



Marine & Offshore  
Division

Certificate number: 22449/B0 BV

File number: AP4058

Product code: 4501H

*This certificate is not valid when presented without the full attached schedule composed of 7 sections*

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## TYPE APPROVAL CERTIFICATE

*This certificate is issued to*

**Pepperl + Fuchs GmbH**  
Mannheim - GERMANY

*for the type of product*

**PROGRAMMABLE LOGIC CONTROL UNITS**  
LB/FB Remote I/O Modules

**Requirements:**

Bureau Veritas Rules for the Classification of Steel Ships

EC Code: 31

*This certificate is issued to attest that BUREAU VERITAS did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.*

**This certificate will expire on: 12 Nov 2020**

**For BUREAU VERITAS,**

At BV HAMBURG, on 12 Nov 2015,

Dirk Hoepfner



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with BUREAU VERITAS. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine & Offshore Division available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 October 2014

This certificate consists of 6 page(s)

## THE SCHEDULE OF APPROVAL

### 1. PRODUCT DESCRIPTION :

**LB/FB Remote I/O modules** are based on Field-Bus Modules used for interfacing process signals with Programmable Logic Controllers.

#### **1.1 - LB Modules:**

Type	Type designation	Name
1	<b>Backplane</b>	
BP	LB 9022 xxxxx (1)	LB- Backplane with 2 Bus coupler slots, 22 I/O-slots and 3 supply slots
BP	LB 9023 xxxxx (1)	LB-Backplane with 1 Bus coupler slot, 8 I/O-slots and 1 supply slot.
BP	LB 9024 xxxxx (1)	LB-Backplane with 24 I/O-slots and 3 Supply slots.
BP	LB 9025 xxxxx (1)	LB-Backplane with 8 I/O-slots and 1 supply slot.
BP	LB 9026 xxxxx (1)	LB-Backplane with 1 Bus coupler slot, 16 I/O-slots and 2 supply slots.
BP	LB 9027 xxxxx (1)	LB-Backplane with 16 I/O-slots and 2 supply slots
BP	LB 9029 xxxxx (1)	LB Backplane with 2 Bus coupler slots, 12 I/O slots and 3 supply slots
BP	LB 9035 xxxxx (1)	LB Backplane with 1 Bus coupler slots, 5 I/O slots and 3 supply slots
2	<b>Power supply</b>	
PS	LB 9006 xxxxx (1)	24 VDC Power supply
3	<b>Communication unit</b>	
BK	LB 8x05 xxxxx (1)	PROFIBUS ComUnit (Standard)
BK	LB 8x06 xxxxx (1)	EasyCOM ComUnit (PROFIBUS)
BK	LB 8x07 xxxxx (1)	MODBUS ComUnit
BK	LB 8x08 xxxxx (1)	PROFIBUS ComUnit (Timestamp)
BK	LB 8x09 xxxxx (1)	PROFIBUS ComUnit (UniCom)
BK	LB 8x10 xxxxx (1)	FF ComUnit
BK	LB 8x11 xxxxx (1)	MODBUS TCP/IP ComUnit
BK	ISCM 8100 xxxxx (1)	HDLC Fieldbus ComUnit
4	<b>Digital Input</b>	
BI	LB 1x01 xxxxx (1)	Digital inputs
BI	LB 1x02 xxxxx (1)	Digital inputs
BI	LB 1x03 xxxxx (1)	Digital inputs
BI	LB 1x04 xxxxx (1)	Digital inputs
BI	LB 1x07 xxxxx (1)	Digital inputs
BI	LB 1x08 xxxxx (1)	Digital inputs
BI	LB 1x09 xxxxx (1)	Digital inputs
BI	LB 1x15 xxxxx (1)	Digital inputs
5	<b>Digital output with feedback</b>	
BO/BI	LB 2x01 xxxxx (1)	Digital output with feedback
BO/BI	LB 2x02 xxxxx (1)	Digital output with feedback
BO/BI	LB 2x03 xxxxx (1)	Digital output with feedback
BO/BI	LB 2x04 xxxxx (1)	Digital output with feedback
BO/BI	LB 2x05 xxxxx (1)	Digital output with feedback
BO/BI	LB 2x12 xxxxx (1)	Digital output with feedback
BO/BI	LB 2x13 xxxxx (1)	Digital output with feedback
6	<b>Digital output (Relay)</b>	
BO	LB 6x01 xxxxx (1)	Digital outputs
BO	LB 6x05 xxxxx (1)	Digital outputs
BO	LB 6x06 xxxxx (1)	Digital outputs
7	<b>Digital output, active</b>	
BO	LB 6x08 xxxxx (1)	Digital outputs
BO	LB 6x10 xxxxx (1)	Digital outputs
BO	LB 6x11 xxxxx (1)	Digital outputs
BO	LB 6x12 xxxxx (1)	Digital outputs
BO	LB 6x13 xxxxx (1)	Digital outputs
BO	LB 6x14 xxxxx (1)	Digital outputs
BO	LB 6x15 xxxxx (1)	Digital outputs

8	<b>Analog input (current)</b>	
AI	LB 3x01 xxxxx, -x2xxx (1)	Analog input
AI	LB 3x02 xxxxx, -x1/2xxx (1)	Analog input
AI	LB 3x03 xxxxx, -x2xxx (1)	Analog input
AI	LB 3x04 xxxxx, -x2xxx (1)	Analog inputs
AI	LB 3x05 xxxxx, -x2xxx (1)	Analog inputs
AI	LB 3x06 xxxxx (1)	Analog inputs
9	<b>Analog output (current)</b>	
AO	LB 4x01 xxxxx, -x2xxx (1)	Analog output
AO	LB 4x02 xxxxx, -x2xxx (1)	Analog output
AO	LB 4x04 xxxxx, -x2xxx (1)	Analog output
AO	LB 4x05 xxxxx, -x2xxx (1)	Analog output
AO	LB 4x06 xxxxx (1)	Analog output
10	<b>Analog input (Voltage/RTD)</b>	
AI	LB 5x01 xxxxx (1)	Analog input (resistor)
AI	LB 5x02 xxxxx (1)	Analog input (mV /thermocouple)
AI	LB 5x04 xxxxx (1)	Analog inputs (resistor)
AI	LB 5x05 xxxxx (1)	Analog inputs (mV /thermocouple)
AI	LB 5x06 xxxxx (1)	Analog input (mV)
11	<b>Universal input / output</b>	
AI/AO	LB 7x04 xxxxx (1)	Analog output
<p>(1) The first "x" in the module type labeling is a placeholder for classification regarding Ex-features and product lines. The "xxxxx" at the end of the module type labeling are placeholders for additional specifications regarding module variants with very less differences to the standard modules e.g.:</p> <ul style="list-style-type: none"> <li>- product line classification LB/FB,</li> <li>- definition regarding connecting leads by modules (length of lead, shielded/unshielded),</li> <li>- identification marker for additional functions ( z.B. shutdown input, LFD),</li> <li>- ComUnit firmware version,</li> <li>- classification regarding input filter,</li> <li>- classification regarding output values (V/mA).</li> </ul>		

## 1.2 - FB Modules:

Type	Designation	Name
1	<b>Backplane</b>	
BP	FB 9255 BPxxxx (1)	Backplane for FB9205C
BP	FB 9256 BPxxxx (1)	Backplane for FB9215 or FB9216
BP	FB 9261 BPxxxx (1)	Backplane 10 slots, 1-row for use in FB stations
BP	FB 9262 BPxxxx (1)	Backplane 10/20/24 slots, 2-rows for use in FB stations
BP	FB 927x BPxxx (1)	Backplane extension, no slots (gateway/bus-coupler and power supply only)
2	<b>Power supplies</b>	
PS	FB 9206 xxxxx (1)	Power supply 24 V DC
PS	FB 9205 xxxxx (1)	Power supply 230 V AC
PS	FB 9215 xxxxx (1)	Power supply 110/230 V AC
3	<b>Bus termination modules</b>	
BT	FB 9293 xxxxx (1)	Bus termination module for service bus
BT	FB 9294 xxxxx (1)	Bus termination module for field bus
BT	FB 9295 xxxxx (1)	Bus termination module for field- and service bus
4	<b>Communication units</b>	
BK	FB 8x05 xxxxx (1)	PROFIBUS ComUnit (Standard)
BK	FB 8x06 xxxxx (1)	EasyCOM ComUnit (PROFIBUS)
BK	FB 8x07 xxxxx (1)	MODBUS ComUnit
BK	FB 8x08 xxxxx (1)	PROFIBUS ComUnit (Timestamp)
BK	FB 8x09 xxxxx (1)	PROFIBUS ComUnit (UniCom)
BK	FB 8x10 xxxxx (1)	FF ComUnit
BK	FB 8x11 xxxxx (1)	MODBUS TCP/IP ComUnit
BK	ISCM 8200 xxxxx (1)	HDLC Fieldbus COMUnit

5	<b>Digital input</b>	
BI	FB 1x01 xxxxx (1)	Digital inputs
BI	FB 1x02 xxxxx (1)	Digital inputs
BI	FB 1x03 xxxxx (1)	Digital inputs
BI	FB 1x04 xxxxx (1)	Digital inputs
BI	FB 1x08 xxxxx (1)	Digital inputs
6	<b>Digital output</b>	
BO/BI	FB 2x01 xxxxx (1)	Digital output with feedback
BO/BI	FB 2x02 xxxxx (1)	Digital output with feedback
BO/BI	FB 2x03 xxxxx (1)	Digital output with feedback
BO/BI	FB 2x04 xxxxx (1)	Digital output with feedback
BO/BI	FB 2x05 xxxxx (1)	Digital output with feedback
BO/BI	FB 2x12 xxxxx (1)	Digital output with feedback
BO/BI	FB 2x13 xxxxx (1)	Digital output with feedback
7	<b>Digital output, relay / active (low power source)</b>	
BO	FB 6x01 xxxxx (1)	Digital outputs
BO	FB 6x05 xxxxx (1)	Digital outputs
BO	FB 6x06 xxxxx (1)	Digital outputs
8	<b>Digital output, active (high power source)</b>	
BO	FB 6x08 xxxxx (1)	Digital outputs
BO	FB 6x10 xxxxx (1)	Digital outputs
BO	FB 6x11 xxxxx (1)	Digital outputs
BO	FB 6x12 xxxxx (1)	Digital outputs
BO	FB 6x13 xxxxx (1)	Digital outputs
BO	FB 6x14 xxxxx (1)	Digital outputs
BO	FB 6x15 xxxxx (1)	Digital outputs
9	<b>Analog input (current)</b>	
AI	FB 3x01 xxxxx, -x2xxx (1)	Analog input
AI	FB 3x02 xxxxx, -x2xxx (1)	Analog input
AI	FB 3x03 xxxxx, -x2xxx (1)	Analog input
AI	FB 3x04 xxxxx, -x2xxx (1)	Analog inputs
AI	FB 3x05 xxxxx, -x2xxx (1)	Analog inputs
10	<b>Analog input (Voltage/RTD)</b>	
AI	FB 5x01 xxxxx (1)	Analog input (resistor)
AI	FB 5x02 xxxxx (1)	Analog input (mV /thermocouple)
AI	FB 5x04 xxxxx (1)	Analog inputs (resistor)
AI	FB 5x05 xxxxx (1)	Analog inputs (mV /thermocouple)
AI	FB 5x06 xxxxx (1)	Analog input (mV)
11	<b>Analog output (current)</b>	
AO	FB 4x01 xxxxx, -x2xxx (1)	Analog output
AO	FB 4x02 xxxxx, -x2xxx (1)	Analog output
AO	FB 4x04 xxxxx, -x2xxx (1)	Analog outputs
AO	FB 4x05 xxxxx, -x2xxx (1)	Analog outputs
<p>(1) The first "x" in the module type labeling is a placeholder for classification regarding Ex-features and product lines. The "xxxxx" at the end of the module type labeling are placeholders for additional specifications regarding module variants with very less differences to the standard modules e.g.:</p> <ul style="list-style-type: none"> <li>- product line classification LB/FB,</li> <li>- definition regarding connecting leads by modules (length of lead, shielded/unshielded),</li> <li>- identification marker for additional functions ( z.B. shutdown input, LFD),</li> <li>- ComUnit firmware version,</li> <li>- classification regarding input filter,</li> <li>- classification regarding output values (V/mA).</li> </ul>		

**1.3 - Accessories:**

Type	Type designation	Name
1	<b>LB/FB Accessories</b>	
Z	LB 9099 A	Dummy I/O module with sockets 8-pole, green
Z	LB 9199 A	Dummy I/O module with sockets 8-pole, blue
Z	FB 9299 B	Dummy I/O module with sockets 2x8-pole, blue
2	<b>Further Products</b>	
Z	MFT-Base.2P xxxx (2)	Socket für Multi Funktional Terminal 2-pole
Z	MFT-Base.4P xxxx (2)	Socket für Multi Funktional Terminal 4-pole
Z	MFT-F.xxxx (2)	Multi Functional Terminal Fuse
Z	MFT-2F.xxxx (2)	Multi Functional Terminal Dual Fuse
Z	MFT-R.xxxx (2)	Multi Functional Terminal Resistor
Z	MFT-2R.xxxx (2)	Multi Functional Terminal Dual Resistor
Z	MFT-D.xxxx (2)	Multi Functional Terminal Diode
Z	MFT-2D.xxxx (2)	Multi Functional Terminal Dual Diode
Z	MFT-2L.xxxx (2)	Multi Functional Terminal Jumper
Z	MFT-FT.xxxx (2)	Multi Functional Terminal Bus Termination
Z	MFT-RNO.xxxx (2)	Multi Functional Terminal Relay open contact
Z	MFT-RNC.xxxx (2)	Multi Functional Terminal Relay closed contact
Z	MFT-T.xxxx (2)	Multi Functional Terminal Semiconductor Relay
(2) xxxx are placeholder for identifiers regrading different variants (e.g. value of resistor, value of fuse)		

**2. DOCUMENTS AND DRAWINGS :**

According to Documents and Drawings filed AP 4058 and MPA0901026.

**3. TEST REPORTS :****Pepperl + Fuchs GmbH:**

- Test Plan Marine Approval Remote I/O LB/FB, dated: 03.11.08
- PRDE-7920B2 dated: 20.11.2008; PRDE-7920B3, dated: 20.11.2008 and 05.12.2008.
- PRDE-7920B6, dated: 18.12.2009
- PRDE-AFN7B dated 2011-09-30; PRDE-AK16A dated 2013-03-04; PRDE-AK21A dated 2012-09-13
- PRDE-AUH6 dated 2013-02-04; PRDE-AUM0 dated 2013-02-12; PRDE-AFZ9A dated 10/14/2011
- PRDE-ASW1 dated 2012-11-28; PRDE-AK09A dated 2012-09-13; PRDE-AK05A dated 2013-03-04
- PRDE-7920B6 dated 17.02.2010

**Ex Certificates:**

- PTB 03 ATEX 2042 & its 6. Supplement; IECEX BVS 09.0037X issue:0; PTB 07 ATEX 1004 U
- BVS 11 ATEX E 116 X; BVS 12 ATEX E 024 X; BVS 12 ATEX E 100 X; BVS 12 ATEX E 115 X;
- BVS 13 ATEX E 038 X; BVS 12 ATEX E 105 X; EXA 13 ATEX 0037X; EXA 13 ATEX 0036X

**4. APPLICATION / LIMITATION :**

- 4.1 - Bureau Veritas Rules for the Classification of Steel Ships.
- 4.2 - Approval valid for ships intended to be granted with the following additional class notations: **AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.**
- 4.3 - Bureau Veritas Environmental Category, **EC Code: 31.**
- 4.4 - The equipment installed in metallic cabinet with power line filter GHG 417 1302 R0001 fulfils the EMC requirements for installation on the Bridge and Deck Zone.
- 4.5 - Only Hardware and Firmware / Software successfully tested together in compliance with the regulations as referred to in page one, according to the declaration of the manufacturer are covered by this certificate.
- 4.6 - Documents relating to each application are to be submitted to the Society's examination prior fitting on board.
- 4.7 - Depending on the application, Factory Acceptance and On-board Tests are to be performed in accordance with requirements for system category II or III equipment.

**5. PRODUCTION SURVEY REQUIREMENTS :**

5.1 - The LB/FB Remote I/O Modules are to be supplied by **Pepperl+Fuchs GmbH** in compliance with the type described in this certificate.

5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320.

5.3 - **Pepperl+Fuchs GmbH** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products :

**Pepperl+Fuchs GmbH**  
**Lilienthalstrasse 200**  
**D-68307 Mannheim, GERMANY**

**6. MARKING OF PRODUCT :**

- Maker's name or trademark.
- Serial number of the units.
- Equipment type number or model identification under which it was type-tested.
- Ex marking, as relevant.

**7. OTHERS :**

7.1 - This approval is given with the understanding that the Society reserves the right to require check tests to be carried out on the above mentioned equipment at any time and that: **Pepperl+Fuchs GmbH, Mannheim - GERMANY** will accept the responsibility for informing shipbuilders, shipowners or their sub-contractors of the proper methods of use and general maintenance of the equipment and the conditions of this approval.

7.2 - This certificate supersedes the Type Approval Certificate N° 22449/A0 BV issued on 27 Nov 2009 by the Society.

**\*\*\* END OF CERTIFICATE \*\*\***