

Low Cost Humain Machine Interface

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I. INTRODUCTION

The HMI (also known as human computer interface) or man machine interface (MMI) is the aggregate of means by which people – the users – interact with the system – a particular machine, device, computer program or other complex tool.

Typical HMIs are very costly to implement. We made this HMI based on microcontroller. So it's very cheap and as well as reliable too.

Our HMI ~ one character LCD based HMI + one Micro PLC + one Analog Module + Many more ...

II. DESIGN

Machines which are suitable to be interfaced with:

- Generators.
- Packing machines.
- Bottle fillers
- Boilers.
- Conveyors belts.
- Robotic welding machines.
- Threading machines.
- And many more ...

Extra features of our HMI:

- Implementation is very easy and no extra device is needed.
- Built-in PLC (Microcontroller based).
- Built-in oil status monitoring capability.
- Built-in Emergency alarm.

- Built-in analog module for analog inputs.
- Built-in fire alarm.
- Built-in Over heat protection system.

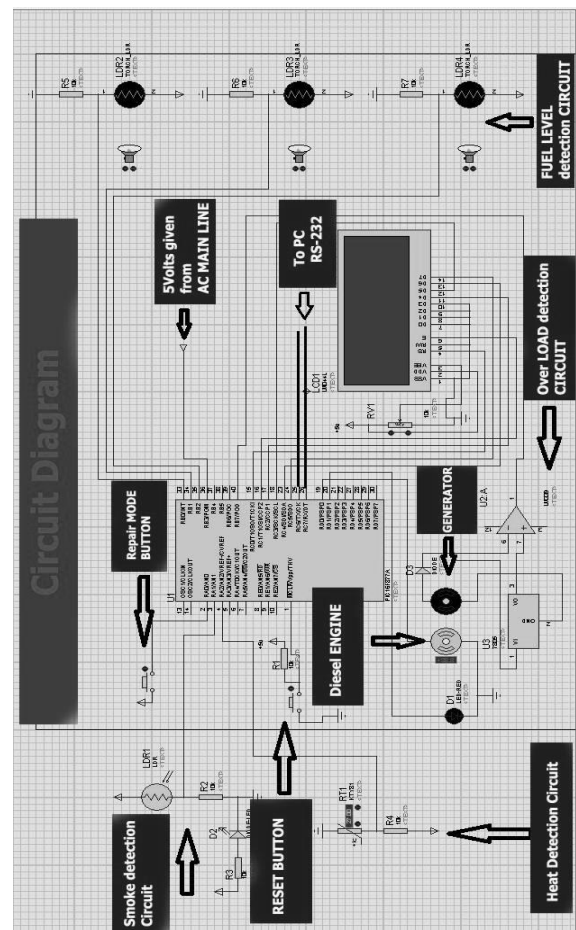


Figure 1: Circuit Design

Total cost of making our HMIs:

A microcontroller + LCD + Temperature sensors + relays + RS 232 to USB converter + MAX 232 level converter + Piezo Buzzer + Other parts ~ 40 \$

III. LIMITATION

We can't interface our HMI with industrial SCADA (Supervisory Control And Data Acquisition) systems software's directly. Extra serial to LAN conversion module is needed for doing that. But using hyper-terminal (Built-in with Windows operating system) our HMI can communicate with single PC.

The screenshot shows a list of industrial control products. Each item includes a title, description, price, and an 'Add To Cart' button. The products listed are:

- MD304L Kinco Evview 4.3"STN HMI New In Box!**: Price: US\$122.00
- FX1S-10MR-001 (FX1S10MR001) PLC Base Unit**: Price: US\$130.00
- TP04G-AL2 DELTA Text Panel New In Box**: Price: US\$119.00
- FX2N-48MR-001PLC NEW**: Price: US\$384.00

Figure 2: A short price list of similar typical HMIs and PLCs

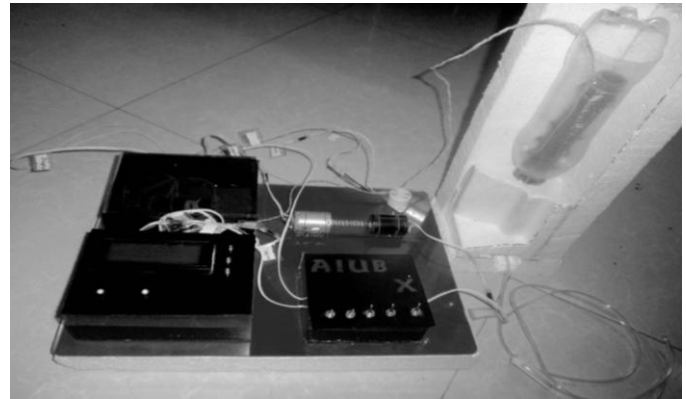


Figure 3: Our HMI prototype

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AUTHOR



I'm an Electrical and Electronics Student. My interest is on electrical equipment repairing and troubleshooting. I worked in Mobile servicing center and in CRT Monitor repair shop before getting admitted to Engineering University.