E I P

N300-AE

English

N300 - Axis Extension

Hardware Manual

Release: **March 18th 2002**

E I P

UNE GAMME COMPLETE DE CONTROLEURS D'AXES
EINE VOLLSTANDIGE PALETTE VON ACHSENSTEUERUNGEN
A COMPLETE RANGE OF MOTION CONTROLLER

E.I.P. SA
CH-1667 Enney

Tél. : 026 / 921 80 40

Fax : 026 /921 80 49

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1 Description

This N300-AE is a 4-axes extension card intended to be use with the EIP N300 CPU Card.

Four N300-AE Cards can be connected simultaneously to an N300 CPU Card. In this case, 15-axes are available. A rotate selector allows addressing the different cards.

Axes connectors are available in one of these executions:

- 10 poles flat cable connectors.
- 9 poles D-Sub connectors.

1.1 Power Supplies

N300-AE power supply are provided by:

- An external power supply for the + 24V (through the N300 Master Card).
- The N300 master Card for the + 5V.
- The N300-AE Card itself for the + 12V. A green LED indicates if this supply is present.

+ 24 V power-supply is protected by a Polyfuse of 0,75 A on the N300-AE card. When this fuse disconnects the 24 V Power-supply, it is only necessary to power off the system, to remove the Short-circuit, and to power on the system again.

1.2 INT Solder Bridge

A solder bridge allows determining axis mode interrupts. It is factory defined on "No interrupt" and must not be changed by the user.

2 N300-AE Card Layout

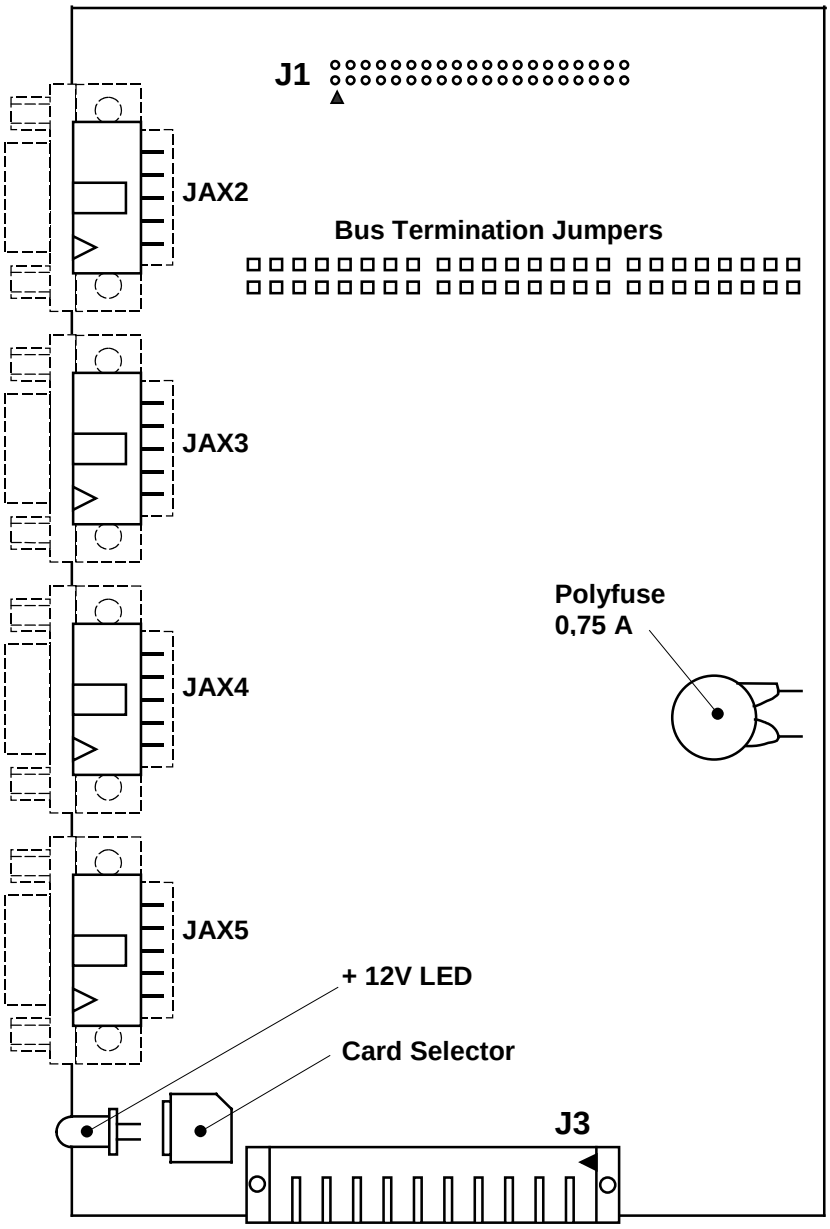

Figure 2-1 : N300-AE Card Layout

3 Connector Description

This chapter describes connectors pinning and gives simplified schematic of external inputs and outputs.

3.1 Bus Connector (J1)

This connector is used to connect all the extension cards to the Master N300 CPU Card. J1 is a 40 pins connector.

Pin Nbr.	Signal Name	Type	Remark
1	VCC Supervision	-	Not Connected
2	BUSCLK	In	System Clock
3	GND	Supply	Logical 0V
4	BUSTOUT	-	Not Used
5	RESET	In	System Reset
6	/IBF	-	Not Connected
7	OBF	-	Not Connected
8	/REQ	Out	Axis Interrupt
9	+ 12 V	Supply	+ 12V from Master Card
10	+ 12 V	Supply	Internally connected to Pin 9
11	BUSALE	-	Not Used
12	GND	Supply	Logical 0V
13	(Reserved)	-	
14	GND	Supply	Logical 0V
15	DT/R	In	Data Direction
16	GND	Supply	Logical 0V
17	/BUSRD	In	System /RD signal
18	+ 5V	Supply	Logical supply
19	/BUSWR	In	System /WR Signal
20	+ 5V	Supply	Internally connected to Pin 18
21	GND	Supply	Logical 0V
22	A7	In	Address Bus, Bit 7
23	A6	In	Address Bus, Bit 6
24	A5	In	Address Bus, Bit 5
25	A4	In	Address Bus, Bit 4
26	A3	In	Address Bus, Bit 3
27	A2	In	Address Bus, Bit 2
28	A1	In	Address Bus, Bit 1
29	A0	In	Address Bus, Bit 0
30	GND	Supply	Logical 0V
31	D7	In/Out	Data Bus, Bit 7
32	D6	In/Out	Data Bus, Bit 6
33	D5	In/Out	Data Bus, Bit 5
34	D4	In/Out	Data Bus, Bit 4
35	D3	In/Out	Data Bus, Bit 3
36	D2	In/Out	Data Bus, Bit 2
37	D1	In/Out	Data Bus, Bit 1
38	D0	In/Out	Data Bus, Bit 0
39	+ 24V	Supply	+ 24V Main Supply
40	+ 24V	Supply	Internally connected to Pin 39

Table 3-1 : Bus Connector (J1)

3.2 Reference Input Connector (J3)

This connector joins together all the reference inputs of all the four axis of the E300-AE Card. The lines INAi and INBi are the same as those of the Axis Connector (JAXn).
When not used as reference inputs INAi and INBi can be used as general-purpose inputs.

Pin Nbr.	Signal Name				Type	Remark
	Card 0	Card 1	Card 2	Card 3		
1	+ 24V	+ 24V	+ 24V	+ 24V	Supply	+ 24 V Main Supply
2	INA2	INA6	INA10	INA14	In	Ref. Switch input A, axis 2, 6,10, 14
3	INB2	INB6	INB10	INB14	In	Ref. Switch input B, axis 2, 6 ,10, 14
4	INA3	INA7	INA11	-	In	Ref. Switch input A, axis 3, 7, 11
5	INB3	INB7	INB11	-	In	Ref. Switch input B, axis 3, 7 ,11
6	INA4	INA8	INA12	-	In	Ref. Switch input A, axis 4, 8, 12
7	INB4	INB8	INB12	-	In	Ref. Switch input B, axis 4, 8, 12
8	INA5	INA9	INA13	-	In	Ref. Switch input A, axis 5, 9 ,13
9	INB5	INB9	INB13	-	In	Ref. Switch input B, axis x
10	+ 24V	+24V	+ 24V	+24V	Supply	Internally connected to Pin 1

Table 3-2 : Reference Input Connector (J3)

3.3 Axis connectors (JAXn)

This connector provides all the lines necessary to pilot one axis. Two versions of connector are available.

- 10 Poles flat cable version :

Pin Nbr.	Signal Name	Type	Remark
1	+ 12 V	Supply	+ 12V Supply
2	GND	Supply	Logical 0V
3	FAULT	In	Axis Fault detection
4	GND	Supply	Internally connected to pin 2
5	/BOOST	Out	Axis Boost
6	/RESET	Out	Axis Reset
7	/PULSE	Out	Axis Pulse
8	INB	In	Axis Ref. Switch input B
9	/DIR	Out	Axis Direction
10	INA	In	Axis Ref. Switch input A

Table 3-3 : Axis connectors (JAXn), 10 poles flat cable version

- 9 poles D-Sub version: **in this version the signal INA is not available**.

Pin Nbr.	Signal Name	Type	Remark
1	+ 12 V	Supply	+ 12V Supply
2	GND	Supply	Logical 0V
3	FAULT	In	Axis Fault detection
4	GND	Supply	Internally connected to pin 2
5	/BOOST	Out	Axis Boost
6	/RESET	Out	Axis Reset
7	/PULSE	Out	Axis Pulse
8	INB	In	Axis Ref. Switch input B
9	/DIR	Out	Axis Direction

Table 3-4 : Axis connectors (JAXn), 9 poles D-Sub version

3.3.1 Axis Reference Input: simplified schematic.

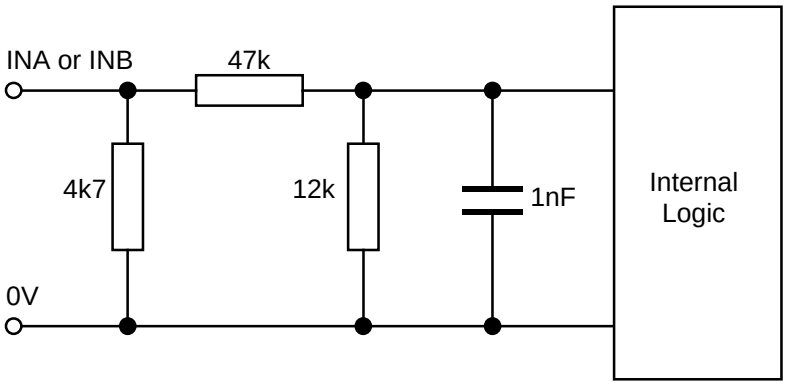

Figure 3-1 : Axis Reference Input, simplified schematic

3.3.2 Fault input: simplified Schematic.

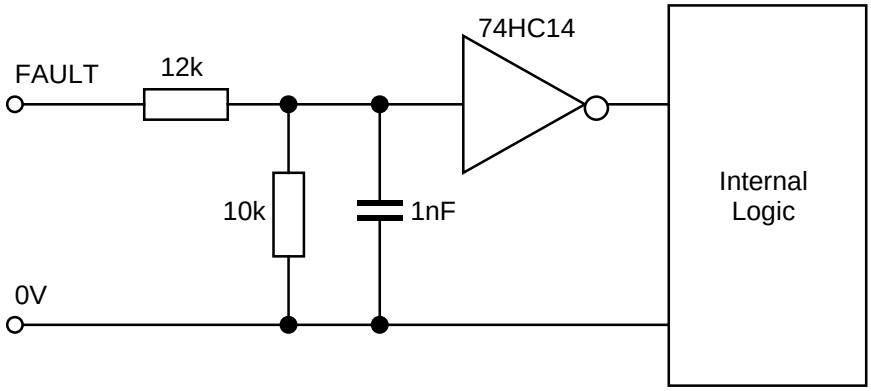

Figure 3-2 : Fault Input, simplified schematic

3.3.3 Output: simplified Schematic.

This is a simplified schematic of axis control outputs (/BOOST, /RESET, /PULSE, /DIR)

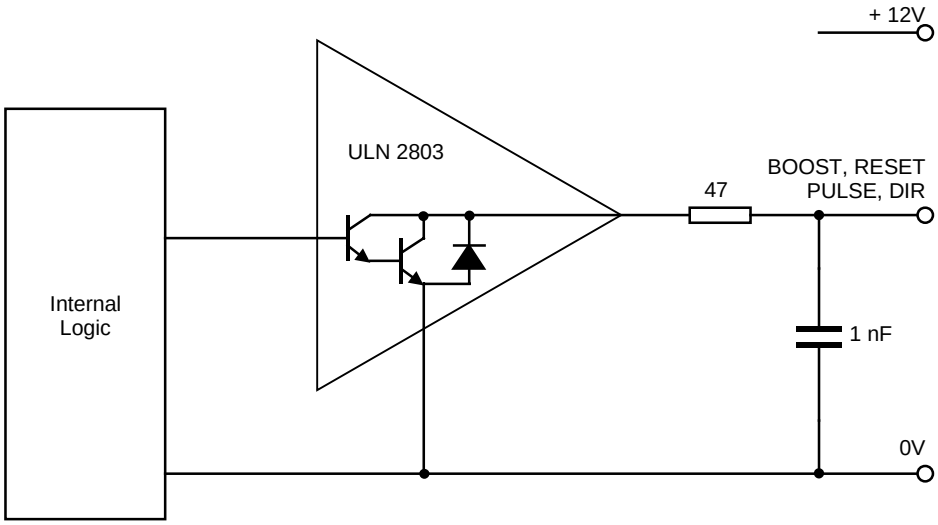

Figure 3-3 : Output, simplified schematic

3.3.4 Recommended Operating Conditions

Power Supply Voltage		24V ± 5V 12V ± 3V 5V ± 0,5V
Pulse Frequency (With EIP Translator)	(JAXn/7)	Max. 200kHz

3.3.5 Absolute Maximum Ratings

Power Supply Current	24V Power Supply 12V Power Supply	Max 600mA Max 500mA
Axis Control Outputs Current:	BOOST, RESET, PULSE, DIR	Max. 160 mA

3.3.6 Input-Output Electrical Characteristics

+ 24V Logic input Voltage:	INA, INB	Low level: 0 – 5V High level: 20 – 24V
+ 12V Logic input Voltage	FAULT	Low level: 0 – 3V High level: 9 – 12V
Axis Control Outputs: Nominal Current: Voltage@20mA:	BOOST, RESET, PULSE, DIR	 20 mA Max. 1,6 V

4 Configuration

This chapter describes what it is necessary to do before connecting the N300-AE card.

4.1 Card Selector

A selector (located near J3), allows to define Axis Numbers in case of more than one extension card is present. The following table gives Axis Number in function of selector position:

Selector Position	JAX2 Connector	JAX3 Connector	JAX4 Connector	JAX5 Connector
0	Axis 2	Axis 3	Axis 4	Axis 5
1	Axis 6	Axis 7	Axis 8	Axis 9
2	Axis 10	Axis 11	Axis 12	Axis 13
3	Axis 14	-	-	-

Table 4-1 : Axis number in function of Selector Position

Warnings:

- If more that one extension card is present, **each selector of each card must be on a different position**.
- The selector has 10 positions, but only the **positions 0 to 3 are usable**.

4.2 Bus Termination

To prevent signal reflection, it is necessary to put a Bus Termination on the last card of the Bus. Components necessary to Termination are present on every card. Termination is obtained by closing 3 groups of jumpers (See Figure 2-1 : N300-AE Card Layout)