

1. Why PC – Based Automation?

The PC has an incomparable history of success, and is now unimaginable in many fields of everyday life.

PC know-how is a matter of course nowadays, and PCs have resulted in standards (hardware components, operating systems, HMI (Human Machine Interface), communication etc.) which – as a result of permanently increasing performance accompanied by reduced prices – make them interesting for an increasingly wide range of applications. In the case of Automation technology, the few PC applications at the beginning – especially for visualization purposes – have now developed into comprehensive applications for complex tasks.

This is basically the result of two aspects.

- PCs offer new possibilities with respect to flexibility, cost reduction and reduction in time-to-market associated with enormous increase in performance
- On the one hand, PC technologies permit new applications within a standardized environment, and, on the other, permit simple interface of such PC-based solutions to the office world.

2. Advantages of PC-based Automation?

- Combining Operating, Control, Monitoring In One Solution.
- Cost Saving Through Integration.
- Simple communication resulting from integral network ports
- Simple use of business software (e.g. MS Office) and own software(C++/VB..)
- Standardized means better selection
- High investment security
- High system availability

3. ARM – AUTO System Description

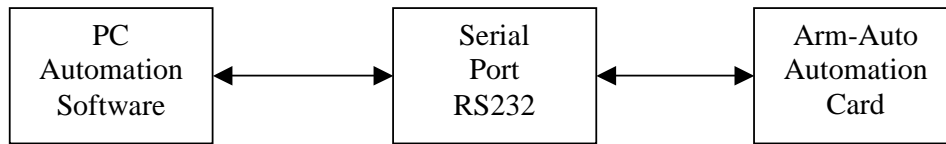
A. PRINCIPLE OF OPERATION

Since any PC- based Automation Systems needs beside the PC a slot PLC which is very expensive for small automation projects the Arm-Auto automation card was introduced as a substitution for the PLC Slot Card (A PCI compatible card) the whole automation process is carried out by the PC as the user interface and the Arm-Auto Automation Card As A server(For Testing purpose I used Keil LPC2138 Evaluation board As automation Card).

The Command signal from the PC Control Software is received at the Automation Card unit where it is decoded over a specified format and the microcontroller-based system throughIt's I/O ports activate appropriate function operation. For the input Monitoring the PC Automation Software is updating is inputs image every 1 Sec For All analog and digital inputs by requesting the input statuses for digital inputs and inputs values for analog inputs from the

Automation Card, the Automation Card read That Values and forward them to the PC software through Serial Communication

When the operator need to activate an actuator (motor , valve , etc.) the PC automation Software Sends the proper signal to the Automation Card to activate the relevant actuator .



C. ADVANTAGES OF THIS SYSTEM

The technology is a very low cost solution for limited budget automation project it very flexible design and customizable PC automation software cost is nothing compared to other professional systems in the market you can connect the outputs to solid state relays or magnetic mechanical relays to activate various actuators You can connect the inputs to various analog and digital sensors you can monitor, operate the process from the same device all that made it is a very suitable choice for limited budget automation system.

PC Automation System

Analog Inputs Values

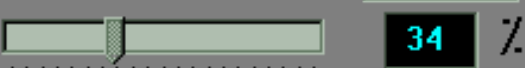
Temperature **13** C



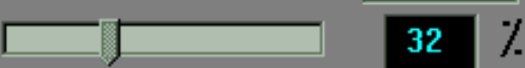
Pressure **522** Kpa



Flow **764**



Level **083** M



Digital Inputs

Input 1

Input 2

Input 3

Input 4

Input 5

Input 6

Input 7

Input 8

Customize

Connect

Online

Disconnect

Offline

Analog Alarms

Temperature

Pressure

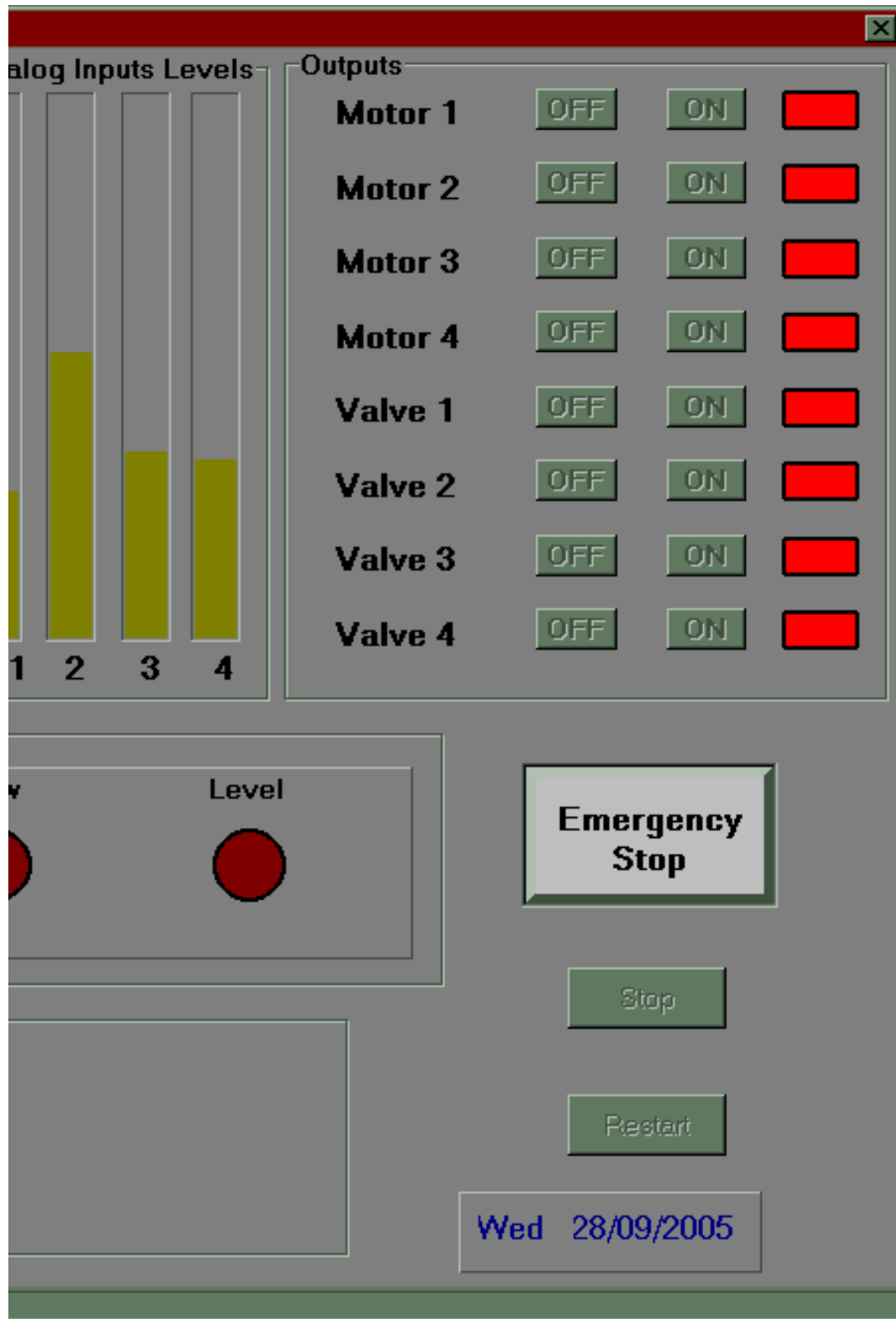
Flow

Alarms

ص 01:17:54

Disconnected

COM1



Arm-Auto Block Diagram

