



CEA



CONCEPTUALS SCHEMATICS
Details of Shop Drawings
Risers and Single Line Diagrams

FOR

**LOW CURRENT “Control Systems”
By
SMARTHOME INDUSTRY GROUP**

How To Cable and Conduit



CEA



RoHS

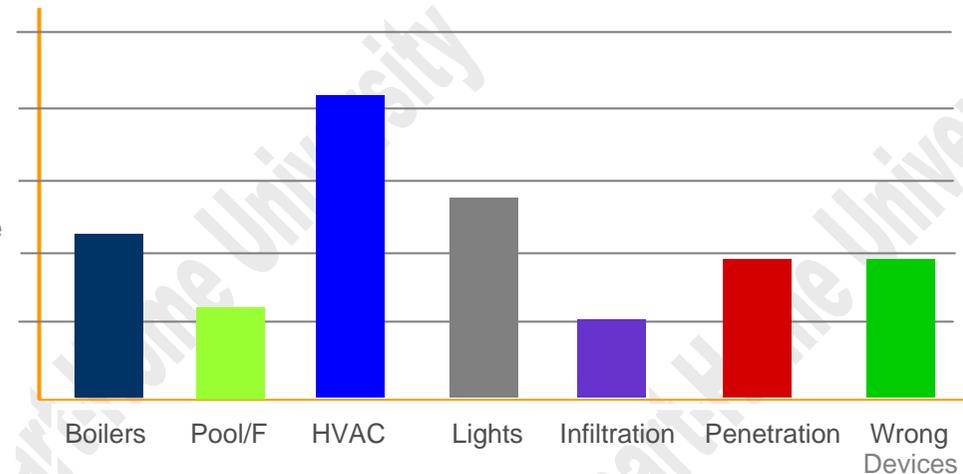
Factors that affect energy consumption Level in Buildings :

- Wasted Energy on Water Heating (During Bed Time, School & Office Time, and away on vacations)
- Wasted Energy on Extreme Air-conditioning (During No Occupancy)
- Wasted Energy on Lighting (During No Occupancy)
- Wasted Energy on Timer Driven Fountains (During No Presence in that area)
- Wasted Energy Due to Infiltration (Forgetting Hatches and Doors or Windows Open for long time while running HVAC)
- Usage of Non Energy Saving Fixtures (Consume more power, and produce heat and thus require accordingly require extra Air-conditioning to cool that heat injected into the space)
- Direct Sun Penetration (creates heat build up and accordingly require extra Air-conditioning to cool that heat injected into the space)
- **Heat Battery Effects** (Due to usage of wrong Building Materials or due to not properly insulating buildings.)
- **The Proper Study of Air Movement Effect Around Building** (Such movement help cool chillers and accordingly make the building more energy efficient.)

Factors that make Buildings Green& Environmental Friendly

- Use of New Energy Generation Technologies like Solar Panels and Wind Turbines contribute towards Green Buildings
- Water Efficiency
- Sustainable Construction Methodology & Materials
- Energy Wastage Management
- Innovation and Design Process
- Usage of Recyclable Materials
- Usage of Bio Degradable Materials
- District Cooling and Heating

Energy & Environment	
SmartHome-BUS System & Low Current	
Schematics & Detail of Shop Drawings	
Control, Entertainment & Energy Systems	
Rev. 5.0	Date 30-July-2011
Supported By: Intelligent Building, Green Building, & Smart Home Standards	



Green Building and Smart Building:

Many things Remain in Common, and Support Each of these two building Environments.

Mainly; Energy Saving and Environmental Factors are the Main Commonality between these two types of Buildings

Green & Smart Building

SmartHome-BUS System & Low Current

Schematics & Detail of Shop Drawings

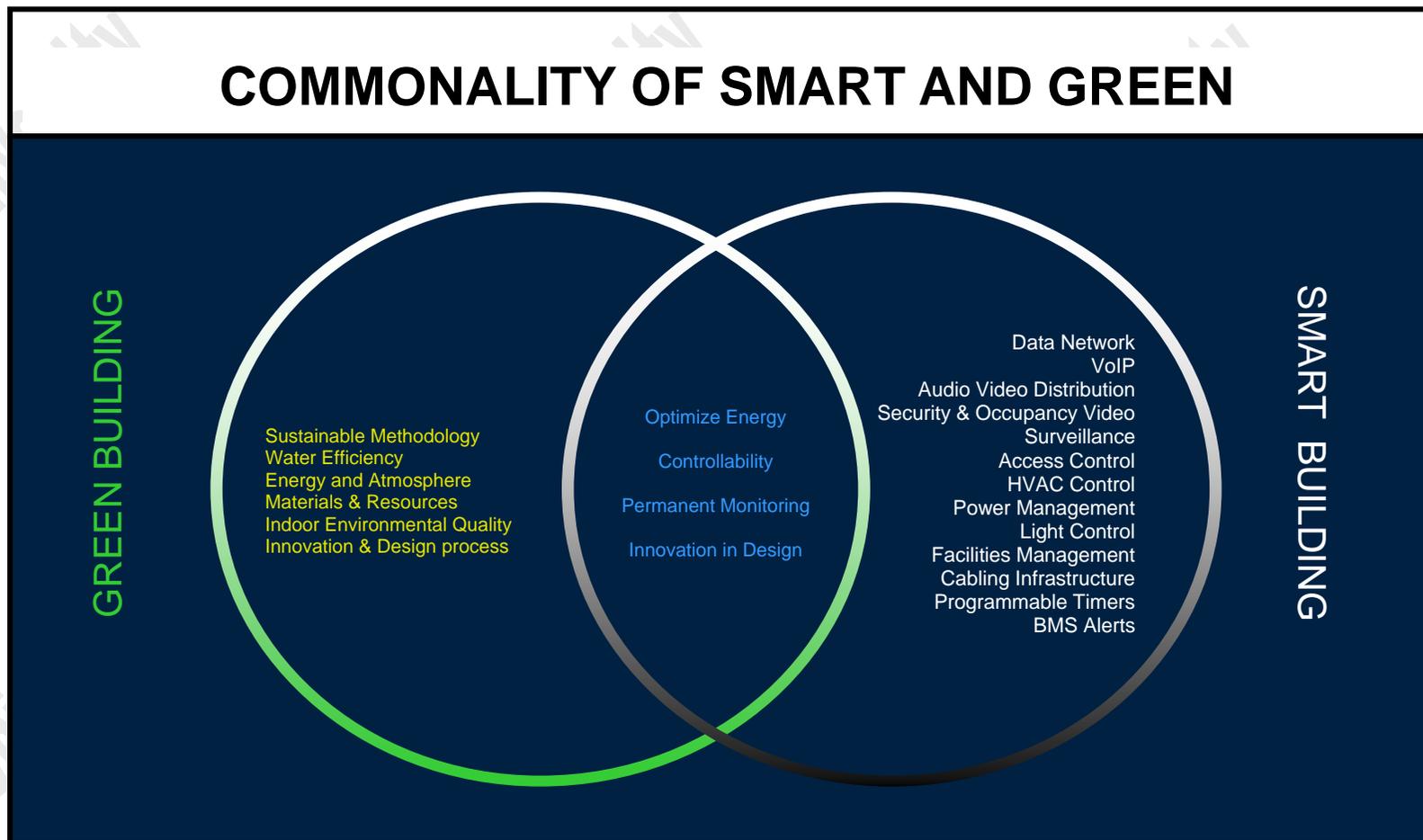
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COMMONALITY OF SMART AND GREEN



Smart Building Main Energy Systems:

Energy Saving: Lighting, HVAC, Sensors, Pumps and Motors, Infiltration

Environment: Less Wiring, Conduits, Manpower

Less Usage of Energy & Less pollution

Renewable Energy

SmartHome Energy Systems

SmartHome-BUS System & Low Current

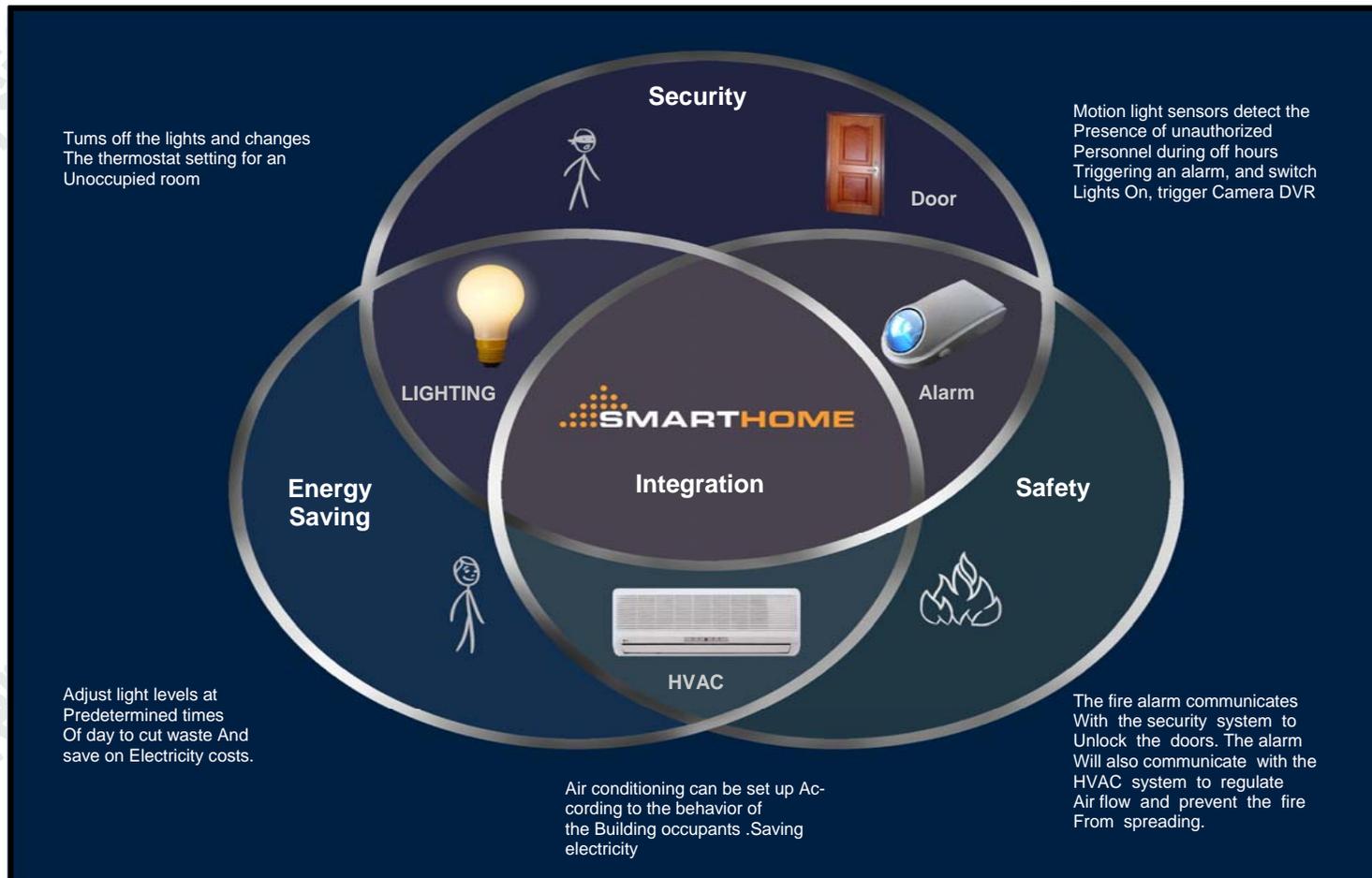
Schematics & Detail of Shop Drawings

Control, Entertainment & Energy Systems

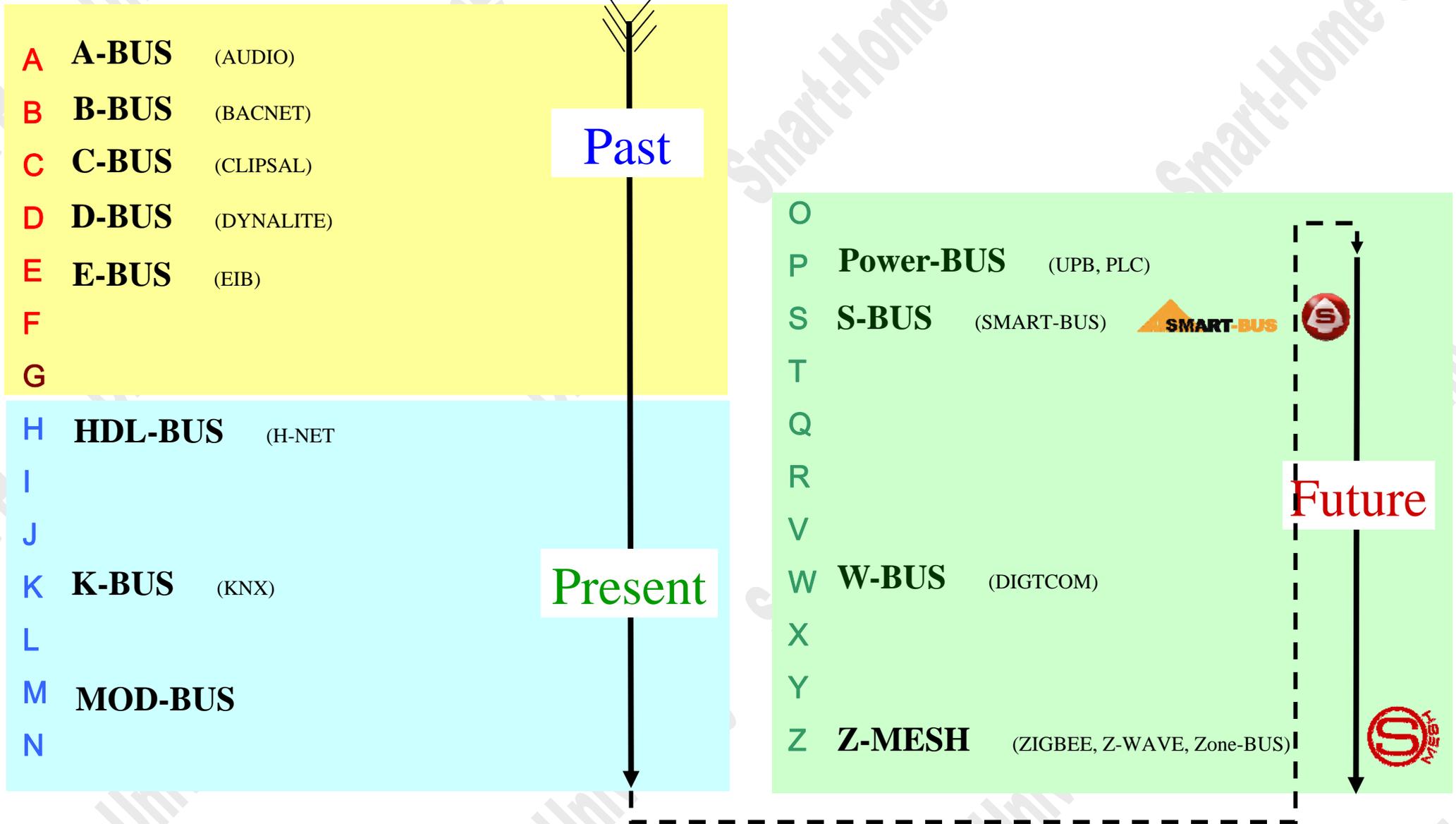
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CONTROL BUS HISTORY LIST

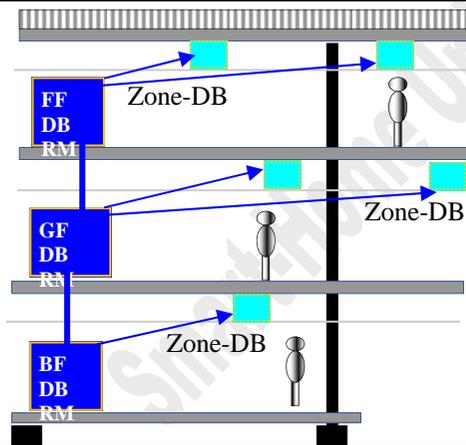


To Save in cabling, Smart Home Recommends to use: Zone DB Wiring System Topology for Control wiring.
 Power feeds Remain intact coming from Main Electrical DB as Main Feed

In ME Area, Especially in the GCC; Most Villas and Homes have FCU/AHU 1 per Zone with Ceiling Access panel.

Thus we do Recommend The **Smart-BUS** Control **Zone DB's** Idea to be Allocated Above Ceiling reachable from Same HVAC Access Panels.

Additional Advise: Simply Add MCB and Fuses for the Zone DB, and Link Between Each Zone DB to the Other, While One of them or At Control Room we recommend to install UPS backup for Crucial Systems.



How To Save in LC Cabling

SmartHome-BUS System & Low Current

Schematics & Detail of Shop Drawings

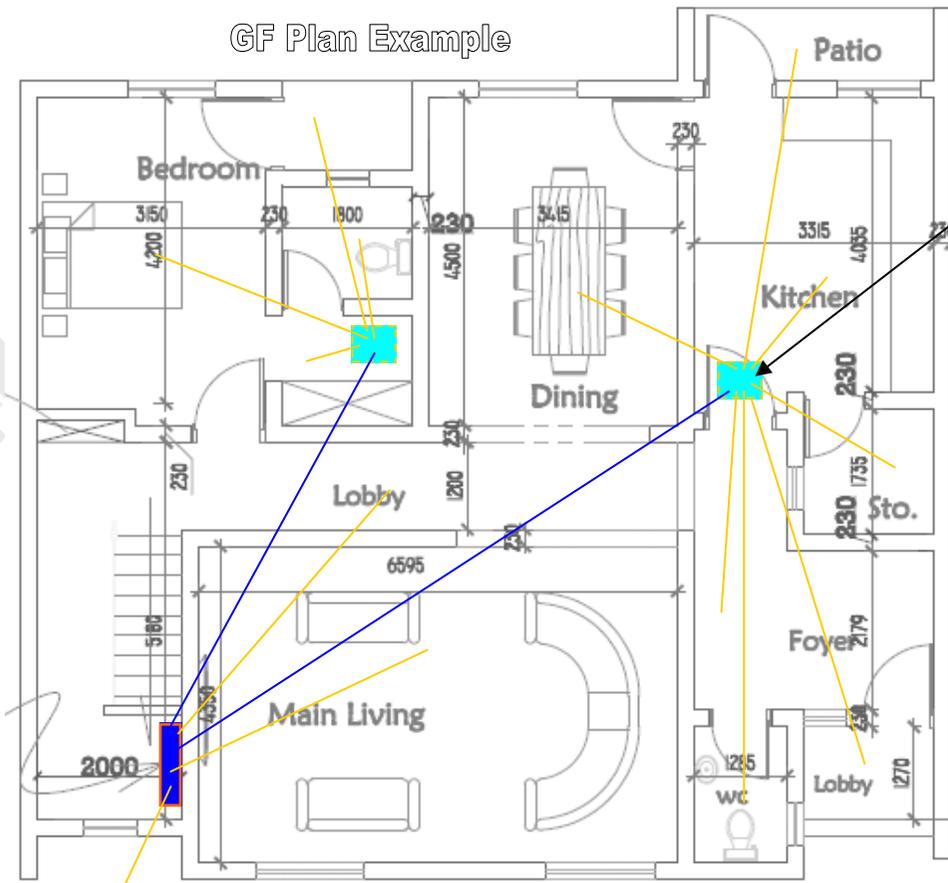
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GF Plan Example



Less JB:

Less Junction Boxes
 Advantage, Zone DB
 Act as Junction Box
 Now

Zone DB:

Can Distribute Lighting
 Loads, HVAC, Security,
 Audio, Shades, Ac-
 cess, GRMS
 DDP's and Switches,
 Touch Controls and
 More.. (All These Are
 Savings compared to
 Star Topology Con-
 ventional System)

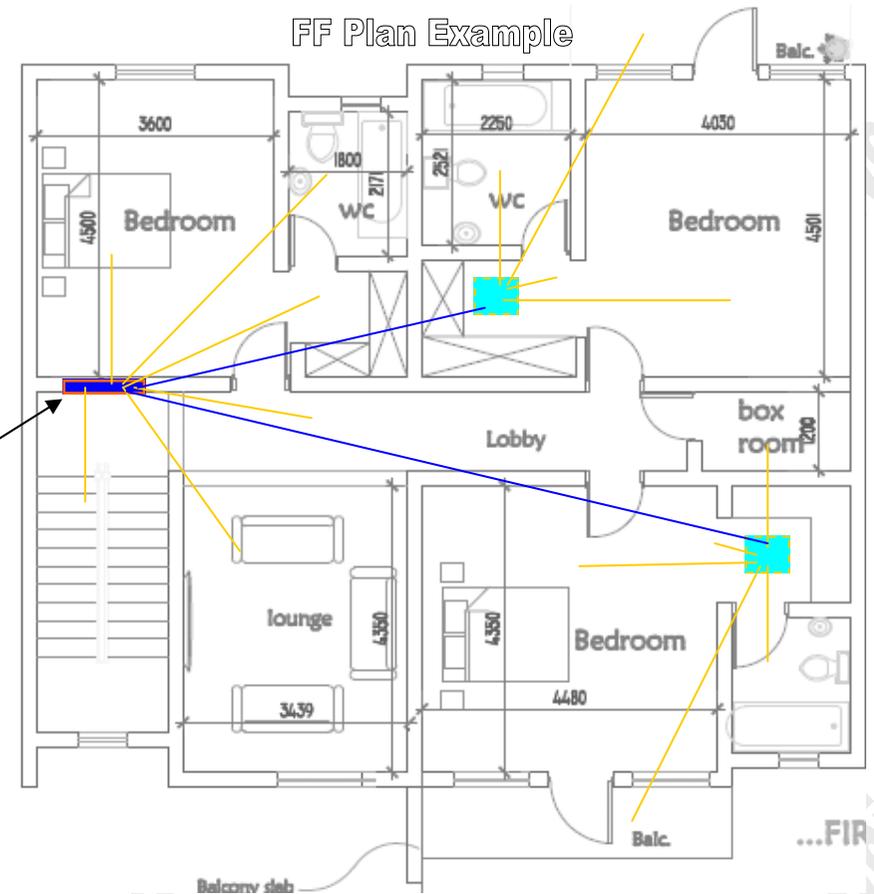
Main DB:

Can Distribute All Zone
 DB Items and Do More
 Central Functions for:

Telephone, Intercom,
 Data Network, Satellite,
 and VOD Media
 Streaming.

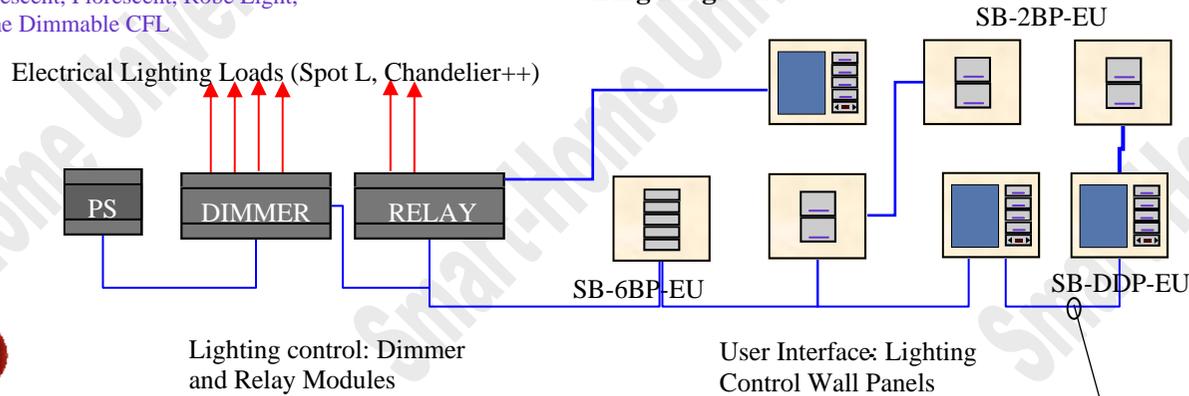
UPS System Central
 and More

FF Plan Example



Smart-BUS Leading Edge Advanced Dimmers can Dim:
Incandescent, Florescent, Robe Light,
and The Dimmable CFL

Wiring Diagram



Lighting & Dimming Control

SmartHome-BUS System & Low Current

Schematics & Detail of Shop Drawings

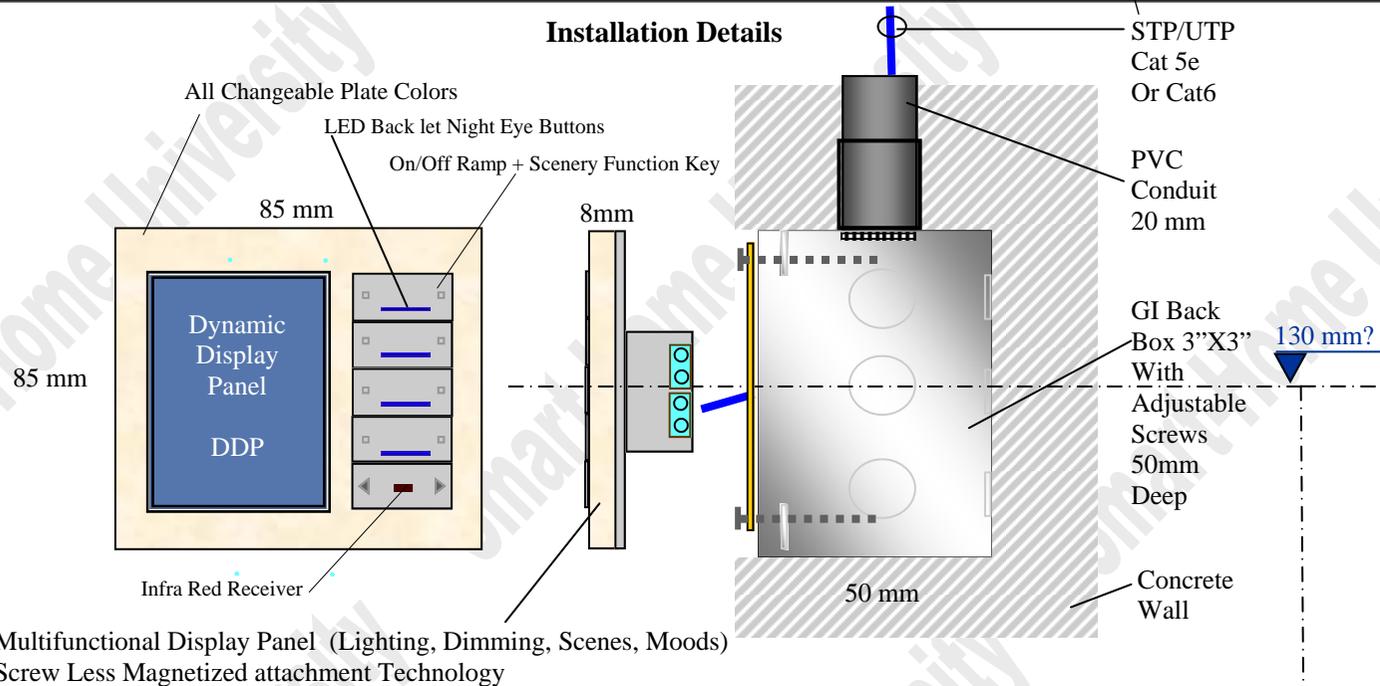
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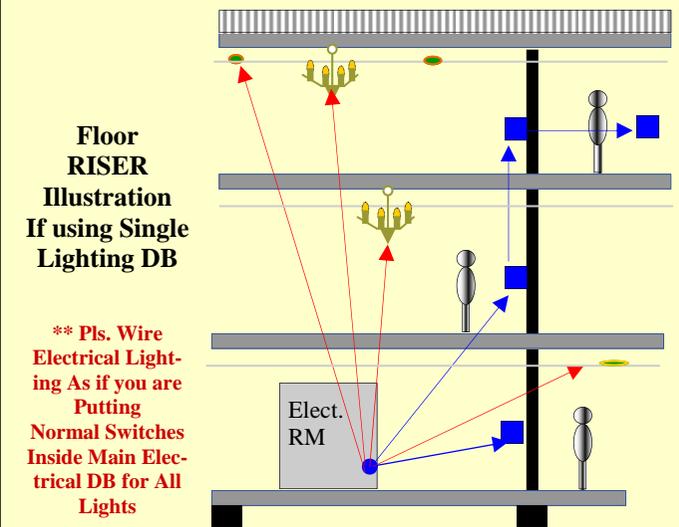
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Installation Details

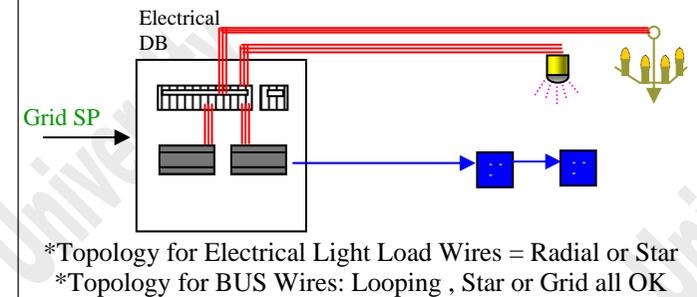


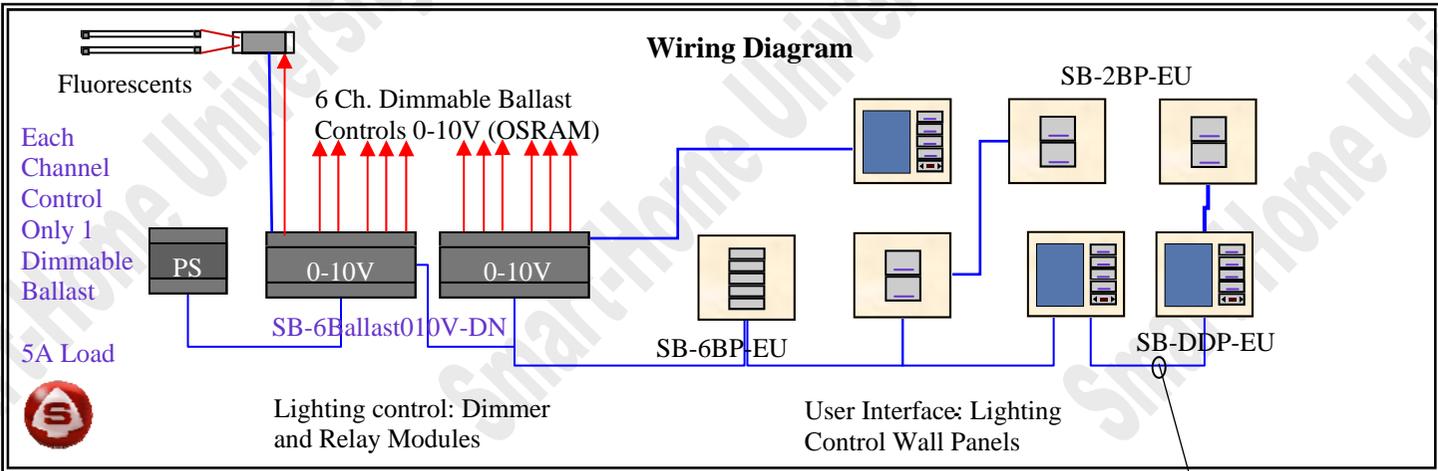
Note: Pulling The Wires For Mood Lighting and Smart Dimming Is Not Conventional, But Much Easier. (Simply: Pull The Channel Wires Direct To Zone Box or Lighting Module, Do not Pass through Switch at all). Switch Wires are Only Data cable Connected to Zone DB and Can Loop. Please Contact us if any thing not clear. support@smartbuscontrol.com

Note: Sizes are Based on Smart-BUS.BS/UK Compliant New Products. Face Plates Layout May Differ If Other SBUS manufacturer



SCHEMATICS





Fluorescent Dimming Control

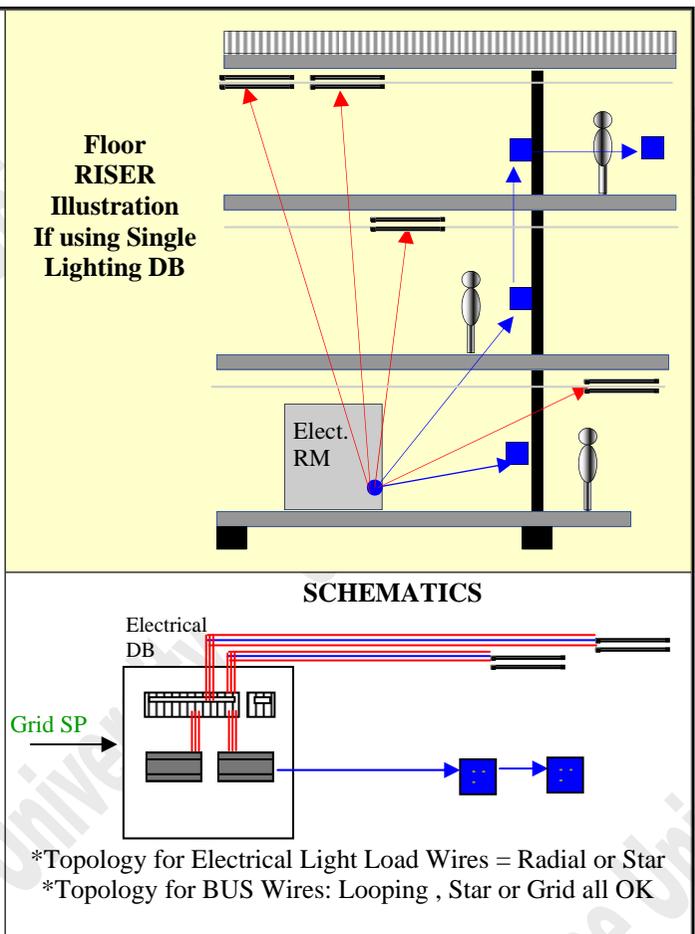
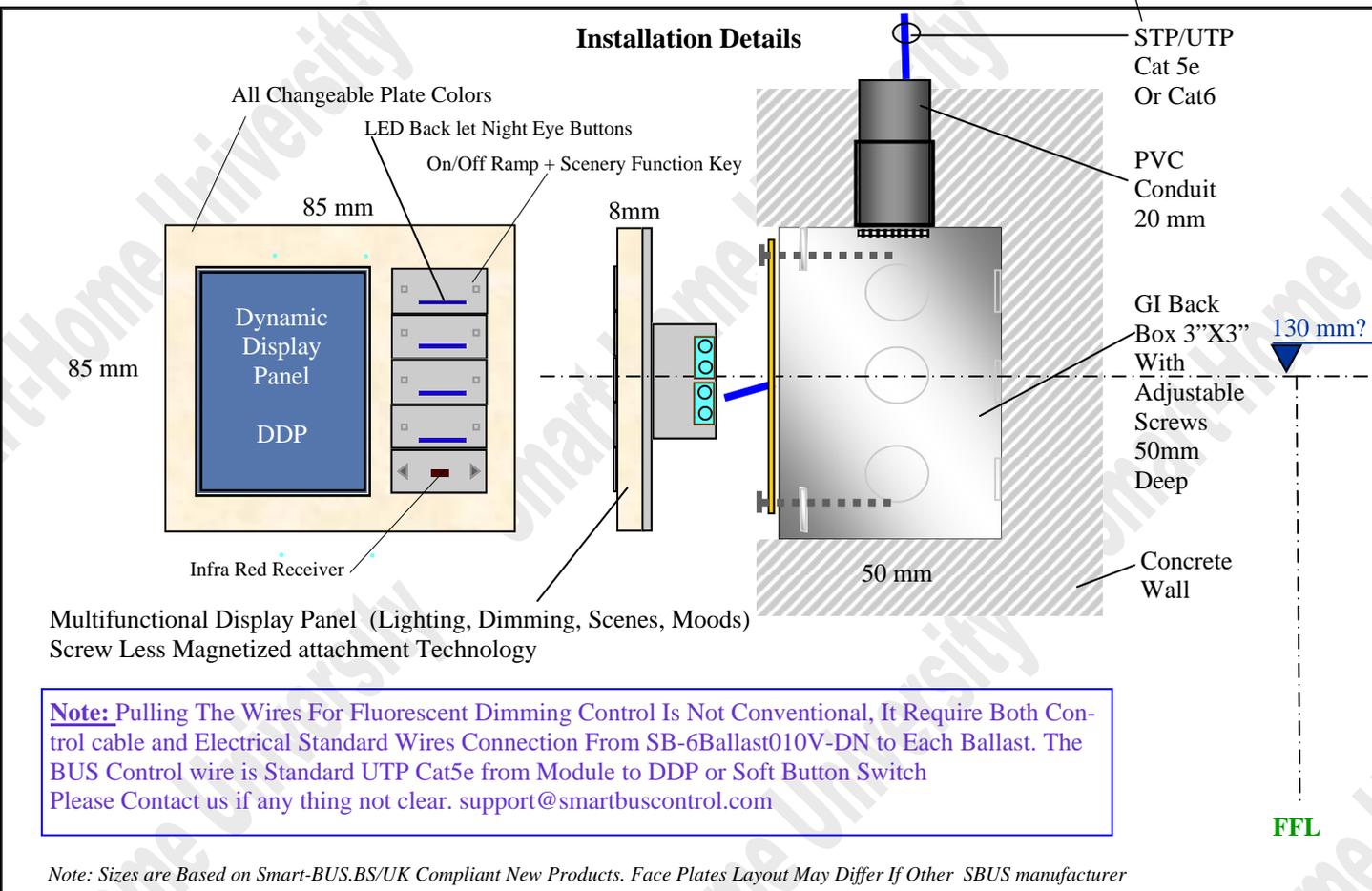
SmartHome-BUS System & Low Current Schematics & Detail of Shop Drawings

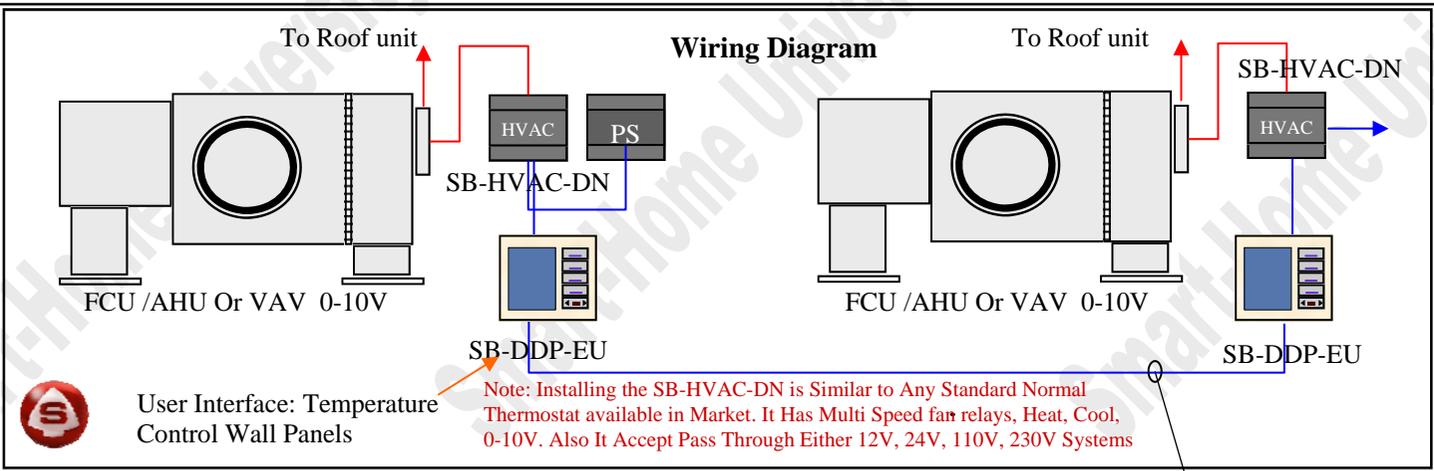
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HVAC Control (FCU/AHU/VAV)

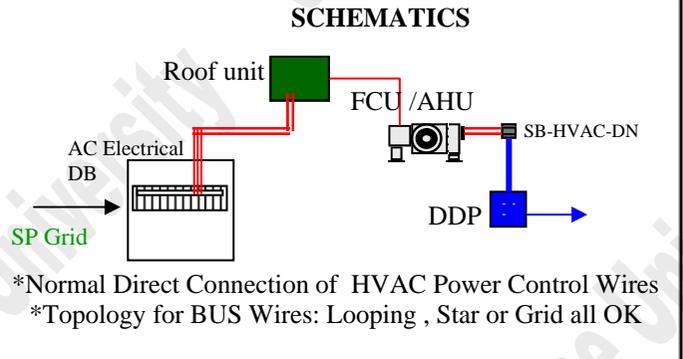
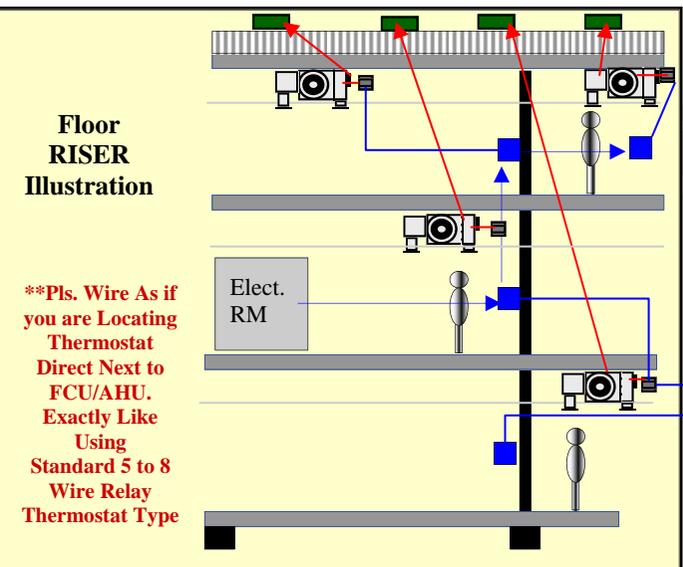
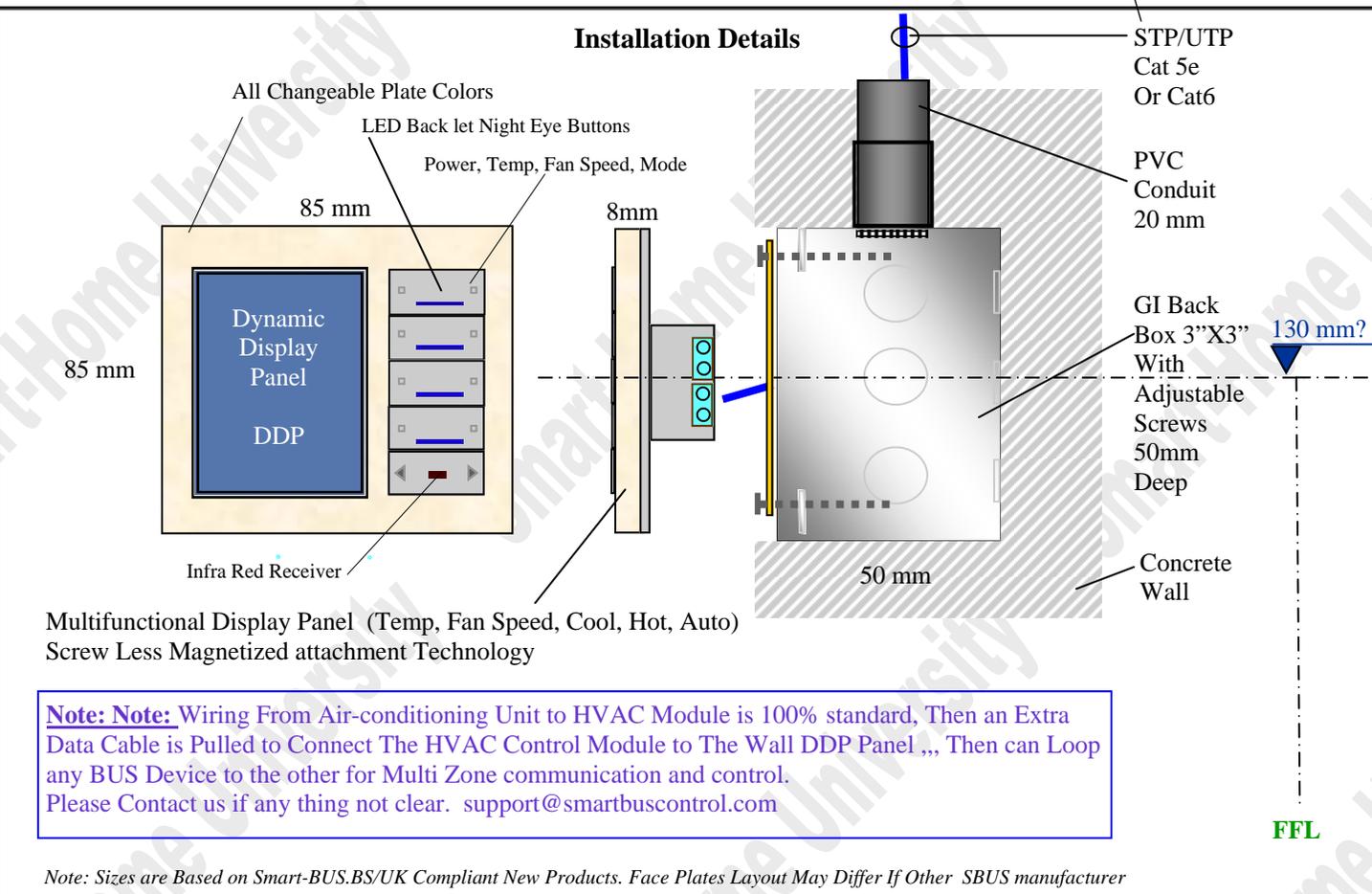
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Control, Entertainment & Energy Systems

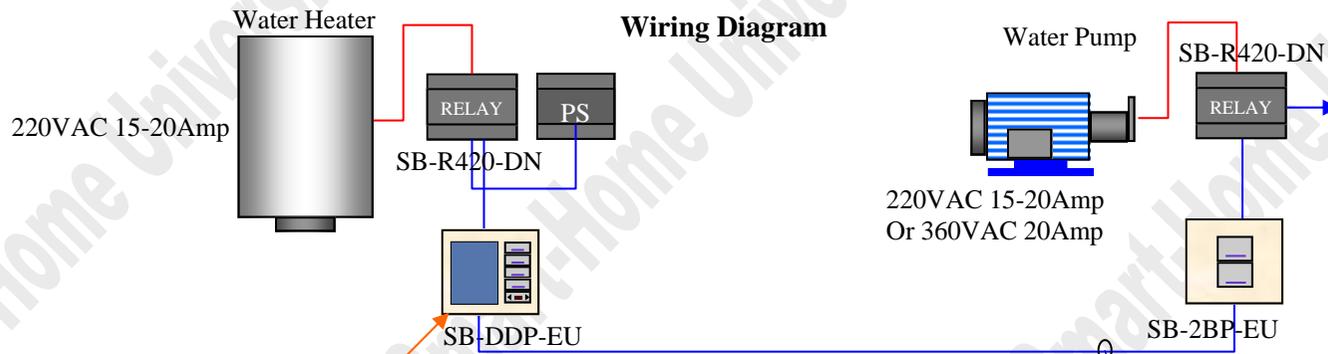
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User Interface: Timer Control Wall Panels

Note: Wire the Boiler and Pump Normal to the Relay Module in Control Panel Exactly Similar to Standard MCB or ELCB

PUMP & BOILERS CONTROL

SmartHome-BUS System & Low Current Schematics & Detail of Shop Drawings

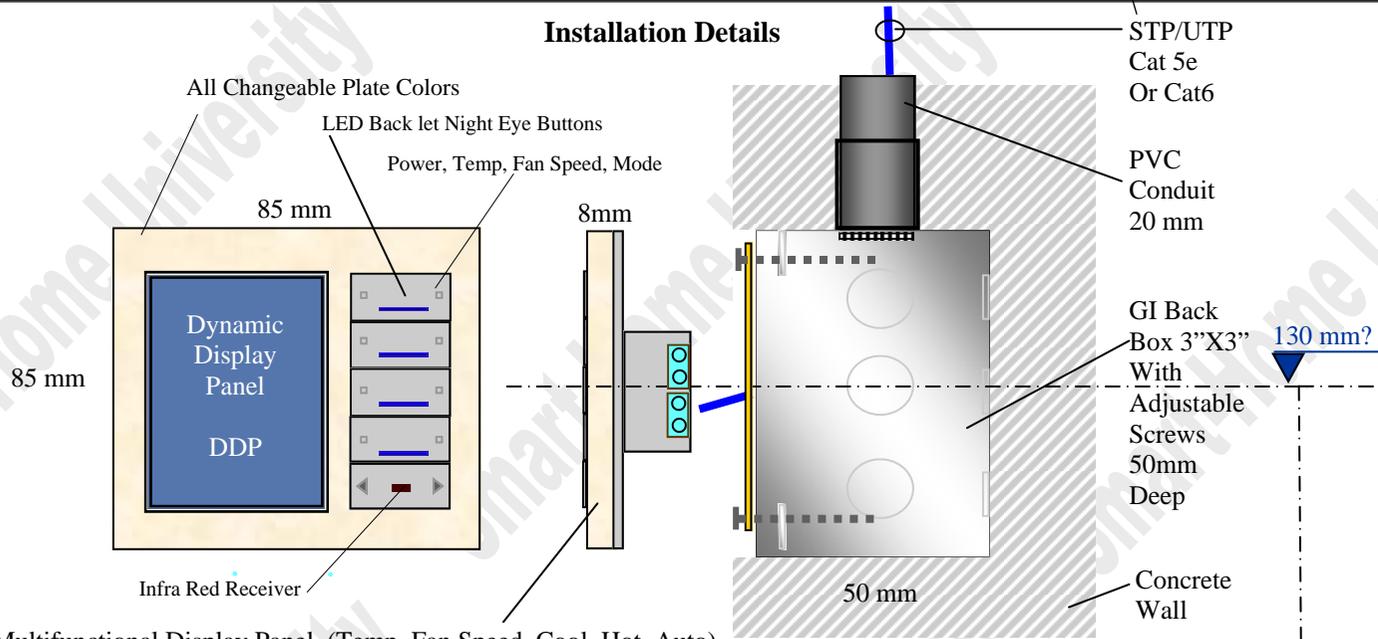
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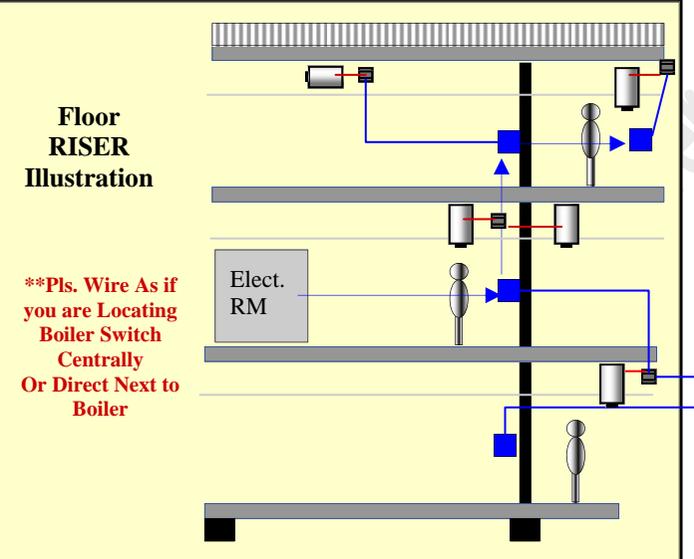
Installation Details



Multifunctional Display Panel (Temp, Fan Speed, Cool, Hot, Auto)
Screw Less Magnetized attachment Technology

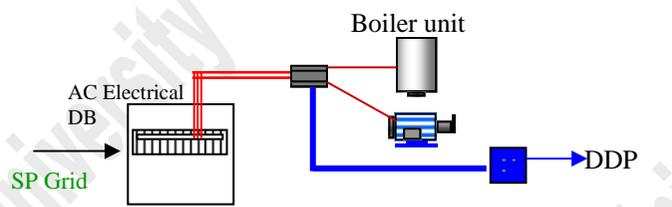
Note: Note: Wiring From Boiler or Pump to Relay (MCB) Module is 100% standard, Then an Extra Data Cable is Pulled to Connect The Relay Control Module to The Wall DDP Panel or Button Switch ,, Data Wiring can Loop from any BUS Device to the other. Please Contact us if any thing not clear. support@smarthomebus.com

Note: Sizes are Based on Smart-BUS.BS/UK Compliant New Products. Face Plates Layout May Differ If Other SBUS manufacturer



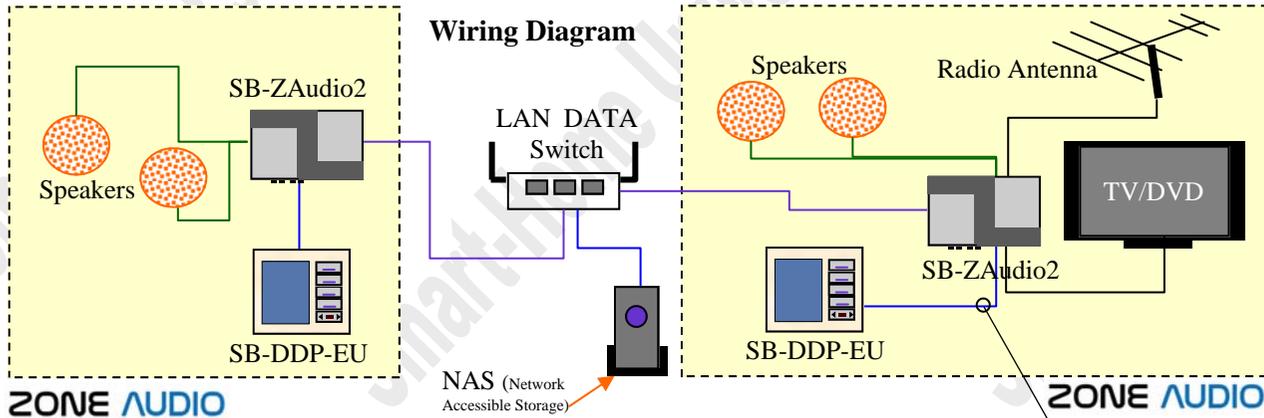
****Pls. Wire As if you are Locating Boiler Switch Centrally Or Direct Next to Boiler**

SCHEMATICS



*Normal Direct Connection of Boiler/Pump Wires
*Topology for Control Wires: Looping, Star or Grid all OK





Distributed Zone-Audio

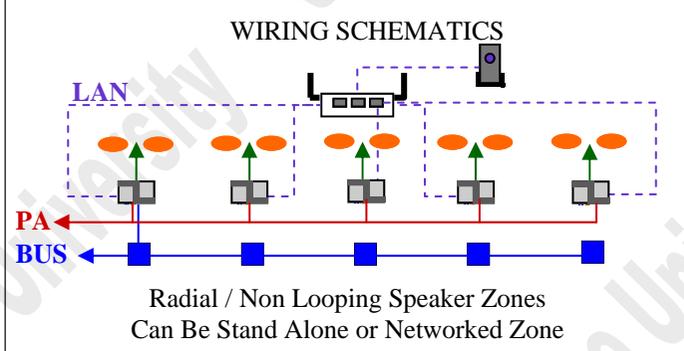
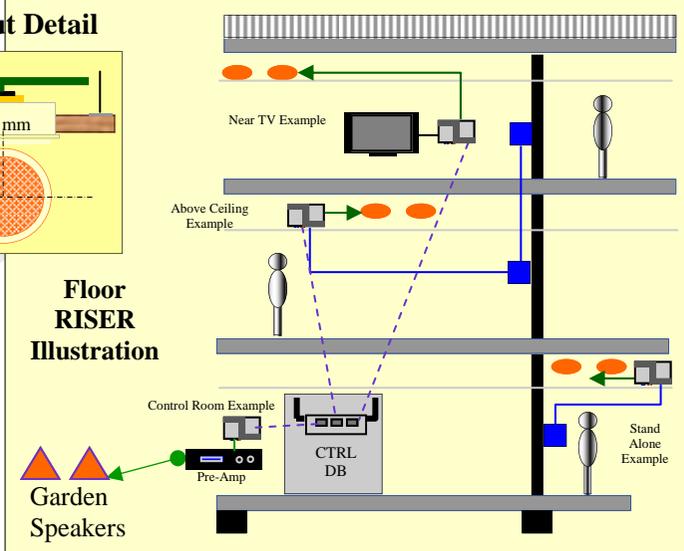
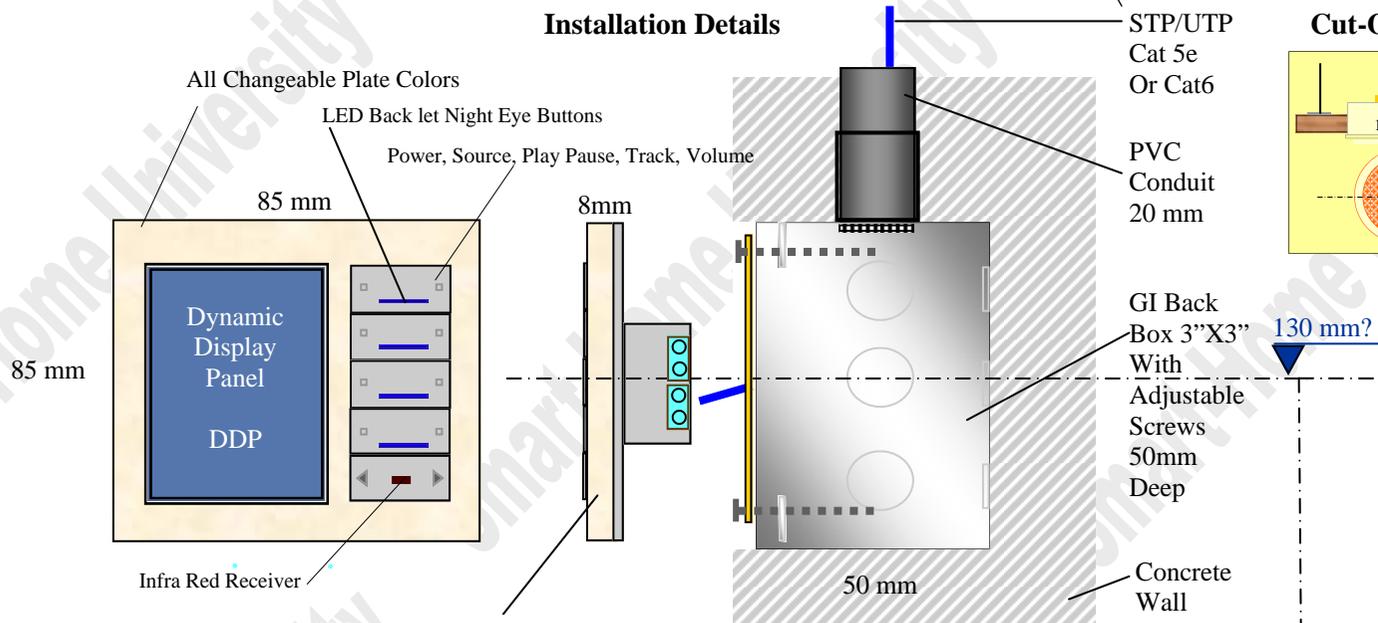
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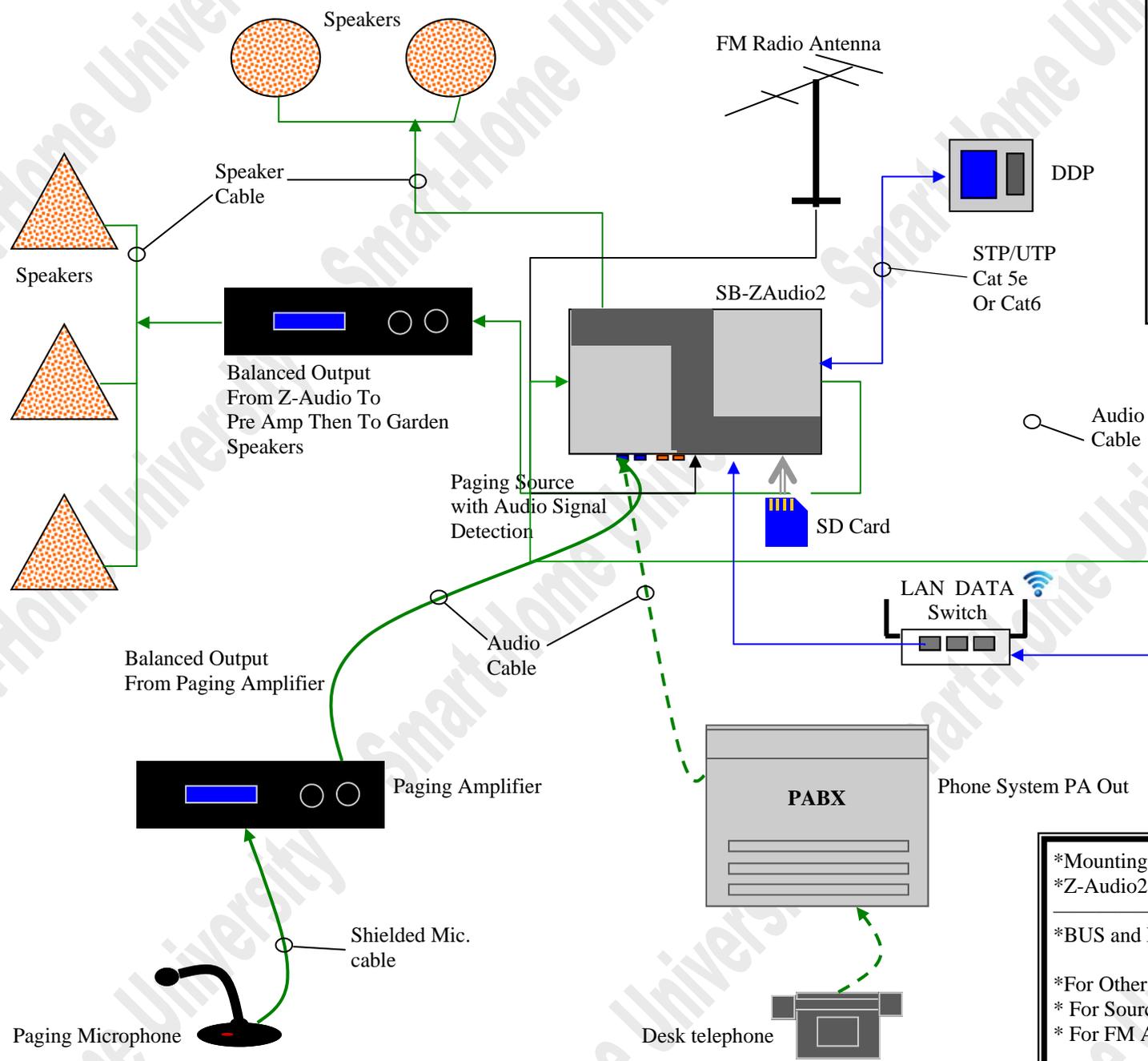
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Note: Note: Wiring Direct From Zone-Audio Unit to DDP and also to Speakers, Then For Network FTP Streaming From NAS a Normal Conventional Data Network Wiring is Required. FM Antenna Cable is Needed for Radio. Gen. Announcement PA Wiring Can Also Connect Direct to PA MIC Port. Please Contact us if any thing not clear. support@smarthomebus.com

Note: Sizes are Based on Smart-BUS.BS/UK Compliant New Products. Face Plates Layout May Differ If Other SBUS manufacturer





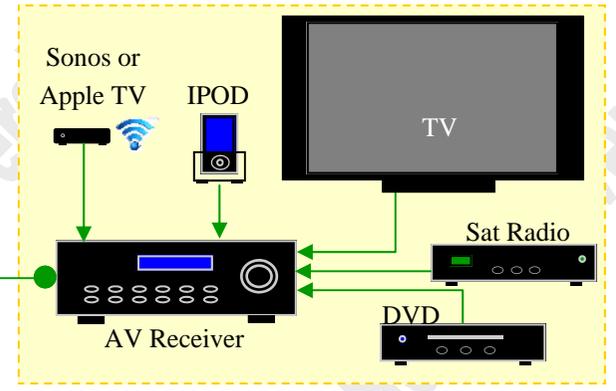
Typical Z-Audio2 Connections

SmartHome-BUS System & Low Current Schematics & Detail of Shop Drawings

Control, Entertainment & Energy Systems

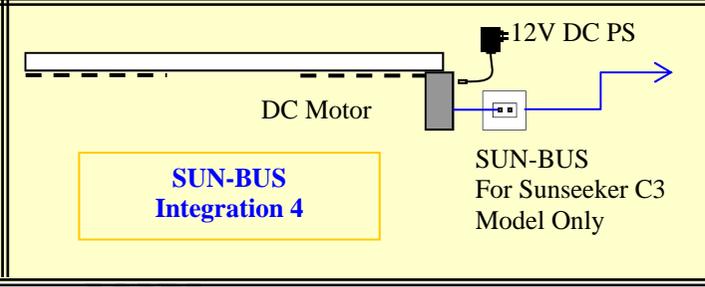
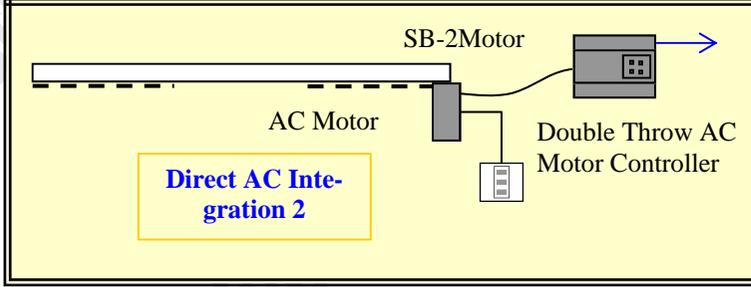
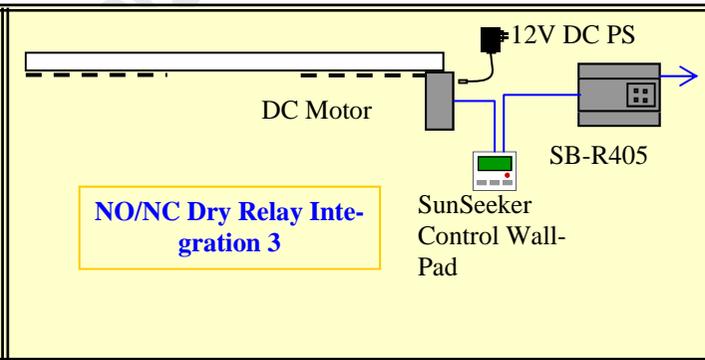
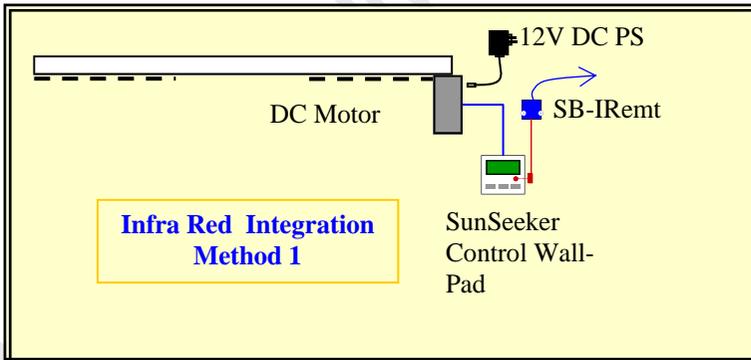
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- *Mounting: Z-Audio2 Can Be Mounted on Wall, On Din rain, On table.
- *Z-Audio2 require Power Supply
- *BUS and NETWORK LAN wiring Use: Cat5e or Cat6
- *For Other Wires Use Standard Speaker Wires
- * For Sources Input Use Standard Audio Wires with RCA Jack
- * For FM Antenna Use Coaxial Shielded Signal Cable





Motorized Shades Control

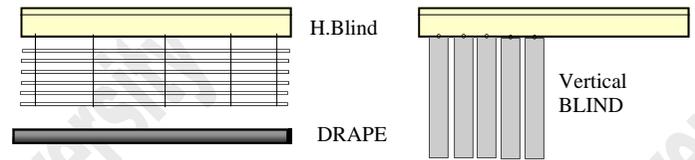
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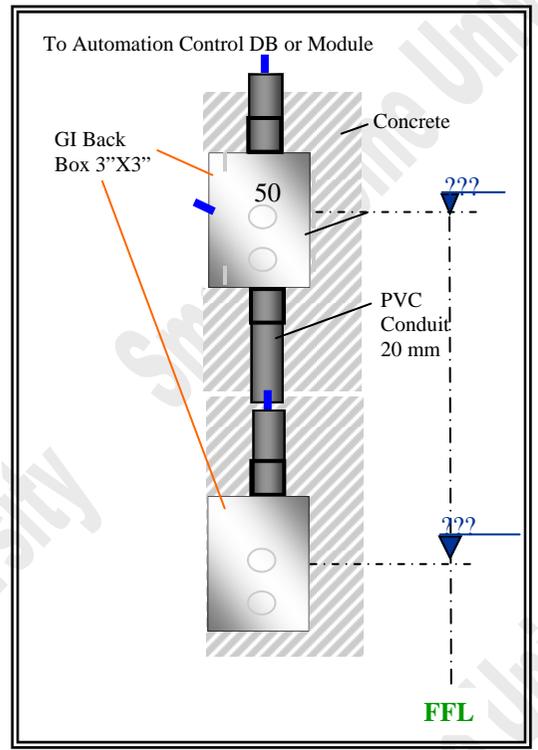
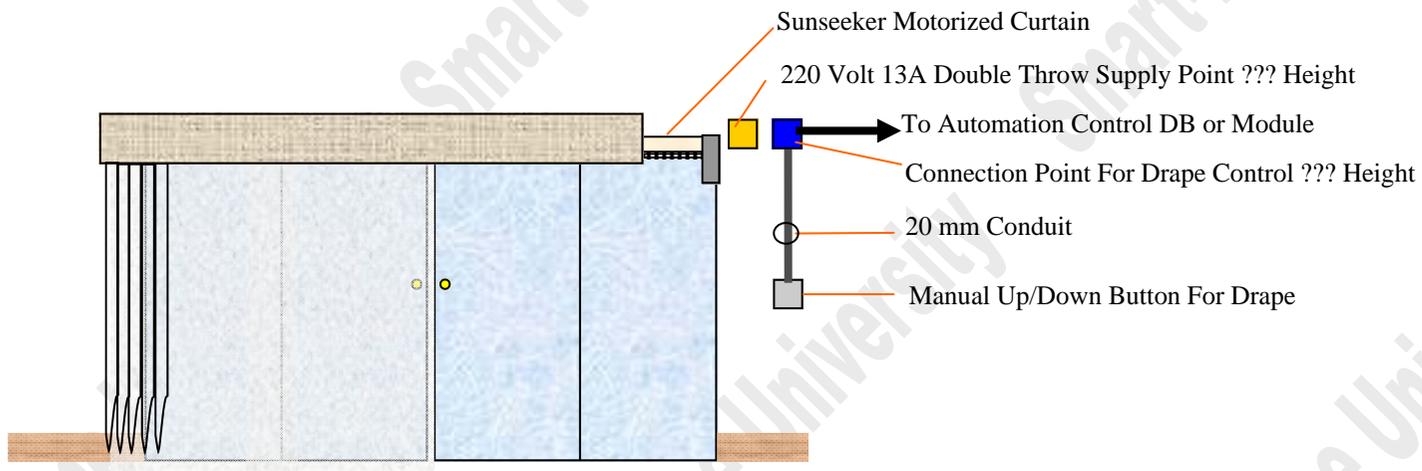
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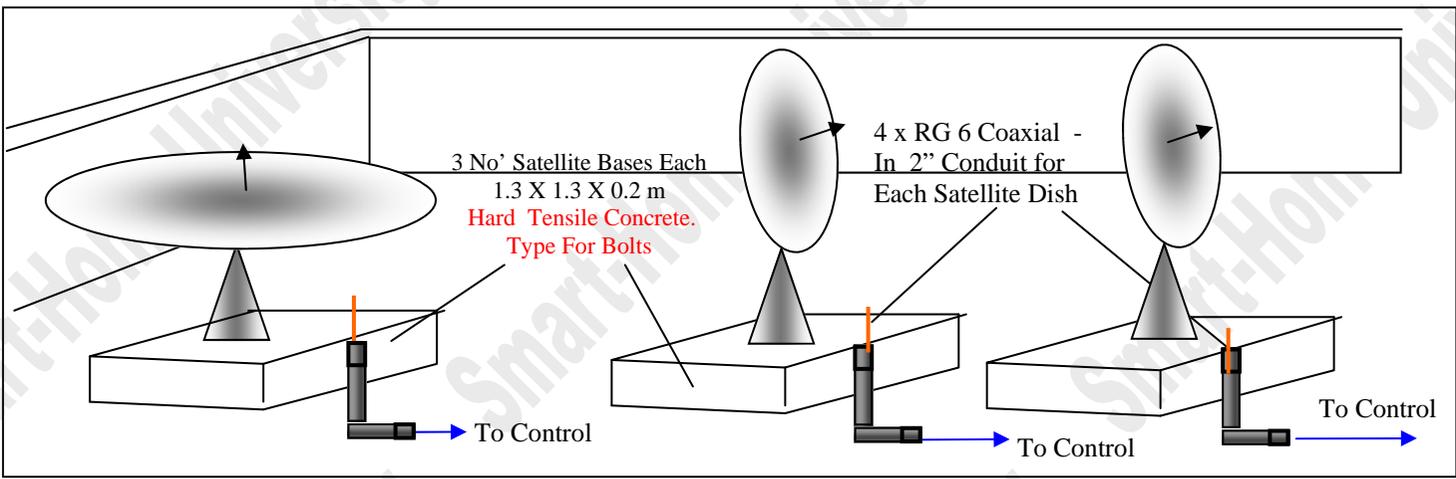
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Note: Each Drapery Located at Different Area That Require To be Automated or Motorized, Require the Following Convenience Arrangement:
 1 Double Throw 220VAC or Power Point to supply The Motor with 220VAC or 12V-24VDC
 1 Control Connection To Drapery (NO/NC, IR)
 1 IR / \RF Controlled Manual Up Down Switch On Wall or SUN-BUS
 Discuss Arrangement Please and Heights with Decoration Consultant

Note: If Using Sunseeker then can Use Sun-BUS, Otherwise Preferred to Use All IR Controlled Type of Curtains





Satellite & CATV Systems

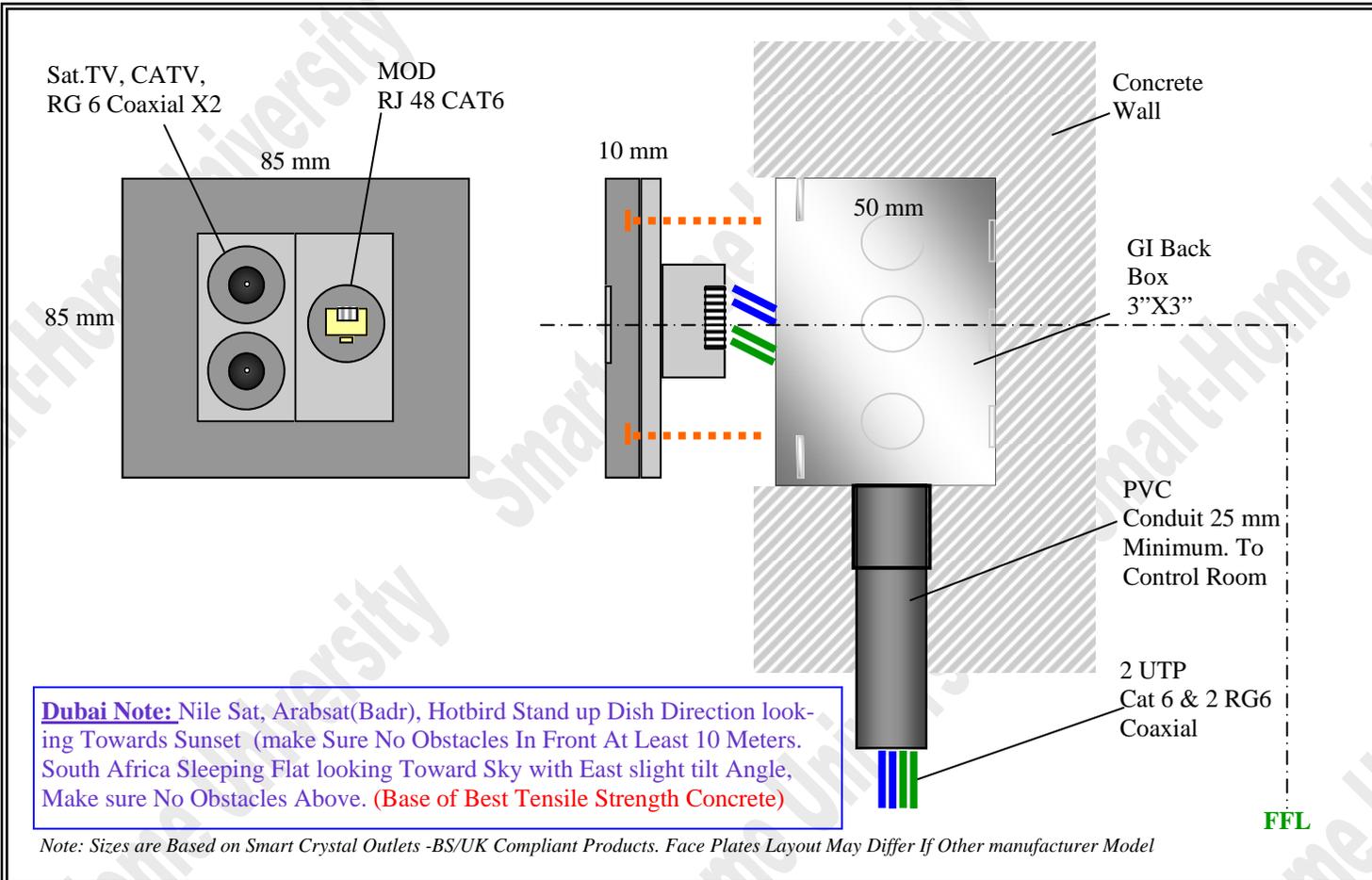
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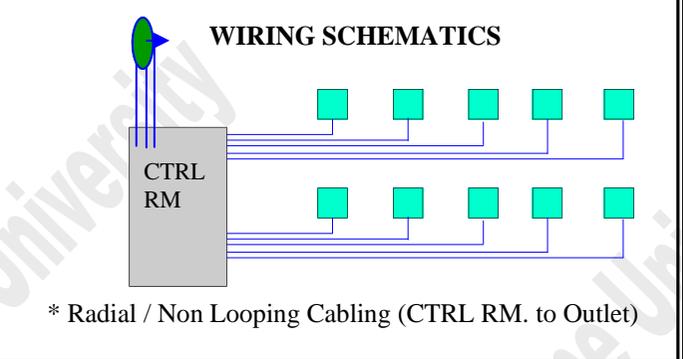
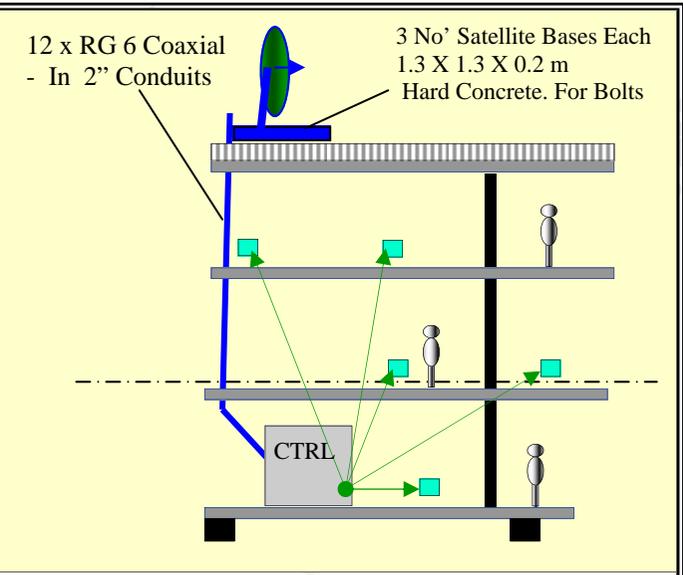
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Dubai Note: Nile Sat, Arabsat(Badr), Hotbird Stand up Dish Direction looking Towards Sunset (make Sure No Obstacles In Front At Least 10 Meters. South Africa Sleeping Flat looking Toward Sky with East slight tilt Angle, Make sure No Obstacles Above. (Base of Best Tensile Strength Concrete)

Note: Sizes are Based on Smart Crystal Outlets -BS/UK Compliant Products. Face Plates Layout May Differ If Other manufacturer Model



Suggested Wiring Topology

SmartHome-BUS System & Low Current

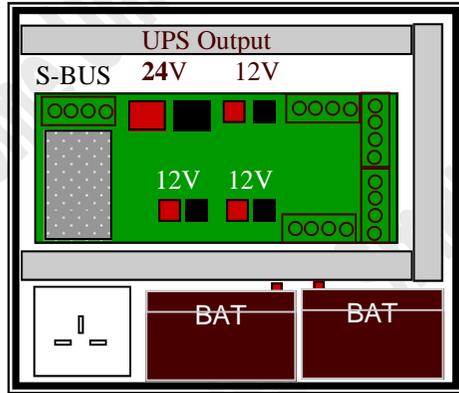
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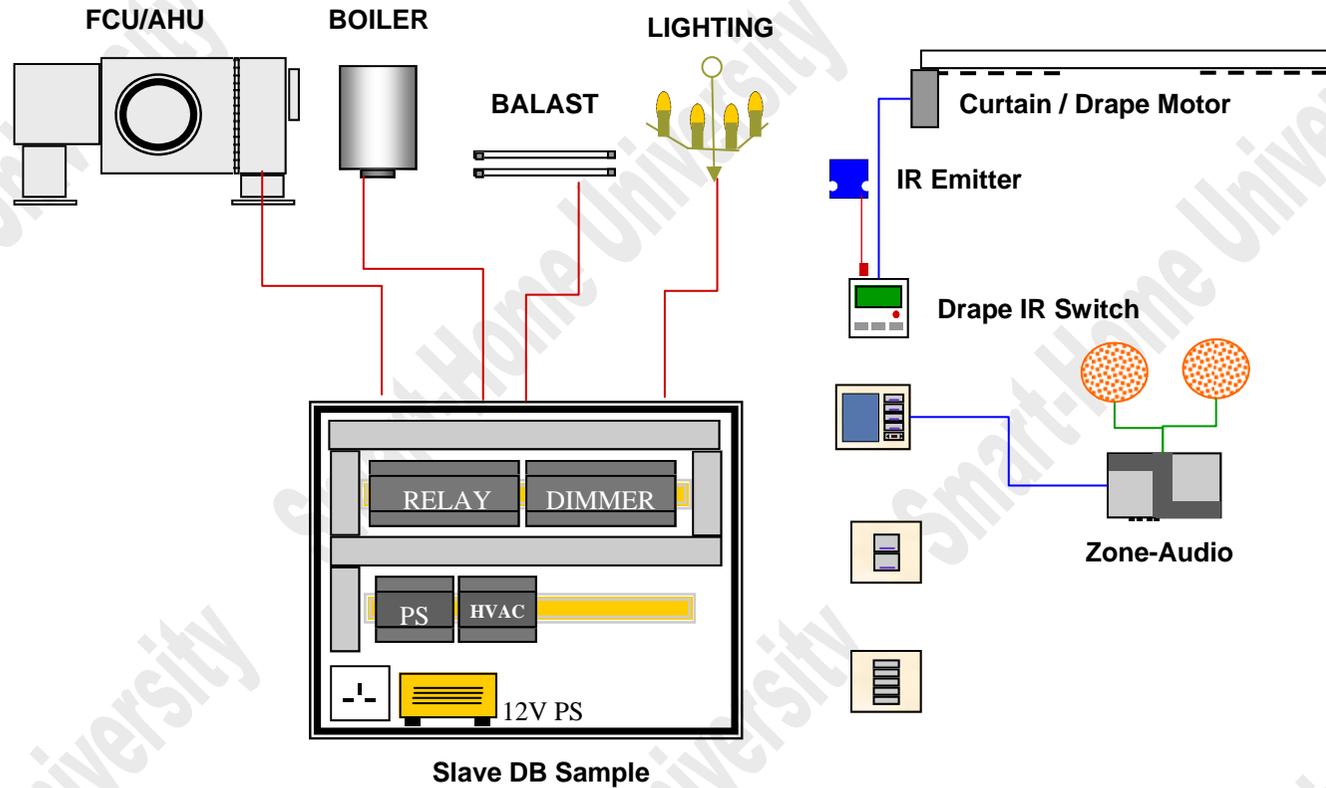
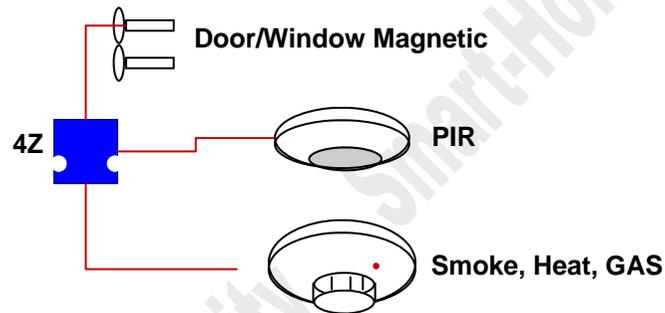
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SB-UPS7

DC Motor



Gate & Garage

SmartHome-BUS System & Low Current

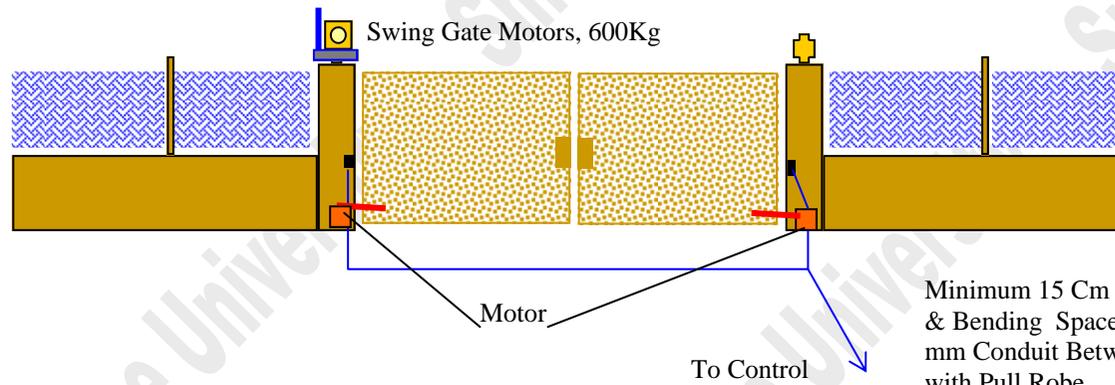
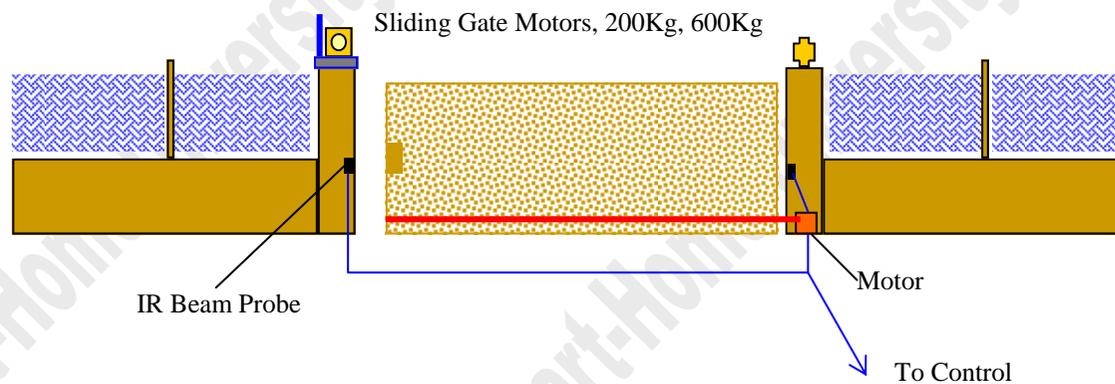
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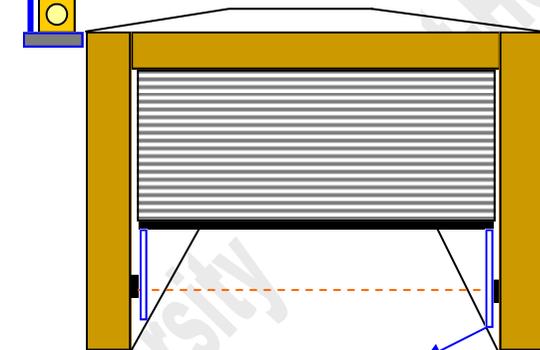
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Flasher/ Receiver Antenna

Roller Garage Door 3X2.5 Meters



Minimum 15 Cm Needed to Fix Arms For Movement & Bending Space, Require 220V 13A Power, and 25 mm Conduit Between Posts Then to Control Room, with Pull Robe

Home Theater

SmartHome-BUS System & Low Current

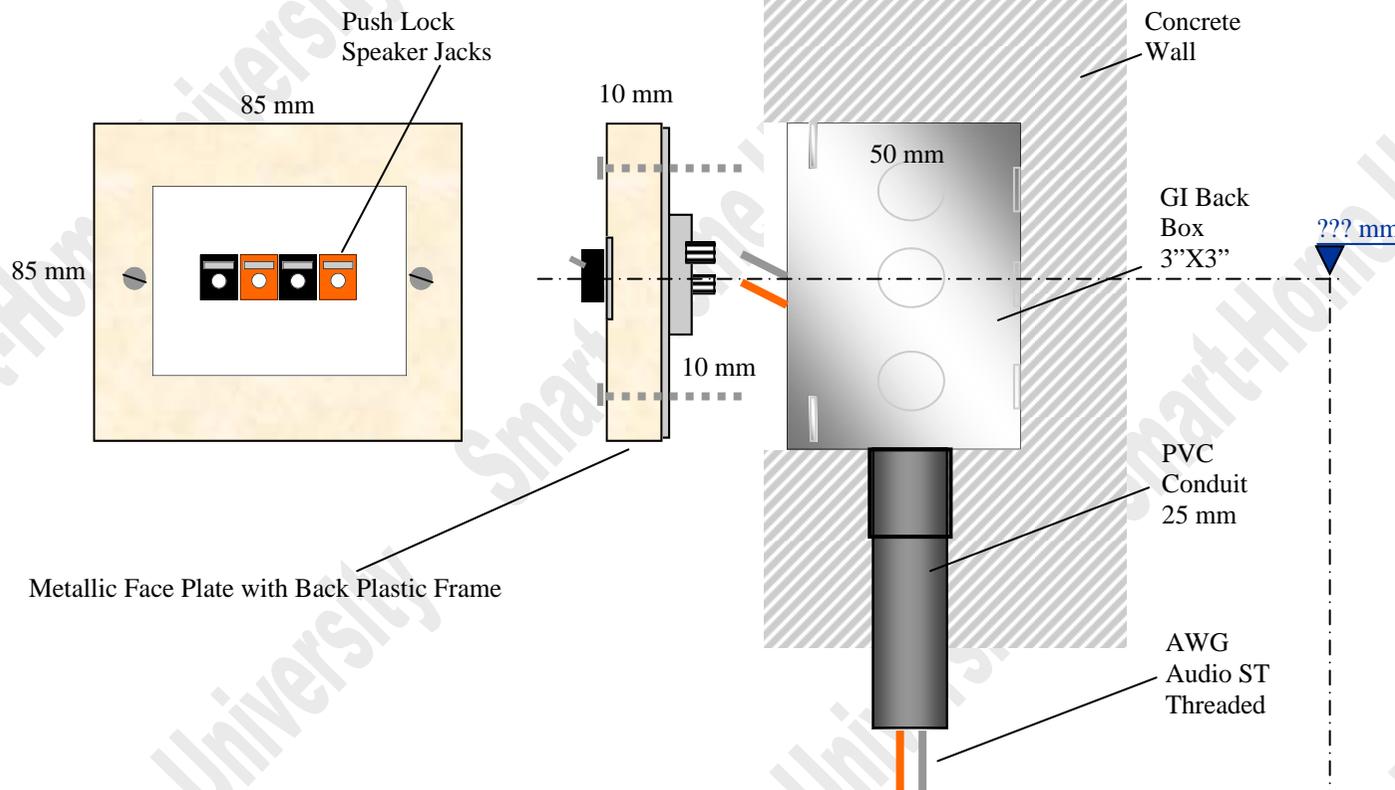
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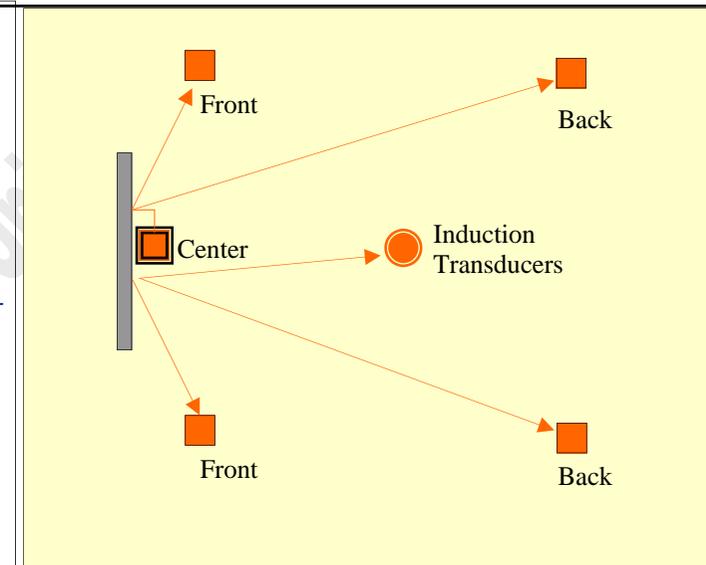
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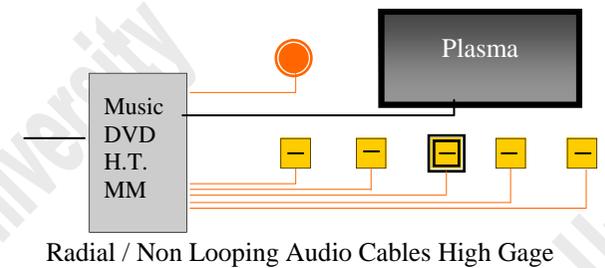
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Note: Sizes are Based on Clipsal—BS Compliant Products. Face Plates Layout May Differ If Other manufacturer



WIRING SCHEMATICS



Plasma Screen

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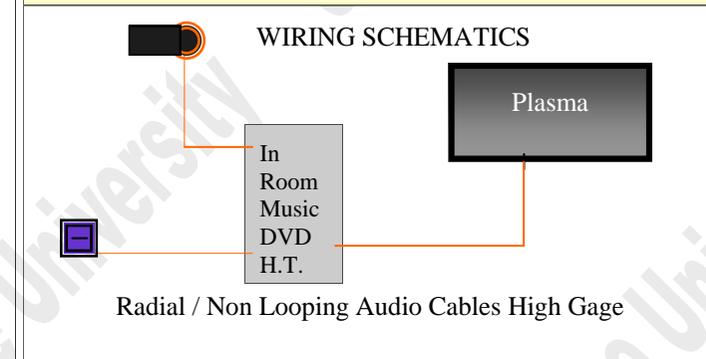
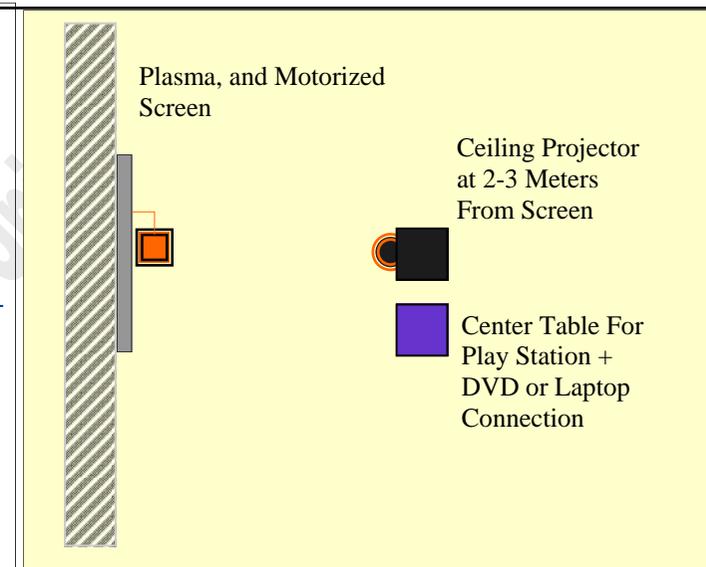
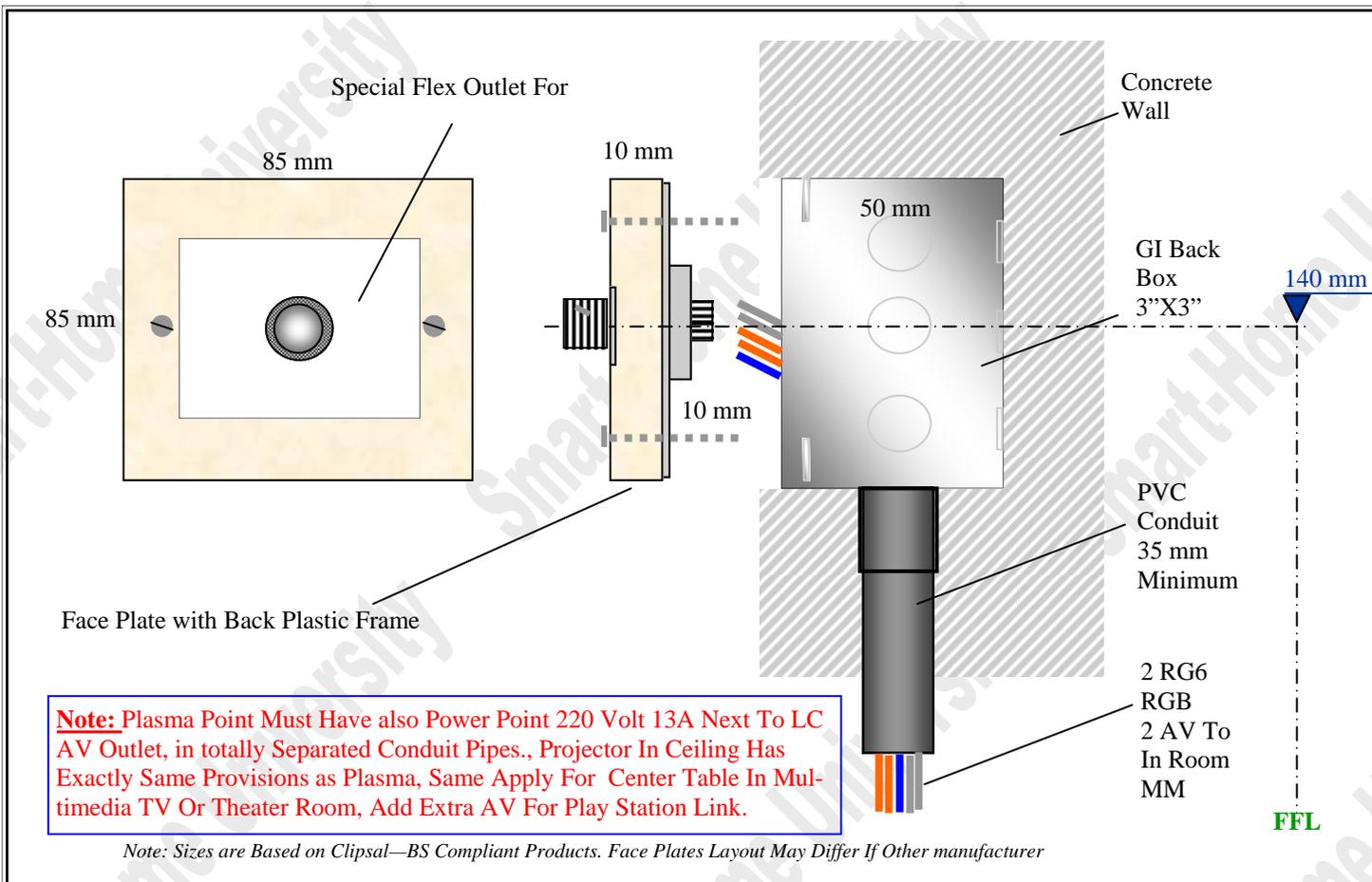
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AV In Room Diagrams

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In Ceiling Projector Provision 3"x3", Need Power 220 V

Motorized Projection Screen, Need Power 220 V

Plasma Provision, Need Power 220 V

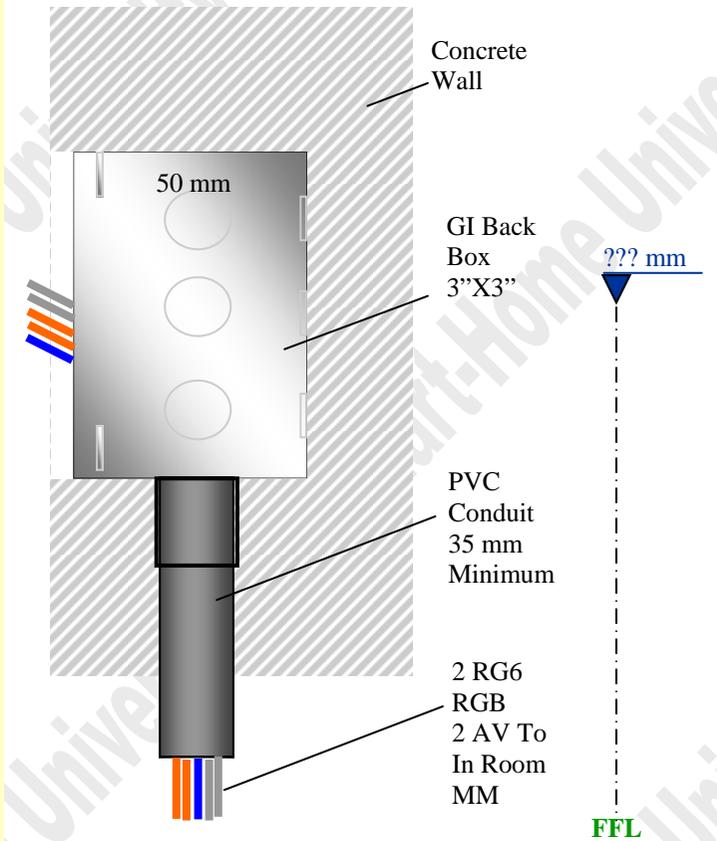
GI Back Box
3"X6"

Screen Up / Down Switch 3"x3"

Floor Central Hub,
For Play Station,
Laptop, DVD ++
Need Power 220 V

In Floor Butt Kicker,
Base Shaker + 3"x3"

In Wall, Provisional
Connection For Home
Theater Speaker 3"X3"



Touch Screen

SmartHome-BUS System & Low Current

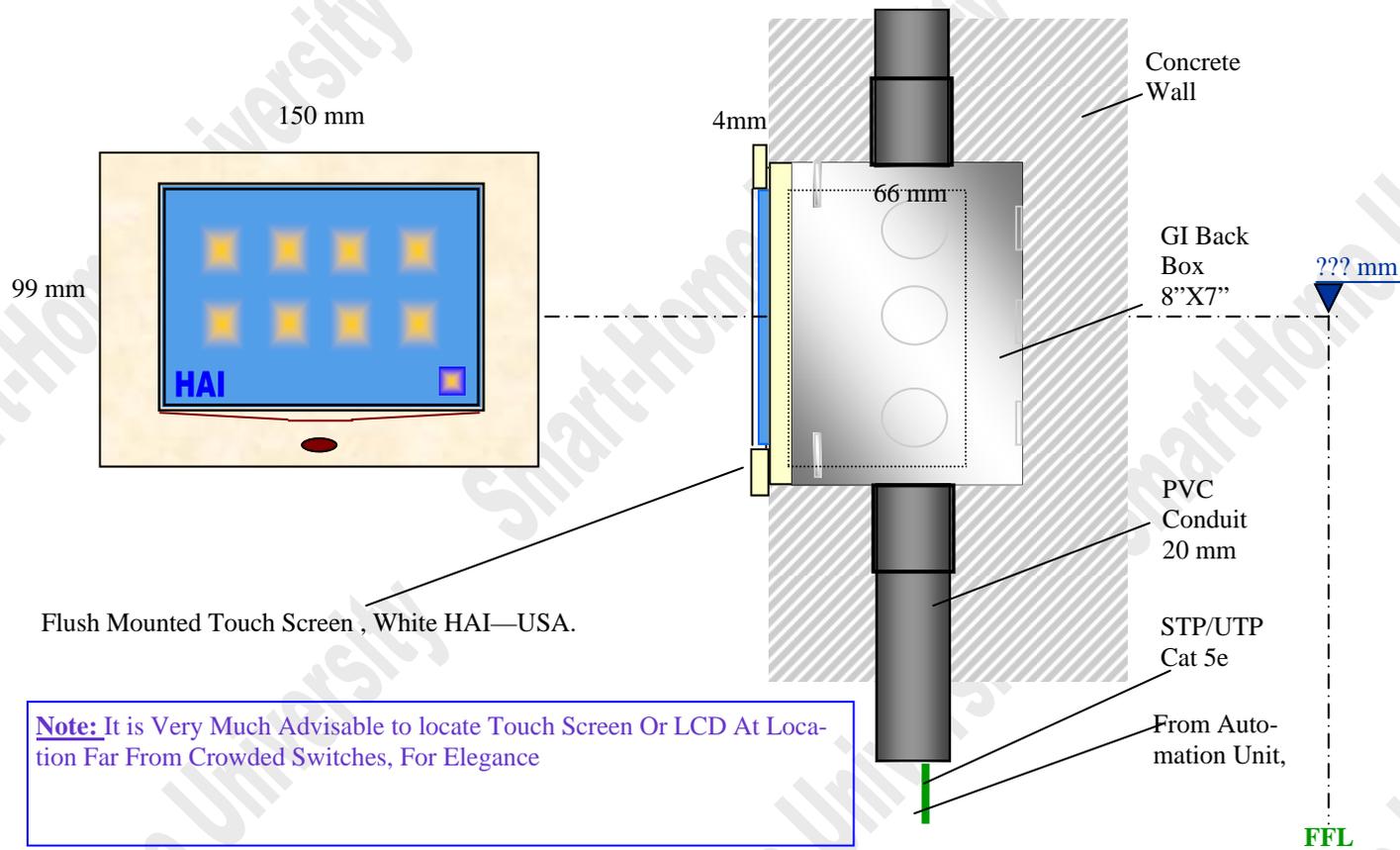
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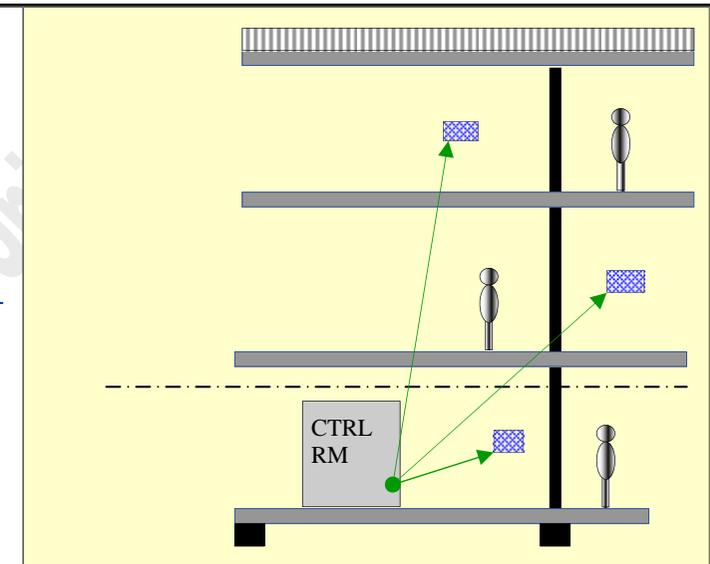
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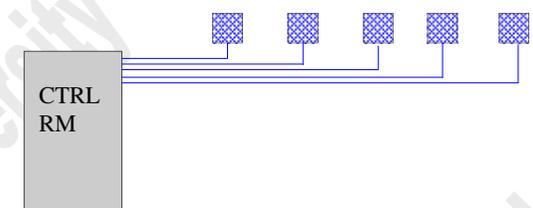


Note: It is Very Much Advisable to locate Touch Screen Or LCD At Location Far From Crowded Switches, For Elegance

Note: Sizes are Based on HAI Omni Series



WIRING SCHEMATICS



Radial / Non Looping System (CTRL RM. to Omni Touch)

Security Alarm

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Note: Wiring From Every Security Point To Control Room Require 1 data Cable, inside 20 mm Conduit.

Location Of Magnetic Contact Is always at The First Point of Door or Window That Move Away From Frame. Opposite to the Direction Of The Hinges. The wired Piece is Inserted inside Frame, and The Magnetic Piece is Fixed In Door Or Window Leaf. For garage and gates, at Lower part Opposite To Direction Of Opening.

Smoke and heat Detectors at Kitchens, and Garages ++

Motion, PIR, Break Glass at all ceiling s of Areas as per Plans. Refer To Type, wall or Ceiling..

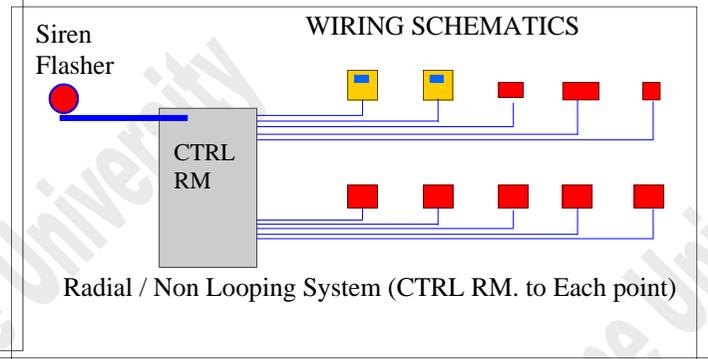
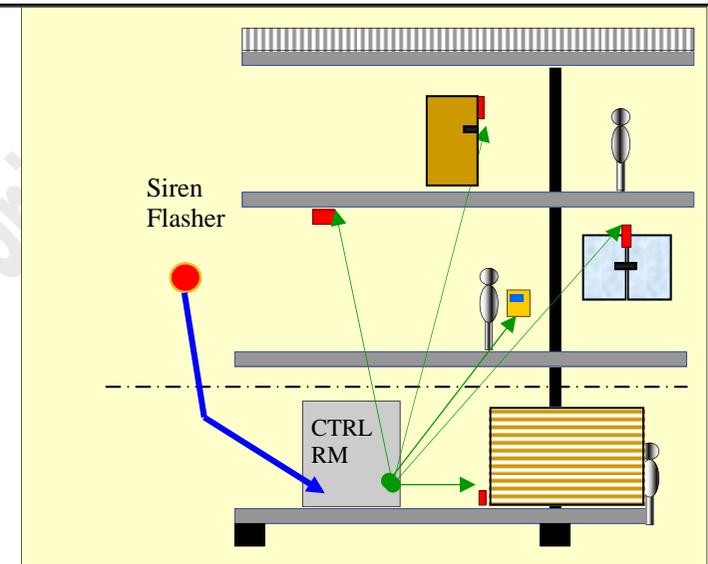
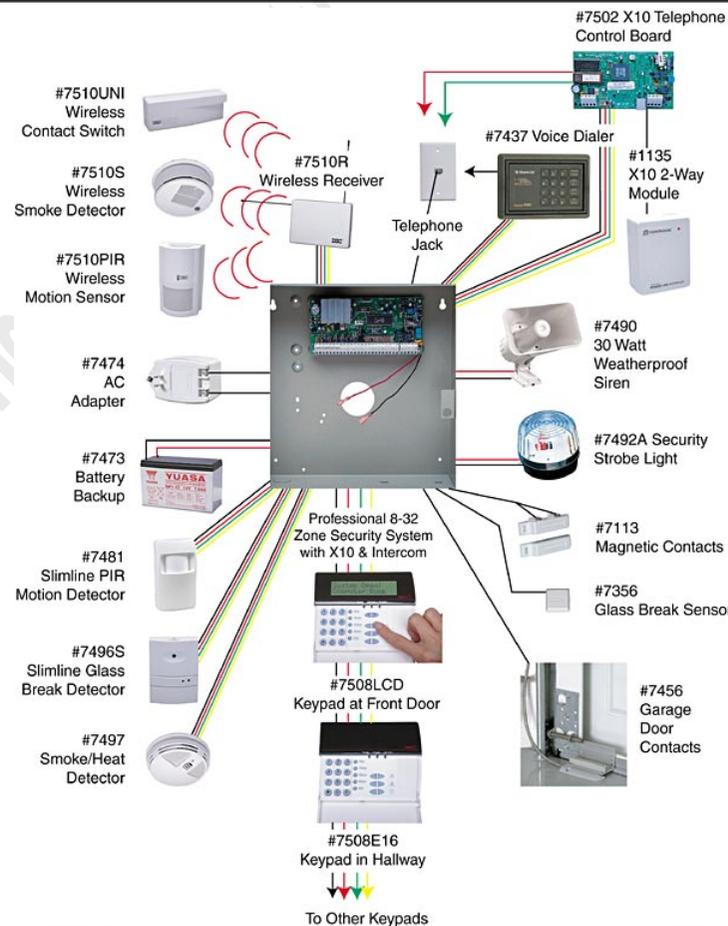
Auto Dialer is To Be linked To tel Direct Line.

Keypads To Be linked to Control Room, and Heights must Be coordinated with Consultant as Per his Levels Schedules

Auxiliary UPS Power is recommended.

220 Volt 13 A Power Needed at Control Room.

Note: Sizes are Based on HAI Omni Stat.



Garden Systems

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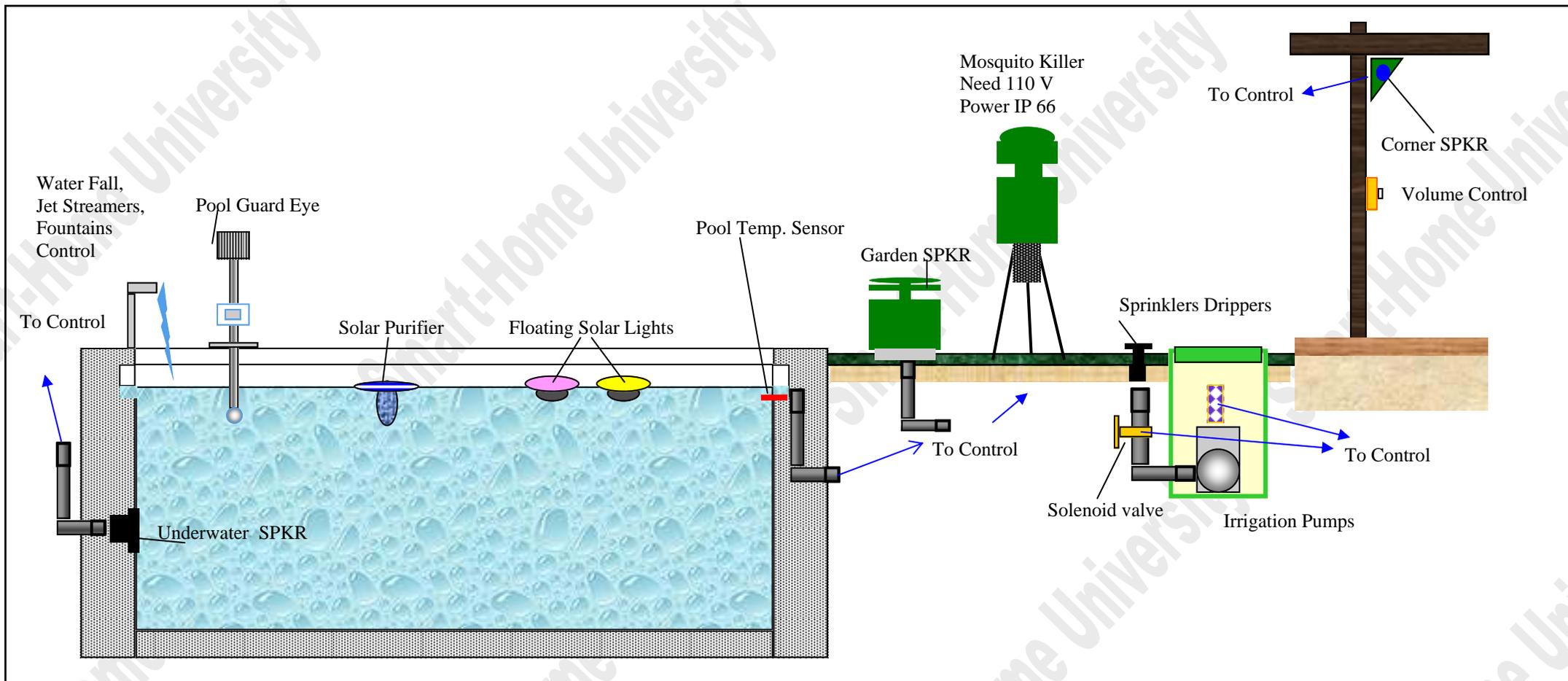
Schematics & Detail of Shop Drawings

Control, Entertainment & Energy Systems

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CCTV Connection Schematic Diagram (Day / Night Cameras)

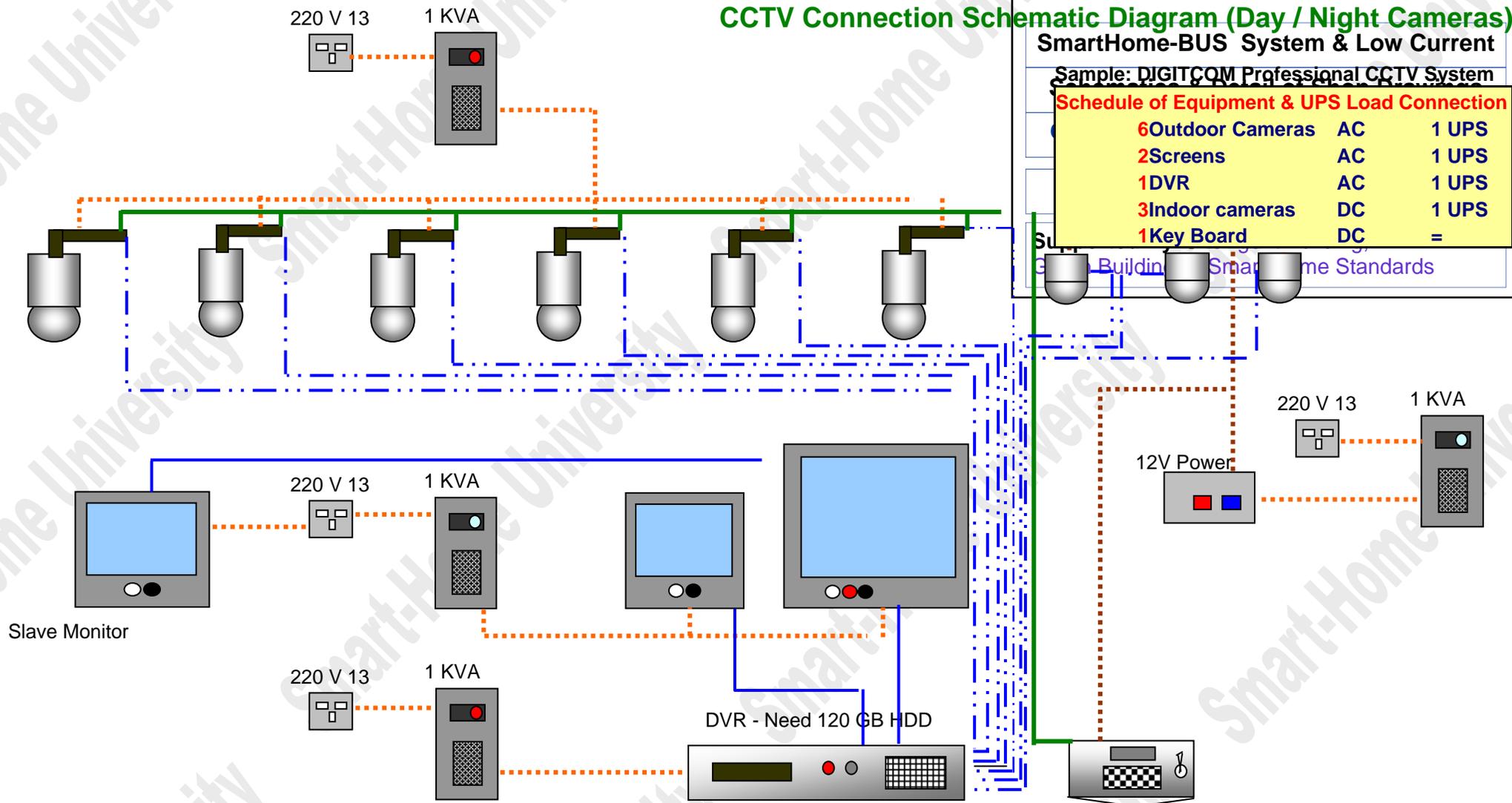
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Sample: DIGITCOM Professional CCTV System

Schedule of Equipment & UPS Load Connection

6 Outdoor Cameras	AC	1 UPS
2 Screens	AC	1 UPS
1 DVR	AC	1 UPS
3 Indoor cameras	DC	1 UPS
1 Key Board	DC	=

Building Smart Home Standards



Key:	
220 Volt	Looping OK Per Zone As Shown Above
12 V	Looping OK Per Zone As Shown Above
RG 59	Video Cable must Be Pulled Separately From Each Camera To DVR
RG 59	Video cable From DVR To Main and Spot Monitors Then To Slave
UTP	Control cable double twist Pair is Recommended Per Wire Phase + & - (Can Loop Ok)

Warning: Charge UPS for 10 Hours First
Warning: Remove Camera Ring Before Operat-
Please read All Manuals carefully First
Use antistatic Clean Cloth or Gloves.

Date: October, 2011 www.smarthomebus.com

Modulated CCTV to TV

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Note: Each Camera Point Need 25 mm Conduit to Control Room
From Control Room to TV Monitor 25 mm conduit

Each Camera Require 13A 220 Volt Power, Concealed.

Special PTZ Controlled Cameras Will Require Additional Control cables

Modulators or Sahn Converters Might Be needed as applicable.

RG 59 75 Ohms Cables With BNC, To Be connected for Cameras up to 300 Meters, RG11 For up to 500, RG6 For Smaller Distances up to 100 Meters. For Web cams. Cat 5e UTP/STP will be Required with Power Supply Point.

Monitoring and recording On DVR, Schedules, Motion, Continuous, Alarm Triggered, Time and Date Stamped, RSM Enabled, Triplex Multiplexing Function.



Door and Window Contacts

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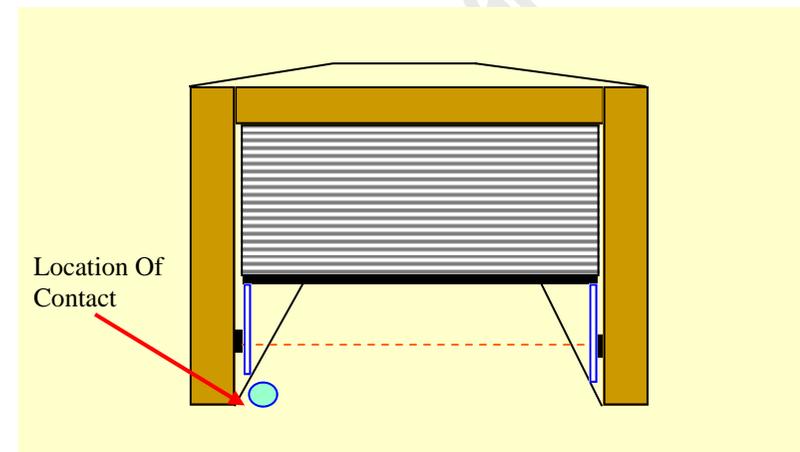
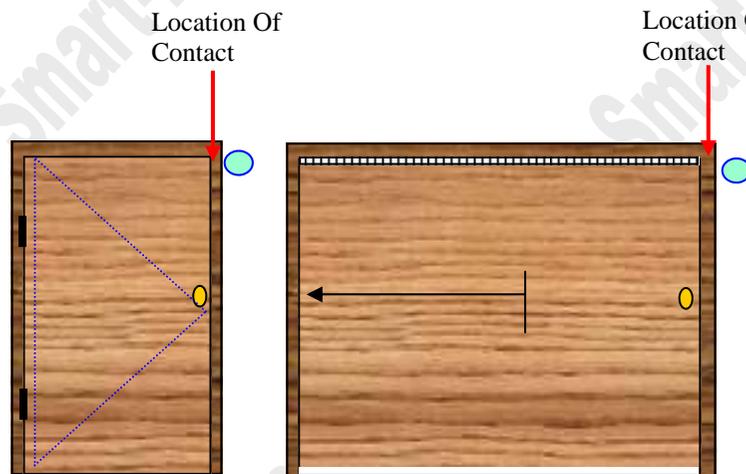
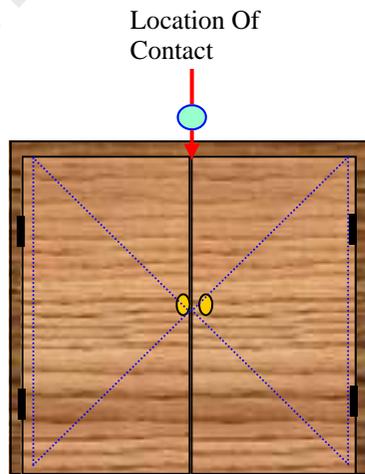
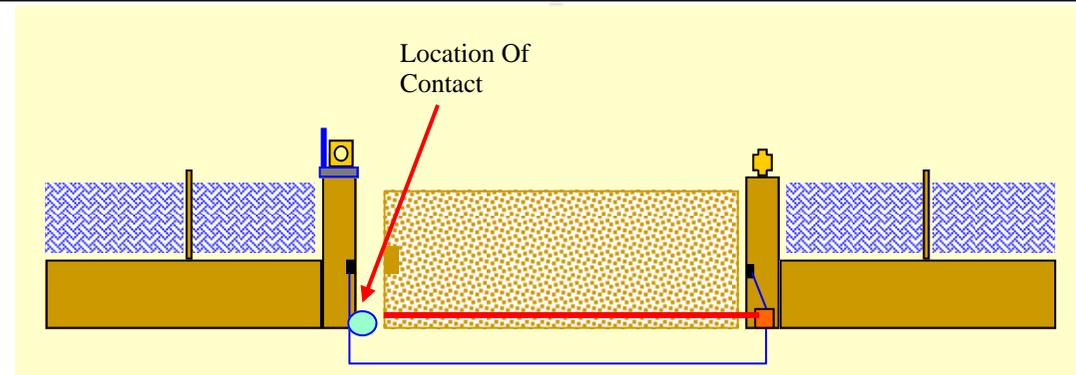
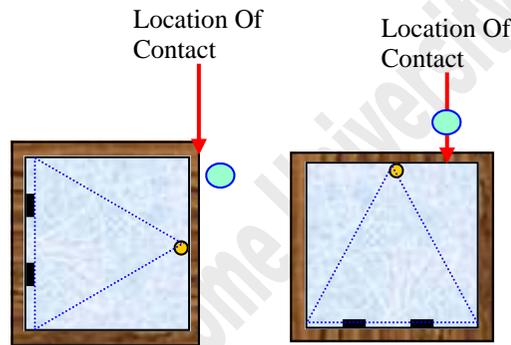
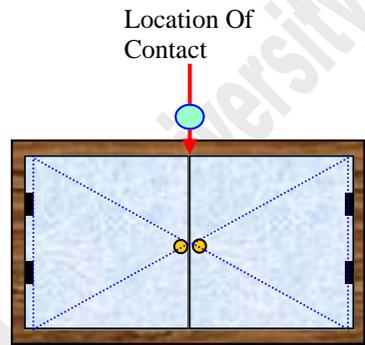
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Telephone and Data

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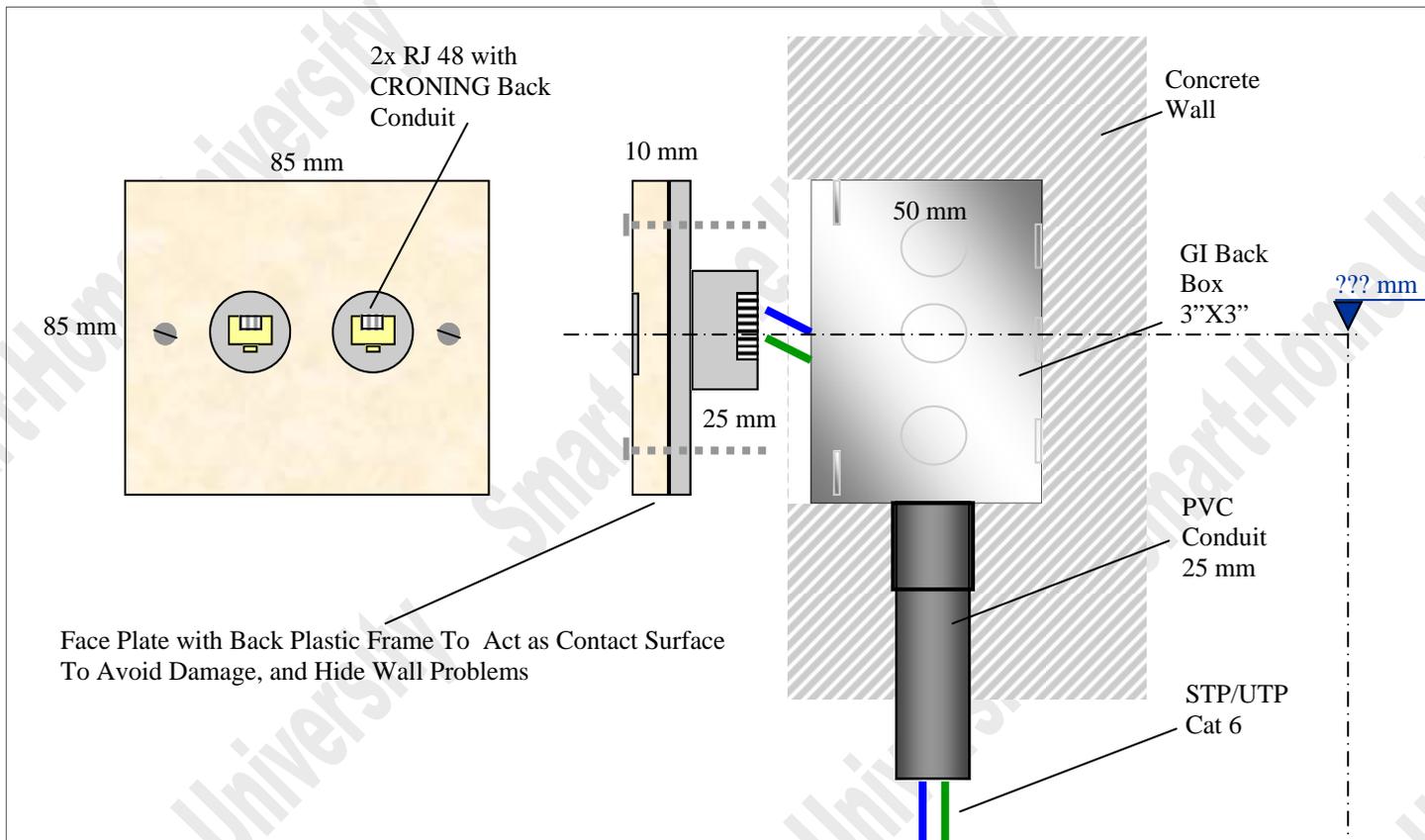
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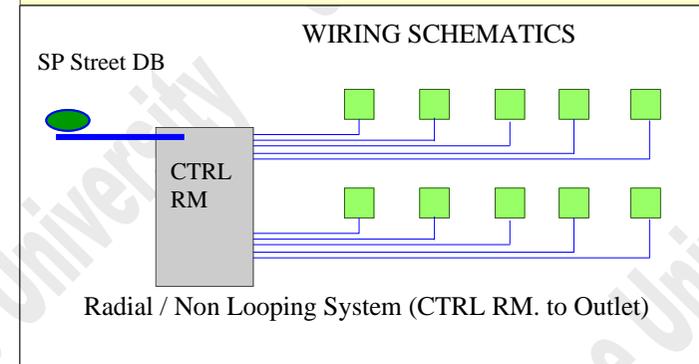
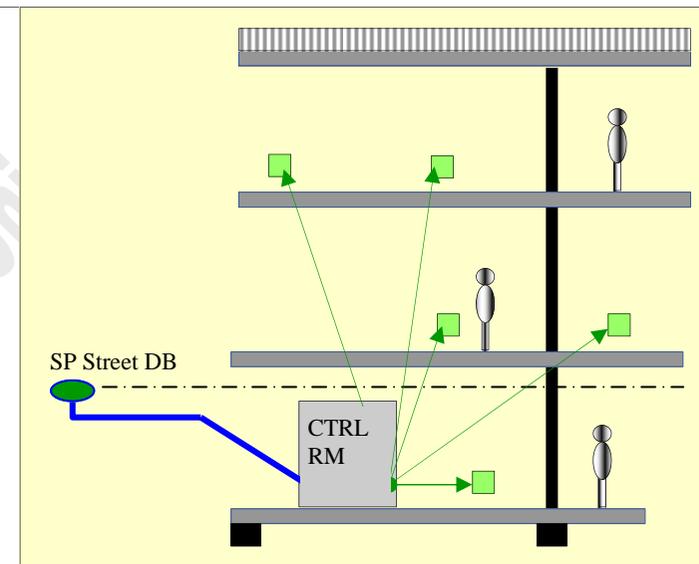
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Note: Sizes are Based on Clipsal—BS Compliant Products. Face Plates Layout May Differ If Other manufacturer



AV Plasma Screen Link

SmartHome-BUS System & Low Current

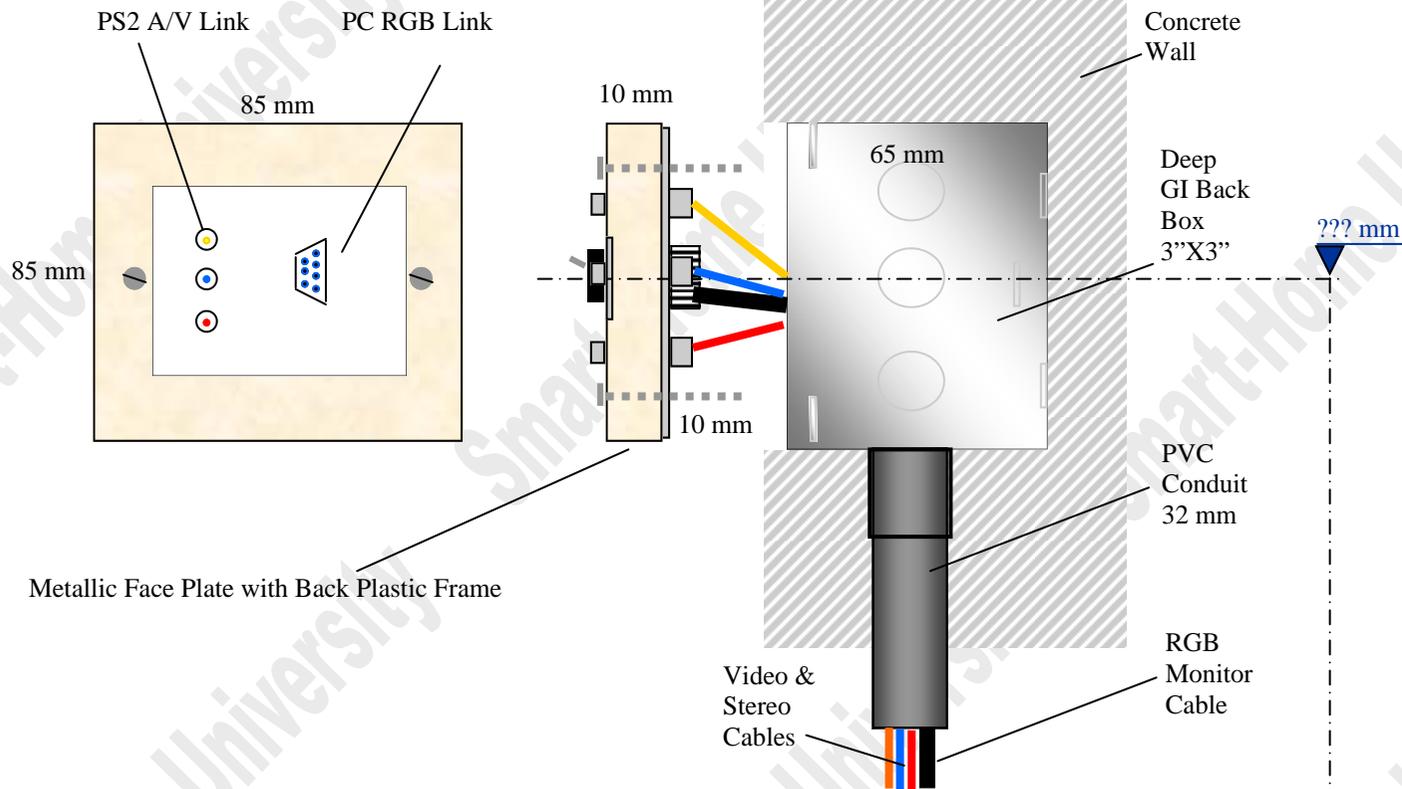
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Control, Entertainment & Energy Systems

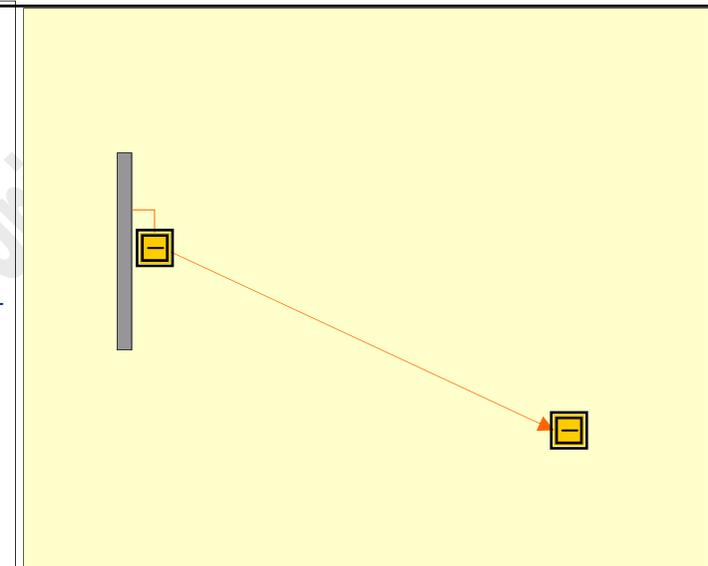
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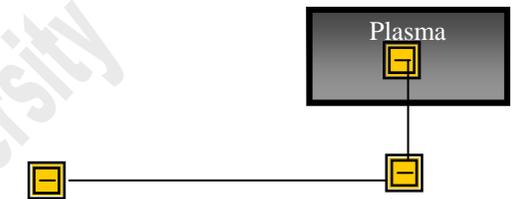
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Note: Sizes are Based on Clipsal—BS Compliant Products. Face Plates Layout May Differ If Other manufacturer



WIRING SCHEMATICS



Radial / Non Looping Cables High Gage

Client Mr. :	Project No:	Consultant:	Interior Designer:
SmartHome Low Current Systems	What Contractors need Is to Coordinate Works, Shop Drawings and Schematics:		
1- Tel System	SP Pipes to LC Room, Tel Socket Shop Drawing, Schematics Of Branched Lines		
2- Data Network	SP Pipes to LC Room, Data Outlet Shop Drawing, Schematics Of Branched Lines		
3- Distributed Audio	Ceiling Shop Drawings, Wall Switch Shop Drawing, Schematics Of Zones and Lines		
4- Home Theater Hub	Speaker Outlet Shop Drawing, Schematics Of Branched Lines		
5- CCTV	CCTV Point Needs, Schematics Of Branched Lines		
6- Security	Mag. Contact Shop Drawing, PIR/BG/Sounder/Siren Needs, Branched Lines Schematics		
7- Lighting & Dimming	Switches Shop Drawings, Schematics of Branched Lines, (Need Loads Coordination Table)		
8- Controls & Automation Points	LCD, Touch, Garage relays ++ Schematic Branched Lines, & Shop Drawings		
9- Satellite & Cable TV	Socket Shop Drawing, Schematics Of Branched Lines		
10 Air Conditioning	Smart thermostat Shop Drawings, Connectivity Diagrams		
11- Pool & Garden Life Systems	(Coordination Sprinklers, Pumps, and Lights), Schematic Branched Lines		

Descriptive Table 1	
Standards	
Material & Provisions Schedules	
As Required By Architect	
Rev. 2	Date 27-06-04
Approvals:	

System Part	Pipe Size & Back Box Size + Instructions	From Point To	Cable Types & Qty To Be Used
Telephone , Data & Intercom Point	20 mm PVC Conduit Max Span Before JB = 25 Meters , Pull Robe is a Must, Back Box 3''X3''	Telecom Control Room	UTP cat6, One Cable Each Point Radial
Speaker Point	20 mm PVC Conduit Max Span Before JB = 25 Meters , Pull Robe is a Must, T JB PVC is needed	Multi Media Control Center	Brass Threaded Audio Cable Twist AWG24
Volume / Music Selector Pnt	20 mm PVC Conduit Max Span Before JB = 25 Meters , Pull Robe is a Must, Back Box By Digitcom (US Standard Decora Box)	Multi Media Control Center	UTP cat6, One Cable Each Point Radial
Home Theater Speaker Pnt	20 mm PVC Conduit, Pull Robe is a Must, Back Box 3''X3''	In Room Central Hub 3'' X 6'' Back Box	Brass Threaded Audio Cable Twist AWG24
Projector, Plasma, Play Station Central Table Point	35 mm PVC Conduit , Pull Robe is a Must, Back Box 3''X6'', Each Point Require 220V AC Power Point 13A.	In Room Central Hub 3'' X 6'' Back Box	RGB, 2XRG59, 2X AV, 2X Data
Projection Screen & Drape	20 mm PVC Conduit Max Span Before JB = 25 Meters , Pull Robe is a Must, Back Box 3''X3'', Each Point Require 220V AC Power Point 13A.	To Switch then Loop To Control Room	UTP cat6, One Cable Each Point Radial
CCTV Camera	25 mm PVC Conduit Max Span Before JB = 25 Meters , Pull Robe is a Must, Back Box 3''X3'', Each Point Require 220V AC Power Point 13A.	Control Room	RG59 , Control cable, or UTP Cat5e for IP Cameras
Garage / Gate Intercom & Control	25mm Looping Between The two sides of Gate or Garage for Beam Detector, then To Control Room. Max Span Before JB = 25 Meters , Pull Robe is a Must, Back Box 3''X3'', Each Point Require 220V AC Power Point 13A. Require Strong Concrete Base For Motors.	Telecom Control Room	Cat 6, UTP cable

Client Mr. :	Project No:	Consultant:	Interior Designer:
SmartHome Low Current Systems	What Contractors need Is to Coordinate Works, Shop Drawings and Schematics:		
1- Tel System	SP Pipes to LC Room, Tel Socket Shop Drawing, Schematics Of Branched Lines		
2- Data Network	SP Pipes to LC Room, Data Outlet Shop Drawing, Schematics Of Branched Lines		
3- Distributed Audio	Ceiling Shop Drawings, Wall Switch Shop Drawing, Schematics Of Zones and Lines		
4- Home Theater Hub	Speaker Outlet Shop Drawing, Schematics Of Branched Lines		
5- CCTV	CCTV Point Needs, Schematics Of Branched Lines		
6- Security	Mag. Contact Shop Drawing, PIR/BG/Sounder/Siren Needs, Branched Lines Schematics		
7- Lighting & Dimming	Switches Shop Drawings, Schematics of Branched Lines, (Need Loads Coordination Table)		
8- Controls & Automation Points	LCD, Touch, Garage relays ++ Schematic Branched Lines, & Shop Drawings		
9- Satellite & Cable TV	Socket Shop Drawing, Schematics Of Branched Lines		
10 Air Conditioning	Smart thermostat Shop Drawings, Connectivity Diagrams		
11- Pool & Garden Life Systems	(Coordination Sprinklers, Pumps, and Lights), Schematic Branched Lines		

Descriptive Table 2	
Standards	
Material & Provisions Schedules	
As Required By Architect	
Rev. 2	Date 27-06-04
Approvals:	

System Part	Pipe Size & Back Box Size + Instructions	From Point To	Cable Types & Qty To Be Used
Security Input & Output Pnt	20 mm PVC Conduit Max Span Before JB = 25 Meters , Pull Robe is a Must, Back Box 3"X3" or Ceiling PVC T-JB	Control Room	UTP cat5e, One Cable Each Point Radial
Smart Lighting & Dimming Channel or Circuit	25 mm PVC Conduit Max Span Before JB = 25 Meters , Contractor To Pull Each Circuit /Channel Direct and Separate To Main DB, Each Channel to Have its Own Separate MCB.	Electrical Lighting DB Panel	Check with Consultant According To Loads
Smart Lighting Switch	20 mm PVC Conduit Max Span Before JB = 25 Meters , Pull Robe is a Must, Back Box 3"X3"	C-bus Panel Next To Lighting DB	UTP cat6, One Cable Each Point Looping or radial (Both Ways OK)
Automation LCD and Touch Or Water tem, AC thermostat, Or Humidity Omnistat	20 mm PVC Conduit from Each point, Max Span Before JB = 25 Meters Pull Robe is a Must, Back Box 3"X3", Except Touch Screen (To Be Provided By Digitcom)	Control Room	UTP cat6, One Cable Each Point Radial
TV / Reuters point / Saham or Multivision or Dream Box Point	25 mm PVC Conduit , Max Span Before JB = 25 Meters , Pull Robe is a Must, Back Box 3"X3", Each TV and Each Reuters Point. Require 220V AC Power Point 13A.	Control Room	RG6, GR59, STP Cat6
Satellite Roof Link	50 mm PVC Conduit Max Span Before JB = 25 Meters , Pull Robe is a Must, Back Box 3"X3"	Control Room	Check with Consultant
Mosquito Killer	110 Volt Provisional Point in Garden, IP 66		RG59 , Control cable, or UTP Cat6 for IP Cameras
Garden Speakers and Sprinkler Override System	20 mm PVC Conduit Max Span Before JB = 25 Meters , Pull Robe is a Must, Back Box 3"X3", Require Base For Speakers.	Control Room	Cat 6, UTP cable

Smart Room

SmartHome-BUS System & Low Current

Schematics & Detail of Shop Drawings

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Note: Multi 220 Volt Power Sockets Needed
For PC, Switches of Data and Video, Amplifiers, Tel
System, Intercom, Security, CCTV ++

Room Has To Be safe and Free from Water Leakage

Room Has To Be Air Conditioned

Minimum Room Size Needed is 2m X 2 Meters

100 pair MDF Panel

