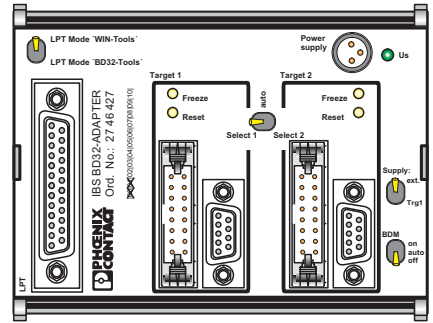# IBS BD32-ADAPTER

Adapter for Connecting the BD32 Interface of Target Systems To the Parallel Interface of IBM-Compatible PCs

Data Sheet 604302   11/2003

Product Description

The IBS BD32-ADAPTER connects the BD32 interface of electronic components with Motorola CPU (target systems) to the parallel port of an IBM-compatible PC.

The IBS BD32-ADAPTER can be used for downloading firmware for INTERBUS controller boards and for downloading and debugging application programs for Motorola CPU systems.

A BDM software package for the control of the target system is available as freeware from Motorola. The software package can be downloaded at www.motorola.com.

The IBS BD32-ADAPTER has an internal galvanic isolation. The power for the adapter is supplied by the INTERBUS master.

⚠ Due to its electromagnetic compatibility, the IBS BD32-ADAPTER is not suited for use in a plant or in a machine.

The IBS BD32-ADAPTER interfaces directly with the central microcontroller of a target system (e.g., of an INTERBUS controller board). The connection of the IBS BD32-ADAPTER to a target system in operation will lead to unpredictable responses from the system or the connected INTERBUS network.
The IBS BD32-ADAPTER may only be used in a laboratory environment.

This adapter is a delivery part for the development and production testing of INTERBUS controller boards and other target systems. During development, testing and installation of devices, the manufacturer must take appropriate measures to avoid electromagnetic interference in accordance with the regulations governing electromagnetic interference. The installation of the adapter in the production test device must be in accordance with relevant EMC regulations.

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Features

–   The IBS BD32-ADAPTER can be connected
    directly to a BD32 interface as per the
    Motorola recommendation (10-pos. DIL
    male connector). A connection for target
    systems (16-pos. DIL male connector with
    polarization key) is also provided.

–   The parallel port and the Target 1/2 connec-
    tions of the IBS BD32-ADAPTER are electri-
    cally isolated from each other.

–   Two target systems can be connected simul-
    taneously to the adapter and operated alter-
    nately. The selection switch allows the
    manual selection of the target system. The
    selection can also be software controlled by
    functional test programs developed with the
    BDM driver software.

–   The BD32 interfaces and the parallel port of
    the adapter are electrically isolated from
    each other.

–   The voltage supply of the electrically isolated
    area can come either from the target system
    or from an external 5 V DC power supply. If
    the adapter is to be supplied from the target
    system, the system must be connected to
    Target 1 and be capable of supplying the
    BD32 interface with a current of 130 mA. In
    the case of external supply, no current is
    drawn from the target system.

–   Status indications for Reset Mode and
    Background Debug Mode Management
    (Freeze) are available for all connectable
    target systems.

–   By means of the switch it is possible to alter
    the startup behavior of the target systems.
    When Background Debug Mode (BDM) is
    deactivated, the target systems start after a
    reset free from any external influence. When
    BDM is activated, a reset sends the target
    systems into the BDM (i.e. the systems are
    stopped).

–   There are two options available for the
    connection of the target systems:

    a) via unshielded ribbon-cables with IDC
       terminal strips or

    b) via shielded 9-pos. D-SUB connectors.

–   Using the appropriate debugging software,
    the program of a connected target system
    can be processed in single step mode.

–   The adapter can be mounted on a standard
    DIN rail.

Connector Pin Assignment
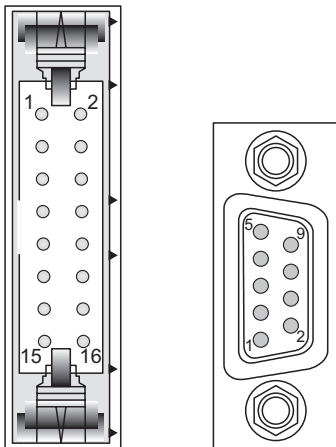
16-Pos. Male Connector (see Figure 1 on page 4)

Pin	Signal	Description
1	NC	Not connected
2	NC	Not connected
3	GND	Supply voltage GND
4	BKPTL_DSCLK	Request for BDM/clock for serial data transmission BKPTL = Breakpoint DSCLK = Data Serial Clock
5	GND	Supply voltage GND
6	FREEZE	Status from the target for BDM 1: CPU in Background Debug Mode 0: CPU not in Background Debug Mode
7	RESETL	Reset signal from the target (bi-directional), active low
8	IFETCH_DSI	Status from the target/serial data **for** the target IFETCH = Instruction Fetch DSI = Data Serial IN
9	VCC_Target	Supply voltage V_{CC} from the target (Target 1 only) (5 V ±10%)
10	IPIPEL_DSO	Status from the target/serial data **from** the target
11	VCC_Target	Supply voltage V_{CC} from the target (Target 1 only) (5 V ±10%)
12	IPIPEL_DSO	Status from the target/serial data **from** the target IPIPEL = Instruction Pipeline DSO = Data Serial Out
13	VPP	Bridge to pin 16, Boot Block Protection disable
14	NC	Not connected
15	NC	Not connected
16	VPP	Bridge to pin 13, Boot Block Protection disable

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9-Pos. D-SUB Male Connector (see Figure 1)

Pin	Signal	Description
1	GND_Target	Supply voltage GND
2	RESETL	Reset signal of the target (bi-directional), active low
3	VCC_Target	Supply voltage V_{CC} from the target (Target 1 only) (5 V ±10%)
4	VCC_Target	Supply voltage V_{CC} from the target (Target 1 only) (5 V ±10%)
5	NC	Not connected
6	BKPTL_DSCLK	Request for BDM/clock for serial data transmission BKPTL = Breakpoint DSCLK = Data Serial Clock
7	FREEZE	Status from the target for BDM 1: CPU in Background Debug Mode 0: CPU not in Background Debug Mode
8	IFETCH_DSI	Status from the target/serial data **for** the target IFETCH = Instruction Fetch DSI = Data Serial IN
9	IPIPEL_DSO	Status from the target/serial data **from** the target IPIPEL = Instruction Pipeline DSO = Data Serial OUT

☞ On the "Target 2" connector, pins 3 and 4 are connected to each other but not to the supply voltage.

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Figure 1   16-pos. male connector and 9-pos. D-SUB male connector

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Technical Data

General Data	
Input (from PC)	PC parallel port LPT1...3 (shielded PC connecting cable (1.8 m [5.906 ft.]; 25-pos. D-SUB male and female connectors; 1:1 connection)
Output (to processor)	Ribbon cable (0.3 m [0.984 ft.]; with 10-pos. DIL male connector (Motorola standard) and 16-pos. DIL male connector with polarization key (Phoenix standard)
Power supply voltage	5 V ±10%
Current consumption	130 mA, typical; 150 mA, maximum
Dimensions (PCB)	82.9 mm x 58.5 mm (3.264 in. x 2.283 in.) (W x H)
Dimensions (housing)	124 mm x 90 mm x 48 mm (4.882 in x 3.543 in. x 1.890 in.) (W x H x D)
Weight	210 g

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Ordering Data

Description	Order Designation	Order No.
Adapter for connecting the BD32 interface of target systems to the parallel interface of IBM-compatible PCs (incl. shielded PC connecting cable for the parallel interface of the PC and ribbon cable for the connection to the target system)	IBS BD32-ADAPTER	27 46 42 7
BDM cable, with shield connector and standard connector, for target system connection; primarily intended for program download (restricted functionality during debugging: no single-step mode) Length: 1.5 m (4.92 ft.)	BDM CAB	28 19 19 2
External power supply unit	IBS ECO-LINK NT 230AC/5DC	27 46 47 2

> Make sure you always use the latest documentation.
> It can be downloaded at www.phoenixcontact.com.

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