \ .03 3 PLACE DECIMAL \ .005
ANGLES \ 1^ DO NOT SCALE DRAWING MILLIMETER ____



FRONT VIEW

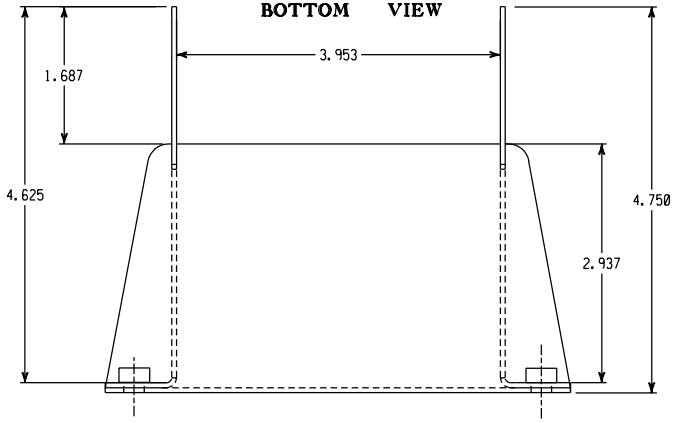


SIDE VIEW



MATERIAL: .060 STAINLESS STEEL

BOTTOM VIEW



SYM	DATE	REVISIONS	BY

INDUSTRIAL COMPONENTS
KENOVA, WEST VIRGINIA 25530

TITLE

STAINLESS STEEL ENCLOSURE FOR
INTRINSICALLY SAFE RELAY
FOUR CHANNEL

DWN. BY DRB	DATE 04/12/04	DWG. NO. B211-1	
CHK'D BY	SCALE FULL	SHEET 1 OF 4	

TOLERANCES UNLESS OTHERWISE NOTED
1 PLACE DECIMAL \ .1 2 PLACE DECIMAL \ .03 3 PLACE DECIMAL \ .005
ANGLES \ 1^ DO NOT SCALE DRAWING MILLIMETER ____