

DS16A

Display Module for RTU32M

Data Sheet

Doc: 40459 v1.01





INTRODUCTION TO LB2 SERIES

Before using the LB2 Series I/O Modules, read the LB2 User manual.

The Brodersen LB2 modules can be used with the RTU32N and RTU32M series products. The I/O modules are in two parts, a bottom part containing the backplane bus, and a top part containing the I/O board and logic. All LB2 I/O modules are hot pluggable and equipped with a 200 MHz processor to handle filtering, de-bouncing and logic processing of I/O.

Module firmware updates are managed by the RTU using Brodersen Worksuite. Use only genuine Brodersen bus cables for connection to Brodersen RTUs and extension of I/O module blocks. The LB2 connection cables are made to handle the power and shielding requirements of the LB2 bus communications. The maximum overall length of complete system is 30m. Each I/O module & Power supply module is calculated as 2cm. The cables are as their length indicates, e.g., UCC-610/100 cable is 100 cm.

The maximum number of I/O modules on one LB2 Bus is 60.

Cable ordering codes:

- UCC-610/25 25cm LB2 Cable
- UCC-610/50 50cm LB2 Cable
- UCC-610/100 100cm LB2 Cable
- UCC-610/200 200cm LB2 Cable

INTRODUCTION TO DS16A

The DS16A display module is used to enable the RTU32M users to display runtime information of the connected LB2 modules. The display has two lines with 12 digits on each line. It has 4 buttons that can be used to browse through the available pages.

The DS16A display module can run in two modes, firmware-controlled mode and Worksuite controlled mode.

In firmware-controlled mode, the buttons can be used to view basic information available for the each LB2 module. In Worksuite controlled mode, the application controls what is displayed.

If the Worksuite application writes a text to the display using the function WriteToDisplay, the display mode changes from firmware-controlled mode to Worksuite controlled mode. To change back to firmware-controlled mode, the application can write an empty string to the display.

POWER SUPPLY BACKPLANE PARTS

Description	Part Nr.
BUS module for communication, Start	BB81A
BUS module for communication, Middle	BB81B

VERSIONS / ORDERING CODES

Hardware basic version

Order code: DS16A

MODULE FRONT SIDE



Figure 1: Front view of the DS16A module

COMMUNICATION KEYS

The DS16A display module provides the following communication Keys:

Left	←
Right	→
UP	↑
Down	↓



Worksuite function to write to DS16A

The function WriteToDisplay can be used to write text to the DS16A display from the Worksuite application.

The function is defined as:

```
WriteToDisplay(Msg:String);
```

The function will write the supplied string to the DS16A display connected to RTU32M

The string can contain following formatting:

\$L : Line Feed (ASCII code 10)
\$R : Carriage return (ASCII code 13)
\$FF : Digital ON indication
\$DB : Digital OFF indication
\$\$: a "\$" character

Empty string : Revert back to FIRMWARE control

This function will take control over the DS16A display and the control can only be returned back to firmware-controlled mode by writing an empty string to the display.

Worksuite function to read DS16A button states

The function ReadDisplayKeys() is used to read the state of the buttons on the DS16A display.

```
ButtonState:=ReadDisplayKeys();
```

Returns the key state of the DS16A display as:

Reports key states as:

ButtonState.0=1: UP pressed
ButtonState.1=1: DOWN pressed
ButtonState.2=1: Left pressed
ButtonState.3=1: Right pressed

ELECTRICAL

Power consumption (from backplane bus):

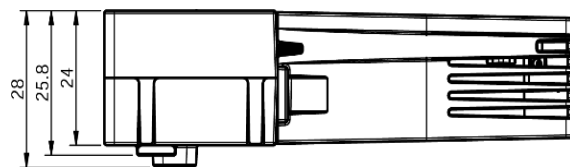
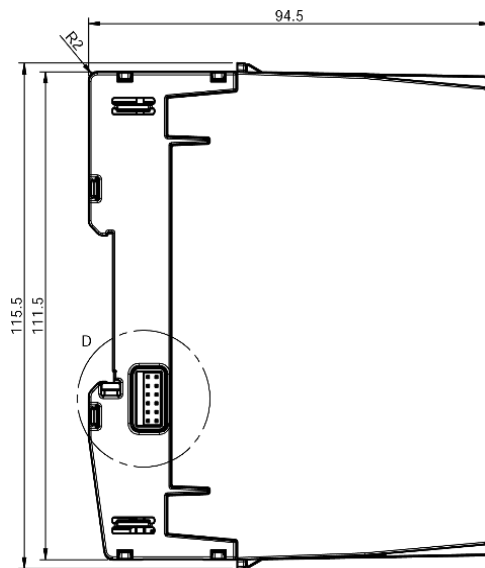
- Current consumption: 14mA (typ.) @ 12V
- Power consumption: 0.168W (typ.)

Separate/safe Extra Low Voltage (SELV) Limits:

VAC (RMS) 30V
VAC (Peak) 42.4V
VDC 60V

Note: The SELV Limits relies on input supply and connected voltages.

MECHANICAL



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

ENVIRONMENTAL 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

SAFETY PRECAUTIONS



- Follow the national safety regulation (IEC 61010-1).
- Only skilled personnel are to install and operate the modules.
- Modules can only be mounted in an end-use 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.