

# iba BLOB Format

Binary format for data base storage of measured data



## Specification

Issue 2.2

Measurement and Automation Systems



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# 1 About this manual

This specification describes in detail the structure of the data format iba Blob Format.

## 1.1 Target group

This manual addresses in particular the qualified professionals who are familiar with handling electrical and electronic modules as well as communication and measurement technology. A person is regarded to as professional if he/she is capable of assessing safety and recognizing possible consequences and risks on the basis of his/her specialist training, knowledge and experience and knowledge of the standard regulations.

## 1.2 Basic knowledge

The following knowledge is required for the operation of the software iba Blob Format.

- Basic knowledge of Windows operating system
- Basic knowledge of ibaAnalyzer
- Basic knowledge of SQL data bases helpful

## 1.3 Notations

In this manual the following notations are used:

| Menu command                  | Menu "Logic diagram"   |
|-------------------------------|--|
| Calling the menu command      | „Step 1 – Step 2 – Step 3 – Step x”<br>Example:<br>Select the menu "Logic diagram - Add - New function block". |
| Keys                          | <Key name><br>Example:<br><Alt>; <F1>  |
| Press the keys simultaneously | <Key name> + <Key name><br>Example:<br><Alt> + <Ctrl>  |
| Buttons                       | <Button name><br>Example:<br><Ok>; <Cancel>  |
| Filenames, paths              | „Filename“, „Path”<br>Example:<br>„Test.doc“   |

## 1.4 Used symbols

If safety instructions or other notes are used in this manual, they mean:



The non-observance of this safety information may result in an imminent risk of death or severe injury:

- By an electric shock!
- Due to the improper handling of software products which are coupled to input and output procedures with control function!

If you do not observe the safety instructions regarding the process and the system or machine to be controlled, there is a risk of death or severe injury!

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The non-observance of this safety information may result in a potential risk of death or severe injury!

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The non-observance of this safety information may result in a potential risk of injury or material damage!

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### Note

A note specifies special requirements or actions to be observed.

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### Important note

Note if some special features must be observed, for example exceptions from the rule.

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### Tip

Tip or example as a helpful note or insider tip to make the work a little bit easier.

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### Other documentation

Reference to additional documentation or further reading.

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## 2 Introduction

By means of ibaAnalyzer-DB you can extract recorded data and analyzed data into a data base (DB).

The user can choose between the storage of single measured values in the data base tables and the storage of data as so called BLOBs in the data base extractor dialog. The choice is to be done by a simple checkmark.

The storage of single measured values provides the possibility to retrieve values of interest from the data base tables by common SQL statements. But this method faces certain limitations in extraction speed when it comes to extracting a large amount of data in a short time.

The storage as BLOBs, in contrast, provides a high extraction speed. But unfavorably, this gain in speed is linked to the disability to retrieve single values by standard SQL statements.

If ibaAnalyzer is used for retrieving the data from the data base then there is no difference in handling for the user between the two methods.

However, we have revealed the structure of our BLOB format in order to permit other applications to retrieve data even when they are stored in BLOBs.

The access methods of external applications can be adjusted accordingly and thus, take advantage of data base extractions performed by ibaAnalyzer.

Both, the old and the new BLOB format are described on the following pages.

### 3 BLOB structure version 1

BLOB structure in the ChannelTable: column Name “\_Segments”.

The BLOB structure 1 is supported by the following software versions:

- ibaAnalyzer: < 3.58
- ibaDataExtractor.dll: < 3.50

In this version of the BLOBs, only the average values of the segments are stored.

| rel. #                         | Bytes | C-Type        | Description         | Unit | Comment   |
|--------------------------------|-------|---------------|---------------------|------|---|
| <b>Header</b>                  |       |               |                     |      |   |
| 00                             | 1     | char          | version tag         |      | current Version 0x01  |
| <b>Data Block</b>              |       |               |                     |      |   |
| 00                             | 1     | unsigned char | count <sup>1)</sup> |      |   |
| 01                             | 4     | float         | value               |      | time or length based value (digital signals are stored as 0.0f and 1.0f ) |
| ... and so on until last value |       |               |                     |      |   |

Table 1

<sup>1)</sup> Count is used to store consecutive identical values for the purpose of file size reduction.

#### Layout of version 1 BLOB



Table 2

## 4 BLOB structure version 2

BLOB structure in the ChannelTable: column Name “\_Segments”.

The BLOB structure 2 is supported by the following software versions:

- ❑ ibaAnalyzer:            >= 3.58
- ❑ ibaDataExtractor.dll:    >= 3.50

In this version of the BLOBs, the aggregates maximum (MAX), minimum (MIN) and standard deviation (STDDEV) for each segment are also stored in addition to the average values of the segments.

For fast access, each series of aggregates (AVG, MAX, MIN and STDDEV) has its own end of buffer (EOB) value in the header. If two successive EOB values have the same value the corresponding aggregate of the second EOB value is not stored.

| rel. #        | Bytes | C-Type | Description                                   | Unit | Comment  |
|---------------|-------|--------|---|------|--|
| <b>Header</b> |       |        |   |      |  |
| 00            | 1     | char   | version tag                                   |      | current Version 0x02   |
| 01            | 4     | dword  | end of buffer of average aggregate            |      | e.g. 100: This means the total size in bytes of the average aggregate is 100 bytes. This also means that the following values are starting at offset 100 relative to the header. |
| 05            | 4     | dword  | end of buffer of max aggregate                |      | e.g. 250: 150 bytes (250 – 100) are used for the max aggregate.  |
| 09            | 4     | dword  | end of buffer of min aggregate                |      | e.g. 250: 0 bytes (250 – 250) are used for the min aggregate.  |
| 13            | 4     | dword  | end of buffer of standard deviation aggregate |      | e.g. 300: 50 bytes (300 – 250) are used for the standard deviation aggregate.  |

### Data Block for each type of value (AVG, MAX, MIN and STDDEV values )

|    |   |               |                     |  |   |
|----|---|---------------|---------------------|--|---|
| 00 | 1 | unsigned char | count <sup>1)</sup> |  |   |
| 01 | 4 | float         | value               |  | time or length based value (digital signals are stored as 0.0f and 1.0f ) |

and so on till to last AVG value, MAX value, MIN value and STDDEV value

Table 3

<sup>1)</sup> The ‘count’ field means that the ‘value’ field is repeated ‘count’ number of times in the channel, it varies from 1 to 255 and is an effective compression of the data when it stays constant at the cost of one extra byte per value.

### Layout of version 2 BLOB:

|        |            |                      |                      |                         |
|--------|------------|----------------------|----------------------|-------------------------|
| Header | AVG Values | (optional)MAX Values | (optional)MIN Values | (optional)STDDEV Values |
|--------|------------|----------------------|----------------------|-------------------------|

Table 4

## 5 Support and contact

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### Note

If you require support, specify the serial number (iba-S/N) of the product.

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