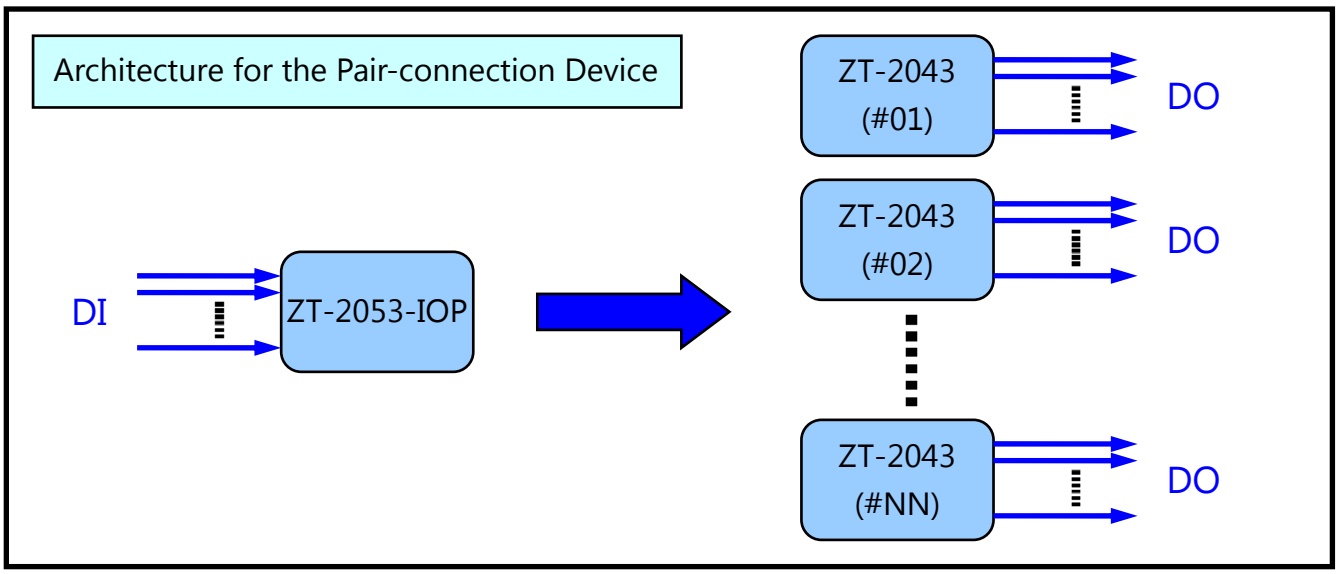
ZT-2053-IOP Quick Start

ZigBee Wireless I/O Pair Connection



1 *What's in the shipping package?*

The package includes the following items:



ZT-2053-IOP Device



ANT-124-05



Quick Start Guide

2 *Preparing the device*

1. Install the ZT Configuration Utility (v2.0.3 or later) if the ZT-2053-IOP is NOT paired with ZT-2043 device, the software configuration is needed.

   CD: \Napdos\ZigBee\ZT_Series\Utility
   http://ftp.icpdas.com/pub/cd/usbcd/napdos/zigbee/zt_series/utility

2. Power Supply: +10 ~ +30 V_{DC}

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3 Introduction of configurations

Overview of the ZT-2053-IOP Hardware Configuration

The DIP and Rotary switches should be adjusted based on the specific network requirements, as described below.

- **Rotary Switch** (LSB Address)

  A. On the ZT-2053-IOP, this switch is fixed and cannot be adjusted. (The ZigBee coordinator is always set to 0x0000)

  B. On the ZT-2043, the switch is used to define the Device ID and Node ID for the ZigBee network.

Rotary Switch	Value	Note
ZT-2053-IOP	0	RUN (Node ID=0x0000)
	1 ~ 15	INIT. (Software Configuration)
ZT-2043	1 ~ 15 (0x0001 ~ 0x000F)	Can be set to any position from '1' to 'F' based on the number of I/O pairs

- **DIP Switch (1)** (MSB Address)

  A. On the ZT-2043, this switch is used to define the **MSB** (Most Significant Bit) **address**.

- **DIP Switches (1~3)** (Pair Number / Protocol, Checksum)

  A. On the ZT-2053-IOP, these switches are used to define the **number of I/O pairs** for showing debug message via LED indicators. It polls every ZT-2043 device every 10 seconds via an unicast frame to check the **connection survival**.

  B. On the ZT-2043, these switches are used to define the **protocol** and **checksum**.

DIP Switch No.	1	2	3	Note
ZT-2053-IOP	Pairing Number			Connection Survival
	OFF	*OFF*	*OFF*	0 (check slave 0x01)
	OFF	*OFF*	**ON**	1 (check slave 0x01 – 0x02)
	OFF	**ON**	*OFF*	2 (check slave 0x01 – 0x03)
	OFF	**ON**	**ON**	3 (check slave 0x01 – 0x04)
	ON	*OFF*	*OFF*	4 (check slave 0x01 – 0x05)
	ON	*OFF*	**ON**	5 (check slave 0x01 – 0x06)
	ON	**ON**	*OFF*	6 (check slave 0x01 – 0x07)
	ON	**ON**	**ON**	7 (check slave 0x01 – 0x08)
ZT-2043	MSB Address	Protocol	Checksum	
	OFF	*OFF (DCON)*	*OFF*	

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➢ **DIP Switch (4)** (Safe Value / Pan ID)

This switch is used to enable the **watchdog** of the remote ZT-2043 device to start the safe value function.

DIP Switch No.	DIP Switch 4	Note
ZT-2053-IOP	OFF (0x0000)	If the safe value function of the remote ZT-2043 is disabled
	ON (0x0001)	If the safe value function of the remote ZT-2043 is enabled
ZT-2043	OFF (0x0000)	※The Pan ID configuration is fixed at the 0x0000

➢ **DIP Switches (5~8)** (RF Channel)

These switches are used to define the **RF channel** used for both the ZT-2053-IOP and ZT-2043 and the values set for both devices must be the same.

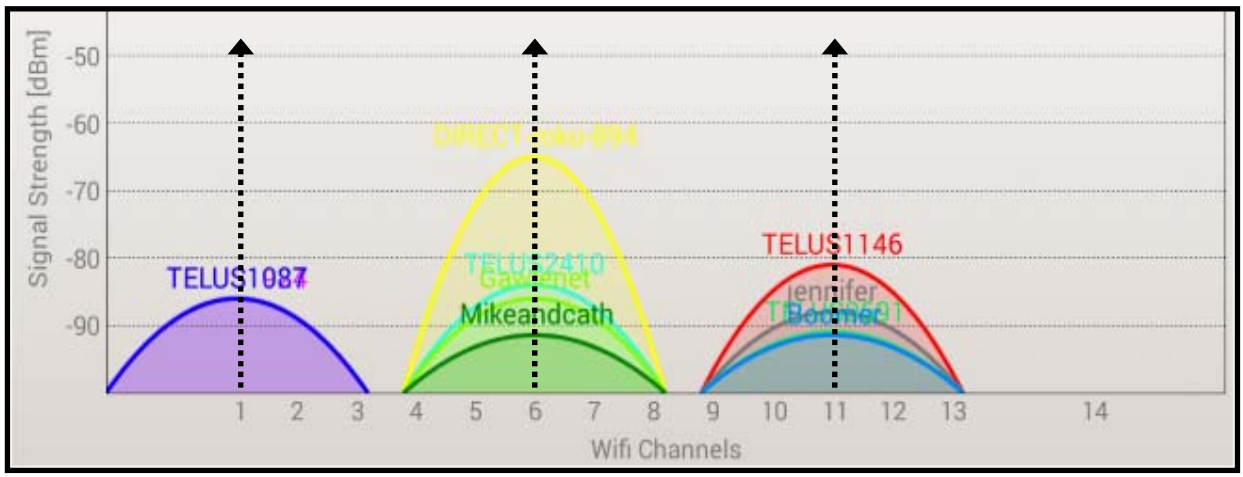
DIP Switch No.	5	6	7	8	Note
ZT-2053-IOP ZT-2043	0x08	0x04	0x02	0x01	Value
	OFF	*OFF*	*OFF*	*OFF*	0 (2405 MHz)
	OFF	*OFF*	*OFF*	**ON**	1 (2410 MHz)
	OFF	*OFF*	**ON**	*OFF*	2 (2415 MHz)
	OFF	*OFF*	**ON**	**ON**	3 (2420 MHz)
	OFF	**ON**	*OFF*	*OFF*	4 (2425 MHz)
	OFF	**ON**	*OFF*	**ON**	5 (2430 MHz)
	OFF	**ON**	**ON**	*OFF*	6 (2435 MHz)
	OFF	**ON**	**ON**	**ON**	7 (2440 MHz)
	ON	*OFF*	*OFF*	*OFF*	8 (2445 MHz)
	ON	*OFF*	*OFF*	**ON**	9 (2450 MHz)
	ON	*OFF*	**ON**	*OFF*	A (2455 MHz)
	ON	*OFF*	**ON**	**ON**	B (2460 MHz)
	ON	**ON**	*OFF*	*OFF*	C (2465 MHz)
	ON	**ON**	*OFF*	**ON**	D (2470 MHz)
	ON	**ON**	**ON**	*OFF*	E (2475 MHz)
	ON	**ON**	**ON**	**ON**	F (2480 MHz)
※The RF channel must be set to the same value on both devices.					

※ The Method of Channel Selection：

Scan the channel of WLAN which have been occupied via some tools. For example, you can download the application of Wifi Analyzer in your Smartphone. It would help you to detect the wireless signal and analysis the WLAN.

As the below screenshot shown, there are several WLAN on the channel 1, 6 and 11. User can refer the below chart of Wifi and ZigBee to select the best channel. As the result we know the ZigBee channel 4, 9, E and F are not overlap with the WLAN, and they are recommended.

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ZigBee	WiFi
CH 0 (2405)	CH 1 (2412)
CH1 (2410)	CH 2 (2417)
CH 2 (2415)	CH 3 (2422)
CH3 (2420)	CH 4 (2427)
CH 4 (2425)	CH 5 (2432)
CH 5 (2430)	CH 6 (2437)
CH6 (2435)	CH 7 (2442)
CH 7 (2440)	CH 8 (2447)
CH 8 (2445)	CH 9 (2452)
CH 9 (2450)	CH 10 (2457)
CH A (2455)	CH 11 (2462)
CH B (2460)	CH 12 (2467)
CH C (2465)	CH 13 (2472)
CH D (2470)	CH 14 (2484)
CH E (2475)	
CH F (2480)	

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Overview of the ZT-2053-IOP Software Configuration (Advanced)

A number of advanced functions and configurations are available on ZT-20XX-IOP devices, including functions related to wireless encryption, Safe Values for the output channels, adjustable I/O pairings and the ability to modify remote devices that have a different number of I/O channels to be paired, etc.

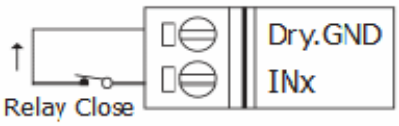
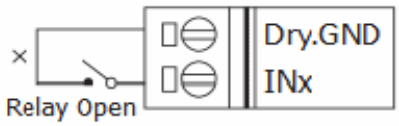
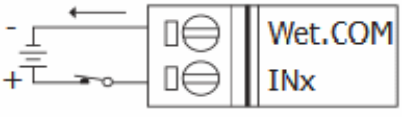
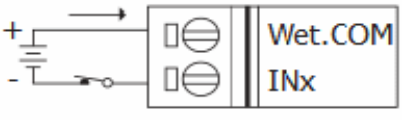
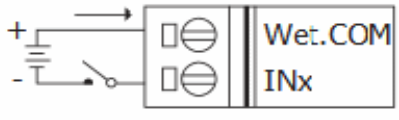
By default, device pairing is fixed to devices with the same number of I/O channels. The following is an overview of common ZT-20XX-IOP and ZT-20XX device pairings.

Number of I/O Pairs	Synchronization	ZT-20XX-IOP	ZT-20XX
4/4	Two-way	ZT-2060-IOP	ZT-2060
8	One-way	ZT-2052-IOP	ZT-2042
8/8	Two-way	ZT-2055-IOP	ZT-2055
14	One-way	ZT-2053-IOP	ZT-2043

Flexibility in device pairings for ZT-20XX-IOP devices can be achieved through software configuration. Please refer the section 3.4 of the user manual for more details.

4 Wire Connections

- ZT-2053-IOP

Input Type	ON State LED ON Readback as 1	OFF State LED OFF Readback as 0
Dry Contact	Relay ON	Relay OFF
		
Wet Contact (Source)	Voltage > 3.5V	Voltage < 1V
		
Wet Contact (Sink)	Open Collector ON	Open Collector OFF
		

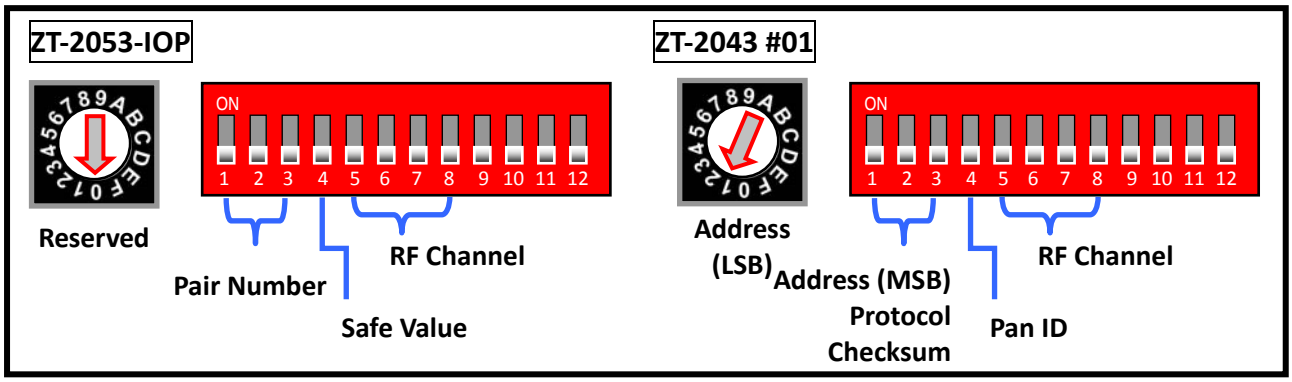
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5 Applications

➢ Example 1 (Default: One-to-One I/O Pair-connection)

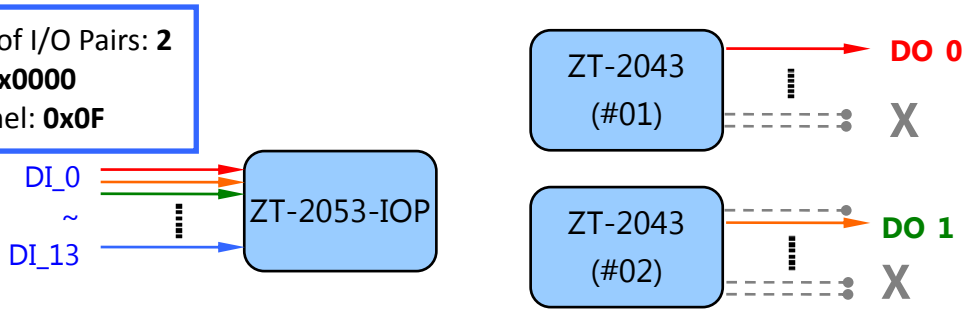
Pan ID: **0x0000**
RF Channel: **0x00**

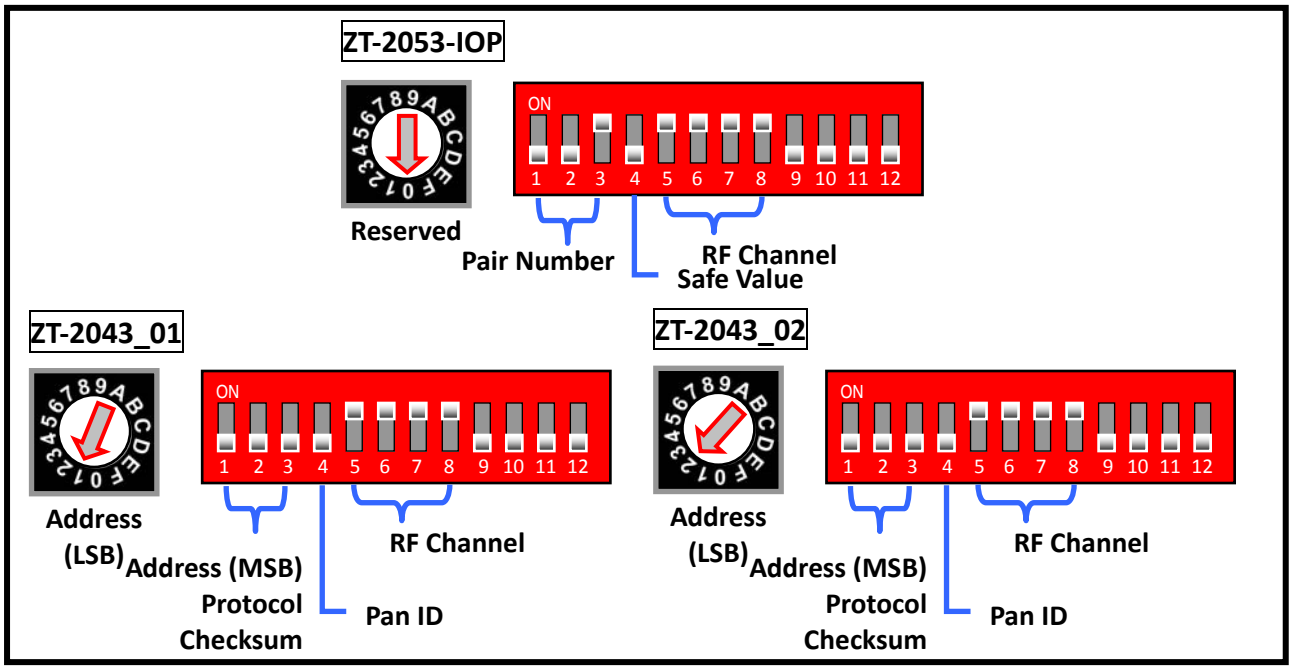




➢ Example 2 (Synchronizing different digital channels to different devices)

Number of I/O Pairs: **2**
Pan ID: **0x0000**
RF Channel: **0x0F**

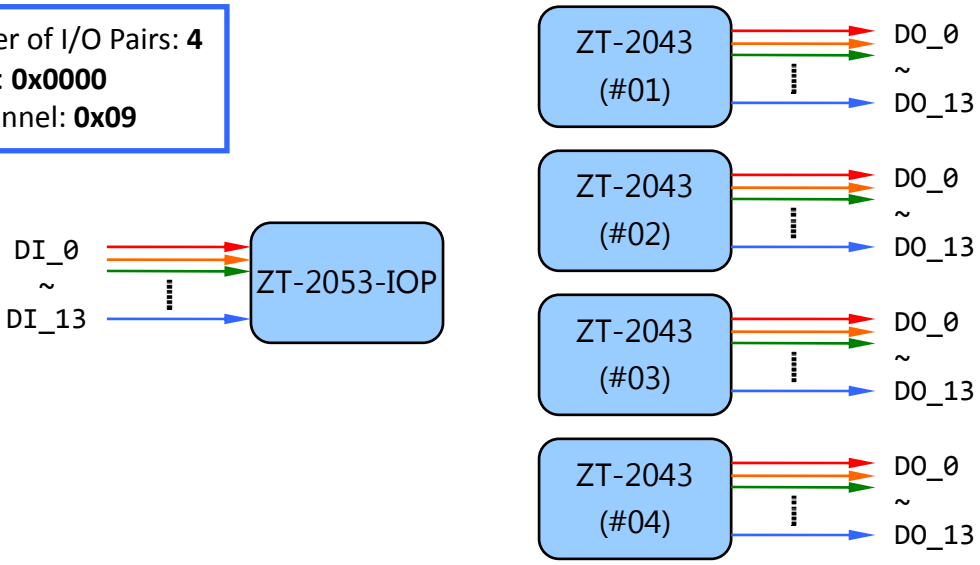


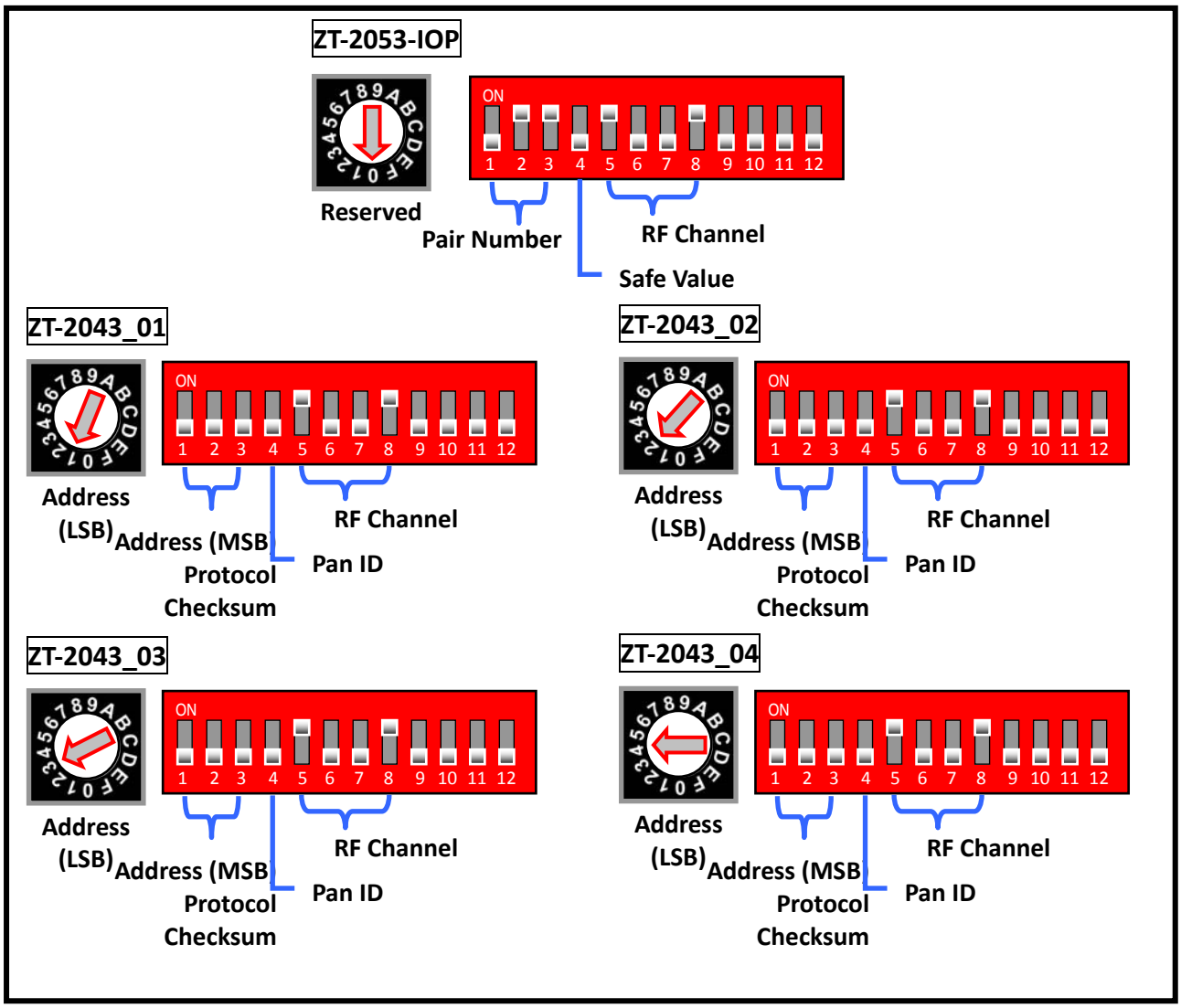


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➢ Example 3 (Synchronizing all of the digital channels to different devices)

Number of I/O Pairs: **4**
Pan ID: **0x0000**
RF Channel: **0x09**





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6 Appendix

- LED Indicators

ZT-2053-IOP	Status	Remarks
PWR	Steady Lit	ZigBee communication is functioning correctly
	Flashing Once	Communication to ZigBee slave 0x01 has been lost
	Flashing Twice	Communication to ZigBee slave 0x02 has been lost
	……	……
	Flashing Eight Times	Communication to ZigBee slave 0x08 has been lost
ZigBee	Steady Lit	ZigBee network has been established
	Flashing to Steady Lit	Rejoin again the ZigBee network or it has occupied
DI	ON/Off	The status of the DI channels
DO	ON/Off	The status of the DO channels

ZT-2043	Status	Remarks
PWR	Steady Lit	The power is on
	Blinking (200ms)	There was a Module Initialization failure
	Blinking (1s)	The Host Watchdog is enabled
	Steady Unlit	The power is off
ZigBee	Steady Lit	The signal strength is high
	Blinking (500 ms)	The signal is available
	Blinking (1s)	The signal is weak
	Blinking (2s)	The signal is poor or no ZigBee network is available.
DI/DO	Steady Lit	The DI/DO channel is enabled
	Steady Unlit	The DI/DO channel is disabled

- Technical Service

If you have any difficulties using your ZT-2000-IOP series I/O device, please send a description of the problem to service@icpdas.com

Include the following items in your email:

- *A description or diagram of the current DIP switch positions.*
- *A copy of the configuration file for the ZT-IOP coordinator. This file can be obtained using the procedure outlined below and should be attached to your email.*

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