

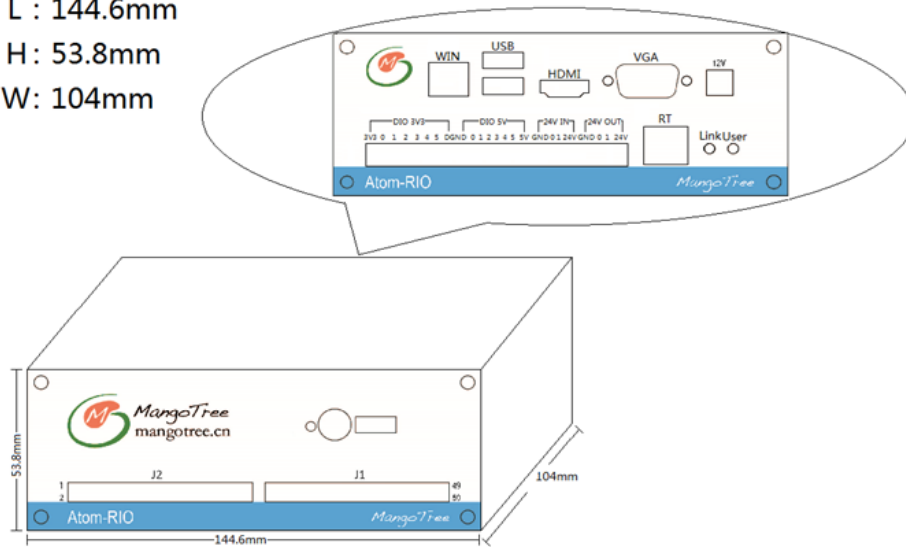
User Manual

Atom-RIO MT-S801

This document lists the specifications for MangoTree Atom-RIO MT-S801.

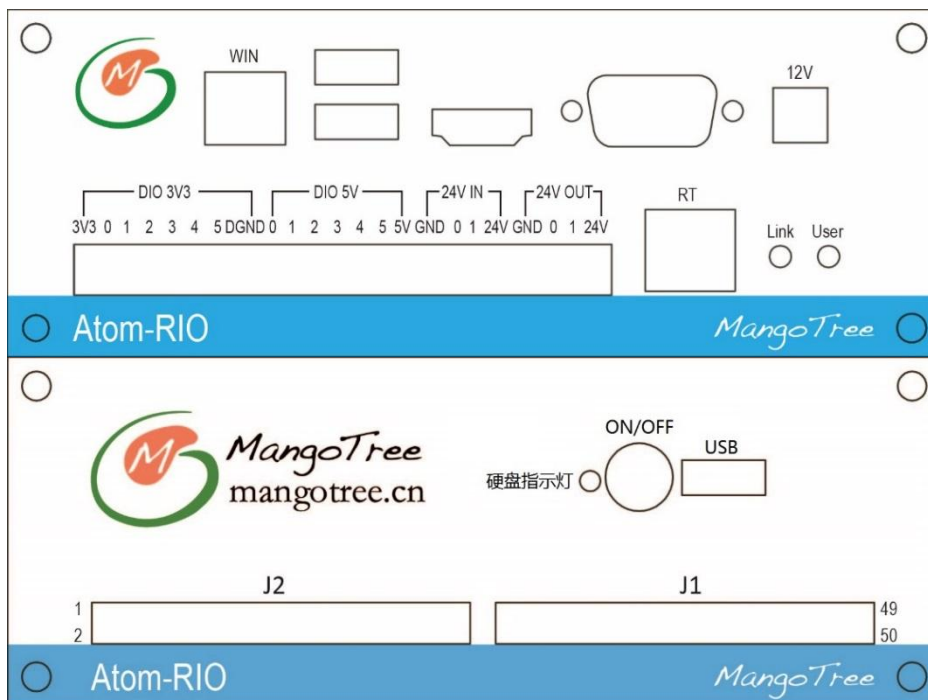
In the figure below shows the appearance of the Atom-RIO, includes size and interface information.

L : 144.6mm
H : 53.8mm
W : 104mm



Appearance of Atom-RIO

The following figure shows detailed interface information of Atom-RIO:



Atom-RIO interface

I/O and Components

Type	Memory	RAM	USB	FPGA	DIO
Atom-RIO MT750	16G	2G	3	Sparten6 LX75	3.3V DIO: 86 Channels 5V DIO: 6 Channels 24V DI /DO: 2 Channels each

Atom-RIO Interface Specification

Bolt terminal connector	Interval : 2.54mm
50 pin IDC	Interval : 2mm

To avoid damaging the instrument, please use the appropriate connector.

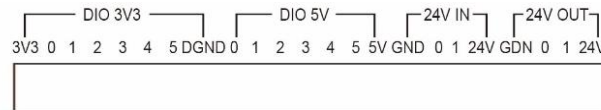
Port Definition

There are 100 pins on IDC J1 and J2:

J1			
5V	1	2	5V
GND	3	4	GND
DIO 00	5	6	DIO 01
DIO 02	7	8	DIO 03
DIO 04	9	10	DIO 05
DIO 06	11	12	DIO 07
DIO 08	13	14	DIO 09
DIO 10	15	16	DIO 11
DIO 12	17	18	DIO 13
DIO 14	19	20	DIO 15
DIO 16	21	22	DIO 17
DIO 18	23	24	DIO 19
GND	25	26	GND
DIO 20	27	28	DIO 21
DIO 22	29	30	DIO 23
DIO 24	31	32	DIO 25
DIO 26	33	34	DIO 27
DIO 28	35	36	DIO 29
DIO 30	37	38	DIO 31
DIO 32	39	40	DIO 33
DIO 34	41	42	DIO 35
DIO 36	43	44	DIO 37
DIO 38	45	46	DIO 39
GND	47	48	GND
3.3V	49	50	3.3V

J2			
5V	1	2	5V
GND	3	4	GND
DIO 00	5	6	DIO 01
DIO 02	7	8	DIO 03
DIO 04	9	10	DIO 05
DIO 06	11	12	DIO 07
DIO 08	13	14	DIO 09
DIO 10	15	16	DIO 11
DIO 12	17	18	DIO 13
DIO 14	19	20	DIO 15
DIO 16	21	22	DIO 17
DIO 18	23	24	DIO 19
GND	25	26	GND
DIO 20	27	28	DIO 21
DIO 22	29	30	DIO 23
DIO 24	31	32	DIO 25
DIO 26	33	34	DIO 27
DIO 28	35	36	DIO 29
DIO 30	37	38	DIO 31
DIO 32	39	40	DIO 33
DIO 34	41	42	DIO 35
DIO 36	43	44	DIO 37
DIO 38	45	46	DIO 39
GND	47	48	GND
3.3V	49	50	3.3V

The port definition of bolt terminal on front panel is shown in the figure below. Atom-RIO provides 6 channels 3.3V digital input and output (DIOs), 6 channels 5V digital input and output (DIO), 2 channels 24V input, 2 channels 24V output.



Port definition of bolt terminal

Power

External power must be connected to Atom-RIO to make it work normally, please connect correct configuration of external power to avoid damaging internal circuit because of large voltage or current.



Please turn on the equipment after check the power line was connected correctly.

After power on, HDD led flashing and Link light normally on. HDD led flashing represents HDD is working normally, Link light on represents FPGA is working normally.

Atom-RIO Configuration

When Atom-RIO is working normally, user can configure Atom-RIO (with RT system) in NI Measurement & Automation Explorer (MAX), include:

- Safe mode
- Console control
- IP configuration
- Connect mode

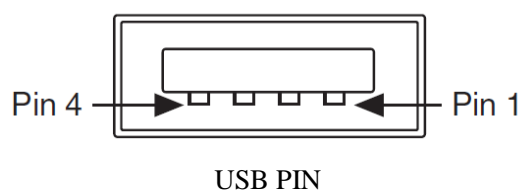
Connect Atom-RIO to Network

Please use a standard five types of shielded twisted-pair cable or better network cable to connect the Ethernet port of Atom-RIO to a Ethernet hub or PC.

When Atom-RIO is power on, it will connect to the Internet by DHCP automatically, or try by Link-local after failure by DHCP. Network configuration must be done by MAX in first use of Atom-RIO.

USB Port

The USB port of Atom-RIO can support common USB devices, like USB disk. Please see the appearance of Atom - RIO to check the location of USB port. (See Page 1)



Pin	Signal	Description
1	VCC	+5V power output
2	D-	Data-
3	D+	Data+
4	GND	Ground

Definition of USB PIN

Product Specification

Atom-RIO MT-S801

This document lists the specification for the Atom-RIO. The following specifications are typical for the 0 to 60 °C operating temperature range unless otherwise noted.



Caution Do not operate the Atom-RIO in a manner not specified in this document. Product misuse can result in a hazard. You can compromise the safety protection built into the product if the product is damaged in any way. If the product is damaged, please contact MangoTree.

Dimensions of Atom-RIO

Long	144.6mm
High	53.8mm
Wide	104mm

Network

Network port	10/100/1,000 Ethernet
Compatibility	IEEE 802.3/IEEE 802.3 ab
Traffic rate	10 Mbps/100 Mbps/1,000 Mbps, auto-negotiated
Network port 1/ Network port 2	Windows Internet access/ RT Internet access

VGA

Video transmission interface

HDMI

High Definition Multimedia Interface -- Support Audio and Video transmission

USB Ports

Two USB2.0, One USB 3.0

IDC

Interval	2.0mm
Measure	2×25pin

Memory

Nonvolatile memory	16G(Up to 64G)
DRAM	2G

Reconfigurable FPGA

FPGA Type	Spartan-6 LX75
Number of flip-flop	93,296
Number of 6-input LUTs	46,648
Number of DSP Slices	132

Total Block RAM	3,096 Kb
-----------------	----------

Internal Real-Time Clock (40MHz)

Precision	5ppm
-----------	------

CMOS Battery

Input range	12V(2A)
-------------	---------

Max power	24W
-----------	-----

Max power consumption	24W
-----------------------	-----



Note The battery is not user-replaceable. Refer to the Battery Replacement and Disposal section for information about replacing the battery.

Environmental

Temperature (IEC 60068-2-1 and IEC 60068-2-2)

Operating	0°C ~ 60°C
-----------	------------

Storage	-40°C ~ 85°C
---------	--------------



Caution Failure to follow the mounting instructions in the user manual can cause temperature derating.

Indoor use only.