



Home Automation Instrumentation

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A Spectrochem Instruments group & Division of I.F.M Consultants Pvt. Ltd.



A SPECTROCHEM INSTRUMENTS GROUP

Customized & tailor made automation

Embedded energy efficient systems

Home automation a customization of User convenience



Our RAC master board

Our home automation solution is a customized package tailor made to suit the home owner's preferences & convenience..

Every home automation requirement is unique. The automation can include...

Our system

Our system is based on high performance embedded microcontrollers. Every room has a scalable remote appliance control unit (RAC).

The Base system comes with 8 channels, multiple boards up to 4 can be added to scale up the total channels in a room to 36.

A master board controls these channels based on

- Lighting
- HVAC
- Security surveillance"
- Audio & Video networking
- Water management
- Weather station
- In-door Air quality management

Our systems are modular & thus offer total scalability. Home automation is always based on a theme, typically the options available are...

- Energy saving
- Utilitarian
- Hungamma

commands received through wireless remote or through building network.

The wireless remote works on 2.4GHz IEEE 802.15.4-2003 standard also very popularly called the Zigbee protocol.

The building network is implemented on RS422 industrial duplex communication.

WiFi network based on "APPLE" express & extreme

A mix of all three options results in the best automation solution.

Energy saving a necessity of modern times is a global requirement too. we deploy sensor based control system. Our sensors include humidity & temperature, ambient light in rooms & occupancy.

Energy efficient lighting can be realized by employing current global trend i.e LED based lighting.

Choosing modern AC systems (VRF) that operate on inverter technology, 3D scroll compressors can save energy almost by 60% compared to conventional AC systems.

is the communication channel employed for linking all the communication layers.

Automatic light control (ALC) is implemented in areas like the toilets & dressing rooms, a combination of PIR & Mag reed switches controls the lighting & exhaust when triggered by the sensors.

Entire home can be controlled through touch panels.

Features:

- MODULAR & SCALABLE
- OPERATES ON 110 & 220V AC SUPPLIES
- EMBEDDED MICROCONTROLLER TECHNOLOGY
- BUILT-IN PROTECTION BASED ON POLYFUSE
- RF 2.4 GHZ WIRELESS REMOTES BASED ON ZIGBEE
- WIFI NETWORK BASED ON APPLE EXTREME & EXPRESS BASE STATIONS

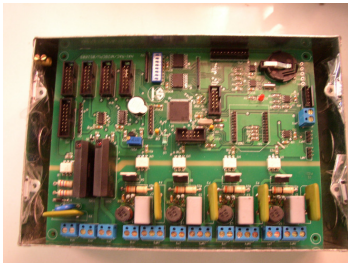
Our system

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OSRAM
Opto Semiconductors

AVAGO
TECHNOLOGIES



Our electronics is put directly into the 12 module box in the wall.

Modern energy efficient lighting: LED's

Light emitting diode LED is a solid state (Semiconductor) device capable of producing intense light. LED lighting is highly efficient & physically the devices last very very long, typically they can last more than 50,000 hours of operation.

A common mistake that most people make is in choosing the LED manufacturer.

Best brands that guarantee higher lumens & extremely long life are...

- CREE
- OSRAM
- Phillips
- Avago
- Seol Optics

LED's produce clean & safe light free from harm full radiation.

Other alternate option is the CFL & tube lights. However it must be realized that these produce harmful radiation.

Also the underlying principle in producing the light in these devices is based on a phosphor which when illuminated by UV light produces the actual light that we see.

Another nice feature of LED's is that they are available in multi-color, are dimmable unlike the CFL's & tubes, and produce relatively very less heat compared to incandescent or the Halogen lamps.

DID YOU KNOW THAT MITSUBISHI HEAVY INVERTER AIRCONDITIONERS TYPICALLY CONSUME ONLY 2AMPS, THAT ROUGHLY AMOUNTS TO ABOUT 60% SAVING.

VRF HVAC systems



MITSUBISHI
HEAVY INDUSTRIES, LTD.

Our Technologies, Your Tomorrow

HVAC systems are the biggest power guzzlers in any home. The efficiency of these systems depends on a number of technologies used in building them.

The first and most important is the least number of moving parts. Only scroll compressors fit this bill, they have typically three moving parts, lesser the moving parts, lesser

the chances of breakdown due to wear & mechanical fatigue.

Current trend is the variable frequency drive used for operating the compressors. Based on the feedback from sensors the compressor rpm is governed by the VFD saving power.

When the room where in the inverter AC is fitted has attained the required temperature set by the occupant, the compressor rpm is regulated unlike in the conventional AC's where it is toggled on and off. On and off control also creates power surges & extra current is consumed every time the compressor come on.

Security: surveillance

The heart of any camera system is the DVR. We offer both IP cameras as well as Analog cameras.

We offer PZT, IR PZT, IR cameras, these can be very conveniently integrated into our automation system.

Our DVR system is from HAWKEYE and supports up to 16 cameras.

Security, scalability & reliability are very important in surveillance systems. Multiple DVR's can also be cascaded and controlled through a single gateway computer.

The power full software enables users to establish recording schedules, create motion detection zones and use PZT controls on available

attached video inputs.





Audio & Video streaming & networking

The Music, video & photo wireless networking is built around the legendary "APPLE" products.

The components used here are...

- 1) MAC Mini computer
- 2) Airport Extreme
- 3) Airport Express
- 4) iTunes software
- 5) Apple TV
- 6) Your Home theater + HDTV

7) Iphone or Itouch (for remote control)

Apple TV gives you access to an easy-to-navigate world of entertainment.

Listen to your iTunes music. Even show off your photos. Connect one HDMI cable and, just like that, Apple TV turns your TV into so much more. You can wirelessly control your music on Apple TV as you walk around your house.

Airport express can be

plugged directly into the wall for wireless Internet connectivity and USB printing for wireless.

AirPort Express also features AirTunes, which works with iTunes to give users a simple and inexpensive way to wirelessly stream iTunes music.

It includes a built-in combination digital and analog audio connector for connecting home stereo or powered speakers.



Water management

Water is a scarce commodity these days, with almost no rains, conserving water is every home's biggest necessity.

Our water management system is a sensor based system, the overhead tank & sump are constantly monitored by precise level sensors.

Unlike the water level con-

trollers commonly available, our system is based on the well proven capillary pressure sensing technique, this is totally failsafe, no moving parts or electrodes to corrode.

An embedded microcontroller monitors these sensors and signals the pumping system as and when required.



Another important aspect in water conservation is the garden watering system.

Here again we monitor the soil humidity employing sensors, based on which drip irrigation system is triggered.

This way water consumption can be highly regulated conserving precious water.

HOW ABOUT WATCHING YOUTUBE VIDEOS ON YOUR HD TV. WELL OUR SYSTEM LETS YOU WATCH YOUTUBE VIDEOS, FAMILY PHOTOS, MOVIES ETC FROM THE CONVINENCE OF YOUR SOFA OR BED.

In-Door Air quality management & Weather sensing

Completely air conditioned homes require air quality management systems.

Our system includes sensors from world renowned gas sensor manufactures like CITY technology & FIGARO.

An air sampling pump silently draws the room air into the system, the air is exposed to

the sensors. The electronics based on embedded microcontroller analyses the data from the sensor and displays the same on an LCD display.

Simultaneously it compares with programmed safe thresholds & if necessary automatically triggers the exhaust system. These systems

are rated for continuous use 24 hours, 365 days a week.

We also offer micro weather stations that can be conveniently deployed on the home roof. The system gives data like the ambient temperature, humidity, wind speed, wind direction & rainfall.



URL: www.spectrochemindia.com

Instrumentation Through Innovation

A SPECTROCHEM INSTRUMENTS GROUP

At Spectrochem Instruments Pvt. Ltd. We design, develop & manufacture cutting edge embedded microcontroller based instruments & devices. We have behind us more than 17 years experience in diverse fields. Our product lines include....



- 1) Analytical Instrumentation.
- 2) Medical & biotechnology Instrumentation.
- 3) Lab, Industrial & process automation.
- 4) Environmental, weather & pollution monitoring.
- 5) Home automation & security systems.

Our company 's in-house R & D effort is recognized by DSIR. We have dedicated & highly motivated team of engineers to carry out high technology projects.

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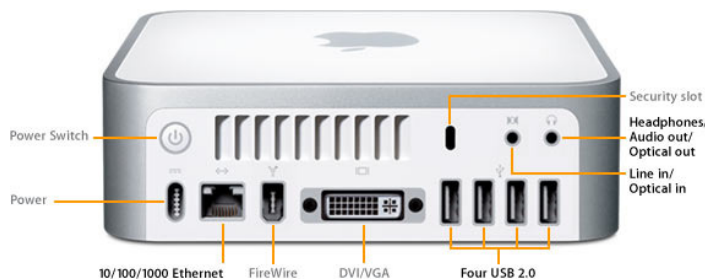
The technology powering our automation solution



Apple Extreme router



Apple iTouch or iPhone remote control for controlling audio & video



Apple MAC mini the building gateway computer



Apple express multi room audio streaming



AVR RISC Microcontrollers