



# Operating and Assembly Instructions

## Electronic function module UO-EM-D41

Evaluation to U-ONE® - LWL Decoder

certificated according EN 61508 SIL2 and DIN EN ISO 13849-1 PL d

Read the Operating and Assembly Instructions prior to assembly,  
starting installation and handling!  
Keep for future reference!



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UL certificates can be requested from us.

An overview of our UL devices can be found at the following link:

**<https://iq.ulprospector.com/info>**

**UL File Number: E351535**

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## 1 General

### 1.1 Information about the operating and assembly instructions

These operating and assembly instructions provide important instructions for working with the device. They must be carefully read prior to starting all tasks, and the instructions contained herein must be followed.

In addition, applicable local regulations for the prevention of industrial accidents and general safety regulations must be complied with.

These Operating and Installation Instructions are valid only in conjunction with the U-ONE® SIL manual.

For other, non SIL certified electronic function modules please refer to the separate Operating and Installation Instructions.

### 1.2 Scope of supply

The scope of supply of the electronic function module fiber optic converter UO-EM-D41 includes the Operating and Installation Instructions (with SIL safety instructions), the programming software U-ONEPro (on CD) and the programming cable.

The Operating and Installation Instructions for the electronic function module is also included on the supplied CD.

### 1.3 Explanation of symbols

Warnings are indicated by symbols in these operating and assembly instructions. The warnings are introduced by signal words that express the scope of the hazard.

The warnings must be strictly heeded; you must act prudently to prevent accidents, personal injury, and property damage.



#### **WARNING!**

Indicates a possibly dangerous situation that can result in death or serious injury if it is not avoided.



#### **CAUTION!**

Indicates a possibly dangerous situation that can result in minor injury if it is not avoided.



#### **CAUTION!**

Indicates a possibly dangerous situation that can result in material damage if it is not avoided.



#### **NOTES!**

Indicates useful tips and recommendations as well as information for efficient and trouble-free operation.



#### **NOTES!**

Do not use a hammer or similar tool when installing the device due to the risk of damage occurring to the bearings or coupling!



#### **DANGER!**

##### **Life-threatening danger due to electric shock!**

Indicates a life-threatening situation due to electric shock. If the safety instructions are not complied with there is danger of serious injury or death. The work that must be executed should only be performed by a qualified electrician.

#### **1.4 Disclaimer**

All information and instructions in these operating and assembly instructions have been provided under due consideration of applicable guidelines, as well as our many years of experience.

The manufacturer assumes no liability for damages due to:

- Failure to follow the instructions in the operating and assembly instructions
- Non-intended use
- Deployment of untrained personnel
- Opening of the device or conversions of the device

In all other aspects the obligations agreed in the delivery contract as well as the delivery conditions of the manufacturer apply.

#### **1.5 Copyright**



**NOTE!**

Content information, text, drawings, graphics, and other representations are protected by copyright and are subject to commercial property rights.

It is strictly forbidden to make copies of any kind or by any means for any purpose other than in conjunction with using the device without the prior written agreement of the manufacturer. Any copyright infringements will be prosecuted.

#### **1.6 Guarantee terms**

The guarantee terms are provided in the manufacturer's terms and conditions.

#### **1.7 Customer service**

For technical information personnel is available that can be reached per telephone, fax or email. See manufacturer's address on page 2.

## **2 Safety**



**DANGER!**

This section provides an overview of all the important safety aspects that ensure protection of personnel, as well as safe and trouble-free device operation.

If these safety instructions are not complied with significant hazard can occur.

#### **2.1 Responsibility of the owner**

The device is used in commercial applications. Consequently the owner of the device is subject to the legal occupational safety obligations, and subject to the safety, accident prevention, and environmental protection regulations that are applicable for the devices area of implementation.

## **2.2 Personnel**

Qualified personnel only are permitted to install, mount, program, commission, operate, maintain and take out of service the devices.

Qualified personnel are people who have received

- training to qualify as an electrician or
- instructions from qualified trades personnel

entitling them to work with and on devices, systems, machinery and plant in accordance with generally accepted standards and safety engineering guidelines.



In addition, the owner is obliged to deploy only personnel who

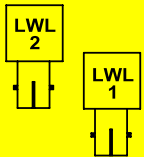
- are familiar with the fundamental regulations covering work safety and accident prevention,
- have read and understood the chapter "Safety" in these Operating and Installation Instructions,
- and are familiar with the basic and specialist standards that apply to the specific application.

### 3 Technical Data

For decoding fiber optic signal transmissions from the basic unit, and the power supply of the other electronic function modules.

#### 3.1 Type plate / Connection diagram

Siemensstrasse 7 35394 Giessen / Germany www.huebner-giessen.com		JOHANNES <b>HÜBNER</b> GIESSEN	
Typ / Type <b>UO-EM-D41</b>			
S/N 123456	Versorgungsspannung / Power supply <b>12...30 V DC class 2</b>		
ID 12345			
Bj./Y 2020			
IP20 / Type 1			
 Ind. Contr. Eq. E351535		Zertifiziert nach / Certified through <b>IEC 61508 - SIL2</b> <b>DIN EN ISO 13849 PLd</b>	

Anschlussplan / Connection diagram <b>EL668a</b>	
Versorgungsspannung Supply Voltage	1 12...30 V DC 2 GND
	Optischer Eingang Optical Input LWL 2  Optischer Eingang Optical Input LWL 1



#### NOTES for UL and CSA!

Do only use copper cables

#### 3.2 Connections and indicators



Anzeigen		
<b>PWR</b>	LED lit:	Operational
<b>Ready</b>	LED lit:	FOC1 connection OK

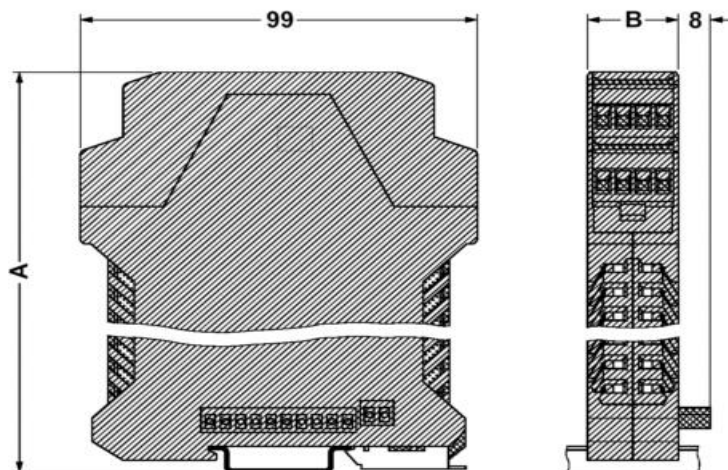
Anschluss	
<b>RS232</b>	Programming cable connection for further non-safety relevant modules

### 3.3 Connected loads environment

Description	Worth
Supply voltage	12 ... 30 V DC
Power consumption	max. 2 W plus power consumption of next electronic function modules
Connection	<ul style="list-style-type: none"> <li>• COMBICON®-terminal strip for supply voltage</li> <li>• ST-plug connector for fiber optic</li> </ul>
Outputs	Internal bus connection to next electronic function modules
Programming interface	RS232
Connecting diagram	EL668a
Device temperature range	-25 ... + 70 °C
Degree of protection	IP20

### 3.4 Dimension drawing

A = 114,50 mm      B = 22,50 mm



### 3.5 Mounting the module

Snap the modules onto the top-hat rail and slide together.



#### **ATTENTION!**

Ensure you do not damage the connectors when you snap the modules onto the rail and push them together!

Ensure the modules contact reliably when joining them together on the top-hat mounting rail.  
Fit the supplied shrouding covers to both ends of the mounted terminals.

**Follow the connection diagram!**



## 4 Functional safety

### 4.1 Characteristic safety values

The details below refer to the overall system consisting of:

Basic device UOM 41L-1212

Electronic function module LWL decoder UO-EM-D41

Characteristic safety values for basic device + LWL decoder	
Safety class / standard	<ul style="list-style-type: none"> <li>• SIL2 to EN 61508</li> <li>• Performance level 'd' to EN ISO 13849-1</li> <li>• Category 2</li> </ul>
System structure	1 channel with diagnostics (1oo1D)
Device type	Type B (complex components)
Hardware fault tolerance (HFT)	0
Type of operating mode	'High demand' to EN 61508 (high demand rate)
Probability of a dangerous failure per hour (PFH <sub>d</sub> )	$1,37 \times 10^{-7}$ [1/h]
Failure rate: safe detected ( $\lambda_{SD}$ ) safe undetected ( $\lambda_{SU}$ ) Dangerous detected ( $\lambda_{DD}$ ) Dangerous undetected ( $\lambda_{DU}$ )	$\lambda_{SD}$ : $5,92 \times 10^{-8}$ [1/h] $\lambda_{SU}$ : $1,40 \times 10^{-7}$ [1/h] $\lambda_{DD}$ : $1,00 \times 10^{-6}$ [1/h] $\lambda_{DU}$ : $1,37 \times 10^{-7}$ [1/h]
Mean time to a dangerous failure (MTTF <sub>d</sub> )	97,6 years (high)
Diagnostic coverage on average (DC <sub>AVG</sub> )	medium
Proportion of safe failure fraction (SFF)	88 %
Service life or proof test interval to EN 61508	10 years Thereafter the components must be replaced with new components

#### 4.2 Proper use

The universal encoder system from the series UOM 41L-1212 which includes the electronic function module UO-EM-D41 has been designed and built solely for the intended purpose described in these Operating and Assembly Instructions.

We do not accept liability of any kind for damages arising from improper use of the device. The owner bears sole responsibility for any improper use.

**For UL and CSA:** For the use in NFPA 79 applications only.

#### 4.3 Improper use

- Do not use the device in potentially explosive areas.
- It is not permitted to use the device in locations higher than 3000 m above sea level.

#### 4.4 Faults table



Faults	Possible cause	Remedy
No LED lit	No power supply	Check connection cable and voltage supply
Contact Hubner-Service (page 2) if none of the actions listed above provide a solution!		

## 5 Additional module UO-EM-FIL

The module UO-EM-FIL is an additional module to the universal encoder system U-ONE for reducing the EMC-influences. It is installed in front of the function module UO-EM-D41.

By using this UO-EM-FIL no supply voltage must be connected to the UO-EM-D41.

### 5.1 Type plate / connection diagram

Siemensstrasse 7 35394 Giessen / Germany www.huebner-giessen.com		JOHANNES <b>HÜBNER</b> GIESSEN			
Typ / Type <b>UO-EM-FIL</b>					
S/N 123456		Versorgungsspannung / Power supply <b>12...30 V DC class 2</b>			
ID 12345					
Bj./ Y 2020					
IP20 / Type 1					
					
Ind. Cont. Eq. E351535					

Anschlussplan / Connection diagram <b>PN169-410</b>	
Versorgungsspannung Supply Voltage	<b>1</b> 12...30 V DC <b>2</b> GND
<b>Achtung:</b> Bei Verwendung des UO-EM-FIL darf keine Versorgungsspannung am UO-EM-D41 angeschlossen werden!  <b>Caution:</b> If using UO-EM-FIL it's not allowed to connect supply voltage to UO-EM-D41!	



#### NOTES for UL and CSA!

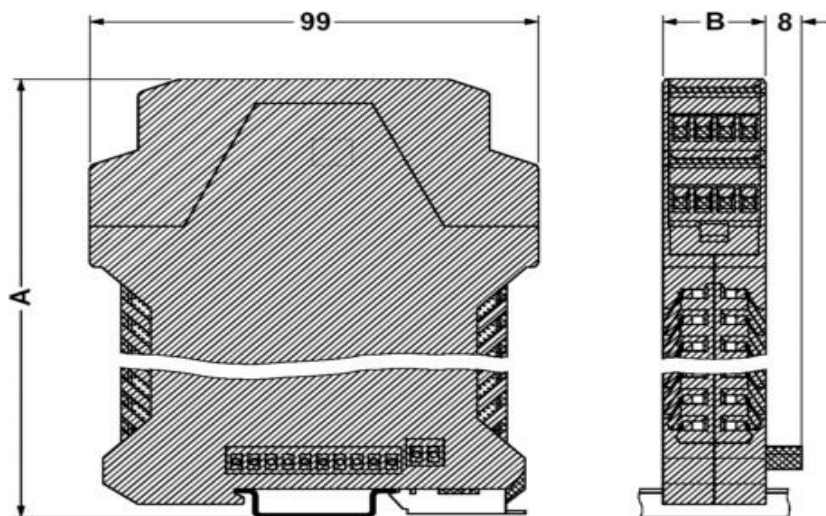
Do only use copper cables

### 5.2 Connected loads, environment

Description	Worth
Connection	COMBICON®-terminal strip
Outputs	Internal bus connection to next electronic function modules
Connecting diagram	PN169-410
Device temperature range	-25 ... + 70 °C
Degree of protection	IP20

### 5.3 Dimension drawing

A = 114,50 mm      B = 22,50 mm



## 6 Transport, packaging and storage

### 6.1 Safety information concerning transport



**CAUTION!**

**Material damage caused by improper transport!**

Observe the symbols and information on the packaging:

- Do not throw - risk of breakage
- Keep dry
- Do not expose to heat above 40 °C or direct sunlight.

### 6.2 Goods inward inspection

Check the delivery immediately upon receipt for transit damage or short delivery.

Inform the carrier immediately on receipt if you determine that damage has occurred during transit (take photos as proof).

### 6.3 Packaging (disposal)

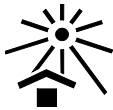
The packaging is not taken back; dispose of according to the respective valid statutory provisions and local regulations.

### 6.4 Storing packages (devices)



**Keep dry**

Keep packages dry and free from dust; protect from moisture.



**Protect against heat**

Protect packages from heat above 40 °C and direct sunlight.

If you intend to store the device for a longer period of time (> 6 months) we recommend you use protective packaging (with desiccant).

#### **6.5 Returning devices (repairs/goodwill/warranty)**

Devices that have come into contact with radioactive radiation or radioactive materials are not taken back.

Decontaminate devices that have may come into contact with harmful chemical or biological substances before returning.

They must also be accompanied by a safety clearance certificate.

#### **6.6 Disposal**

The manufacturer is not obliged to take back the device.

The device is classed as electronic equipment and subject to the WEEE Directive; observe local, country-specific laws when disposing of the device.

For information on environmentally sound disposal please contact your local authority or a specialist disposal company.