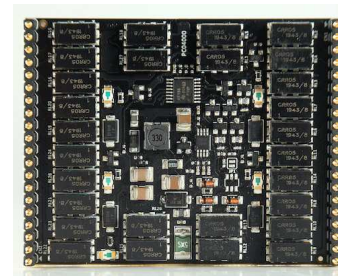
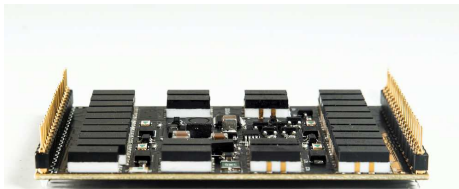
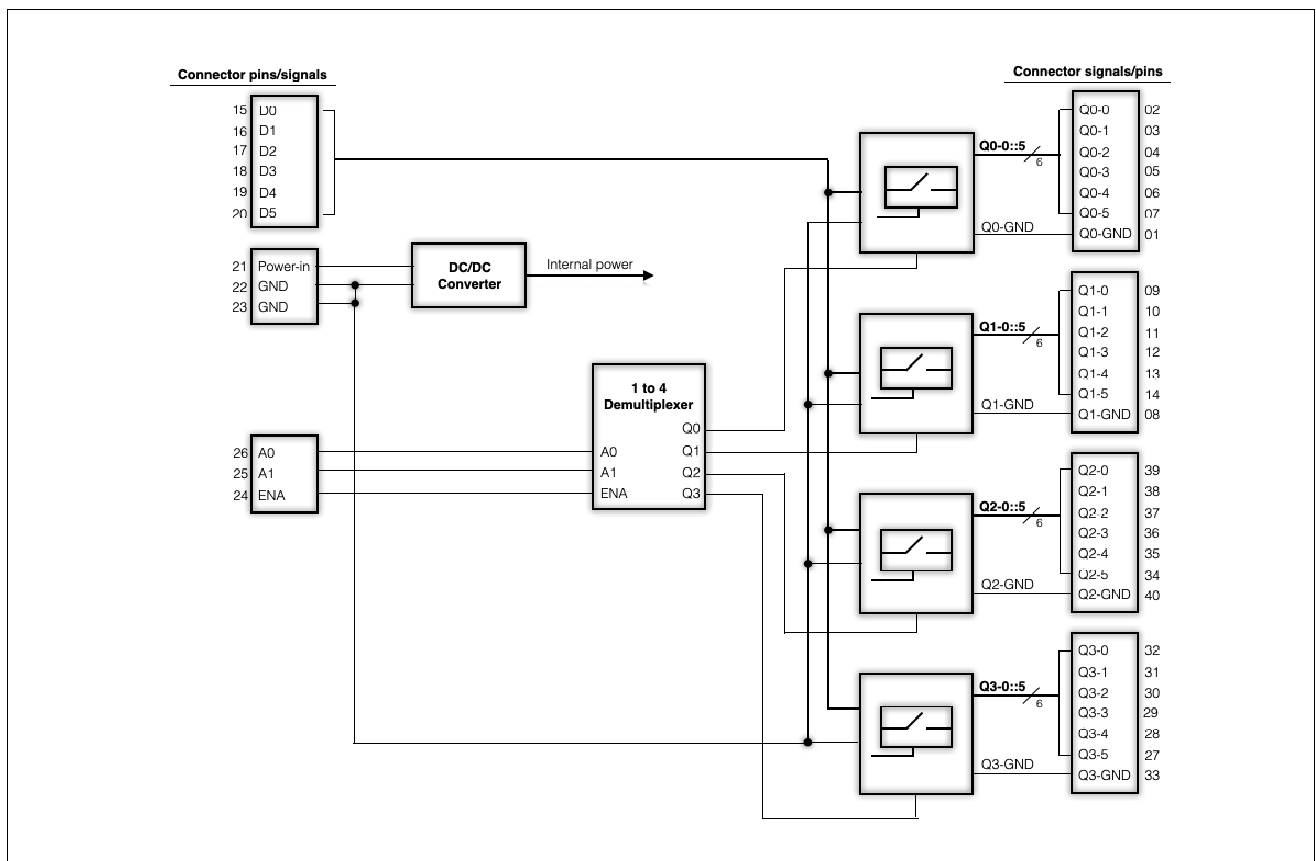


NanoPlex general description

NanoPlex NPS-06-01-04A Universal Relay ISP-Channel Multiplier allows the expansion of the number of Channels of ISP-Programming tools, while also offering galvanic isolation. The total number of switched signals is 24. NanoPlex is used on PCBAs production lines, in ATE-controlled ISP programming. Thanks to its ultra-small size (only 51.0x66.5 mm), this NanoPlex model takes easily place in Test Fixtures. Designed for piggyback mounting, NanoPlex is universal and compatible with all types of ISP Programming tools.

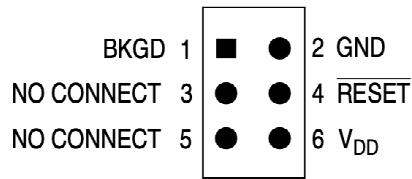


NanoPlex NPS-06-01-04A Block Diagram



NXP (former Freescale) HSC08 Microcontrollers

NXP HSC08 Series of microcontrollers is programmed through BDM interface.



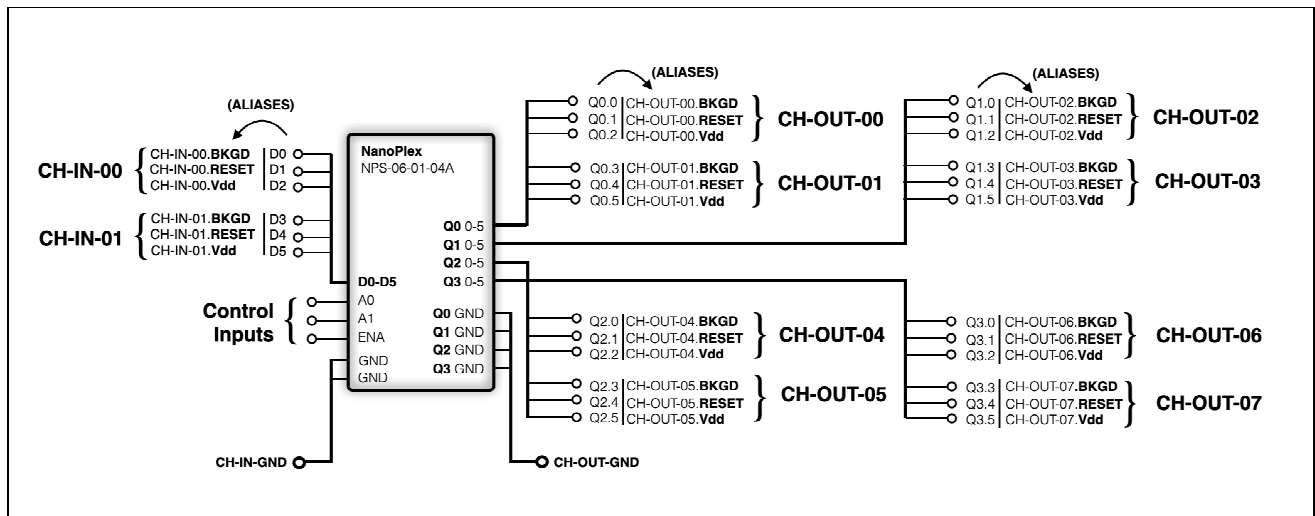
Three signals (BKGD, RESET and Vdd) are required to accomplish the ISP Programming.
 NanoPlex NPS-06-01-04A offers four operating modes: 1x4, 2x8, 3x12 and 6x24.
 For details of this NanoPlex model, please refer to:

► *DC04016 Flexibility of NanoPlex NPS-06-01-04A Application Note*

How to use NanoPlex NPS-06-01-04A with BDM interface

The most convenient way to ISP program multiple NXP HSC08 Series Microcontrollers through NanoPlex is using this model in **2x8 operating mode**. Two NanoPlex input Channels are multiplied to eight different, galvanic isolated output Channels.

On the following mode examples diagram, for a better explanation, signal names are assigned with aliases (texts are in **bold**).



Truth table

(the symbol ► stands for "connected to")

ENA	A1	A0	CH-IN...	...00.BKGD ►	...00.RESET ►	...00.Vdd ►	...01.BKGD ►	...01.RESET ►	...01.Vdd ►
1	0	0	CH-OUT...	...00.BKGD	...00.RESET	...00.Vdd	...01.BKGD	...01.RESET	...01.Vdd
1	0	1	CH-OUT...	...02.BKGD	...02.RESET	...02.Vdd	...03.BKGD	...03.RESET	...03.Vdd
1	1	0	CH-OUT...	...04.BKGD	...04.RESET	...04.Vdd	...05.BKGD	...05.RESET	...05.Vdd
1	1	1	CH-OUT...	...06.BKGD	...06.RESET	...06.Vdd	...07.BKGD	...07.RESET	...07.Vdd
0	X	X	CH-OUT	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z

Operating sequence

ENA = 1;

A1-A0 = "00"

(CN-IN-00.BKGD ► CH-OUT-00.BKGD)
(CN-IN-00.RESET ► CH-OUT-00.RESET)
(CN-IN-00.Vdd ► CH-OUT-00.Vdd)

(CN-IN-01.BKGD ► CH-OUT-01.BKGD)
(CN-IN-01.RESET ► CH-OUT-01.RESET)
(CN-IN-01.Vdd ► CH-OUT-01.Vdd)

A1-A0 = "01"

(CN-IN-00.BKGD ► CH-OUT-02.BKGD)
(CN-IN-00.RESET ► CH-OUT-02.RESET)
(CN-IN-00.Vdd ► CH-OUT-02.Vdd)

(CN-IN-01.BKGD ► CH-OUT-03.BKGD)
(CN-IN-01.RESET ► CH-OUT-03.RESET)
(CN-IN-01.Vdd ► CH-OUT-03.Vdd)

A1-A0 = "10"

(CN-IN-00.BKGD ► CH-OUT-04.BKGD)
(CN-IN-00.RESET ► CH-OUT-04.RESET)
(CN-IN-00.Vdd ► CH-OUT-04.Vdd)

(CN-IN-01.BKGD ► CH-OUT-05.BKGD)
(CN-IN-01.RESET ► CH-OUT-05.RESET)
(CN-IN-01.Vdd ► CH-OUT-05.Vdd)

A1-A0 = "11"

(CN-IN-00.BKGD ► CH-OUT-06.BKGD)
(CN-IN-00.RESET ► CH-OUT-06.RESET)
(CN-IN-00.Vdd ► CH-OUT-06.Vdd)

(CN-IN-01.BKGD ► CH-OUT-07.BKGD)
(CN-IN-01.RESET ► CH-OUT-07.RESET)
(CN-IN-01.Vdd ► CH-OUT-07.Vdd)

Connector pinout (aliases signals)

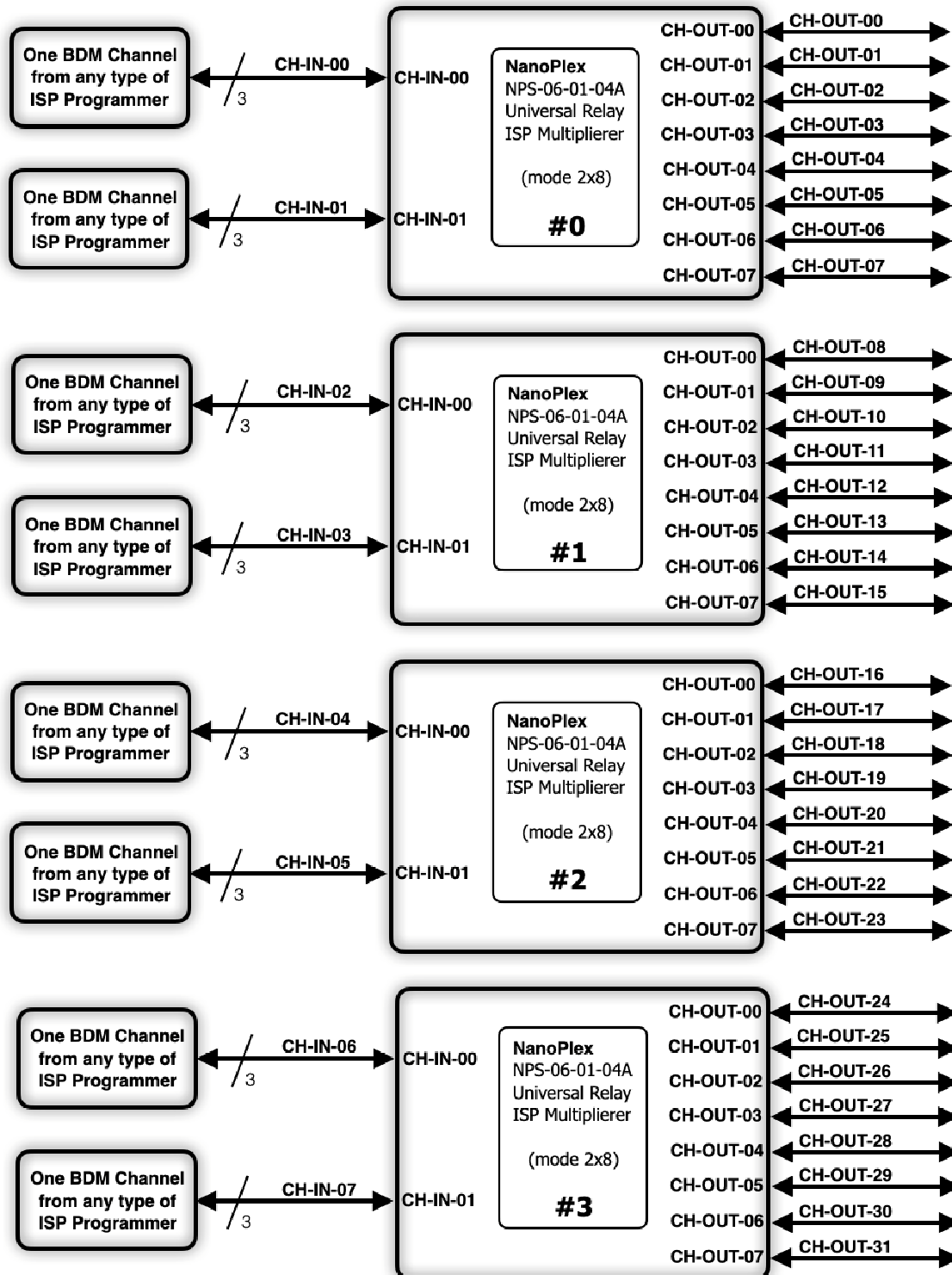
Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
01	CH-OUT-GND	11	CH-OUT-03.Vdd	21	Power	31	CH-OUT-06.RESET
02	CH-OUT-00.BKGD	12	CH-OUT-03.BKGD	22	GND (*)	32	CH-OUT-06.BKGD
03	CH-OUT-00.RESET	13	CH-OUT-03.RESET	23	GND (*)	33	CH-OUT-GND
04	CH-OUT-00.Vdd	14	CH-OUT-03.Vdd	24	ENA	34	CH-OUT-05.Vdd
05	CH-OUT-01.BKGD	15	CN-IN-00.BKGD	25	A1	35	CH-OUT-05.RESET
06	CH-OUT-01.RESET	16	CN-IN-00.RESET	26	A0	36	CH-OUT-05.BKGD
07	CH-OUT-01.Vdd	17	CN-IN-00.Vdd	27	CH-OUT-07.Vdd	37	CH-OUT-04.Vdd
08	CH-OUT-GND	18	CN-IN-01.BKGD	28	CH-OUT-07.RESET	38	CH-OUT-04.RESET
09	CH-OUT-02.BKGD	19	CN-IN-01.RESET	29	CH-OUT-07.BKGD	39	CH-OUT-04.BKGD
10	CH-OUT-02.RESET	20	CN-IN-01.Vdd	30	CH-OUT-06.Vdd	40	CH-OUT-GND

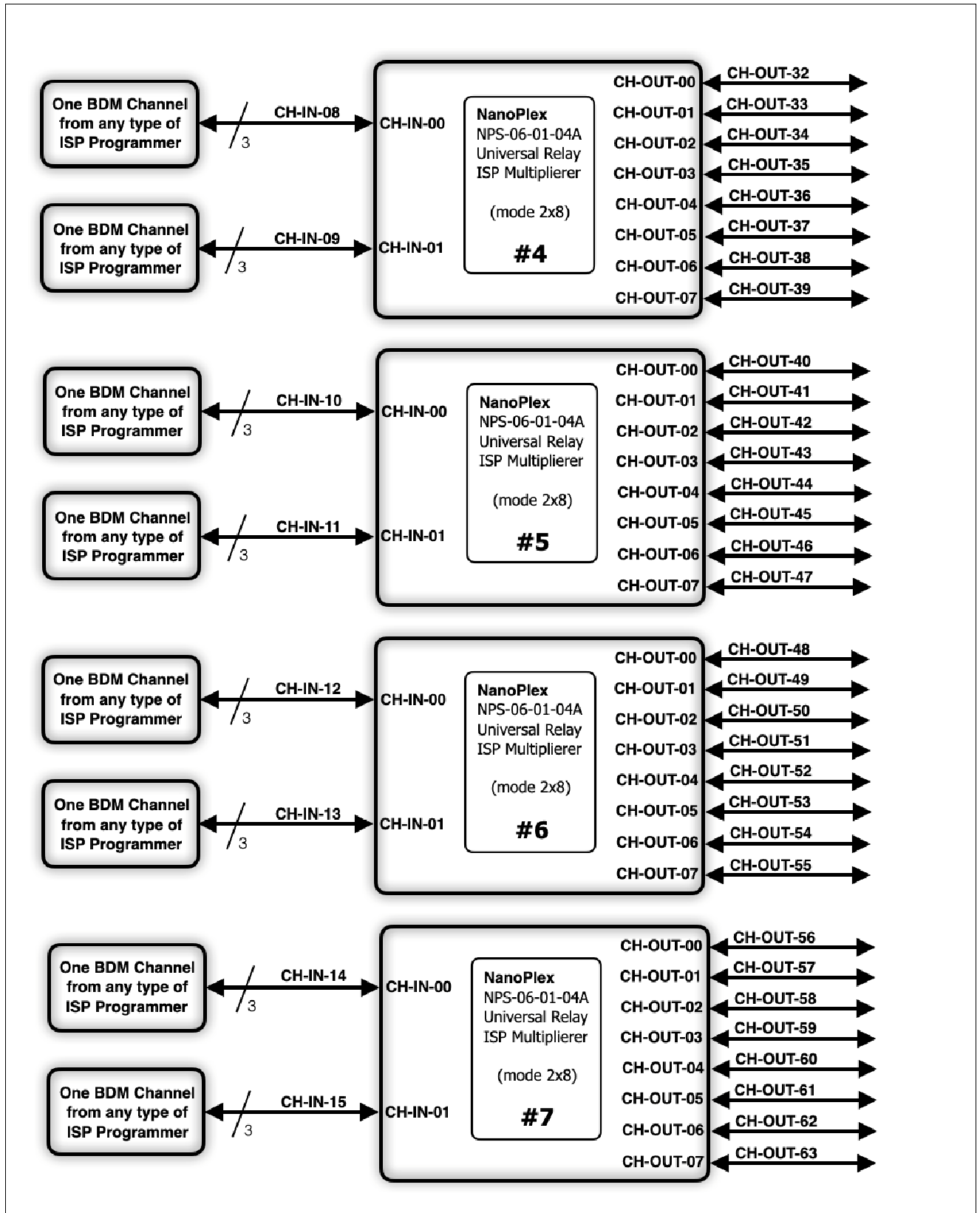
(*) GND at pins 22/23 is used for both Power GND and CN-IN-GND.

Using 8 NanoPlex NPS-06-01-04A units for a 64 Channels systems

The following diagram shows how eight NanoPlex NPS-06-01-04A units can be used to create a massive, 64 Channels ISP Programming multipliers. In this example, 16 input Channels are coming from any brand or type of ISP Programming tool.

Examples diagram 1/2





As shown on the diagram above, signal names transition for this systems formed by eight NanoPlex NPS-06-01-04A units is straightforward.

Channels and aliases

NanoPlex Unit	Input Channels	Input Aliases	Output Channels	Output Aliases
#0	CH-IN-00	▶ CH-IN-00	CH-OUT-00	▶ CH-OUT-00
#0			CH-OUT-01	▶ CH-OUT-01
#0			CH-OUT-02	▶ CH-OUT-02
#0			CH-OUT-03	▶ CH-OUT-03
#0	CH-IN-01	▶ CH-IN-01	CH-OUT-04	▶ CH-OUT-04
#0			CH-OUT-05	▶ CH-OUT-05
#0			CH-OUT-06	▶ CH-OUT-06
#0			CH-OUT-07	▶ CH-OUT-07
#1	CH-IN-00	▶ CH-IN-02	CH-OUT-00	▶ CH-OUT-08
#1			CH-OUT-01	▶ CH-OUT-09
#1			CH-OUT-02	▶ CH-OUT-10
#1			CH-OUT-03	▶ CH-OUT-11
#1	CH-IN-01	▶ CH-IN-03	CH-OUT-04	▶ CH-OUT-12
#1			CH-OUT-05	▶ CH-OUT-13
#1			CH-OUT-06	▶ CH-OUT-14
#1			CH-OUT-07	▶ CH-OUT-15
..				
..				
..				
#7	CH-IN-00	▶ CH-IN-14	CH-OUT-00	▶ CH-OUT-56
#7			CH-OUT-01	▶ CH-OUT-57
#7			CH-OUT-02	▶ CH-OUT-58
#7			CH-OUT-03	▶ CH-OUT-59
#7	CH-IN-00	▶ CH-IN-15	CH-OUT-04	▶ CH-OUT-60
#7			CH-OUT-05	▶ CH-OUT-61
#7			CH-OUT-06	▶ CH-OUT-62
#7			CH-OUT-07	▶ CH-OUT-63

Recommended Readings / Further Documentation

- ▶ *DC04013 NanoPlex NPS-06-01-04A Data Sheet*
- ▶ *DC04016 Flexibility of NanoPlex NPS-06-01-04A Application Note*

About Manta Systems

Manta Systems is a hi-tech company, global leader in hi-density signal switching for In-System Programming (ISP) and Testing Systems. The company targets the electronic boards assembly market, where a high number of connections is required.

Manta Systems flagship product is NanoPlex™, a series of Channels Multipliers for In-System Programming (ISP) and Testing instruments. NanoPlex™ is the **world's first universal tool** providing end-user with the possibility of having compact, easy-to-use, professional, reliable In-System Programming (ISP) and Testing Channel Multiplication functionality.

Orders

All NanoPlex™ Series products are generally off-the-shelf.
Shipping within 24 hours from order reception.
Free shipping & 30-day money back guarantee.

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