RMV ELECTRONICS INC. **Application Note:**	**Application #:** 00007
	Date: September 1994
Description: Using several ITC232-A units in a RS-485 multidrop communications network.	**Status:** Draft version

Several potential applications of the ITC-232A may require the use of multiple units connected to a single PC or terminal controller. This application note describes a circuit and the software necessary to connect up 128 devices on dual twisted pair cable. The system will work by the host sending an address byte to all attached ITC-232A devices. An address byte is differentiated from all other communications by the setting of bit 7. (Other communications with ITC232-A's consist of ASCII characters, all of which leave bit 7 low.) The unit whose address corresponds to the transmitted address byte will then 'wake up'. This unit's ITC232-A will now 'listen' to commands sent from the host. The first such command will be to set another port output, which will enable the RS-485 transmitter. The host now sees this single ITC-232A as though it were the only one on the network.

OPERATIONAL DESCRIPTION

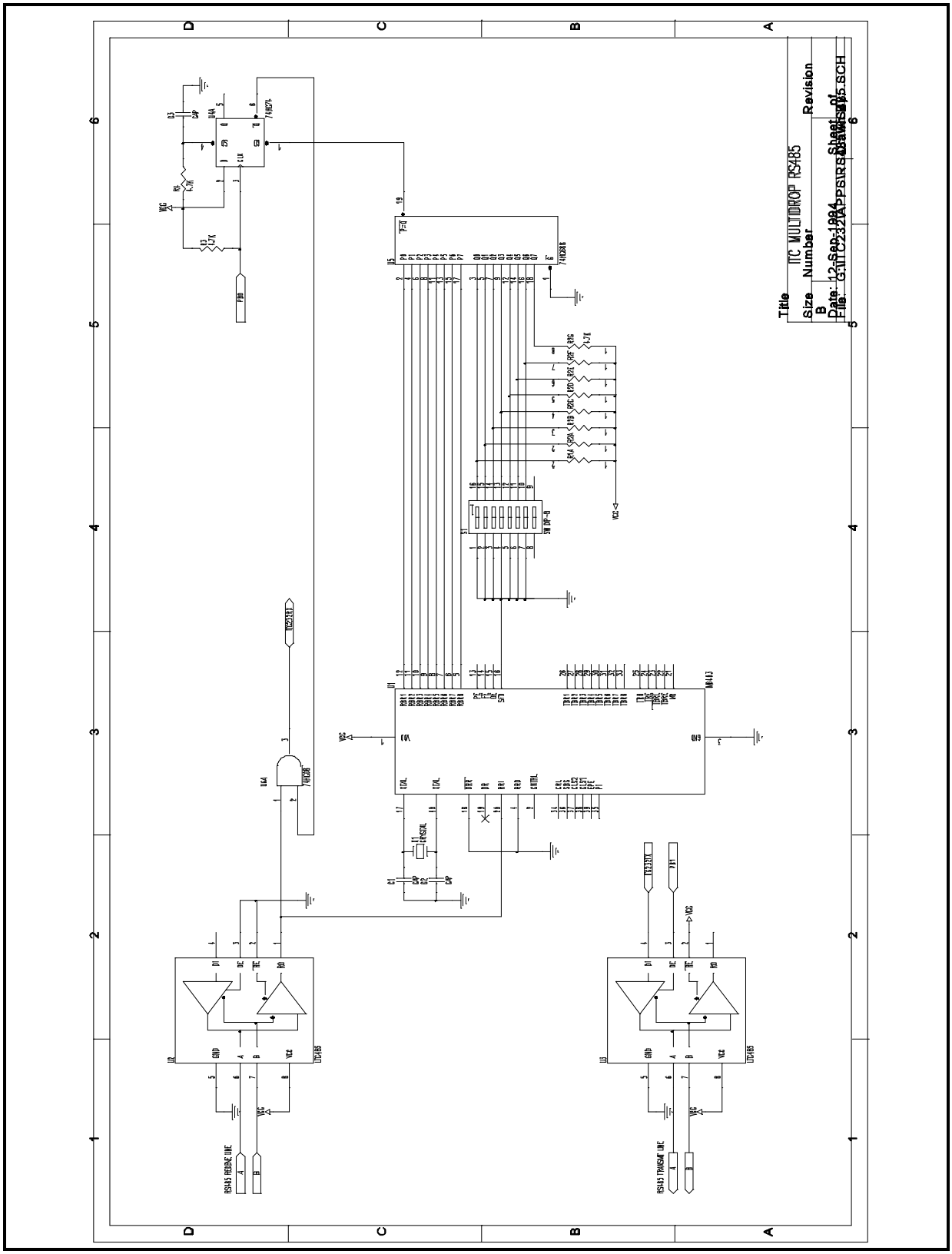
Please refer to the schematic diagram and the functional software listing. Also refer to the appropriate manufactures' data sheets and the ITC232-A user's manual for further detail.

The circuit consists of an RS-485 receiver/transmitter pair that connects to the communications cable. The receiver is enabled for continuous operation, while the transmitter is enabled through an ITC232-A port output (Port B, bit 1). There is also an independent asynchronous receiver/transmitter and an 8 bit comparator. The function of these parts is to monitor the received serial data stream for address bytes (distinguishable by bit 7 being set). The address of each unit is on one side of the comparator, while all received data bytes are on the other. Thus, if an address byte is sent that matches that set on the unit, the comparator output will change state. This transition will in turn clear the D flip flop. The output of the flip flop is connected to a gate that enables or disables the serial communication stream from connecting to the ITC232-A receive input. Thus, when an address match is detected, all subsequent communications will also be sent to the ITC232-A.

The first step is to send a single byte that contains the address of the desired unit. The next step is to send the command to the ITC232-A to set Port B pin 1 as a low output. Note that since the ITC232-A transmitter is not connected, there will be no acknowledgment until this command. Port B bit 1 enables the RS-485 transmitter section and completes the communications circuit between the PC (or terminal) and the addressed ITC232-A. Normal operations as in a stand alone configuration can now take place. All regular ASCII (7 bit) communications are ignored by the address detection circuitry in the other units in the network.

To end communications with a particular unit, Port B bit 1 is switched back high. This disables the ITC232-A transmitter connection. Then Port B bit 0 is toggled high. This reverses the condition of the D flip flop and disconnects the ITC232-A receiver. Note that there will be no acknowledgment of this command received at the host. The system is now ready for another ITC232-A unit to be selected in a similar manner.

Note that any assertions of the interrupt lines (IRQL or IRQH) from a disconnected ITC232-A will not be received at the host. A networked system such as this must work in a 'master/slave' configuration, allowing for polled operations only.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