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Multiplexing switch inputs into Linet node

Overview

These examples cover ideas on how to use the Linet network in a data acquisition application, where single or multiple switch inputs are to be read and transmitted to a host. The host is connected to the Linet controller's serial interface, but the same functionality can be utilized with UDP/IP over Ethernet.

Note that these configurations use data groups of the Linet system, which does not provide very fast response times.

The switches in these examples are floating. If they are in galvanic connection to other systems or conductors, they should be isolated using optocouplers.

Switch input

Each Linet node has a switch input ('SWNO') where floating switch contacts may be connected. The purpose of this input is to read the status of a switch or relay, depending on the application - such as lighting control pushbuttons, proximity sensors, fire alarms, door switches, etc.

The switch input is also used when the node is configured. (The on-board pushbutton, equipped with the 'hybrid' node, is internally connected in parallel with the SWNO switch input.)

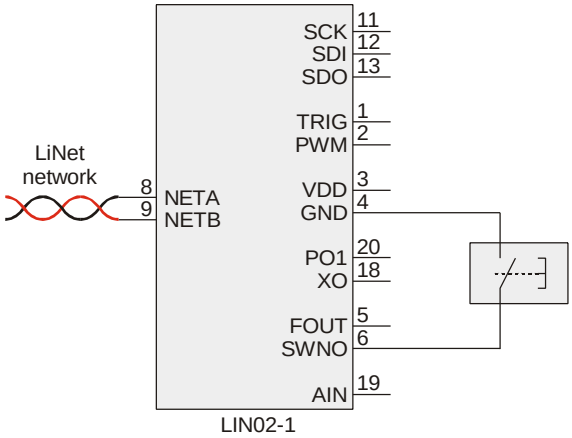

Figure 1. Single switch input

A switch input node may be configured as an 'I/O-NODE'. To read the state of the switch, the following string is to be sent to the Linet controller via the serial line:

```
IN n  or I n
```

where 'n' is 'gid' (address) of the node. The controller returns

```
0 OK! or 1 OK!
```

depending on the state of the switch.

Inputting double and triple switches with a single node

The node has built-in input for a single switch. The easiest approach to input from 2 or 3 switches is to use the AD-converter of the Linet node. Such node should be configured in 'AD/STATE' or 'DATA 12' group. When using the latter, be sure to enable the on-board AD-converter.

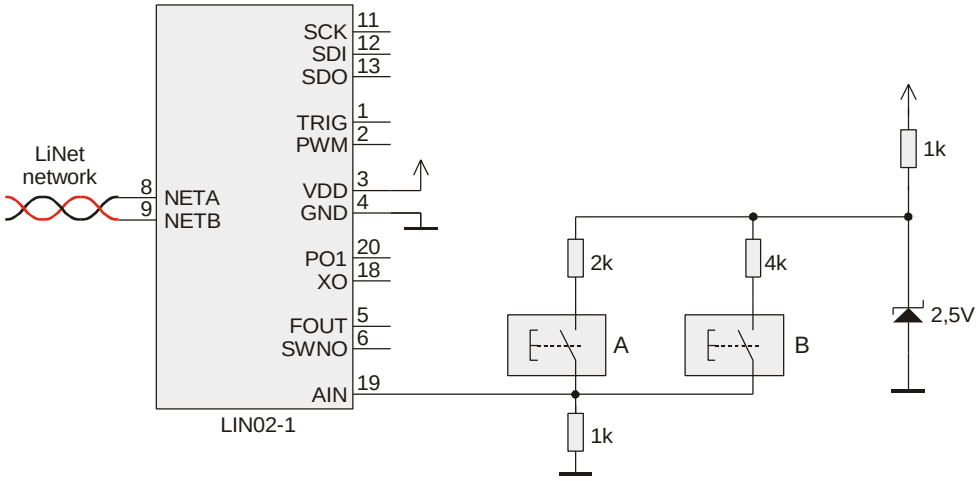

Figure 2. Double switch.

To read the state of the double switch, the following string is to be sent to the Linet controller via the serial line:

`IN n` or `I n`

where 'n' is 'gid' (address) of the node. The controller returns the AD value, eg.

`3510 OK!`

which holds the switch information.

Table 1. AD values with double switch positions.

A	B	Voltage at AIN (V)	AD value (dec)
0	0	0	0
0	1	0,500	1638
1	0	0,833	2731
1	1	1,071	3511

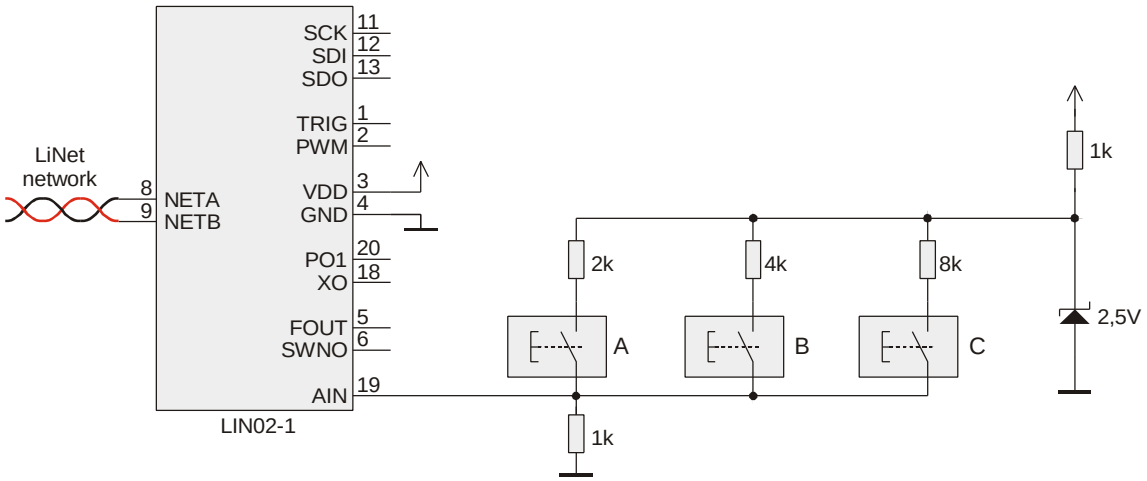

Figure 3. Triple switch.

Table 2. AD values with triple switch positions.

A	B	C	Voltage at AIN (V)	AD value (dec)
0	0	0	0	0
0	0	1	0,278	910
0	1	0	0,500	1638
0	1	1	0,682	2234
1	0	0	0,833	2731
1	0	1	0,962	3151
1	1	0	1,071	3511
1	1	1	1,167	3823

Inputting 4 or more switches with a single node

When a large number of switches are to be inputted with a single node, an external microcontroller should be used. The number of switches is thus (in theory) unlimited.

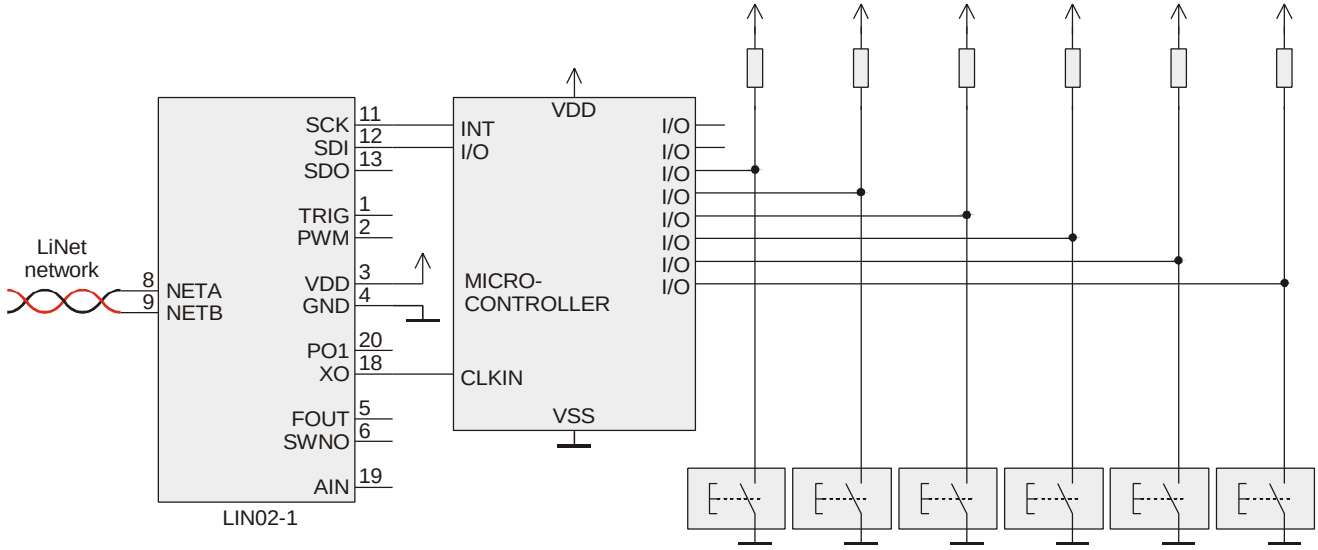

Figure 4. Interfacing 6 switches with a Linet node.