## 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)**

## GENERAL

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.

A 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.

## INTELLIGENT - FLEXIBLE - USER FRIENDLY

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 measure-ment solution for demanding applica-tions.

A 3.5" Floppy Disk Drive can be used to acquire data and to store 16 additional settings files indepen-dent 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.

## 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!
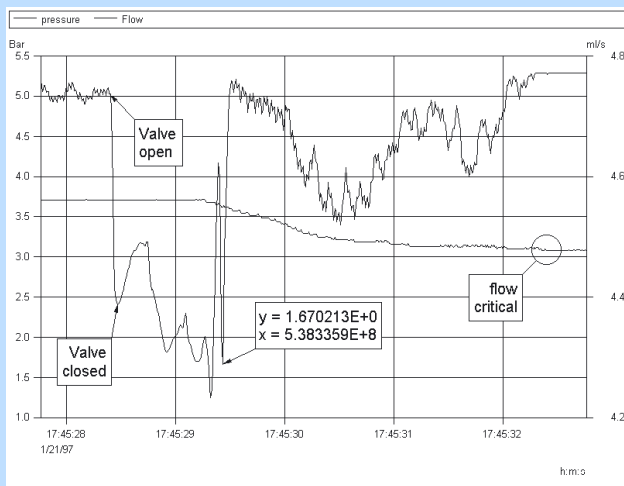
The BD 300 is capable of all of the most popularly desired measurements. To different channels VDC/VAC; Current; Temperature (Thermocouple or Pt-100) and frequency input sources can be connected simultaneously. Measurement resolution is 20 bits, and results can be displayed in user-defined engineering units. The innovative input backpack, which can be detached from the recorder, provides the user with easy access to the input connectors.

*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.*

## 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.

## 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 looses 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).



pressure — Flow

Bar / ml/s graph with labels: Valve open, Valve closed, flow critical

$y = 1.670213E+0$
$x = 5.383359E+8$

Time axis: 17:45:28, 17:45:29, 17:45:30, 17:45:31, 17:45:32   1/21/97   h:m:s

### PLUG - MEASURE | INPUT CHANNELS

| | |
|---|---|
| Volt DC | 0 .. 1 mV up to 0 .. 250 V Full Scale (FS) ± 0.1% |
| Volt AC | 0 .. 1 mV up to 0 .. 250 V FS true RMS ± 0.2%  (Crest factor < 5) |
| Amps DC | 0 .. 1 mA up to 0 .. 0.5 A FS. ± 0.1% |
| Amps AC | 0 .. 1 mA up to 0 .. 0.5 A FS true RMS ± 0.2%  (Crest factor < 5) |
| °C/F/K | -200°… +2000 °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 ± 0.1 %, cold junction ± 0.5 °C, linearisation 0.06 °C |
| | VAC, IAC ± 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 µV / °C |
| Channel separation | 2 kV (3 kV tested), no visible cross talk with freq. < 10 kHz |
| Input impedance | 1 MW VAC,VDC and 1W 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 | FUNCTIONS

| | |
|---|---|
| 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 |
| | All recorder functions can be remote controlled |
| Logging to RS-232 | PC software (under Windows®) 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 |

## 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 ±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

## RECORDERS & DATA ACQUISITION

4414-458-31W