E I P **N-300**

ENGLISH

HARDWARE SPECIFICATIONS

Release : **August 20, 2000**

E I P

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

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N-300, HARDWARE SPECIFICATIONS

1. Available versions

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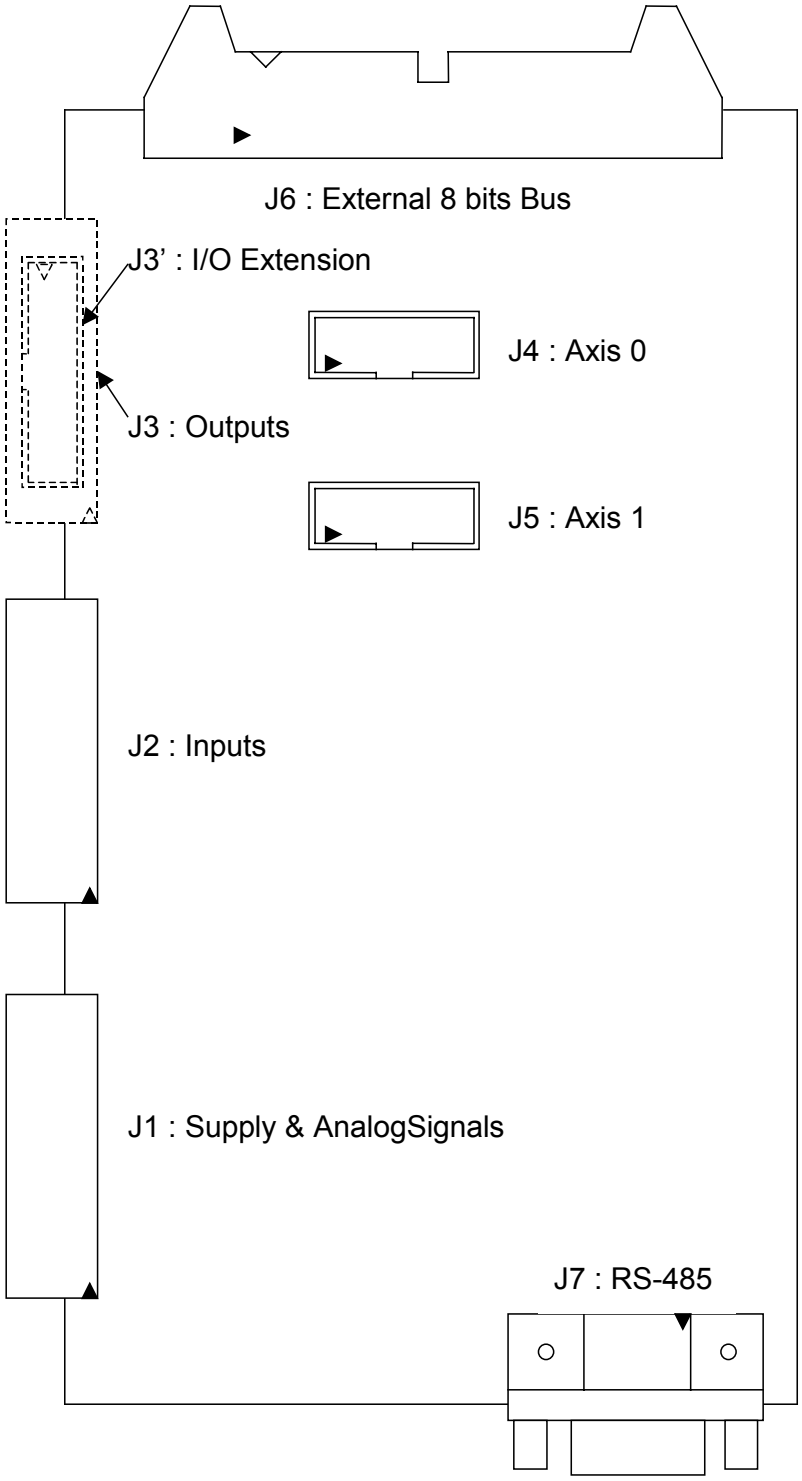
N-300-2 : Version with serial link RS-485, External I/O bus.



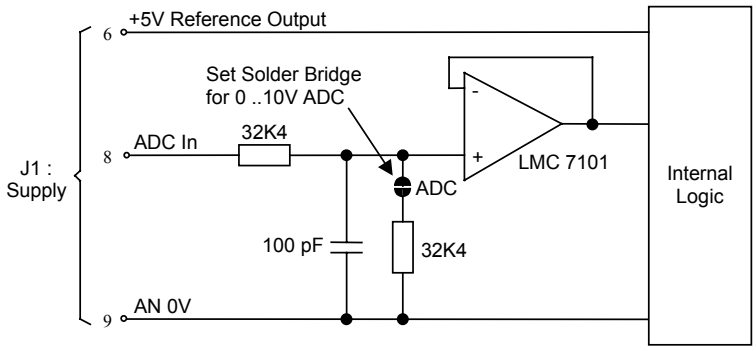
2. Pin description and connector assignment

2.1. J1 Connector: Supply & analog signals

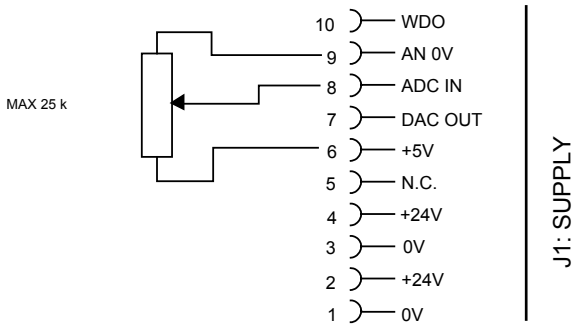
Pin Nbr.	Signal Name	Remark
1	0V	Supply return
2	+24V	Supply Input
3	0V	Internally connected to Pin 1
4	+24V	Internally connected to Pin 2
5	N.C.	Not Connected
6	+5V	5V output available for potentiometer
7	DAC OUT	0-10V analog output
8	ADC IN	0-5V analog input (potentiometer cursor)
9	AN 0V	Analogue 0V to reference Pin 6, 7, 8
10	/WDO	+24V Watch dog output *

* /WDO Security Output goes low when the Processor becomes inactive (non correct Functionality)

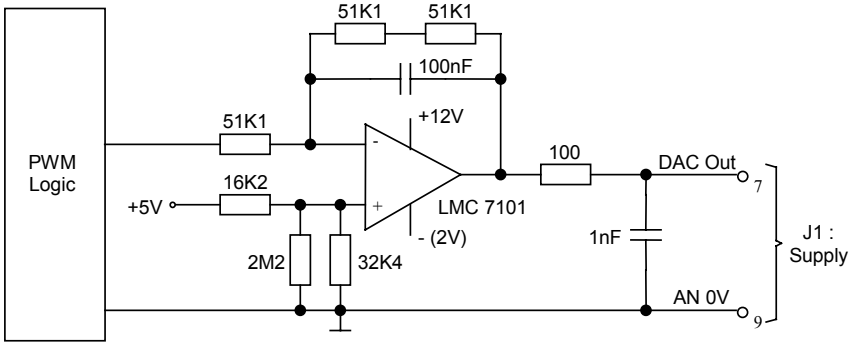
2.1.1 ADC Input : Simplified Schematic



2.1.2 ADC Input: Wiring example



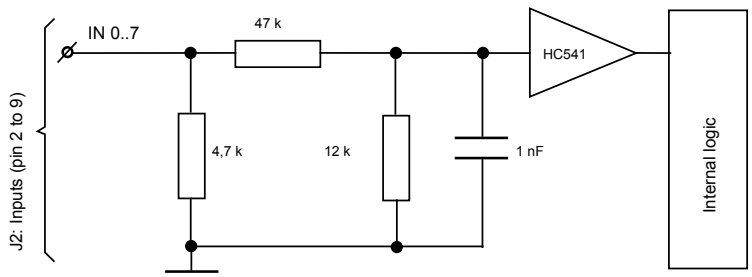
2.1.3 DAC Output: Simplified Schematic



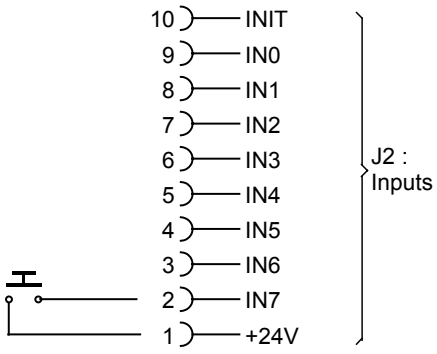
2.2. J2 Connector: Inputs

Pin Nbr.	Signal Name	Remark
1	+24V	+24V rated current output to supply logic inputs
2	IN7	Logic input 7
3	IN6	Logic input 6
4	IN5	Logic input 5
5	IN4	Logic input 4
6	IN3	Logic input 3
7	IN2	Logic input 2
8	IN1	Logic input 1
9	IN0	Logic input 0
10	INIT	used only for initialization, keep free!

2.2.1 Input : Simplified Schematic



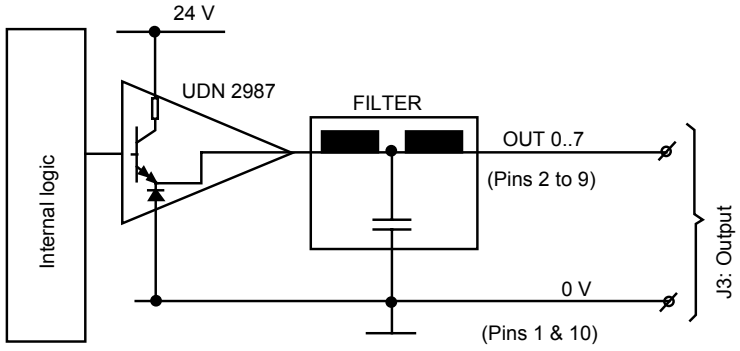
2.2.2 Input : Wiring Example



2.3. J3 Connector: Outputs (Only for N-300-1 Version)

Pin Nbr.	Signal Name	Remark
1	0V	0V return line, Internally connected to J1/1
2	OUT7	+24V logic output
3	OUT6	"
4	OUT5	"
5	OUT4	"
6	OUT3	"
7	OUT2	"
8	OUT1	"
9	OUT0	"
10	0V	0V return line, Internally connected to J1/1

2.3.1 Output : Simplified Schematic



2.4. J3' Connector: External I/O (Only for N-300-2 Version)

This port is intended to be used with E.I.P. external I/O modules

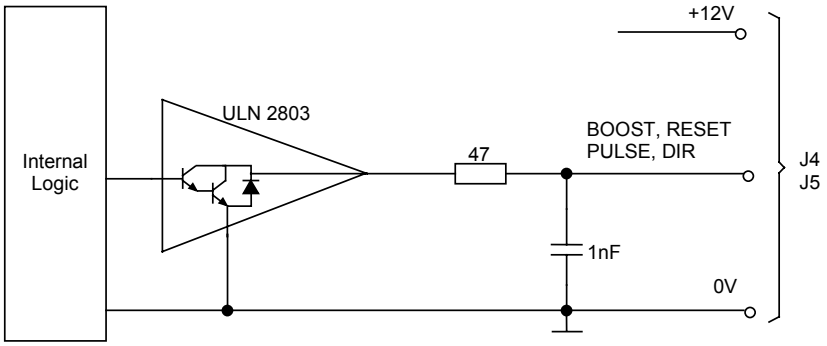
Pin Nbr.	Signal Name	Remark
1	BDATA	Data output
2	0V	Ground
3	BRES	Bus Reset
4	/BDI	Data input
5	+12V	Supply to External bus
6	+12V	Internally connected to Pin 5
7	BWR	Bus Write
8	BA1	Bus addressing line 1
9	BA0	Bus addressing line 0
10	BA3	Bus addressing line 3
11	BA2	Bus addressing line 2
12	BA5	Bus addressing line 5
13	BA4	Bus addressing line 4
14	BA6	Bus addressing line 6
15	0V	Ground
16	N.C.	Not Connected

2.5. J4 Connector (Axis 0) & J5 Connector (Axis 1)

J4 and J5 are flat cable connector. These ports can be used with all E.I.P. translators or YASKAWA E600-8, E600-18 Sigma2 series Adapters.

Pin Nbr.	Signal Name		Remark
	J4	J5	
1	+12V		Supply to axis control outputs
2	0V		Supply return
3	FAULT0	FAULT1	Axis fault detection
4	0V		Supply return Internally connected to Pin 2
5	/BOOST0	/BOOST1	Axis boost
6	/RESET0	/RESET1	Axis reset
7	/PULSE0	/PULSE1	Axis pulse
8	INB0	INB1	Axis Status Input B
9	/DIR0	/DIR1	Axis direction
10	INA0	INA1	Axis Status Input A

2.5.1 Axis Control Output : Simplified Schematic



2.6. J6 Connector: External 8 bit bus

Pin Nbr.	Signal Name	Type	Remark
1	VCC Supervision	In	To control Power Supply of extension Cards
2	BUSCLK	Out	Intel 80C188 Clock Output
3	GND	Supply	Logical 0V
4	BUSTOUT	Out	Intel 80C188 Timer Output
5	RESET	Out	Reset Signal of N-300 Card
6	/IBF	In	Interrupt Input
7	OBF	In	Interrupt Input
8	/REQ	In	Interrupt Input
9	+12V	Supply	+12V Supply of N-300 Card
10	+12V	Supply	Internally connected to Pin 9
11	BUSALE	Out	Intel 80C188 ALE Signal
12	GND	Supply	Logical 0V
13	(Reserved)	-	Not used at this Moment
14	GND	Supply	Logical 0V
15	DT/R	Out	Intel 80C188 DT/R signal
16	GND	Supply	Logical 0V
17	/BUSRD	Out	Intel 80C188 /RD signal
18	+5V	Supply	Logical Supply of N-300 Card
19	/BUSWR	Out	Intel 80C188 /WR Signal
20	+5V	Supply	Internally connected to Pin 18
21	GND	Supply	Logical 0V
22	A7	Out	Address Bus, Bit 7
23	A6	Out	Address Bus, Bit 6
24	A5	Out	Address Bus, Bit 5
25	A4	Out	Address Bus, Bit 4
26	A3	Out	Address Bus, Bit 3
27	A2	Out	Address Bus, Bit 2
28	A1	Out	Address Bus, Bit 1
29	A0	Out	Address Bus, Bit 0
30	GND	Supply	Logical 0V
31	D7	In/Out	Data Bus, Bit 7

Pin Nbr.	Signal Name	Type	Remark
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 (750mA Fuse on N-300 Card)
40	+24V	Supply	Internally Connected to Pin 39

2.7. J7 Connector: RS-485 Interface

To connect the N-300 to a PC, it's necessary to use a special interface (see chapter 3)

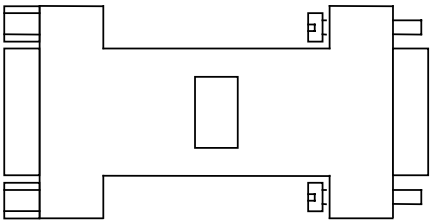
Pin Nbr	**Function**
1	+5V
2	0V (across a 100 Ohm Resistor)
3	TXD/RXD, inverted Channel
4	DTR/DSR, inverted Channel
5	GND
6	+5V
7	+24V (If Supply Jumper is closed. Closed by Default)
8	TXD/RXD, non inverted Channel
9	DTR/DSR, non inverted Channel

3. RS-485 to RS-232 Converter

A special Interface, who converts RS-485 to RS-232, is needed to connect a PC with an N-300. This Interface is provided by EIP and is called **N300-SI**.

This Interface must be connected directly to the PC's RS-232 Port. Thus the line length can be greater. The cable between the J7 connector of the N-300 and the interface must be straight (not crossed)

N-300 Side :
RS-485
D-SUB 9 Poles
male



PC Side :
RS-232
D-SUB 9 Poles
female

RS-485 Side (N-300):

D-SUB 9 Poles male connector	Function
1	+5V
2	N.C.
3	TXD/RXD, inverted Channel
4	DTR/DSR, inverted Channel
5	GND
6	+5V
7	N.C.
8	TXD/RXD, non inverted Channel
9	DTR/DSR, non inverted Channel

RS-232 Side (PC):

D-SUB 9 poles female Con.	Signal Direction	PC Signal Name
1		N.C.
2	N-300-SI → PC	RXD
3	N-300-SI ← PC	TXD
4	N-300-SI ← PC	DTR
5		GND
6	N-300-SI → PC	DSR
7	N-300-SI ← PC	RTS
8	N-300-Si → PC	CTS
9		N.C.

4. Absolute Maximum Ratings

Supply Voltage: J1 / +24V	32 Volts
Logic Input Voltage: J2/IN0..IN7 and J4,J5 / FAULT	min -6 Volts, max 32 Volts
ADC Input Voltage: J1 / ADC	min -0,5 Volts, max 5,5 Volts
Axis Control Outputs J4 & J5 / BOOST, RESET, PULSE, DIR See note 1 - All (8) channels continuously on, current per channel: - Voltage:	 max 160 mA max 35 V

note 1: Both conditions (current and voltage) are fulfilled when using E.I.P. translators

5. Recommended Operating Conditions

Us: power supply voltage (J1 / +24V)

Power Supply Voltage J1 / +24V	24 Volts +/- 5 V
+24V Logic Input Supply, Current J2 / +24V	max 500 mA
+5V ADC Supply, Current J1 / +5V	max 100mA
Logic Input Voltage, U_s=24V J2 / IN0..IN7, J4 & J5 / INA, INB	low level: 0..5 Volt high level: 20..24 Volts
ADC Input Voltage J1 / ADC IN See note 1	0 to 5 Volts
+12V supply J4 & J5 / +12 Current including the load of axis control outputs (BOOST, RESET, PULSE, DIR), U_s=24V See note 2	 max 150 mA
Logic Output Source Current (Only for N300-1 Version) J3 / OUT0..OUT7 @+24V - One channel alone - all (8) channels continuously	 max 350 mA max 80 mA
Pulse Frequency (With E.I.P. TRANSLATORS) J4/7,J5/7	max. 200 kHz

note 1: Input Impedance must be lower than 10KΩ
note 2: This condition is fulfilled with E.I.P. Translators and no extra load (E.I.P Translators sources 16 mA at each active axis control line)

6. Electrical Characteristics

U_s: Supply voltage (J1/+24V)

Characteristic	Min.	Typ.	Max.	Units
Power Supply				
J1 / +24V				
- Minimal Operating Voltage	-	17	-	V
- Current with no external load	-	100	-	mA
General Purpose Outputs, each channel				
J3 / OUT0..OUT7				
(Only for N-300-1)				
- Voltage @ -100mA	Us-1,8	-	-	V
- Shutdown Threshold Current	-370	-500	-	mA
Axis Control sink Outputs	-	-	1,6	V
J4 & J5 / BOOST,RESET,PULSE,DIR				
Voltage @ 20mA				
D/A Converter Output				
J1 / DAC				
- Voltage	-	0..10	-	V
- Linearity	-	0,5	-	%
Logic Inputs, U_s=24V				
J2 / IN0..IN7 and J4 & J5 / INA, INB				
- Positive Going Threshold	-	-	17,7	V
- Negative Going Threshold	7,3	-		V
- Current @ 24V	-	5,5	-	mA