

## 2-way analogue to digital converter for the LCN-Bus

The LCN-AD2 is a double analogue-digital converter with 12Bit triggering for the I-connection. The measured values are assigned to the variables 11 and 12 in the module. They work optionally on thresholds or regulators.

The LCN-AD2 can be used universally, because its inputs can each be set using the DIP switches as follows:

voltage: 0-10V

current: 0(4)-20mA

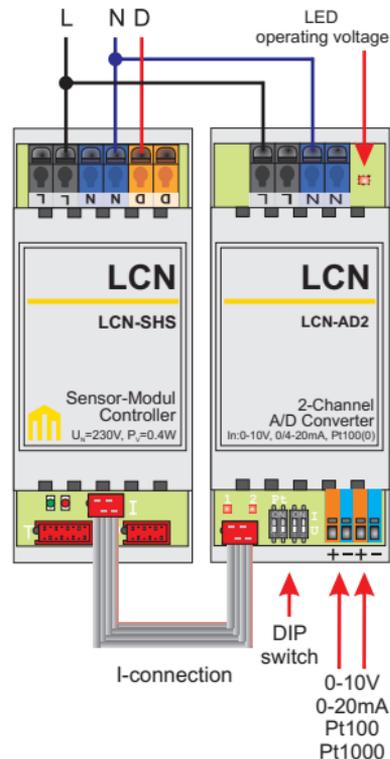
temperature: Pt100/Pt1000 (platinum-temp.-sensors)

### connection:

The LCN-AD2 is for connecting to the I-port of an LCN module with series number 170206 (Feb. 2013) or after. This cable can be extended with 2 LCN-IV's to a maximum of 50m - see also "TD connection from peripheries" ([www.LCN.de / Downloads](http://www.LCN.de / Downloads)). The LED's on the inputs each signal the connection of the sensor or the input signal.

### Included in delivery:

LCN-AD2 & I-connecting cable.



### How the analogue/digital converter functions

The LCN-AD2 has 2 measuring converters, that convert the analogue input voltages into digital measured values. Over DIP switches (see page 5), each input can be set to different signals.

**0..10V** voltage input: here the input impedance is with  $>1\text{M}\Omega$  very large.

**0/4-20mA** current measurement: input resistance 220  $\Omega$ .

**Pt100/Pt1000** temperature sensors: these are connected with a two wire switch. If longer cable lengths are needed ( $>2\text{m}$ ), Pt1000-sensors should be used; the difference between Pt100/1000 is automatically self-controlled from the LCN-AD2. When extending the length, shielded cable should be used.

Both channels are galvanically connected to each other and carry the same mass. that's why sensors/machines/SPS may not be connected, if they are supplied from different power sources.

The analogue input is electrically insulated from the module and from the power supply.

#### Tip:

If you set the threshold of the current measurement value to  $< 100$ , you can implement an error recognition / wire breakage detection in a simpler way. Set the threshold to 400 for the 4-20mA operation.

**Input values & conversions**input valuesLCN-value

0-1V	corresponds to	0..400
0-10V	corresponds to	0..4000
0-20mA	corresponds to	0..2000
4-20mA	corresponds to	400...2000
Pt100	measuring range -40 to 200°C	600...3000 (1000=0°C like LCN-TS)
Pt1000	measuring range -40 to 200°C	600...3000 (triggering 0,1K)

conversion:

$$U [V] = LCN / 400$$

$$I [mA] = LCN / 100$$

$$T [°C] = (LCN-value - 1000) / 10$$

triggering:

Pt100 and Pt1000: 0,1°C

voltage: 2,5mV, current: 0,01mA

area:

Pt100 and Pt1000: -40°C to +200°C

voltage: 0-10V

current: 0/4-20mA

### Notes:

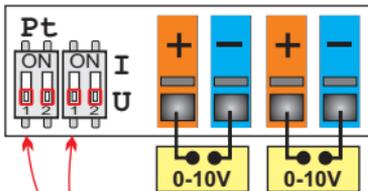
- The DIP-switches should only be operated when the power supply is turned off; then each set position is only queried when switching on the LCN-AD2.
- The same applies to a sensor, this should only be connected with the power switched off, as the sensor type is only first recognized after switching on.
- If the first DIP-switch of an input is set to Pt-Sensor operation, the other DIP-switch of the channel must be set to voltage (U), see graphics.
- The signal line is not protected against high voltages (i.e. main voltage). If the Pt-sensor operation is switched on per DIP-switch, no external signal (e.g. 0-10V or 4-20mA) may be connected to the appropriate terminal. This can cause destruction.
- The following peripheries may be operated parallel to the LCN-AD2 on the I-port: LCN-RR, -ULT, -GT2, -GT4D, -GT10D, -GT3L, -BT4H, -BU4L, -BMI, -B3I, but no more than 5 periphery devices at the same time on the I-connection.

**Important:** Operating the LCN-IV as an impulse counter / counter input, is not possible!

- The flat cable is a signal line and must be handled according to the actual VDE guidelines. Keep distance from main power supplies!

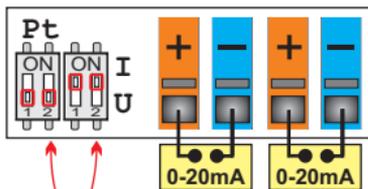
## Connection examples & positions for the DIP switches

Settings on delivery **0-10V**



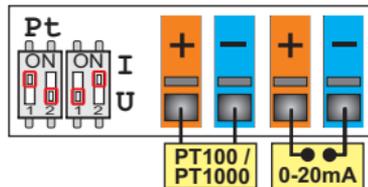
switches for input 1

Example: both **0-20mA**

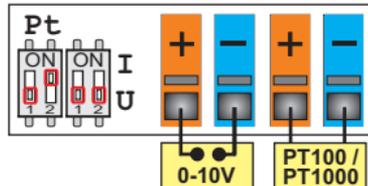


switches for input 2

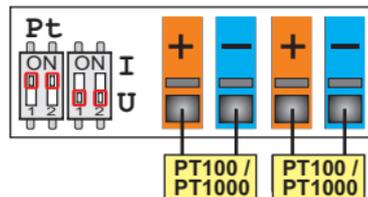
**PT100/PT1000 & 0-20mA**



**0-10V & PT100/PT1000**



**PT100/PT1000**



**Technical data:****Connection**

power supply:	230V AC $\pm 15\%$ 50/60Hz, (110V AC available)
power consumption:	0,5W
terminals/wire type (load side):	screwless, solid max. 2,5mm <sup>2</sup> or fine wire with wire end-sleeves max 1,5mm <sup>2</sup> loop through current max. 16A
terminals/wire type (sensor side):	screwless, solid or fine wire max. 0,2-1,5mm <sup>2</sup> /0,5-1,38mm $\varnothing$
input optional:	0-10V, 0/4-20mA, Pt100, Pt1000 (be aware of DIP switch position!)
Internal resistance:	220 (current measurement), >1M (voltage meas. )
input potential:	potential free, max. 500V against N allowed
triggering / tolerance:	12Bit / 0,5-2% from measured value, dep. on sensor
LCN-connection:	I-connecting cable length 300mm

**installation**

operating temperature:	-10°C..+ 40°C
environmental conditions:	for use as stationary installation according to VDE632, VDE637
protection art:	IP20, installation on DIN rail 35mm
dimensions:	38mm (2HP) x 92mm x 66,5mm

Technical information and images are non binding. Changes are reserved.

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