

# EXL-7567

320x240 Graphic LCD Smart Module 3,8"

SHORT FORM

TECHNICAL SPECIFICATIONS



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## **EXL-7567**

### **320x240 Graphic LCD Smart Module**

#### **1. GENERAL DESCRIPTION**

The EXL7567 is an intelligent graphic LCD module suitable for data visualization and man-to-machine terminal applications.

The module uses a 3.8 inch 320x240 dot matrix monochrome LCD and it is equipped with an integrated resistive touch-screen panel and white-LED backlight.

The LCD is driven by an 8-bit RISC microcontroller (Atmel ATmega128) which provides a wide set of digital and analog general-purpose I/O lines for interfacing external boards.

Two on-board asynchronous serial interfaces, which can be set to operate in TTL, RS-232 or RS-485 electrical standards, are also provided and allow easy interfacing with microcontrollers or personal computers. A USB port (device only) is also available.

Furthermore EXL7567 provides a built-in Real Time Clock with automatic calendar.

The microcontroller has 128 Kbyte of flash program memory for application software while general data and bitmap images can be stored in the on-board 1 Mbyte flash memory.

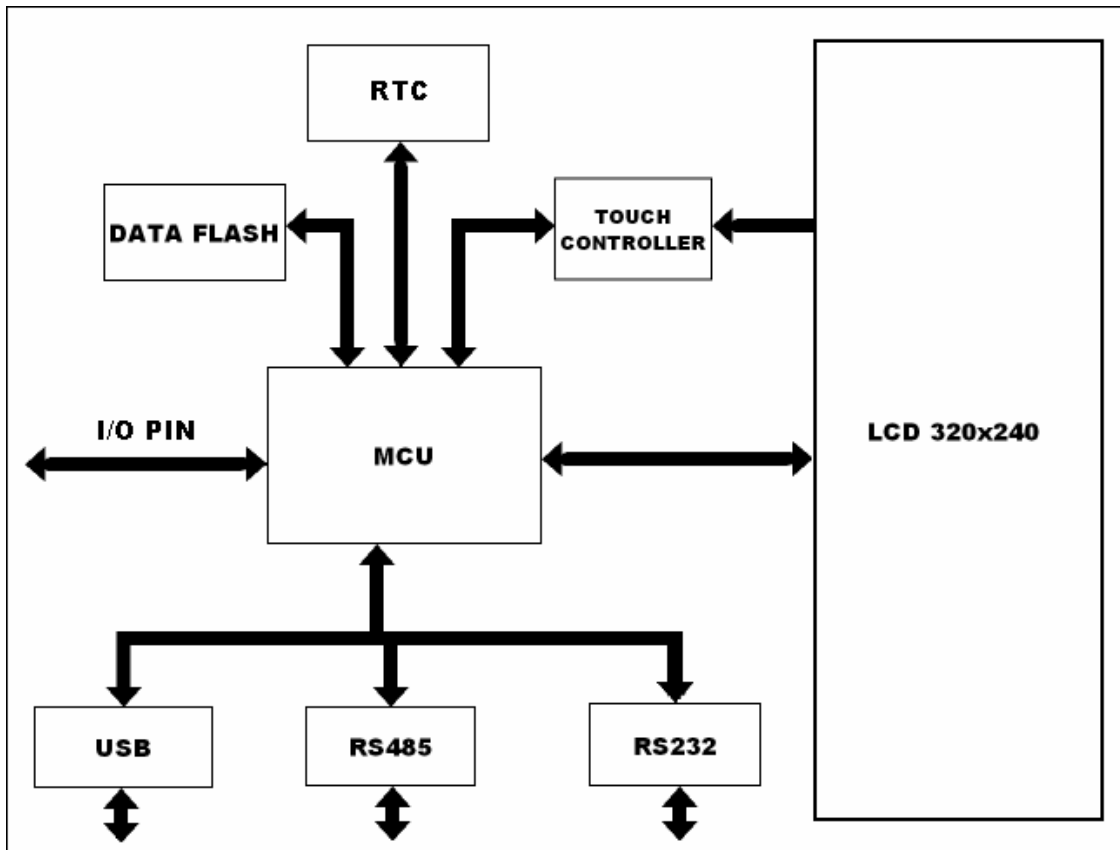
Application software can be developed both in C-language (using low cost or free c-compilers) and in Assembler, while software downloading can be performed by a low cost in-system programmer. Source library for LCD and on-board peripheral control are supplied in order to speed-up application development.

#### **2. FEATURES**

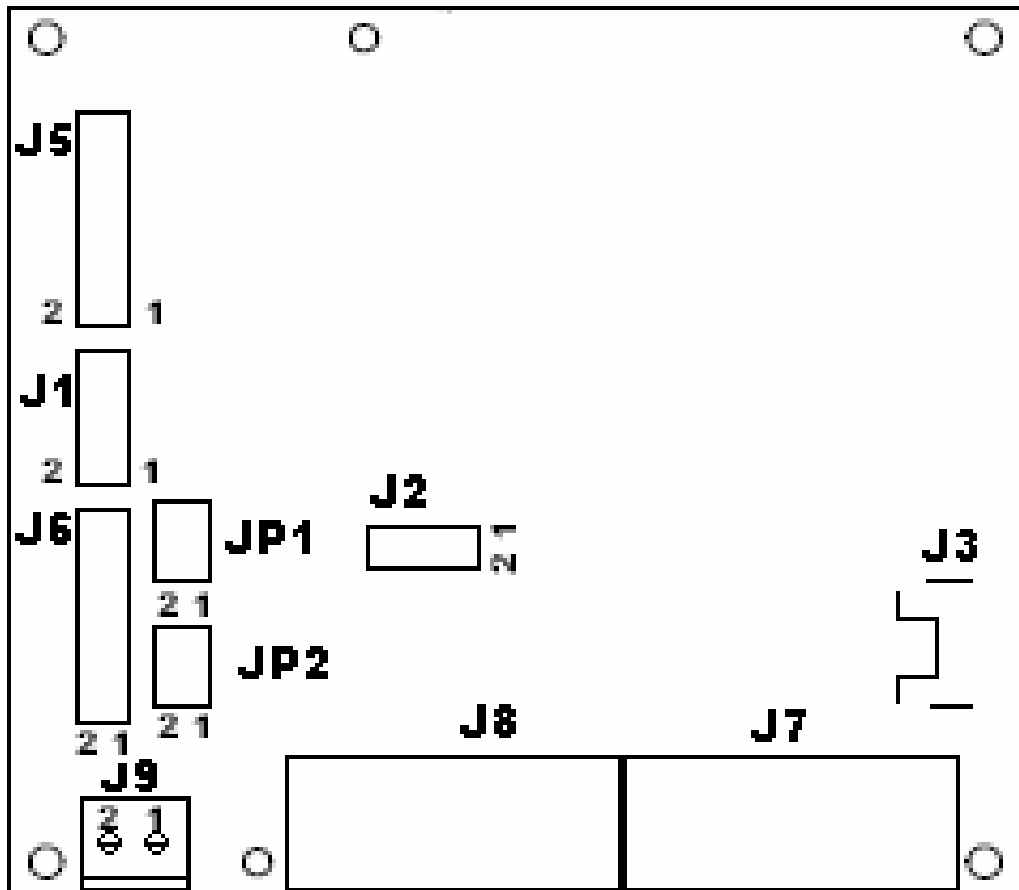
- 3.8 inch, 320 x 240 dot matrix monochrome LCD
- Resistive touch screen
- White-LED backlight
- Atmel ATmega128 microcontroller (8-bit RISC)
- 128 Kbyte flash program memory
- 1 Mbyte flash memory for bitmaps and general data storage
- 8 analog input lines (10 bit multiplexed ADC) each configurable as general TTL I/O
- 10 configurable digital input/output lines
- Real Time Clock with calendar function
- 2 asynchronous serial interface (configurable as TTL, RS-232 or RS-485 or USB converter)
- 5 Volt power supply
- Module dimension: 95mm x 85 mm x 20 mm
- Holes pitch : 88 mm x 79 mm
- Display area : 88 mm x 61 mm

## ■ 3. BLOCK DIAGRAM

EXL-7567



## ■ 4. MODULE COMPONENT MAPPING



## ■ 5. CONNECTORS PIN-OUT

### *J1 connector*

PIN	NAME	DESCRIPTION
1	AREF	Analog voltage reference
2	GND	Ground
3	P0	Input/Output 0 (or analog input AD0)
4	P1	Input/Output 1 (or analog input AD1)
5	P2	Input/Output 2 (or analog input AD2)
6	P3	Input/Output 3 (or analog input AD3)
7	P4	Input/Output 4 (or analog input AD4)
8	P5	Input/Output 5 (or analog input AD5)
9	P6	Input/Output 6 (or analog input AD6)
10	P7	Input/Output 7 (or analog input AD7)

### *J2 connector (only for programming with AVRISP)*

PIN	NAME	DESCRIPTION
1	MISO	Master IN /Slave OUT
2	Vcc_5V	Voltage Supply for AVR programmer
3	SCK	System Clock
4	MOSI	Master OUT/Slave IN
5	RESET	Input line for reset micro
6	GND	Ground

### *J5 connector*

PIN	NAME	DESCRIPTION
1	P8	Input/Output 8
2	P9	Input/Output 9
3	P10	Input/Output 10
4	P11	Input/Output 11
5	P12	Input/Output 12
6	P13	Input/Output 13
7	P14	Input/Output 14
8		NC
9	P15	Input/Output 15
10	GND	Ground
11		NC
12	P16	Input/Output 16
13	P17	Input/Output 17
14		NC
15	VCC	Supply Voltage (+5 Volt)
16	GND	Ground

### J6 connector

PIN	NAME	DESCRIPTION
1	RXMAX232_0	RX RS232 (UART0) line*
2	TXMAX232_0	TX RS232 (UART0) line*
3	RXTTL_0	RX TTL (UART0) line**
4	TX_0	TX TTL (UART1) line**
5	GND	Ground
6	VBUS	Supply voltage from USB (+5 Volt)
7	D-	USB negative line (UART0) ***
8	D+	USB positive line (UART0) ***
9	A_485_1	RS485 input positive line (UART1)**
10	B_485_1	RS485 input negative line (UART1)**
11	Y_485_1	RS485 output positive line (UART1)**
12	Z_485_1	RS485 output negative line (UART1)**
13	RXTTL_1	RX TTL (UART1) line**
14	TX_1	TX TTL (UART1) line**
15	TXMAX232_1	TX RS232 (UART1) line*
16	RXMAX232_1	RX RS232 (UART1) line*

\* If RS232 is enabled ( JP1 and JP2 jumpers)

\*\* If RS485 is enabled (JP1 and JP2 jumpers)

\*\*\* If USB is enabled (JP1 jumper)

### J7 connector (DB-9 MALE)

PIN	NAME	DESCRIPTION
1		NC
2	RXMAX232_0	RX RS232 (UART0) line*
3	TXMAX232_0	TX RS232 (UART0) line*
4		NC
5	GND	Ground
6		NC
7		NC
8		NC
9		NC

\* If RS232 is enable (JP1 jumper )



### **J8 connector (DB-9 FEMALE)**

<b>PIN</b>	<b>NAME</b>	<b>DESCRIPTION</b>
1		NC
2	TXMAX232_1	TX RS232 (UART1) line*
3	RXMAX232_1	RX RS232 (UART1) line*
4		NC
5	GND	Ground
6	B_485_1	RS485 input negative line (UART1) **
7	A_485_1	RS485 input positive line (UART1) **
8	Z_485_1	RS485 output negative line (UART1) **
9	Y_485_1	RS485 output positive line (UART1) **

\* If RS232 is enable ( JP2 jumper )

\*\* If RS485 is enable ( JP2 jumper )


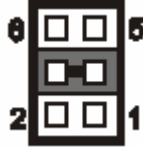
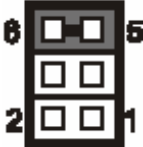
### **J9 connector - Power Supply**

<b>PIN</b>	<b>NAME</b>	<b>DESCRIPTION</b>
1	GND	Ground
2	VCC	Supply Voltage


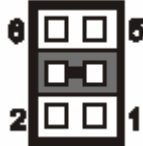
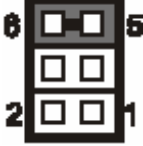


## 6. JUMPER CONFIGURATION

### JP1 jumper - UART0 INTERFACE

PIN	TYPE	JUMPER ILLUSTRATOR
1-2	RS232 (DB9 MALE PIN 2 -3 J6 CONN PIN 1-2)	
3-4	TTL (J6 CONN PIN 3-4)	
5-6	USB (MINIPOINT USB J3)	

### JP2 jumper - UART1 INTERFACE

PIN	TYPE	JUMPER ILLUSTRATOR
1-2	RS232 (DB9 FAME PIN 2 -3 J6 CONN PIN 15-16)	
3-4	TTL (J6 CONN PIN 12-14)	
5-6	RS485 (DB9 FAME PIN 6 -7-8-9 J6 CONN PIN 9-10-11-12)	

■ **7. DC ELECTRICAL AND OPTICAL CHARACTERISTIC**

Symbol	Parameter	T 20°C			Units	Note
		Min.	Typ.	Max.		
<b>-- Electrical Characteristic --</b>						
VCC	Logic Supply Voltage	4.75	5.0	5.25	V	
ICC	Logic Supply Current	--	50	--	mA	
		--	75	--	mA	with USB Active
		--	80	--	mA	with RS485 Tx Active
<b>-- White LED Backlight Characteristic --</b>						
IF	Forward Current	--	80	--	mA	
<b>-- Optical Characteristic --</b>						
9f	View Angle Range	--	±35-40	--	Deg.	

## 8. MODULE OUTLINE DRAWING

