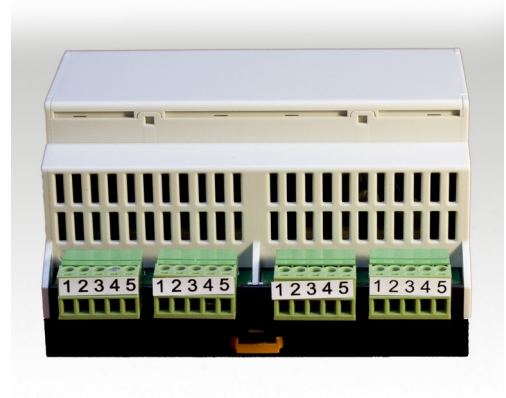# BIRDIE
24 Digital Inputs

1 FEATURES

- 24 isolated 24 V/110 V binary inputs
- RS-485 copper or HFBR optical links
- up to 8 devices per network

2 TECHNICAL SPECIFICATIONS

Power supply voltage	10 V to 36 V 5 V $\pm5\%$
Power consumption	1.2 W max.[1]
Power dissipation	up to 33 W
Operating temperature	5°C to 45°C
Storage temperature	−40°C to 70°C
Dimensions [mm]	$108 \times 112 \times 61$
Number of inputs	24
Inputs type	DC
Inputs current flow direction	sink
Inputs voltage	24 V or 110 V
Inputs voltage tolerance	$\pm35\%$
Inputs current [mA]	1.3 to 6
Inputs isolation	$\geq$ 1000 V
Physical layer	2×EIA-485 or 2×HFBR-X5X2
Data link layer	SPRUKED
Application layer	BDATA

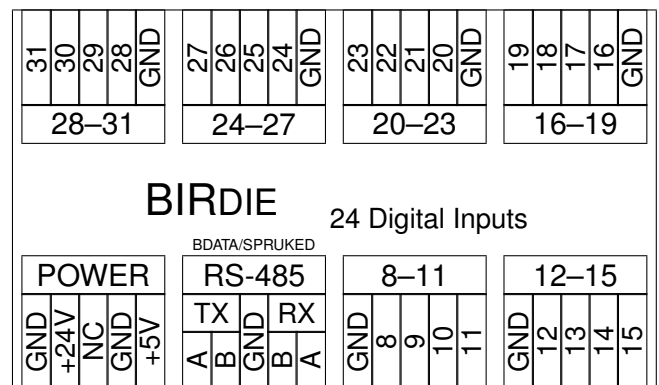[1] 0.7 W typ.; for BirDieF 0.5 W typ. (0.9 W max.)

Figure 1: BIRDIE I/O connectors.

3 PHYSICAL INTERFACE

The BIRDIE is available with one receive/transmit pair of the following physical interfaces:

Link	Max. baudrate	Max. range
RS-485	230.4 kbps	$\geq$ 1200 m
HFBR-X5X2Z	230.4 kbps	$\geq$ 39 m
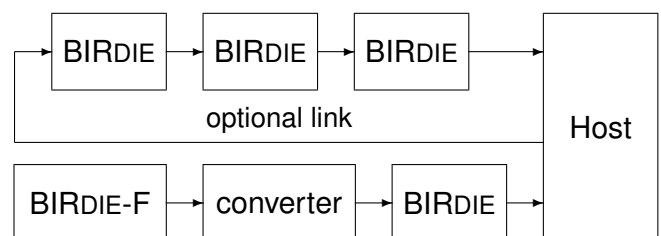
Figure 2: An example network.

4 BINARY INPUTS PARAMETERS
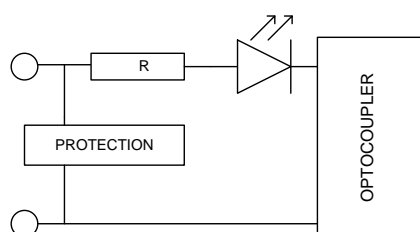
Figure 3: Input circuit.

Parameter	Min	Typ	Max	Unit
I_{LO}	0		0.5	mA
I_{HI}	1.3	2	6	mA
V_D		3.3	4.3	V

I_{LO} — input current for low state

I_{HI} — input current for high state

V_D — voltage drop on non-linear elements

24 V version:

Parameter	Min	Typ	Max	Unit
V_{LO}	−30	0	8	V
V_{HI}	17	24	60	V
R	4.4	9.4	9.9	kΩ

110 V version:

Parameter	Min	Typ	Max	Unit
V_{LO}	−115	0	29	V
V_{HI}	70	110	230	V
R	22	48	51	kΩ

V_{LO} — input voltage for low state

V_{HI} — input voltage for high state

R — input resistance

5 FIRMWARE

Frequency	Baudrate	Max. nodes
200 Hz (default)[2]	115.2 kbps	5
200 Hz	230.4 kbps	8
100 Hz	115.2 kbps	8

Compilation:

```
$ git clone
  git://git.podlesie.net/km/tmos.git
$ cd tmos
$ make birdie_defconfig
$ make
```

6 ORDERING GUIDE

The BIRDIE is available in the following versions:

Model	Interface	Input
BIRDIE-24	RS-485 115.2 kbps	24 V DC
BIRDIE-110	RS-485 115.2 kbps	110 V DC
BIRDIE-24F	HFBR 115.2 kbps	24 V DC
BIRDIE-110F	HFBR 115.2 kbps	110 V DC

There is a possibility to customize BIRDIE module variants to Client's wishes.

7 ACCESSORIES:

Code	Description
RS-232/485A	RS-232/RS-485 converter with terminator + bias
RS-232/422	RS-232/RS-422 converter
HFBR-X5X2Z/RS	HFBR-X5X2Z to RS-232/RS-422 converter

---

[2]baudrate and sampling frequency is configured during firmware compilation