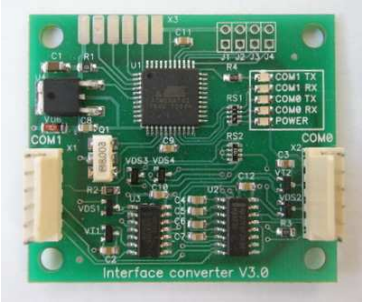
Universal Protocol Converter V3.0
User Manual



Power
Converter board is powered with +12V DC. Power can be applied through either connector X1 or X2. Power terminals of both connectors are wired together. So power supply from the host board can be applied to the X0 connector and then applied to a bill acceptor from the X1 connector. When board is powered POWER LED is lit.

Connectors
Board has two identical connectors: X1/COM1 and X2/COM0. Connectors have same pin-outs.

X1/X2 pin	Type	Description
1	power	+12 V
2	power	Ground
3	output	TX TTL (OC)
4	input	RX TTL
5	output	TX RS232
6	input	RX RS232

Each connector has two pairs of RX/TX terminals – with TTL (0/+5V) levels and with RS232 (+12V/-12V) levels. RS232 terminals can be directly connected to a PC serial port. Only one pair of RX/TX signals should be used at a time.

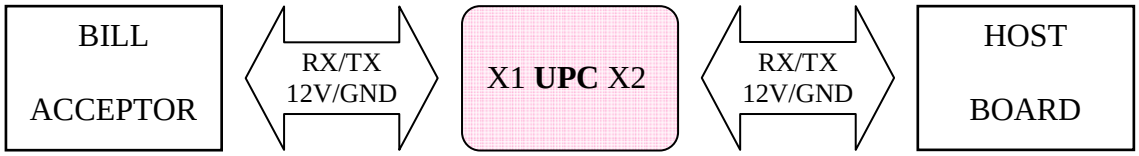
LEDs
Converter board has 5 LEDs. First one is POWER which indicates that board is powered on. Other four used to indicate the communication on both ports.

COM0 RX flashes when board receives a packet through port 0. Long interval between flashes (about 2 seconds) indicates receive timeouts (nothing received).
COM0 TX flashes when board sends a packet through port 0.
COM1 RX flashes when board receives a packet through port 1. Long interval between flashes (about 2 seconds) indicates receive timeouts (nothing received).
COM1 TX flashes when board sends a packet through port 1.

Usually, when all pins are properly connected, COMn RX and TX flash in sync. That means if a board receives packet from host then it immediately answers. Also if board sends a packet to a bill acceptor it should answer very quickly.
If either COM0 RX or COM1 RX flashes with period about 2 sec that means communication is broken.

Connection
In order to connect converter board two cables must be built: the cable between bill acceptor and converter board and the cable between converter board and a host board. Each cable should have four wires: +12V, GND, RX, TX. Signal levels (TTL or RS232) should be properly selected, consult bill acceptor and host board manuals.

Although both ports of converter board are hardware identical the firmware loaded into the board usually expect bill acceptor on a particular port, and host board on the other. So the bill acceptor should be connect to the X1 (COM1) connector and the host board to the X2 (COM0) connector:



WARNING!
Never connect RS232 level terminals with the TTL level terminals. This can damage a converter board and a host board / bill acceptor.