Manual
Dot Matrix Display
DMD128
PROFINET

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1. General

1.1 About this manual

This manual describes the technical data and properties of the DMD128 dot matrix display with the PROFINET interface.
The individual commands are described in the short guide Dot-Matrix Display DMD128 Commands **044.254.xx** which complements this manual.

Follow the instructions in this manual to ensure safe and proper operation of the product.
Keep this manual for the entire service life of the product.

1.2 Signs and symbols

DANGER

This symbol indicates that death or serious injury will occur if the necessary precautions are not taken.

NOTICE

This symbol indicates the risk of damage to the product or other equipment if the instructions are not strictly followed.

NOTE

This symbol indicates tips and useful information for easier handling of the product.

1.3 Changes

The information in this document is subject to change without prior notice.
The manufacturer accepts no liability in the event of errors in this manual.

1.4 Copyright

1.5 Concluding remarks

The display may have functions that are not described in this manual. However, there is no entitlement to these functions in the case of new deliveries or repairs.
We have checked this manual regarding hardware and software. Nevertheless, we cannot completely rule out differences. We are grateful for any suggestions for improvement.

2. Brief description

2.1 Product

The DMD128 dot matrix display is a freely programmable display for demanding indoor industrial applications. It enables the brilliant display of numbers, texts, symbols and graphics. The DMD128 offers a freely programmable character size and number of characters in eight different colors per pixel via the interface.
The DMD128 is primarily used to display a wide range of process data and physical quantities such as weight, pressure, rotational speed, temperature or speed. With a reading distance of 50 m at full character height, a brightness of 800 cd/m² and a reading range of 160°, the information shown on the display is clearly recognizable even from a greater distance and from different viewing angles. The low-reflection, anti-glare front panel ensures high contrast. This ensures readability even in difficult viewing conditions. Connectors for industry-standard interfaces ensure optimum data security for power supply and data exchange. The display technology used is based on LEDs.

Figure 1: DMD128/5

2.2 Intended operation

The DMD128 dot matrix display is used to display values, texts, graphics and symbols that are transmitted to the display via fieldbus.
The DMD128 is designed for indoor applications. It may only be used in applications defined by the technical data (e.g. max. ambient temperature).
The DMD128 is not authorized for use in potentially explosive atmospheres.
Applications other than those specified here are not permitted.

2.3 Scope of delivery

Dot Matrix Display DMD128

Optional:
Connection cables
Fastening elements
The scope of delivery must be checked against the delivery documents.

2.4 Order code DMD128

DMD128/X.Y00

X = Display size

2 = 64x32 pixel
5 = 128x32 pixel
8 = 192x32 pixel

Y = Interface

7 = PROFINET IO

Example:
DMD128/5.700 = DMD128, 128x32 pixel, PROFINET IO interface

3. Safety notes

3.1 General

Read this manual carefully before using the device.
The locally applicable accident prevention regulations must be observed.

DANGER

Please read the manual carefully before using the device.
If you have any questions, please contact your local dealer. Improper use of this product may cause damage to other equipment or products.
CE conformity of the complete system must be guaranteed by the machine manufacturer. Depending on the application, further national regulations may also be required.
Strictly observe the safety regulations VDE0100, VDE0113, VDE0160, EN50178 and the accident prevention regulations of the employers' liability insurance associations. Other DIN regulations may also apply.

DANGER

This appliance may only be connected and commissioned by a specialist.
Read the manual carefully. Follow the instructions for initial commissioning. Failure to follow the instructions will invalidate the warranty and liability claims.
The appliance monitors internal and system-side operating states. However, malfunctions caused by faulty components cannot always be prevented.

DANGER

The housing must not be opened.

3.2 Electromagnetic compliance (EMC)

The device complies with the applicable CE standards. In certain cases, the emission of high-frequency electromagnetic waves can cause interference in other parts of the system. This may require additional remedial measures.

NOTE

This is a category C2 product (industrial area). In a residential environment, this product can cause high-frequency interference that may require interference suppression measures.

3.3 Mounting

DANGER

A falling display unit can cause serious injury. Ensure that the DMD128 is properly secured to a fixed support, especially in an elevated position.

4. Installation

View on backside

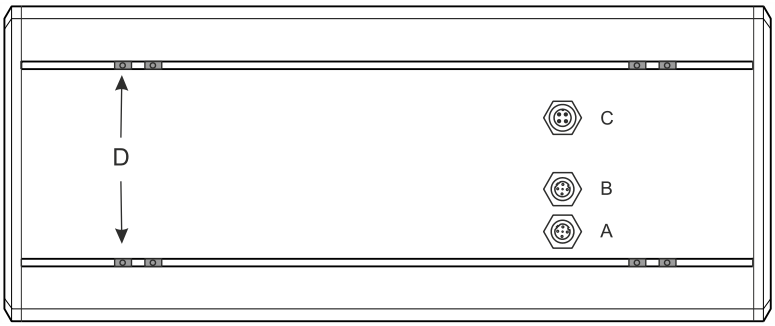


Figure 2: DMD128 backside of housing

4.1 Mechanical installation

Letter D are sliding M4 nuts suitable for esitron mounting set (accessory order no.: V02421) or own design.

4.2 Electrical installation

4.2.1 Supply voltage

Connector C: Male connector on device

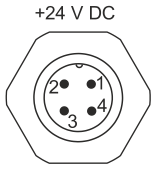


Figure 3: Power supply

Pin-No.	Cable colour	Function	Remarks
1	BR	+24 V DC	M12 A-coded 4-pin
2	WS	Insulate / not used	
3	BL	0 V GND	
4	SW	Insulate / not used	

4.2.2 Interface

Type code: DMD128/X.700

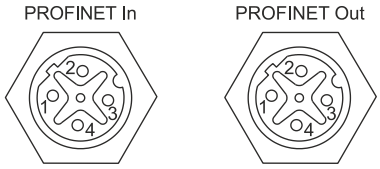


Figure 4: PROFINET interface

Plug A: Input, socket connector on the appliance side
Plug B: Output, socket connector on the appliance side

Pin-No.	Cable colour	Function	Remarks
1	GE	TX+	M12 D-coded 4-pin
2	WS	RX+	
3	OR	TX-	
4	BL	RX-	

5. Operation

5.1 General

To signal to the display module that new data bytes are available, the handshake bit must be toggled in the control byte. As soon as the data bytes have been transferred from the display module to the command buffer, the status of the handshake bit of the control byte is mirrored in the handshake bit of the status byte. This ensures the handshake.
'\r' (0x0D) ends the addition of data bytes to the command buffer.
This character is required so that the remaining data bytes do not have to be filled with 0x00.

The individual commands are described in the **additional instructions 044.254**.xx

5.2 Configurations

The device can be integrated into a PROFINET master system using the GSDML file supplied. When integrating the DMD128 into the PROFINET network, one of 4 different configurations can be selected.

5.2.1 Configuration 1

Output data (8 bytes)

Byte no.	Function
0	Control byte
1-7	Data bytes

Input data (1 byte)

Byte no.	Function
0	Status byte

5.2.2 Configuration 2

Output data (16 bytes)

Byte no.	Function
0	Control byte
1-15	Data bytes

Input data (1 byte)

Byte no.	Function
0	Status byte

5.2.3 Configuration 3

Output data (32 bytes)

Byte no.	Function
0	Control byte
1-31	Data bytes

Input data (1 byte)

Byte no.	Function
0	Status byte

5.2.4 Configuration 4

Output data (64 byte)

Byte no.	Function
0	Control byte
1-63	Data bytes

Input data (1 byte)

Byte no.	Function
0	Status byte

5.3 Explanations on the configurations

5.3.1 Control byte

Byte no.	Function
0	Handshake bit
1-7	Reserve

5.3.2 Status byte

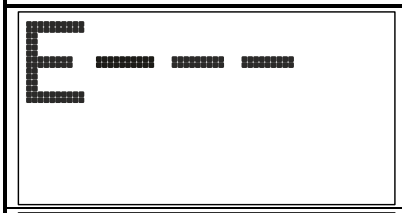
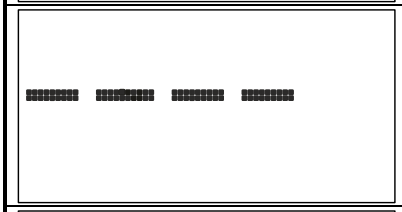
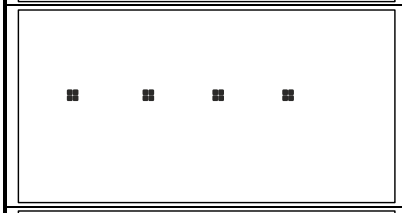
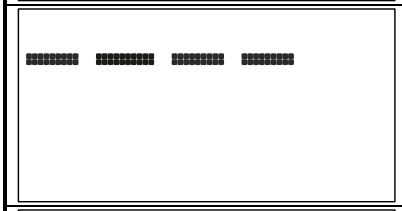
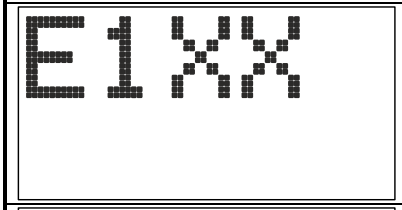
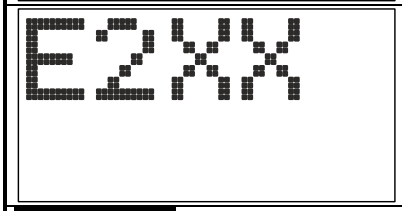
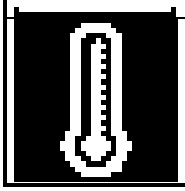
Byte no.	Function
0	Handshake bit
1-7	Reserve

6. Maintenance

6.1 Service

Carefully remove any dirt. Use a slightly damp, lint-free cloth for the display screen. Do not allow moisture to get inside the appliance.
There are no serviceable parts inside the appliance. The appliance must not be opened.

6.2 Error messages

Display	Cause	Remedy
	Value too large	Check transmitted value. e.g.: 10000 or – 1000 at 4-digit display
	PROFINET: no or incorrect configuration data	Check PROFINET connection
	PROFINET: cyclical data exchange interrupted	Check PROFINET connection
	PROFINET: Poor reception status	Check PROFINET connection
	Protocol error	
	Internal error	Switch the device off and on again. If this occurs repeatedly, contact the manufacturer.
	Undervoltage	The 24 V DC supply is not within the specifications.
	Overtemperature	The device is too hot.

6.3 Repairs

Repairs may only be carried out by the manufacturer or by authorized personnel.

DANGER

Unauthorized opening and improper repairs cause a considerable risk of injury to the user or damage to the system.

NOTICE

The housing must not be opened. There are no user-replaceable parts inside the display.

7. Shipment, storage, disposal

7.1 Shipment

The product may only be transported in shock-protected packaging. If possible, use the original packaging for shipping.
Ensure that the display front is protected.

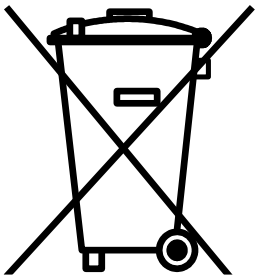
7.2 Storage

Only store the product under the specified, permissible ambient conditions for room temperature and humidity. Observe the specifications in the technical data.
Protect the product from dust and dirt.

7.3 Disposal

This product must be disposed of or recycled in accordance with the applicable national regulations at the end of its service life.

NOTE
Dispose of the relevant materials in accordance with the applicable environmental protection laws.



Do not dispose of environmentally hazardous materials in household waste.

8. Technical data

8.1 General

Display:	LED Dot Matrix Display, multicolor 64x32, 128x32, 192x32 pixel 4 mm pitch maximum display height: 128 mm maximum display width: 768 mm brightness in 255 steps
Ambient temperature:	0 … +50°C
Storage temperature:	–20 … +70°C
Air humidity:	max. 90%, non-condensing
Weight:	64x32 pixel: 1.65 kg 128x32 pixel: 3.25 kg 192x32 pixel: 4.80 kg
Protective system:	IP 51 (front)
EMC emission:	EN 61000-6-4
EMC immunity:	EN 61000-6-2
Safety requirements:	EN 50178, EN60204-1
Dimensions:	64x32 pixel: k = 291 mm 128x32 pixel: k = 547 mm 192x32 pixel: k = 803 mm

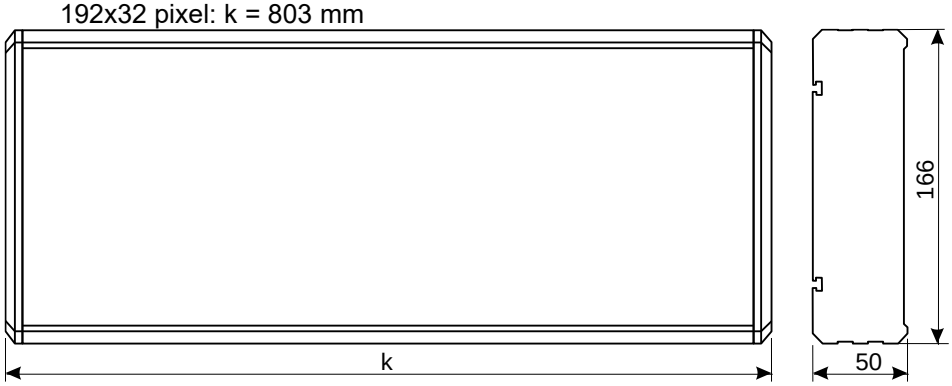


Figure 5: Dimension drawing

8.2 Supply voltage

Nominal voltage:	24 V DC
Permissible range:	18 – 30 V DC
Ripple:	≤ 10%
Reverse polarity protection:	with diode
External fuse:	
Current consumption:	64x32 Pixel: 1,4 A 128x32 Pixel: 2,7 A 192x32 Pixel: 4,0 A
Potential separation:	Galvanically insulated from fieldbus interface
Connection:	M12 sensor-actuator plug

8.3 Mounting

M4 slide-in nuts at the rear, optional mounting set order no: V02421

9. Appendix

9.1 List of illustrations