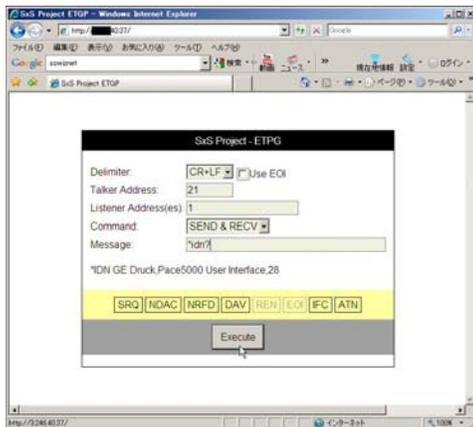
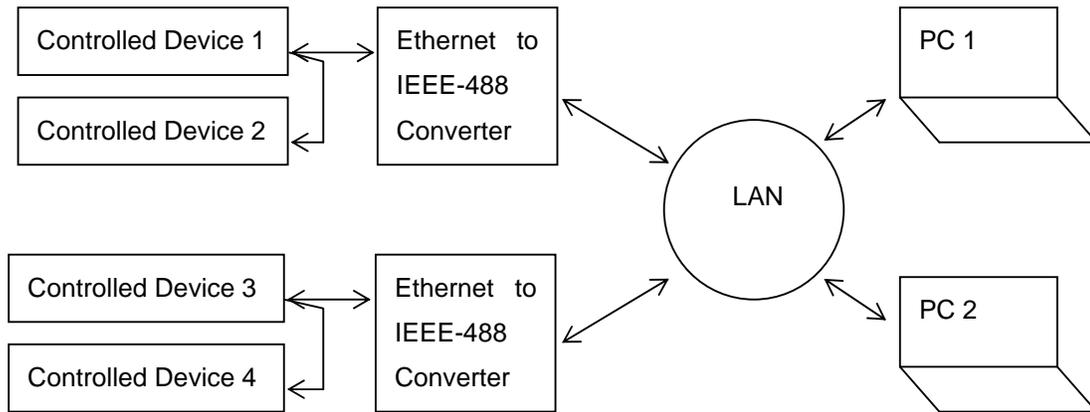


Ethernet to GPIB Interface

Project Code Name : ETGP

Abstract

IEEE-488 (or GPIB) has been being a well known and proven interface in measurement used in many industries. IEEE-488 is used to connect PC and various measurement devices and control devices. The idea is to connect GPIB devices to LAN, so that they can be either controlled or monitored from remote.



Design Summary

W7100 is low voltage powered micro-controller ($V_{dd} = 3.3V_{dc}$ typical). However, unlike other low voltage powered micro-controllers, W7100 GPIOs are capable to deal with TTL input voltage, 5Vdc. Other low voltage powered micro-controllers will limit their high level input voltage to power input voltage, i.e. $V_{ih} \leq V_{dd}$. Moreover, W7100 GPIOs are capable to produce high level output at least 2Vdc and are capable to drive current of at least 2mA. This will enable W7100 to communicate with multiple IEEE-488 devices connected in daisy-chain without using additional level shift interface IC. The IEEE-488 standard limits the controlled IEEE-488 devices that may be connected to one controller to 15 devices. Other micro-controllers will require bi-directional transceiver ICs, like SN75160 and SN75161. In this project experiment, we connect IEEE-488 port connector to P0 and P3, the available GPIOs of W7100. These ports are pulled-up and pulled-down by network resistor. No other electrical component is used. For testing purpose, W7100 will become network server while PC being used to control IEEE-488 devices will become network client.

Hardware Design

The hardware is very simple. The W7100 micro-controller will have direct control to both control bus and data bus of IEEE-488 port.

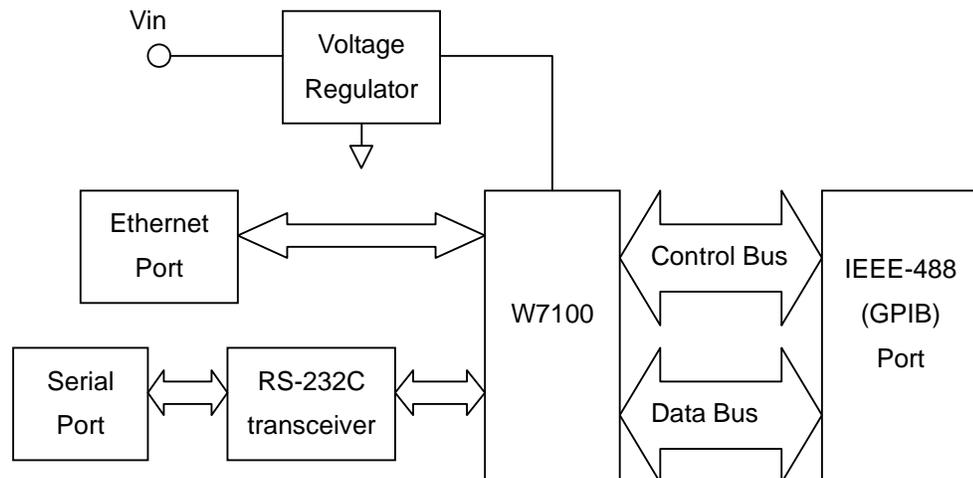


Fig.3.1. Circuit Block Diagram

Software Design

HTTP is chosen as user interface, since HTTP has been being standard protocol and is being used widely. This will allow users to connect PC of any platform (not restricted to one OS) to W7100 via any web browser. Upon power on, the W7100 will request IP address from DHCP server. The IP address will be retrieved automatically. This will prevent the W7100 from IP collision that may occur when static IP address is used. If the W7100 fail to retrieve IP address automatically, it will revert to static IP address. The W7100 firmware will generate html upon request from client PC. The generated web page is XHTML compliant.

