

The INFO-ADA board is the multifunctional analog/digital board in the INFO-Link range.

14 analog inputs and 8 analog outputs are available on the INFO-ADA board. The analog/digital converter measures voltages, currents and temperatures with 16Bit resolution. Each channel can be separately configured.

With the $\pm 10V$ outputs, it is possible to activate flow controllers, proportional

valves or shaft speed controllers of motors and frequency converters.

The board does not incorporate any potentiometers for alignments. Offset and gain corrections are saved for inputs and outputs in the on-board EEPROM. The INFO-Master corrects all outputs by the appropriate factors during operation. The DAC-part has a board enable; it allows emergency stop functions to be implemented.

Technical Data

Analog inputs

- 14 analog measurement channels
- Eight measurement ranges: $\pm 10V$, $10V \dots \pm 25mV$, $25mV$
- 14 ... 16 bit resolution, as required
- Adjustable 50/60Hz filter

Analog outputs

- 8 analog voltage outputs
- Voltage range: $\pm 10V$
- 16 bit resolution, $1/65,000$ of the measurement range

Reference

- Automatic alignment of zero point and full scale

Emergency OFF

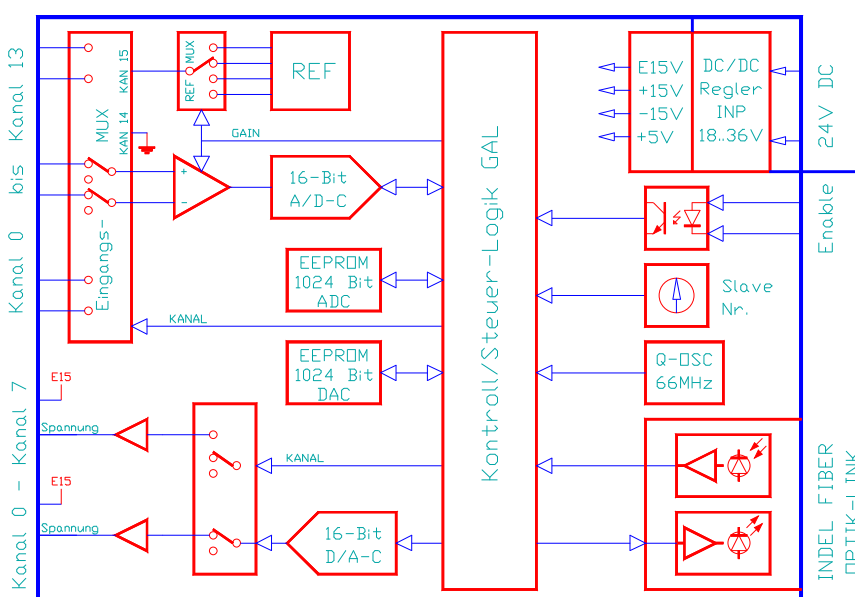
- Enable input, $+24V$
- Electrically isolated

15V power supply (on-board)

- Additional 15V supply

Board power supply

- Electrically isolated
- Power supply $18 \dots 32V$, $520mA$ max.



Mode of Operation

Analog digital converter

A measurement is performed in two phases:

In the first phase, the channel is switched on during a configurable stabilization time. Transient processes are completed during this phase.

In the second phase, the analog quantity is measured during the adjustable measurement time.

The measurement time per card can be selected according to the following table.

Resolution:	Measurement time:
16Bit	50, 60, 80ms
15Bit	25, 30, 40
14Bit	12.5, 15, 20

For the stabilization time, values between 1 ... 20ms can be specified.

The measurement is performed using an integrating process so that any interference, e.g. from the power supply (50/60Hz), can be filtered out.

The field bus master automatically measures all selected channels, corrects any offset and gain, and converts it to the desired unit.

Temperatures are compensated by the compensation temperature (fixed value or from compensation element), linearized and converted directly to degrees centigrade.

The processed measurement values can be addressed in the field bus master or by the PC via their names.

Digital analog converter

The INFO-ADA board can output eight voltages of $\pm 10V$ with a resolution of 16Bit.

With the standard firmware, one channel is transmitted per ms and per board so that all DAC values are updated after 8ms. Faster refresh rates are available upon request.

Connector Allocation

	d		b		z
2	O	+ Vout 0	O	- Vout 0	Shield
4	O	+ Vout 1	O	- Vout 1	Shield
6	O	+ Vout 2	O	- Vout 2	Shield
8	O	+ Vout 3	O	- Vout 3	Shield
10	O	+ Vout 4	O	- Vout 4	Shield
12	O	+ Vout 5	O	- Vout 5	Shield
14	O	+ Vout 6	O	- Vout 6	Shield
16	O	+ Vout 7	O	- Vout 7	Shield
18	I	+Enable	I	- Enable	Shield
20	O	+ 15 V	O	+ 15 V	Shield
22	O	- 15 V	O	- 15 V	Shield
24	O	GND	O	GND	Shield
26		0 V			
28		0 V			
30		+ 24 V			
32		+ 24 V			

Connector 1

vertical
DIN41612, Type F-48
2.8mm pins

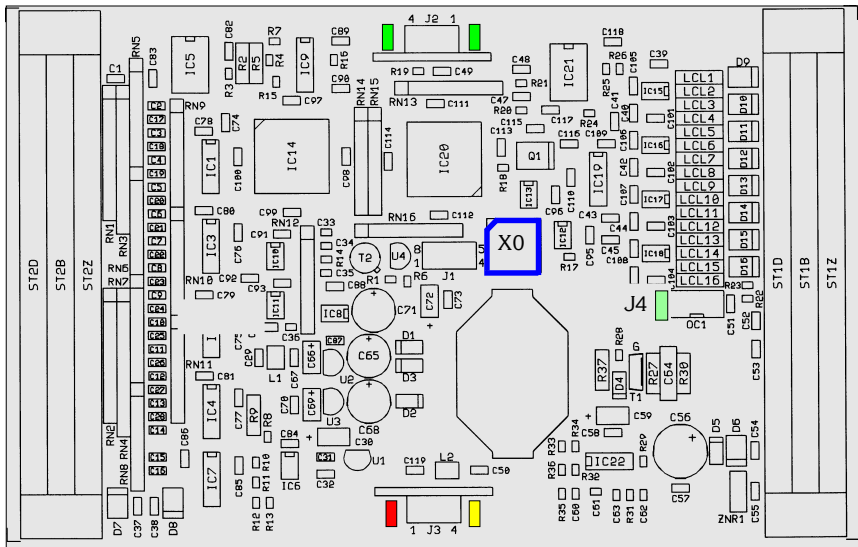
	d		b		z
2	Shield	I	+ Vin 0	I	- Vin 0
4	Shield	I	+ Vin 1	I	- Vin 1
6	Shield	I	+ Vin 2	I	- Vin 2
8	Shield	I	+ Vin 3	I	- Vin 3
10	Shield	I	+ Vin 4	I	- Vin 4
12	Shield	I	+ Vin 5	I	- Vin 5
14	Shield	I	+ Vin 6	I	- Vin 6
16	Shield	I	+ Vin 7	I	- Vin 7
18	Shield	I	+ Vin 8	I	- Vin 8
20	Shield	I	+ Vin 9	I	- Vin 9
22	Shield	I	+ Vin 10	I	- Vin 10
24	Shield	I	+ Vin 11	I	- Vin 11
26	Shield	I	+ Vin 12	I	- Vin 12
28	Shield	I	+ Vin 13	I	- Vin 13
30	Shield	O	+ 15 V	O	- 15 V
32	Shield	O	GND	O	GND

Connector 2

vertical
DIN41612, Type F-48
2.8mm pins

All alignments have been made during quality checking at INDEL. The values are saved in an on-board EEPROM. The board does not incorporate any potentiometers; there is nothing to align or vary!

Assembly



Addressing (blue)

S1 (X0)	ADC-Addr.	DAC-Addr.
0	0	1
1	1	0
...
E	14	15
F	15	14

Transmit power jumpers (green)

The jumpers influence the illumination intensity of the emitting LED and thereby the segment length of the fiberoptic cable to the next board.

Segment length	Jumper position
0 ... 10m	no jumper
8 ... 30m	> 10
20 ... 50m	> 30

Enable jumper (light green)

Instead of the +24V on the board enable (pins 18d, 18b; connector 1), it is possible to set the jumper J5.

LEDs on receiver module

LED-red	=	+5V power supply
LED-yellow	=	INFO-Link receiver signal OK

Temperature measurement

Type	Trade name
Type T,U	Cu-Konst
Type J,L	Fe-Konst
Type E,K	Chromel-Alumel
Type B,E,R	Platin-Rhodium

The thermocouples opposite are connected directly to the INFO-ADA. The operating system linearizes them automatically. Mixed assemblies with any required, different types are possible.

Specifications

Power supply

+18..32V, 520mA max.

Climatic conditions

- Ambient temperature:
 - Storage: -20...+80°C
 - Operation: 0 ... +45°C
- Board temperature:
 - Operation: 0...+70°C
- Relative air humidity
 - no condensation: 95%

Analog inputs

- 14 independent, differential measurement channels.

Each channel can be configured as required (range). Resolution in μV :

Range	16Bit	15Bit	14Bit
0..10V	150	300	600
0..1V	15	30	60
0..0,1V	1.5	3	6
0..25mV	0.3	0.6	1.2
$\pm 10\text{V}$	300	600	1200
$\pm 1\text{V}$	30	60	120
$\pm 0,1\text{V}$	3	6	12
$\pm 25\text{mV}$	0.6	1.2	2.4

Resolution Msmt.time per channel
 16Bit 80, 60 or 50ms
 15Bit 40, 30 or 25ms
 14Bit 20, 15 or 12.5ms
 plus stabilization time: 1 ... 20ms per channel.

- Precision: <0.02% of measurement range at 25 degrees
- Drift: 5ppm/ ΔK
- Max. input voltage: $\pm 15\text{V}$

Analog outputs

- 8 outputs: $\pm 10\text{V}$
- Resolution: $300\mu\text{V/bit}$
- Current: $I_{\text{max}} = 5\text{mA}$
- Internal resistance: $R_i = 1...10\Omega$
- Refresh rate/ channel: 1ms
- Precision: 2mV bei 25°C
- Drift: 3ppm/ ΔK

15V power supply (on-board)

- 2 x $\pm 15\text{V} \pm 10\%$, 50mA max.

EMERGENCYOFF

- As long as no 24V are present at the ENABLE input, the board will output 0V on all channels. (Jumper J4 not set.)

Warm-up time

- The optimal stability of the measurement values is reached after approx. 15min warm-up time.

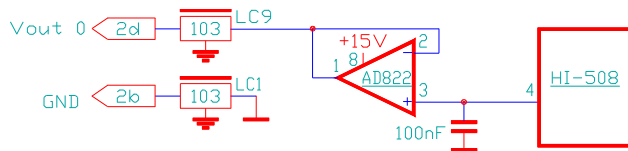
Mounting

- Connector DIN 41612, Type F-48
- Mounting on 35mm DIN bar
- 105 x 165 x 45mm (WxDxH)

Interfaces

Wiring

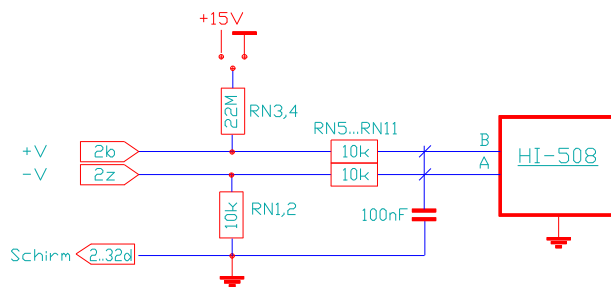
Analog outputs



Voltage outputs

Wiring of the voltage output.

Analog inputs



Analog inputs

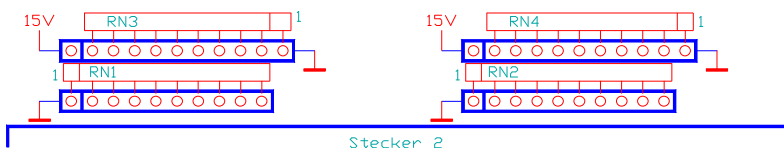
Wiring of the analog inputs. The sensors are connected directly to pin $\pm V$.

The plug-in resistor arrays RN1 ... RN11 allow the inputs to be configured according to individual requirements.

The number of inputs should be limited in the configuration of the board so that there are no open inputs.

The inputs can be wired with the resistor arrays RN3,4 as required to Gnd or + 15V. They will thereby always be in a defined state, even when open. As standard RN3,4 is wired to Gnd.

Resistor array assembly



Input lines $\pm V$ wired to Gnd.

Enable input

At the enable input, 24V must be present if the board is to output the voltage values.

Note

Frequently, the temperature of the connection terminal is measured by temperature transmitters (e.g. LM35). As these are supported by the firmware, it is possible to perform 'low cost' temperature measurements using these temperature sensors.

Enable input

