

LW-MC01-P938 Mini 80C51 Controller Module

Version: 2.1

I. Function

- Data Acquisition, Data Storage, Data Buffer/Transfer.
- Serial Communication, Networking.

II. Application

- Portal in Field Data Collection.
- Networking.
- Local Control.
- Extend Application Including: Meter Remote Control; Network Terminal; Front End of System; Re-Writable Programming Application; etc.

III. Specification

1, I/O Capacity

- ◇ Analog Input: 4 Channel (Can be Expanded to 6 Channel), 10-bit Resolution, 0-20mA.
- ◇ Analog Output: None.
- ◇ Digital Input: 4-bit (Can be Expanded to 6-bit), 0-24V.
- ◇ Digital Output: None (Can expand to 5-bit).
- ◇ Data Acquisition: Recycled Acquisition, Wave Filter.

2, Communication Interface

- ◇ Interface: RS/232 Serial Interface.
- ◇ Baud Rate: 9600bps. 1-bit Stop; 8-bit Data; 1-bit Parity; 1-bit Stop.
- ◇ Protocol: Support MODBus; Self-Define; Support Polling/Automatically Send Out.
- ◇ Communication Mode: Data Send Out Every 15 Minutes or Send Out upon request.

3, Data Information

- ◇ Data Format: Each Data Set Consists 4 Channels, 10 Analog and 4 Digital Inputs.
- ◇ Data Storage: One Data Set Every 15 Minutes, Recycle the Storage for 24 Hours.
- ◇ Warning Alarm: Audio Warning with Warning Alarm Message to Serial Interface.

4, Data Instruction and Format

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- ✧ **Date:** It is a 4 bytes command to set the date. The format is [44yyymmdd] in heximal format. 44 (equal to 68 in decimal format.) represents the “D” of ASCII code; yy represents the year in heximal format; mm represents the month in heximal format; dd represents the date in heximal format.
- ✧ **Time:** It is a 3 bytes command to set the time. The format is [54hhmm] in heximal format. 54 (equal to 84 in decimal format.) represents the “T” in ASCII code; hh represents the hour of 24 hours a day in heximal format; mm represents minute in heximal format.
- ✧ **Clear:** It is a single byte command to clear the memory. The format is [52] in heximal format. 52 (equal to 82 in decimal format.) represent the “R” in ASCII code. The command clears the memory and restart to record data in every 15 minutes.
- ✧ **Test:** It is a single byte command for testing. The format is [43] in heximal format. 43 (equal to 67 in decimal format.) represent the “C” of ASCII code. The module response the command with a 17 bytes data as format of [aaayymmddhhnnXDL1H1L2H2L3H3L4H40D0A] in heximal. aa represents the device address (ID); yy represents the year in heximal format; mm represents the month in heximal format; dd represents the date in heximal format; hh represents the hour of 24 hours a day in heximal format; nn represents the minute in heximal format; XD represents the 4-bit digital input status at lower 4-bits; Ln and Hn represents the lower byte and high byte of the 4 channel analog input; 0D (equal to 13 in decimal format) is control words of “Cartridge Return” (CR) in ASCII code; 0A (equal to 10 in decimal format) is control words of “ Line Feed” (LF) in ASCII code.
- ✧ **Data Req.:** It is a 4 bytes command for data request. The format is [41] (Heximal format). 41 (equal to 65 in decimal format.) represent the “A” in ASCII code. The feedback data is in data format as:
[aaayymmddhhnncc0D0A
XDL1H1L2H2L3H3L4H40D0A
...
...
XDL1H1L2H2L3H3L4H40D0A]
aa represents the device address (ID); yy represents the year in heximal format; mm represents the month in heximal format; dd represents the date in heximal format; hh represents the hour of 24 hours a day in heximal format; nn represents the minute in heximal format; cc represents the number of stored data sets. Following are corresponding data sets in groups. The data format in each group will be: XD represents 4 bit digital input status; Ln and Hn represents the lower byte and high byte of the 4 channel analog input; 0D (equal to 13 in decimal format) is control words of “Cartridge Return” in ASCII code; 0A (equal to 10 decimal format) is control words of “Line Feed”.

5, Data Download

- ✧ Communication cycle is one set of data in every 15 minutes.
- ✧ Programmable Formula for PID, I/O Output.
- ✧ Re-writable data filter.

6, Real Time Clock

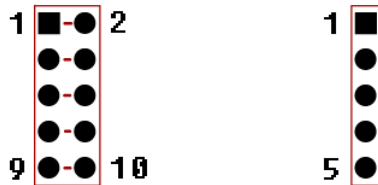
- ◇ Accuracy: 1%. (Hardware Option for 0.0001 %.)
- ◇ Date: 2000 Year – 2255 Year.
- ◇ Default: 01/01/2006
- ◇ Media: EEPROM.

7, Initialization

- ◇ Test Bit-Switch setting, Initialize Module, Setting LEDs.
- ◇ Check Input/Output, Initial Data Acquisition, Store Data.

8, Interface Connector

The arrangement of connector pins as below:



- ◇ J1 Analog Input:
 - J1.1 – For Testing. (Do NOT Connect It.)
 - J1.2 – Analog Input 1 (A/D1).
 - J1.3 – For Testing. (Do NOT Connect It.)
 - J1.4 – Analog Input 2 (A/D2).
 - J1.5 – For Testing. (Do NOT Connect It.)
 - J1.6 – Analog Input 3 (A/D3).
 - J1.7 – Ground.
 - J1.8 – Analog Input 4 (A/D4).
 - J1.9 - For Testing. (Do NOT Connect It.)
 - J1.10 – +5V Power Supply (Alternative for J3.1).
- ◇ J2 Digital (Status) Input:
 - J2.1 – Reserved. (Do NOT Connect It.)
 - J2.2 – Reserved. (Do NOT Connect It.)
 - J2.3 – Reserved. (Do NOT Connect It.)
 - J2.4 – Ground.
 - J2.5 – Reserved. (Do NOT Connect It.)
 - J2.6 – Reserved. (Do NOT Connect It.)
 - J2.7 – Digital Input 1 (Input1).
 - J2.8 – Digital Input 2 (Input2).
 - J2.9 – Digital Input 3 (Input3).

J2.10 – Digital Input 4 (Input4).

- ◇ J3 Power Supply and RS/232 Interface:
 - J3.1 - +5V Power Supply.
 - J3.2 – Ground.
 - J3.3 – RS/232 Serial Data In (RXD).
 - J3.4 – RS/232 Serial Data Out (TXD).
 - J3.5 – Ground.

9, Bit Switch and LEDs

- ◇ SW1 8-Bit Switch:
 - SW1.1: Protocol Setting (Default Off).
 - Sw1.2: Auto-Send Setting. On – Send Data Set Every 15 Minute; Off – No Automatic Data Send out.
 - SW1.3-8: Device Address (ID).
- ◇ SW2 Reset Button:

Pressing the reset switch can reset the system. System processing will go back initial operation but won't affect the stored data and real time clock.
- ◇ D1 Power LED:

When the system is turned on, the LED will be light.
- ◇ D2 Error LED:

When system encounters error, the LED will be light.
- ◇ D7 Serial Data Out LED (TXD):

During system send the data out from RS/232 serial port, the LED will be light.
- ◇ D8 Serial Data Receive LED (RXD):

During system receive the data from RS/232 serial port, the LED will be light.
- ◇ SP1 Buzzer:

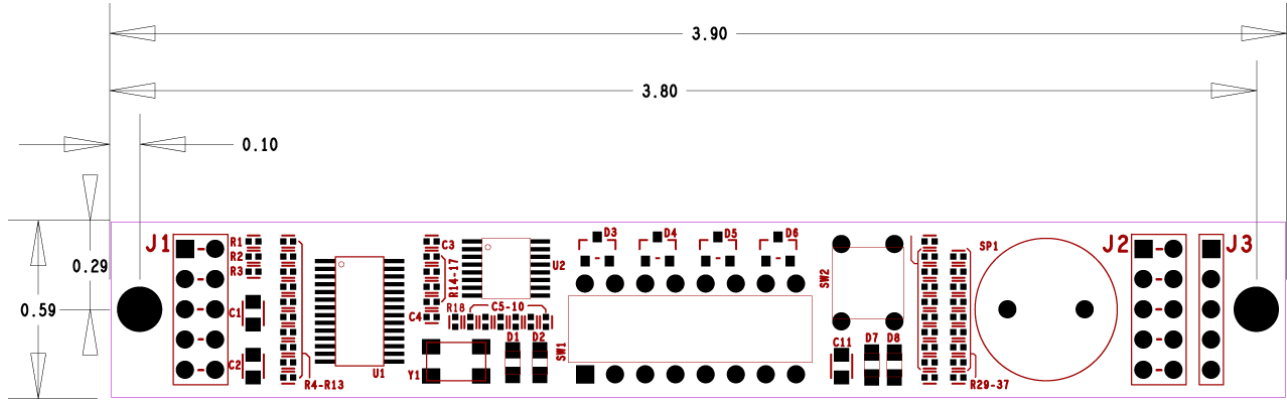
During system initialization, the buzzer will sound for audio warning code if there is any error. The buzzer will send out alarm continually if system encounters error during normal works. When system operates regularly, the buzzer will send out half-second short sound in each minute to indicate the normal operation.

IV. Working Environment

Power Supply: +5VDC, +/-10%.
Working Current: < 10mA.
Working Temperature: -40C – 85C.
Storage Temperature: -65C - +150C.

V. Dimension

The size of LW-MC01-P938 Mini 80C51 System Module shown as below: (Unit: Inch)



Dimension in meter as below:

- Length: 10cm (Can be as short as 6cm customized.)
- Width: 1.5cm
- Height: 1.2cm
- Weight: 12g