



Historical Data in High Definition

Recording measured data with ibaPDA and storing it as data files is a well established technology and forms the basis for data analysis with the ibaAnalyzer. We have developed a new software component, the ibaHD-server (Historical Data Server), which allows you to watch with ibaPDA-V6 previous data recorded over a long period of time.

The ibaHD-server: State-of-the-art technology for historical data!



Data and events recorded over a long period of time: always at a glance

Where we start

File-based recording of measured data constitutes a good way of structuring the data. The whole previous data can be divided into several files. This way, each file can be assigned a certain segment of the whole record time. Another advantage is the possibility to assign a comprehensible and meaningful name to each file. Considering all those features, file-based recording is an efficient solution for short- and medium-term analysis as often needed for machine maintenance.

Nevertheless, sometimes it is difficult to keep track of long periods of time and the interrelationship of data files. Up to now, you only could build a sequence of files in the ibaAnalyzer. When looking for a certain event, e.g. a disturbance, you could find it just by chance, especially if you did not know the exact time, the event happened.

For a real long-time data storage as we use it for production data, you needed a database extraction with ibaAnalyzer-DB-

Extractor. This solution still was a file-based approach.

New demands

Opening up new industry sectors for ibaPDA, we faced several new demands. Paper machines, machines in the field of process technology, test installations for long-term studies or power plants have all got one thing in common: All these technologies work with continuous processes. Here, file-based recording is not the best solution.

People working in the fields of machine maintenance and production have got some demands and wishes concerning the data recording software:

- Recording data continuously and without interruption
- Direct access to previous data from ibaPDA without having to change the application



Dear Readers,

recently, when returning from a presentation of our new ibaCapture-CAM System to a customer, I was reminded of a time about 15 years ago. Then, installing stationary ibaPDA Systems in machines and capturing large amounts of data continuously was a comparatively new technology. People took it for granted that machines sometimes just displayed failures nobody could explain. Soon, recording more and more signals and storing it as high-resolution data became state-of-the-art technology. This way, using the data from the ibaAnalyzer, maintenance engineers have been able to deliver a fact based explanation for a machine breakdown and could use it in the next staff meeting.

This "trend" has continued until nowadays. Whenever you record data, this helps solving even the most demanding problems. This does not only apply for fault finding but also when technical problems occur or customers complain about quality.

Nevertheless, still situations occur which cannot be interpreted by using machine signals. That is the point where the ibaCapture-CAM System offers great solutions. For the first time, machine data and video signals can be recorded synchronously and also be replayed synchronously on the ibaAnalyzer.

This way, you know exactly, what could be seen in the machine when there was a change in signals. I am absolutely sure that this system will bring about a revolutionary change in machine analysis similar to that the ibaPDA System caused several years ago. In the near future we will not only be offering analog and IP-cameras, but also high speed cameras which allow us to record very fast events in a triggered way. The development process for these solutions has yet begun. Furthermore, we do pilot surveys in the field of image processing. We are about to develop a program which allows us to identify labels and inscriptions.

Yours sincerely,

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- Intuitive user surfaces for visualizing previous data like browsing, scrolling or jumping to a certain date
- Zooming long-time overviews as well as single samples
- Displaying current data and previous data together on one single screen

The concept

As it comprises a client- and a server-component, the HD-server fits into the concepts of ibaPDA-V6, ibaQPanel and ibaAnalyzer without any problems.

The server component runs as Windows utility either on the ibaPDA-processor or on an own server in the network.

Server-component

ibaPDA-V6 continuously supplies the HD-server with measured data. This data are - using a special file structure - stored for weeks, months or even years. The measured data are stored in a base profile as well as in further compression stages. The number of those stages depends on the original time base. This way, graphs being zoomed from the lowest to the highest resolution, can be displayed very fast.

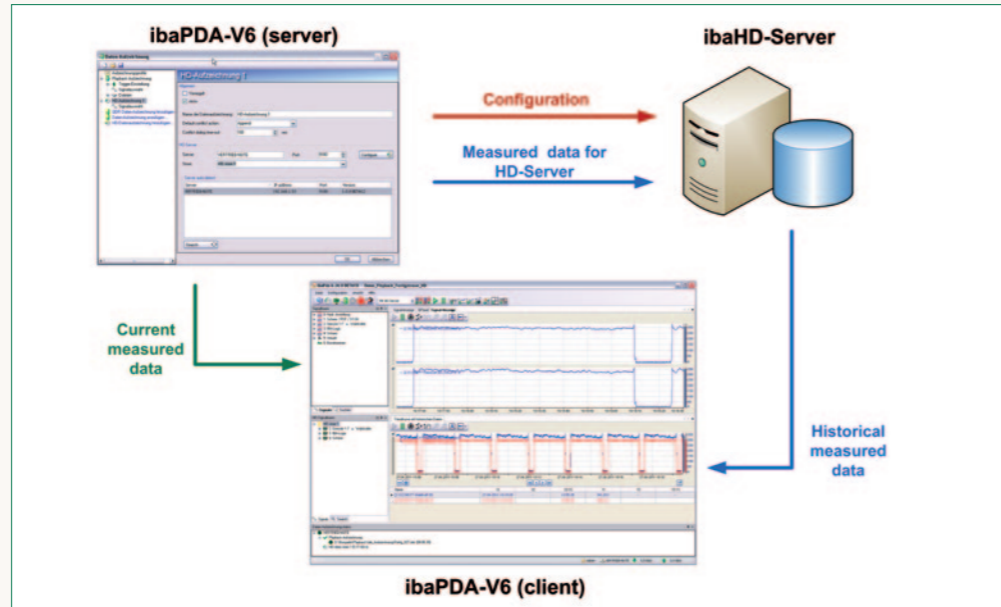
The memory needed for an HD-recording is merely 8 % bigger than that needed for conventional recording. An HD-server allows administrating more than one HD-storage. The option for HD-recording is only one recording type in many. It appears in the configuration dialog for data storage in ibaPDA-V6. In this dialog, you can choose the HD-server and then one of the HD storages available on this server. In case no storage has been defined, it can be set up in the same dialog.

An ibaPDA-V6-System can supply many HD-recordings on the same or on different servers with data. This way, for example, production and maintenance data can be separated. For each HD-recording you can chose the signals to be stored.

Different ibaPDA-Systems can write their data on the same HD-server, defined as different HD-stores.

HD-Server Client

The client component has got two functions. It allows the configuration of the HD-server. Moreover, it is the decisive component for displaying data on the ibaPDA-client or on the ibaQPanel. The ibaPDA-V6-client offers a special view for displaying historical data. After having established a connection to the HD-server, the historical data graphs can be displayed in a separate window. Signals, organized in a special structure, the so called "tree", can be dragged on the display by "drag and



Interaction of software components

drop". Special control items and branch functions support navigation along the HD time axis.

Customized system features

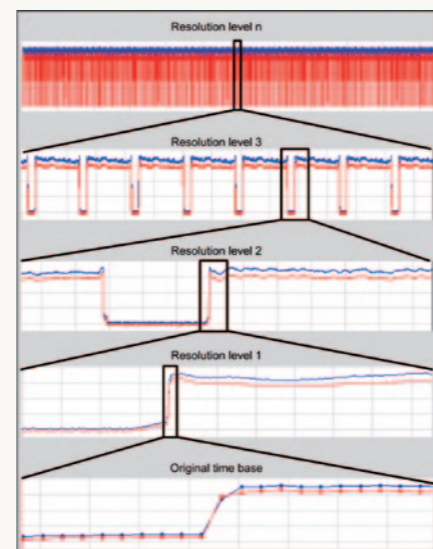
The features of the HD-server can be customized to the user's needs. Similar to ibaPDA-V6, we offer basic licenses with a scale of signal quantities. These basic versions comprise an HD-server, an HD-storage and an HD-client. For extending the system, we offer licenses for further HD-storages (on the same server) and further HD-clients, which allow to access historical data from more than one ibaPDA-client. You need an HD-server client-license and the ibaPDA-V6 client software for every work station intended to display historical data.

Future technology

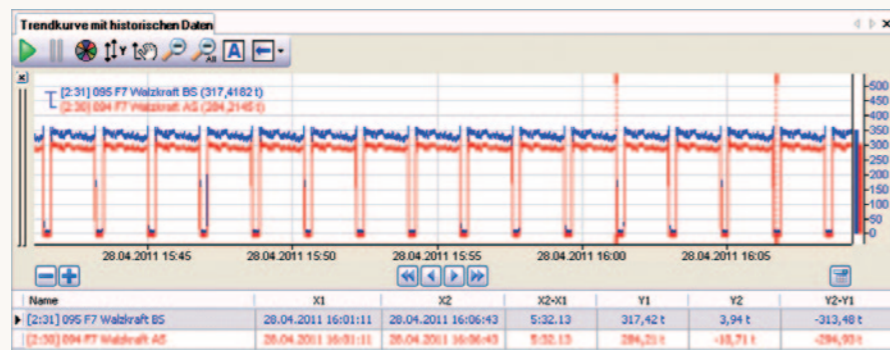
Initially, recording and displaying the historical data are time-based. In a further stage of extension, you will also be able to store and display the historical data in a product-based manner. The filing of product data of the ibaAnalyzer-database is integrated into the concept and the access to

external databases is supported.

For further analysis, that cannot be done with ibaPDA-V6, there will be a function you can export any chosen segment of historical data in the data file format with. This way, the data is edited for ibaAnalyzer. ■



Resolution levels for fast zooming



HD trend view with zoom and navigation buttons and actual values

New features for ibaPDA-V6 and ibaAnalyzer

ibaPDA-V6 (6.26)

The latest innovations at a glance.

Windows 7 and Server 2008: ibaPDA-V6 can run on the latest operating systems from Microsoft, Windows 7 (32 bit) and Server 2008 (32 bit). Support for 64 bit variants is in preparation but not available yet. Other supported systems are still Windows XP, Vista and Server 2003.

.NET Framework 4.0: Beginning with version 6.25.0 of ibaPDA-V6 the .NET Framework 4.0 is required.

ibaPDA-V6-64: A new regular license for measuring of up to 64 signals has been created for small measurement applications. It is a full-fledged ibaPDA-V6 system which can be upgraded later towards 256, 1024, 2048 or unlimited number of signals.

Ultra data store: A new type of data store offers up to 255 independent data stores with up to 20 signals each in one ibaPDA-V6 system. This type of data store has been created especially for batch processing, like batch annealing plants. Therefore, every batch process can have its own data store.

Pause data store: Every data store can now be paused by means of a digital signal.

Modbus TCP/IP Client: A new interface variant for Modbus TCP/IP is available. Before, ibaPDA-V6 was only able to act as a server on a Modbus network. The TCP/IP Modbus client interface now enables ibaPDA-V6 to act as a client. ibaPDA-V6 then connects to a Modbus server and periodically reads data from it. Up to 64 connections with up to 1000 signals each can be established for this interface.

Scaling: The span between the minimum and maximum level of a signal can be pre-set in the I/O-manager individually for every signal and used on the display for scaling the Y-axis.

ICP-Sensor-Status: The status of an ICP-sensor, connected to an ibaPADU-8-ICP-device, can now be requested by the ICP-SensorStatus function.

Virtual modules: For the electric modules (Star, Delta), variable frequencies are supported.

ibaAnalyzer (5.20)

Macros: Thanks to the new macro editor, users can define and store large and standardized analysis functions as so called macros. The macros are created by means

of the common functions from the expression editor. They can be employed universally, as the input and output parameters are replaced by wild-card characters. Macros can be stored globally. Hence, they can be made available for other analysis instructions. For exchanging macros, these can be imported and exported. By using macros, analysis instructions can be represented clearly and comprehensively.

Configuration file: All settings of the ibaAnalyzer can be exported into a configuration file (*.ini) and loaded at the next start.

Web-embedded start: Measured data files and analysis files can be opened by a hyperlink embedded on a web page. The hyperlink calls ibaAnalyzer with the data file(s) and analysis as start parameters.

ibaCapture-CAM: The latest version of ibaCapture-CAM (V3.0) is supported.

ibaAnalyzer-DB: For extracting data, there is a new option „Delete duplicate file table rows“. When extracting a data file, you can by means of this option delete all database entries of preceding extractions of the file with the same name and start date. ■

Sinamics Link – PROFINET for drives

In the field of drive technology, Siemens offers a special version of PROFINET communication: Sinamics Link. For us, that was the decisive factor for developing a corresponding bus module: ibaBM-SiLink.

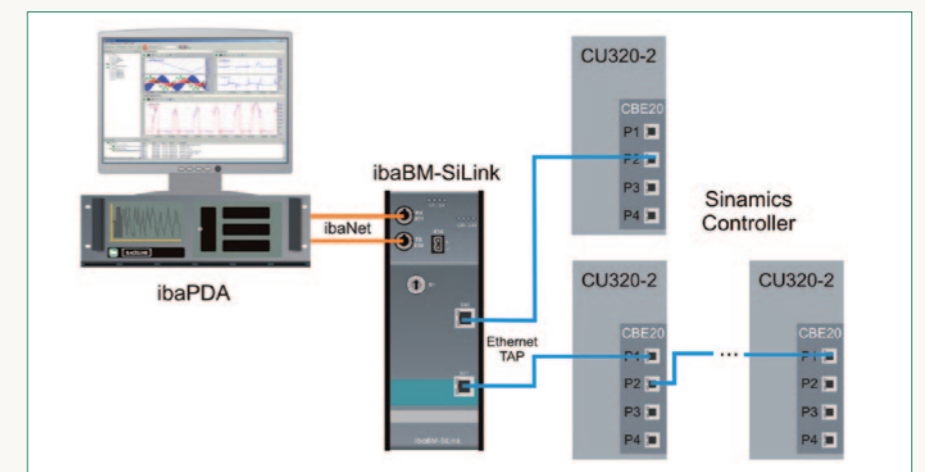
What is SinamicsLink?

Sinamics Link is based on a strict and linear network topology. With Sinamics Link you can link up to 64 PROFINET- (PN-) controllers of the CU320-2 type. The controllers are connected by the optional CB20 PN IRT part. Every work station connected to the bus, is identified by an ID (1...64) and sends 46 byte of user data by multicast datagram. 32 byte (16 Data Words) in 46 are assigned to measured data.

The PROFINET IRT protocol (Isochronous Real-Time) constitutes the physical communication base of Sinamics Link. The protocol offers a temporal resolution of less than 1 ms and bases on a 100Mbit-standard-Ethernet-connection.

ibaBM-SiLink - a monitoring bus module

The new ibaBM-SiLink bus module behaves in a complete passive way on the Sinamics Link. It is just monitoring the



ibaBM-SiLink within the Sinamics topology

data. The device receives the data via multicast datagram like all other PROFINET members, but it does not send data to the members. The device has got a capacity of 2048 byte (64 x 32 byte) for storing measured data.

With supplementary status information, the device is able to identify if and at which rate data is coming in. Sinamics Link does not support a physical diagnosis beyond these features.

Data are captured by default at a rate of 1 ms. Supposed, users do not use 16 Data Words/user, higher rates of up to 50 μ s are possible.

Reliable operation

For guaranteeing a non-reactive way of operating, the PROFINET-connection of the device is an Ethernet-TAP. Hence, switching off the bus module or a failure do not have any disturbing effect on the Sinamics Link topology. The device can be

bed in at any place in the Sinamics "chain", but it can also be connected as last user in that "chain".

System integration

According to the design of iba bus modules, the connection to the ibaPDA system is realized by an ibaFOB-io-D-card and a bidirectional fiber optic cable. Hence, you do not have to insert an external card (e.g. CP1616) into the ibaPDA-PC. This is a great advantage, especially for the exten-

sion of existing systems with free FO terminals.

The device supports the 32 Mbit FLEX protocol and can be integrated in ring as well as in line topologies. The settings for the device and the configuration of the data to be captured are done in the I/O manager of ibaPDA-V6.

First devices are tested in pilot installations. Sales release is scheduled for summer 2011. ■

No ties – network-independent measuring with ibaPADU-C



The new and compact ibaPADU-C makes the dream of network-independent measuring come true.

The device can be used for any application where cables for power supply or connections for data transfer to a measuring computer via fiber optic cables cannot be used.

This is e.g. true for movable machine parts or vehicles. As the measuring data are stored locally on the device, ibaPADU-C can also optimally be used for spontaneous and temporary measuring applications in course of tests or setting-up operations. A great solution if you do not have your ibaPDA-System close at hand. Thanks to its robust design, as you know it

from our ibaPADU-8-devices, and its DIN-rail-clamp, the device is an ideal solution for industrial applications.

1000 or 1 days

This measuring technology can be implemented using an integrated lithium ion battery and a 4 GB memory for recording data. This memory is dimensioned for long-term measurement with a sample rate of 1 Sample/s (about 1000 days) as well as for measuring with a high sample rate of 1000 Samples/s (about 1 day). The data are stored as iba-data files (*.dat) or csv-files.

Easy handling

The device stands out due to its easy handling. Recording of the data is started either by pressing a key, by a programmed timer or by an external signal. The settings for the device are done by editing a configuration file (.txt) yet existing on the device. This process does not need any supplementary software.

For reading out the data files, the device is connected to a computer via USB. The computer identifies the device, like a mass

storage device, by Plug and Play. Additionally, the data can be transferred by a network connection (FTP).

For displaying and analyzing the data, you can – of course – still use our ibaAnalyzer software. You can get this software for free.

Versions

We offer ibaPADU-C in different versions. The first version offers 8 analog inputs for ± 10 V in a 16 bit resolution and 8 digital inputs for 0 up to 30 V. For suppliers and integrators, we offer OEM versions of the device that can be equipped according to each requirement.

Furthermore, we are about to launch integrated radio modules for cellular mobile telephony and Wi-Fi (WLAN), which allow a remote access to the data stored on the device. ■

ibaFOB-io cards for PCI Express



ibaFOB-D PCI Express cards

All models of the ibaFOB-D card family are also available for PCI Express now. The cards have a PCIe 1.0-x1 connector that fits in all 32 bit or 64 bit slots. Like the

ibaFOB-D PCI cards the PCIe cards use DMA technology (Direct Memory Access) what allows fast data traffic at reduced CPU load during measurement. The following cards are ready to be ordered:

- ibaFOB-io-Dexp (order no. 11.118020)
- ibaFOB-2io-Dexp (order no. 11.118010)
- ibaFOB-2i-Dexp (order no. 11.118030)
- ibaFOB-4i-Dexp (order no. 11.118000)

ibaFOB-2i- or -4i-Dexp can be combined with output module ibaFOB-4o-D in order to supply outputs for fast ibaPADU devices (25 kHz) or general alarm signals. All cards can use ibaFOB-4o-D for mirroring of input signals. ■

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Published by:

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