

SP04B

RS232/RS485 Serial Communications Module Data Sheet

Data Sheet
Doc: 40443 v1.00





INTRODUCTION - SP04B LB2 SERIES MODULE

The SP04B is a 4-port, isolated RS232/RS485 serial communications module that is 'plug and play'. The module has dip switches for configuration of the communication mode (RS232/RS485) for each port. The module is managed via the RTU web server and is auto-detected by the RTU32M system firmware. The SP04B module is used to connect legacy serial equipment to your infrastructure using serial protocols that include DNP3, IEC 60870, Modbus, Omron and DF1.

The Brodersen LB2 communication modules can be used with the RTU32M series products. The modules are in two parts, a bottom part containing the backplane bus, and a top part containing the comms board and interfaces. All LB2 modules are hot pluggable.

Before using the LB2 Series communications modules, read the LB2 User manual.

VERSIONS / ORDERING CODES

Hardware basic version

Order code: **SP04B**

BACKPLANE PARTS

Description	Part nr.
BUS module for SYS-I/O, Start	BB81A
BUS module for SYS-I/O, Middle	BB81B

TYPE OF COMMUNICATION PORTS

- 4x Isolated RS232/RS485 ports
- Configurable using dip switches for each port

INTERFACE INDICATION & CONFIGURATION:

- 4x RJ12 (6P6C) connectors for PORTS 1-4
- 1x 8way Dip-switch for RS232/RS485 modes located at the front of the module
- 1x 2way Dip-switch, for RS485 half/full duplex modes located at the rear of the module
- 1x Dual color LED at the top of the module for status
- Two LEDs at each port for indicating Tx/RX communication activity

MODULE FRONT VIEW

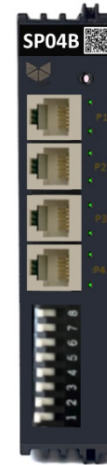


Figure 1: Front view of the SP04B module

COMMUNICATION PORTS

The SP04B serial communication module provides the following communication ports:

PORTS 1-4: Isolated RS232/RS485 connector pinout:

Pin No.	RS232	RS485	RS485 FULL DUPLEX
Pin 1 (Top)	TXD	Data +	TX+
Pin 2	NA	Data-	TX-
Pin 3	GND	GND	GND
Pin 4	GND	NA	GND
Pin 5	RXD	NA	RX+
Pin 6	NA	NA	RX-

PORTS 1-2, 2way RS485 duplex mode dip-switch:

DIP-SW No.	Function
DSW-1	Up direction is Half duplex for RS485 mode at port 3,4.
	Down (ON) direction is full duplex for RS485 mode at port 3,4.

PORTS 3-4, 2way RS485 duplex mode dip-switch:

DIP-SW No.	Function
DSW-2	Up direction is Half duplex for RS485 mode at port 1,2.
	Down (ON) direction is full duplex for RS485 mode at port 1,2.

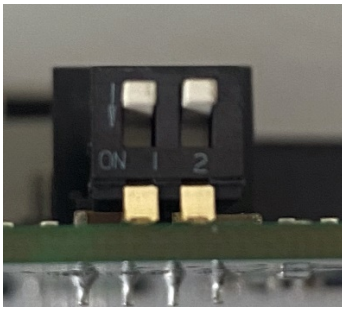


Figure 2: dip-switch DSW-1 and DSW-2

PORTS 1-4, 8way RS232/RS485 mode dip-switch:

DIP-SW No.	Function
DSW-1	LEFT is termination for RS485 mode at port 1
	RIGHT is no termination for RS485 mode at port 1
DSW-2	LEFT is RS232 mode at port 1
	RIGHT is RS485 mode at port 1
DSW-3	LEFT is termination for RS485 mode at port 2
	RIGHT is no termination for RS485 mode at port 2
DSW-4	LEFT is RS232 mode at port 2
	RIGHT is RS485 mode at port 2
DSW-5	LEFT is termination for RS485 mode at port 3
	RIGHT is no termination for RS485 mode at port 3
DSW-6	LEFT is RS232 mode at port 3
	RIGHT is RS485 mode at port 3
DSW-7	LEFT is termination for RS485 mode at port 4
	RIGHT is no termination for RS485 mode at port 4
DSW-8	LEFT is RS232 mode at port 4
	RIGHT is RS485 mode at port 4

The dip-switches for enabling/disabling termination resistors (DSW-1,3,5,7) are functional in RS485 mode only (in RS232 mode, the termination resistor is always disabled).

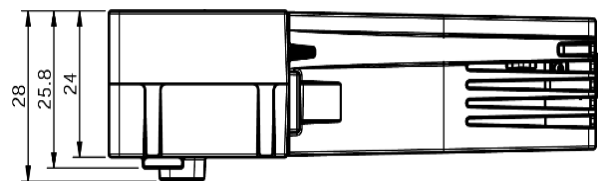
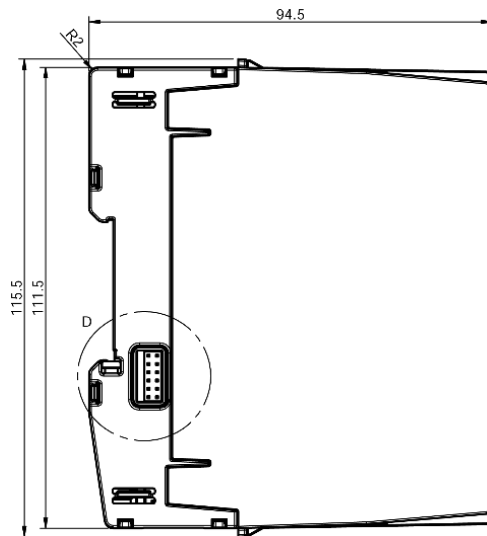
ELECTRICAL

Power consumption (from backplane bus):

- Current consumption*: 110mA (typ.) @ 12V
- Power consumption: 1.32W (typ.)

*When all ports 1-4 are in active communication with full duplex RS232/RS485 mode

MECHANICAL



Mounting	DIN 35
Width	24 mm
Height	111.5 mm
Depth	94.5 mm
Weight	102 grams

ENVIRONMENTAL & MECHANICAL CONDITIONS

Ambient operating temperature range	-25°C to +75°C
Ambient Storage temperature range	-40°C to +85°C
Marked degree of protection	IP20
Humidity	0...99.8%
Ventilation Restrictions	No
Pollution degree	2



STANDARDS

EMC:

- **IEC 61000-6-2:** EMC - Immunity standard for industrial environments
- **IEC 61000-6-4:** EMC - Emission standard for industrial environments
- **IEC 50121-4:** Railway applications - EMC - Emission and immunity of the signalling and telecommunications apparatus

Safety:

- **IEC 60950-1:** Safety requirements for Information technology equipment
- **IEC 61010-1:** Safety requirements for electrical equipment for measurement, control, and laboratory use

Environmental:

- **IEC 60068-2-1:** Environmental testing - Cold
- **IEC 60068-2-2:** Environmental testing - Dry heat
- **IEC 60068-2-30:** Environmental testing - Damp heat, cyclic (12 h + 12 h cycle)
- **IEC 60068-2-78:** Environmental testing - Damp heat, steady state
- **IEC 60068-2-6:** Environmental testing - Vibration (sinusoidal)
- **IEC 60068-2-27:** Environmental testing - Shock

MODULE LED STATUS

A dual color (red/yellow) LED is provided on the module to indicate the module status. Yellow indicates the module mode / state and red indicates module error or warnings (according to the table below):


Status	Yellow	Red
Normal operating	ON	OFF
Module is not configured / communication error	OFF	ON
No module power	OFF	OFF

Communication LED STATUS

Two LEDs for each port are indicating the communication status for Tx and Rx:

Status	Green - Tx	Green - RX
Active communication	ON	ON
No communication	OFF	OFF

SAFETY PRECAUTIONS

- Follow the international safety regulation (IEC 61010-1). 
- Only skilled personnel are to install and operate the modules.
- Modules can only be mounted in an end-user enclosure which provides protection against fire, electrical and mechanical hazards.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.