Circuit Description for V640-HS61(-X)/HAM11(-X)

1 General

V640-HS61(-X) [CIDRW Head] and V640-HAM11(-X) [Amplifier Unit] comprise a Carrier ID Reader/Writer system. The CIDRW Head exchanges data to and from various types of Radio Frequency (RF)ID Tags. Each Tag is attached on an object that is to be identified by the CIDRW Head.

The data exchange between the ID Tag and the CIDRW Head is bi-directional.

The Amplifier Unit gets data from host computer (ex. Personal computer, Programmable Logic Controller) by RS-232C line, communicates with CIDRW Head by dedicated line, and sends response data to host computer.

2 Description of the CIDRW Head(Antenna) .

The CIDRW Head is comprised of the coil and the ferrite.

The CIDRW Head operates at 0.2W supplied from the Amplifier Unit.

For transmission, a pulse-modulated RF signal is encoded by the Amplifier Unit then this is sent out via the coil.

For reception, the reflection wave modulated by the ID Tag is received by the coil.

3 Description of Amplifier Unit

The Amplifier Unit is comprised of Micro-Reader, Control circuit, I/F circuit and other circuits.

The Amplifier Unit operates at 24V DC supplied from the external power supply.

The CIDRW Head, the display circuit and etc. are controlled from the input data as a signal of host computer. Moreover, an internal power supply circuit generates and supplies the power for the CIDRW Head.

3.1 Micro-Reader

The Micro-Reader is comprised of Transmitter circuit and Receiver circuit.
Oscillator sends 134.2KHz clock signal to Transmitter circuit which is in Micro-Reader, and Micro-Reader makes MOD signal.

3.2 Transmitter circuit

The Transmitter circuit drives a rectangular wave, and the LC series resonates.
The Transmitter circuit gets MOD signal of 134.2KHz.

3.3 Receiver circuit.

The Receiver circuit receives the RF signal of 134.2KHz and 123.2KHz.
Only the signal from Tag is selected by switch signal from Micro-Reader.

3.4 Control circuit

Control circuit controls all signals.
When the signal is input from a host computer, Control circuit outputs the command data which is needed to work the Micro-Reader. When the response data is input from the Micro-Reader, this circuit outputs the response data to host computer. This circuit also controls reset signal and display signal.
Oscillator sends 16MHz clock signal to CPU which is in Control circuit

3.5 I/F circuit

Host computer I/F is RS-232C of 9pin D-sub connector and RS-485 of 2pin original connector. CIDRW Head I/F is original of BNC connector.

3.6 Other circuits

The Power supply circuit inputs DC24V and generates and supplies two systems of electric power. One is the electric power of 5V used as an Amplifier Unit and another is 0.2W used with the CIDRW Head.
The Display circuit displays the state of the Amplifier Unit with four LEDs.
The Setting circuit is comprised of 10bits dip switches.