

BBM-384 Baseband modem

The MuLogic BBM-384 is a baseband modem for synchronous and asynchronous operation at data rates ranging from 225 bps to 38.4 Kbps. The BBM-384 provides reliable data transmission over unloaded, unconditioned local area telephone wire or twisted-pair cables.

The modem is designed to operate within a variety of network configurations like point-to-point, multipoint and tail-circuits and features a full implementation of CCITT V.54 test facilities.

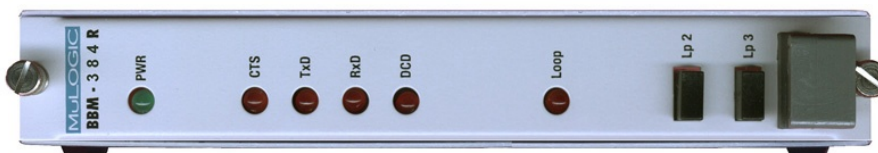
The modem is available in 3 versions:

- BBM-384D: Standard desktop housing
- BBM-384S: Rugged steel desktop housing.
- BBM-384R: Rack card for use in a 19", 4HE card frame.



BBM-384D

BBM-384R



BBM-384S

FEATURES

- Synchronous and asynchronous operation up to 38400 bit/s.
- Half-duplex and multipoint operation over 2 or 4-wire lines. Full duplex on 4-wire lines
- Ideal for SCADA applications over private copper networks.
- Transparent data transport: Supports a.o. Modbus RTU, DNP3 and Mirrored Bits[®] protocols.
- Very low back-to-back data delay time (latency): 0,67 ms at 9600 bps.
- Fall-back/fall-forward to follow variable data rates in tail-circuits of voice band modems. (option)
- Supports CCITT V.54 master/slave diagnostics in point-to-point, multipoint and tail-circuits.
- Test loop activation at front panel.
- Test loop activation from interface circuits 140 and 141.
- Adaptive statistical equalizer to increase data rates over longer lines.
- Available as desktop unit and rack card.
- Internal 230Vac power supply on BBM-384D.
- Internal 11-38Vdc or 20-75Vdc power supply on BBM-384S and BBM-384R.
- External power adapter for 100..240Vac power supply on BBM-384S.

OPERATION

The BBM-384 series operates over unloaded, unconditioned local area data channels or twisted-pair cables at distances up to 50 km on cables with 0,5 mm copper gauge.
The actual distance obtainable for a specific application varies depending on data rate and wire diameter used.

The BBM-384 offers local loop-2 and loop-3 test facilities. These test loops can be activated by means of interface circuits C.140 and C.141, or manually by push buttons at the front panel.

The BBM-384 offers a full CCITT V.54 implementation including addressed test loops for multipoint or tail-circuits. This ensures an entire network, including the tail-circuit modems to be subjected to a series of tests without requiring any action from remote terminals.

TECHNICAL SPECIFICATIONS

- Modulation: Differential bi-phase modulation, standard and alternative.
- Operation: Synchronous and asynchronous, in point-to-point or multipoint network topologies.
- Half-duplex operation over 2 or 4-wire lines or full-duplex over 4-wire lines.
- Data rates: 38.4, 22.8, 19.2, 14.4, 9.6, 7.2, 4.8, 3.6, 2.4, 1.8, 1.2, 0.9, 0.6, 0.45, 0.3 and 0.225 Kbps.
- Transmission level: Adjustable in 8 steps, from +6 dBm to -15 dBm.
- Carrier threshold: Programmable for -30 dBm or -43 dBm.
- Line equalizer: Adaptive statistical equalizer, activated on the transmit or receive side.
- Line impedance: Selectable 150Ω or 600Ω balanced or high impedance (10 kΩ when receiving).
- Interface: to CCITT V24/V28, with fixed DTR and RTS circuits (and from DTE).
- Asynchronous data formats: 8, 9, 10 or 11 bits.
- Fall-back/fall forward (option): Switching time less than 32 bits.
- Diagnostics: In accordance with CCITT V.54 using circuits C.140 and C.141.
- Control of up to 256 V.54 addresses for multipoint and tandem connections.
- Power supply (standard on BBM-384D): 230 Vac. (+10%, -15%) 50-60 Hz, 5 W max.
- Power supply (standard on BBM-384S and R): 11..38Vdc or 20-75Vdc, 5 W max.
- Operating temperature: -25°C to +70°C
- Isolation (line to circuit, power to circuit): 1500Vac (3000Vac available on request)
- Dimensions BBM-384D: 240 x 160 x 54 mm (L x W x H)
- Dimensions BBM-384S: 240 x 160 x 31 mm (L x W x H)
- Dimensions BBM-336R: Panel: 5TU/4HU, length 240mm

Distance table

Data Rate	Copper diameter 0,5 mm (24 Awg)	Copper diameter 0,9 mm (19 Awg)
38400 bit/s	7 km	14 km
19200 bit/s	11 km	22 km
14400 bit/s	12 km	24 km
9600 bit/s	15 km	30 km
7200 bit/s	17 km	34 km
4800 bit/s	21 km	42 km
3600 bit/s	24 km	48 km
2400 bit/s	28 km	57 km
1800 bit/s	32 km	65 km
1200 bit/s	36 km	73 km
900 bit/s	41 km	83 km
600 bit/s	51 km	103 km

(Note*: low noise line, receive equaliser enabled)