

- [Compatible IOTA models for differential analog input and output channels](#)
- [Standard and self-powered two-wire transmitter wiring - Differential Analog input module](#)
- [Custom wiring - Differential Analog input module](#)
- [Jumper configuration for differential configuration - Differential Analog input module](#)
- [IOTA board and connections - Differential Analog input module](#)

5.4.1 Compatible IOTA models for differential analog input and output channels

IOM model number	IOM Block Name	Description	Compatible IOTA model number
CC-PAIH02	AI-HART	Differential/Single-ended Analog Input. It supports 16 channels and following inputs. • 4-20mA • 1-5V • 0-5V	CC-TAID01 - Non-redundant CC-TAID11 - Redundant CC-TAIX01 - Non-redundant CC-TAIX11 - Redundant CC-GAIX11 - GI-IS-Redundant CC-GAIX21 - GI-IS-Non-Redundant
CC-PAIX02	AI	Differential/Single-ended Analog Input without HART functionality. It supports 16 channels and following inputs. • 4-20mA • 1-5V • 0-5V	CC-TAID01 - Non-redundant CC-TAID11 - Redundant CC-TAIX01 - Non-redundant CC-TAIX11 - Redundant CC-GAIX11 - GI-IS-Redundant CC-GAIX21 - GI-IS-Non-Redundant
CC-PAIN01	AI-HL	Non-HART Analog Input module It supports 16 channels.	CC-TAIN01 (AI non-redundant; IOTA - 6') CC-TAIN11 (AI redundant; IOTA - 12')
CC-PAON01	AO	Non-HART Analog Output module It supports 16 channels.	CC-TAON01 (AO, non-redundant; IOTA - 6') CC-TAON11 (AO, redundant; IOTA - 12')

5.4.2 Standard and self-powered two-wire transmitter wiring - Differential Analog input module

The differential AI IOM/IOTA is optimized for use with classic two-wire transmitters. All 16 channels can accept inputs from two-wire transmitters. Note that, by default, the jumper settings must be changed to 'single-ended configuration' as referred in the *Series C Differential Analog Input 9 inch - terminal block 2* table and the *Series C Differential Analog Input 12 inch - terminal block 2* table.

Following figure illustrates an example jumper configuration for channel 1 of non-redundant 9 inch IOTA.

Figure 5.13 Non-redundant Analog Input 9 inch, standard 2-wire transmitter wiring

Standard 2 wire XMTR

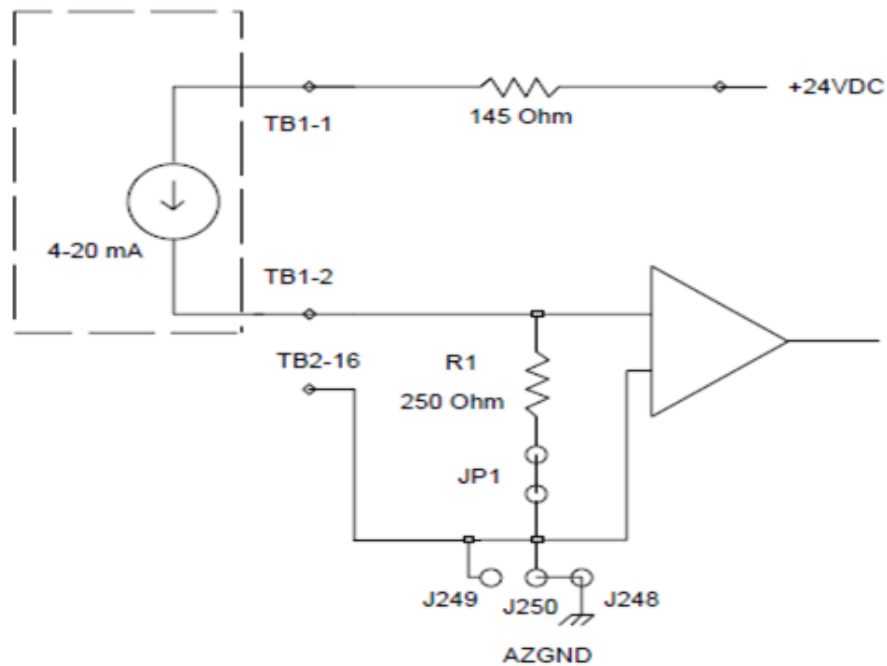
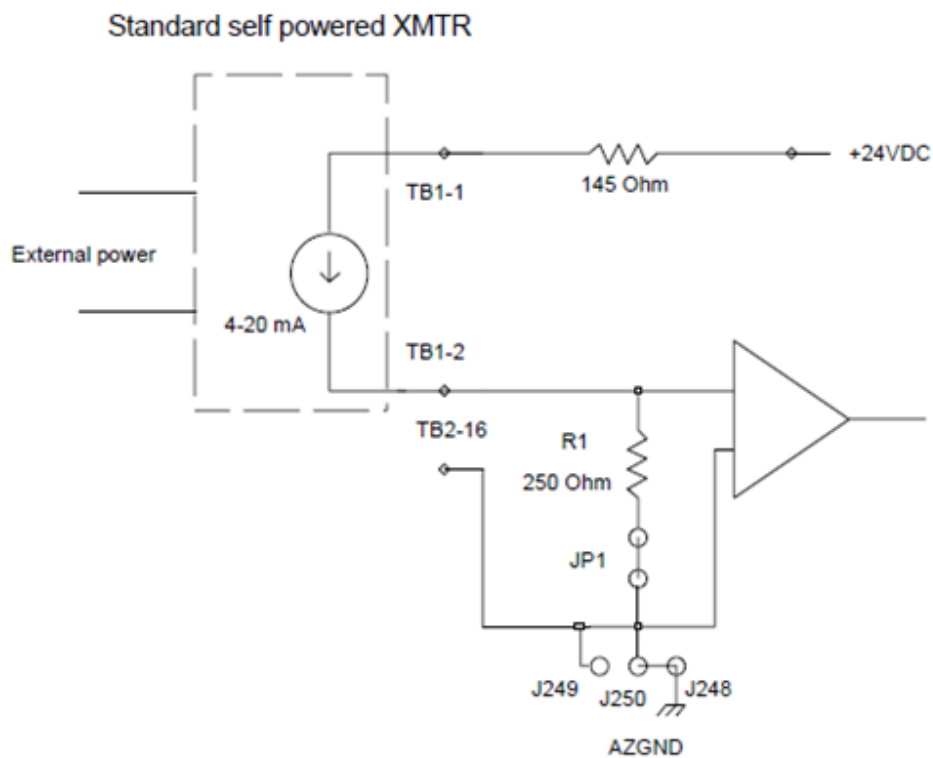


Figure 5.14 Non-redundant Analog Input 9 inch, self-powered 2-wire transmitter wiring



5.4.3 Custom wiring – Differential Analog input module

ATTENTION

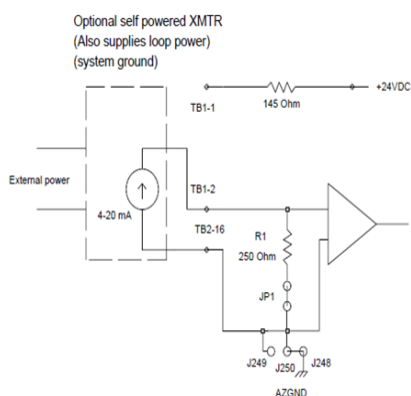
For differential HART transmitter, you can use only channel number 13 to 16. For non-HART differential transmitter, you can use all 16 channels in both differential mode and single-ended mode.

Custom wiring scenarios are explained in the following table.

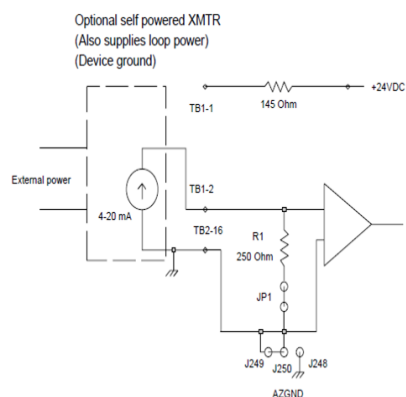
Table 5.12 Custom wiring to support differential Analog Input

Custom wiring scenarios
<i>Self-powered transmitter with Experion PKS system ground</i>
Self-powered transmitter is connected across the TB1 - 2 and TB2 - 16 for the channel 1 of the non-redundant 9' IOTA as illustrated in the following figure. Jumper settings must be configured as single-ended according to the <i>Series C Differential Analog Input 9 inch – terminal block 2</i> table and the <i>Series C Differential Analog Input 12 inch – terminal block 2</i> table.

Custom wiring scenarios

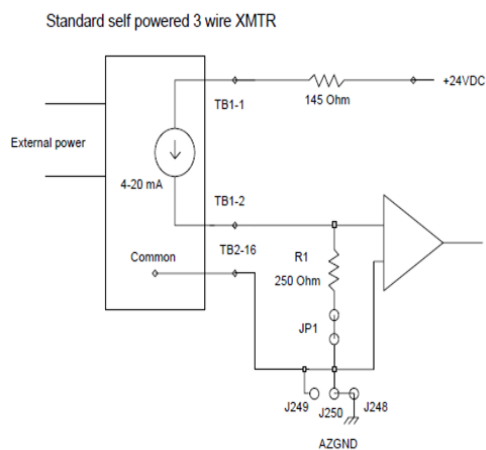
*Self-powered transmitter with device grounded*

Self-powered transmitter is connected across the TB1 - 2 and TB2 - 16 for the channel 1 of the non-redundant 9' IOTA as illustrated in the following figure. Jumper settings must be configured for differential configuration according to the *Series C Differential Analog Input 9 inch – terminal block 2* table and the *Series C Differential Analog Input 12 inch – terminal block 2* table.

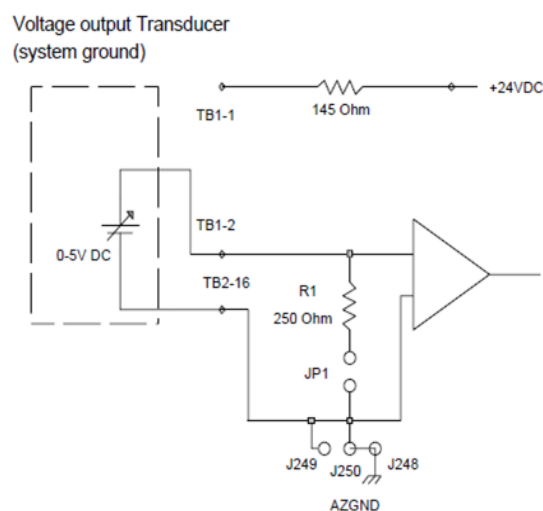
*Self-powered 3-wire transmitter (system ground)*

Self-powered transmitter is connected across the TB1 - 1 and TB2 - 2 when the common terminal is terminated at TB2 - 16. Jumper settings must be configured as single-ended according to the *Series C Differential Analog Input 9 inch – terminal block 2* table and the *Series C Differential Analog Input 12 inch – terminal block 2* table.

Custom wiring scenarios

*Voltage input (System ground)*

Voltage output transducer is connected across TB1-2 and TB2-16 as illustrated in the following figure. To use voltage output transducer, 250 Ω spool resistor must be disconnected by cutting the jumper (example, JP1). Jumper settings must be configured as single-ended according to the *Series C Differential Analog Input 9 inch – terminal block 2* table and the *Series C Differential Analog Input 12 inch – terminal block 2* table.

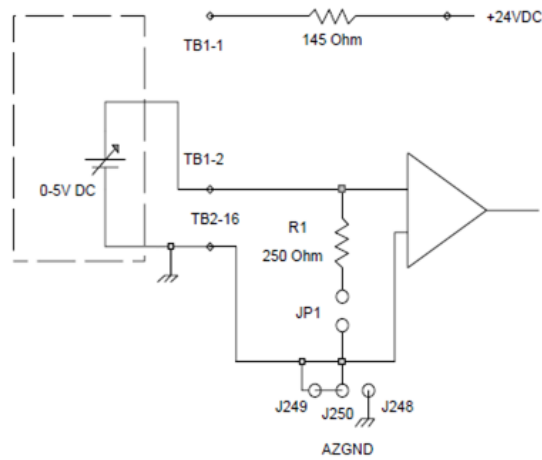
**NOTE**

You must plan cautiously when you cut the JP1 to JP16 jumpers as they are non-repairable. That is, once these jumpers are cut, you cannot short these jumpers.

Voltage input (Device ground)

Voltage output transducer is connected across TB1-2 and TB2-16 as illustrated in the following figure. To use voltage output transducer, 250 Ω spool resistor must be disconnected by cutting the jumper (example, JP1). Jumper settings must be configured for differential configuration according to the *Series C Differential Analog Input 9 inch – terminal block 2* table and the *Series C Differential Analog Input 12 inch – terminal block 2* table.

Custom wiring scenarios

Voltage output Transducer
(Device ground)**NOTE**

You must plan cautiously when you cut the JP1 to JP16 jumpers as they are non-repairable. That is, once these jumpers are cut, you cannot short these jumpers.

Slide Wire: Series C does not support Slidewire.

5.4.4 Jumper configuration for differential configuration - Differential Analog input module

Jumper configuration for the non-redundant differential AI channel is illustrated in the following figure. Each channel is associated with 250 Ω 'range spool' or 'dropping resistor' for sources that deliver 4-20mA. In addition, one jumper and three jumper pins are provided for each channel.

Example: channel 1 consists of JP1, J248, and J249.

Figure 5.15 Series C differential non-redundant Analog Input 9 inch, jumper configuration

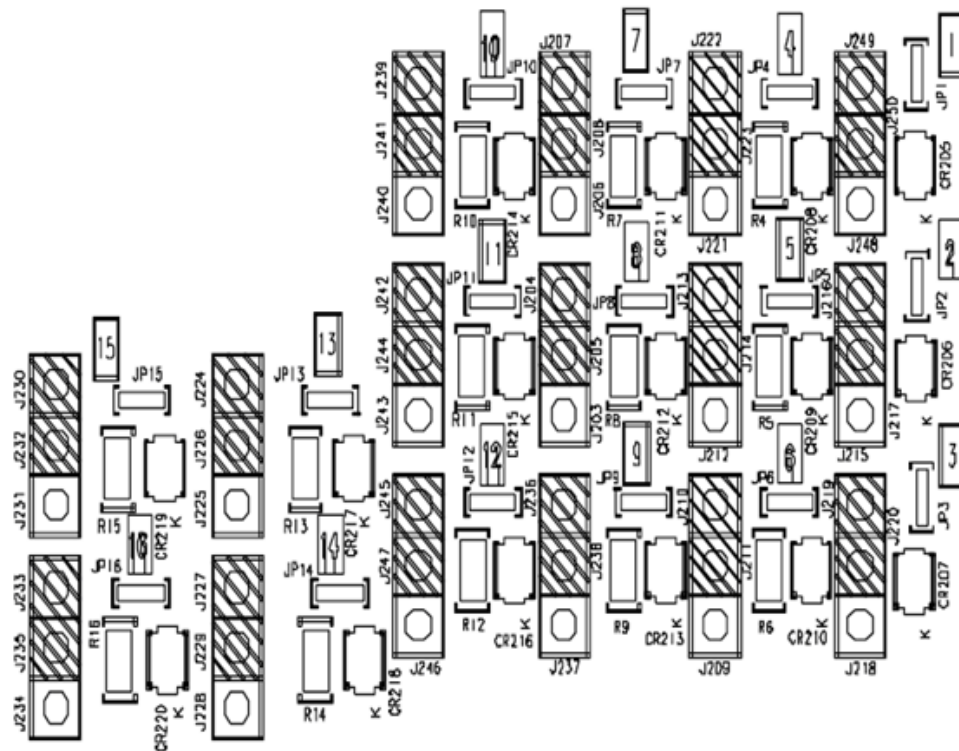
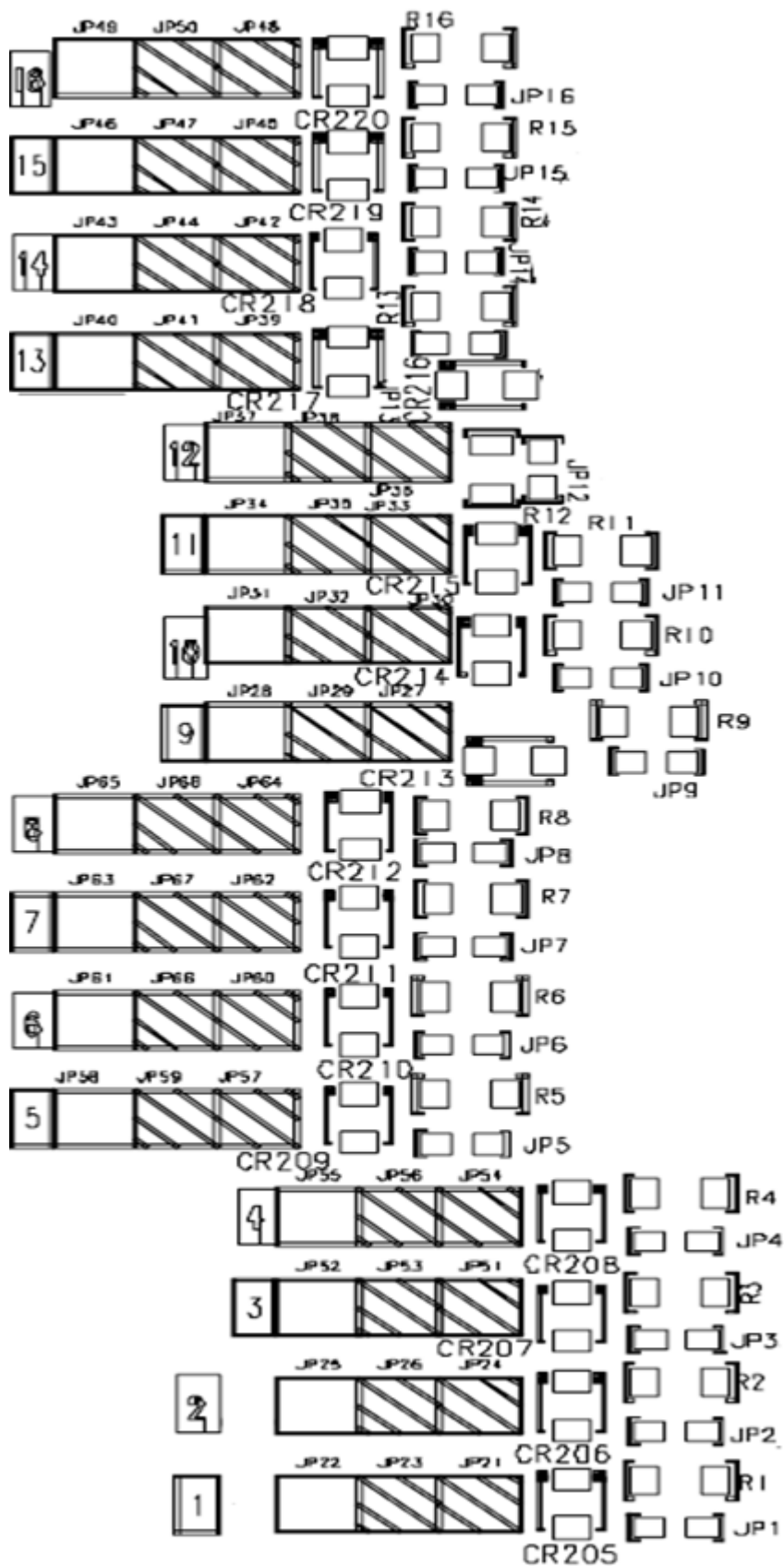


Figure 5.16 Series C differential redundant Analog Input 12 inch, jumper configuration



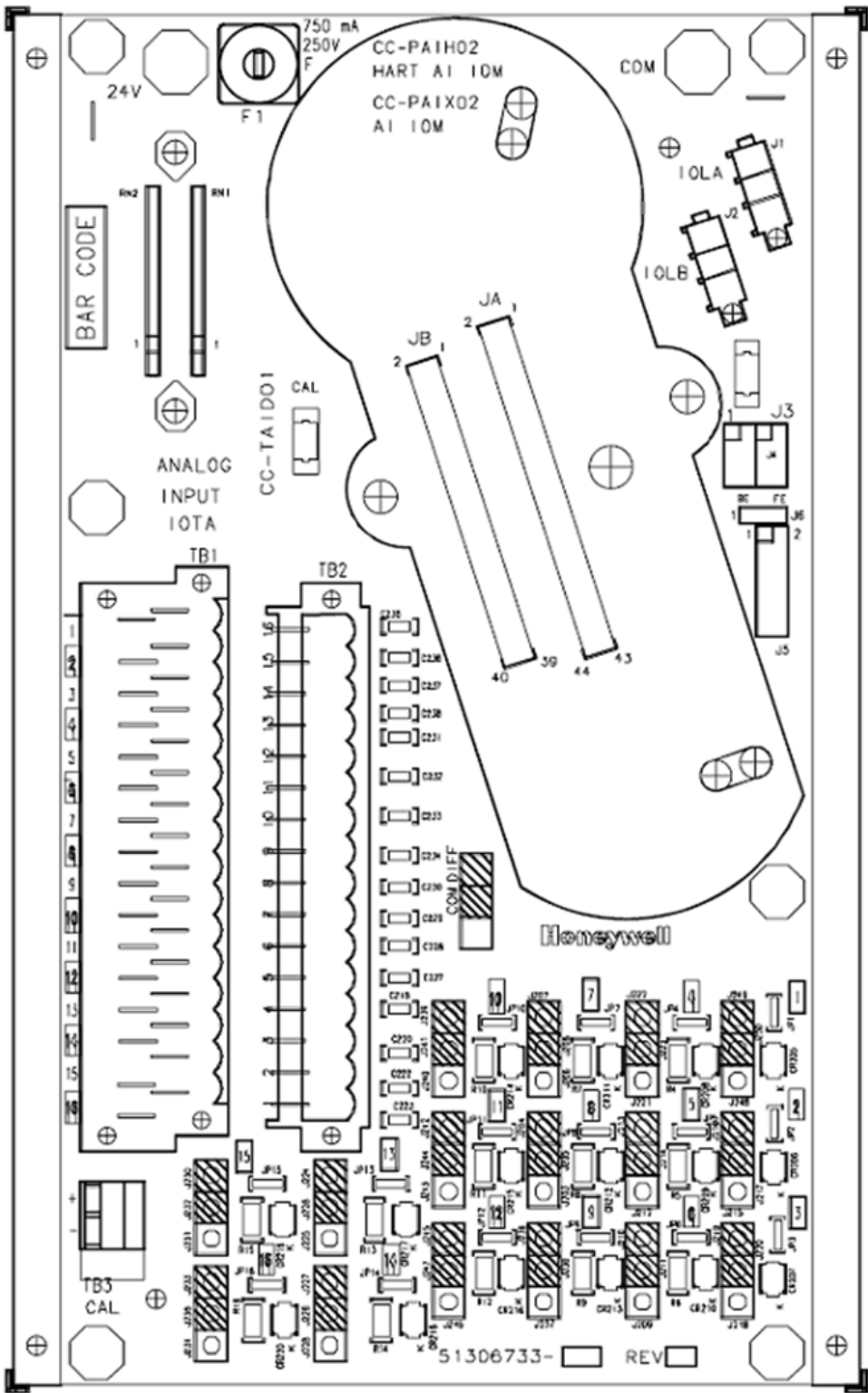
CAUTION

Jumper pins can bend or break while removing, replacing, or reinserting jumpers from/on the IOTA. Broken pins can result in loss of use of a channel on the module. Therefore, you must exercise caution while removing, replacing, or reinserting the jumpers so that the pins remain straight. Also, do not try to straighten the bent or deformed pins.

5.4.5 IOTA board and connections – Differential Analog input module

The Series C Analog Input 9 inch, non-redundant IOTA is displayed in the following figure.

Figure 5.17 Series C Differential Analog Input 9 inch, non-redundant IOTA



To properly wire your module to the Series C Analog Input IOTA for differential configuration with terminal block 1 (TB1) and terminal block 2 (TB2), use the following table.

Table 5.13 Series C Differential Analog Input 9 and 12 inch - terminal block 1

Terminal Block 1		
Channel	Return screw	Power screw
Channel 1	2	1
Channel 2	4	3
Channel 3	6	5
Channel 4	8	7
Channel 5	10	9
Channel 6	12	11
Channel 7	14	13
Channel 8	16	15
Channel 9	18	17
Channel 10	20	19
Channel 11	22	21
Channel 12	24	23
Channel 13	26	25
Channel 14	28	27
Channel 15	30	29
Channel 16	32	31

ATTENTION

- Three pin jumper labels are different for 9' and 12' IOTAs.
- All channels available in these IOTAs are configured for differential mode by default. If a shorting jumper is not present, that channel is configured in differential mode. If you want to modify the configuration from differential mode to single ended mode, refer to these to short the pair of jumpers.

Table 5.14 Series C Differential Analog Input 9 inch - terminal block 2

Terminal Block 2			
CC-TAID01 IOTA			
If TB2 screw is...	Then, the channel is...	And the pair of jumper to be short for differential configuration	And the pair of jumper to be short for single ended configuration
TB2-16	Ch 1	J249 - J250	J248 - J250
TB2-15	Ch 2	J216 - J217	J215 - J217
TB2-14	Ch 3	J219 - J220	J218 - J220
TB2-13	Ch 4	J222 - J223	J221 - J223
TB2-12	Ch 5	J213 - J214	J212 - J214
TB2-11	Ch 6	J210 - J211	J209 - J211
TB2-10	Ch 7	J207 - J208	J206 - J208
TB2-9	Ch 8	J204 - J205	J203 - J205
TB2-8	Ch 9	J236 - J238	J237 - J238
TB2-7	Ch 10	J239 - J241	J240 - J241
TB2-6	Ch 11	J242 - J244	J243 - J244
TB2-5	Ch 12	J245 - J247	J246 - J247

Terminal Block 2 CC-TAID01 IOTA			
If TB2 screw is...	Then, the channel is...	And the pair of jumper to be short for differential configuration	And the pair of jumper to be short for single ended configuration
TB2-4	Ch 13	J224 - J226	J225 - J226
TB2-3	Ch 14	J227 - J229	J228 - J229
TB2-2	Ch 15	J230 - J232	J231 - J232
TB2-1	Ch 16	J233 - J235	J234 - J235

Table 5.15 Series C Differential Analog Input 12 inch - terminal block 2

Terminal Block 2 CC-TAID11 IOTA			
If TB2 screw is...	Then, the channel is...	And the pair of jumper to be short for differential configuration	And the pair of jumper to be short for single ended configuration
TB2-16	Ch 1	JP21 - JP23	JP22 - JP23
TB2-15	Ch 2	JP24 - JP26	JP25 - JP26
TB2-14	Ch 3	JP51 - JP53	JP52 - JP53
TB2-13	Ch 4	JP54 - JP56	JP55 - JP56
TB2-12	Ch 5	JP57 - JP59	JP58 - JP59
TB2-11	Ch 6	JP60 - JP66	JP61 - JP66
TB2-10	Ch 7	JP62 - JP67	JP63 - JP67
TB2-9	Ch 8	JP64 - JP68	JP65 - JP68
TB2-8	Ch 9	JP27 - JP29	JP28 - JP29
TB2-7	Ch 10	JP30 - JP32	JP31 - JP32
TB2-6	Ch 11	JP33 - JP35	JP34 - JP35
TB2-5	Ch 12	JP36 - JP38	JP37 - JP38
TB2-4	Ch 13	JP39 - JP41	JP40 - JP41
TB2-3	Ch 14	JP42 - JP44	JP43 - JP44
TB2-2	Ch 15	JP45 - JP47	JP46 - JP47
TB2-1	Ch 16	JP48 - JP50	JP49 - JP50

The Series C Analog Input 12 inch, non-redundant IOTA is displayed in the following figure.