

**Display Elektronik GmbH**

# DATA SHEET

**LCD STANDARD PANEL**

**DE 301 - SERIES**

*Product Specification*

*Version : 2*

07.07.2014

---

**GENERAL SPECIFICATION**

---

**MODULE NO. :**

**DE 301 - SERIES**

**CUSTOMER P/N**

<b>VERSION NO.</b>	<b>CHANGE DESCRIPTION</b>	<b>DATE</b>
0	ORIGINAL VERSION	14.04.2003
1	ADD VERSION	04.01.2012
2	ADD VERSION	07.07.2014

**PREPARED BY: MHO**

**DATE: 07.07.2014**

**APPROVED BY: MH**

**DATE: 07.07.2014**

**CONTENTS**

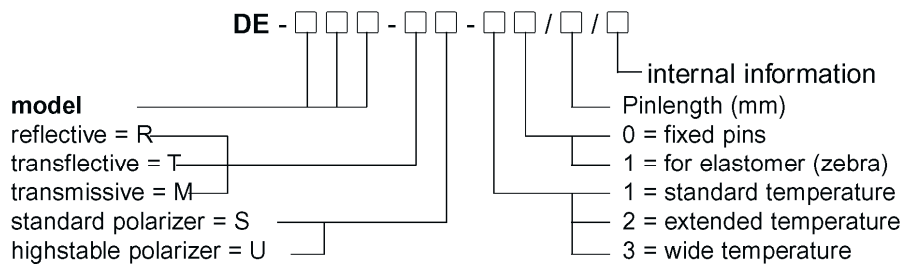
1. GENERAL FEATURES-----	2
2. ORDERING INFORMATION-----	2
3. MODEL TYPES-----	2
4. MECHANICAL SPECIFICATIONS-----	3
4.1 Pin-Version-----	3
4.2 Zebra-Version-----	3
5. PIN ASSIGNMENTS-----	4
5.1 Pin-Version-----	4
5.2 Zebra-Version-----	4
6. ELECTRICAL AND PHYSICAL PROPERTIES-----	4
7. APPLICATION NOTE-----	4
8. SEGMENT DEFINITION-----	5
9. CONNECTING LCDs-----	5
10. SOLDER CONDITIONS FOR LCD WITH FIXED PINS-----	5
11. CLEANING OF LCDs-----	6
12. HANDLING PRECAUTIONS-----	6

## 1. GENERAL FEATURES

Display Elektronik GmbH is specialized in LCD-products.

- There is a wide range of standard lcd-panels. Most of them are available from stock.
- Most of our standard panels operate within the extended temperature range (-20°C to +70°C).
- For the static types the Vlcd is ready for 3 Volt, like shown in the following table. For most of our multiplexed standard panels we offer a 3Volt and a 5Volt model.
- Most panels are available in reflective and transfective version.
- In general we offer a standard pinlength from stock. Pls ask us in case you want a different pinlength. For the LCD-panels without pins we also offer elastomeric connectors (zebras).
- For outdoor applications we offer suitable LCD-displays with extreme wide temperature range and UV-stability etc...

## 2. ORDERING INFORMATION



### Example:

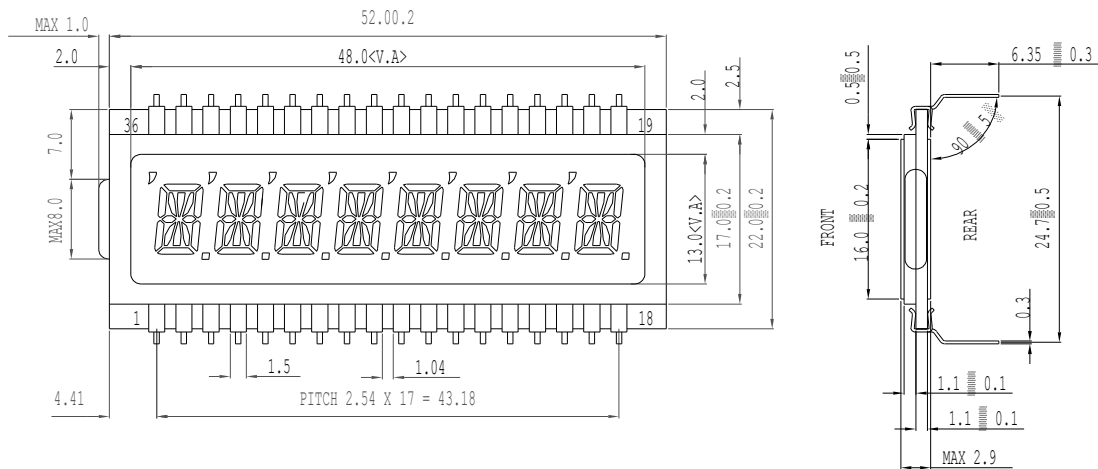
DE-113-RS-10/7,5  
 LCD 3½ digits  
 Digit height 12.7 mm  
 Reflective  
 Standard polarizer  
 Standard temperature  
 Fixed pins  
 Pinlength 7.5 mm

## 3. MODEL TYPES

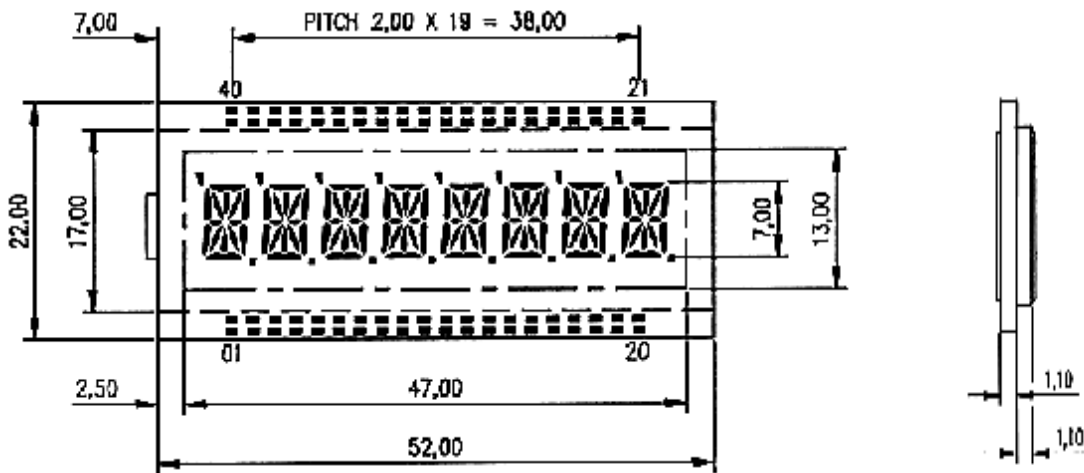
Our actual model types are:

MODEL NAME	POLARIZER MODE	POLARIZER TYPE	OPERATING TEMPERATURE	PIN LENGTH	VIEWING DIRECTION	OPERATING VOLTAGE	VOLTAGE MODE
DE 301-RS-20/6,35 (3 Volt)	Reflective	Standard	-20°C ... +70°C	6,35	6° clock	3 Volt	MUX ¼
DE 301-RS-20/6,35 (5 Volt)	Reflective	Standard	-20°C ... +70°C	6,35	6° clock	5 Volt	MUX ¼
DE 301-RS-21 (3 Volt)	Reflective	Standard	-20°C ... +70°C	ZEBRA	6° clock	3 Volt	MUX ¼
DE 301-RS-21 (5 Volt)	Reflective	Standard	-20°C ... +70°C	ZEBRA	6° clock	5 Volt	MUX ¼
DE 301-TS-20/6,35 (3 Volt)	Transfective	Standard	-20°C ... +70°C	6,35	6° clock	3 Volt	MUX ¼
DE 301-TU-30/6,35 (5 Volt)	Transfective	High-Stable	-40°C ... +90°C	6,35	6° clock	5 Volt	MUX ¼

## 4. MECHANICAL SPECIFICATIONS



### 4.2 Zebra-Version



**5. PIN ASSIGNMENTS (!)**

**5.1 Pin-Version**

PIN#	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18
COM1	S1	1I	S2	2I	S3	3I	S4	4I	S5	5I	S6	6I	S7	7I	S8	8I	NC	NC
COM2	1F	1J	2F	2J	3F	3J	4F	4J	5F	5J	6F	6J	7F	7J	8F	8J	NC	NC
COM3	1E	1K	2E	2K	3E	3K	4E	4K	5E	5K	6E	6K	7E	7K	8E	8K	NC	COM3
COM4	1D	1N	2D	2N	3D	3N	4D	4N	5D	5N	6D	6N	7D	7N	8D	8N	COM4	NC
PIN#	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
COM1	NC	COM1	8A	8H	7A	7H	6A	6H	5A	5H	4A	4H	3A	3H	2A	2H	1A	1H
COM2	COM2	NC	8B	8G	7B	7G	6B	6G	5B	5G	4B	4G	3B	3G	2B	2G	1B	1G
COM3	NC	NC	8C	8L	7C	7L	6C	6L	5C	5L	4C	4L	3C	3L	2C	2L	1C	1L
COM4	NC	NC	P8	8M	P7	7M	P6	6M	P5	5M	P4	4M	P3	3M	P2	2M	P1	1M

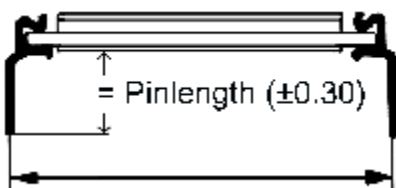
**5.2 Zebra-Version**

PIN#	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
COM1	NC	NC	S1	1I	S2	2I	S3	3I	S4	4I	S5	5I	S6	6I	S7	7I	S8	8I	NC	NC
COM2	NC	NC	1F	1J	2F	2J	3F	3J	4F	4J	5F	5J	6F	6J	7F	7J	8F	8J	NC	NC
COM3	COM3	NC	1E	1K	2E	2K	3E	3K	4E	4K	5E	5K	6E	6K	7E	7K	8E	8K	NC	COM3
COM4	NC	COM4	1D	1L	2D	2L	3D	3L	4D	4L	5D	5L	6D	6L	7D	7L	8D	8L	COM4	NC
PIN#	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
COM1	NC	COM1	8A	8H	7A	7H	6A	6H	5A	5H	4A	4H	3A	3H	2A	2H	1A	1H	COM1	NC
COM2	COM2	NC	8B	8G	7B	7G	6B	6G	5B	5G	4B	4G	3B	3G	2B	2G	1B	1G	NC	COM2
COM3	NC	NC	8C	8N	7C	7N	6C	6N	5C	5N	4C	4N	3C	3N	2C	2N	1C	1N	NC	NC
COM4	NC	NC	P8	8M	P7	7M	P6	6M	P5	5M	P4	4M	P3	3M	P2	2M	P1	1M	NC	NC

**6. ELECTRICAL AND PHYSICAL PROPERTIES**

	Standard temperature			Extended temperature			Wide temperature			Unit
	min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	
At an ambient temperature of 25°C										
Operating voltage		3			3			5		V
Driving frequency	30	32	100	30	32	100	30	32	100	Hz
Current consumption		1,0	2,0		1,0	2,0		1,0	2,0	µA/cm <sup>2</sup>
DC-voltage allowance			50			50			50	mV
Response time (t <sub>on</sub> + t <sub>off</sub> )		440			440				450	ms
Operating temperature	-10		60	-20		70	-40		90	°C
Storage temperature	-20		65	-40		90	-40		90	°C
Lifetime	100 000									h

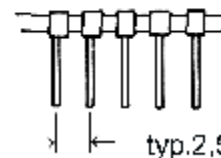
**7. APPLICATION NOTE**



Distance of pinrow to pinrow = glass-size + 2.54 mm

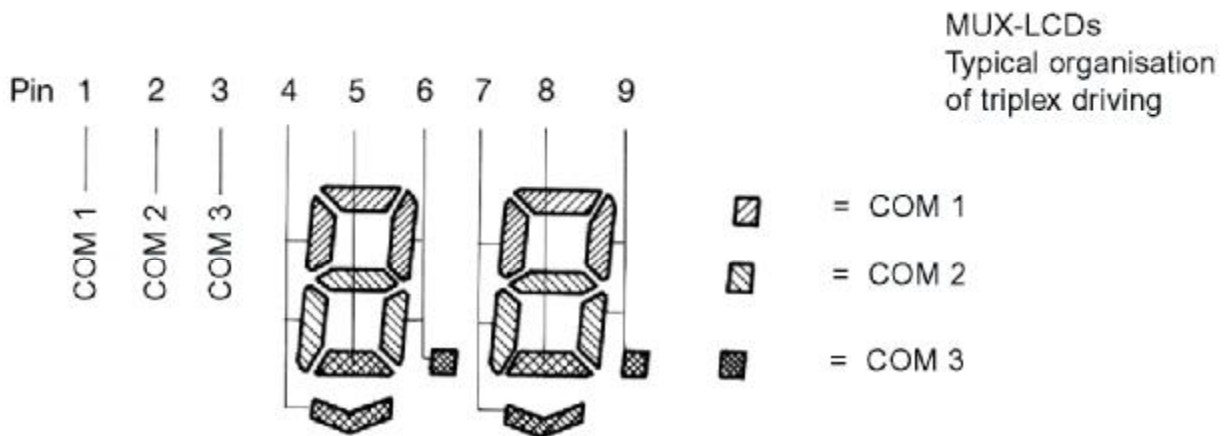
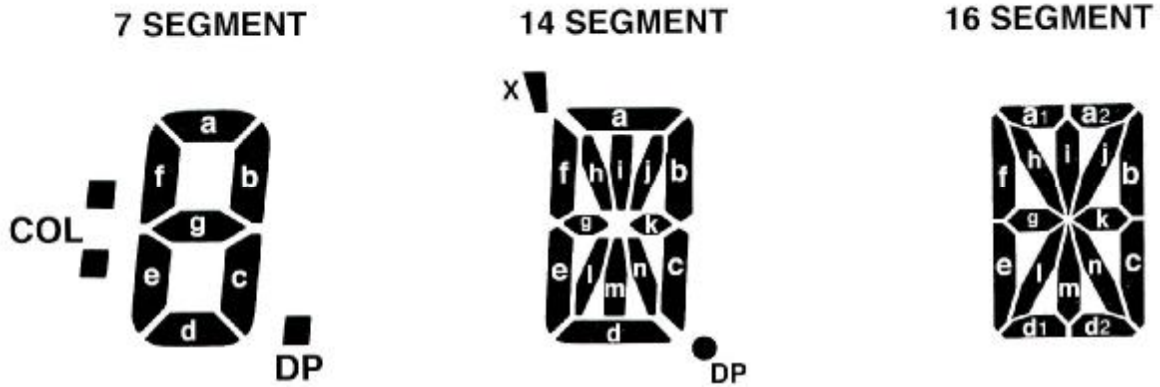
DIL-Pins

Pinlength = Distance between rear side of LCD to end of pin



Ø hole in PCB typ. 1,0 mm

**8. SEGMENT DEFINITION**



Digits to be counted from left to right.

**9. CONNECTING LCDs**

- Fixed pins have a typical pitch of 2,54mm. (Pls refer to mechanical specification).
- LCD for elastomeric connectors (zebras) may have tighter pitches. Please regard tolerances and pitch of elastomer connector.

**10. SOLDER CONDITIONS FOR LCD WITH FIXED PINS**

	min.	typ.	max.
Solder temperature	t.b.d.	~ 235°C	260°C
Solder duration	t.b.d.	2 seconds	5 seconds
Distance to glass substrate	4mm	6mm	t.b.d.

t.b.d. – to be discussed !

**11. CLEANING OF LCDs**

- LCDs have a protective foil on top of the front glass. This foil should be removed at the latest possible stage.
- If there is a need of cleaning, you may use freon or alcohol with a soft fabric, as front polarizers are sensitive to physical damage.
- Pls also note this protective foil on the rear side, in case you use transfective model-types.
- Do not use ultrasonic for cleaning of PCB once LCD is soldered.

**12. HANDLING PRECAUTIONS**

- As polarizers of LCD (front and rear-side) are sensitive, they must be handled with care.
- DC Voltage or drive voltage higher than specified voltage will decrease the lifetime of the liquid crystal display panel.
- If any fluid leaks out of a damaged glass cell, wash off any human part that comes into contact with soap and water. Never swallow the fluid. The toxicity is low, but caution should be exercised at all times.
- LCD is made up of glass, organic sealant, organic fluid and polymer based polarizers. The following precautions should be taken when handling:

Keep the temperature within range for use and storage. Excessive temperature and humidity could cause polarization degradation, polarizer peel-off or bubble generation. When storage for a long period over 40°C is required, the relative humidity should be kept below 60%.