

1.0 OVERVIEW

Asyst's ATR9100-RoHS electronics consists of a two printed circuit board which contains power supplies, Controller Area Networking CAN driver and a RFID radio with standard range and long range. The digital PCB contains a Dallas Network Microcontroller with 16 x 4 MHz CPU, Fast Ethernet 10BASE using RJ-45 connector and one RS-232 port. There is also a RFID radio/power supply PCB which contains +5, +10, +3.3 V power supplies for various reader functions and a 134.2 KHz RFID transceiver with interface circuitry to the host processor.

1.1 ATR9100-RoHS has the following primary functions

- 1.1.1 A serial port to a serial host and CAN Bus and 10BASE-T/100Base-TX Ethernet and RFID with one Antenna Port and one Remote Presence Port
 - 1.1.1.1 Serial port to a single serial host connection
 - 1.1.1.2 Provide power on the serial and CAN Bus ports for power connected devices
 - 1.1.1.3 Ethernet 10BASE-T/100Base-TX and RFID

2.0 MECHANICAL SPECIFICATIONS

Size: 1.5" x 3.25" x 4.5"

3.0 ELECTRICAL SPECIFICATIONS

+24 VDC @2A max

4.0 ATR9100-RoHS Antenna Ports

4.1 Introductions

The ATR91000-RoHS digital PCB provides the external power interface to the outside world in addition to a CAN external interface and a digital interface from the microprocessor circuitry to the RFID radio circuitry on the RFID radio/power supply PCB.

4.2 ATR9100-RoHS contains the following sub-circuits which will be addressed individually

4.2.1 RFID radio/power supply PCB

4.2.2 DC/DC converters:

- +24Vdc @2A (input)
- +3.3Vdc @500mA (output) for on board logic chips
- +10Vdc @500mA for extended range RFID circuitry
- +5Vdc @200mA for the RFID reader module

4.2.3 Internal Power Generation

- +12Vdc switch module converter – switch mode converter U15 provides 12Vdc $\pm 2\%$, monitored at TP7, to the RF power circuits and remote IO presence port of the ATR9100-RoHS

- +5Vdc linear regulator
- +3.3Vdc switch mode converter
- +1.8Vdc for the micro controller core

4.2.4 Digital PCB

4.2.4.1 Micro Controller

Micro controller with the 16 MHz oscillator communicate with the RFID READER through the serial communication link.

Effectively, the antenna circuit is a series mode, resonate, LC circuit which is resonated very close to the 134.2 KHz carrier to achieve maximum voltage at the antenna node, approximately 200V peak-peak. This voltage divided by the impedance of the antenna at the 134.2 KHz determines the magnetic field generated by the antenna. The later the magnetic field the longer the read/write range of the transponder.

4.2.4.2 CAN Interface

Level translator CAN buffer chip translates the CAN Bus signal levels, at the J1 connector, to 3.3Vdc signals compatible with the microprocessor

4.2.4.3 Ethernet

The Micro Controller is built in 10/100 Media Access Controller (MAC), the Intel LXT972A 3.3V Dual-Speed Fast Ethernet/IEEE 802.3-compliant PHY Transceiver that directly supports 10BASE-T application. It provides a Media Independent Interface (MII) for easy attachment to 10/100 Media Access Controllers (MACs).

4.2.4.4 CAN 2.0B Controller

The DS80C400 incorporates one CAN Controller that is fully compliant with the CAN 2.0B specification. The CAN controller support the use of 11-bit standard or 19-bit extended acceptance identifiers for up to 15 messages, with the standard 8-Byte data field, in each message and global masks. The Micro Controller provides two CAN interface signals C0TX CAN0 Transmit Output and C0RX CAN0 Receive Input. These two CAN interface C0TX and C0RX are connected to the J1 pin 2 and pin 7, respectively.

4.2.4.5 Serial Ports

The ATR9100-RoHS provides 3 serial ports that can operate simultaneously and can be configure for different braud rate or mode. The RS-232 serial ports reside on the radio board and the CAN and fast ethernet port reside on the digital board.