

BD 300 Data Acquisition Recorder



Summary of Features

4, 6 or 8 Channels

Data logging frequency up to 400 Hz,
20 bit measurement resolution

Inputs for any channel:

- Volt DC / Volt AC (true RMS)
- Current DC / Current AC (true RMS)
- Temperature (Pt-100 or Thermocouple)
- Frequency

In-built Floppy disk and/or Printer,
with unique synchronous printing !

Very easy to use

Windows® Data visualisation package
(FAMOS compatible)

The unique solution to your measurement demands

The BD 300 is a general purpose measurement tool ideal for many types of test & measurement applications in scientific - laboratory - industrial - and technical environments.

Independent from the input source the output data can be user defined and displayed in any engineering unit (e.g. mbar, °C, kJoule, hPa, W/m², RPM, kW, V, A, Hz).

Connection to a Personal Computer or network via the BD 300's the RS-232C interface. This allows communication between both instruments and data transfer (logging) directly to the hard disk of the PC.

A floppy disk drive can be mounted inside the BD 300 thus allowing data logging without the need of a PC. Data is compressed to a maximum of about 4MB ASCII on a MS-DOS compatible 3.5 inch diskette.

An optional HP Inkjet printer head allows printing of axis, actual data, alarm messages, settings etc. that are synchronous in time with the written signals.

Communication to the outside world is via 8 free definable relay in/outputs, in addition to 8 Event Inputs.

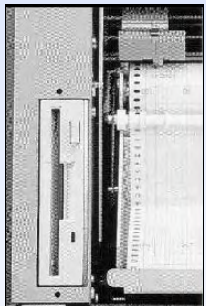
On every I/O event the BD 300 has 43 functions available to react.
A built-in timer allows functionality when you are not there.

BD 300 Data Acquisition Recorder

The Plug Measure & Control concept

BD 300 DATA ACQUISITION RECORDER - EASE OF USE IS THE PRIME CONSIDERATION

The PMC-concept is an innovative new approach to data acquisition and recording. It greatly simplifies the business of instrument set-up, operation, and data analysis! The BD 300 is capable of all of the most popularly desired measurements. To different channels VDC/VAC; Current; Temperature (Thermocouple or Pt-100) and frequency input sources can be connected simultaneously. Measurement resolution is 20 bits, and results can be displayed in user-defined engineering units. The innovative input backpack, which can be detached from the recorder, provides the user with easy access to the input connectors.



Intelligent - flexible - user friendly

The **BD 300 DATA ACQUISITION RECORDER** features a unique and intuitive User Interface which allows easy set-up and display of all recorder functions with random access to all menus. Four (4) instrument settings files can be stored - under a user defined name - inside the BD 300 for immediate recall, at any time. Together with its 'built-in intelligence' the BD 300 offers you a most flexible, high performance measurement solution for demanding applications. A 3.5" Floppy Disk Drive can be used to acquire data and to store 16 additional settings files independent from a PC.

All users can have **their own BD 300** by using the Auto Disk function. The users specific settings file is loaded into the BD 300 at power-up so that you can 'take off' immediately.

Write in analogue and save digitally

A must for many today's users is the ability to write signals to paper ('recording') to get a real time - full colour - hard copy of the measurement data. At a glance any irregularities in the signal become visible and recordings are available for review and storage. Zone recording is one of the many possibilities.

The BD 300 provides recording with 4, 6 or 8 differently coloured pens. Plug in your signal and get going. There is no need for immediate recording. Data digitally logged on a diskette, can be transferred to a PC first, for visualisation, data reduction and manipulation. Afterwards the data can be written to paper using the BD 300's full colour recording (playback) feature, it then serves as a 'colour plotter'.

Control

The BD 300 can function as a 'controller'. The instrument watches over the measuring process and is capable of reacting in case certain alarm limits are being exceeded. This reaction may be manifested as: an alarm, switching on/off a pump or other instrument, starting data acquisition, etc. In total 43 functions are available.

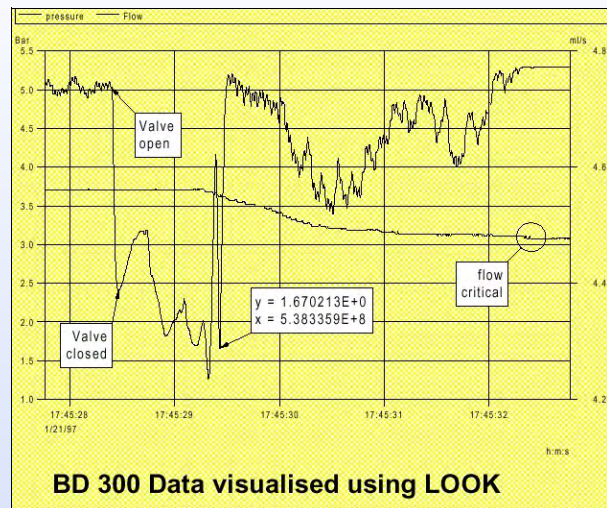
Connection to a PC-System

When using the Kipp & Zonen 'PC connectivity package' data can be transferred via RS-232 directly to the hard disk of a PC. The special Data Visualisation package LOOK accepts the data as such and allows visualisation and annotation of data in the PC. Reports are made easily from this environment using the Report Generator which is part of LOOK. The LOOK package is FAMOS compatible. Data can also be acquired on a 3.5" diskette in compressed form. The MS-DOS compatible disk is brought into a PC.

For the PC the Windows program 'WTOOLS' is available that allows the decompression of the data into a maximum of about 4 MB ASCII-data. These data can be directly read into EXCEL®, MathCad® and other spread sheet programs.

Data integrity

Data logged on diskette or hard disk is encoded to recognise that the data is original - not manipulated - data. Once the data are decompressed for visualisation, the data file loses its original status. The Windows program called 'WLog' contains a routine 'Check Origin' to perform a data integrity check. This is a very useful feature in case it should be proved that the presented data are original (GLP - Good Laboratory Practice).



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Technical specifications

Plug - Measure

Volt DC	0 .. 1 mV up to 0 .. 250 V Full Scale (FS) \pm 0.1%
Volt AC	0 .. 1 mV up to 0 .. 250 V FS true RMS \pm 0.2% (Crest factor < 5)
Amps DC	0 .. 1 mA up to 0 .. 0.5 A FS. \pm 0.1%
Amps AC	0 .. 1 mA up to 0 .. 0.5 A FS true RMS \pm 0.2% (Crest factor < 5)
$^{\circ}$ C/F/K	-200 $^{\circ}$... +2000 $^{\circ}$ C span for: J, K, T, N, B, S, E, R and Pt-100 with 2, 3 or 4 wires
CJC	cold junction compensation selectable per channel for thermo couples
Frequency	10 Hz - 100 kHz in steps of 1,2 and 5. (sensitivity adjustable)
Accuracy	VDC, IDC \pm 0.1 %, cold junction \pm 0.5 $^{\circ}$ C, linearisation 0.06 $^{\circ}$ C VAC, IAC \pm 1 % RMS Crest factor < 5, freq. < 10 kHz
Input resolution	20 bits
Sampling rate	each channel 400 Hz (used for filtering and pen positioning)
Zero drift	< 0.25 μ V / $^{\circ}$ C
Channel separation	2 kV (3 kV tested), no visible cross talk with freq. < 10 kHz
Input impedance	1 M Ω VAC,VDC and 1 Ω for AAC, ADC
Input filter	low pass filter selectable from 0.1 to 20 Hz, in steps of 1, 2 and 5 + mains filter
Shifting	-500% to +500% (full scale or zone, manual or automatic)
Left / right	margin minimal full scale 10 mV, max full scale 495 V (max input 250 V)
Zone recording	0..100% adjustable per channel
Zero position	-100% to +200%

Control

Alarms	2 Input or Pen alarms per channel with adjustable hysteresis
8 event inputs	TTL inputs or contact closure, with each 43 programmable functions
8 alarm relays outputs	contact rating 500 mA / 50 V, open and close per relay available
Time events	Switches all selectable events (also logging/recording), with pre-set time, date and duration
Mathematical functions	possible between input(s) and pen
Serial interface	RS-232 up to 57600 baud, 25 pins female connector
Logging to RS-232	All recorder functions can be remote controlled PC software (under Windows \circledR) supplied on 3.5" disk (option)

Chart drive

Paper speeds	5 mm/h..... 50mm/s. or 0.2 inch/hr....2 inch/s. (forward and backward)
Dual speed	2 chart speeds 'remote' selectable, triggered by event
External control	chart controlled by external input with TTL pulses. (divider selectable)
Paper type	Z-fold paper standard; roll cassette for both roll paper and Z-fold paper is optional
Paper feed	Manual feed; X-Y-mode and via 'go to home', speed up to 250 mm/s
Paper out sensor	paper out is indicated; chart is stopped, logging continues
XY mode	one of the input channels is directed to the chart control

Servo system

Paper width	250 mm
Pen travel	252 mm
Pen speed	1.2 m/s and 20 m/s ² acceleration
Response time	< 0.25 s. (5..95% full scale deflection (FSD)); in discrete mode temporarily < 0.1 s (> 10Hz.)
Mechanical pen offset	2.5 mm, Pen Offset Compensation (POC) standard
Life time pen	500 m typical 800 m
Pens	Identical for all channels (8 different colours available)
Auto pen lift	auto pen lift (with override) to prevent stains on paper when chart stops

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Technical specifications

Printer

Type	Inkjet (HP Inkjet cartridge)
Speed	80 characters/sec. unidirectional
Density	100 characters over full scale (250 mm)
Position	In front of pen 1 to allow synchronous printing mode !
Mode	-direct prints information direct at the moment the command is given
	-synchronous delays the information (like Pen Offset Compensation) to synchronise it (in X and t) with the analogue input signals
Print features:	messages, actual values and time/date on request or interval settings, axis per channel, changes, alarms, tags and disk contents

Disk data logging station MS-DOS compatible

Log rate	off / 0.01 Hz - 400 Hz in steps of 1, 2 and 5, per channel selectable logging per external chart pulse is also possible
Data storage	compressed. The supplied software decompresses a 1.44 MB disk into ± 4 MB of ASCII data
Logging type	
-full disk	data is stored until the 'disk full' message is given, then logging stops
-continuous	at 'disk full' the oldest data will be overwritten to have the most recent data available
Data files	up to 16 different data files with a selectable name can be stored on disk (MS-DOS file structure). Each file also contains the complete settings of the recorder
Setting files	16 complete recorder setting files can be stored with a free selectable name, in addition to the 16 data files on the same disk.
Data guard	in case of a power failure all data until power off is retained
Disk information	during data logging the remaining time or disk space showed in every display
Playback	original BD 300 or PC data can be (re)written on the BD 300
Auto disk	this allows the recorder to start directly with pre-stored settings (at power on)
Check origin	difference between original and manipulated data can be detected with check origin program (according to GLP requirement)
Initialise	formats a disk for use in the BD 300

General specifications

Instrument type	4, 6 or 8 channels
Mains power supply	115 / 230 Volt $\pm 15\%$. Optional 12 or 24 Volt DC power supply
Power consumption	60, 70 or 80 VA for 4, 6 or 8 channels
Operating conditions	0°C .. 40°C and 20% .. 80% rH; non condensing
Dimensions (all models)	444 x 390 x 280 mm. (W x D x H)
Weight	14, 15 and 16 kg for BD 300 /4, /6 and /8 channels respectively
Safety	According to IEC 1010, CSA, VDE and CE
Safety category	Class II for power supply and inputs
Disturbance	Tested according to IEC 801, 801-2, 801-3 and 801-4

Additional options 19" rack mount; panel mount; chart illumination-illuminates chart and pens