# Anybus ComBricks 2 Channel Repeater

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The Anybus 2 Channel Repeater is a standard RS 485 PROFIBUS repeater module for 12 Mbps with diagnostic LEDs and redundancy feature. Bus connection is utilized by screw terminals and additional DB9 connector.

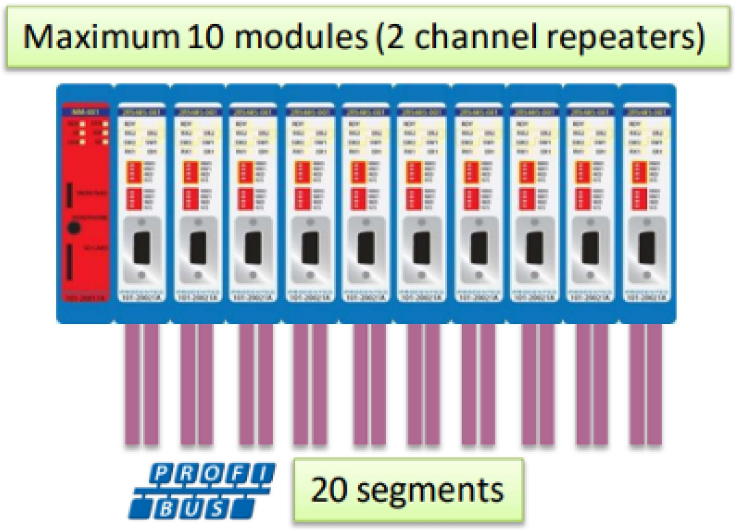
The repeater channels are directly connected with the ProfiTrace OE core in the 1B/1C Head Station. Bus monitor data is directly available in the web server.

The advanced 12 Mbps core of the repeater module can be cascaded unlimitedly and has increased RS 485 strength. The data traffic is constantly monitored for glitches which are digitally filtered out. Every channel has on-board switchable termination and able to drive 31 devices.

**Distinctive features**

- Diagnostics LEDs
- Bus speed up to 12 Mbps
- 31 devices per channel
- Screw terminals bus connection
- DB9 connector for monitoring
- Redundancy feature included
- Bus termination integrated

• Segmentation
• Cable Redundancy




nure 1 - 2 Channel repeater configuration example

**Dimensions and weight**

| | |
|---|---|
| L x W x H: | 137 x 25 x 105 mm (including backplane, per module) |
| Weight: | 119 g (excluding plug-able connectors, backplane and packing material) |
| Mounting DIN-rail type | 35mm × 7.5mm (EN 50022, BS 5584, DIN 46277-3) |

**Ambient conditions**

| | |
|---|---|
| Operating temperature range | -20$^{o}$ ... +60$^{o}$ Celsius (for mounting position see manual)<br>-4$^{o}$ ... 158$^{o}$ Fahrenheit |
| Isolation class | IP 20 (IEC/EN 60529, DIN 40050) |

**Backplane**

| | |
|---|---|
| PROFIBUS networks | 4 (set by dipswitches or web server) |
| Modules | 10 (positioned in the first 10 slots) |
| Power supply | Provided through the backplane |
| Typical backplane current consumption | Yes |
| Redundant power supply | 300 mA (at 5.72 VDC) |
| Max. backplane current consumption | 500 mA (at 5.72 VDC) At this current consumption the module is switched OFF from backplane. Occurs when module is faulty, e.g. internal short circuit. |
| Compatible backplane units | 101-200011, 101-200022, 101-200023, 101-200024,<br>101-200027 |

**Protocol specifications**

| | |
|---|---|
| Supported Protocols | DP-V0, DP- V1, DP-V2, FDL, MPI, FMS, PROFIsafe, PROFIdrive and any other FDL based protocol |
| Address | NO bus address required |
| Transmission speed | 9.6 kbps .. 12 Mbps (including 45.45 kbps) |
| Transmission speed detection | Auto detect (< 10 s detection and 50 s baudrate switchover time) |
| Data delay time | At baudrate / Normal mode / Redundunt mode<br>9.6 - 500 kbps / 2.8 Tbit / 13.8 Tbit<br>1.5 Mbps / 3.2 Tbit / 14.2 Tbit<br>3 Mbps / 3.9 Tbit / 14.5 Tbit<br>6 Mbps / 4.6 Tbit / 15.6 Tbit<br>12 Mbps / 6.4 Tbit / 17.4 Tbit |
| Deviation | 2 bit times (over the complete message) for received messages is allowed and is corrected to nominal speed when transmitted. |

**OFIBUS cable specifications**

| | |
|---|---|
| Cable lengths | 1200 m at 9.6 kbps to 93.75 kbps<br>1000 m at 187.5 kbps<br>400 m at 500 kbps<br>200 m at 1.5 Mbps<br>100 m at 3 Mbps to 12 Mbps |
| Wire diameter (for the screw terminals) | < 2.5 $mm^2$ |
| Wire type | Stranded or solid core |
| Number of devices | Maximum 31 devices per channel (busload) |
| Termination | Integrated and switchable<br>Powered according to PB RS 485 (390/220/390 Ohms) |
| Redundancy | Yes, maximum 10 cables activated by switch |
| Cascading depth | No limit (only limited by busparameter of the master) |
| Cascading units | With standard busparameters:<br>At baudrate Normal mode[units]<br>9.6 kbps 7<br>19.2 kbps 7<br>45.45 kbps 42<br>93.75 kbps 7<br>187.5 kbps 7<br>500 kbps 17<br>1.5 Mbps 23<br>3 Mbps 19<br>6 Mbps 16<br>12 Mbps 15<br><br>Formula to calculate number of cascading units with adjusted $T_{slot}$ :<br>Cascading units = ($T_{slot}$ - max$T_{sdr}$) / (2 × $T_{data\_delay\_time}$)<br>$T_{data\_delay\_time}$ is described in protocol specifications on previous page.<br>Example 1.5 Mbps, normal mode:<br>Cascading units = (300-150) / (2x3.2) = 23 |

**Connector Lay-out**

| | |
|---|---|
| PROFIBUS SCREW Terminal CH1 and CH2 | Plug-able screw terminal, pitch 5,08 mm<br>Pin A: PROFIBUS A (green wire)<br>Pin B: PROFIBUS B (red wire)<br>Pin SH: Shield<br>Pin I: Indirect Shield |
| PROFIBUS DB9 CH2 | D Sub connector, 9 contacts (PROFIBUS specification)<br>Pin 1: N.C.<br>Pin 2: N.C.<br>Pin 3: PROFIBUS - B<br>Pin 4: PROFIBUS - RTS<br>Pin 5: GND<br>Pin 6: VPP<br>Pin 7: N.C.<br>Pin 8: PROFIBUS - A<br>Pin 9: N.C.<br>Housing: Shield |

| | |
|---|---|
| | Pin SH is connected internally to the DIN-rail with spring-loaded contact.<br>Pin I is connected internally with 10nF/1MOhm to shield. |

**LEDs**

| | |
|---|---|
| RDY: Ready | Module is ready for operation (ON) |
| RX: Receiving | Receiving telegrams (blinking) |
| ER: Error Receiving | No or bad receiving telegrams detected (ON or blinking) |
| SW: Switch Network Termination | Network termination active (ON) |

**Dipswitches**

| | |
|---|---|
| NW0 NW1 | PROFIBUS Network |
| LEFT LEFT | 1 |
| RIGHT LEFT | 2 |
| LEFT RIGHT | 3 |
| RIGHT RIGHT | 4 |
| | |
| RED | Redundancy |
| LEFT | OFF |
| RIGHT | ON |
| | |
| H/S | Settings |
| LEFT | Hardware |
| RIGHT | Software |

**Standard and approvals**

| | |
|---|---|
| CE | EMC Directive 2014/30/EU, class A Digital Device<br>RoHs Directive 2011/65/EU |
| FCC | 47 CFR 15, Unintentional Radiator, class A Digital Device. |
| UL | Report reference: E468970<br>Standards for safety: UL 508 - Industrial Control Equipment, CSA C22.2 No. 142-M1987 - Industrial Control Equipment |

**Others**

| | |
|---|---|
| Head Station firmware | ALL |
| MTBF | 1448431 hours, at $30^{O}$ Celsius, IEC TR 62380 |

| File | Version | Size | Read online |
|---|---|---|---|

**Ordering Information**

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|---|---|
| **Order Codes** | 101-201102 |
| **Included Components** | Anybus Combricks, backplane socket |

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|---|---|
| **Warranty** | 1 year |