



**WINSTAR Display Co.,Ltd.**  
**華凌光電股份有限公司**

## SPECIFICATION

**MODULE NO.: WH2002AR**

### General Specification

Item	Dimension	Unit
Number of Characters	20 characters x 2Lines	—
Module dimension	116.0 x 37.0 x 13.9 (MAX)	mm
View area	85.0 x 18.6	mm
Active area	73.5x 11.5	mm
Dot size	0.60 x 0.65	mm
Dot pitch	0.65 x 0.70	mm
Character size	3.20 x 5.55	mm
Character pitch	3.70 x 5.95	mm
Duty	1/16	
Backlight Type	LED	
Controller IC	ST7066	
Interface	UART	

## Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	T <sub>OP</sub>	-20	—	+70	°C
Storage Temperature	T <sub>ST</sub>	-30	—	+80	°C
Supply Voltage	—	V <sub>SS</sub> -0.3	—	6.0	V
EEPROM Cell Endurance	—	100K	—	—	E/W
Input Voltage	—	V <sub>SS</sub> -0.3	—	V <sub>DD</sub> +0.3	V

## Electrical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage For Logic	V <sub>DD</sub> -V <sub>SS</sub>	—	4.5	5.0	5.5	V
Supply Voltage For LCD	V <sub>DD</sub> -V <sub>O</sub>	T <sub>a</sub> =25°C	4.2	4.35	4.5	V
Input High Voltage	V <sub>IH</sub>	—	3.5	—	5.0	V
Input Low Voltage	V <sub>IL</sub>	—	0	—	1.5	V
Supply Current (Module + Backlight)	I <sub>DD</sub>	V <sub>DD</sub> =5.0V	—	—	45	mA

# Interface Pin Function

## CON1

Pin No.	Symbol	Description
1	RX	UART: serial data input (full duplex communication)
2	VSS	Ground
3	VDD	Supply Voltage
4	TX	UART: serial data output
5	CS	SPI: chip select
6	SDO	SPI: serial data output
7	SCK/SCL	SPI: serial clock I2C: serial clock
8	SDI/SDA	SPI: serial data input I2C: serial data input/output
9	VSS	Ground
10	VDD	Supply Voltage
11-14	NC	No connection

