P3H2X4XBHN

I3C Hub with Two Controller Ports and Four/Eight Target Ports

Rev. 2.0 — 6 May 2026 **Product brief**

Document information

Information	Content
Keywords	P3H2X4XBHN_PB, P3H2840BHN, P3H2440BHN, P3H2841BHN, P3H2441BHN, I3C Hub, I3C, I2C, SMBus
Abstract	The P3H2X4XBHN are multiport I3C hub devices that connect to a host CPU via I3C/I2C/SMBus bus on one side and connect to multiple peripheral devices on the other side.

1 General description

The P3H2X4XBHN are multiport I3C hub devices that connect to a host CPU via I3C/I2C/SMBus bus on one side and connect to multiple peripheral devices on the other side. The hub ICs have two controller ports and up to eight target ports to expand bus connectivity to multiple devices. These hub devices also support highly flexible voltage level translation. The controller ports support either I2C/SMBus or I3C buses and connect to a CPU, BMC, or SOC. The target ports can be configured as I2C/SMBus, I3C, or GPIO and connect to peripherals.

Each controller port can be connected to different IO voltages, independent of each other. Depending on the controller port mode, it can be I2C/SMBus mode (3.3 V open drain tolerant IO port) or I3C mode (1.0 V, 1.2 V, or 1.8 V push/pull IO port).

Each target port can be connected to different IO voltages, independent of each other. Depending on the target port mode, it can be I2C/SMBus mode (3.3 V open-drain tolerant IO port.), I3C mode (1.0 V, 1.2 V, or 1.8 V push/pull IO port) or be configured as a Agile GPIO pins.

2 Features and benefits

Main features and benefits are listed as follows.

- Two controller ports to connect to I3C or I2C/SMBus controller devices: Controller port 0 (CP0) and controller port 1 (CP1)
- An I3C target device to provide hub control/configuration and data buffer access for each controller port
- A register map for hub device, controller ports, and target ports configuration/control/status
- Up to eight target ports (TP); each port can be used to connect to I3C only devices, I2C only devices, mixed I3C and I2C devices, SMBus devices only, or be used as GPIOs
- A hub network/circuitry to communicate between controller ports to target ports in a transparent bridge manner
- A multiplexer to connect one controller port to the hub network
- VDDIN = 3.3 V ± 10 %
- Integrated LDO regulators provide two target port VCCIO voltage domains, two controller port VCCIO domains, and internal core logic power. The voltages supported are 1.0 V, 1.2 V, or 1.8 V
- ESD protection
- Package HVQFN28 lead package, 0.4 mm pitch in 4 mm x 4 mm
- Operating temperature range: T_{amb} -40 °C to +85 °C

3 Ordering options

Table 1 describes various ordering options.

Table 1. Ordering options

Type number	Orderable part number	Package	Packing method	Minimum order quantity	Temperature
P3H2440BHN	P3H2440BHNHP	HVQFN28	REEL 13" Q2 NDP	6000	T_{amb} = -40 °C to +85 °C
P3H2840BHN	P3H2840BHNHP	HVQFN28	REEL 13" Q2 NDP	6000	T_{amb} = -40 °C to +85 °C
P3H2441BHN	P3H2441BHNHP	HVQFN28	REEL 13" Q2 NDP	6000	T_{amb} = -40 °C to +85 °C
P3H2841BHN	P3H2841BHNHP	HVQFN28	REEL 13" Q2 NDP	6000	T_{amb} = -40 °C to +85 °C

4 Block diagram

Figure 1 shows the block diagram of P3H2X4XBHN.

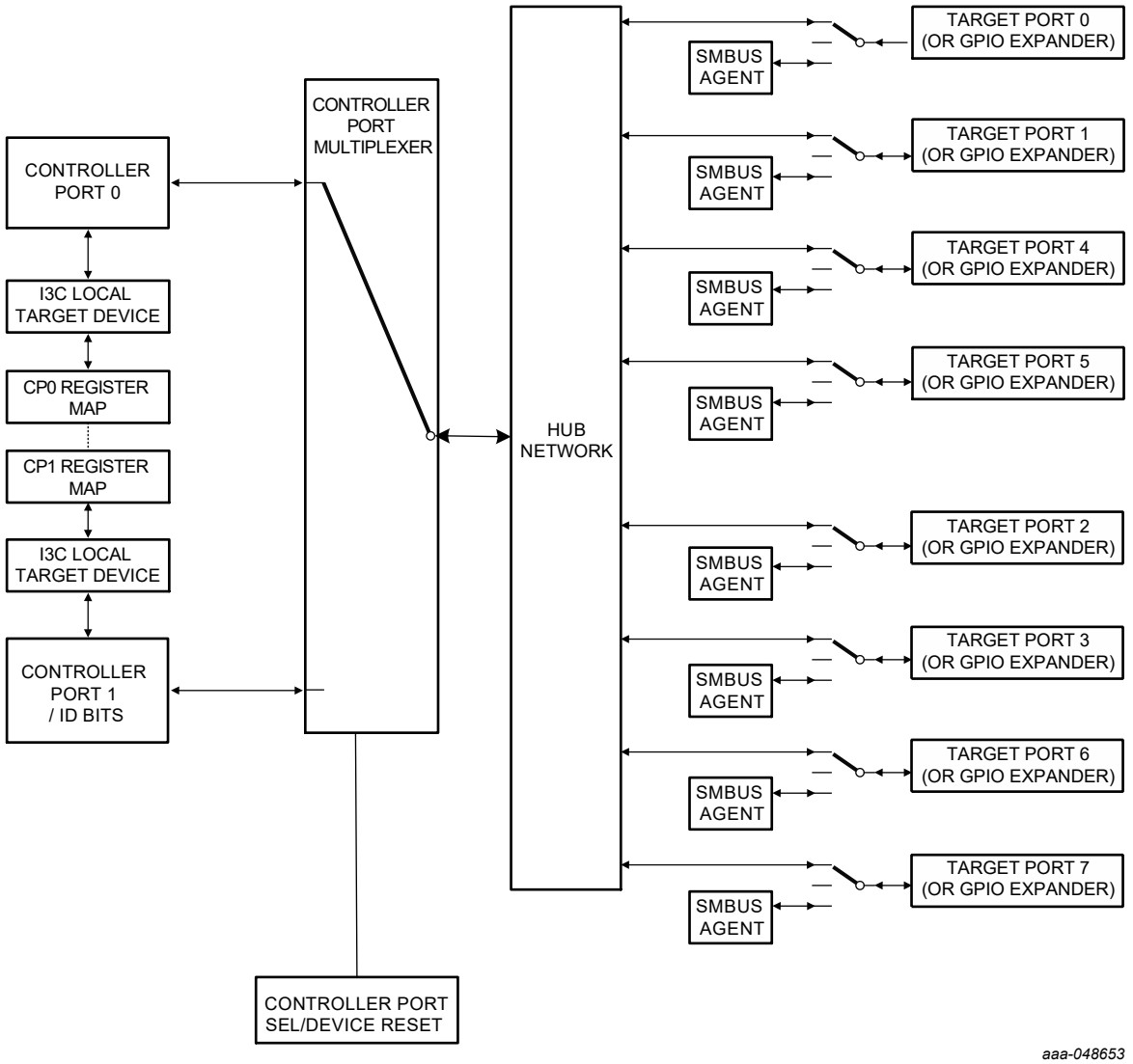

Figure 1. Block diagram

5 Revision history

Table 2 summarizes the revisions to this document.

Table 2. Revision history

Document ID	Release date	Description
P3H2X4XBHN_PB v.2.0	6 May 2026	Updated per CIN #202604010I: • Replaced "P3H244X_P3H284X" with "P3H2X4XBHN" throughout the document • Editorial changes
P3H244X_P3H284X_PB v.1.0	26 May 2025	Initial release

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