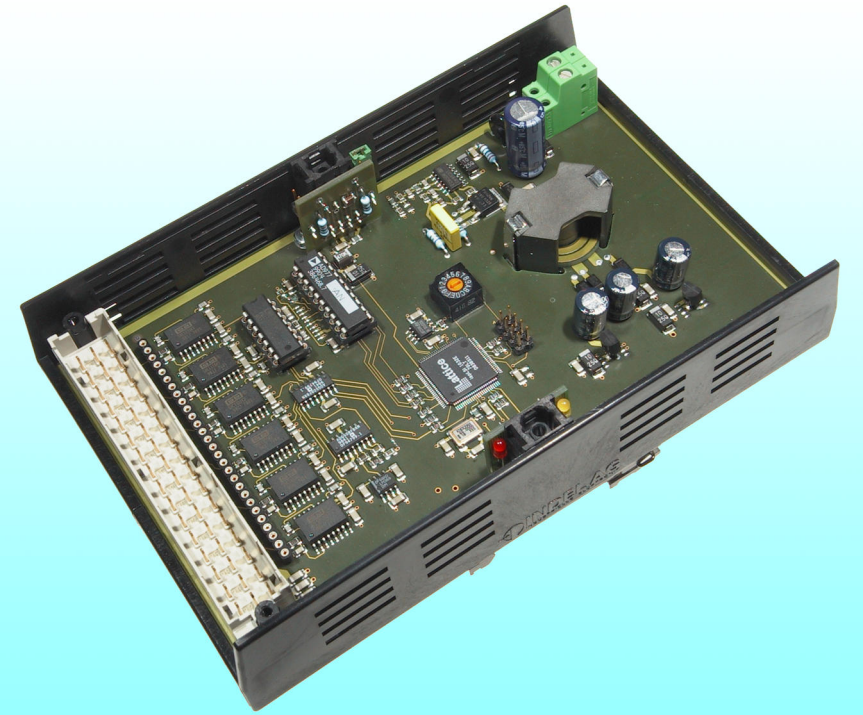
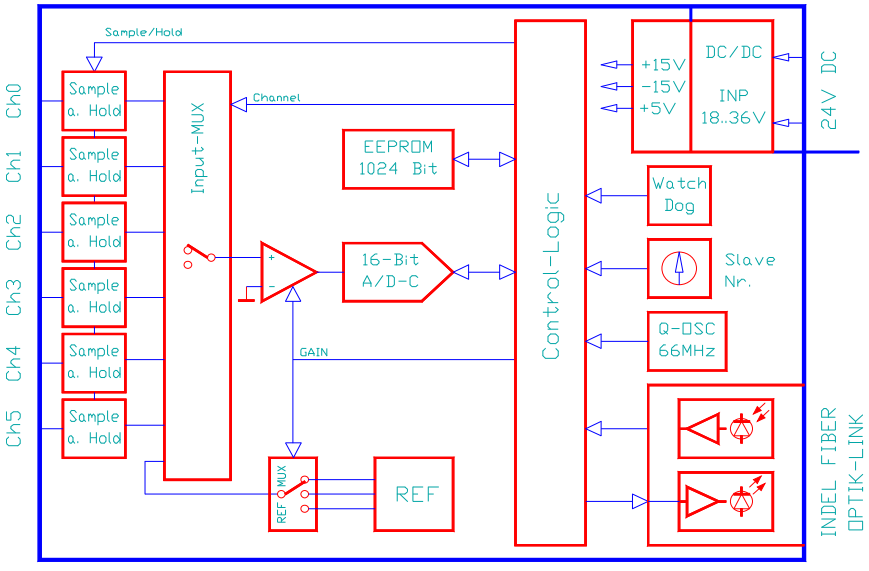
Fast Analog/Digital Converter

INFO-FSH



Registering Dynamic Processes

The INFO-FSH board (Fast Sample and Hold) is the measurement element for registering fast and dynamic processes.
Up to 6 currents, voltages, temperatures or weights can be registered by an INFO-FSH board. The sampling rate per board can be selected between 1kHz, 2kHz and 4kHz.
The board is especially suitable for power measurements of 3-phase networks, e.g. in order to measure motor powers. Precision voltage sources, with characteristics that have been saved in the on-board EEPROM, are incorporated for automatic zero point and full-scale alignment.
The operating system thereby automatically corrects offset and gain drifts of all measurement values.
This makes high-precision measurement values permanently available, even in the presence of wide ambient temperature fluctuations.



Technical Data

Measurement channels
- 6 analog measurement channels
- 3 measurement ranges: ±10V, ±1V, ±0.1V

Resolution
- Resolution: 14Bit

Sampling rates
- as required 1kHz, 2kHz, 4kHz

Reference
- Automatic alignment of zero point and full scale

15V power supply
- Additional 15V supply (voltage output)

Board power supply
- Electrically isolated
- Supply 18 ... 36V, 140mA max.

Order-No. INFO-FSH 609826700

INDEL AG INDUSTRIELLE ELEKTRONIK

INFO-FSH

Fast Analog/Digital Converter

Mode of Operation

The INFO Fast Sample and Hold board has been developed for measuring fast and dynamic processes.
It measures voltages and currents on six channels with sampling rates between 1kHz and 4kHz. The measurement resolution is 16 bit.

Each channel can be individually used for:

- voltage,
- current,
- temperature or
- weight measurement

The values for shunt resistors, type of thermocouple, scaling of the compensation elements and scaling of the weighing equipment can be easily entered during configuration.

The entire measurement handling and the transmission of the measurement values is done by firmware in the INFO-Master. The user obtains the offset and full-scale-corrected measurement values directly in the required unit of measurement.

The channels 6 and 7 are provided with four high-precision reference voltage sources. During operation, the INFO-Master automatically includes them in the measurement, using them to correct the offset and gain drift.
All alignments have been made during quality checking at INDEL. The values are saved in an EEPROM located on the board. The board does not have any potentiometers, so there is nothing to align or vary!

Connector Allocations

Connector 1

vertical
DIN 41612, Type F-48
2.8mm pins

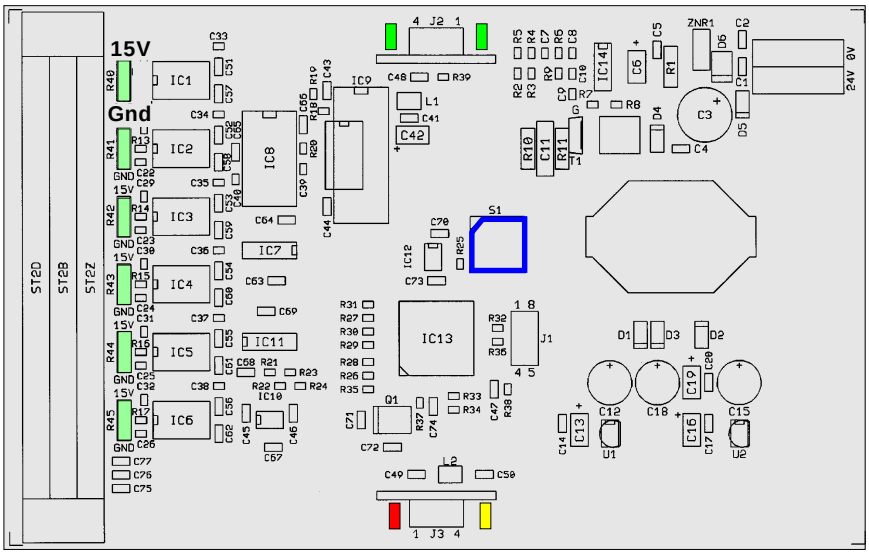
	d		b				z			
2	Shield	I	+	V	0	I	+	V	0
4	Shield	I	-	V	0	I	-	V	0
6	Shield	I	+	V	1	I	+	V	1
8	Shield	I	-	V	1	I	-	V	1
10	Shield	I	+	V	2	I	+	V	2
12	Shield	I	-	V	2	I	-	V	2
14	Shield	I	+	V	3	I	+	V	3
16	Shield	I	-	V	3	I	-	V	3
18	Shield	I	+	V	4	I	+	V	4
20	Shield	I	-	V	4	I	-	V	4
22	Shield	I	+	V	5	I	+	V	5
24	Shield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

Connector 2

Print terminal
Phönix

1	0V	I
2	24V	I

Assembly



Addressing (blue)

S1 (0Y)	Measurement board
0	0
…	…
0F	15

The switch S2 is not mounted as standard.

Wire rupture (light green)

In order to detect a wire rupture, e.g. of a temperature sensor, each individual input can be wired with a 22MΩ resistor to +15V or Gnd.

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

LEDs on receiver module

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

Customized modifications are available as needed.

Specifications

Board power supply

- +18 … 36V, 270mA with 24V

Climatic conditions

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

Measurement ranges, resolution

- 6 measurement channels; all 6 channels are measured absolutely simultaneously (Sample and Hold)
- Resolution 14 bit.

Range	14Bit
± 10V	1,200µV
± 1V	120µV
± 0.1V	12µV

- Max. input voltage: ±15V

Sampling rate

- Sampling rate, as required: 1kHz
  2kHz
  4kHz
  The sampling rate always applies to all six channels.

Precision and drift

- Drift:
  Precision:

Warm-up time

- The optimal stability of the measurement values is achieved after 15min operation.

15V Power supply (on-board)

- Voltage: 15V ±10%
  Current 100mA max.

Mounting

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

Connections

Board power supply

For supplying the board with power, a 3-phase rectifier without electrolytic capacitor will suffice. But to prevent interference, an electrolytic capacitor of 4,700 ... 10,000µF is recommended. The 24V power supply must pass through a line filter.

Shielded lines

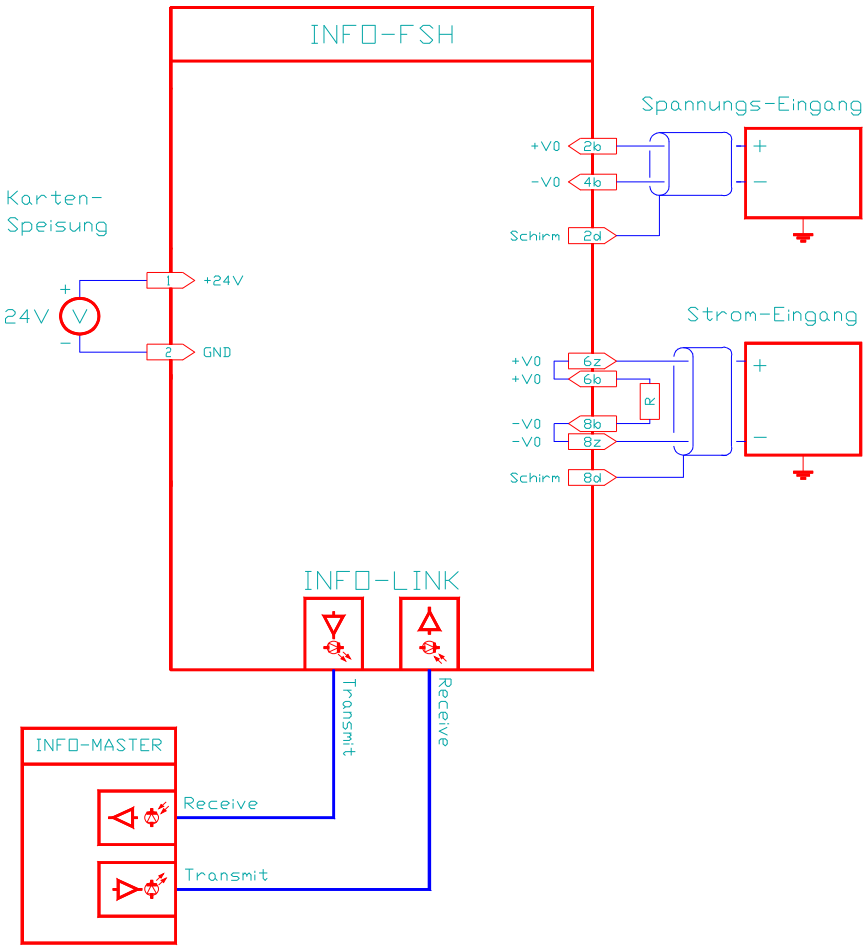
All analog signal lines must be shielded. The shield must be connected at both ends.
In order to prevent undesired leakage currents through the shield, it may be necessary to provide a bonding conductor, especially in case of long distances.

Grounding

The INFO-FSH is grounded the housing. Make sure that the mounting bar has very good contact with the mounting plate or the chassis to allow interference to be discharged.

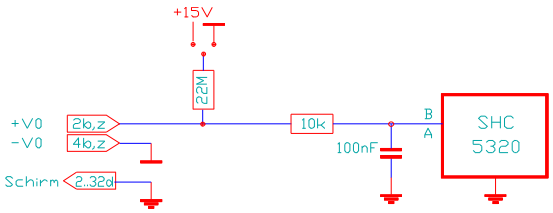
See also INDEL Wiring Guidelines and INDEL Design Guidelines.

Connection Example

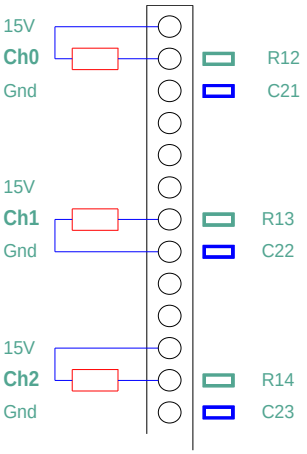


Interfaces

Analog inputs



Assembly of series resistors



In case of wire rupture, channel Zero indicates 15V

In case of wire rupture, channel One indicates 0V

In case of wire rupture, channel Two indicates 15 V

Wiring

Inputs

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 resistors R40 ... R45 as required to Gnd or +15V. As a result, they will always be in a defined state, even when open. As standard, R40 ... R45 are not assembled.

Customized modifications are available as needed.