

# ibaPDA-Request-FM458/TDC

Measurement with Request Function via Profibus DP



## Manual

Issue 2.6

Measurement and Automation Systems



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| Version | Date       | Revision              | Author | Version SW |
|---------|------------|-----------------------|--------|------------|
| 2.6     | 01/26/2017 | New chapters 3.3.5 ff | ko     |            |

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# 1 About this manual

This manual describes the function, the design and the application of the software ibaPDA-Request-FM458/TDC.

## 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 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 ibaPDA-Request-FM458/-TDC:

- Basic knowledge of Windows operating system
- Basic knowledge of operating web browsers
- Basic knowledge of Profibus configuration
- Basic knowledge of operating SIMATIC, CFC and D7-SYS

## 1.3 Notations

In this manual the following notations are used:

| Action                        | Notation  |
|-------------------------------|---|
| Menu command                  | Menu "Logic diagram"  |
| Calling the menu command      | <i>Step 1 – Step 2 – Step 3 – Step x</i><br>Example:<br>Select the menu <i>Logic diagram - Add - New function block</i> . |
| Keys                          | <Key name><br>Example:<br><Alt>; <F1>   |
| Press the keys simultaneously | <Key name> + <Key name><br>Example:<br><Alt> + <Ctrl>   |
| Buttons                       | <Key name><br>Example:<br><OK>; <Cancel>  |
| File names, 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:

---

### **DANGER**

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

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

---

### **WARNING**

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

---

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### **CAUTION**

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

---



#### **Note**

A note specifies special requirements or actions to be observed.

---



#### **Important note**

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

---



#### **Tip**

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

---



#### **Other documentation**

Reference to additional documentation or further reading.

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## 2 Requirements

### 2.1 Siemens hardware

For FM458-Request:

- FM458-1 DP**
- MPI adapter or CP443-1 (Ethernet CP) for connection to programming device (PG) or for SIMATIC TDC-Request:

- CP50M1 with DP-interface**
- MPI-adapter or CP51M1 (Ethernet CP) for PG-connection

### 2.2 Siemens software

- CFC V6.1 + HF1 , or higher
- D7-SYS V6.2 + SP1 (FBSLIB 102500V617), or higher
- If you use PC/CP connection: MPI-interface or STEP 7

### 2.3 iba hardware

- PCI card ibaComL2B-x-8, or
- Profibus monitor ibaBM-DPM-S and fiber optical PCI card ibaFOB-*nn*-D
- Profibus monitor **ibaBM-DP** and a fiber optical input and output card of ibaFOB-D or ibaFOB-Dexp type

### 2.4 iba software

- ibaPDA V6.17.0 or later for FM458,  
ibaPDA V6.23.0 or later for SIMATIC TDC  
**ibaPDA V6.32.0 or later with ibaBM-DP**
- Add-on license: ibaPDA-Request-FM458/TDC
- Function block library: **FBAPDA**  
version 080415V003 or higher

## 3 Configuration

### 3.1 Overview

For controls from Siemens, iba AG offers the following request solutions:

| Target system | Interface  | Transmission via   | iba interface                         | Manual            | License                    |
|---------------|------------|--------------------|---------------------------------------|-------------------|----------------------------|
| SIMADYN D     | CS12/13/14 | fiber optical link | ibaFOB-SD                             | Request-SD-TDC    | Request-SD,<br>Request-TDC |
| SIMATIC TDC   | CP53       |                    | ibaFOB-TDC                            |                   |                            |
|               | GDM        |                    |                                       |                   |                            |
| S7-400        | CP50       | Profibus           | ibaBM-DP<br>ibaBM-DPM-S<br>ibaCom-L2B | Request-FM458/TDC | Request-FM458/TDC          |
|               | FM458      |                    |                                       |                   |                            |
|               | S7-CPU     |                    |                                       | Request-S7        | Request-S7                 |
| S7-300        |            | TCP/IP,<br>MPI, DP | Ethernet,<br>MPI-adapter              | PLC-Xplorer       | PLC-Xplorer                |

This manual describes the green highlighted areas of the table above.



### 3.2 Basics

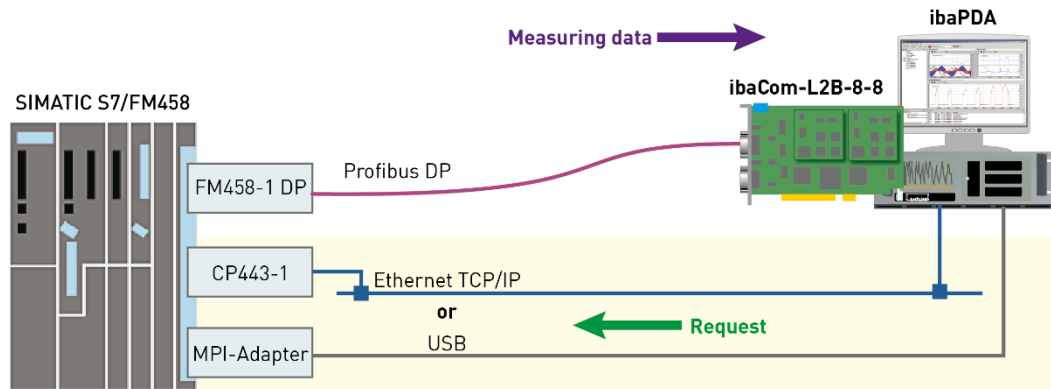
The measuring data is transmitted via Profibus, either over the PCI card **ibaCom-L2B** or the Profibus modules **ibaBM-DPM-S** or **ibaBM-DP**.

The online access (TCP/IP or DP/MPI) is used for the transmission of the address book and the request handshake.

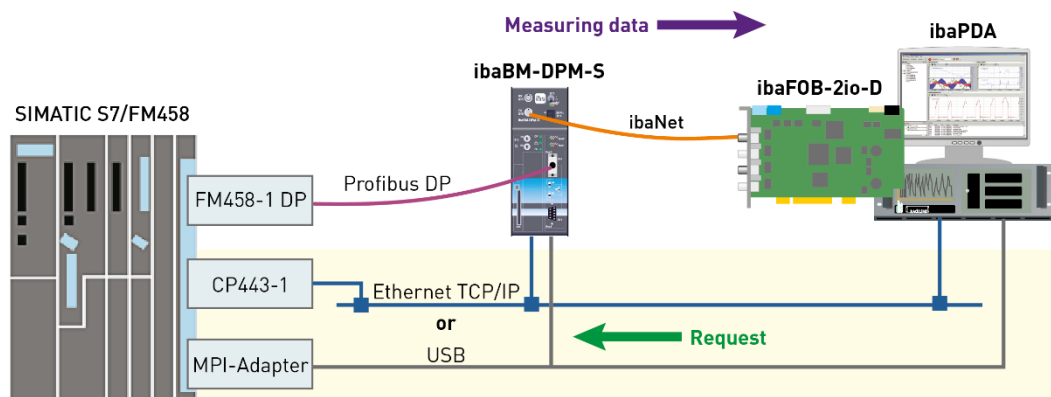


The following combinations are possible:

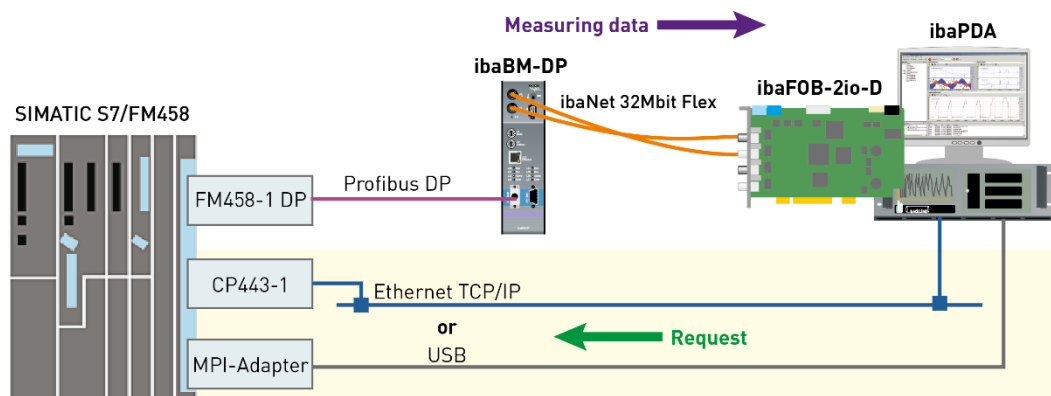
#### SIMATIC S7/FM458 with ibaCom-L2B card



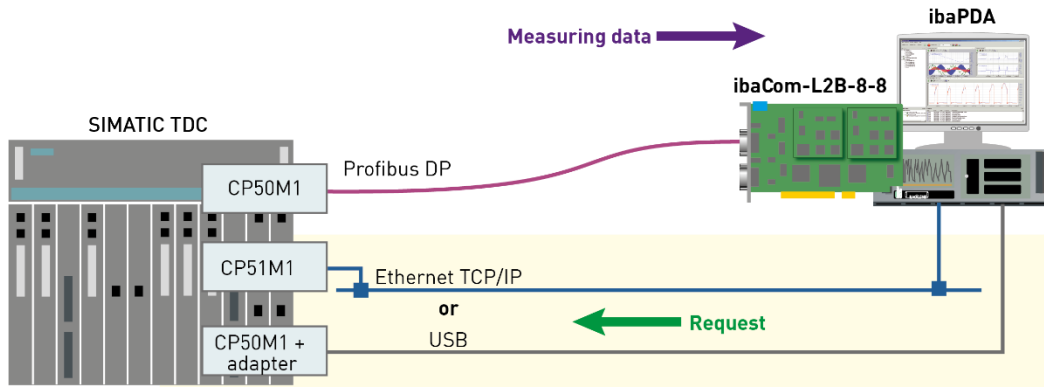
#### SIMATIC S7/FM458 with ibaBM-DPM-S



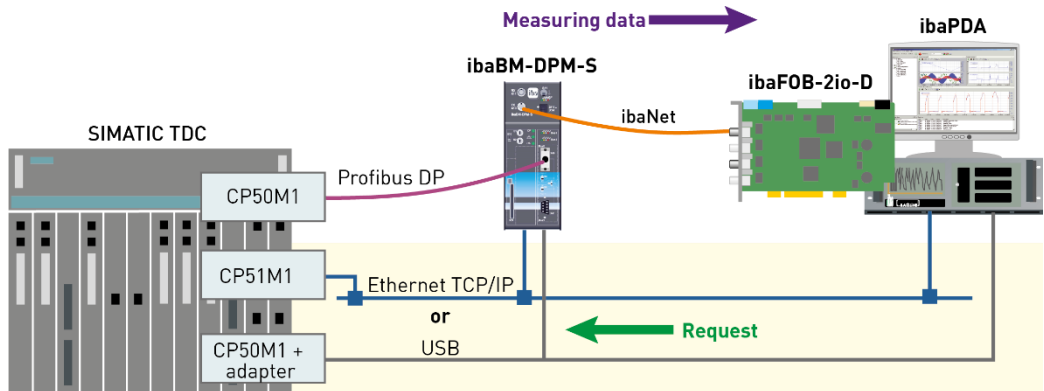
#### SIMATIC S7/FM458 with ibaBM-DP



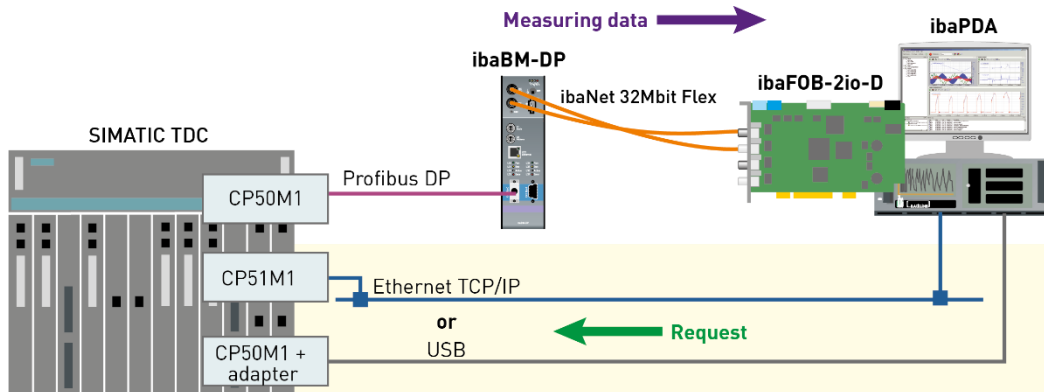
**SIMATIC TDC with ibaCom-L2B card**



**SIMATIC TDC with ibaBM-DPM-S**




**SIMATIC TDC with ibaBM-DP**





ibaPDA uses the interface of the Siemens programming device (PG-interface) for request handshake and the transmission of address books. Depending on the hardware and software installed, different access points are available for data acquisition:

- ❑ TCP/IP: The connection to the control is established over corresponding CP  modules and the standard network interface of the PC. No additional software is required for the connection.
- ❑ PC/CP: There are several, SIMATIC-specific access points which fall under this designation. In contrast to the TCP/IP connection, the STEP 7 software or respectively the drivers for the MPI/DP interface must be installed on the PC for all connection types within the PC/CP group.
  - MPI, Profibus: The connection to the control is established over the MPI or Profibus interface of the PC (MPI-adapter or Siemens CP5611 or others).
  - TCP/IP, ISO: Either the standard network interface of the PC or a compatible interface card should be used.

The transmission of measured data runs over Profibus DP to the iba-Profibus slaves:

- ❑ ibaCom-L2B (ibaPDA Version 6.15.0 or higher) or
- ❑ ibaBM-DPM-S (ibaPDA Version 6.17.0 or higher) or
- ❑ ibaBM-DP (ibaPDA Version 6.32.0 or higher)

The number of data per connection depends on the type of the Profibus slave. If one slave does not provide enough data, additional connections should be configured.



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**Note**

For using the request functionality with ibaBM-DPM-S you further need to establish an online connection between the ibaPDA PC and the ibaBM-DPM-S device, via Ethernet TCP/IP or USB.

---

### 3.3 Configuration on FM458 / SIMATIC TDC side

#### 3.3.1 General Information

Up to 122 Bytes can be transmitted per connection (i.e. per DP station) with ibaCom-L2B, and up to 244 Bytes with ibaBM-DP/-DPM-S.

If this data volume is not sufficient, it is possible to configure several connections per CPU (up to 8 per device).

Each connection requires:

- A DP station of "ibaL2B/DPM64 (32R/32D)" or "ibaBM-DPM-S/DP-Monitor" type in the hardware configuration
- A triplet of the blocks S7DB\_P, SERPDA and SERPDB in the CFC program. The DB number in S7DB\_P.XDB must be unique as well as the channel name and the station number in SERPDB.AT.
- A module FM458 request or TDC request in ibaPDA, the module must be uniquely assigned to a DB.

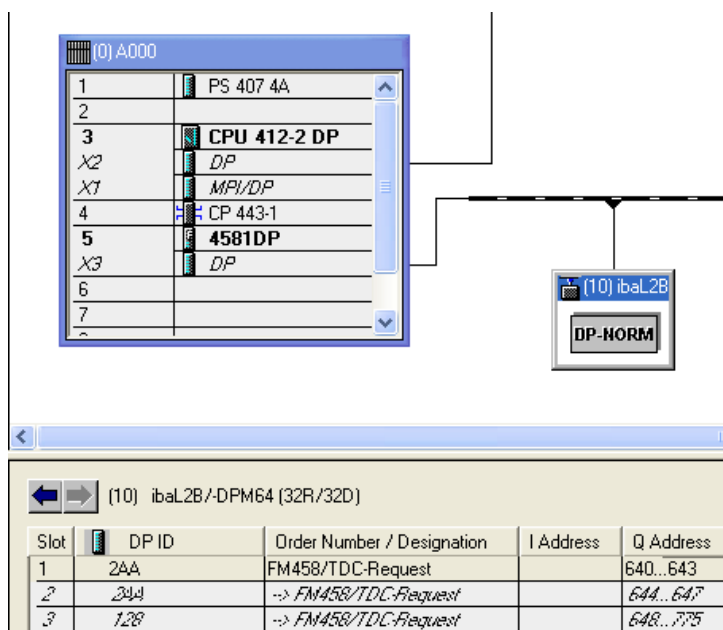
If you want to request data from several CPUs from one TDC rack, connections have to be configured in each of the CPUs. It is not possible to acquire data from several CPUs with one connection.

#### 3.3.2 Hardware (Profibus)

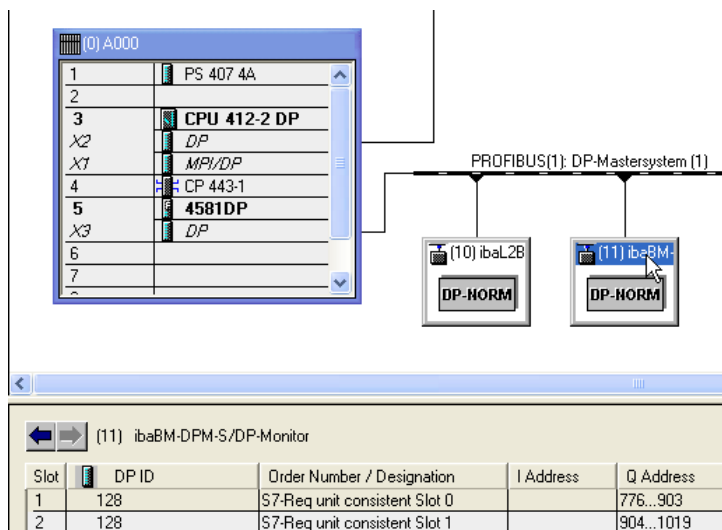
One iba-Profibus slave should be defined for each connection.

The following GSD files should be used:

- Measurement with ibaCom-L2B: **iba0F02.gsd**  
Add a module „ibaL2B/-DPM64 (32R/32D) <o>“ with the slot „FM458/TDC-Request“ (for up to 32 analog values and 32 digital values) in your hardware configuration. You find the module in the hardware catalog under *PROFIBUS-DP - Additional Field Devices - General*.



- ❑ Measurement with **ibaBM-DP/-DPM-S**: **ibaDPMSi.gsd**  
Add a module „**ibaBM-DPM-S/DP-Monitor**“ with the slots „**S7-Req unit consistent Slot 0**“ and „... **Slot 1**“ (for up to 244 bytes) to your hardware configuration. You find the module in the hardware catalog under *PROFIBUS-DP - Additional Field Devices - General*.



### 3.3.3 Software

#### 3.3.3.1 Installation of FBAPDA library

You will find a more detailed description of the installation in the appendix, chapter 4.1 "iba Library".

#### 3.3.3.2 Wiring of blocks

The so-called "agents" which handle the request procedure have to be programmed on the FM458 component. The following function blocks are required for each connection:

- ❑ Block S7DB\_P (standard block) 

This block creates a data block which is S7-compliant and to be used for data exchange with ibaPDA.


We recommend creating a "DB10" for the first connection and "DB11", "DB12" etc. for further connections.

Recommended time slice: T5 

- ❑ Block SERPDA (from iba's user library FBAPDA)

This block handles the handshake with ibaPDA via the related data block. It takes the list of variables to be measured, calculates the memory addresses on that basis and transmits the addresses to the SERPDB block.

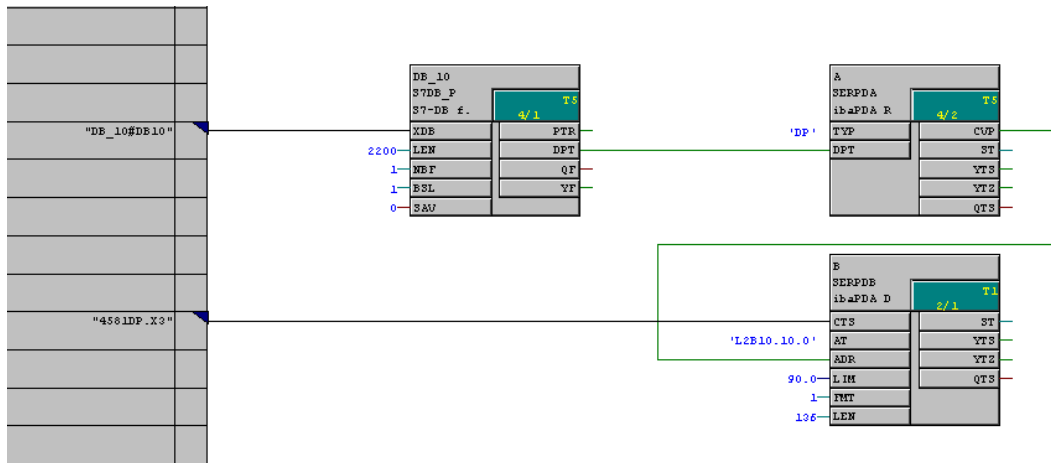
Recommended time slice: T5

- ❑ Block SERPDB (from iba's user library FBAPDA) 

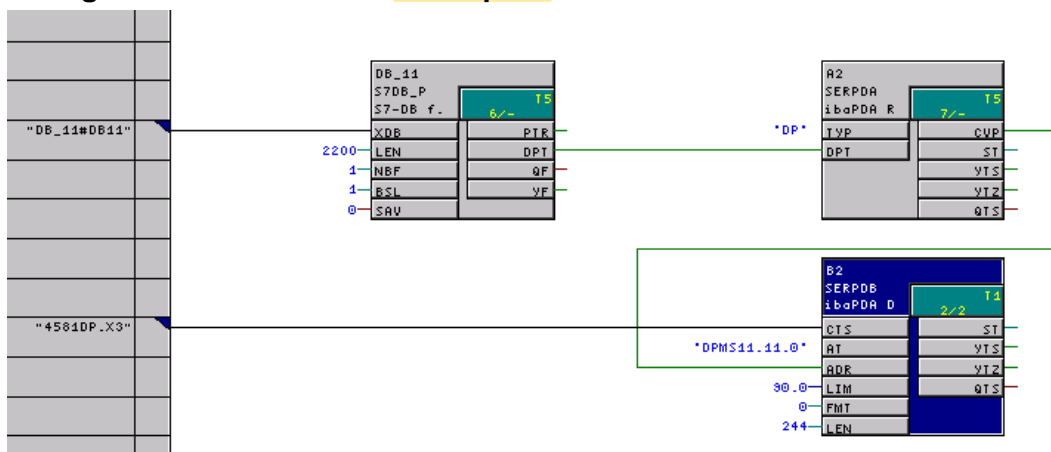
Every cycle, this block acquires the actual values from the calculated memory addresses, puts them into the message buffer and transmits them to the specified interface.

Recommended time slice: T1 


## Wiring of blocks for L2B-request:



## Wiring of blocks for DPM-S/DP-request:


 Note

Of course, the standard block "@PRODP" is still required once for initialization of the Profibus interface!

 If the size of one Profibus slave is insufficient to transmit all data required you can multiply the capacity of data by copying these three blocks.

You should modify the following data of the copied blocks:

- Data block number (connection to S7DB\_P.XDB)
- Channel name (name to SERPDB.AT)
- Station number (address level 1 to SERPDB.AT)

### 3.3.4 Description of blocks

#### 3.3.4.1 S7DB\_P

| Con. | Description   | Configuration / Result   |
|------|---|--|
| XDB  | Initialization connector for entry of symbol name and number of the "virtual" S7-DB | Recommended: DB10 , increasing numbers for further connections |
| LEN  | Length of the DB in bytes   | Minimum: 2200  |
| NBF  | Number of data buffers which are held in this DB.                                   | 1  |
| BSL  | Selection of buffer   | 1  |
| SAV  | DB in SAVE-range  | 0  |
| PTR  | Pointer on data buffer management   | -  |
| DPT  | Pointer on net data   | "Connection to SERPDA.DPT"                                     |
| QF   | Error bit (1 = error)   | 0 = no error   |
| YF   | Status info   | 0000 = no error  |



#### Tip







Since version 6.15.3 of ibaPDA you can define a larger DB, e. g. with 10000 bytes, in order to accelerate the transmission of the address book. But keep in mind that the run time of the block SERPDA during address book transmission will increase with bigger DB size!

## 3.3.4.2 SERPDA

| Con | Description   | Configuration / Result   |
|-----|---|--|
| TYP | Type Measurement channel<br>"DP" = Data channel Profibus DP<br>"TC" = Data channel TCP/IP<br>"UD" = Data channel UDP<br>"SM" = Data channel SM128<br>„DB“ = Data channel DB | DP<br>(others not available yet)   |
| DPT | Contains memory address of the data block   | "Connection to S7DB_P.DPT"   |
| ST  | Block status:   | 0...Waiting for startup of SERPDB<br>1...Waiting for synchronization with ibaPDA<br>2...Normal (Standby) operation<br>3...Stop SERPDB<br>4...Start SERPDB<br>5...Transmitting address book<br>6...Cont. transmitting address book<br>7...Sending Req-error acknowledge<br>8...Sending acknowledge<br>9...Error |
| CVP | Address of the common data area with SERPDB   | "Connection to SERPDB.ADR"   |
| YTS | Error status  | 0000 ... no error,<br>see chapter <i>Messages "SERPDA"</i>   |
| YTZ | Additional error label  | 0000 ... no error,<br>see chapter <i>Messages "SERPDA"</i>   |
| QTS | Ready for operation   | 0 ... out of operation / 1 ... OK  |




### 3.3.4.3 SERPDB


| Con. | Description   | Configuration / Result  |
|------|---|---|
| CTS  | Initialization connector for the configured component name  | "Connection to component.connector"   |
| AT   | Channel name.xx.y   | Unique channel name acc. to TDC-convention.<br><b>For Profibus:</b><br>xx = station number <br>y = 0: flag for byte swapping |
| ADR  | Address VPORT   | "Connection to SERPDA.CVP"  |
| LIM  | Load limitation                                  | Recommended: 90.0<br>See chapter 3.3.5.2 "Load limitation"  |
| FMT  | Format code:                                     | 0: DPMS format<br>1: 32-REAL format for ibaCom-L2B  |
| LEN  | Net data length of measurement channel in bytes  | Must correspond to data length in the GSD file.<br>For FMT=0: length according to configured DP slave, max. 244<br>For FMT=1: exactly 136   |
| ST   | Block status:   | 0...Waiting for initialization<br>1...Waiting for channel registration<br>2...Normal (Standby) operation<br>3...Start-up<br>4...Active (Sending)<br>5...Error   |
| YTS  | Error status  | 0000 ... no error,<br>see chapter <i>Messages "SERPDB"</i>  |
| YTZ  | Error supplementary code  | 0000 ... no error,<br>see chapter <i>Messages "SERPDB"</i>  |
| QTS  | Ready for operation   | 1: OK   |

## 3.3.5 Other characteristics


### 3.3.5.1 Processor load

For the sporadic load due to transmission of the address book, the SERPDA function block requires a computing time of max. ca. 10 ms to 20 ms per cycle. The time slice in which the block is configured (normally T5) must therefore be chosen so that sufficient processing time still remains for the sporadic T5 "Transmit address book" task.

If this time is not available, then an overload indication is displayed during address book transmission. Since this overload is only sporadic and is caused in T5 and thus has no influence on T1-T4 processing, this indication can be ignored and deleted again via acknowledgement. 

The cyclical transmission operation by the SERPDB function block requires computing time per transmission cycle for assignment of the measurement values in the local data buffer and for transmission of the data into the rack link. 

### 3.3.5.2 Load limitation


In order to prevent a CPU overload due to the increase in computing time when making a request, the blocks have a load limitation (connector LIM). 


After the start of acquisition, the function block follows a kind of **run-up ramp** when taking **only parts of the requested values per cycle** into its processing. During this phase the required computing time is checked. If the load exceeds the value set at the LIM connector, then the measurement values that have not yet been processed are rejected and a “processor overload” error message appears in ibaPDA. The user needs to reduce the number of the requested values in ibaPDA or increase the sampling time base (ibaPDA base measuring rate or the PDA channel time bases) or increase the time slice for the SERPDB in the TDC system.

When “LIM = 0.0”, load monitoring will be switched off.



#### Important note


**The load is checked only at the start of acquisition.** A load increase due to other acyclic processes during on-going measurement are not detected by the SERPDB function block. 

Due to unfavorable temporal relations overload errors can occur **despite** monitoring. The load increase in **high-priority** tasks has **repercussions** on the capacity of low-priority tasks. But the latter lead to a load increase only after **expiration** of their task cycle. But with slow low-priority task times the run-up of the SERPDB function block is already completed at this point. 

### 3.3.5.3 Transmission cycle

The SERPDB works in the configured sampling time (primarily T1). 

If the data is requested by ibaPDA in a slower cycle, then the function block **gears down** its own transmission cycle. In other words, it transmits no longer in the projected cycle time, but rather in the cycle in which the data are read by ibaPDA (rounded to a multiple of its own cycle). This way, the processor load can be reduced.

The transmission cycle is also limited by the Profibus cycle time which is based on the bus data volume (number of participants and telegram length) and the **bus bitrate**. The cycle time will be specified in HW Config and in ibaPDA diagnostics of the interfaces ibaCom-L2B or ibaBM-DP. 

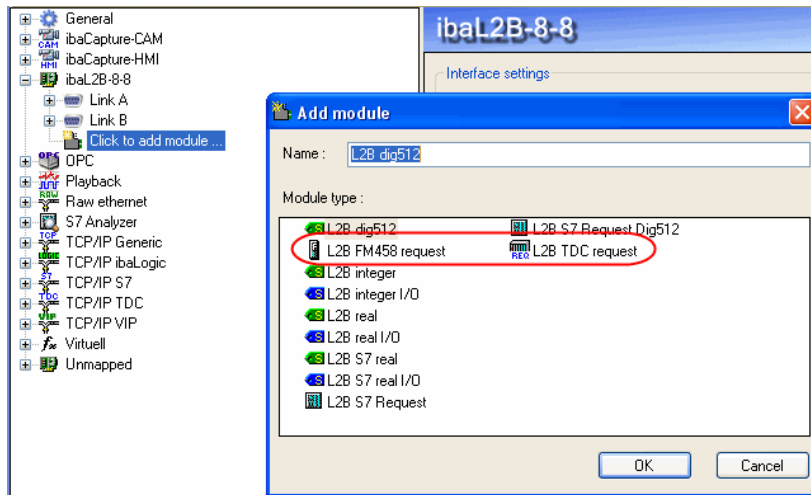
### 3.4 Configuration on ibaPDA side

For configuration in ibaPDA, please follow these steps.

- Start ibaPDA client
- Open IO manager

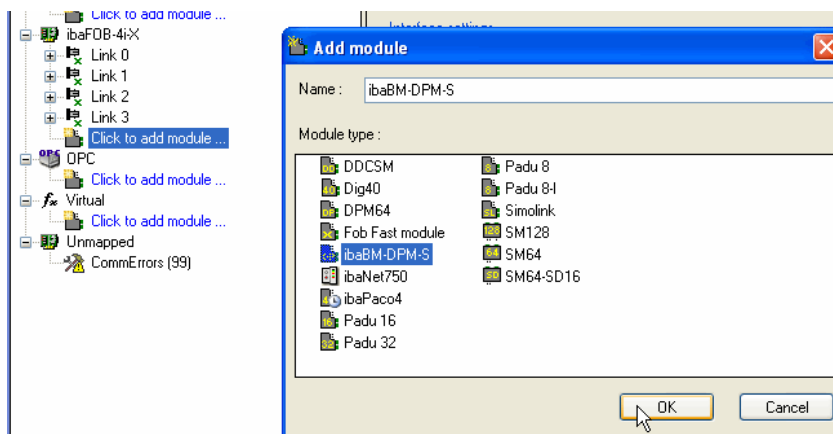
#### 3.4.1 For request with ibaCom-L2B

- Add a module "L2B FM458 request" or "L2B TDC request" to ibaL2B hardware interface  
(or more if multiple connections to one or more CPUs are required)



#### 3.4.2 For request with ibaBM-DPM-S

- Add an "ibaBM-DPM-S" module to the ibaFOB...-X or -D interface.

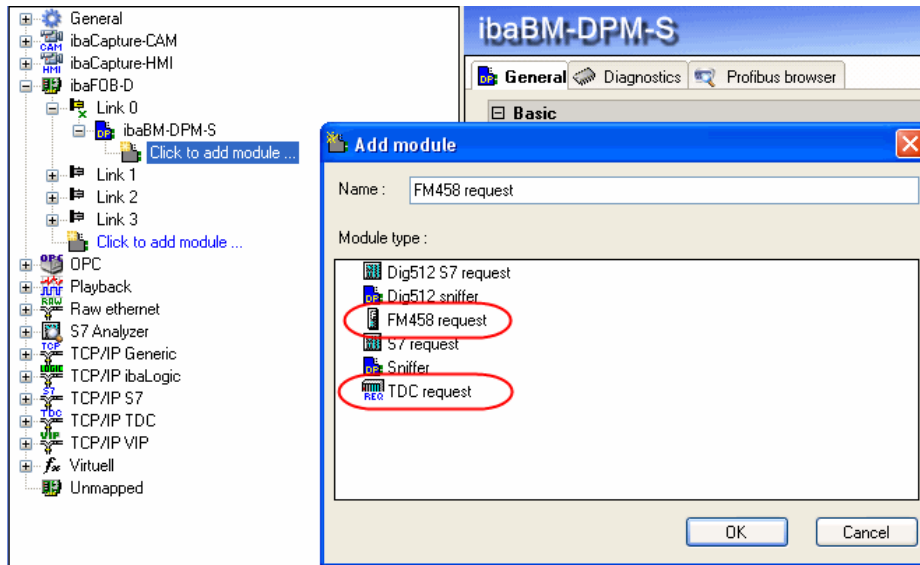



- Enter the IP-address of the ibaBM-DPM-S device into the IP-address field in the "General" tab of the "ibaBM-DPM-S" module:  
Either as a name e. g. "dpms\_011D" or as IP-address, e. g. "192.168.11.123".

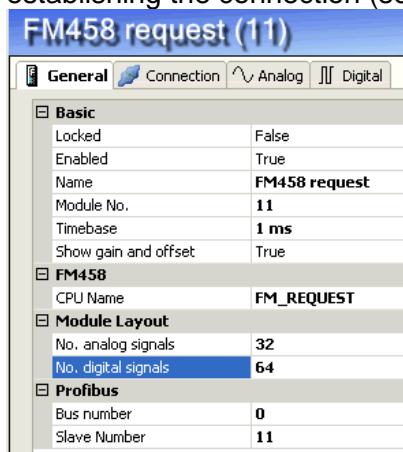
**Note**

It is necessary to have an online connection to the device via Ethernet or USB. See the manual of the ibaBM-DPM-S device for how to establish and test such a connection.

- Add a module "FM458 request" or "TDC request" to the ibaBM-DPM-S interface (or more, if multiple connections to one or more CPUs are required).



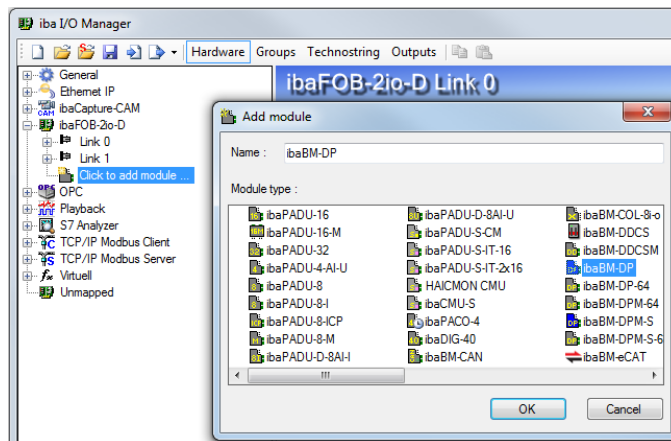
- Make the general module settings.
  - Important:
    - Number of signals (size of the tables): the length of the Profibus telegram must not be exceeded. 
    - Bus number: 0 = upper connector, 1 = lower connector
    - The station number (slave number) will be entered automatically when establishing the connection (see below).

**Note**

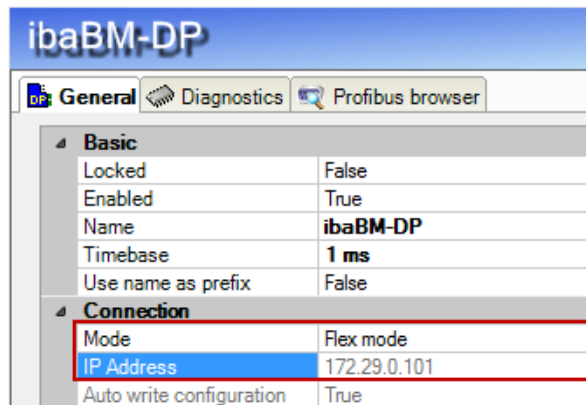
The total number of signals of all modules of an ibaBM-DPM-S is limited by the fiber optical connection to 512 analog and 512 digital signals.

### 3.4.3 For request with ibaBM-DP

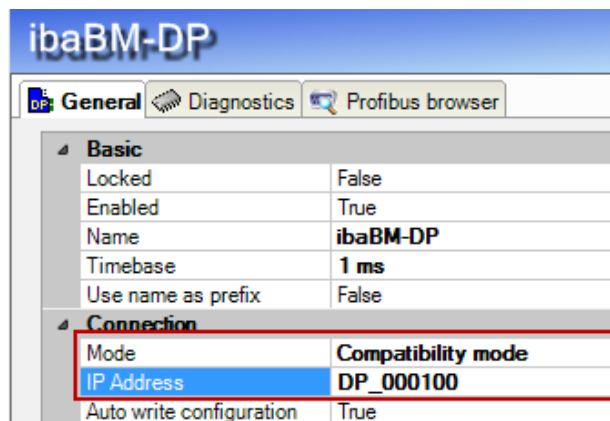
- ❑ Add an "ibaBM-DP" module to the ibaFOB-D interface.



- ❑ When the device is used in **Flex mode**, the IP address of the device will be adjusted automatically.



- ❑ When the device is used in compatibility mode, enter the IP address of the device in the field „IP Address“ on the „General“ tab: either the name e. g. "DP\_000100" or the IP address e. g. "192.168.11.123".



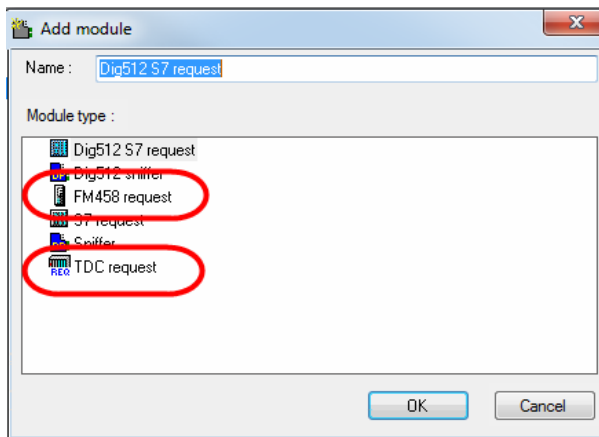


### Note

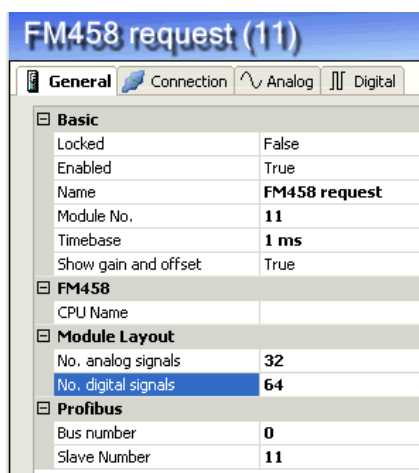
The ibaBM-DP manual gives a more detailed description of the difference between Flex mode and compatibility mode.

When the device is used in compatibility mode, an online connection to the device is required, either over Ethernet or USB. For a description how to establish and test this connection, please observe the ibaBM-DP manual.

- Add a module "FM458 request" or "TDC request" to the ibaBM-DP interface at the corresponding Profibus link (or more, if multiple connections to one or more CPUs are required).



- Make the general module settings.
  - Important:
    - Number of signals (size of the tables): the length of the Profibus telegram must not be exceeded.
    - Bus number: 0 = left connector, 1 = right connector
    - The station number (slave number) will be entered automatically when establishing the connection (see below).



### Note

The total number of signals of all modules of an ibaBM-DP is limited by the fiber optical connection: in Flex mode to 4060 Byte, in compatibility mode to 512 analog and 512 digital signals.

### 3.4.4 Connecting

On the *Connection* tab of the request modules you should enter the connection parameters and test the connection.

#### 3.4.4.1 Connection Mode TCP/IP

Connection type: not relevant

Timeout: 5 s (default)

Address: IP address of the CP443-5, FM458 or CP51M1,  
e. g. "192.168.11.86"

Rack: Rack number of the S7 station or SIMATIC TDC station, e. g. "0"

Slot: Slot of the FM458 or CPU550/551, e. g. "3"

DB number: Number of the DB which has been configured with the S7DB\_P-  
block, e. g. "10"

#### 3.4.4.2 Connection Mode PC/CP

Connection type: PG-connection

Timeout: 5 s (default)

Access point: Selection of access point, e. g. MPI

Configure PG/PC

interface: Here you can configure a special access point for ibaPDA  
(see guidelines in manual of ibaPDA-PLC-Xplorer).

Address: MPI- or DP-address of the S7-CPU or CP50M1

Rack: Rack number of the S7-station or SIMATIC TDC station, e. g. "0"

Slot: Slot of the FM458 or CPU550/551, e. g. "3"

DB number: Number of the DB which has been configured with the S7DB\_P-  
block, e. g. "10"




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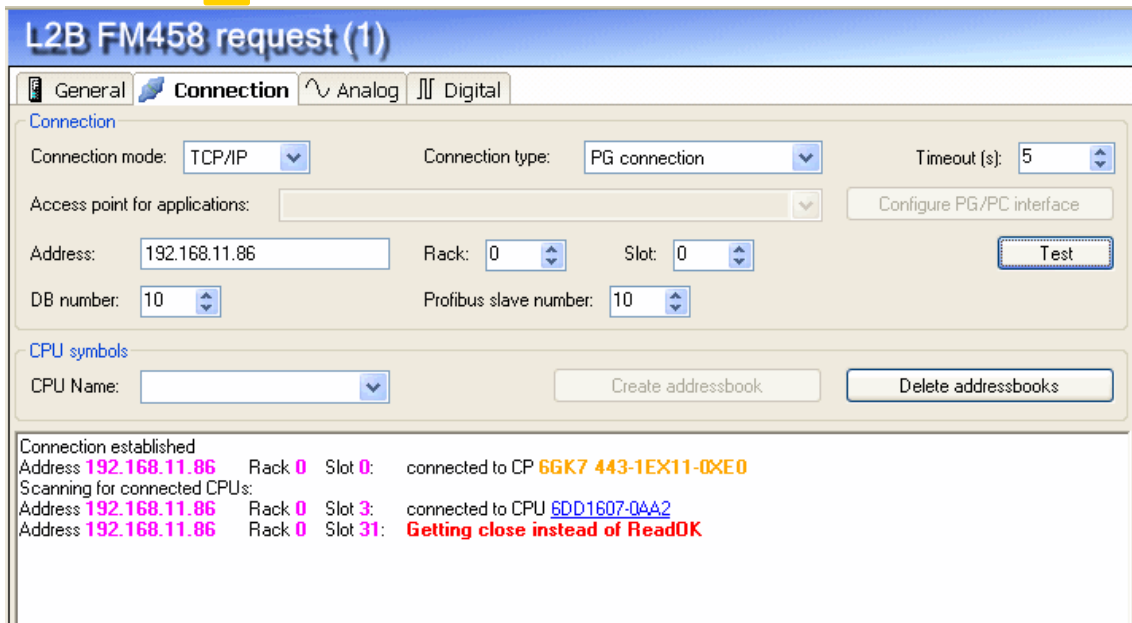
#### Note

For using the connection mode PC/CP the SIMATIC-S7 communication software (e. g. SIMATIC Manager or driver for MPI adapter) must be installed on the ibaPDA-PC too!

---

### 3.4.4.3 Testing the connection

If you do not know neither rack nor slot number you can click on the <Test>-button and let the system search for the FM-component. The search results will list the MLFB numbers of the installed components. The MLFB of the FM-component will be displayed as a [hyperlink](#). 



**L2B FM458 request (1)**

General **Connection** Analog Digital

Connection

Connection mode: TCP/IP Connection type: PG connection Timeout (s): 5

Access point for applications:  Configure PG/PC interface

Address: 192.168.11.86 Rack: 0 Slot: 0 **Test**

DB number: 10 Profibus slave number: 10

CPU symbols

CPU Name:  Create addressbook Delete addressbooks

Connection established  
 Address 192.168.11.86 Rack 0 Slot 0: connected to CP 6GK7 443-1EX11-0XE0  
 Scanning for connected CPUs:  
 Address 192.168.11.86 Rack 0 Slot 3: connected to CPU 6DD1607-0AA2  
 Address 192.168.11.86 Rack 0 Slot 31: **Getting close instead of ReadOK**

After a mouse click on the hyperlink of the CPU the connection will be activated and rack and slot number will be entered immediately into the corresponding fields.

If the correct DB number has been entered in the corresponding field the connection to the request agent will be established and the Profibus diagnostic data from the DB will be displayed.

The station number (slave number / slave address) will be entered automatically in the module settings.



Examples for diagnostic information

Request over ibaCom-L2B

**L2B FM458 request (1)**

General Connection Analog Digital

Connection

Connection mode: TCP/IP Connection type: PG connection Timeout (s): 5

Access point for applications: Configure PG/PC interface

Address: 192.168.11.86 Rack: 0 Slot: 3 Test

DB number: 10 Profibus slave number: 10

CPU symbols

CPU Name: Create addressbook Delete addressbooks

Addressbook timeout: 10 s  Macro filter

Connection established  
 MLFBNr of PLC is: **6DD1607-0AA2**  
 PLC status: **RUN**  
 Reading **DB10**  
 DB version: **0.0.0.2**  
 FB version: **0.0.2.5**  
 DB length: **2200 bytes**  
 Software version: **103300V617**  
 BGT name: **BGTA00**  
 BG name: **4581DP**  
 T1: **1 ms** T2: **4 ms** T3: **16 ms** T4: **64 ms** T5: **256 ms**  
 Charts: **3**  
 Profibus slaves: **1**

| Slave address | Format             | Length     | Status   | Error code    |
|---------------|--------------------|------------|----------|---------------|
| <b>10</b>     | <b>L2B 32 real</b> | <b>136</b> | <b>0</b> | <b>0x0000</b> |

Request over ibaBM-DPM-S or ibaBM-DP

**FM458 request (0)**

General Connection Analog Digital

Connection

Connection mode: TCP/IP Connection type: PG connection Timeout (s): 5

Access point for applications: Configure PG/PC interface

Address: 192.168.11.86 Rack: 0 Slot: 5 Test

DB number: 11 Profibus slave number: 11

CPU symbols

CPU Name: Create addressbook Delete addressbooks

Addressbook timeout: 10 s  Macro filter

Connection established  
 MLFBNr of PLC is: **6DD1607-0AA2**  
 PLC status: **RUN**  
 Reading **DB11**  
 DB version: **0.0.0.2**  
 FB version: **0.0.2.6**  
 DB length: **2200 bytes**  
 Software version: **103300V617**  
 BGT name: **BGTA00**  
 BG name: **4581DP**  
 T1: **1 ms** T2: **4 ms** T3: **16 ms** T4: **64 ms** T5: **256 ms**  
 Charts: **3**  
 Profibus slaves: **1**

| Slave address | Format      | Length     | Status   | Error code    |
|---------------|-------------|------------|----------|---------------|
| <b>11</b>     | <b>DPMS</b> | <b>244</b> | <b>0</b> | <b>0x0000</b> |

The following diagnostic information is available in the DB:



- PLC status: e. g. "RUN" or "STOP"
- DB version: version code e.g. "0.0.0.2"
- FB version: version code e. g. "0.0.2.5"
- DB length: length of the communication-DB
- Software version: version code of the D7-Sys software
- BGT name: standard name "BGTA00"
- BG name: name of the CPU component from HWConfig, e. g. "4581DP"
- T1...T5: time slices from CPU
- Charts: number of charts
- Profibus slaves: always "1"
- Slave address: station number of the connected Profibus device
- Format: format name (connector SERPDB.FMT)
- Length: data length (connector SERPDB.LEN); this length must match the length of the station configured in HWConfig.
- Status: error status (connector SERPDB.YTS), see chapter *Messages "SERPDB"*
- Error code: error code (connector SERPDB.YTZ), see chapter *Messages "SERPDB"*

If no connection has been established to the service block the following reasons may apply:

- No TCP/IP connection
- Wrong address, rack- or slot number
- Wrong DB-number
- DB too small (less than 2200 bytes)
- Error in configuration of service blocks; an initialization error number will be generated which corresponds to the YTS connector of the SERPDA block, see chapter *Messages "SERPDA"*

### 3.4.5 Generating the address book

If the connection to the agents has been established, the address book can be loaded:

- Enter the CPU name, e. g. "FM\_1" or "TDC\_N1"  
This is absolutely necessary in order to **distinguish** single CPUs in case of multi-processor systems.  
- Set option "macro filter" (only for ibaPDA version 6.15.3 or higher).  
If the **macro filter** is enabled (= default), the contents of macro blocks will NOT be added to the address book.  
If the filter is disabled, the blocks of a macro will be taken into account too.
- Click on button <Create address book>  
The data of the address book will be transmitted. The address book file will be stored in the folder ".. \iba\ibaPDA\Server\FM458".



---

#### Tip 1

If you have configured multiple connections to a CPU it is enough to load an address book of one connection. You can use the same address book for the other connections to this CPU.

#### Tip 2

Depending on the project size the transmission of the address book could take some time. **You may accelerate this by moving the block SERPDA of this connection to the time slice T4.**

#### Tip 3

With **ibaPDA version 6.15.3 or higher you can make the address book transmission even faster by increasing the size of the DB for this connection!**

#### Tip 4

With ibaPDA version 6.15.3 or higher you can further **reduce the transmission time of the address book by enabling the macro filter!**

---



#### Note

You can also work with an address book not up-to-date. Shifts in memory have no effect because the memory addresses are mapped on the symbols not until the time of accessing the CPU. Access on function blocks which had been deleted in the meantime will cause error messages.


---




### 3.4.6 Creating a list of variables

Select the address book which is related to this CPU connection in the field (combo box) "CPU-name" on the "General" tab or on the "Connection" tab.

You have the following possibilities for creating a list of variables:

- ❑ On one hand, you may click on <Edit FM458 symbols> (hyperlink) in the *General* tab in the request module's dialog in order to open the browser.
- ❑ On the other hand, you may click on a cell in the signal table, column *Symbol*, on the tabs *Analog* or *Digital* of the module. If you click on the button  in the cell, the browser opens too.
- ❑ But an easier way to select signals to be measured is the drag & drop method from CFC-chart to the IO Manager in ibaPDA.


The essential requirement is that the ibaPDA-client is installed on the same PC like the SIMATIC Manager. 

Therefore, start the CFC-editor and the ibaPDA-client, windows in "restore down" mode. Open ibaPDA IO Manager, module and signal table. Then click on the connector in the CFC chart you want to measure, keep the left mouse key depressed and drag it into the IO Manager on the desired row in the signal table and let it drop. The CFC-connector is now available in the signal table of the L2B-S7-Request module.

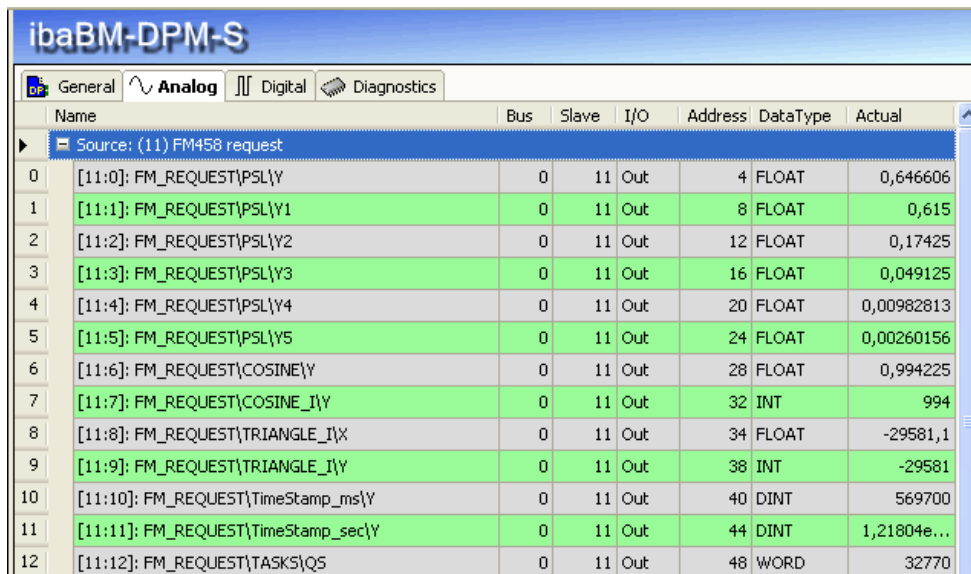
### 3.4.7 Starting measurement

By clicking the button <Apply> or <OK>, the IO configuration and the variable list will be checked and applied to the ibaPDA server.

The following steps are performed:

- Verification of the license and consistency of IO configuration
- With ibaCom-L2B: Checking the Profibus connection
- With ibaBM-DPM-S: Transfer of list of variables to the ibaBM-DPM-S device via online connection (TCP/IP or USB)
- With ibaBM-DP: Transfer of list of variables to the ibaBM-DP device via fiber optics in Flex mode, and via online connection (TCP/IP or USB) in compatibility mode.
- Request handshake: Transfer of list of variables to the FM458 or SIMATIC CPU via online connection (TCP/IP, MPI or DP)
- Checking of data storage configuration 

After starting the measurement you can see **the raw values** of the requested variables in the *Analog* or *Digital* tab of the ibaBM-DPM-S module.



|                            | Name                                | Bus | Slave | I/O | Address | DataType | Actual      |
|----------------------------|-------------------------------------|-----|-------|-----|---------|----------|-------------|
| Source: (11) FM458 request |                                     |     |       |     |         |          |             |
| 0                          | [11:0]: FM_REQUEST\PSL\Y            | 0   | 11    | Out | 4       | FLOAT    | 0,646606    |
| 1                          | [11:1]: FM_REQUEST\PSL\Y1           | 0   | 11    | Out | 8       | FLOAT    | 0,615       |
| 2                          | [11:2]: FM_REQUEST\PSL\Y2           | 0   | 11    | Out | 12      | FLOAT    | 0,17425     |
| 3                          | [11:3]: FM_REQUEST\PSL\Y3           | 0   | 11    | Out | 16      | FLOAT    | 0,049125    |
| 4                          | [11:4]: FM_REQUEST\PSL\Y4           | 0   | 11    | Out | 20      | FLOAT    | 0,00982813  |
| 5                          | [11:5]: FM_REQUEST\PSL\Y5           | 0   | 11    | Out | 24      | FLOAT    | 0,00260156  |
| 6                          | [11:6]: FM_REQUEST\COSINE\Y         | 0   | 11    | Out | 28      | FLOAT    | 0,994225    |
| 7                          | [11:7]: FM_REQUEST\COSINE_I\Y       | 0   | 11    | Out | 32      | INT      | 994         |
| 8                          | [11:8]: FM_REQUEST\TRIANGLE_I\X     | 0   | 11    | Out | 34      | FLOAT    | -29581,1    |
| 9                          | [11:9]: FM_REQUEST\TRIANGLE_I\Y     | 0   | 11    | Out | 38      | INT      | -29581      |
| 10                         | [11:10]: FM_REQUEST\TimeStamp_ms\Y  | 0   | 11    | Out | 40      | DINT     | 569700      |
| 11                         | [11:11]: FM_REQUEST\TimeStamp_sec\Y | 0   | 11    | Out | 44      | DINT     | 1,21804e... |
| 12                         | [11:12]: FM_REQUEST\TASKS\Q5        | 0   | 11    | Out | 48      | WORD     | 32770       |

This is not (yet) possible for measuring via ibaCom-L2B.

## 4 Appendix

### 4.1 iba Library

The iba library FBAPDA is suitable for the use with SIMATIC Manager V5.5 or higher. It contains the Request blocks described in the manual, which are required for the use of ibaPDA-Request-FM458/TDC.

You find the iba library on the DVD "iba Software & Manuals" under  
 ...\\04\_Libraries\_and\_examples\\10\_Libraries\\02\_SIMATIC\_TDC\_FM458.

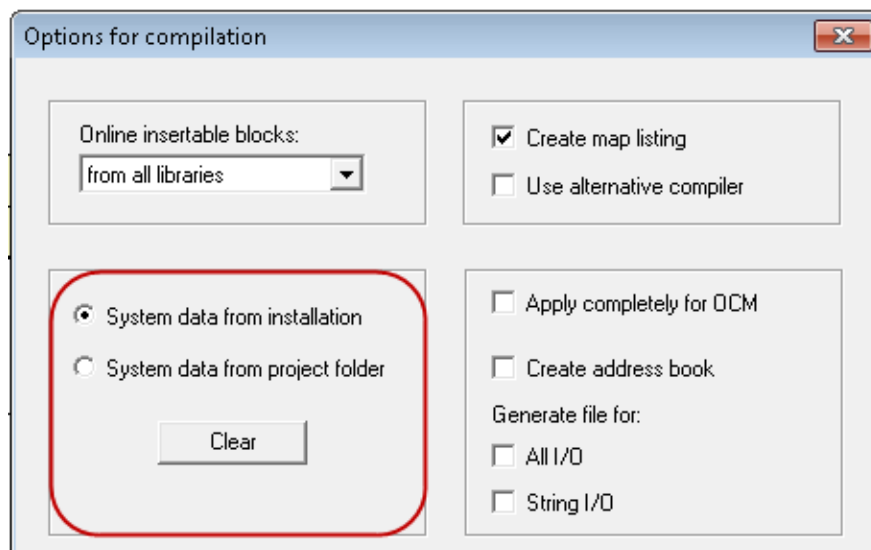
The following blocks are included:

| iba connection                             | Block name | Note                     |
|--|------------|--------------------------|
| general                                    | DCF77      | For time synchronization |
| ibaFOB-TDC                                 | SER04A     | Request administration   |
| ibaFOB-SD<br>ibaFOB-TDCexp<br>ibaFOB-SDexp | SER04B     | Request data transfer    |
| ibaFOB-TDCexp                              | SER05A     | Request administration   |
| ibaFOB-SDexp                               | SER05B     | Request data transfer    |
| ibaBM-DP                                   | SERPDA     | Request administration   |
| ibaBM-DPM-S<br>ibaCom-L2B                  | SERPDB     | Request data transfer    |

#### 4.1.1 Integrating the library

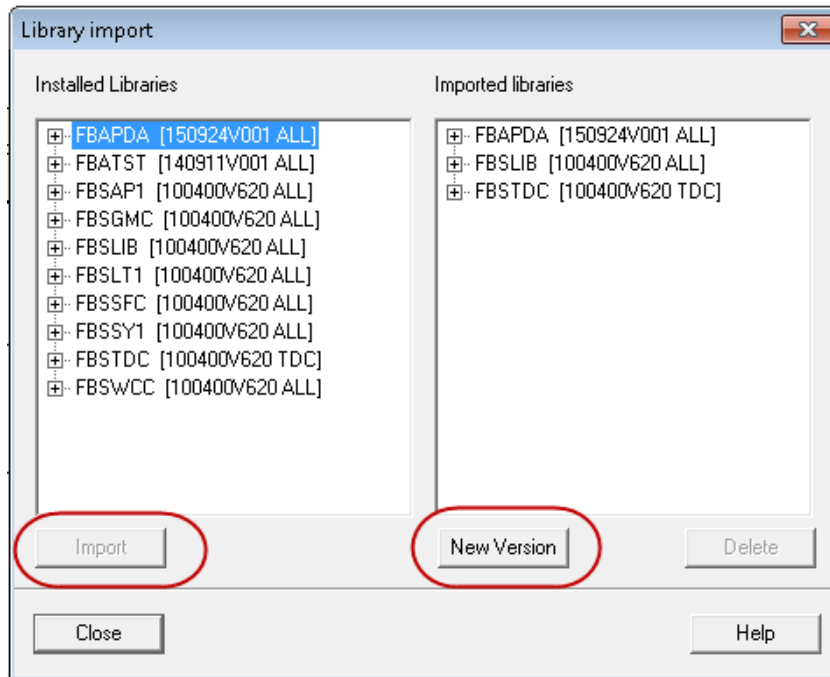
The library contains the files fbapda\_fm1.a, fbapda\_tdc\_Cpu551.a, fbapda\_tdc\_Cpu555.a, fbapda.msk, FBAPDA\_A.HLP and FBAPDA\_B.HLP.

Depending on the setting of the CFC compiler (under *Options – Customize – Compile/Download*), they have to be copied into the STEP7-CFC block folder.



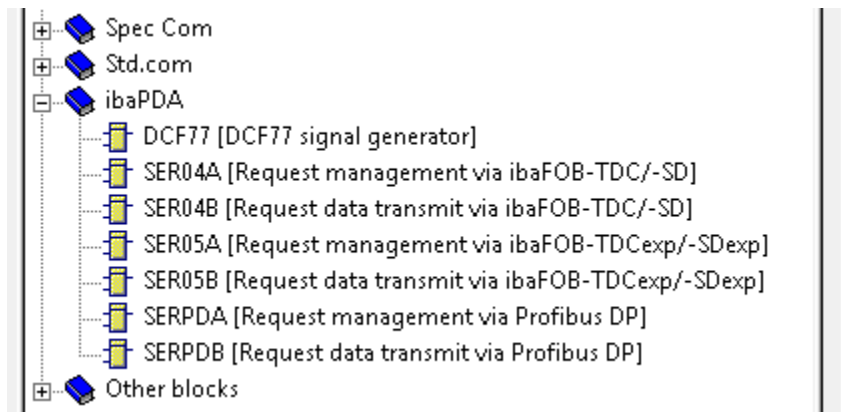
- System data from installation: Copy the blocks to ...\\STEP7\\s7cfc\\sdblocks.
- System data from project folder: Copy the blocks to ...\\STEP7\\S7Proj\\project\_folder\\Global\\sdblocks.

Then, you can import the library into the project. Open the menu *Options – Block Types* in the CFC chart and import FBAPDA.



#### 4.1.2 Integrating the blocks

After having imported the library, the iba blocks are available in the catalog under ibaPDA.



Drag the block via drag & drop into the chart. 

Pay attention to the sequence and the time class of the blocks, see chapter “*Wiring of blocks*”.

## 4.2 Application examples

You find application examples on the DVD "iba Software & Manuals":

- ❑ For the ibaBM-DP device in the path  
   \04\_Libraries\_and\_examples\31\_ibaBM-DP\02\_SIMATIC\_TDC\Request\  
   and  
   \04\_Libraries\_and\_examples\31\_ibaBM-DP\03\_SIMATIC\_FM458\Request\
- ❑ For the ibaBM-DPM-S device in the path  
   \04\_Libraries\_and\_examples\30\_ibaBM-DPM-S\02\_SIMATIC\_TDC\Request\  
   and  
   \04\_Libraries\_and\_examples\30\_ibaBM-DPM-S\03\_SIMATIC\_FM458\Request\
- ❑ For the ibaCom-L2B device in the path  
   \04\_Libraries\_and\_examples\40\_ibaCom-L2B\02\_SIMATIC\_TDC\Request\  
   and  
   \04\_Libraries\_and\_examples\40\_ibaCom-L2B\03\_SIMATIC\_FM458\Request\

Examples are available for the following configurations:

| iba         | SIMATIC CPU  | S7 project             | ibaPDA project                |
|-------------|--------------|------------------------|-------------------------------|
| ibaBM-DP    | S7 - FM458-1 | FM458_DP_REQ_Vxx.zip   | ibaPDA_FM458_DP_REQ_Vxx.zip   |
|             | SIMATIC TDC  | TDC_DP_REQ_Vxx.zip     | ibaPDA_TDC_DP_REQ_V01.zip     |
| ibaBM-DPM-S | S7 - FM458-1 | FM458_DPMS_REQ_Vxx.zip | ibaPDA_FM458_DPMS_REQ_Vxx.zip |
|             | SIMATIC TDC  | TDC_DPMS_REQ_Vxx.zip   | ibaPDA_TDC_DPMS_REQ_V01.zip   |
| ibaCom-L2B  | S7 - FM458-1 | FM458_L2B_REQ_Vxx.zip  | ibaPDA_FM458_L2B_REQ_Vxx.zip  |
|             | SIMATIC-TDC  | TDC_L2B_REQ_Vxx.zip    | ibaPDA_TDC_L2B_REQ_Vxx.zip    |



## 4.3 Messages

### 4.3.1 SERPDA

| YTS | Y TZ          | Description   |
|-----|---------------|---|
| 0   | 0             | everything ok   |
| 1   | frv *)        | error requesting global memory                          |
| 2   | frv *)        | error requesting VPORT-memory                           |
| 3   | frv *)        | error reading sample time                               |
| 4   | 0             | incorrect DB-address ( < 0x80000000 )                   |
| 5   | Order-ID      | unknown order-ID from ibaPDA                            |
| 6   | Status B      | block B has unexpected status                           |
| 7   | Sample time B | sampling time of block B is 0 or bigger than of block A |
| 8   | 0             | DBT connector not or incorrectly connected              |
| 9   | Length        | DB too small (less than 2200 Bytes)                     |
| 12  | Number        | number of requested values too large ( >512 )           |
| 15  | Channel type  | transmission channel type not supported                 |
| 16  | Channel type  | unknown transmission channel type                       |
| 17  | 0             | block B doesn't answer                                  |
| 18  | 0             | no valid values requested                               |
| 20  | frv           | error reading the own BGT-name                          |
| 21  | frv           | error reading the own PN-name                           |
| 32  | Seq no.       | error order sequence (unexpected follow-up message)     |
| 40  | frv *)        | error system function sda_afpi_fp_name.                 |
| 41  | frv *)        | error system function sda_afpi_fb_anzahl_in_fp          |
| 42  | frv *)        | error system function sda_afpi_fb_handle_nach_fb_nr     |
| 43  | frv *)        | error system function sda_afpi_fb_name                  |
| 44  | frv *)        | error system function sda_afpi_fbk_anzahl               |
| 45  | frv *)        | error system function sda_afpi_fbk_name                 |
| 46  | frv *)        | error system function sda_afpi_fbk_kbs                  |

\*) frv = function return values from system functions, see SIMATIC TDC/FM458 error codes

**4.3.2 SERPDB**

| YTS | YTZ    | Description  |
|-----|--------|--|
| 0   | 0      | everything ok  |
| 1   | frv *) | error requesting local memory                            |
| 2   | frv *) | error reading sample time                                |
| 3   | frv *) | error configuring data channel                           |
| 4   | 0      | inadmissible address on ADR-connector                    |
| 5   | frv *) | permanent channel error                                  |
| 6   | 0      | incorrect AT-connector (address level 1, station number) |
| 7   | 0      | incorrect AT-connector (address level 2 )                |
| 10  | frv *) | temporary channel error                                  |
| 11  | 0      | warning, telegram buffer full                            |

\*) frv = function return values from system functions, see SIMATIC TDC/FM458 error codes

## 5 Support and contact

### Support

Phone: +49 911 97282-14  
Fax: +49 911 97282-33  
E-mail: support@iba-ag.com



### Note

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

---

### Contact

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**[www.iba-ag.com](http://www.iba-ag.com)**.