GETTING STARTED

Connecting Remote I/O Stations with Com Unit

LB/FB8X09* / LB/FB8X05*

to Siemens PLC (S7-300) via PROFIBUS



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1. Introduction

This document is intended as an aid for commissioning an LB or FB remote I/O station with **Unicom com unit LB/FB8X09** (≙ **LB8109 or FB8209**) or type **LB/FB8X05** (≙ **LB8105 or FB8205**) com units that are to be connected to a Siemens PLC via PROFIBUS DP.

Comprehensive documentation can be found in your com unit manual.

Com unit LB/FB8X06 can only be operated with the GSD file. It will not be described further here. Commissioning instructions can be found at <u>http://www.pepperl-fuchs.de/germany/de/classid_259.htm</u>

2. Preparing for Configuration

To enable the smooth integration of the LB/FB remote I/O system, the following preparatory work must first be completed (section 2.1-2.3).

2.1. Downloading the GSD Files



Visit <u>www.pepperl-fuchs.com</u> to download the required GSD files for LB/FB systems. Enter the com unit being used (**LB8109, FB8209, LB8105, or FB8205**) into the search field on the right-hand side of the website and start the search (see Fig. 1).

LB8109	P
--------	---

Figure 1: Searching for GSD files by entering the com unit

Now select the listed com unit. Selecting the "Software" button takes you to the part of the page where the GSD files can be downloaded.



The GSD files for corresponding com units from the LB and FB systems are identical. It is therefore irrelevant whether the GSD files are downloaded from the LB8109 or FB8209 web page.

Unzip the file in a directory of your choice. The "Master Parameterization" section can be accessed in the unzipped .gsd file.

Datasheet Documents CAD+CAE Appro	ovals+Certificates Software A	ssociated Products		
ownload the complete datasheet as a PDF: EN	NG - Download PDF			
oftware: LB8109*	Ch)			
Drivers		Release Info	File Type	File Size
EDD für Simatic PDM 5.xx und 6.xx/EDD for Sima	atic PDM 5 xx and 6 xx	6.45	ZIP	550 KB
GSD 1710/GSE 1710		1.09	ZIP	8 KB
		1.10	ZIP	9 KB

Figure 2: Selecting the software section for com units being used and downloading the GSD file

2.2. Installing PACTware and Microsoft .NET



The **PACTware** FDT container is required for **Unicom com units** (LB/FB8X09) and type LB/FB8X05 com units. The PACTware installation file can be downloaded from <u>www.pepperl-fuchs.com</u>. Search for the term "pactware" using the search field according to the procedure described in chapter 2.1. The current version can then be downloaded by clicking on the green "Download" button (see Fig. 4).

	PACTware 4.X
	FDT Framework
	Software
PACTware	Universal DTM host platform, For all DTMs of Pepperl+Fuchs, Approved FDT/DTM
	technology, Free of charge, Internet download possible

Figure 3: Downloading PACTware The installation is performed by running the downloaded .exe file.

If a prompt to install the **"Microsoft .NET Framework"** appears during the installation routine, the installer for this can be found by entering "microsoft .net" into the search field at <u>www.pepperl-fuchs.com</u>. This can then be installed once the download has finished (see Fig. 5).

Microsoft .NET
Connection Software
Software
Software for connecting people, information, systems, and devices, For applications
developed using .NET, Required to run PACTware [™]

Figure 4: Downloading Microsoft .Net

2.3. Installing the Device Drivers (DTM Collection)

In addition to the PACTware FDT container, LB/FB 8X09 / LB/FB8X05 Com Units require the correct device drivers (DTM). Visit <u>www.pepperl-fuchs.com</u> again and enter the term "dtm lb/fb" in the search field. The DTM Collection can be downloaded by clicking the green "Download" button (see Fig. 6).

DTM LB/FB
DTM collection
Software
For Remote I/O systems, Frame application, like e. g. PACTware, must be installed
separately

Figure 5: Downloading Microsoft .Net

Once the download is complete, run the application and follow the installation instructions.

If an older version of the DTM is already installed on your computer, select the option "Remove" when prompted during the installation routine and then install the DTM Collection again (see Fig. 7).

Remove	Remove all installed features.			
InstallShield ——		< Back	Next 2	Cancel

Figure 6: Removing an older version of the DTM prior to installing the new version

Once you have reached the point at which you can select the elements to be installed, select all elements (by checking the appropriate box for each of the elements) and then continue with the installation.

3. Configuration of the PROFIBUS Master

The following sections will describe the parameterization of the PLC, which acts as the master in the current system configuration. The procedure described relates to the use of a Siemens SIMATIC S7-300.

For master parameterization, a connection must be established between the PC and the PLC This can be done using a SIMATIC PC adapter (MPI-USB adapter) (see Fig. 7).

The Simatic Manager is required to perform the following actions.



Figure 7: MPI-USB adapter

3.1. Preparing the Simatic Manager

1. Start the Simatic Manager.

Ο

- 2. In the Simatic Manager, open the project in which the remote I/O station is to be added.
- 3. If not already available, add a SIMATIC 300 station (due to the use of the SIMATIC **S7-300**):

SIMATI	C Manager - Te	st		
File Edit	Insert PLC Vie	w Options Window	/ Help	
🗅 😅	82 🛲 X 🛛	6 6 6 6		iii 🋍
📑 Test	C:\Programme	\Siemens\Step7\s	7proj\Test	
⊡- £9 ∎- ⊕-∎	Cut Copy Paste	Isa SIMATI Ctrl+X Ctrl+C Ctrl+V	C 300(1) 문을MPI(1)
	Delete	Del		
	Insert New Ob	iect 🕨	SIMATIC 400 Sta	ation
	PLC	+	SIMATIC 300 Sta	ation
	100000		CIMANTIC II CHARG	100

4. Open the **HW Config** by double-clicking on "Hardware":

SIMATIC Manager - Test	
File Edit Insert PLC View Op	tions Window Help
🗅 🎯 🔡 🛲 🕹 🖻 🛍	🕍 😨 🐾 🖭 📰 🔁 < No Filte
Test C:\Programme\Siem	ens\Step7\s7proj\Test
	Hardware CPU 315-2 DP

5. In the HW Config, create your control system with the corresponding CPU and a PROFIBUS connection.

3.2. Installing GSD Files

Before starting the installation, close the configuration window of the project within the HW Config (see arrow in the graphic below).

1. To install the GSD files, s	elect Options \rightarrow In	istall GSD Files in HW C	onfic
🔣 HW Config - [SIMATIC 300(1) (Ca	nfiguration) Test]		
🛄 Station Edit Insert PLC View	Options Window Help	-	
D 🚅 🔓 🖩 🖷 🙀 🎒 🖻 🖻	Customize	Ctrl+Alt+E	
(0) UR (1 PS 307 5A 2 CPU 315-2 DP	Specify Module Configure Network Symbol Table Report System Error	Ctrl+Alt+T	
X2 DP 3 4	Edit Catalog Profile Update Catalog	Close before	
5 6 7	Install HW Updates Install GSD File	starting the installation	

2. Select the **"Browse"** button to navigate to the directory in which the files were saved previously (see section 2). Select the .gsd file and start the installation by selecting **"Install":**

stall GSD Files		
nstall GSD Files:	from the directory]
Y:\VM_shared\8x09\v1_10		Browse
File Release PFV61710.gsd PFV61710.gse	Version Languages Default English	
LB/FB 8x09 Remote IO 2		
LB/FB 8x09 Remote 10 2	now Log Select All Deselect.	All

3. Then update the device catalog.



3.3. Configuring the Remote I/O Station

 In the HW Config, add your com unit to your project by dragging and dropping it on to the PROFIBUS line. This is located on the right in the folder structure under PROFIBUS-DP → Additional FIELD DEVICES → I/O → "LB/FB 8X05H/DPV1 V6" for com units LB8105 and FB8205 or "LB/FB 8X09 Remote I/O 2" for com units LB8109 and FB8209. Now enter the desired PROFIBUS address and confirm this window and the following window with OK:

HW Config - [SIMATIC 300(1) (Configuration) Test] Station Edit Insert PLC View Options Window Help			
C 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		End	
6	Properties - PROFIGUS Interface LB/FB 8x09 Remote 10 2 X General Parameters Address: ITB Address: ITB Transmission rate: 1.5 Mbps Subnet — not networked —		the second
[0] UR Skt Module 0 Fi M 0 Comment 1 P 530754 EE57 Comment 1 2 Comment 2	OK Cancel Help		

This creates an empty station with the corresponding PROFIBUS address. The modules are now added as follows:

2. Click on the com unit to select it. You will now see a table for the various components of the I/O station underneath the graphic representation of your project:

월 HW Config - [SIMATIC 300(1)(Configuration) Test] M Station Edit Insert PLC View Options Window Help D 译 음~ 문 및 을 哈 哈 哈 諭 諭 節 마 많 옷	
I IPS 307 5A. 2 ICPU 315-2 DP X2 DP 3	PROFIBUS(1): DP master system (1)
	Table for components
(119) LB/FB 8x09 Remote IO 2 Slot I C Order Number / Designation I Address Q Address 2 3 4	Comment

3. Add the modules located on your remote I/O station to the table using the drag and drop function. The modules can be found on the right-hand side in the folder structure below your com unit. Enter the desired address range for the inserted modules and then confirm with **OK**:

	→ (115)	i) LB/FB 6x09 Remote (D 2			Drag and drop	×	CDM: Module Status (1 Bi/Mod.) CDM: Cmd-Status + Module Status Empty Stot 1X01 Digital Input 2-channels 1X02 Digital Input 3-channels 1X03 Files Counter 1X03 Fi
Slot		Order Number / Designation	Address	Q Address	Comment		1X08 Digital Input 8-channels 1X09 Digital Input 8-channels
1	192	COM: Cmd+Status + Module Status	07	01		·	1X14 Digital Input (230V) 15-ch.
2							1×15 Digital Input (24V) 15-ch.
3							2000 Digital Out + 2 Digital In
4							3K01 Analog Input + Supply
5							3K02/3 HART Analog In + Supply
ь							3/02/3 HABT AIN + 1 HABT 3/ar



The examples on **pages 11 and 12 illustrate** the arrangement of the modules.

The following rules must be observed when adding modules:

- a) For the com unit, it is recommended that the "COM: Command + Status+ Module Status" module is added in slot 1. Note the overview "<u>Various</u> <u>Com Unit Configurations</u>" on page 10.
- b) Add empty slots ("Empty slot" module):
 - In the case of redundant LB backplanes, exactly two empty slots must be added after the com unit (both when the redundancy is used and not used).
 - For double-width modules, an empty slot must be added after the module itself.

Exception: No empty slot is added if the last module in the configuration is a double-width module

- An empty slot is added for each **unoccupied slot** on the backplane.
- c) No more empty slots are added after the last added module. You can continue with the <u>"Loading Hardware Data onto the CPU"</u> section.
- d) Power supplies are not added. No empty slot is added.
- e) For the FB system: Termination modules are not added. No empty slot is added.
- f) In the case of LB/FB3X02 and LB/FB3X03 modules, the "3X02/3 HART isolation amplifier" module is usually added. In the case of the LB/FB1X03 module, a decision must be made, depending on the present application, as to which of the four modules available in the Simatic Manager is added.

Various Com Unit Configurations

There are various com unit configurations in the Simatic Manager. The selected configuration must correspond with the settings of the cyclic data traffic of the com unit in PACTware. Depending on which com unit configuration has been selected in the Simatic Manager, the appropriate box must be checked in PACTware (see table below):

Simatic Manager	PACTware (cyclic data traffic)
Com unit without data:	Cyclic data: Transmit module state area Transmit command/status area
COM: Global Status + Command Register: COM: Global-Status + Command Reg	Cyclic data: Transmit module state area Transmit command/status area
COM: Module Status Register:	Cyclic data: Transmit module state area Transmit command/status area
COM: Command + Status + Module Status: COM: Cmd+Status + Module Status	 Cyclic data: Transmit module state area Transmit command/status area

Special Considerations in the Case of Redundancy

In the case of line redundancy

Configuration is performed in the same way as when the redundancy is not used. Your com unit is added, followed by two empty slots due to the redundant LB backplane (e.g., LB 9022).

The configuration of the I/O modules follows the two empty slots.

No second com unit is added to the configuration list, although it is physically plugged into the backplane.

In the case of line redundancy, no additional configuration is

necessary. The line redundant slave is not configured from the master view.

In the case of application redundancy (two masters)

Configuration is performed in the same way as when the redundancy is not used. Your com unit is added, followed by two empty slots due to the redundant LB backplane (e.g., LB 9022).

The configuration of the I/O modules follows the two empty slots.

No second com unit is added to the configuration list, although it is physically plugged into the backplane.

Another station with the same configuration is then created on your redundant PROFIBUS line.

You can copy the created station and add it to your redundant PROFIBUS line.

An **<u>example</u>** of a configuration of an LB backplane populated with nonredundant modules can be found in the image below.



Example of a non-redundant LB remote I/O station in HW Config

3.4. Loading Hardware Data onto the CPU

Once the appropriate modules have been added to the remote I/O station in the Simatic Manager, data can be loaded onto the CPU of the PLC.



1. Save and compile your project:

							ion) — Te	
m :	Station	Edit	Insert	PLC	View	Options	Window	Help

2. Load the data onto the CPU of the PLC:



3. Confirm with **OK** and then always click **Yes/OK** so that the PLC restarts and adopts the changes:



4. Configuration of the PROFIBUS Slave

Unicom com units (LB/FB 8X09) and type LB/FB8X05 com units must be parameterized via **PACTware**. Before carrying out the following instructions, ensure that PACTware and the DTM Collection have been installed correctly (see section 2). The following description relates to PACTware version 4.1.

Two different ways to configure the remote I/O station are described below:



Via PROFIBUS using a PROFIBUS class 2 master (e.g., Softing PROFlusb)



Via the service bus interface using a USB-RS485 converter (e.g., ICPCON i-7561) with a suitable cable set (for LB item no. 541037, for FB item no. 541038)

Preferably, the configuration should be performed using a PROFIBUS class 2 master, as this offers a high transfer rate.

Depending on which of the two options is chosen, **continue with the corresponding section:**

► Via **PROFIBUS** using a **PROFIBUS** class 2 master: <u>Section 4.1</u>

► Via the service bus interface using a USB-RS485 converter: Section 4.2

4.1. Configuration via PROFIBUS Using a PROFIBUS Class 2 Master

The following section describes the **connection of the PROFIBUS class 2 master** (e.g., Softing PROFlusb). Note whether your remote I/O station is an LB or FB system:



LB System: Connection Remote I/O System to Siemens SPS via PROFIBUS

FB System: Connection Remote I/O System to Siemens SPS via PROFIBUS



Connect your PC directly to the bus line via the class 2 master (either to the backplane [in the case of an LB system only]—here the interface is marked with X4—or to the PLC).

The class 2 master that is used requires the appropriate driver software. This is usually installed automatically after the class 2 master is connected. In the case of the Softing PROFlusb, this is included in the delivery. If necessary, the driver can be subsequently obtained from the Download Center:

http://industrial.softing.com/en/downloads.html

Once the appropriate driver has been installed and the selected component has been connected, the parameterization of the remote I/O station using PACTware can be continued.

4.1.1. Adding an Interface

- Start PACTware and update the device catalog via F3 → Update Device Catalog. The device catalog may only be updated after the DTM has been installed.
- 2. To n HOST PC to add another device:



3. Select the PROFIBUS communication interface:

Device for											
All Devices											
Device	Protocol 🔺	Vendor	Group	Device Version	FDT ve						
HART Communication	HART	CodeWrights GmbH	FDT	1.0.52/2015-03-17	1.2.0 A						
HART IP Communication	HART IP; HART UDP	PEPPERL+FUCHS GmbH	FDT	1.1.0.15/2016-02-03	1.2.0 A						
👾 Servicebus interface LB/FB series	P+F LB FB Servicebus	PEPPERL+FUCHS GmbH	FDT	1.0 / 2006-07-01	1.2.0 A						
PROFIdtm DPV1	Profibus DP/V1	Softing Industrial Automation GmbH	FDT	V 2.11(116) / 2010-11-	(1.2.0 A						
Select	Select interface										

4. (on your interface to parameterize it:

Project						
Device tag		Address	0	36	Device type	Status
📕 HOST PC						
PROFIdtm		0	1	ЮÞ	PROFIdtr	0
	36	Connect				
	÷	Disconnect	t			
	<u> ()</u>	Load from	dev	ice		
	<u>N</u>	Store to de	vice			
		Parameter				

5. Adjust the baud rate to the speed of your PLC:

Board			
Board Name:	Node 0	✓ Station Address: 0	
		ud rate according to the PLC speed, set	. 10
Misc	default val	lues and apply	
Misc Baud Rate:	default val	lues and apply	Automatic Defaults for Baud Rate
	K	lues and apply	V Automatic Defaults for Baud Rate

4.1.2. Add a Com Unit

Ο

- 1. On Interface \rightarrow Disconnect to ensure that the connection to the previously added interface is disconnected.
- 2. To on the Interface and select Add device to add the com unit being used:

All Devices				
Device	Protocol 💌	Vendor	Group	Device Version
LB 8105 LB-DPV1 Communication Interface	PROFIBUS_DPV1; P+F LB FB Service	PEPPERL+FUCHS GmbH	remoteIC	1.4 / 2007-03-30
LB 8106 LB-EasyCom Communication Interface	PROFIBUS_DPV1; P+F LB FB Service	PEPPERL+FUCHS GmbH	remoteIC	1.4 / 2007-03-30
LB 8109 LB-DPV1 UNICOM Interface	PROFIBUS_DPV1; P+F LB FB Service	PEPPERL+FUCHS GmbH	remotelC	1.4 / 2007-03-30
FB 8205 FB-DPV1 Communication Interface	PROFIBUS_DPV1; P+F LB FB Service	PEPPERL+FUCHS GmbH	remoteIC	1.4 / 2007-03-30
EB 8206 FB-EasyCom Communication Interface	PROFIBUS_DPV1; P+F LB FB Service	PEPPERL+FUCHS GmbH	remoteIC	1.4 / 2007-03-30
FB 8209 FB-DPV1 UNICOM Interface	PROFIBUS_DPV1; P+F LB FB Service	PEPPERL+FUCHS GmbH	remoteIC	1.4 / 2007-03-30

3. When prompted, enter the "Station Address". This is the **PROFIBUS** address of the com unit. This must match the specification in the **PLC**. The PROFIBUS address of the com unit is preconfigured to 126 for delivery.

PROFIdtm]
Please enter a station address for the added child device.	In this case, the PROFIBUS address of the com unit was previously changed from 126 to 117. 117 must therefore also be specified
Station Address: 127	in the PLC and PACTware. (Determining/Changing PROFIBUS Address ->
OK Cancel	

How to determine and change the PROFIBUS address of the com unit is described in the FAQs (section 6.3).

Please skip the following section and continue with <u>section "4.3</u> <u>Parameterizing Com Units"</u>.

4.2. Configuration via Service Bus Using a USB-RS485 Converter

The **connection of the USB-RS485 converter** (e.g. ICPCON i-7561) is shown below. Note whether your remote I/O station is an LB or FB system:





Connect your PC to the service bus interface on the backplane via the USB-RS485 converter. This interface is marked with X6 on **LB** backplanes. In the case of **FB** backplanes, the cable set should be connected to the backplane using terminals X2.3 (Data -) and X2.4 (Data +) or terminals 12/13 and 7/8. When connecting, note the information from the housing guide for your FB system.

The USB-RS485 converter that is used requires the appropriate driver software. This is usually installed automatically after the USB-RS485 converter is connected. For the ICPCON I-7561, this is included in the delivery. If necessary, the driver can be subsequently obtained from http://www.icpdas.com/products/Remote_IO/i-7000/i-7561.htm.

Once the appropriate driver has been installed and the selected component has been connected, the parameterization of the remote I/O station using PACTware can be continued.

4.2.1. Adding an Interface

 Start PACTware and update the device catalog via F3 → Update Device Catalog. The device catalog may only be updated after the DTM has been installed.

on HOST PC to add another device:



2. Select the service bus communication interface:

All Devices	Select interface										
Device	Protocol	Ŧ	Vendor	Group	Device Version	FDT vers					
PROFIdtm DPV1	Profibus DP/V1		Softing Industrial Automa	FDT	V 2.11(116) / 2010-1	1.2.0 Ad					
Gervicebus interface LB/FB series	P+F LB FB Servicebus		PEPPERL+FUCHS GmbH	FDT	1.0 / 2006-07-01	1.2.0 Ad					
F HART IP Communication	HART IP; HART UDP		PEPPERL+FUCHS GmbH	FDT	1.1.0.15/2016-02-0	1.2.0 Ad					
HART Communication	HART		CodeWrights GmbH	FDT	1.0.52/2015-03-17	1.2.0 Ad					

3. The on your LB/FB service bus interface to parameterize it:

Project									4 ×		
Device tag		Address	0	op D	Device type	Status	Timesta	np statu	s		
B HOST PC				1							
🙀 LB/FB service bus	-	1			7 Servicebi	0					
	₩ ₩	Connect Disconne									
	\$ \$	Load from Store to a									
		Paramete	er					•	Parameterization	•	Configure COM port

4. Set the correct COM port:

Ο



Set the COM port in accordance with the port from the "Device Manager" and click Save/OK

The Device Manager can be opened in Windows via $Run \rightarrow "devmgmt.msc"$ or alternatively via the control panel. Which COM port has been assigned to the USB-RS485 converter (e.g., ICPCON) can then be checked under the menu point Device **Manager**.

4.2.2. Add a Com Unit

- 1. On LB/FB service bus \rightarrow Disconnect to ensure that the connection to the previously added interface is disconnected.
- 2. On the LB/FB service bus and select Add device to add the com unit being used:

All Devices			
Device	Protocol Vendor	Group	De
LB 8105 LB-DPV1 Communication Interface	PROFIBUS_DPV1; P+F LB PEPPERL	+FUCHS GmbH remote	eIC 1.4
FB 8205 FB-DPV1 Communication Interface	PROFIBUS_DPV1; P+F LB PEPPERL	+FUCHS GmbH remote	eIC 1.4
LB 8106 LB-EasyCom Communication Interface	PROFIBUS_DPV1; P+F LB PEPPERL	+FUCHS GmbH remote	eIC 1.4
FB 8206 FB-EasyCom Communication Interface	PROFIBUS_DPV1; P+F LB PEPPERL	+FUCHS GmbH remote	eIC 1,4
LB 8109 LB-DPV1 UNICOM Interface	PROFIBUS_DPV1; P+F LB PEPPERL	+FUCHS GmbH remote	-IC 1.4
FB 8209 FB-DPV1 UNICOM Interface	PROFIBUS_DPV1; P+F LB PEPPERL	+FUCHS GmbH remote	eIC 1.4
LB 8107 MODBUS Communication Interface	P+FLB FB Servicebus - P- PEPPERL	+FUCHS GmbH remote	eIC 1.4
FB 8207 MODBUS Communication Interface	P+F LB FB Servicebus - P- PEPPERL	+FUCHS GmbH remote	eIC 1.4
LB 8111 MODBUS-TCP Communication Interface	Modbus over TCP; P+F LE PEPPERL	+FUCHS GmbH remote	eIC 1.4
FB 8211 MODBUS-TCP Communication Interface	Modbus over TCP; P+F LE PEPPERL	+FUCHS GmbH remote	eIC 1.4

3. Enter the **servicebus address** of the com unit. Upon delivery, the preset service bus address of the com unit is 1.

rvicebus address		In this case, the service
LB/FB UNICOM Interface	P+F LB/FB - RIO	bus address of the com unit was previously changed from 1 to 119 and must therefore also be specified here with 119 (Determining/Changing Service Bus Address -> FAQs).
	📕 🍺 LB/FB - RIO	
	+	LB/FB UNICOM Interface

How to determine and change the service bus address of the com unit is described in the FAQs (section 6.3).

Please continue with the following <u>section "4.3 Parameterizing Com</u> <u>Units"</u>.

4.3. Parameterizing Com Units

1. The com unit to select Additional Functions \rightarrow Edit application mode parameters.

If necessary, uncheck boxes that are already checked and check the "fieldbus address changing supported", "redundancy mode changing supported" and "changing for COMUnit – data supported" check boxes:

Config	uration options:
	with Hot-Configuration-in-Run support
V	fieldbus address changing supported
V	redundancy mode changing supported
	changing for ComUnit - data supported
	Analog output values without status check (invalic
	OK Cancel

2. \bigcirc on the com unit to select Parameter \rightarrow Parameterization \rightarrow Edit Device Data (Offline).

Set the backplane, extensions, redundancy, and power supplies being used:

LB-8109 Edit device data (Offline)	
Station description:	
LB-8109	P+F
Device description:	Set the backplane being
LB/FB UNICOM Interface	used and specify whether an extension backplane is
Structure Profibus I Profibus II Info	beina used
Backplane:	Extensions
LB 9022/24: Redundancy backplane system with 22/24 slots 🔹 👻	1 - Specify the PROFIBUS
	address of the com
ComUnit	unit (only during
	SB address prim.: configuration using a
Buskoppler	119 USB-RS485 converter!)
Power supplies:	Enable/disable redundancy, no further settings are required (all power supplies must be plugged in!)
Type of power supply: LB 9006 C 24V DC g. isol.	,
PS redundancy: 🔲 on 🛛 👞	Power owney redundancy con
Inst. environment: 🔲 Safe Area	Power supply redundancy can be activated independently of
Power supplies: V PS-1 (base) V PS-4 (extension) PS-2 (base) PS-5 (extension) PS-3 (base) PS-6 (extension)	full redundancy First power supply on the extension
First power supply on	backplane
the base backplane	LB/FB - RIO
OK Cancel Save	Help

Specify the PROFIBUS address of the com unit in the **PROFIBUS I** tab. In addition, the cyclic data should also be activated in accordance with the functionality of the com unit selected in the PLC:

LB-8109 Edit device data (Offline)			0	
Station description:		P+F	Л	For information on
LB-8109				how to determine and
Device description:				change the PROFIBUS address, refer to the
LB/FB UNICOM Interface		LB/FB - RIO		FAQs (section 6.3)
Structure Profibus I	Profibus II Info			
Bus addresses: prim. ComUnit (1126):	of the com ur	ROFIBUS address nit—must match tion in the PLC.		
Bus timeout for outputs:	2000 _{, ms} 🔲 Suppress "clear"		о П	Check the boxes
Redundancy mode:	Cyclic data: Transmit module stal Transmit command/:			according to the com unit configuration in the PLC
	Select in accordance v in the PLC	with the settings		

3. To on the **interface** to establish the connection:

티 🛱 LB/FB service bus	3 🖉 🛷 🐺 Servicebi
LB-8109	An Connect
	Connect



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If communication problems arise (e.g., "Unknown board name"), check whether the drivers for the class 2 master / USB-RS485 converter have been installed properly.

4. On the **com unit** to establish the connection to the com unit. A symbol appears next to the interface once the connection has been successfully established:

If communication problems arise (e.g., "Unknown board name"), check whether the drivers for the class 2 master / USB-RS485 converter have been installed properly.

4.4. Adding and Configuring I/O Modules

Once the **connection** to the com unit has been successfully **established**, the I/O modules of the remote I/O station can be added in PACTware.

 \bigcirc on the **com unit** to select **Additional Functions** → **Topology Scan**. This function examines whether modules in the com unit are configured and what modules are plugged into the backplane. The **"plugged"** column lists the I/O modules that are actually plugged into the backplane. The last configuration loaded in the com unit is displayed in the **"Configured"** column. Finally, the desired module can be selected in the **"Selected"** column (if necessary, Ex i or Ex e). Selecting the **"Create devices"** button adds the devices to the project tree:

	2	DT container.	Cre	eate devices connected to the backplane
© plugged [€] C configured				configured in the com unit
Slot	plugged	configured	selected	subtype description
1	3x02	3x02	3102	LB 3102 HART Analog Input/Transmitter Power Supply (1 ch., Ex(
2	1x09	1x09	1109	LB 1109 Digital Input (8-ch., Ex(i))
. .		1.00	4106	LB 4106 HART Analog Output (4 ch., Ex(i))
3	4x06	4x06	4100	The tree is a reading a subscript stay subject ()
3	4x06 6x08	4x06	a characteristic and the second	LB 6108 Digital Output (8 ch., low power, Ex-i)
	6x08	6x(2	6108	
4	6x08 0x00	6x(2	6108 	LB 6108 Digital Output (8 ch., low power, Ex-i) empty slot
4	6x08 0x00	6x0 0x00	6108 7104	LB 6108 Digital Output (8 ch., low power, Ex-i)

When creating the devices, a message may appear to indicate the required **subversion of the com unit**. This can be noted without further attention.

Alternatively, I/O modules can be added manually.

To do this, select \bigcirc Com unit \rightarrow Add device. The devices from the list can then be assigned to the respective slot into which they are to be inserted on your remote I/O station.

4.5. Configuring I/O Modules (PACTware)

At this point, the application-dependent parameters of the I/O modules can already be set. However, it is recommended to first continue with section 4.6. to ensure that the integration was successful.

1.

 \bigcup on Module \rightarrow Parameter \rightarrow Parametrization \rightarrow Edit Device Data (Offline).

Various parameters can be set (e.g., line monitoring).

Consult the com unit manual for more information.

2. Now save your changes with Save and OK.

At this point, line fault detection (LFD) should be deactivated to prevent line fault messages appearing for unoccupied channels of the I/O modules: **Com** unit \rightarrow **Disconnect.**

Then: Com unit \rightarrow Additional Functions \rightarrow LFD of All Channels OFF. This can be reactivated at a later point in time.

3. To apply the changes, \bigcirc on **Com unit** \rightarrow **Store to Device** to load the data in the com unit.

4.6. Store Data in the Com Unit

When first commissioning the remote I/O station, it is recommended that the line fault detection (LFD) is deactivated to prevent line faults from being displayed for unoccupied channels of the I/O modules. This can be activated again at a later point in time (see section 4.6). Select:



1.

2

- \bigcirc Com unit \rightarrow Disconnect.
- **Com unit** \rightarrow Additional functions \rightarrow LFD of All Channels OFF.

Finally, store the current configuration data in the com unit:

1. (on the **com unit** to establish the connection to the com unit.



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2. Select \bigcirc Com unit \rightarrow Store to Device:



If a **communication error** appears at this point due to the firmware used on the com unit, then **unsupported functions** can be disabled:

 \bigcirc Com unit \rightarrow Parameter \rightarrow Parameterization \rightarrow Select firmware-dependent functions:

GETTING STARTED Integrating Remote I/O Stations with Com Unit LB/FB8X09* / LB/FB8X05*

	Description device function	Firmware
V	Support of additional HART variables within the data exchange of module 3x02	9.02
1	Support of 8IN80UT universal module	9.05
	Extend the maximum I/O data to 240 input AND 240 output bytes	9.0
	Support of active input signals (5V/24V DC) for 1x09	9.0
	Enter the firmware of the com unit ar press the button. Then save and stor data again in the com unit	
Firmwar	re version ComUnit > = 9 05 Set FW functions	

O The firmware of your com unit is printed on the type plate.

☐ E.g.,: LB8109 h0905 ≙ Firmware 09.05

The last four digits of the type designation correspond to the firmware of the supplied com unit.

At this point the integration of the remote I/O station is complete. If the integration was successful, then this is indicated by the fault indication LEDs on all modules of the remote I/O station and the PLC lighting up green.

In the event of a fault (red LED) section "<u>5.5. Why is the Configuration</u> <u>Faulty? —Diagnostics via PACTware/Simatic Manager"</u> should be consulted.

5. Troubleshooting

5.1. Why Does the Plug Icon Not Have a Green Background Even Though the Device Is Connected Properly?

The plug icon is green when data is exchanged.

As soon as you view the measured value, the plug will have a green background, provided the connection is error-free.

Module \rightarrow Measured Value \rightarrow Show Measured Value)

5.2. Why Does the Error Message "No available space to add the module" Appear?

Check that the correct backplane has been set.

In the case of redundant LB backplanes (e.g., LB 9022), I/O modules may only be added from slot 03 onward (if the numbering begins with 0). Slot 01 and slot 02 must be configured as empty slots.

5.3. Why Does the Error Message "Base unit overloaded" Appear?

Check the settings of the power supplies.

Additional power supplies may be required to power the I/O modules. Alternatively, the position of the modules in the station can be changed or your system can be expanded with another station.

5.4. Why Does the Topology Scan Not Run Successfully?

Check the PROFIBUS address of the com unit and the physical

connection. The topology scan is only possible when no modules are scheduled. Therefore, no more modules may be added to the module tree below the com unit in PACTware.

Also ensure the backplane is configured correctly.

5.5. Why is the Configuration Faulty? - Diagnostics via PACTware/Simatic Manager

Check your configuration for typical errors before carrying out fault diagnostics via PACTware or the Simatic Manager. Typical errors include:

- Modules configured in the wrong place → Check the positioning of the modules in the table in HW Config in the Simatic Manager (see p.9 and following pages).
- Empty slots are missing or empty slots in the wrong place → Check whether the empty slots are set in accordance with the rules when making additions (see p.9)
- **Com unit data set incorrectly** \rightarrow Check whether the com unit data is set consistently in the Simatic Manager and PACTware (see table on p.10)
- Terminators set incorrectly → Check whether the terminators in your bus topology are set correctly
- **PROFIBUS address set incorrectly** → Check whether the PROFIBUS address is set consistently in the Simatic Manager and PACTware
- **Physical connection faulty** → Check the physical connections in your topology

5.5.1. PACTware Diagnostics Function

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In the following, you will find explanations of how the **diagnostic functions of PACTware** can be used to check what errors can be found in your configuration.

The com unit must be connected to be able to select the correct context menu.

1. To on Com unit \rightarrow Measured Value > View progress values/diagnosis.

	Connect Disconnect	
Br LB-71	Get device state Load from device Store to device	
	Parameter Measured value	View process values/diagnosis

 Select the slave DP configuration (≙ Remote I/O station) and the master DP configuration (≙ PLC) in the diagnostics tab and click on the two read buttons. Selecting the "<>" button to compare the respective configuration strings:

tation name:	LB-8109 P+F
ag prim. ComUnit:	Buskoppler
Status/Diagnoses: Global status registe	
Value: 8000 Text: No erro	ComUnit active Simulation active Parametrizing in action Multiple errors active Configuration selection Error code: 0
(
Diag. register	PB-Diag (std.) PB-Diag (ext.) CU-Diag Module status
Slave DP-	-configuration - Master DP-configuration -
0	0
20	20 After reading: Compare
40	40 the configuration strings
60	60
80	80
100	Read buttons
120	120
' Read	Automatic Expand Read Automatic Expand

O In the event of a deviation (this is then shown in red), check the station configuration in the HW Config (PLC) and in PACTware. In addition, consult the com unit manual for help.

The **"Data Exch"** box in the **"Com Unit Diag."** tab should be checked. This signals that data is being exchanged between the com unit and the master and indicates the successful integration of the remote I/O station:



GETTING STARTED Integrating Remote I/O Stations with Com Unit LB/FB8X09* / LB/FB8X05*

LB-8109 # Vi	ew proc	ess values	s/diagnos	is							
tation name:		LB-8109								P+	F
ag prim. ComUnit:		Buskopple	f								- RIO
Status/Diagnose Global status re											
Value: 80	000 🔘	ComUnit a	active C) Simulatio	on active	() Pa	rametrizing	g in action	O Multiple	errors active	•
Text: No	error								Error code:		0
Diag. registe	ar)	PB-Diag (s	td.)	PB-Diag ((ext.)	CU-	Diag	Modu	le status		
ComUnit- Sta	atus:	10000	Cycle	DP-S	IndC.	Error-C.	Diag 1	Diag 2	CRC	FW	
	CU-S	GW-S	Cycle			Enorie.		Diag 2	CHC	E W	Log.
Му	CU-S 8000	GW-S C773	8D97	0088	25	00	00	Orag 2 OC	7CCCAA26	0906	Log.
							-				
Му	8000	C773	8D97	0088	25	00	00	0C	7CCCAA26	0906	\square
My Partner	8000	C773 ****	8D97 ****	0088	25	00	00 ×××× DP-Status	0C	7CCCAA26 ****	0906	\square
My Partner GW-Status: My Part	8000 ×××× ther Active	C773 ****	8D97 **** My Pa	0088	25	00	00 ×××× DP-Status My F I	OC xxxx Partner	7CCCAA26 ****	0906 **** Partner	•
My Partner GW-Status: My Part	8000 xxxx ther Active Prim	C773 ****	8D97 **** My Pa	0088 ****	25	00	00 ×××× DP-Status	OC ****	7CCCAA26 ****	0906 **** Partner OutNe DataE	•
My Partner GW-Status: My Part	8000 ×××× ther Active	C773 **** Alone Online	8D97 **** My Pa	0088 ×××× artner	25 ××××	00 **** \$	00 ×××× DP-Status My F I	OC **** Partner Clear	7CCCAA26 SKXX	0906 **** Partner	w

If there is no checkmark, check the station configuration in the HW Config (PLC) and in PACTware. In addition, consult the com unit manual for help.

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5.5.2. Diagnostics via the Online View in the Simatic Manager



In order to be able to make good use of the following online view, the

PROFIBUS slave must first be configured (see section 4. Configuration of the PROFIBUS Slave).

The 🔓 button can be used to switch between the **online** and the **offline view**.

1. Switch to the online view to detect any errors. The following error images frequently appear here:

Module not available:

Check whether the PROFIBUS address in the HW Config matches the PROFIBUS address of the com unit and the specification of the PROFIBUS address in PACTware.

i Error:

If nothing is connected and the line fault detection is not disabled, this error could indicate a line breakage.

- 2. To on Node \rightarrow Module Status to open the diagnostics page.
- 3. Open the 2nd tab **"DP slave diagnostics"**, where a more detailed error message is displayed.

6. FAQs

6.1. How Do I Determine the PROFIBUS Address of the Com Unit?

When **configuring via the service bus interface** (e.g., with ICPCON), determination of the PROFIBUS address is generally not relevant. When **configuring via PROFIBUS** (e.g., with Softing PROFlusb), proceed as

follows:

1. On the **PROFIdtm DPV1 Interface** to establish the connection:

 $\overset{\circ}{\amalg}$

If communication problems arise (e.g., "Unknown board name"), check whether the drivers for the class 2 master / USB-RS485 converter have been installed properly.

2. On Interface \rightarrow Additional Functions \rightarrow Show Live List \rightarrow Start Scan to search for the com unit:

PROFIdtm	# Show Live Li	ist		4 Þ
Start Address: End Address:		1 device(s) found in last scan.	ID number for BK LB/FB8X09 / LB/FB8X05	Start Scan
Address	Ident Numbe	r Device Name	Manufacturer	
126	0x1710		unknown (ID = 0)	
126	UK1/10		unknown (iD = U)	

PROFIBUS address of the com unit

6.2. How Do I Change the PROFIBUS Address of the Com Unit?

The current PROFIBUS address must be known to be able to change the PROFIBUS address of the com unit when **configuring via PROFIBUS** (e.g., with Softing PROFIusb). First, determine the PROFIBUS address of the com unit (section 6.1.). Then change the PROFIBUS address as follows:

- 1. On the **PROFIdtm DPV1 Interface** to establish a connection.
- 2. On Interface \rightarrow Additional Functions \rightarrow Set Device Station Address to change the PROFIBUS address:



When **configuring via the service bus interface** (e.g., with ICPCON), the PROFIBUS address can be changed directly via:



LB-8109 Edit	device data (Offlin	e)			
Station description:					P+F
LB-8109					P+F
Device description:					
LB/FB UNICOM In	terface				
Structure	Profibus I	Profibus	:II Y	Info	LB/FB - RIO
Bus addresses: prim. ComUnit (1	126):	117	PRO can l		DFIBUS address the service bus
Functions:			111 F A	ACT wate at this	point.
Bus timeout for o	utputs:	2000 ms	🔲 Su	ppress "clear"	
Redundancy mod	8;		Cyclic da	ita:	
			10 T (ansmit module state	e area
			T:	ansmit command/st	atus area
	inges are not apj	plied until "S	Tr	ansmit command/st	alus area

6.3. How Do I Determine the Service Bus Address of the Com Unit?

When **configuring via PROFIBUS** (e.g., with Softing PROFlusb), determination of the service bus address is generally not relevant.

When **configuring via the service bus interface** (e.g., with ICPCON), this is performed as follows:

- 1. The on Service Bus Interface LB/FB Series \rightarrow Connect to connect.
- 2. The service bus address can then be determined via:

\bigcirc Service Bus Interface LB/FB Series \rightarrow Additional Functions \rightarrow Scan Service Bus:

LB/FB serv	ice bus #	Scan service bus		
	of the devi	to 126 to	the button to create	P+F
SB address	Туре	TAG	subtype description	
	8109	LB-8109	LB 8109 LB-DFV1 UNICO	

6.4. How Do I Change the Service Bus Address of the Com Unit?

When **configuring via PROFIBUS** (e.g., with PROFlusb from Softing), the service bus address is changed as follows:

 \bigcirc on **Com unit** \rightarrow **Parameter** \rightarrow **Parameterization** \rightarrow **Edit Device Data** (Offline) to connect:

Station description:					
LB-8109	8			P+F	
Device description:					
LB/FB UNICOM In	terface				
Structure	Profibus I	Profibus II	Info		1
Backplane: Backplane type:				Extensions:	
LB 9022/24: Rec	lundancy backplane sys	tem with 22/24 slots	3	• 1 •	
ComUnit: Tag ComUnit prim	÷			SB address prim.: /	In contrast to a configuration via the service bus, the service
	22				
Buskoppler		Redundancy on		13	bus address can be changed via PROFIBUS in PACT ware at this point. When configuring via the service bus, the service
Buskoppler Power supplies:		Redundancy on	3		bus address can be changed via PROFIBUS in PACT ware at this point. When configuring via the service bus, the service bus address is only
Power supplies:	oply: LB 9006 C 24V D(•]		bus address can be changed via PROFIBUS in PACT ware at this point. When configuring via the service bus, the service bus address is only specified here to ensure communication with the
Power supplies:	oply: LB 9006 C 24V D(•		bus address can be changed via PROFIBUS in PACT ware at this point. When configuring via the service bus, the service bus address is only specified here to ensure
Power supplies: Type of power sup	 on		•		bus address can be changed via PROFIBUS in PACT ware at this point. When configuring via the service bus, the service bus address is only specified here to ensure communication with the

When **configuring via the service bus interface** (e.g., with ICPCON), the service bus address is changed as follows:

- 1. To on Service Bus Interface LB/FB Series \rightarrow Connect to connect.
- 2. Scan the service bus:

 \bigcirc Service Bus Interface LB/FB Series \rightarrow Additional Functions \rightarrow Scan Service Bus:

LB/FB service bus # Sc	an service bus		
	s scan will be displayed in the table be you want to create within the FDT co Scan to 126 Start sc	ntainer. Click the button to create over a sufficient range	P+
SB address Type TA	G	subtype description	
119 8109 LB	8109	LB 8109 LB DFV1 UNICO)M Interface

3. Double-click on the service bus address of the com unit to set the desired service bus address.

ψĻ	B/FB serv	ice bus #	Scan service bus	
Th ch	ie result of t eckboxes o	he service f the Jevi	: bus scan will be disp ces you want to creat	alayed in the table below. Please e within the FDT container. Clicl
S	canning are	a from 1 Oouble-c	to 126	Start scan
SI	B address	Туре	TAG	
V	119	8109	LB-8109	

6.5. How Can Values be Simulated?

The module must be connected, since the online menu differs from the offline menu.

- 1. \bigcirc Module \rightarrow Connect device.
- 2. Module \rightarrow Parameter > Online Parameterization > Edit Device Data (Online).
- 3. Select the desired channel in the **Channel X** tab.
- 4. Select the **Simulation** operating mode. Special analog values can be set using the **Expanded** button.