LED Matrix Display Series LX P6 RGB
for industrial use

LEDs with excellent luminosity

Numbers, characters, symbols, pictures
256 different colors

Plenty of different display sizes due to a modular construction

Extremely wide viewing angle, Reading distance up to 65 meters

Readability even in difficult light conditions

Low power consumption

Long product life
Maintenance free

Interfaces: Serial, Ethernet, CAN, PROFIBUS, PROFINET…

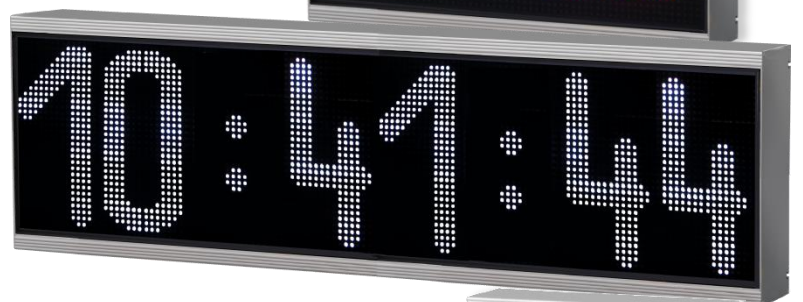Simple data protocol to the transfer of information

Easy to assemble / install

IP54/IP65

For the presentation of:
- o Machine conditions
- o Measurement data
- o Process flows
- o Temperatures / weights
- o Operating data
- o Warnings and alarms
- o Fault messages
- o Text information
- o Target-performance comparision

………..

1. LED Matrix Modules

The LED matrix display family LX P6 RGB is ideal for the visualization of situation-related data in the industry. The used LED matrix modules are characterized by extremely bright SMD LEDs which provide a clear readability even in difficult light conditions, such as direct sunlight.

The large viewing angle ensures an excellent reading experience.

A LED pixel pitch of just 6 mm guarantees a very good readability at a very low reading distance. The maximum reading distance is determined by the character height. (Character height x 400 = maximum readability)

Example:
LED vertical: 28 LEDs, pixel pitch: 6 mm:
Character height: 168 mm-> max. readability = 65 meter

The matrix modules can be arranged side by side, one above the other in any number. In this way, the most diverse display sizes are deliverable.
Available matrix modules:
Module 1: 16 x 32 LEDs, RGB pixel distance: 6 mm
Module 2: 32 x 32 LEDs, RGB pixel distance: 6 mm

It would be a pleasure to assist you on the way to your individual visualization system.

2. Features

Overview
- LED-Matrix-Display
- 256 colors (RGB), pixel pitch 6mm
  LX protocol: 16 colors selectable
- Free selectable display sizes consisting of
  LED matrix modules: 16x32 LEDs and 32x32 LEDs
- Configurable display: lines, fonts, font sizes, symbols, numbers, Colors
- Robust elegant aluminium profile housing, anodized silver or any RAL color
- Reflex free front glass
- Protection IP54 / option: IP65

- Displays readable from both sides are also available
Operating Voltage
- 110 - 230 VAC, option: 18-36 VDC
Temperature
- IP54: 0 … 50°C
- IP65, -10… 60°C
- extended temperature range optional
Connector
- Industrial plugs
Protocol
- Compatible to previously delivered LX and LI displays

3. Interfaces

The product family LX P6 RGB can be equipped with various interfaces. Examples:

- RS 232 / RS 485
- Ethernet TCP/IP, EtherNet/IP
- CAN-Bus, Modbus
- PROFIBUS DP
- PROFINET

- A/D-converter
- Timer
- BCD/SPS
- Temperature
- Counter
- Speed/rotary encoder

Further interfaces on request, e.g.:

4. Operation / Data Connection

Data connection of external systems - LX Protocol
All relevant display and transfer functions were combined in a simple data transfer protocol "LX Protocol". This protocol ensures the control of the display and the transfer of the text information from various systems and processes. The use of an additional PC operating software is not necessary. Many different interfaces are available, e.g. Profibus or Ethernet TCP / IP. (See also order code)
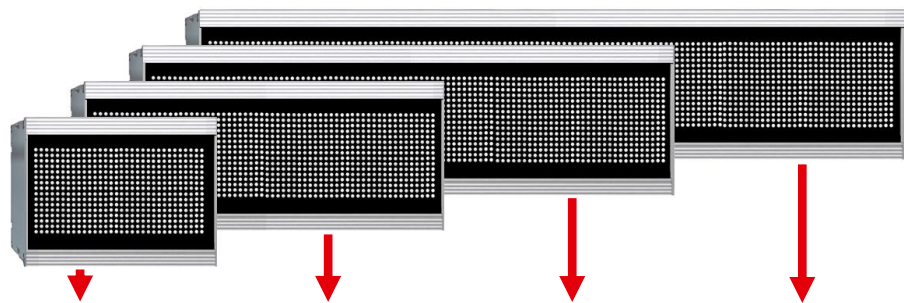
- Selectable colors: 16
- Different fonts selectable: smallest font = 4cm, largest font = 19 cm
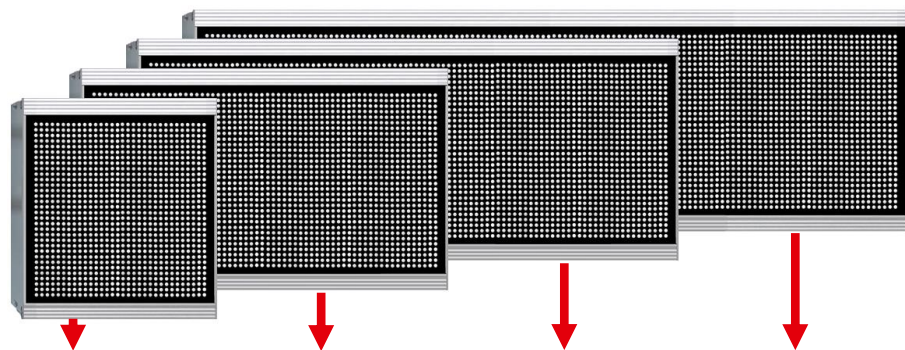
PC operating software
The PC operating software enables the input of information and offers a wide range of text effects (such as scrolling, flashing, etc.). Features at a glance:

- Configuration
- Creation of procedures
- Storage and transmission to the LED matrix display
- Inserting real-time information, such as time, values…
- Setting of display effects

5. Models / Order Code

	LX 1632P6	LX 1664P6	LX 1696P6	LX 16128P6
LED colors	RGB	RGB	RGB	RGB
LED Matrix	16 x 32 LEDs	16 x 64 LEDs	16 x 96 LEDs	16 x 128 LEDs
Display size (height x width)	95 x 192 mm	95 x 384 mm	95 x 576 mm	95 x 768 mm
Minimum character size	4 cm	4 cm	4 cm	4 cm
Maximum character size	8 cm	8 cm	8 cm	8 cm
Maximum readability	32 meter	32 meter	32 meter	32 meter
Number of lines maximum	1-2 lines	1-2 lines	1-2 lines	1-2 lines
Number of characters/line max.	5 characters	10 characters	16 characters	21 characters
Housing (height x width x depth)	170 x 220 x 80 mm	170 x 410 x 80 mm	170 x 610 x 80 mm	170 x 800 x 80 mm
Weight (approximately)	1,5 kg	2,3 kg	3,1kg	4,0 kg
Power supply VAC (HI.),	110-230 VAC, 50-60 Hz	110-230 VAC, 50-60 Hz	110-230 VAC, 50-60 Hz	110-230 VAC, 50-60 Hz
alternative: 24 VDC (GI.)	18-36 VDC	18-36 VDC	18-36 VDC	18-36 VDC
RS 232 (.Z)	LX 1632P6 GI.Z	LX 1664P6 GI.Z	LX 1696P6 GI.Z	LX 16128P6 GI.Z
Alternative: RS 485 (.V)	LX 1632P6 GI.V	LX 1664P6 GI.V	LX 1696P6 GI.V	LX 16128P6 GI.V

	LX 3232P6	LX 3264P6	LX 3296P6	LX 32128P6
LED colors	RGB	RGB	RGB	RGB
LED Matrix	32 x 32 LEDs	32 x 64 LEDs	32 x 96 LEDs	32 x 128 LEDs
Display size (height x width)	190 x 192 mm	190 x 384 mm	190 x 576 mm	190 x 768 mm
Minimum character size	4 cm	4 cm	4 cm	4 cm
Maximum character size	17 cm	17 cm	17 cm	17 cm
Maximum readability	65 meter	65 meter	65 meter	65 meter
Number of lines maximum	1-4 lines	1-4 lines	1-4 lines	1-4 lines
Number of characters/line max.	5 characters	10 characters	16 characters	21 characters
Housing (height x width x depth)	258 x 220 x 70 mm	258 x 410 x 70 mm	258 x 610 x 70 mm	258 x 800 x 70 mm
Weight (approximately)	2,5 kg	3,5 kg	4,5 kg	5,5 kg
Power supply VAC (HI.),	110-230 VAC, 50-60 Hz	110-230 VAC, 50-60 Hz	110-230 VAC, 50-60 Hz	110-230 VAC, 50-60 Hz
Alternative: 24 VDC (GI.)	18-36 VDC	18-36 VDC	18-36 VDC	18-36 VDC
RS 232 (.Z)	LX 3232P6 HI.Z	LX 3264P6 HI.Z	LX 3296P6 HI.Z	LX 32128P6 HI.Z
alternative: RS 485 (.V)	LX 3232P6 HI.V	LX 3264P6 HI.V	LX 3296P6 HI.V	LX 32128P6 HI.V

Additional interfaces

|	
Ethernet TCP/IP (.E)	available
CAN-Bus (.C)	available
ROFIBUS (.P)	available
PROFINET (.PN)	available
EtherNet/IP (.EI), Modbus (.MB)	on request
BCD (.G)	on request
Analog 0..10 V, 4…20 mA (.A)	on request
Timer (.T) / Temperature (.C)	on request
Counter (.Z) / Speed (.D)	on request

6. Scope of Delivery

LED display, mounting kit BS L100/200, data sheet including pinouts, LX protocol description / PC operating software

7.1 Dimensions

	Height(h) x Length(l) x Depth(t)
LX 1632P6	170 x 220 x 80 mm
LX 1664P6	170 x 410 x 80 mm
LX 1696P6	170 x 610 x 80 mm
LX 16128P6	170 x 800 x 80 mm
LX 16160P6	170 x 1000 x 80 mm
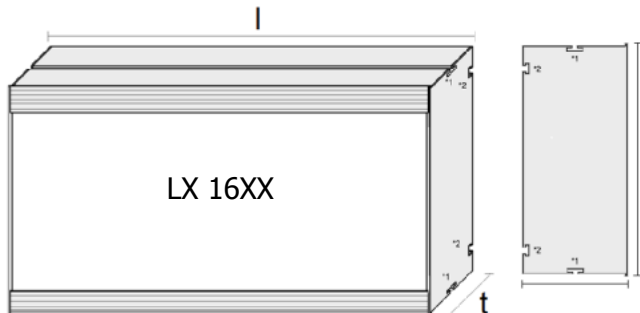
* 1 Mounting groove 19 x 3.5 mm
* 2 Mounting groove 10.5 x 4.5 mm (for M6)

7.2 Mounting

The display can be easily mounted. Mounting slots:

- 1 mounting slot at the top (Mounting groove 19 x 3.5 mm)
- 1 mounting groove at the bottom (Mounting groove 19 x 3.5 mm)
- 2 mounting grooves on the back (Mounting groove 10.5 x 4.5 mm for M6)

Included:

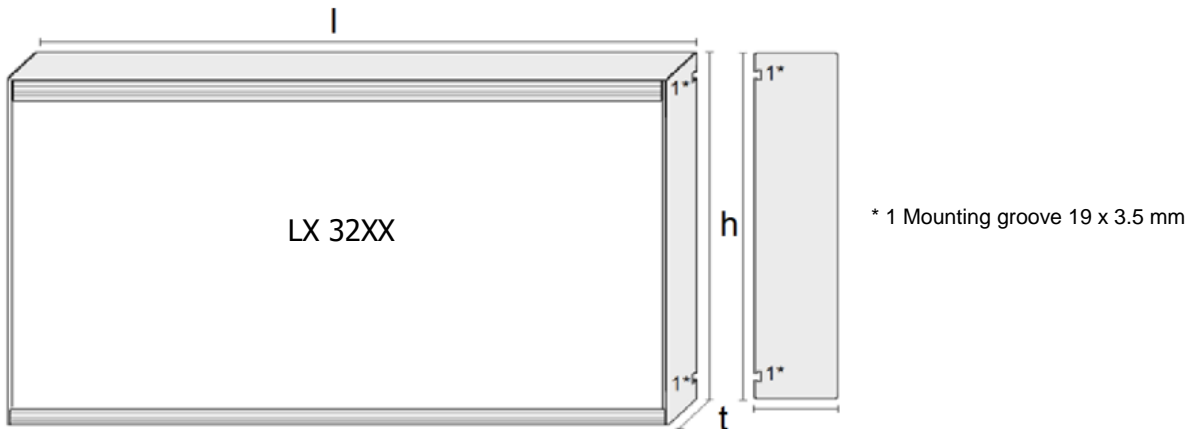| **Mounting kit BS L100** |
|---|
| Mounting kit for mounting the display on existing rear / ceiling plate

consisting of:
4 x M6 nuts
4 x M6 screws
2 x square nuts |

Options:

Suspension eyelets AOE L100	**Mounting kit EM L100**	**Wall mounting kit WM L100**
Suspension Eyelets for suspension or ceiling mounting consisting of: 2 x suspension eyelets	Mounting kit for mounting in a cutout consisting of: 2 x mounting brackets 4 x M6 nuts 4 x M6 screws	Wall mounting kit for rear mounting 2 x mounting brackets 4 x M6 nuts 4 x M6 screws

8. LX 32XXP6 – Dimensions / Mounting

8.1 Dimensions

	Height(h) x Length(l) x Depth(t)
LX 3232P6	258 x 220 x 80 mm
LX 3264P6	258 x 410 x 80 mm
LX 3296P6	258 x 610 x 80 mm
LX 32128P6	258 x 800 x 80 mm
LX 32160P6	258 x 1000 x 80 mm

l

LX 32XX

h

t

* 1 Mounting groove 19 x 3.5 mm

8.2 Mounting

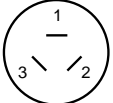The display can be easily mounted. Mmounting slots:

- 2 mounting grooves on the back (Mounting groove 10.5 x 4.5 mm for M6)

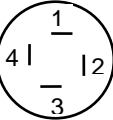| Mounting kit BS L100	
Mounting kit for mounting the display on existing rear / ceiling plate consisting of: 4 x M6 nuts 4 x M6 screws 2 x square nuts	

Suspension eyelets AOE L100	Wall mounting kit WM L100
Suspension Eyelets for suspension or ceiling mounting consisting of: 2 x suspension eyelets	Wall mounting kit for rear mounting 2 x mounting brackets 4 x M6 nuts 4 x M6 screws

9. Connectors Indoor IP54 - RS232 / RS485 / Ethernet TCP/IP/ EtherNet/IP / Profinet
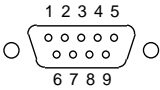
Power supply 230 VAC 50 Hz

Pin	Pinout	Sketch	Description
1	L		Insulation displacement connection, Phoenix Quickon, IP65,
2	N		3 pins, wires 0.75 - 1.5 mm^2
3	⏚		
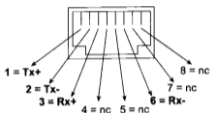
Power supply 24 VDC

Pin	Pinout	Sketch	Description
1	+24 V DC		Insulation displacement connection, Phoenix Quickon, IP65
2	GND		4 poles, wires 0.75 - 1.5 mm^2
3	Nc		
4	⏚		

RS232/RS485

Pin	RS485	RS232	Sketch	Description
1	GND	NC	9-pin D-SUB connector (pins)	NC — not connected
2	NC	RxD		+24V — Power supply Plus (only for 24 VDC version)
3	B	TxD		GND — Supply voltage Minus (only for 24 VDC version)
4	NC	NC		A — Receive data A at RS 485 interface
5	DGND	DGND	1 2 3 4 5	B — Receive data B at RS 485 interface
6	+ 24 V	NC		DGND — Data reference potential
7	NC	GND	6 7 8 9	RxD — Data receiving port for RS 232 interface
8	A	NC		TxD — Data transmission port for RS 232 interface
9	NC	+ 24 V		A separate power supply connector is not needed.

Ethernet TCP/IP / EtherNet/IP / Profinet

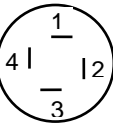| Sketch	Description	Control LEDs
1 = Tx+ 8 = nc 2 = Tx- 7 = nc 3 = Rx+ 4 = nc 5 = nc 6 = Rx-	Phoenix PLUSCON RJ45 Mounting frame VS-8-A-RJ45/MOD-1-IP67, Order No. 1689080. Female insert VS-8-BU-RJ45-6-MOD/BU, Order No. 1653155	A green LED lights up when the device is switched on. A green LED lights up when data is being transmitted on the network. A red LED lights up if the mains connection is faulty (E.g., no or wrong cable connected, hub not operating).

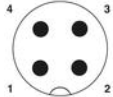# 10. Connectors Outdoor IP65 - RS232 / RS485 / Ethernet TCP/IP/ EtherNet/IP / Profinet

Power supply 230 VAC 50 Hz

Pin	Pinout	Sketch	Description
1	L		Insulation displacement connection, Phoenix Quickon, IP65,
2	N		3 pins, wires 0.75 - 1.5 mm^2
3	⏚		
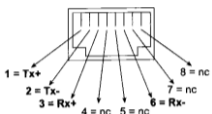
Power supply 24 VDC

Pin	Pinout	Sketch	Description
1	+24 V DC		Insulation displacement connection, Phoenix Quickon, IP65
2	GND		4 poles, wires 0.75 - 1.5 mm^2
3	nc		
4	⏚		

RS232 / RS485

Pin	Pinout	Sketch	Description
1	-		Connector M12
2	RS232 GND		Phoenix Contact No. 1432619
3	RS485 (Rx –)/RS232 RX		SACC-FS-4SC M SCO
4	RS485 (Rx +)/RS232 TX		

Ethernet TCP/IP / EtherNet/IP / Profinet

Sketch	Description	Control LEDs
1 = Tx+ 8 = nc 2 = Tx- 7 = nc 3 = Rx+ 4 = nc 5 = nc 6 = Rx-	Phoenix PLUSCON RJ45 Mounting frame VS-8-A-RJ45/MOD-1-IP67, Order No. 1689080. Female insert VS-8-BU-RJ45-6-MOD/BU, Order No. 1653155	A green LED lights up when the device is switched on. A green LED lights up when data is being transmitted on the network. A red LED lights up if the mains connection is faulty (E.g., no or wrong cable connected, hub not operating).

11. Further connectors

IP54 Connectors / IP65 Connectors

Due to the large number of different interfaces and thus also connectors, we decided not to describe all plugs in this document. The description of the connectors and mating connectors is part of the delivery. We will be pleased to send you the corresponding descriptions for the following interface connnectors IP54/IP65 in advance:

- CAN-Bus (.C)
- ROFIBUS (.P)
- Modbus (.MB)
- BCD (.G)
- Analog 0..10 V, 4…20 mA (.A)
- Timer (.T) /
- Temperature (.C)
- Counter (.Z)
- Speed (.D)

Project-specific connectors are also possible and available.

12. Connector Position

Mounting sets	Plug position
BS L100/200	Plugs, right, at the bottom
AOE L100/200	Plugs, right, at the top
WM L100/200	Plugs, right, at the bottom
EM L100	Plug, back

Project specific plug positions on request without any further costs:
For example: right, left, top, bottom, rear

The below listed overview shows a first selection of possible solutions. Due to the modular design, countless sizes and designs are available. Displays with 16 LED pixels vertical are suitable for one up to two-line information. Displays with 32 LED pixels vertical can show one up to four-line information.

Models

Example: LX **16 64** P6 **G I** . **C**

LED display height	
16 Pixel	16
32 Pixel	32
N Pixel (N = Multiple of 16/32)	N

LED display width	
32 Pixel	32
64 Pixel	64
M Pixel (M = Multiple of 32)	N

Power supply	
24 VDC	G
230 VAC	H

Usage/envirnment	
IP 54	I
IP 65	O

Interface	
RS 232	Z
RS 485	V
CAN-Bus	C
PROFIBUS	P
Ethernet TCP/IP	E
Ethernet IP	EI
PROFINET	PN
EtherNet/IP	EI

Additional interfaces:
■ A/D-converter
■ Timer
■ BCD/SPS
■ Temperature
■ Counter / Speed