



IB6 Series Solid-State Isolation Relay Installation & Operation Manual

TRANSDATA, INC.

2560 TARPLEY ROAD • CARROLLTON, TEXAS 75006 • TEL (972) 418-7717 • FAX (972) 418-7774
Website: www.transdatainc.com E-mail: tdmeters@transdatainc.com

Table of Contents

- UNPACKING..... 1
- INSTALLATION INSTRUCTIONS 1
- WHAT IS AN IB6? 2
 - APPLICATIONS 2
 - FEATURES 2
 - MODELS 2
- FUNCTIONAL DESCRIPTION 3
 - MECHANICAL HARDWARE 3
 - ELECTRICAL HARDWARE 3
 - Inputs* 3
 - Outputs*..... 4
 - Wiring Connections* 4
 - Power Supply*..... 4
- INPUT/OUTPUT RELATIONSHIPS 5
- TROUBLESHOOTING..... 10
- SPECIFICATIONS..... 12
 - POWER REQUIREMENTS 12
 - INPUTS 12
 - OUTPUTS 12
 - ENVIRONMENTAL AND MECHANICAL 12
 - APPROVALS..... 12
- INDEX..... 13

Table of Figures

- TABLE 1: I/O WIRING AND CORRESPONDING LED DESIGNATORS 5
- FIGURE 1: MOUNTING TEMPLATE..... **ERROR! BOOKMARK NOT DEFINED.**
- FIGURE 2: ISOLATION BUFFER..... **ERROR! BOOKMARK NOT DEFINED.**
- FIGURE 3: IB6 FORM A OPERATION **ERROR! BOOKMARK NOT DEFINED.**
- FIGURE 4: IB6 FORM C OPERATION **ERROR! BOOKMARK NOT DEFINED.**

UNPACKING

The shipping carton should contain the following:

- IB6 Series Isolation Buffer (Board Assembly # 272-0003-XX)

Be sure to inspect the IB6 for any shipping damages. If damage is evident, notify the carrier accordingly, and contact TransData.

INSTALLATION INSTRUCTIONS

To install an IB6, follow these steps:

1. Select a suitable mounting location for the IB6.
2. Using **Error! Reference source not found.** as a reference, drill 3/16" holes.
3. Mount the IB6 using 4 appropriate #8 screws. Secure the screws tightly.
4. Disable AC power source. If 120VAC power supply is used, connect the AC power source to the IB6 using 16 gauge stranded wire with an insulation rating of at least 300 volts. If 208VAC, 240VAC or 277VAC power supply is used, then the wire insulation rating should be at least 600 volts.
5. If the IB6 is not mounted to a grounded surface, then TransData recommends connecting 16 AWG or larger wire between one of the mounting plate screws and a suitable earth ground to insure proper operation of the IB6 device.

NOTE

Due to the solid-state design and no moving parts, the IB6 series is environmentally friendly and can be mounted in any position.

WHAT IS AN IB6?

The IB6 is a solid state isolation buffer with up to three Form A or Form C pulse inputs and up to six Form A or Form C solid state pulsed outputs. This device is available in five different model configurations to fit any utility metering application.

The IB6 provides a pulse distribution point to various devices in remote locations. The buffer is designed to isolate and protect network components for safety and security. It can be used for both pulse replication and pulse isolation applications, where a utility needs to isolate their billing meter's pulsed output from a customer's energy management system, RTU, Load Profile Recorder, or some other pulse collecting device. The IB6 can also replicate two or three pulsed inputs, providing the same pulse to several different devices. Reference **Error!**
Reference source not found..

Applications

The IB6 can be utilized in the following applications:

- Isolation for substation pulse inputs/outputs
- Meter pulse isolation and pulse replication
- DC pilot wire signaling for long distances
- Pulse bounce filtering

Features

The IB6 provides the following features:

- Up to three Form A or Form C inputs accepting contact closures or open collector inputs
- Power supply accepting 120 - 277 VAC, selectable using PCB header shunts
- Input and Output color-coded LED indicators
- Maximum 10 pulse per second throughput
- Pulse debouncing in Form A or Form C mode

Models

The IB6 is available in five models:

<u>MODEL</u>	<u>CONFIGURATION</u>
IB6-12	1 Input/2 Outputs
IB6-13	1 Input/3 Outputs
IB6-24	2 Inputs/4 Outputs
IB6-26	2 Inputs/6 Outputs
IB6-36	3 Inputs/6 Outputs

FUNCTIONAL DESCRIPTION

Mechanical Hardware

The printed circuit board is fastened to an aluminum plate by means of four standoffs and #4 screws. A clear dust cover protects the electronics. As an option, a sealable dust cover or a NEMA 3R security enclosure can be provided.

Electrical Hardware

Inputs

The IB6 provides one to three pulse input connections, which can be wired to any Form A or Form C pulse source, such as an electric meter pulse initiator output. Headers TB7, TB8, and TB9 control the type of input that will be accepted on Input Channels 1, 2, and 3. Header TB7 controls Input Channel 1, header TB8 controls Input Channel 2, and header TB9 controls Input Channel 3. The shunt installed at the header pins labeled "C", sets the respective input to accept a Form C contact closure. The shunt installed at the header pins labeled "A", sets the respective input to accept a Form A contact closure or open collector. Reference **Error! Reference source not found.**

These inputs provide the following features for the IB6:

- Form A (two-wire) or Form C (three-wire) operation, which are independently field configurable for both inputs using PCB header shunts.
- Color-coded LED's indicate pulse reception for both the "Y" and "Z" of each input.
- The inputs are designed to accept dry relay contacts or open collector pulse sources. An input wetting voltage of 5.5 to 8.5 VDC open circuit with a short circuit current capability of 4.2 to 5.2mA.
- Input pulse rates up to 10 pulses per second are permissible.

NOTE

Any combination of Form A or Form C can be used on each input, in the order required, by using PCB header shunts.

Outputs

The outputs are optically isolated FET transistors, which are rated at 270V peak AC or DC and 150mA maximum DC or RMS current. The isolation rating is 1500VRMS. Color-coded LED's indicate the transmission of IB6 pulses on both the "Y" and "Z" of each output. See Table 1: I/O Wiring and Corresponding LED Designators for terminal and LED designations.

Wiring Connections

User terminations are facilitated using 300V, wire clamp, terminal strips that will accommodate 18 to 12 AWG wire. The IB6 is designed to operate with input wire lengths of up to 2500 feet when using twisted pair, or shielded twisted pair, 18 to 12 AWG copper wire, or with a maximum input wire impedance of 1.5k Ω if other wire type is used. Terminal block designations for the input and output connections as well as AC power are labeled on the printed circuit board silkscreen as shown in **Error! Reference source not found.**

Meter Input Wiring

If Form A inputs are used, "1K" and "1Y" are input one, "2K" and "2Y" are input two, and "3K" and "3Y" are input three. Reference **Error! Reference source not found.**

If Form C inputs are used, "1K", "1Y", and "1Z" are input one, "2K", "2Y", and "2Z" are input two, and "3K", "3Y", and "3Z" are input three. Reference **Error! Reference source not found.**

Output Wiring

Each output provides a "K", "Y", and "Z" terminal. Form C operation requires a "K", "Y", and "Z" connection for each output. Form A output connections are all achieved by using only the "K" and "Y" or "K" and "Z" terminals.

Power Supply

The AC input to the power supply is transformer isolated and accommodates 120 - 277 VAC at a maximum of 5.5 VA of burden. Input voltage is selectable by installing a PCB header shunt on header J1, J2, J3, or J4.

WARNING!

To prevent shock, always disconnect power before selecting voltage.

INPUT/OUTPUT RELATIONSHIPS

Each of the following models is factory mapped for two outputs per input:

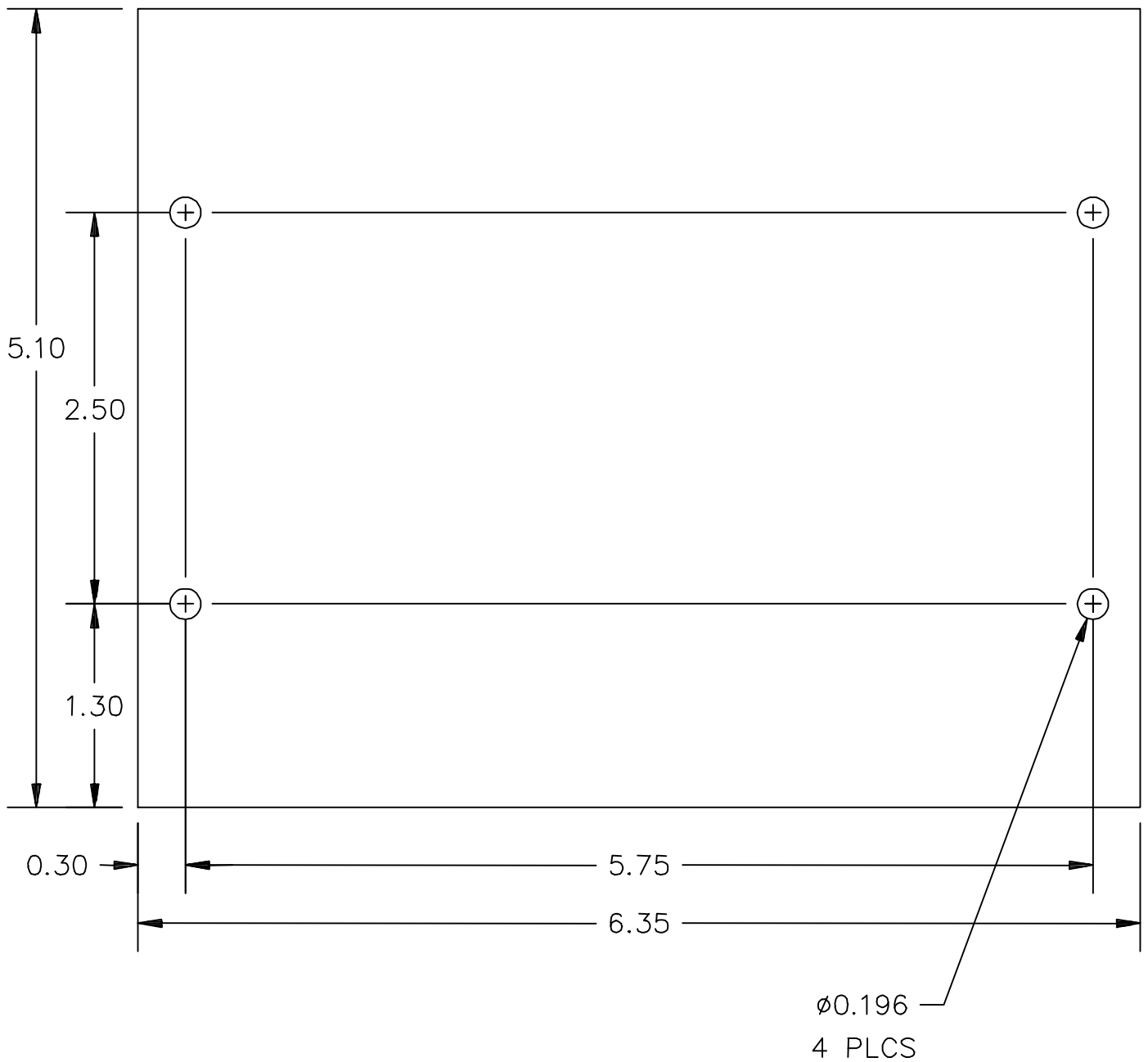
IB6-12	1 Form A or Form C input and 2 Form C outputs
IB6-24	2 Form A or Form C input and 4 Form C outputs
IB6-36	3 Form A or Form C input and 6 Form C outputs

Each of the following models is factory mapped for three outputs per input:

IB6-13	1 Form A or Form C input and 3 Form C outputs
IB6-26	2 Form A or Form C input and 6 Form C outputs

Table 1: I/O Wiring and Corresponding LED Designators

MODEL	INPUT	LEDS	COLOR	OUTPUT	LEDS	COLOR
IB6-12	Input 1	D17, D22	Red	Output 1 Output 2	D24, D34 D25, D35	Red Red
IB6-13	Input 1	D17, D22	Red	Output 1 Output 2 Output 3	D24, D34 D25, D35 D28, D27	Red Red Red
IB6-24	Input 1 Input 2	D17, D22 D20, D21	Red Green	Output 1 Output 2 Output 3 Output 4	D24, D34 D25, D35 D28, D27 D26, D29	Red Red Green Green
IB6-26	Input 1 Input 3	D17, D22 D18, D19	Red Yellow	Output 1 Output 2 Output 3 Output 4 Output 5 Output 6	D24, D34 D25, D35 D28, D27 D30, D33 D31, D32 D36, D39	Red Red Red Yellow Yellow Yellow
IB6-36	Input 1 Input 2 Input 3	D17, D22 D20, D21 D18, D19	Red Green Yellow	Output 1 Output 2 Output 3 Output 4 Output 5 Output 6	D24, D34 D25, D35 D28, D27 D26, D29 D30, D33 D31, D32	Red Red Green Green Yellow Yellow



NOTES:
 MOUNTING PLATE— 0.093 THICK

Figure 1: Mounting Template

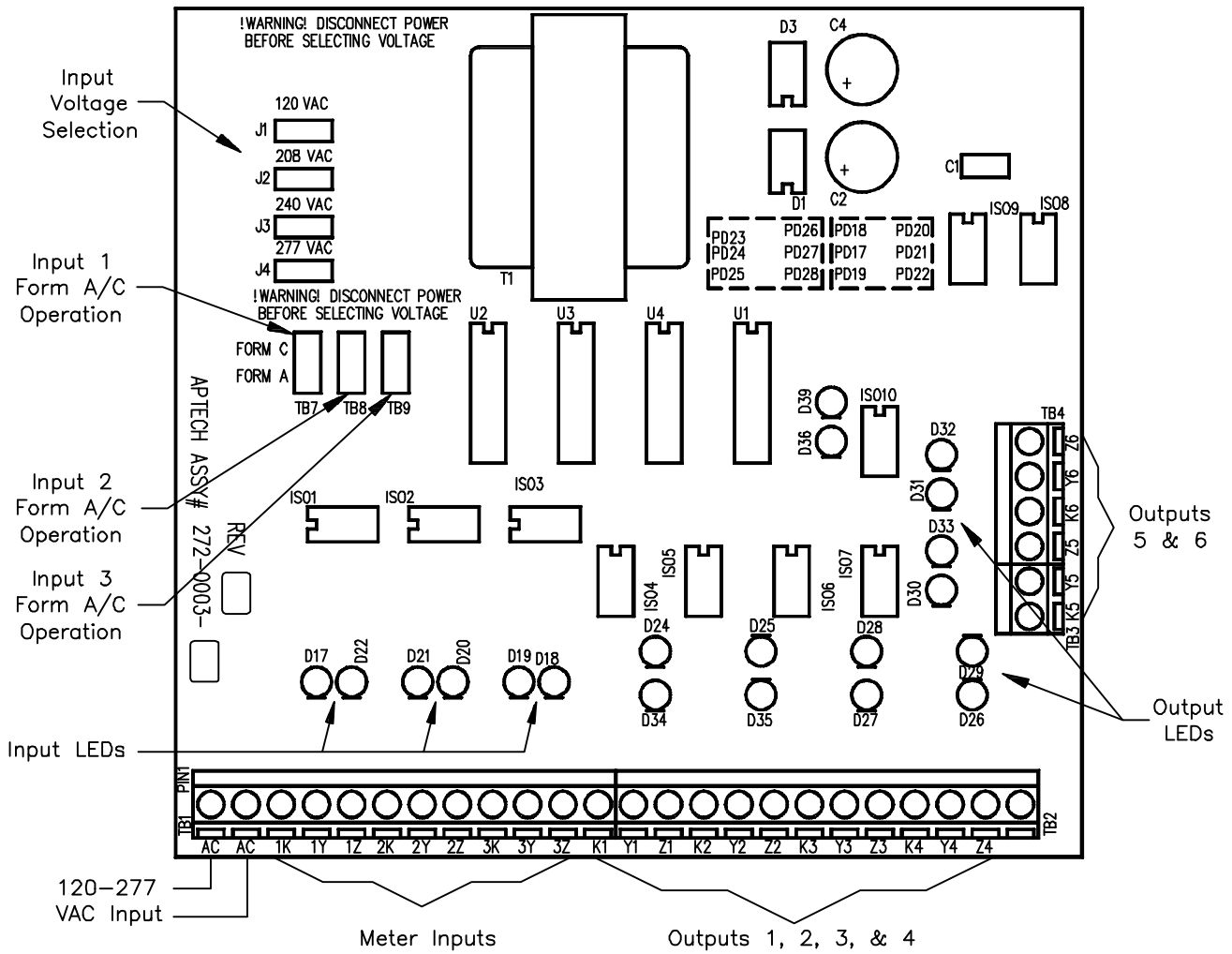


Figure 2: Isolation Buffer

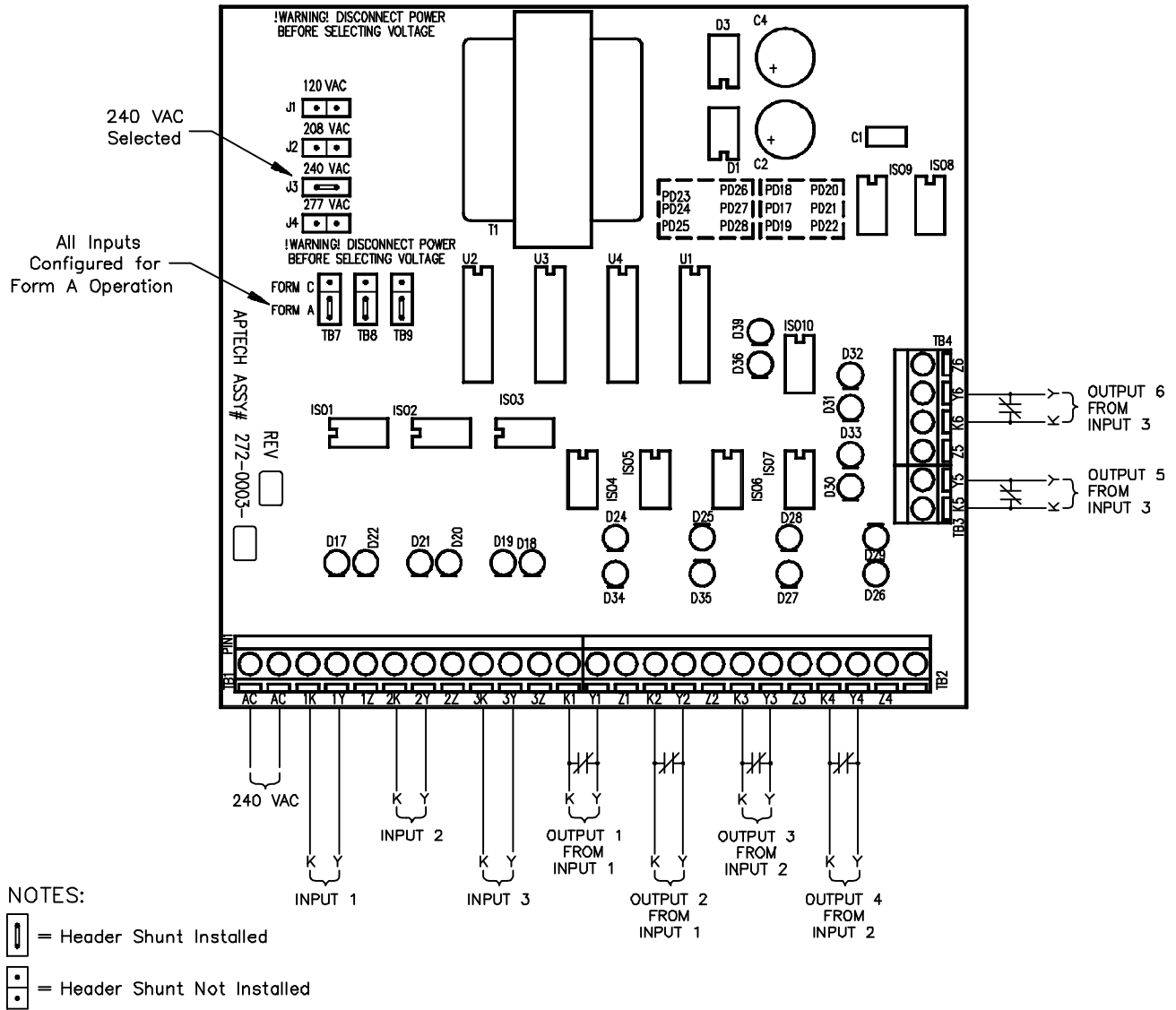


Figure 3: IB6 Form-A Operation

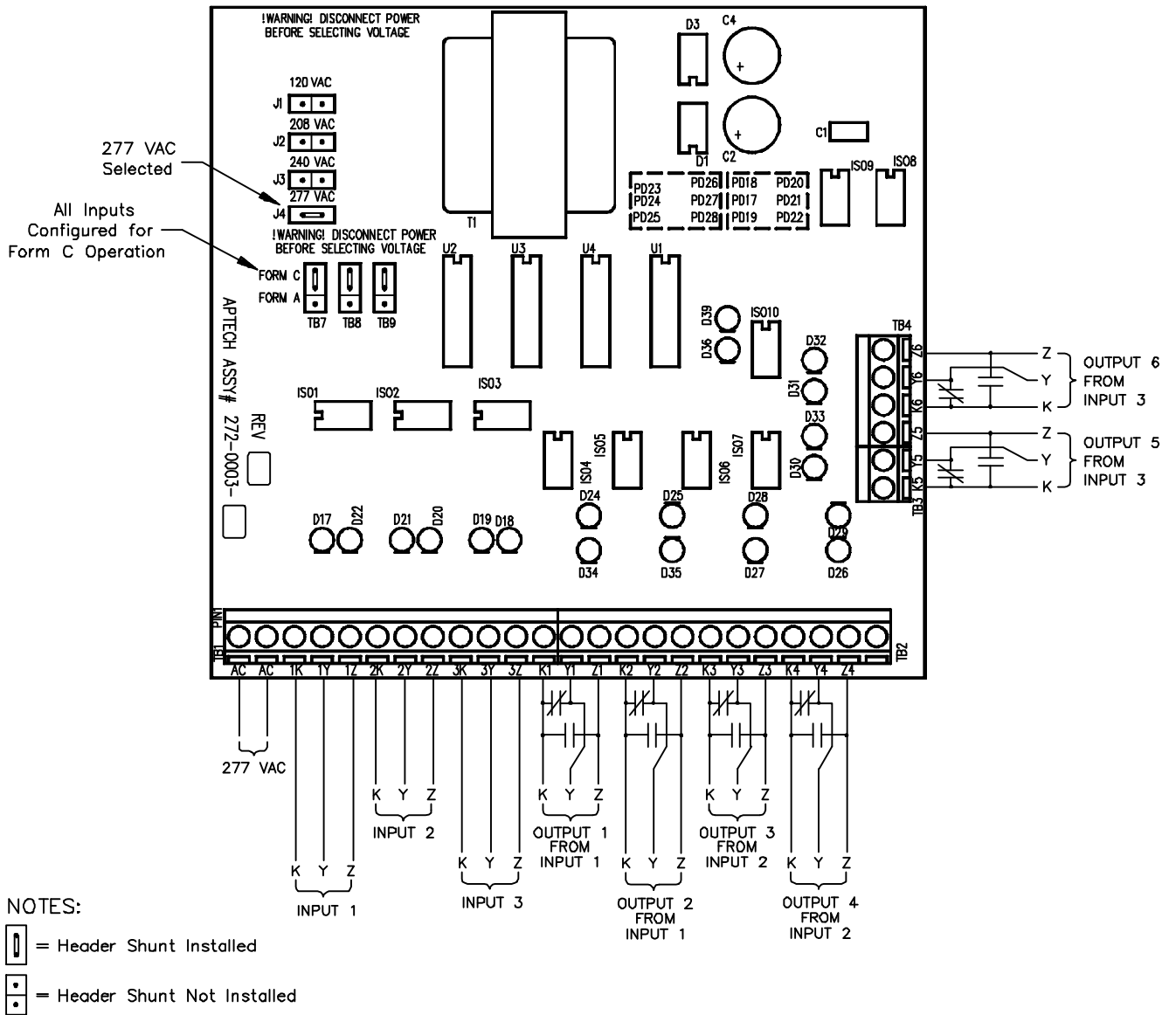
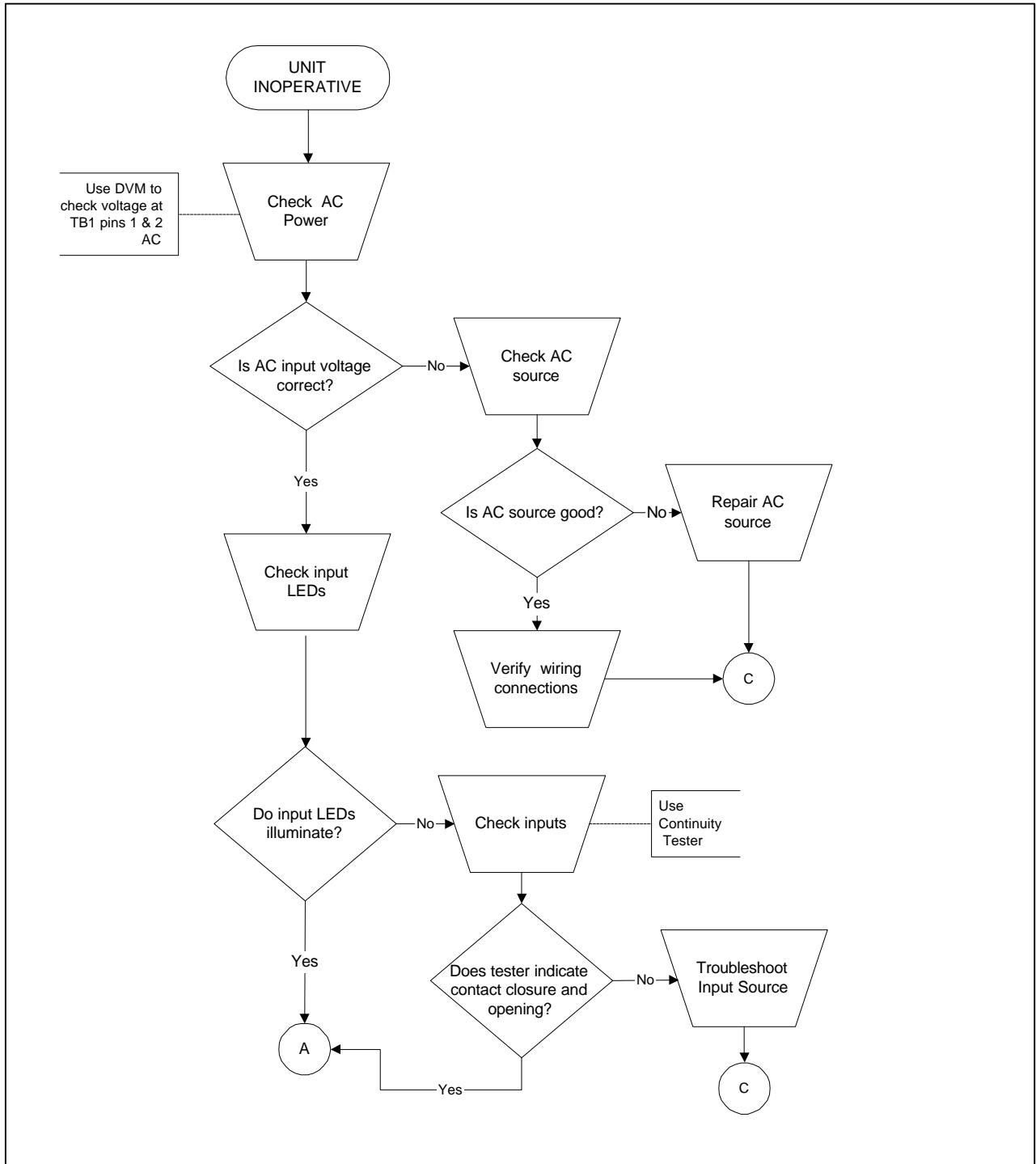
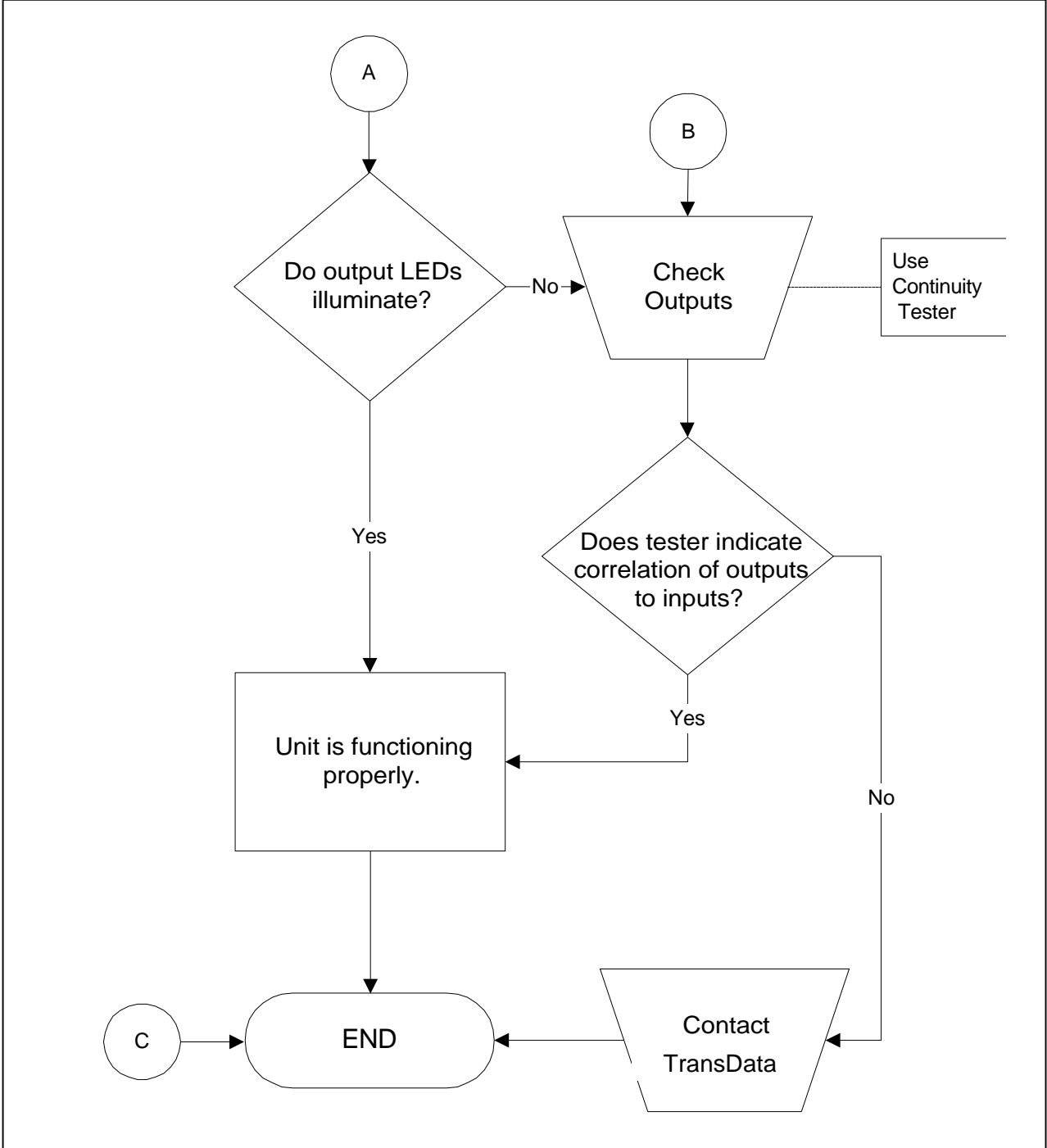


Figure 4: IB6 Form-C Operation

TROUBLESHOOTING





SPECIFICATIONS



Power Requirements

Voltage	120 - 277 VAC \pm 20%
Frequency	50/60 Hz
Burden	Less than 5.5 VA
AC Input Surge Suppression	1.5 Joules/26 Amps

Inputs

Number of Inputs	Up to three Form C (three-wire) or Form A (two-wire)
Signal Conditioning Voltage	5.5 to 8.5VDC open circuit
Current Output	4.9 to 5.2mA short circuit current max.

Outputs

Number of Outputs	Up to six Form C (three-wire) or Form A (two-wire)
Voltage	270 Volts DC or peak AC maximum
Current	150mA
Capacity	20VA DC or 14VA AC RMS
Max. Pulse Rate	10 pulses per second per channel

Environmental and Mechanical

Temperature	-40° to +85° Celsius
Humidity	5 to 95% non-condensing
Mounting Plate	The IB6 is fastened to an aluminum plate. Dust cover included. Sealable cover or NEMA 3R security enclosure-optional.

Approvals

- Approved by the Legal Metrology Branch (LMB) of Industry Canada (IC), Approval #E-281.

INDEX

A	
Applications	2
E	
Electrical Hardware	3
F	
Features	2
Functional Description	3
I	
Input/Output Relationships	5
Inputs	3
Installation Instructions	1
M	
Mechanical Hardware	3
Meter Input Wiring	4
Models	2
O	
Output Wiring	4
Outputs	4
P	
Power Supply	4
S	
Specifications	12
T	
Troubleshooting	10
U	
Unpacking	1
W	
What is an IB6?	2
Wiring Connections	4