

Asynchronous short-range modem **D-1**

RS232/V.24 **DIN-rail version**



- RS232C/V.24/ V.28
- Up to 115.2 kbit/s
- Balanced current loop
- Independent of speed and code
- Galvanic isolation and transient protection.
- Status message transmission
- Transmission distance up to 21 km
- Easily installed
- 230 V, 115 V, 12-36 V DC, 24 V AC

The D-1 asynchronous short-range modem guarantees trouble-free data communication over distances up to 21 km with serial communication RS232/V.24. It provides a reliable extension of data lines. D-1 is a DIN rail version with internal transformer for 230 V (115 V), or (D1-DC) 12-36 V DC, 15-29 V AC.

The D-1 short-range modem permits data speeds up to 115.2 kbit/s with full/half duplex, half simplex. Very reliable data transmission is ensured by a tristated balanced 10 mA current loop. This technique permits, in addition to data transmission, the transmission of a status signal in both directions.

The status signals in a 9-pole D-SUB connector are selected with jumpers on the circuit board. See block diagram on the next page. The signal interface X1 is designed in accordance with the specifications EIA RS232-C and CCITT V.24/V28.

The status of PWR (Power on) RD, TD and DCD are indicated on the front panel of the modem.

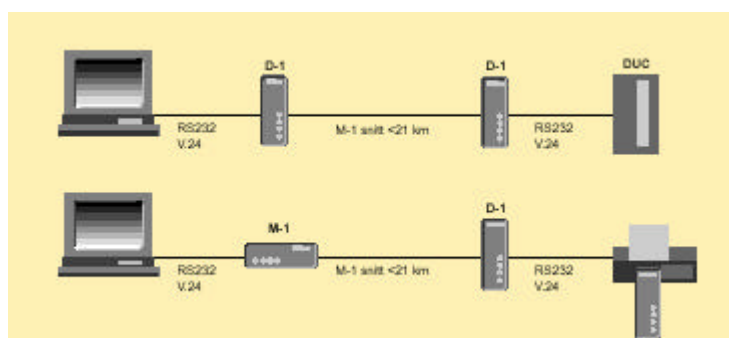
The D-1 short range modem needs no adjustment for different speeds or number of start/stop bits and is completely code-transparent with respect to data structure and protocol.

D-1 provides very good protection against lightning and other overvoltages. It is not only the modem which is protected - computers and other equipment connected to the short-range modem are most often unaffected by such transients.

D-1 satisfies the requirements of the highest standards of reliability, function and performance. The modem is very easy to install and installation instructions in English are supplied with each modem delivered.

Recoverable plastic is used in the fabrication of the D-1 DIN rail unit. Corresponding modems, a desk version designated M-1 and a rack version, R-1 are also available. D-1 is normally available for immediate delivery.

Application examples



Reliable transmission over long distances

For secure transmission of data, for examples, within a building or an industrial plant, the data signal should be amplified and made resistant to electrical interferences such as transients, ground currents and lightning strike. The D-1 has an effective line driving, resistant to interference, with a balanced current loop which permits data transmission over long distances (21 km) at even high speeds.

Galvanic isolation and transient protection

The short range modem D-1 is galvanically isolated with opto-couplers between transmission and receiving sides. The line side is protected with transorbers which divert the energy in any transients to ground. The galvanic isolation and transorbers reduce the risk of operational disturbances caused by ground currents and lightning strike.

Code-independence

The D-1 short range modem is independent of codes and functions without the need for adjustment at all speeds between 0 and 115.2 kbit/s. Word length, parity and protocol are optional.

Status messages

In addition to data, the D-1 can transmit a status message in each direction between data transmitter and receiver. The status-in signal can be DTR, RTS or other optional status signal (such as a busy-signal). The status-out signal can be DCD or CTS. Status signals are selected with jumpers on the PC board.

DIN rail installation

The D-1 is easily installed on a 35 mm DIN rail (EN50022). A DIN rail adaptor (A-10) is fixed to the DIN rail. The DIN rail adaptor contains the connection for 230 V AC or 24 V DC/AC power. The modem unit is then easily jacked in position in the DIN rail adaptor, thereby automatically connecting the modem to the voltage. This permits replacement of the mo-dem board without touching the power connector. The short-range modem is also available in a conventional box version (M-1) or for installation in a rack (R-1).

Connections

Power: 230 V or 24 V (15-29 V AC, 24 V DC) is connected through a 4 pole screwed terminal block in the DIN adaptor. A separate PE (ground) diverts any transients directly to ground. RS232/V.24: with 9-pole connector DB9P. Line side M-1 interface: with 5-pole screwed terminal block supplied with the modem.

MTBF (Mean Time Between Failure)

The mean time between failure, including failure due to lightning strike, is more than 130 000 hours (15 years)

Manuals/Documentation

Each modem is delivered with a manual in English.

Version designations

- D-1 DIN rail version, 230 V AC
- D-1 DC DIN rail version, 12-36 V DC and 15-29 V AC, (12-60 V DC, 15-48 V AC, isolated) (option)
- A-10 DIN rail adaptor for modems with power socket, included in the delivery.
- M-1 Desk/wall-hung version, 230 V AC
- M-1 DC Desk version, 12-36 V DC and 15-29 V AC (isolated power option)
- R-1 Modem board for rack installation

Specification D-1

Transmission Interface X1, (DCE)	Asynchronous, full/half duplex or simplex RS 232-C and V.24/V.28 Connector: DB9P
Interface X2, (line M-1 interface)	10 mA balanced current loop Connector: 5-pole screwed terminal block
Transmission speed LEDs	0-115 200 bit/s, dynamic Power on, TD, RD and DCD
Current supply	Connection via a 4-pole screwed terminal block installed in the DIN adaptor. A separate PE (ground) diverts transient energy directly to ground. D-1: 230 V AC, 50/60 Hz (10%, 2.5 VA) D-1DC: 2-36 V DC, 15-29 V AC (10%, 100 mA) 12-60 V DC, 12-48 V AC, isolated (option)
Isolation voltage	420 V rms

Isolation	Galvanic isolation with opto-couplers.
Overvoltage protection	Transorbers and varistors
Cable type	Twisted pair, 0,3 mm 2 , 42 pF/m
Fuse	F500 mA
Temperature range	5-50 °C, ambience
Humidity range	0-90% RH, non-condensing
Dimensions, weight	D-1 and D-1DC: 132x52x142 (hxbxd) 0,4 kg
Chassis material	Recoverable plastic
Installation	The unit is fixed in the DIN rail adaptor A-10 supplied. The adaptor can be mounted either on a 35 mm DIN rail (EN 50022) or on a wall with screws in prepared keyholes or 4 screw holes.
CE approval	In accordance with the directive for electromagnetic compatibility and electric safety.

Transmission distance		
Cable Type	Speed bits/s	Distance Km
0,3 mm ²	600	20,0 - 30,0
42 pF/m	1.200	13,0 - 18,0
	2.400	10,0 - 15,0
	4.800	5,0 - 8,0

Cable Type	Speed bits/s	Distance Km
0,3 mm ²	9.600	2,5 - 3,0
42 pF/m	19.200	1,8 - 2,3
	38.400	1,0 - 1,5
	64.000	0,7 - 1,0
	115.200	0,2 - 0,4