



*WE CARE FOR  
NATURE.*



**TOSHIBA DESIGN AIRS SOFTWARE**  
Bernd Taucher



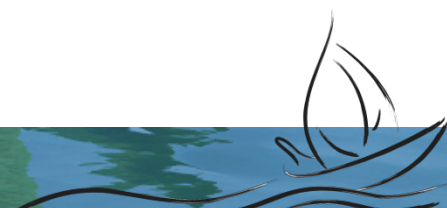
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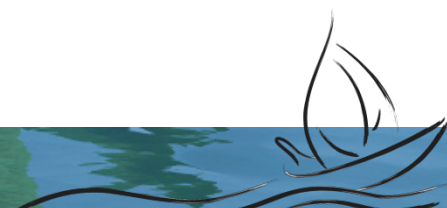
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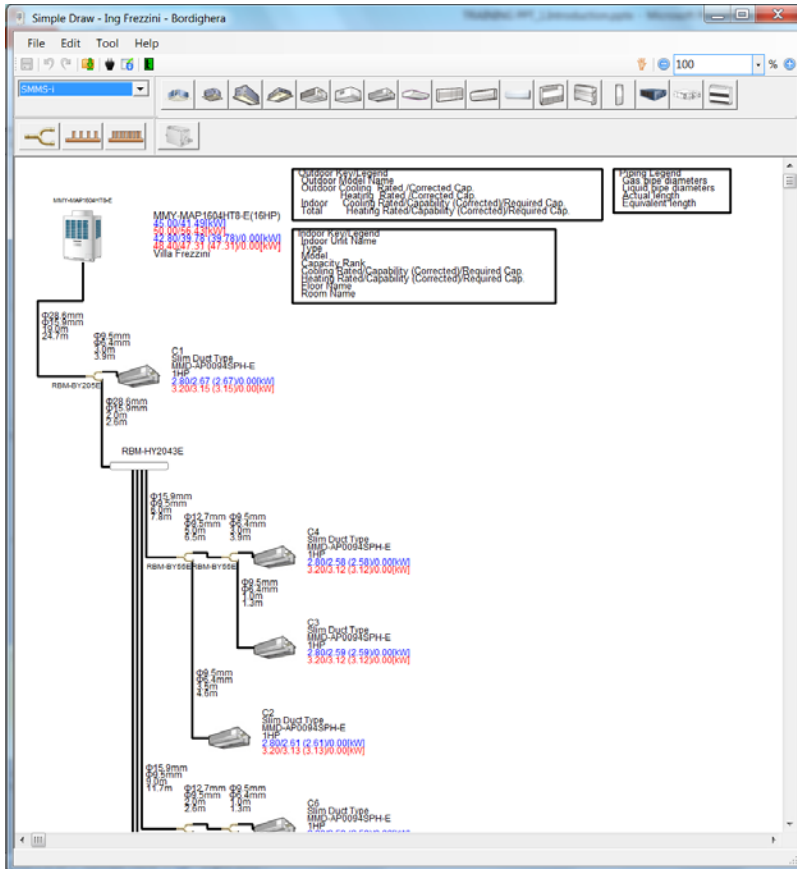
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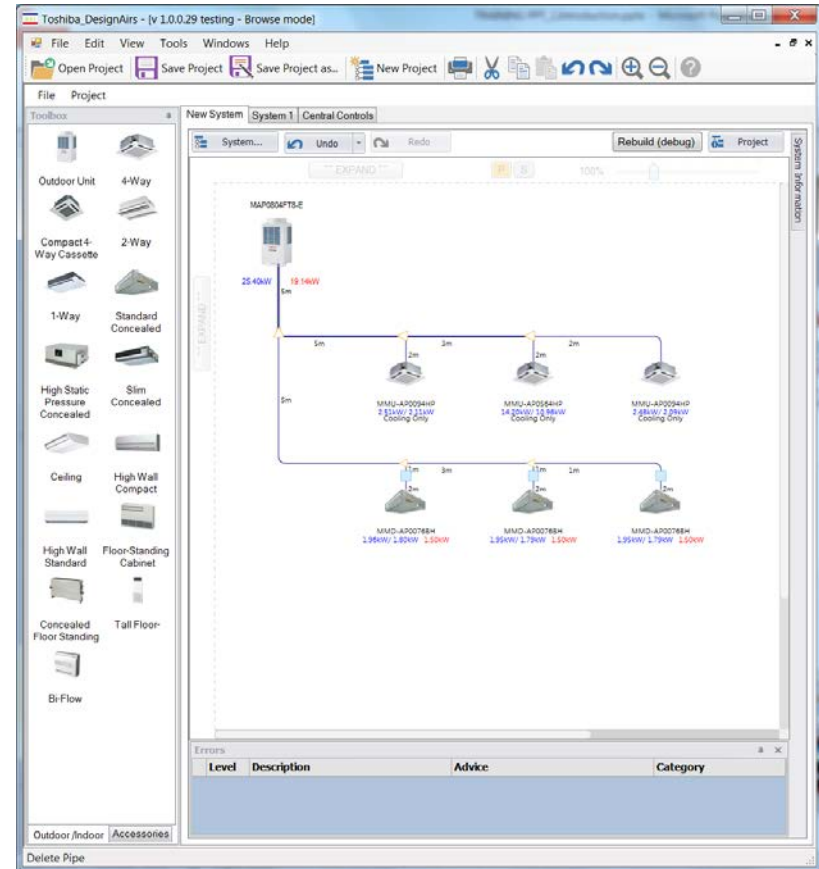


# INTRODUCTION

## Current Selection Tool Software



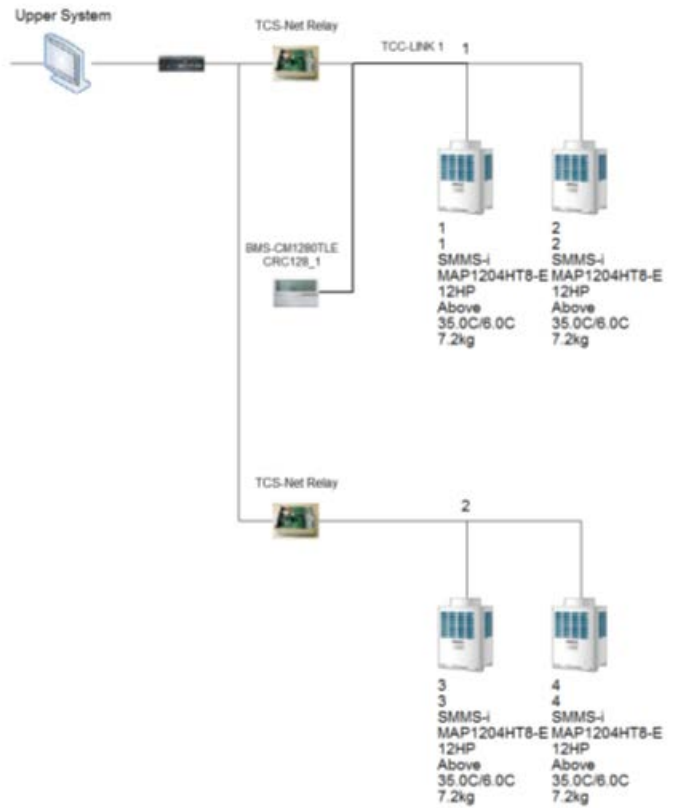
## New TOSHIBA Design-Airs



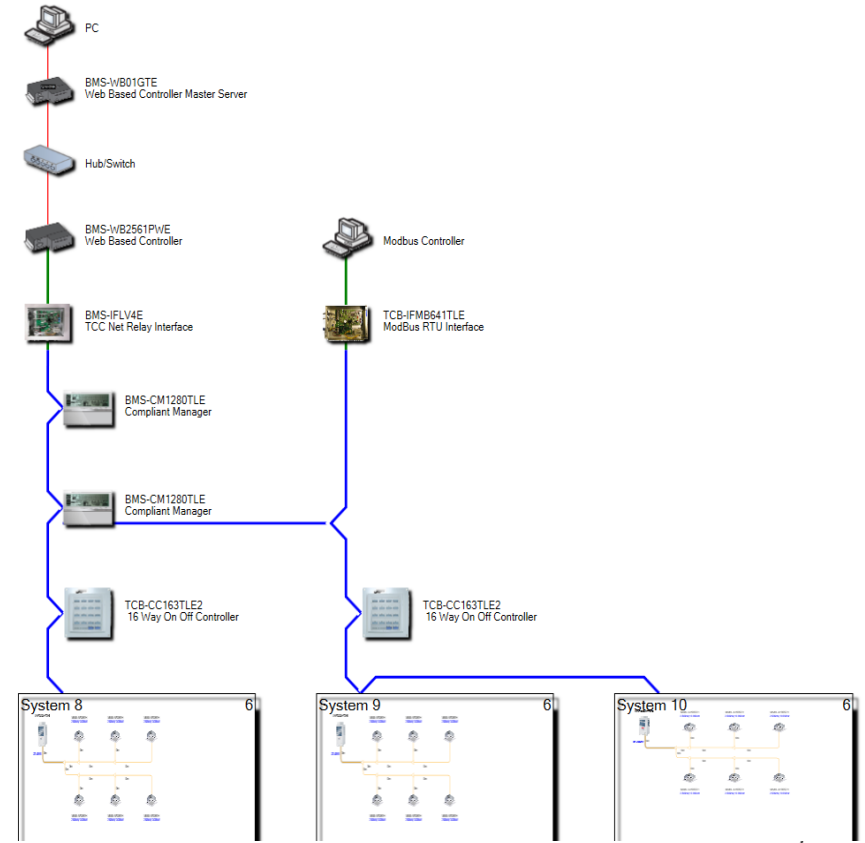


# INTRODUCTION

## Current Selection Tool Software



## New TOSHIBA Design-Airs





# INTRODUCTION

## Current Selection Tool Software

TOSHIBA Leading Innovation >>>		Toshiba VRF Piping Selection Tool Report		SHMS-1					
		12/8/2014							
<b>Project Information</b>		<b>Version</b>		2.4.03.0					
<b>Project Name</b>	Ing Frezzini - Bordighera								
<b>System Type</b>	SHMS-1								
<b>Customer Name</b>	Belfieldma								
<b>Address</b>									
<b>Installer</b>									
<b>Installation Date</b>	24/01/2014								
<b>Commissioning Date</b>	24/01/2014								
<b>Equipment List</b>									
<b>Outdoor Units</b>									
<b>Model Name</b>					<b>Quantity</b>				
MHY-MAP1604HTB-E					1				
<b>Indoor Units</b>									
<b>Model Name</b>					<b>Quantity</b>				
MMD-AP0204SPH-E					6				
MMD-AP0124SPH-E					1				
MMD-AP0184SPH-E					4				
<b>Outdoor Connection Kits</b>									
<b>Model Name</b>					<b>Quantity</b>				
<b>Y-Joints</b>									
<b>Model Name</b>					<b>Quantity</b>				
RBM-BY3SE					6				
RBM-BY2SE					1				
<b>Header</b>									
<b>Model Name</b>					<b>Quantity</b>				
RBM-HY2043E					1				
<b>Accessories</b>									
<b>Model Name</b>					<b>Quantity</b>				
RBC-AM551E-EN					11				
<b>Central Control Devices</b>									
<b>Model Name</b>					<b>Quantity</b>				
TCB-FLN64ZTLE					1				
<b>Piping Length - Project Totals</b>									
(mm)	ø6.4	ø9.5	ø12.7	ø15.9	ø19.1	ø22.2	ø28.6	ø34.9	ø41.3
Total(m)	45.5	41.5	39	42		21		21	
Gas side(m)	-	13.5	39	21					
Liquid side(m)	45.5	28	0	21					
<b>Refrigerant Change Amount(Additional Refrigerant Required) - Project Total(kg)</b>						16.5375			
<b>Outdoor Design Temperature</b>									
Cooling	35 deg(C)		(Dry Bulb)						
Heating	15.5 deg(C)		(Wet Bulb)						
<b>System Information</b>									
<b>Ref. Cycle Number</b>	Villa Frezzini								
<b>Ref. Cycle Name</b>	SHMS-1								
<b>System Type</b>									
<b>Outdoor Unit</b>									
<b>Model Name</b>	Follower Unit1		Follower Unit2		Follower Unit3				
<b>Header Unit</b>	MHY-MAP1604HTB-E								
<b>Capacity</b>	Rated Capacity(kW)		Corrected Capacity(kW)						
Cooling	45		41.49						
Heating	50		56.43						

## New TOSHIBA Design-Airs

**TOSHIBA**  
Leading Innovation >>>

**TOSHIBA Design**  
**AIRS**

Tesco Roborough  
MacWhirter Ltd.  
07/08/2014

**MacWhirter**  
WESTERN LTD.  
AIR CONDITIONING





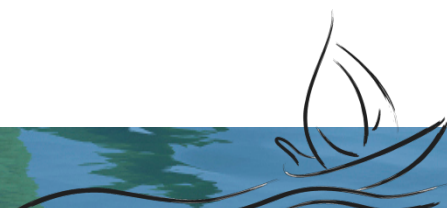
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## SET UP

Fill in the registration form, this will then be used for the Report Output:

The screenshot shows a registration dialog box titled "Toshiba\_DesignAirs\_Registration" with the following fields and labels:

- Company Name  \*Required
- Serial Number  \*Required
- First Name  \*Required
- Last Name  \*Required
- Email Address  \*Required
- Add1
- Add2
- Add3
- Town/City
- County
- Post Code
- Country
- Tel No  \*Required

Buttons: OK, Cancel

Background advertisement text: TOSHIBA, Toshiba, www.toshiba-aircon.c, cliK, Designed by Clik Ltd, www.cliksoftware.com



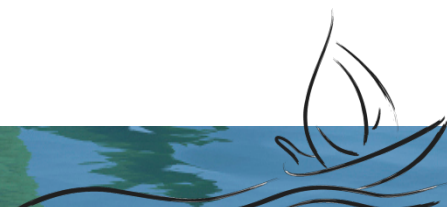
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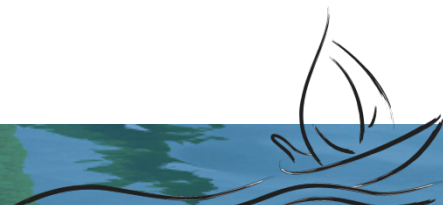
4 **Software**





## FEATURES

- Modern feel, ease of use
- Fast design method for quick quotation
- Intuitive
- Controls capability
- Wiring schematics (System/Central)
- Improved project outputs
- Floor / Room Designs
- Refrigerant leak density requirements
- Live updates
- Selectable TOSHIBA specification output (NC, Dimensions, etc.)
- Greater flexibility
- Improved design error feedback system







TECHNICAL & COMMERCIAL TRAINING FOR...

**TOSHIBA DESIGN-AIRS**

**THE NEW SELECTION TOOL SOFTWARE**



- SOFTWARE -



## SOFTWARE INDEX

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**Starting the design**

**Outdoor & Indoor**

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**Piping**

**Accessories**

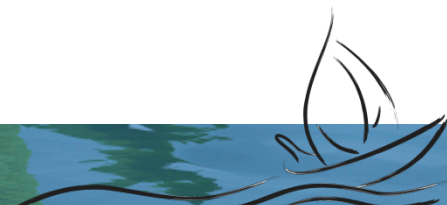
**5**

**6**

**Central Controllers**

**Output**

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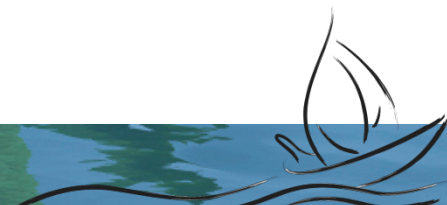
**5**

**6**

**Central Controllers**

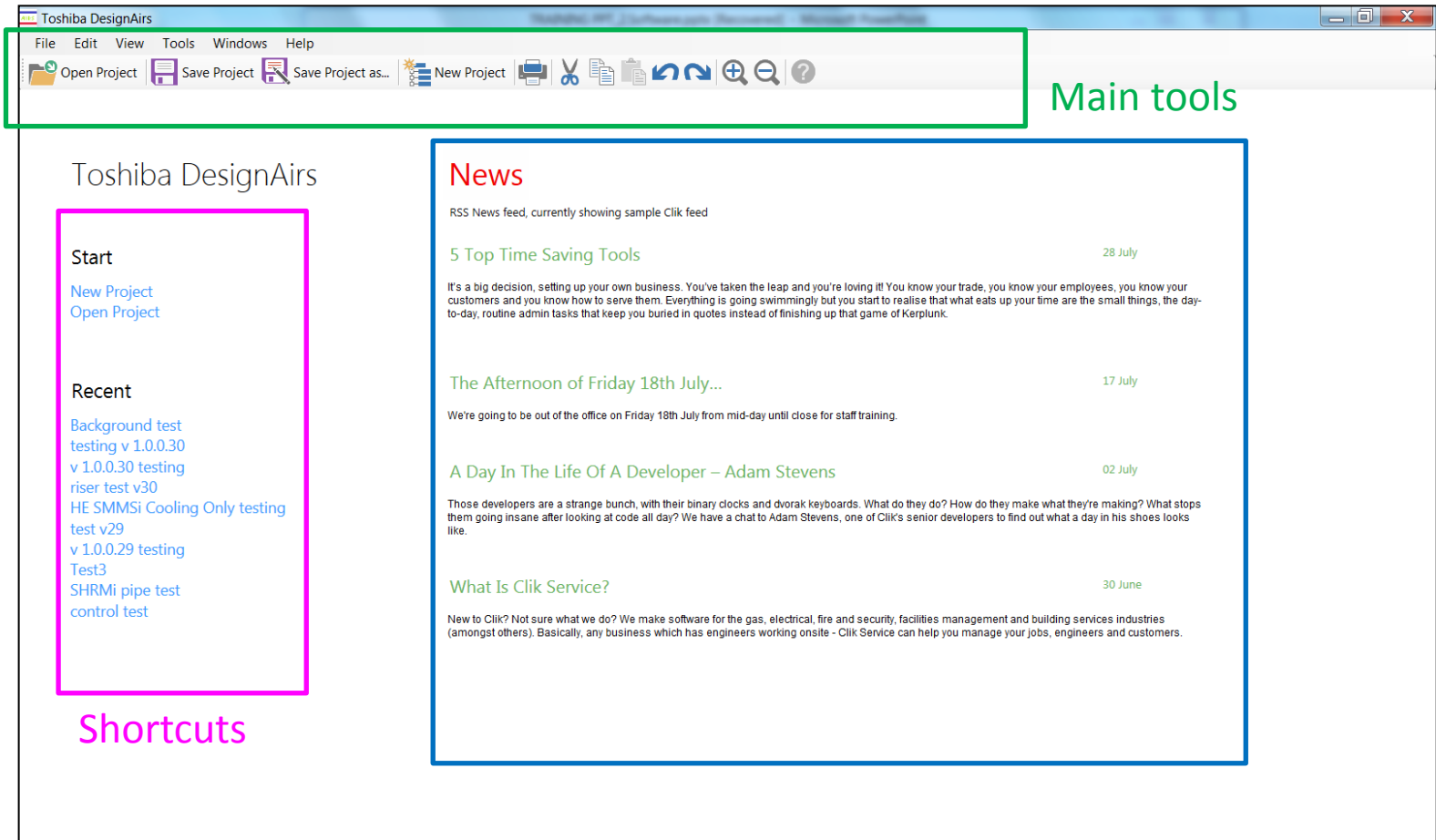
**Output**

**7**



# STARTING THE SOFTWARE

## Main Window



**Main tools**

Toshiba DesignAirs

**Start**

- [New Project](#)
- [Open Project](#)

**Recent**

- Background test testing v 1.0.0.30
- v 1.0.0.30 testing riser test v30
- HE SMMSi Cooling Only testing test v29
- v 1.0.0.29 testing Test3
- SHRMi pipe test control test

**Shortcuts**

**News**

RSS News feed, currently showing sample Clik feed

**5 Top Time Saving Tools** 28 July

It's a big decision, setting up your own business. You've taken the leap and you're loving it! You know your trade, you know your employees, you know your customers and you know how to serve them. Everything is going swimmingly but you start to realise that what eats up your time are the small things, the day-to-day, routine admin tasks that keep you buried in quotes instead of finishing up that game of Kerplunk.

**The Afternoon of Friday 18th July...** 17 July

We're going to be out of the office on Friday 18th July from mid-day until close for staff training.

**A Day In The Life Of A Developer – Adam Stevens** 02 July

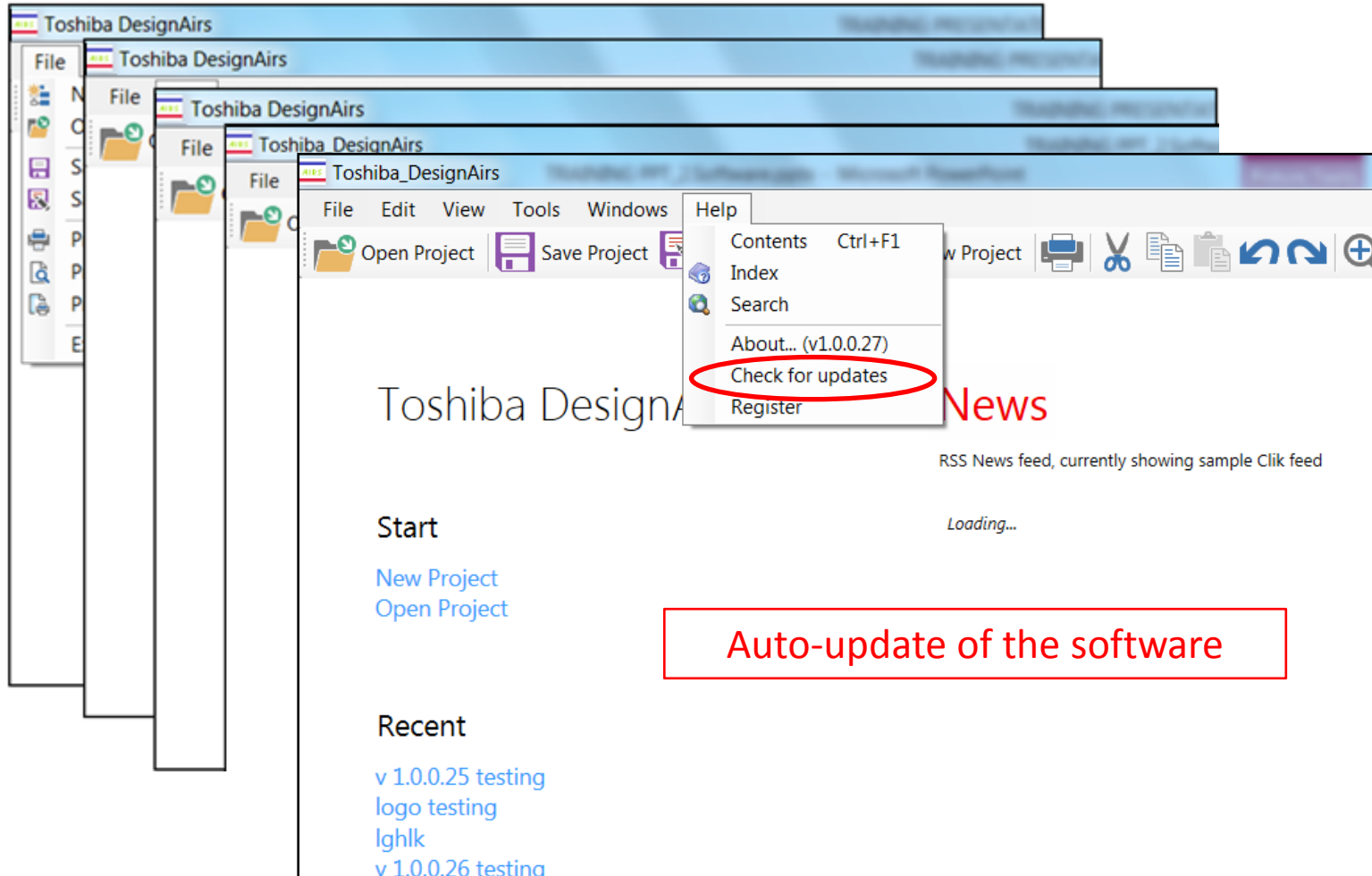
Those developers are a strange bunch, with their binary clocks and dvorak keyboards. What do they do? How do they make what they're making? What stops them going insane after looking at code all day? We have a chat to Adam Stevens, one of Clik's senior developers to find out what a day in his shoes looks like.

**What Is Clik Service?** 30 June

New to Clik? Not sure what we do? We make software for the gas, electrical, fire and security, facilities management and building services industries (amongst others). Basically, any business which has engineers working onsite - Clik Service can help you manage your jobs, engineers and customers.

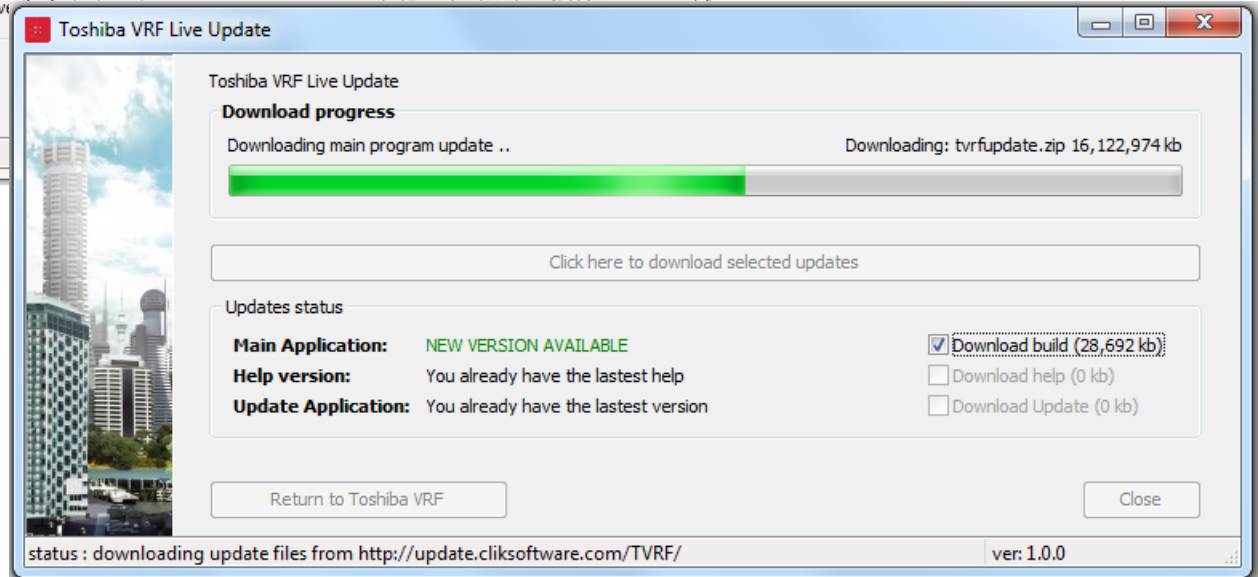
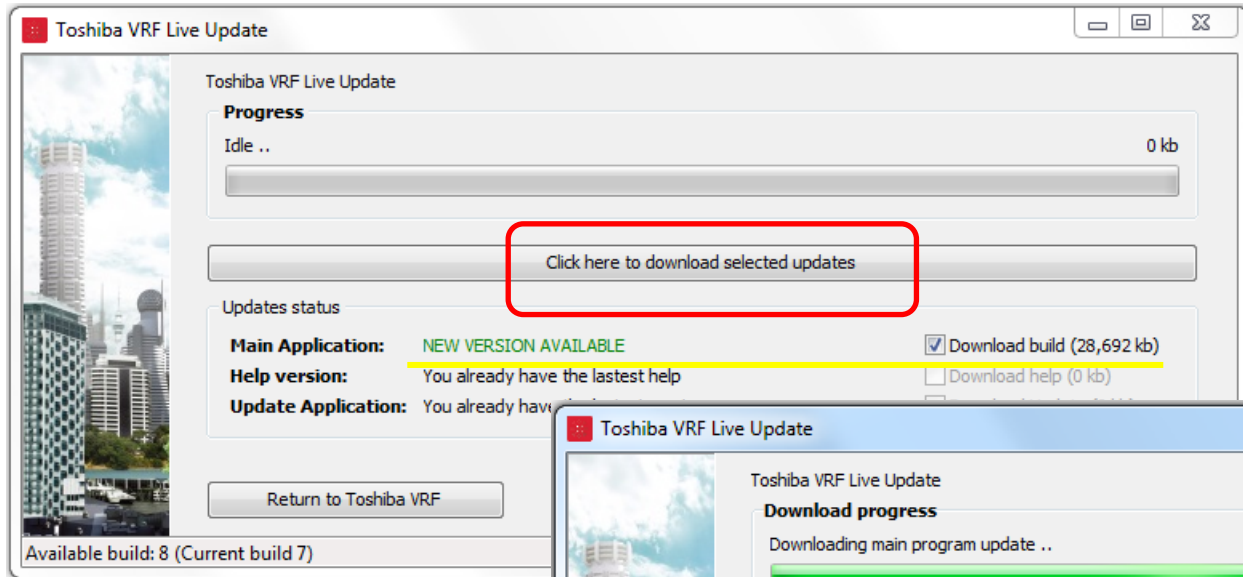


## MAIN TOOLS



# AUTO UPDATES

Tools → Help → Check for updates







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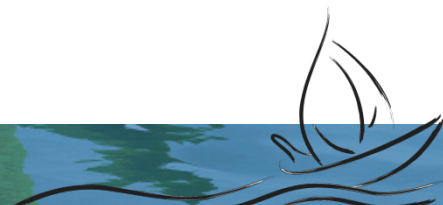
Outdoor & Indoor 3

4 Piping

Accessories 5

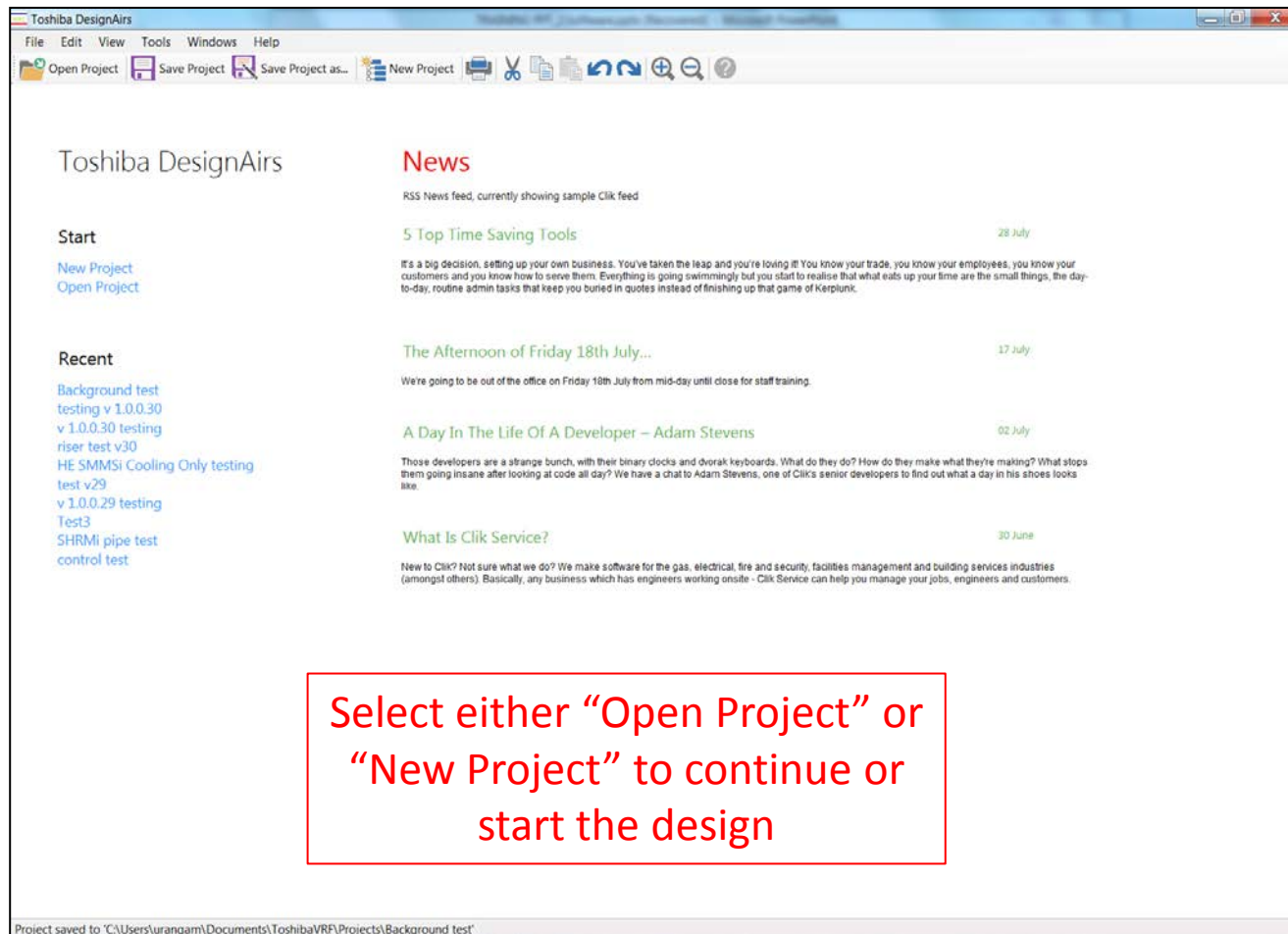
6 Central Controllers

Output 7



# STARTING THE DESIGN

## Main Window

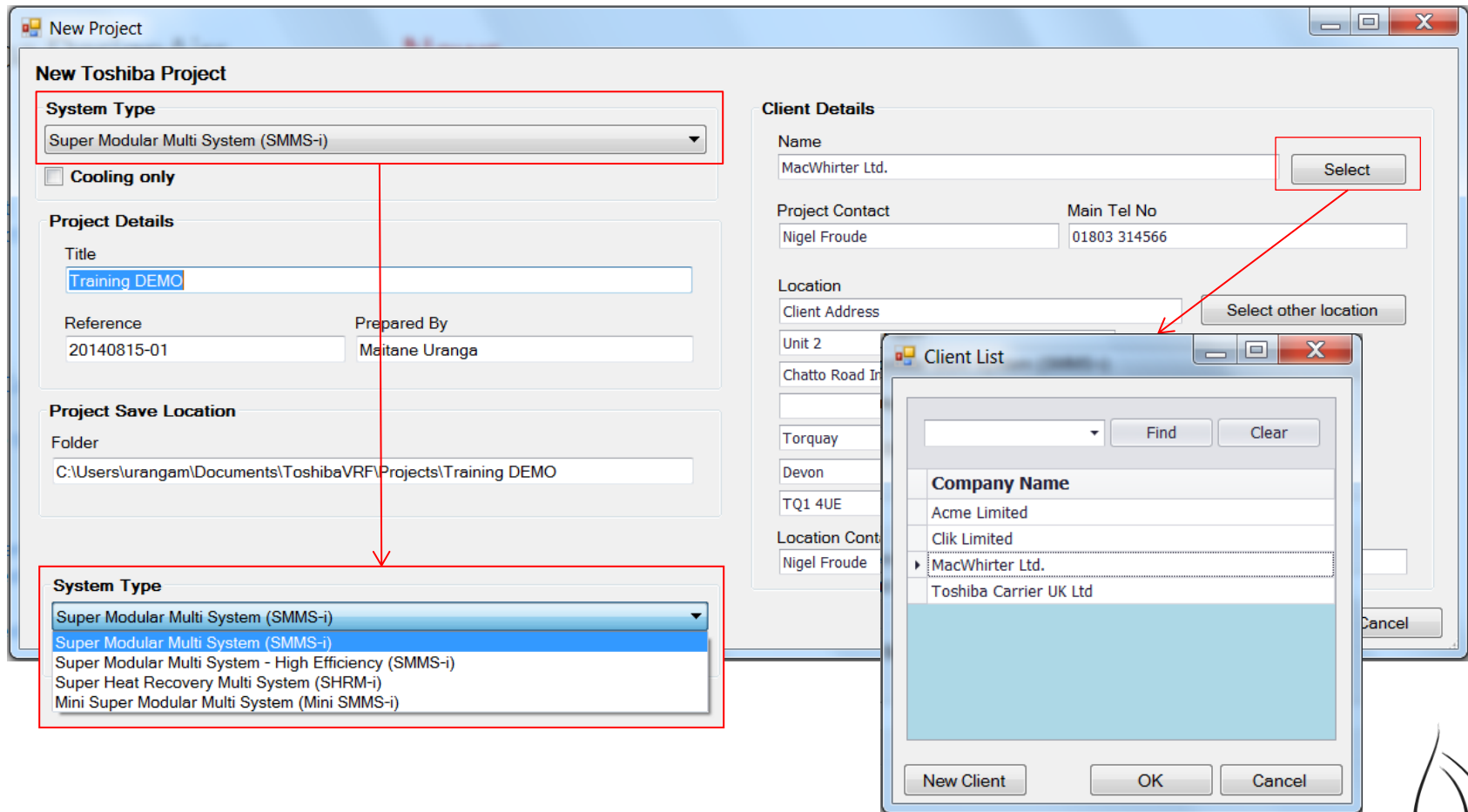


Select either “Open Project” or  
 “New Project” to continue or  
 start the design



## STARTING THE DESIGN

Select the Outdoor Unit and fill in the required information (just the Project Title is mandatory):

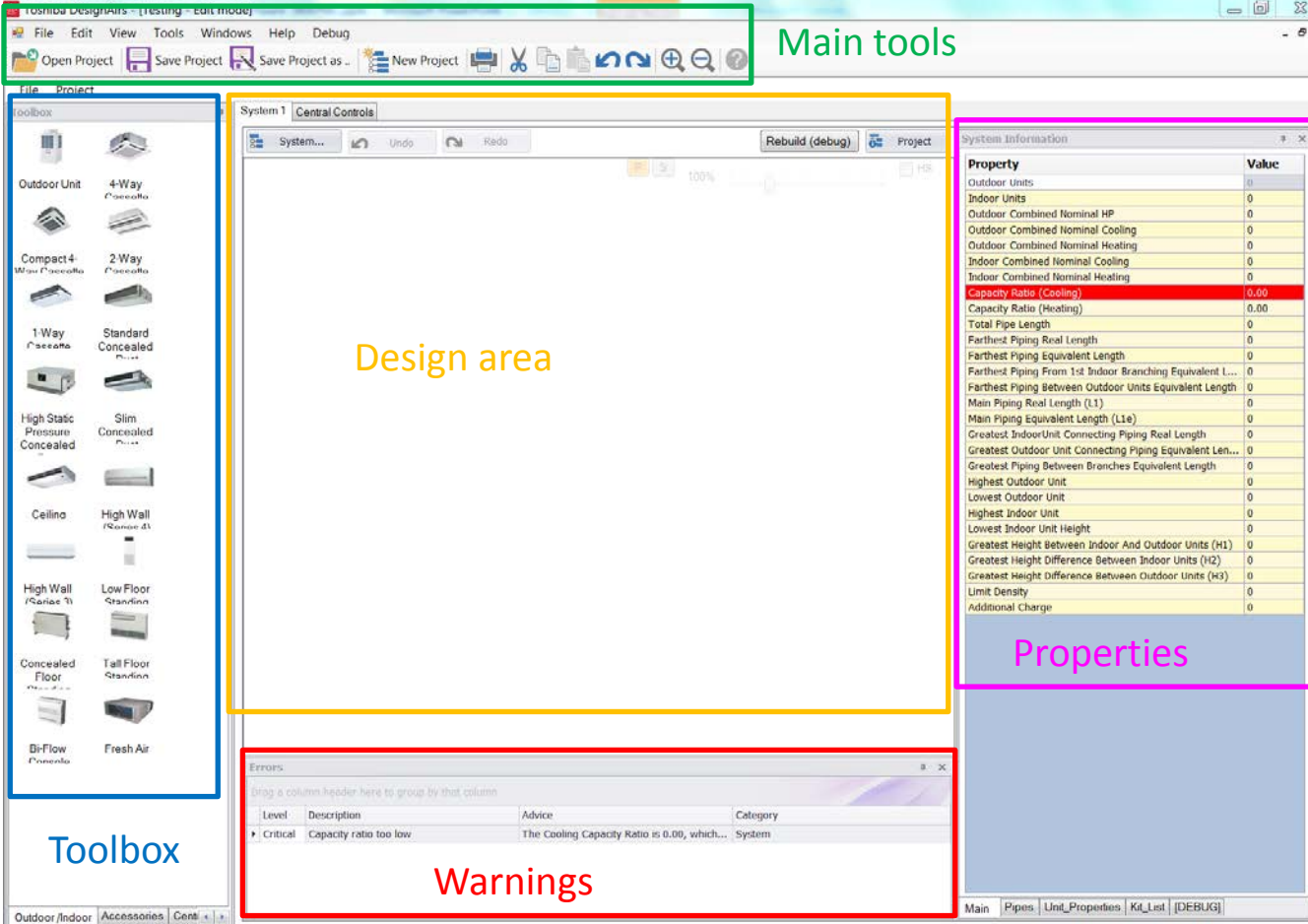


The screenshot shows the 'New Project' window with the following sections:

- New Toshiba Project**
  - System Type**: Super Modular Multi System (SMMS-i)
  - Cooling only
  - Project Details**
    - Title: Training DEMO
    - Reference: 20140815-01
    - Prepared By: Maitane Uranga
  - Project Save Location**
    - Folder: C:\Users\urangam\Documents\ToshibaVRF\Projects\Training DEMO
- Client Details**
  - Name: MacWhirter Ltd. (with a 'Select' button)
  - Project Contact: Nigel Froude
  - Main Tel No: 01803 314566
  - Location: Client Address (with a 'Select other location' button)
  - Unit 2: Chatto Road In
  - Torquay
  - Devon
  - TQ1 4UE
  - Location Cont: Nigel Froude
- System Type** (dropdown menu):
  - Super Modular Multi System (SMMS-i)
  - Super Modular Multi System (SMMS-i)
  - Super Modular Multi System - High Efficiency (SMMS-i)
  - Super Heat Recovery Multi System (SHRM-i)
  - Mini Super Modular Multi System (Mini SMMS-i)
- Client List** (dialog box):
  - Company Name:
    - Acme Limited
    - Clk Limited
    - MacWhirter Ltd.
    - Toshiba Carrier UK Ltd
  - Buttons: New Client, OK, Cancel

# STARTING THE DESIGN

Main window of the software:



The screenshot shows the main window of the Toshiba DesignAid software. The interface is divided into several key areas:

- Main tools:** The top menu bar (File, Edit, View, Tools, Windows, Help, Debug) and the toolbar below it are highlighted with a green box.
- Design area:** The central workspace, labeled 'System 1 Central Controls', is highlighted with a yellow box.
- Toolbox:** The left sidebar containing various HVAC unit icons is highlighted with a blue box.
- Properties:** The 'System Information' panel on the right, showing a table of system properties, is highlighted with a purple box.
- Warnings:** The 'Errors' panel at the bottom, displaying a warning about a low capacity ratio, is highlighted with a red box.

**System Information Table:**

Property	Value
Outdoor units	0
Indoor Units	0
Outdoor Combined Nominal HP	0
Outdoor Combined Nominal Cooling	0
Outdoor Combined Nominal Heating	0
Indoor Combined Nominal Cooling	0
Indoor Combined Nominal Heating	0
Capacity Ratio (Cooling)	0.00
Capacity Ratio (Heating)	0.00
Total Pipe Length	0
Farthest Piping Real Length	0
Farthest Piping Equivalent Length	0
Farthest Piping From 1st Indoor Branching Equivalent L...	0
Farthest Piping Between Outdoor Units Equivalent Length	0
Main Piping Real Length (L1)	0
Main Piping Equivalent Length (L1e)	0
Greatest Indoor Unit Connecting Piping Real Length	0
Greatest Outdoor Unit Connecting Piping Equivalent Len...	0
Greatest Piping Between Branches Equivalent Length	0
Highest Outdoor Unit	0
Lowest Outdoor Unit	0
Highest Indoor Unit	0
Lowest Indoor Unit Height	0
Greatest Height Between Indoor And Outdoor Units (H1)	0
Greatest Height Difference Between Indoor Units (H2)	0
Greatest Height Difference Between Outdoor Units (H3)	0
Limit Density	0
Additional Charge	0

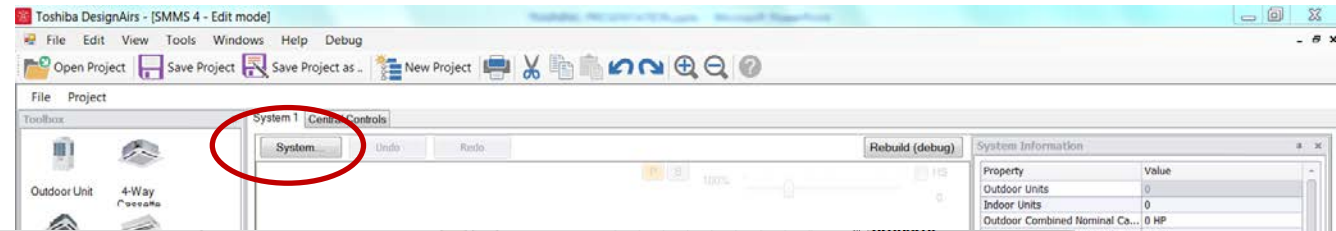
**Errors Panel:**

Level	Description	Advice	Category
Critical	Capacity ratio too low	The Cooling Capacity Ratio is 0.00, which...	System



# SYSTEM PROPERTIES

Click on "System" to set the Properties for the current system.



**System Properties**

General Design Conditions Floors Rooms

**System Details**

System Name: System 1 System No. [ ]

System Type: Super Heat Recovery Multi System (SHRM-i)  Cooling only

Building Diversity: [ ]  Load Sharing

Equivalent Length Ratio: 1.2

**Client Details**

Name: [ ] [Select]

Contact: [ ] Main Tel No: [ ]

Email address: [ ]

[ ] [Select other location]

Location Tel No: [ ]

Location Contact: [ ]

**Background Image**

[Load Background Image] [Clear Background Image]

Position: [ 2 ] x [ 3 ]

Size: [ 8 ] x [ 10 ]

Keep Aspect Ratio

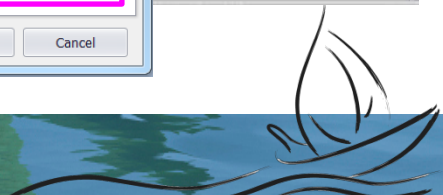
Opacity: [ 1 ]

Use this background as default for all floors

[OK] [Cancel]

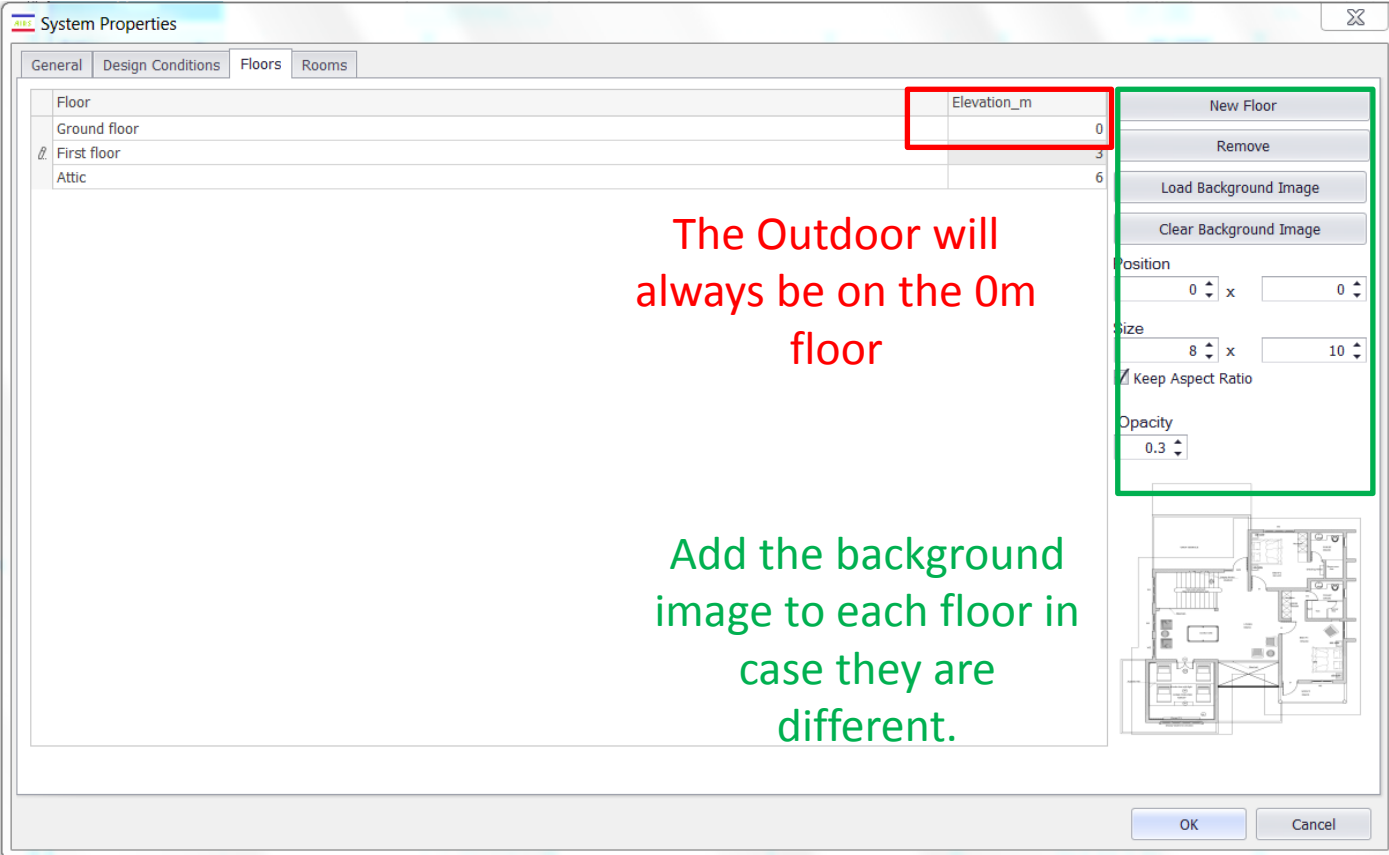
You can change the Outdoor Unit type anytime during the design

Load Background image



## SYSTEM PROPERTIES

Define the floors of the design and their elevation in comparison to the Outdoor Unit:

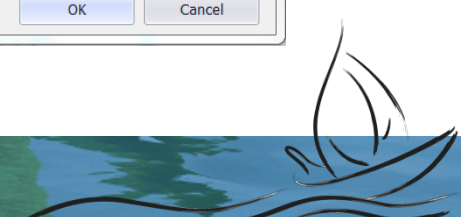


Floor	Elevation_m
Ground floor	0
First floor	3
Attic	6

The Outdoor will always be on the 0m floor

Add the background image to each floor in case they are different.

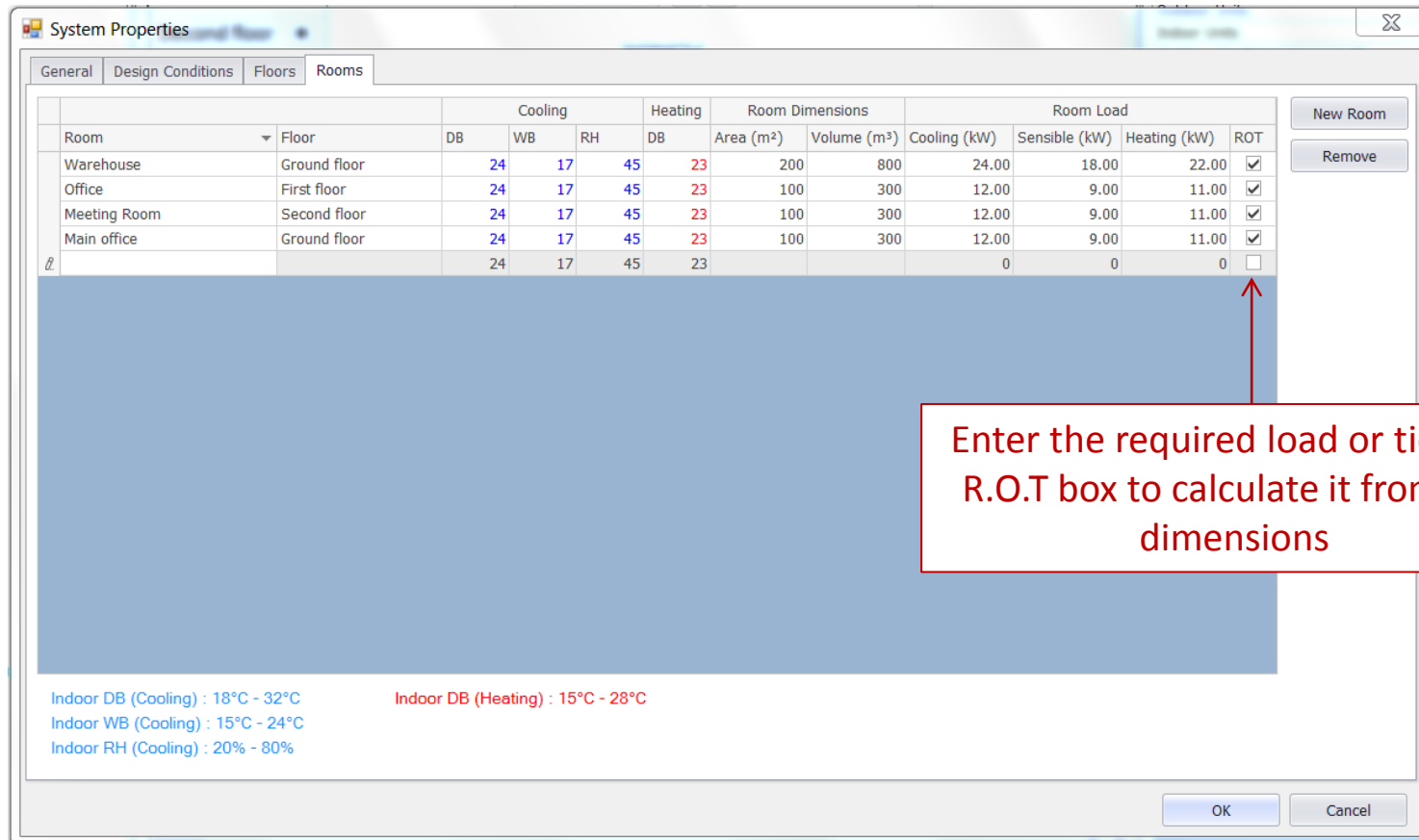
New Floor panel options:  
 Remove  
 Load Background Image  
 Clear Background Image  
 Position: 0 x 0  
 Size: 8 x 10  
 Keep Aspect Ratio  
 Opacity: 0.3





## SYSTEM PROPERTIES

Define the rooms of the design and the floors in which they are. Set the dimensions of the room to get a Rule of Thumb for the Load:



Room	Floor	Cooling			Heating	Room Dimensions		Room Load			
		DB	WB	RH	DB	Area (m <sup>2</sup> )	Volume (m <sup>3</sup> )	Cooling (kW)	Sensible (kW)	Heating (kW)	ROT
Warehouse	Ground floor	24	17	45	23	200	800	24.00	18.00	22.00	<input checked="" type="checkbox"/>
Office	First floor	24	17	45	23	100	300	12.00	9.00	11.00	<input checked="" type="checkbox"/>
Meeting Room	Second floor	24	17	45	23	100	300	12.00	9.00	11.00	<input checked="" type="checkbox"/>
Main office	Ground floor	24	17	45	23	100	300	12.00	9.00	11.00	<input checked="" type="checkbox"/>
∅		24	17	45	23			0	0	0	<input type="checkbox"/>

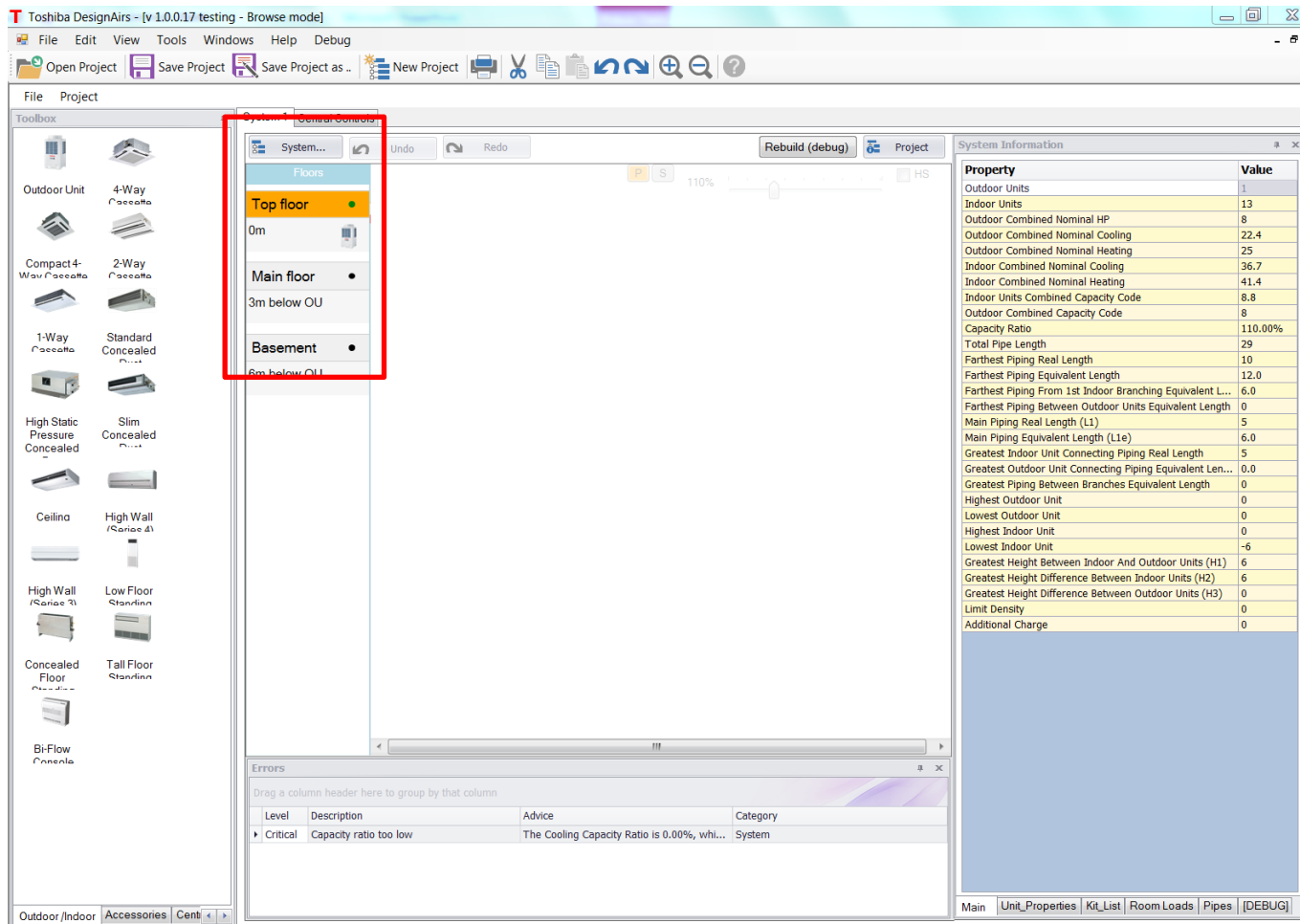
Indoor DB (Cooling) : 18°C - 32°C  
Indoor WB (Cooling) : 15°C - 24°C  
Indoor RH (Cooling) : 20% - 80%

Indoor DB (Heating) : 15°C - 28°C

Enter the required load or tick the R.O.T box to calculate it from the dimensions

# STARTING THE DESIGN

The floors of the building will appear in the Main Window:



The screenshot shows the Toshiba DesignAirs software interface. The 'General Controls' window is open, and the 'Floors' panel is highlighted with a red box. The 'Floors' panel lists the following floors:

- Top floor
- 0m
- Main floor
- 3m below OU
- Basement
- 6m below OU

The 'System Information' panel on the right displays the following data:

Property	Value
Outdoor Units	1
Indoor Units	13
Outdoor Combined Nominal HP	8
Outdoor Combined Nominal Cooling	22.4
Outdoor Combined Nominal Heating	25
Indoor Combined Nominal Cooling	36.7
Indoor Combined Nominal Heating	41.4
Indoor Units Combined Capacity Code	8.8
Outdoor Combined Capacity Code	8
Capacity Ratio	110.00%
Total Pipe Length	29
Farthest Piping Real Length	10
Farthest Piping Equivalent Length	12.0
Farthest Piping From 1st Indoor Branching Equivalent Length	6.0
Farthest Piping Between Outdoor Units Equivalent Length	0
Main Piping Real Length (L1)	5
Main Piping Equivalent Length (L1e)	6.0
Greatest Indoor Unit Connecting Piping Real Length	5
Greatest Outdoor Unit Connecting Piping Equivalent Length	0.0
Greatest Piping Between Branches Equivalent Length	0
Highest Outdoor Unit	0
Lowest Outdoor Unit	0
Highest Indoor Unit	0
Lowest Indoor Unit	-6
Greatest Height Between Indoor And Outdoor Units (H1)	6
Greatest Height Difference Between Indoor Units (H2)	6
Greatest Height Difference Between Outdoor Units (H3)	0
Limit Density	0
Additional Charge	0

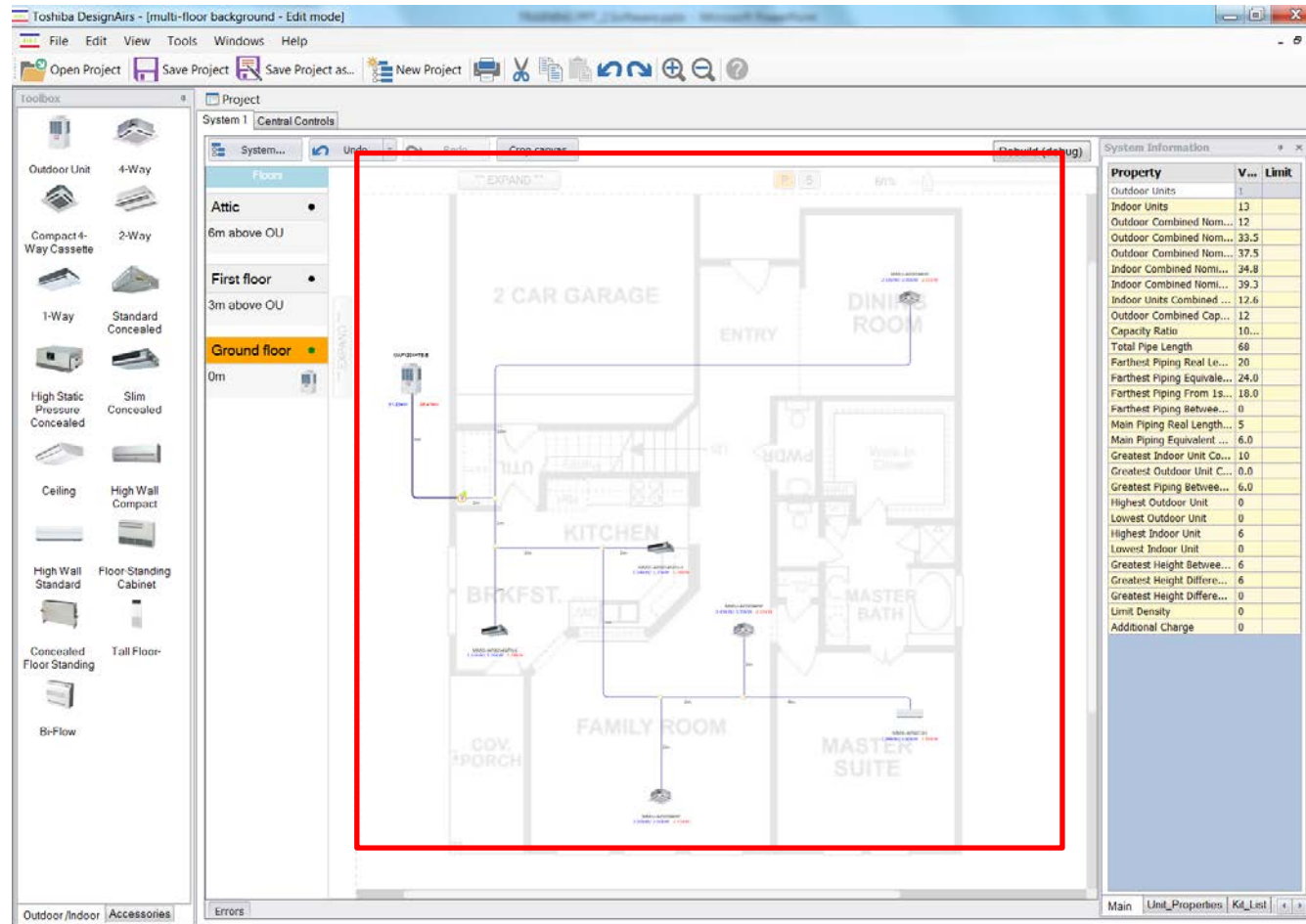
The 'Errors' panel at the bottom shows a critical error:

Level	Description	Advice	Category
Critical	Capacity ratio too low	The Cooling Capacity Ratio is 0.00%, wh...	System



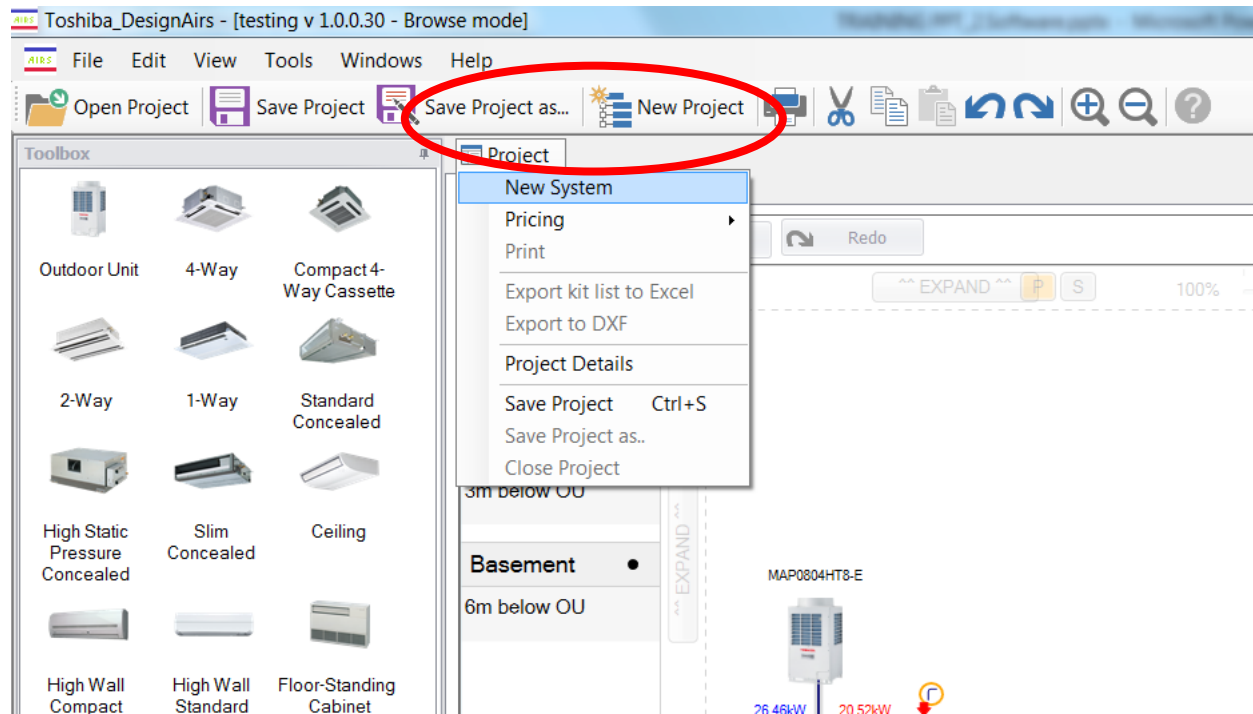
# STARTING THE DESIGN

The background image will appear in the Main Window:



# STARTING THE DESIGN

To add a new System: Project → New System



# SYSTEM INFORMATION

We will be able to see the properties of the system at any time in the System Information panel:

The screenshot shows the Toshiba DesignAirs software interface. The main window displays a system diagram with an outdoor unit (AP1624HT-E) and several indoor units (MMU-AP0124HP). The System Information panel on the right provides detailed system data.

Property	Value
Outdoor Units	2
Indoor Units	18
Outdoor Combined Nominal HP	16
Outdoor Combined Nominal Cooling	45
Outdoor Combined Nominal Heating	50
Indoor Combined Nominal Cooling	56.0
Indoor Combined Nominal Heating	63.2
Indoor Units Combined Capacity Code	19.75
Outdoor Units Combined Capacity Code	16
Capacity Ratio	123.44%
Total Pipe Length	103
Farthest Piping Real Length	33
Farthest Piping Equivalent Length	39.6
Farthest Piping From 1st Indoor Branching Equivale...	37.2
Farthest Piping Between Outdoor Units Equivalent L...	0
Main Piping Real Length (L1)	2
Main Piping Equivalent Length (L1e)	2.4
Greatest Indoor Unit Connecting Piping Real Length	5
Greatest Outdoor Unit Connecting Piping Equivalent...	0.0
Greatest Piping Between Branches Equivalent Length	9.6
Highest Outdoor Unit	0
Lowest Outdoor Unit	0
Highest Indoor Unit	0
Lowest Indoor Unit	0
Greatest Height Between Indoor And Outdoor Units...	0
Greatest Height Difference Between Indoor Units (H2)	0
Greatest Height Difference Between Outdoor Units ...	0
Limit Density	0
Additional Charge	0

The navigation bar at the bottom includes: Main, Unit\_Properties, Kit\_List, Room Loads, [DEBUG].

The Errors panel at the bottom shows two critical errors: "Pipe length is zero" with the advice "Please enter a length" and category "Piping".



# SYSTEM INFORMATION

## Main Properties

Check all the rules and current status of our design

Property	Value	Limit
Outdoor Units	1	
Indoor Units	11	
Outdoor Combined Nominal HP	8	
Outdoor Combined Nominal Cooling	22.4	
Outdoor Combined Nominal Heating	25	
Indoor Combined Nominal Cooling	25.4	
Indoor Combined Nominal Heating	28.9	
Indoor Units Combined Capacity Code	9.2	
Outdoor Combined Capacity Code	8	
Capacity Ratio	115.00%	
Total Pipe Length	49.0	
Farthest Piping Real Length	22	
Farthest Piping Equivalent Length	26.4	
Farthest Piping From 1st Indoor Branching Equivalent Length	24.0	
Farthest Piping Between Outdoor Units Equivalent Length	0	
Main Piping Real Length (L1)	2	
Main Piping Equivalent Length (L1e)	2.4	
Greatest Indoor Unit Connecting Piping Real Length	7	
Greatest Indoor Unit Connecting Piping FS Group Equivalent Length	0	
Greatest Flow Selector To Indoor Unit Real Length	1	
Greatest Outdoor Unit Connecting Piping Equivalent Length	0.0	
Greatest Piping Between Branches Equivalent Length	6.0	
Highest Outdoor Unit	0	
Lowest Outdoor Unit	0	
Highest Indoor Unit	0	
Lowest Indoor Unit	0	
Greatest Height Between Indoor And Outdoor Units (H1)	0	
Greatest Height Difference Between Indoor Units (H2)	0	
Greatest Height Difference Between Outdoor Units (H3)	0	
Greatest Height Difference Between Indoor Units Downstream Of A Flow Selector (H4)	0	
Limit Density	0	
Additional Charge	0	

Main | Unit\_Properties | Kit\_List | Room Loads | [DEBUG]



## SYSTEM INFORMATION

### Unit Properties

Select an Indoor or Outdoor unit to see its properties

System Information	
Properties	
Model No.	MMC-AP0157HP-E
Description	Ceiling
<b>Pipe Length (m)</b>	1
<b>Elevation (m)</b>	6
▶ Performance	4.5/5.0
▲ Power Requirement	0.033kW/0.365A
Power Supply	1 phase 50Hz 230V (220 - 240V) ...
Running Current	0.365
Power Consumption	0.033
Starting Current	0.545
▶ Appearance	
▶ Outer Dimensions	235/950/690, //
▶ Total Weight	23/
Heat Exchanger	Finned tube
Soundproof Heat Insulatin...	Polyethylene foam
▶ Fan Unit	840/690/540, 94
Air Filter	Standard filter (Long life filter)
Controller	Remote controller
▶ Piping	12.7/6.4/20
Sound Pressure Level	/
Sound Power Level	/
Series	7

Main Unit\_Properties Kit\_List Room Loads [DEBUG]



## SYSTEM INFORMATION

### Kit List

Name and quantity of the used elements will be shown here

System Information		
Drag a column header here to group by that column		
Qty	Type	Model No
1.0	OutdoorUnit	MAP1604HT8-E
2.0	IndoorUnit	MMU-AP0242H
1.0	IndoorUnit	MMD-AP0094SPH-E
4.0	IndoorUnit	MMU-AP0092H
4.0	IndoorUnit	MMD-AP0054SPH-E
4.0	IndoorUnit	MMU-AP0054MH-E
2.0	IndoorUnit	MMD-AP0184H-E
4.0	Branch	RBM-BY55E
7.0	Branch	
89	Pipework	L:0mm / S:0mm / D:0mm
5	Pipework	L:15.9mm / S:28.6mm / D:0mm
11	Pipework	L:9.5mm / S:15.9mm / D:0mm
5	Pipework	L:6.4mm / S:9.5mm / D:0mm

Main | Unit\_Properties | Kit\_List | Room Loads | Pipes | [DEBUG]



## SYSTEM INFORMATION

### Room Loads

The required and reached capacities for each room are shown.

Green values mean that the required capacity is reached.

Red values mean that the selected indoor units are not powerful enough for the required load.

System Information			
<b>Office 3</b>			
	Cooling (kW)	Sensible (kW)	Heating (kW)
Required	12.00	9.00	11.00
Total	14.2710	9.5121472...	15.393754...
<b>Bathroom 3</b>			
	Cooling (kW)	Sensible (kW)	Heating (kW)
Required	2.40	1.80	2.20
Total	2.8140	2.0211260...	3.0681743...
<b>Office 2</b>			
	Cooling (kW)	Sensible (kW)	Heating (kW)
Required	12.00	9.00	11.00
Total	2.8140	2.0443574...	3.0779179...
<b>Bathroom 2</b>			
	Cooling (kW)	Sensible (kW)	Heating (kW)
Required	2.40	1.80	2.20
Total	1.7085	1.3629049...	1.8275137...
<b>Office 1</b>			
	Cooling (kW)	Sensible (kW)	Heating (kW)

Main | Unit\_Properties | Kit\_List | Room Loads | [DEBUG]



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1

2

Starting the design

**Outdoor & Indoor**

**3**

4

Piping

Accessories

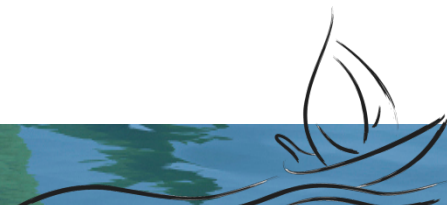
5

6

Central Controllers

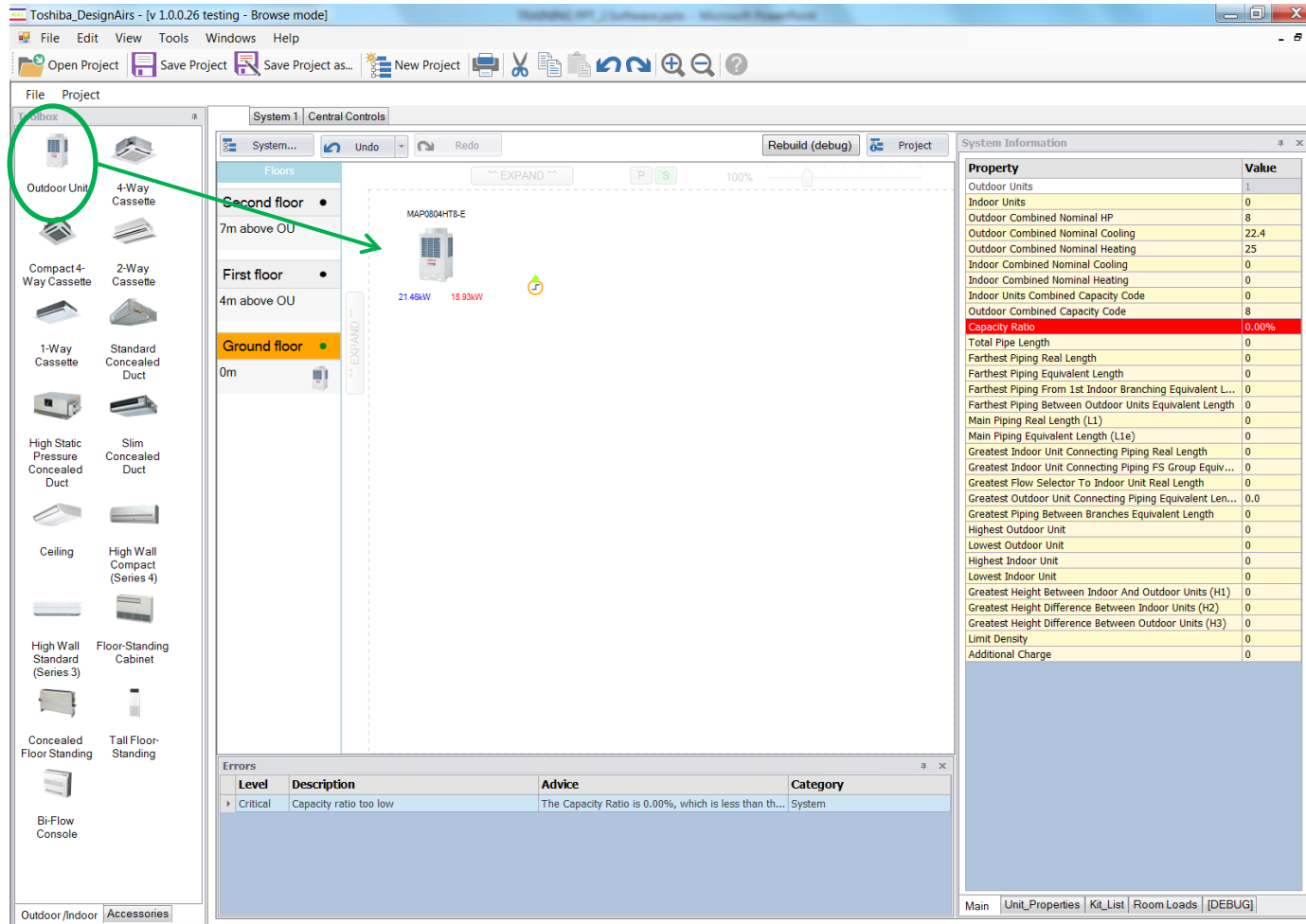
Output

7



# ADDING THE OUTDOOR UNIT

Add the OUTDOOR UNIT by drag & dropping



The screenshot shows the Toshiba DesignAirs software interface. On the left, a 'Project' panel contains a 'Toolbox' with various unit types. The 'Outdoor Unit' icon is circled in green, and a green arrow points from it to a unit placed on the 'Second floor' of a floor plan. The unit is labeled 'MA0804HTB-E' with power ratings of '21.48kW' and '13.93kW'. The floor plan shows three levels: 'Second floor' (7m above OU), 'First floor' (4m above OU), and 'Ground floor' (0m). The 'System Information' panel on the right displays various properties, with 'Capacity Ratio' highlighted in red and set to 0.00%. The 'Errors' panel at the bottom shows a critical error: 'Capacity ratio too low' with the advice 'The Capacity Ratio is 0.00%, which is less than th... System'.

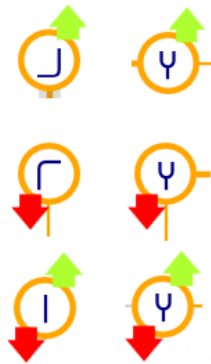
Property	Value
Outdoor Units	1
Indoor Units	0
Outdoor Combined Nominal HP	8
Outdoor Combined Nominal Cooling	22.4
Outdoor Combined Nominal Heating	25
Indoor Combined Nominal Cooling	0
Indoor Combined Nominal Heating	0
Indoor Units Combined Capacity Code	0
Outdoor Combined Capacity Code	8
Capacity Ratio	0.00%
Total Pipe Length	0
Farthest Piping Real Length	0
Farthest Piping Equivalent Length	0
Farthest Piping From 1st Indoor Branching Equivalent L...	0
Farthest Piping Between Outdoor Units Equivalent Length	0
Main Piping Real Length (L1)	0
Main Piping Equivalent Length (L1e)	0
Greatest Indoor Unit Connecting Piping Real Length	0
Greatest Indoor Unit Connecting Piping FS Group Equiv...	0
Greatest Flow Selector To Indoor Unit Real Length	0
Greatest Outdoor Unit Connecting Piping Equivalent Len...	0.0
Greatest Piping Between Branches Equivalent Length	0
Highest Outdoor Unit	0
Lowest Outdoor Unit	0
Highest Indoor Unit	0
Lowest Indoor Unit	0
Greatest Height Between Indoor And Outdoor Units (H1)	0
Greatest Height Difference Between Indoor Units (H2)	0
Greatest Height Difference Between Outdoor Units (H3)	0
Limit Density	0
Additional Charge	0

Level	Description	Advice	Category
Critical	Capacity ratio too low	The Capacity Ratio is 0.00%, which is less than th...	System



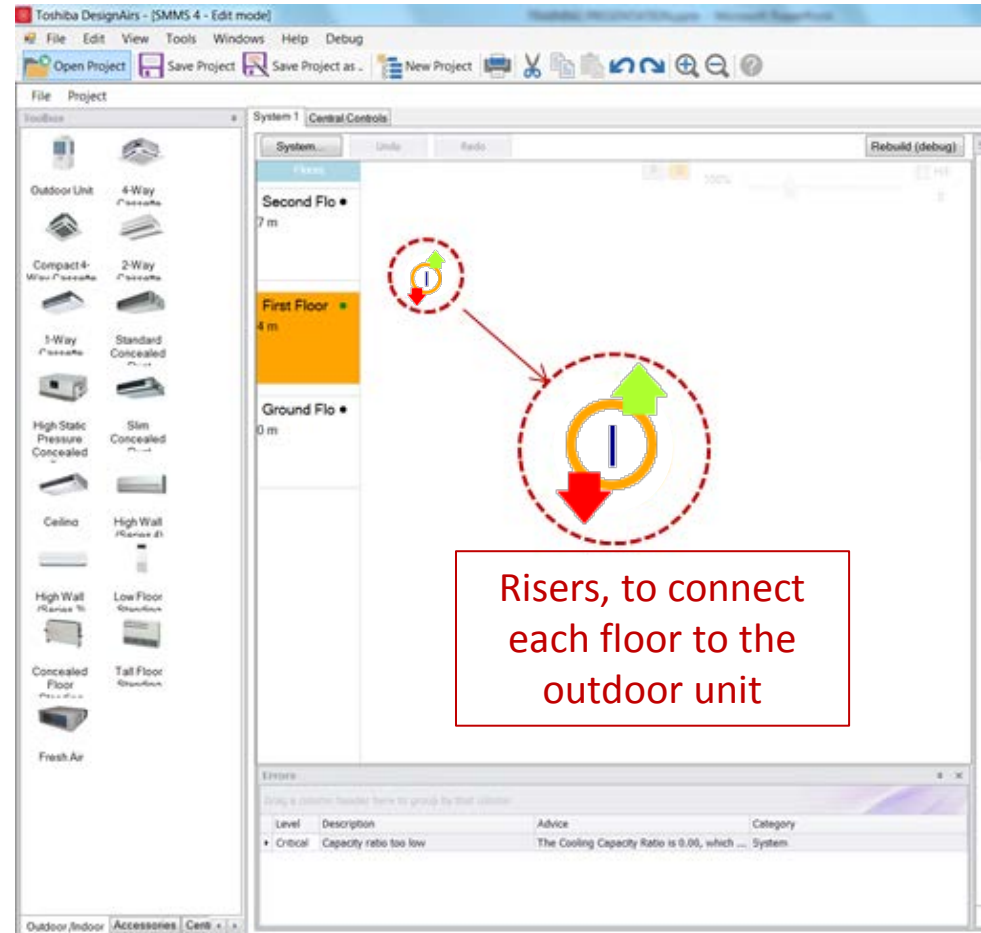
## ADDING THE OUTDOOR UNIT

Appearance of the rest of the floors:



Appearance of the risers:

1. Green arrow = riser to next floor
2. Red arrow = riser to previous floor
3. Green & Red = riser going up and down



## ADDING THE OUTDOOR UNIT

Double click on the Outdoor Unit to select its size:

Double Click →

MAP0804HT8-E



24.03kW

17.80kW

The screenshot shows a software window titled "Outdoor Units". At the top left, there is a dropdown menu with "MAP0804HT8-E" selected. Below this, a diagram shows four outdoor unit icons. The first icon is highlighted with a thick black border and a black line extending from its base to the text "12.7 / 22.2" in the bottom left corner. To the right of the unit icons is a "Unit Information" panel containing the following data:

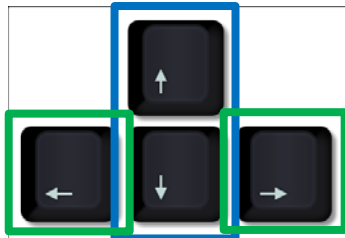
Corrected Cooling	23.32 kW
Corrected Heating	17.63 kW

Below the information panel is a small image of the outdoor unit. At the bottom right of the window are "OK" and "Cancel" buttons.



## ADDING THE INDOOR UNITS

Drag & drop the indoor units in each floor:



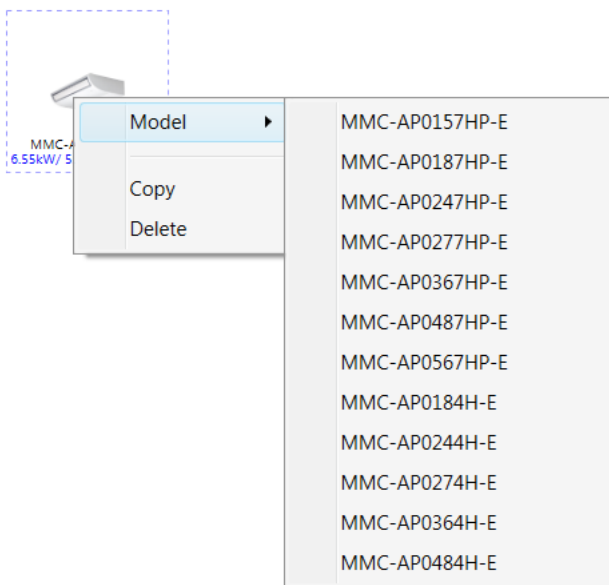
Alt + Up & down  
arrows to change  
size

Alt + Left & right  
arrows to change  
model

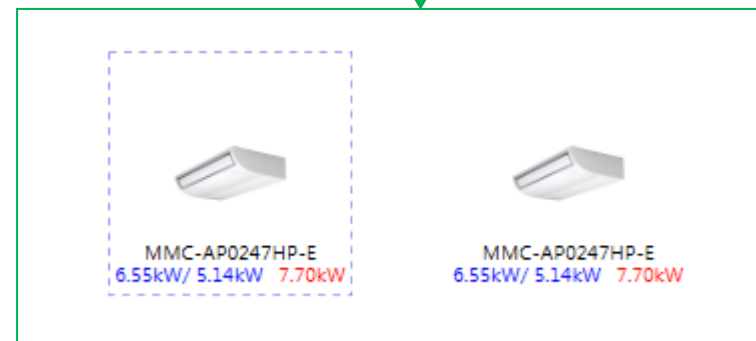
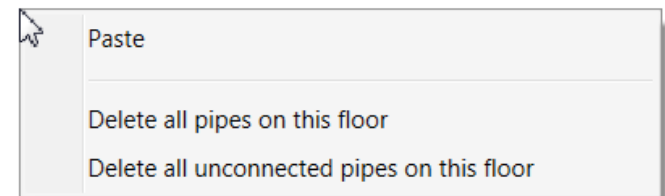
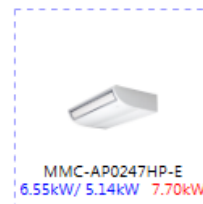
Property	Value
Outdoor Units	1
Indoor Units	0
Outdoor Combined Nominal HP	0
Outdoor Combined Nominal Ceiling	22.4
Outdoor Combined Nominal Heating	25
Indoor Combined Nominal Cooling	0
Indoor Combined Nominal Heating	0
Indoor Units Combined Capacity Code	0
Outdoor Combined Capacity Code	8
<b>Factory Issues</b>	<b>0 Errors</b>
Total Flow Length	0
Maximum piping total length	0
Exhaust Piping Equivalent Length	0
Exhaust Piping From Unit Indoor Branching Equivalent L...	0
Pipe Size Piping Between Outdoor Units Equivalent Leng...	0
Main Piping Total Length (L)	0
Main Piping Equivalent Length (L)	0
Greatest Indoor Unit Connecting Piping Total Length	0
Greatest Indoor Unit Connecting Piping to Condensate	0
Sleekest Pipe Selector: To Indoor Unit Total Length	0
Sleekest Outdoor Unit Connecting Piping Equivalent Len...	0.8
Greatest Piping Between Branches Equivalent Length	0
Highest Outdoor Unit	0
Lowest Outdoor Unit	0
Highest Indoor Unit	0
Lowest Indoor Unit	0
Sleekest Height Between Indoor And Outdoor Units (H)	0
Greatest Height Difference Between Indoor Units (H2)	0
Greatest Height Difference Between Outdoor Units (H3)	0
Unit Density	0
additional charge	0

## ADDING THE INDOOR UNITS

If we right click on the Indoor Unit, we can select its size, copy it or delete it:



If we copy it, then we can paste the same Indoor Unit wherever we want by right clicking:



## ADDING THE INDOOR UNITS


Double click on each Indoor Unit to select their properties:

Double Click →



MMU-AP0092H  
2.80kW/ 0.00kW

Indoor Unit Details

<b>Location</b> Room Office 2	<b>Pipe Length</b> Pipe Length 3m	<b>Unit Information</b> Capacity Code 1.00 Nominal Cooling 2.80 kW Nominal Heating n/a <hr/> Corrected Cooling 2.81 kW Corrected Heating n/a Corrected Sensible 2.04 kW <hr/> Distributed Cooling 2.63 kW Distributed Heating n/a
<b>Indoor Unit</b> Type 4-Way Cassette Model MMU-AP0092H Fan Speed High	<b>Pipe Equivalent Length</b> Equiv. length ratio 1.2 auto or Number of bends 90° 90° long radius or Equivalent Length 3.6m	
<b>Controls</b> <input checked="" type="radio"/> Individual Control <input type="radio"/> Group Header <input type="radio"/> Group Follower Header Remote - none - <input type="checkbox"/> Schedule Timer Follower Remote - none - CN61/T10 Controller - none - <b>PMV Kit</b> <input type="checkbox"/> PMV Elevation relative to indoor unit 0 Pipe length from indoor unit m	<b>Elevation (relative to Outdoor Unit)</b> Elevation -5 auto	

OK Cancel





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2 Starting the design

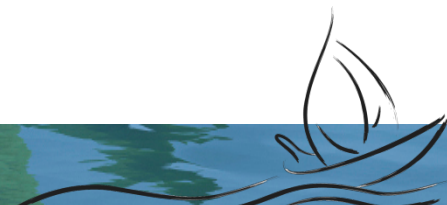
Outdoor & Indoor 3

**4 Piping**

Accessories 5

6 Central Controllers

Next 7

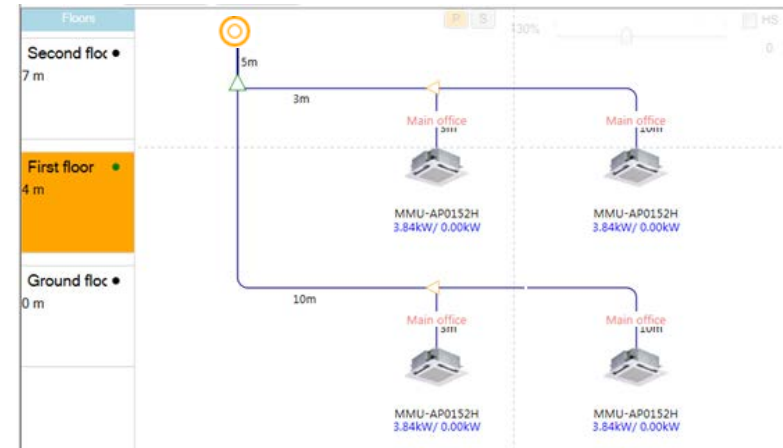
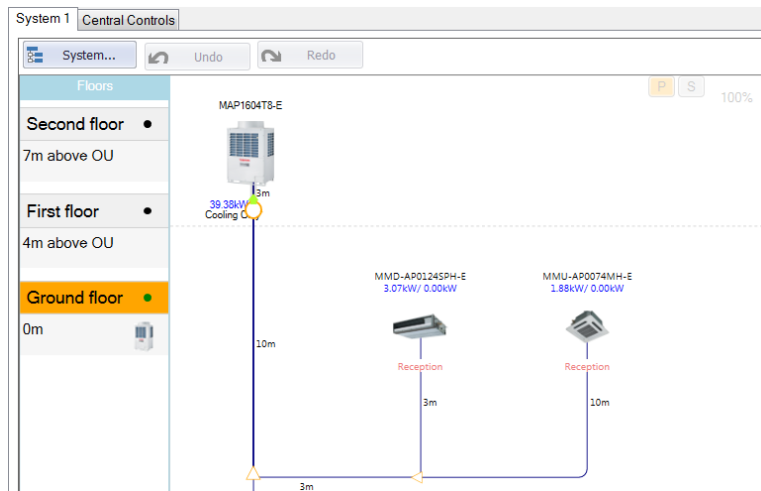


## PIPING THE INDOOR UNITS

Clicking on a unit and on any point on the grid where you want the pipe to finish or change direction:

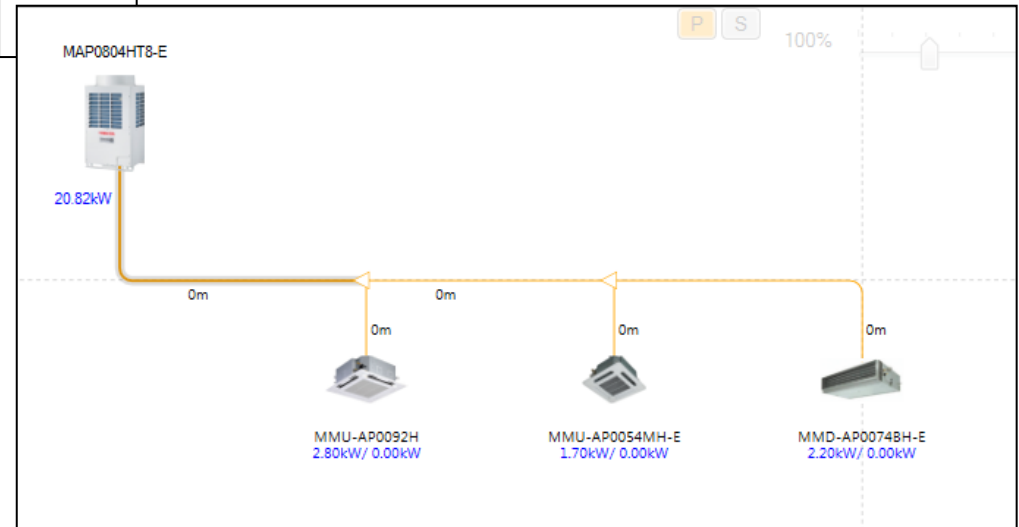
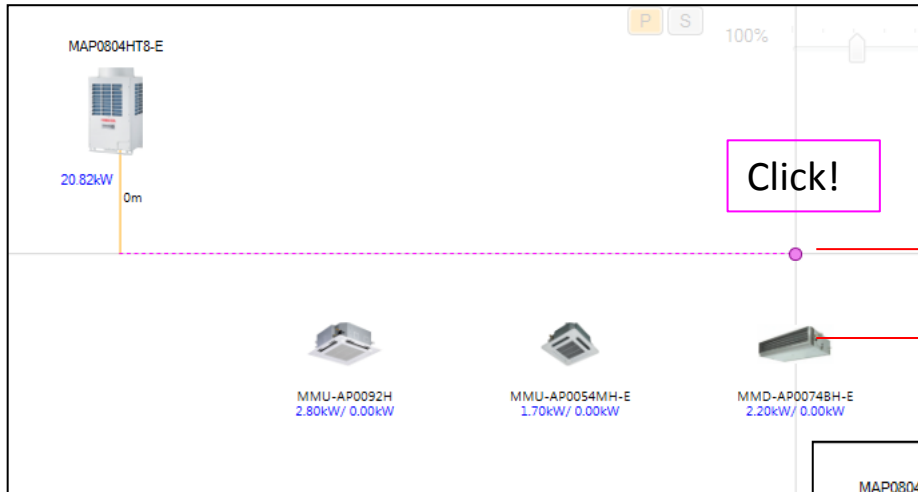


Connect the Indoor units either to the Outdoor unit or to the riser.



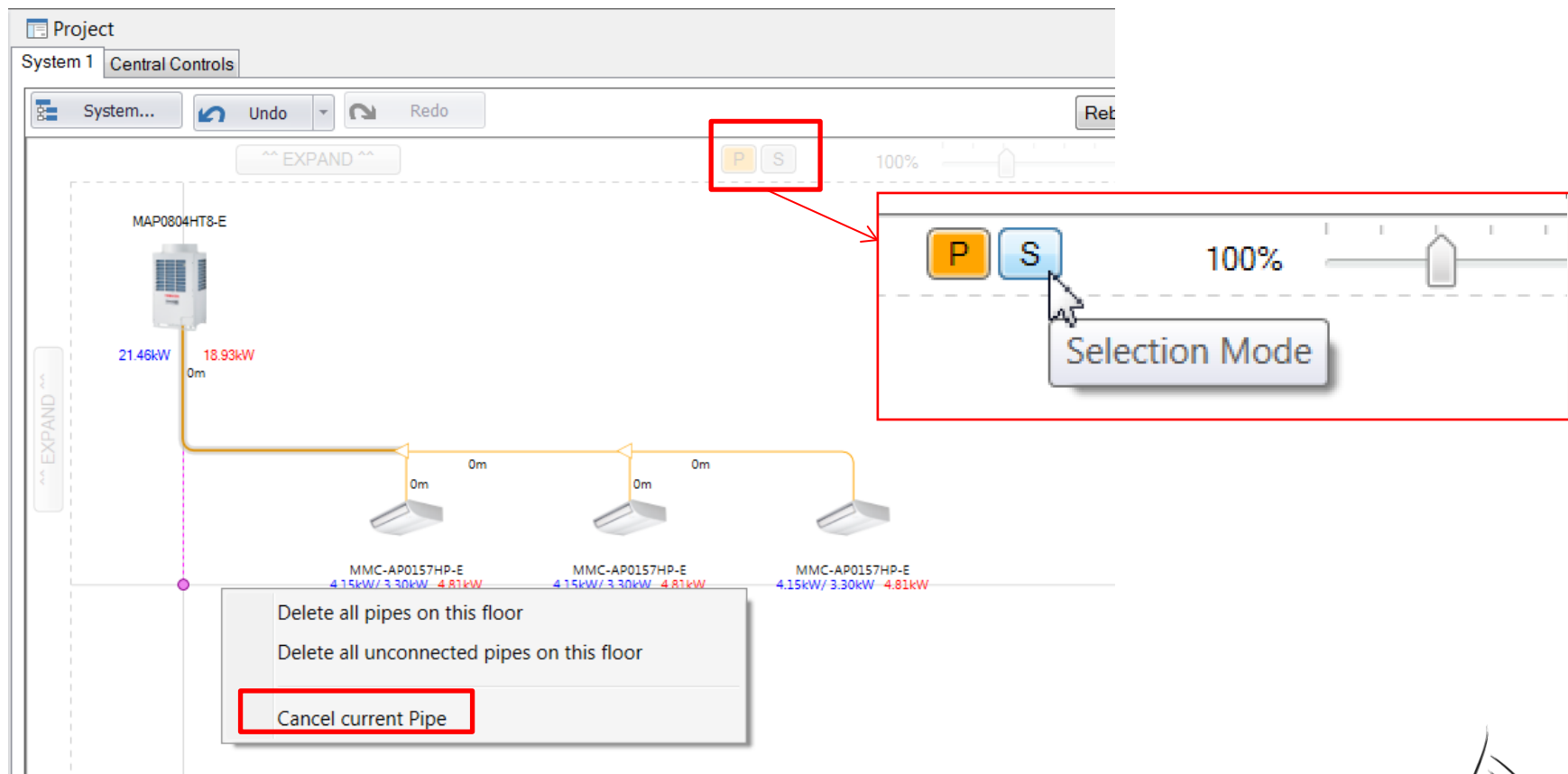
## PIPING THE INDOOR UNITS

Tip for a quick piping: Set the farthest indoor unit at close distance



## PIPING THE INDOOR UNITS

If we want to exit from the Piping Mode, press “Esc”, “S” (for Selection Mode) button next to the zoom bar, or right click and “Cancel the current Pipe”







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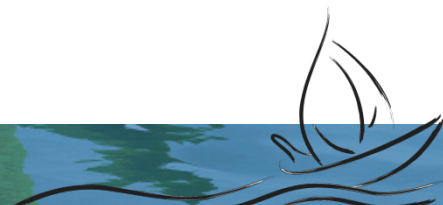
Outdoor & Indoor 3

4 Piping

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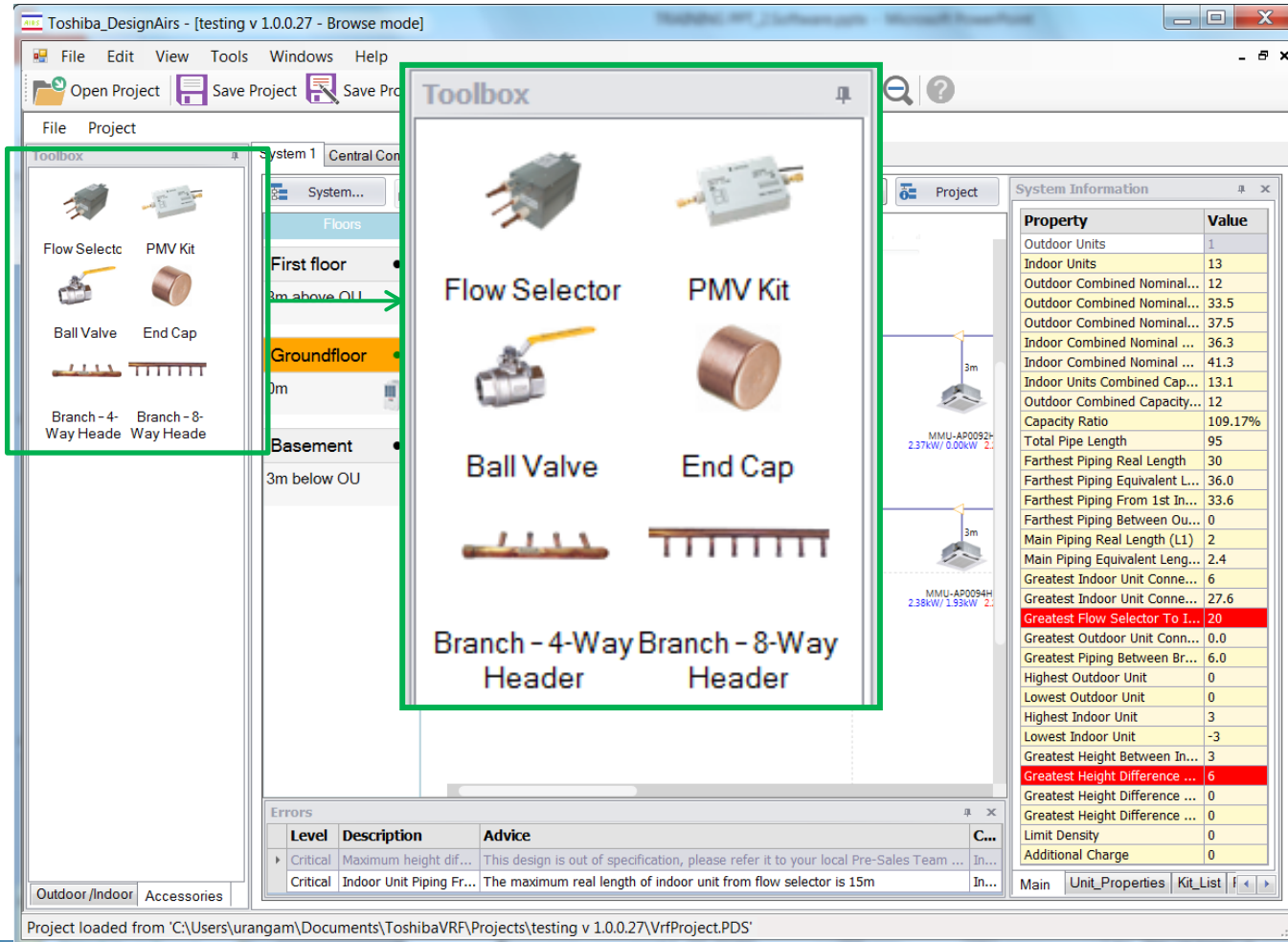
6 Central Controllers

Output 7



# ACCESSORIES

Available accessories:



The screenshot displays the Toshiba DesignAirs software interface. A central 'Toolbox' window is highlighted with a green border, listing the following accessories:

- Flow Selector
- PMV Kit
- Ball Valve
- End Cap
- Branch - 4-Way Header
- Branch - 8-Way Header

The background shows a project window with a 'System Information' table and an 'Errors' table.

Property	Value
Outdoor Units	1
Indoor Units	13
Outdoor Combined Nominal...	12
Outdoor Combined Nominal...	33.5
Outdoor Combined Nominal...	37.5
Indoor Combined Nominal ...	36.3
Indoor Combined Nominal ...	41.3
Indoor Units Combined Cap...	13.1
Outdoor Combined Capacity...	12
Capacity Ratio	109.17%
Total Pipe Length	95
Farthest Piping Real Length	30
Farthest Piping Equivalent L...	36.0
Farthest Piping From 1st In...	33.6
Farthest Piping Between Ou...	0
Main Piping Real Length (L1)	2
Main Piping Equivalent Leng...	2.4
Greatest Indoor Unit Conne...	6
Greatest Indoor Unit Conne...	27.6
<b>Greatest Flow Selector To I...</b>	<b>20</b>
Greatest Outdoor Unit Conn...	0.0
Greatest Piping Between Br...	6.0
Highest Outdoor Unit	0
Lowest Outdoor Unit	0
Highest Indoor Unit	3
Lowest Indoor Unit	-3
Greatest Height Between In...	3
<b>Greatest Height Difference ...</b>	<b>6</b>
Greatest Height Difference ...	0
Greatest Height Difference ...	0
Limit Density	0
Additional Charge	0

Level	Description	Advice	C...
Critical	Maximum height dif...	This design is out of specification, please refer it to your local Pre-Sales Team ...	In...
Critical	Indoor Unit Piping Fr...	The maximum real length of indoor unit from flow selector is 15m	In...





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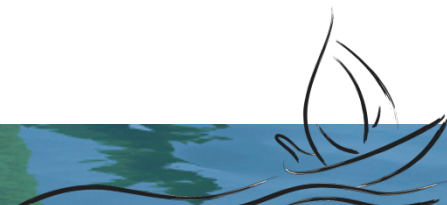
Outdoor & Indoor 3

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**6 Central Controllers**









Output 7










# CENTRAL CONTROLLERS

## Standard Operation Central Controllers









**Toolbox**

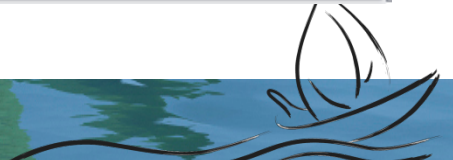
	
Schedule Timer	64 Way Central Controller
	
16 Way On Off Controller	Compliant Manager
	
Smart Manager	Touch Screen
	
Smart Manager with Data Analyser	Touch Screen

## Advanced Central Controllers

	
Digital I/O Relay I/F	Touch Screen with Energy Monitoring
	
Energy Monitoring Interface	Touch Screen
	
TCC Net Relay Interface	Touch Screen with Energy Monitoring
	
Touch Screen	

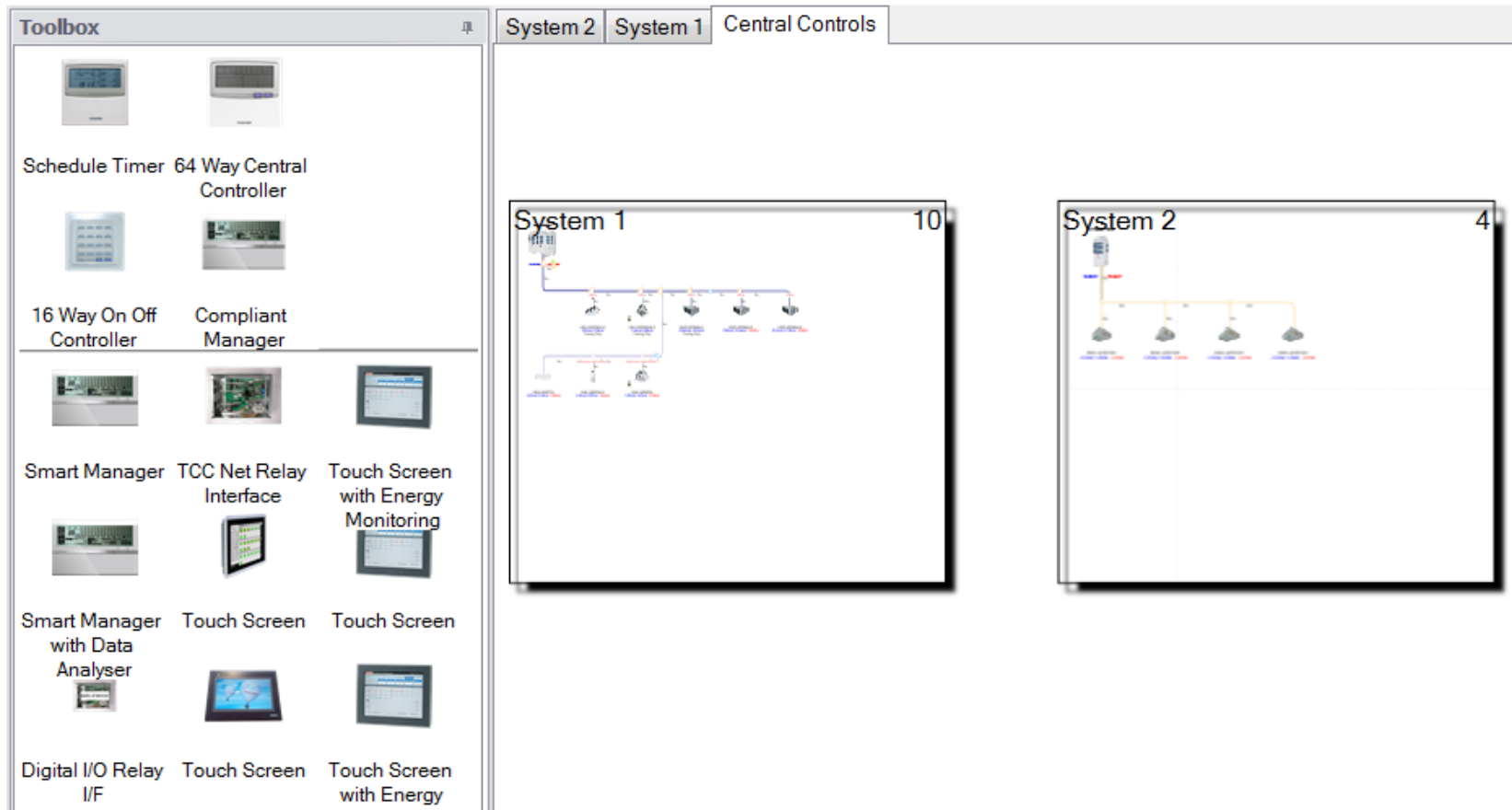
## BMS Controllers

	
Web Based	ModBus RTU Interface
	
Web Based Controller Master	LONWorks Interface
	
BACNet Intelligent Server	Analogue Interface
	
BACNet Intelligent Server	General Purpose Interface
Central Controllers	



# CENTRAL CONTROLLERS

Add Central Controllers to the systems by drag & dropping

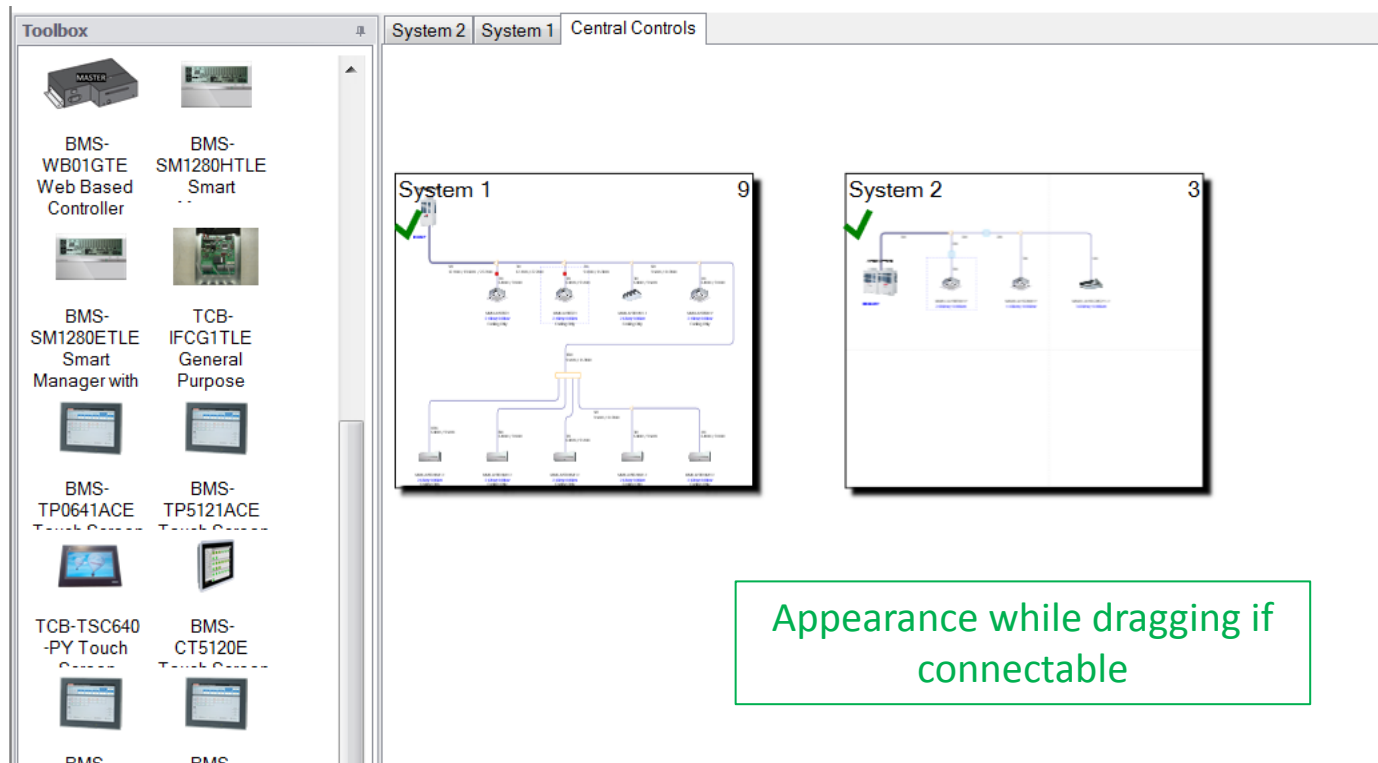


The screenshot shows a software interface with a 'Toolbox' on the left and two system diagrams on the right. The 'Toolbox' contains various controller icons with labels: Schedule Timer, 64 Way Central Controller, 16 Way On Off Controller, Compliant Manager, Smart Manager, TCC Net Relay Interface, Touch Screen with Energy Monitoring, Smart Manager with Data Analyser, Touch Screen, Touch Screen, Digital I/O Relay I/F, Touch Screen, and Touch Screen with Energy Monitoring. The right side shows 'System 1' and 'System 2' diagrams, each with a '10' in the top right corner. System 1 is a complex network diagram, while System 2 is a simpler linear diagram.



## CENTRAL CONTROLLERS

Green “ticks” will appear when dragging if the selected Controller is connectable to the system.

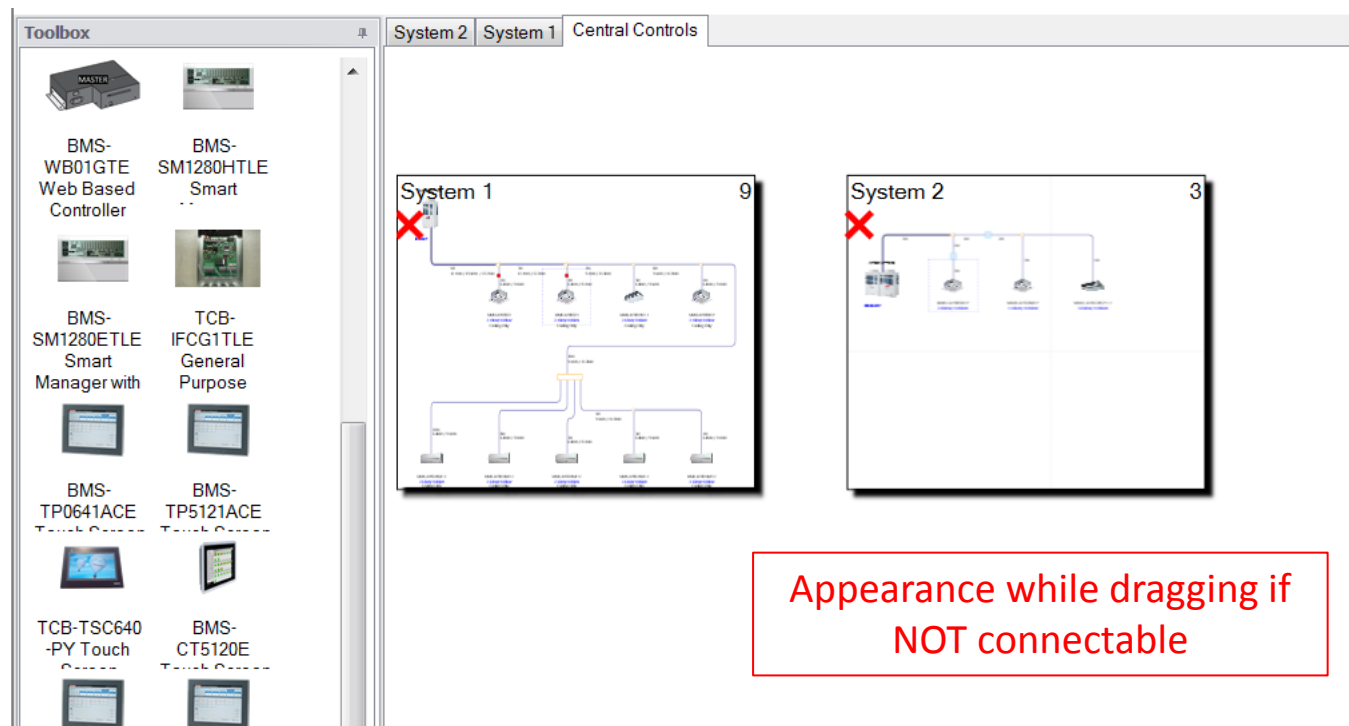


The screenshot displays a software interface for configuring central controllers. On the left is a 'Toolbox' containing various controller models, including BMS-WB01GTE (Web Based Controller), BMS-SM1280HTLE (Smart), BMS-SM1280ETLE (Smart Manager with), TCB-IFCG1TLE (General Purpose), BMS-TP0641ACE (Touch Screen), BMS-TP5121ACE (Touch Screen), TCB-TSC640-PY Touch, and BMS-CT5120E (Touch Screen). The main workspace shows two system diagrams: 'System 1' (labeled '9') and 'System 2' (labeled '3'). Both diagrams feature a green checkmark in their top-left corner, signifying that a controller from the toolbox is connectable to that system. A green-bordered box at the bottom right contains the text: 'Appearance while dragging if connectable'.



## CENTRAL CONTROLLERS

Red crosses will appear when dragging if the selected Controller is not connectable to the system.

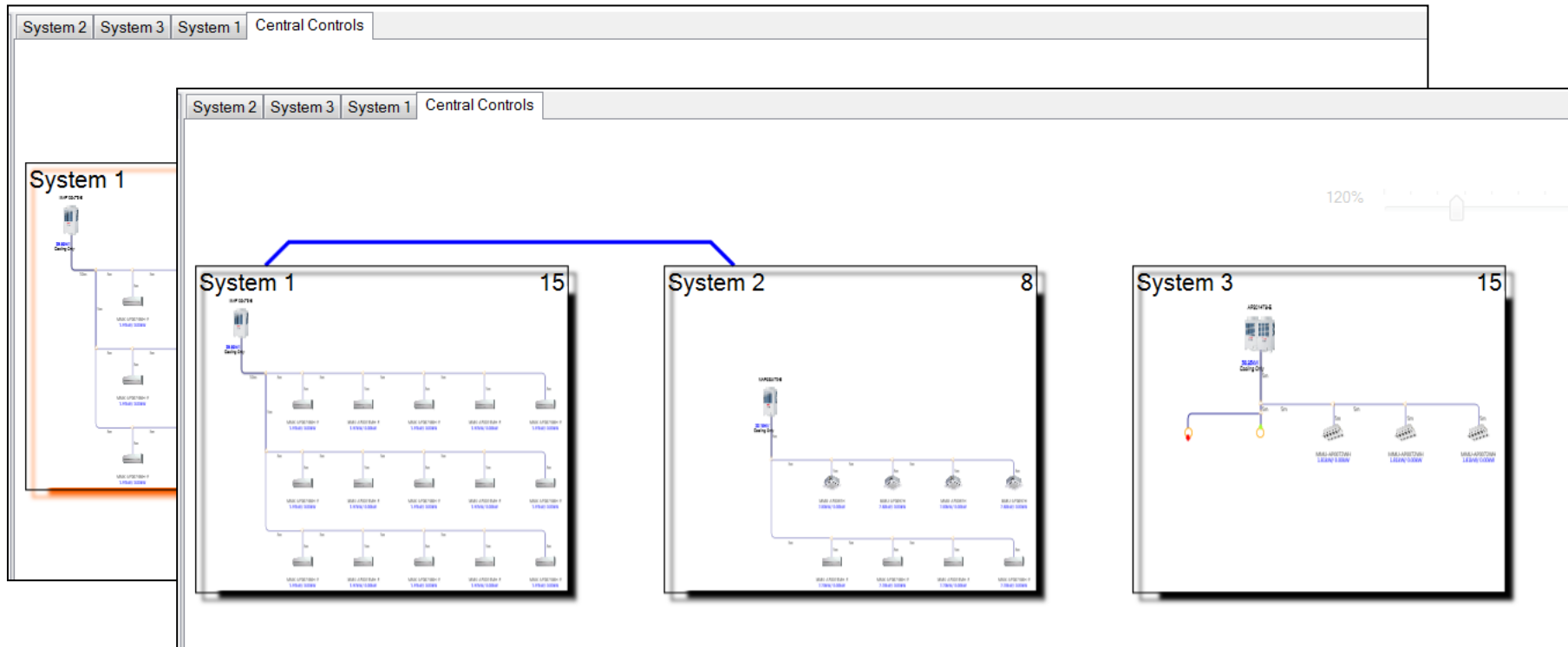




## CENTRAL CONTROLLERS

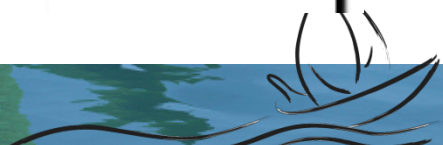
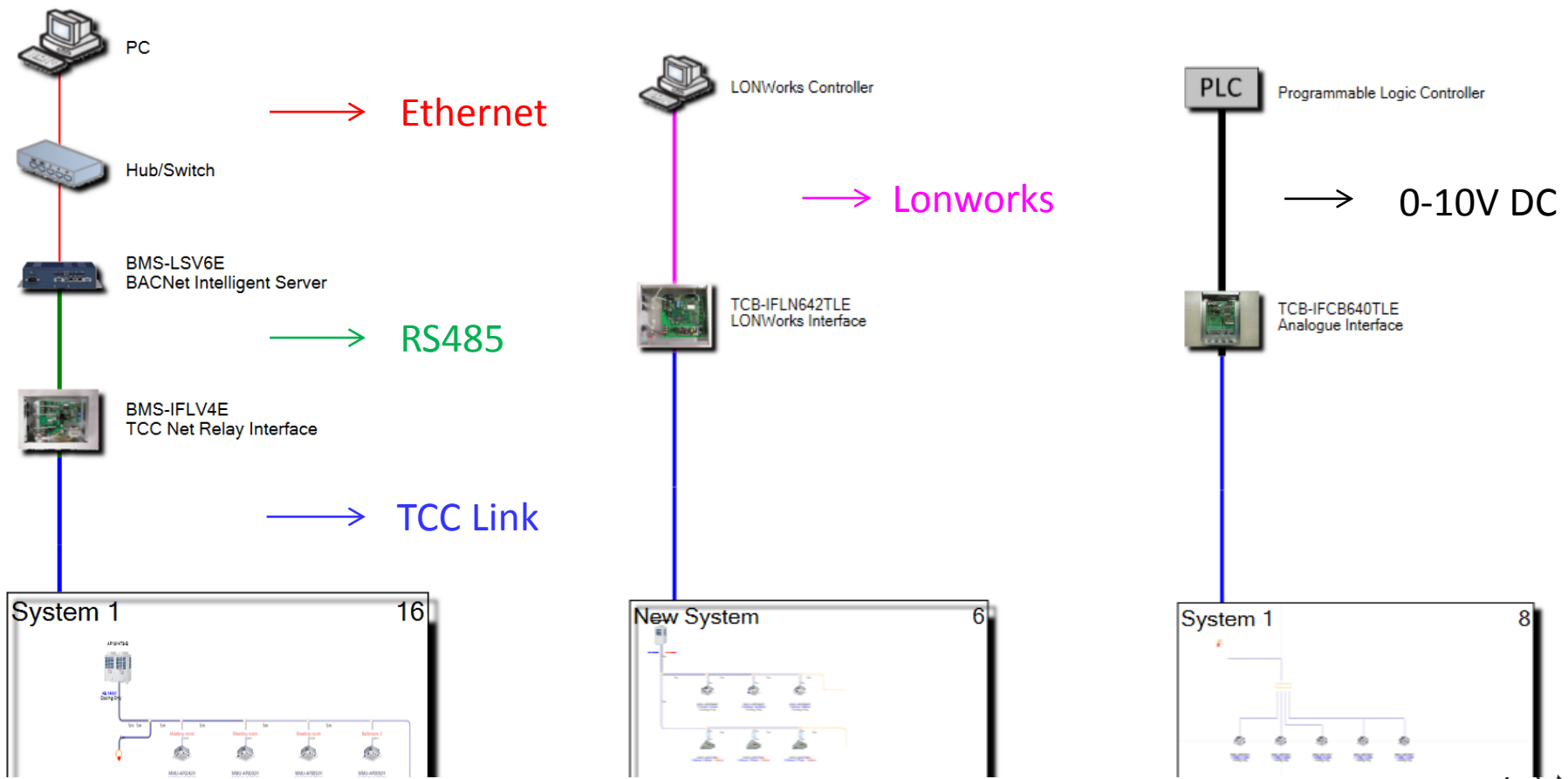
To connect different systems between them:

- Select the systems to be connected while Ctrl is being pressed
- Right click in the mouse
- Select “Make TCC Link”



# CENTRAL CONTROLLERS

Connecting colour depends on the type of connection:





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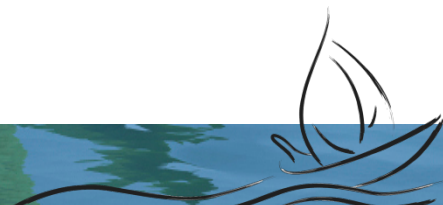
**Outdoor & Indoor** 3

4 **Piping**

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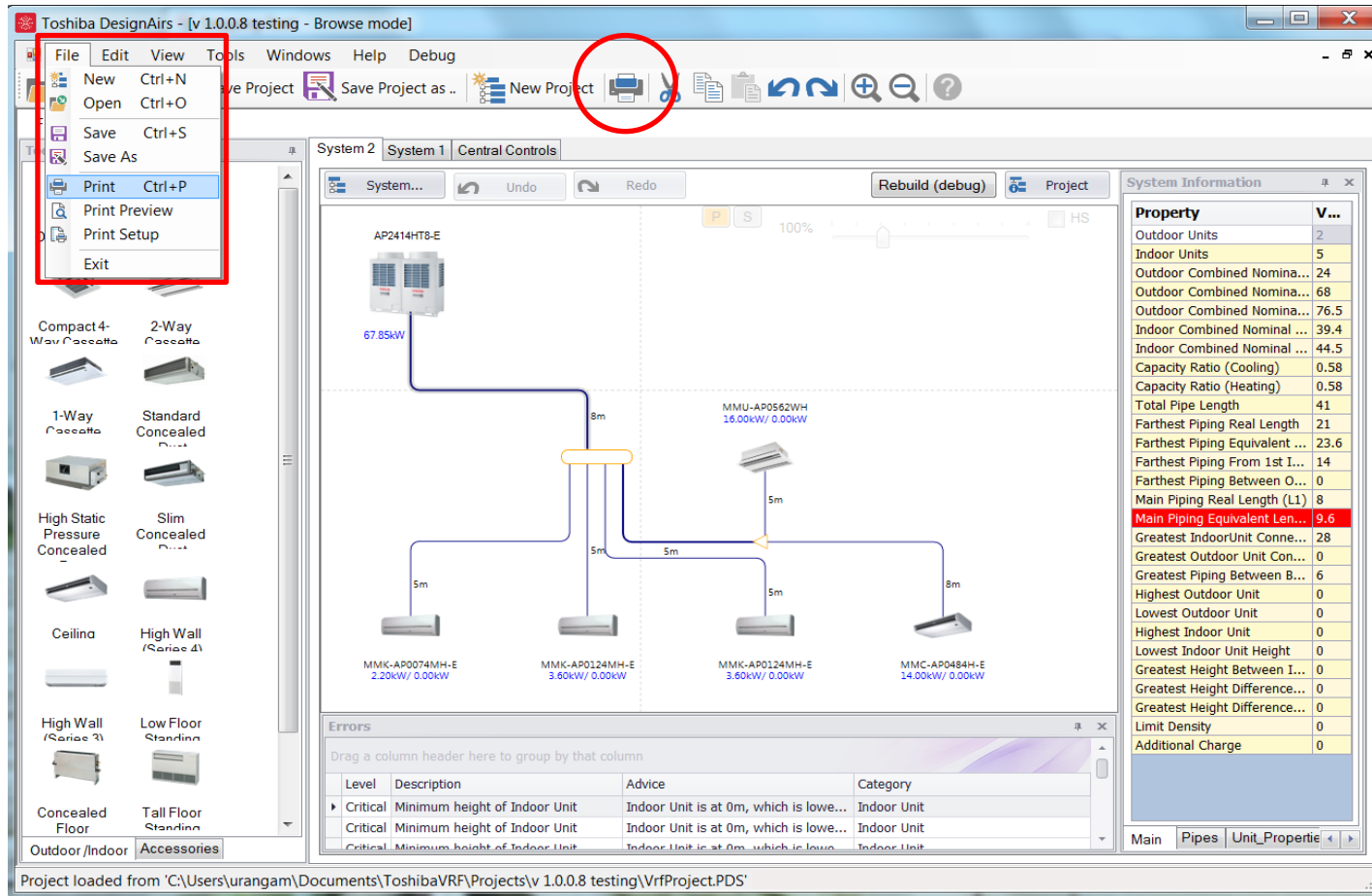
6 **Central Controllers**

**Output** 7



# OUTPUT

There are 2 options to generate the output:



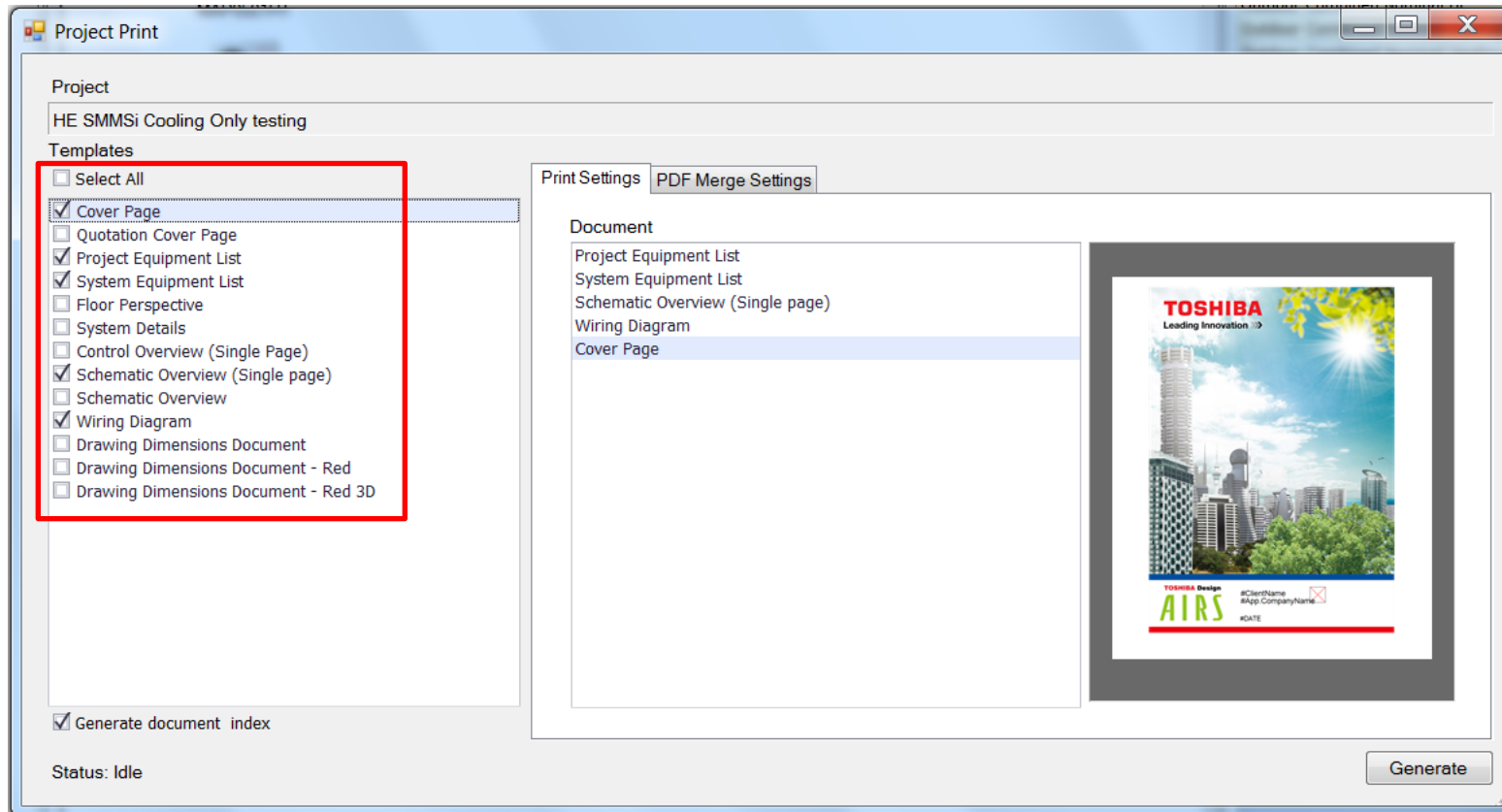
The screenshot shows the Toshiba DesignAirs software interface. The 'File' menu is open, with 'Print' (Ctrl+P) and 'Print Preview' options highlighted. A red circle highlights the printer icon in the toolbar. The main workspace displays a piping diagram with various units and their capacities. The 'System Information' panel on the right shows a table of properties, with 'Main Piping Equivalent Len...' highlighted in red. The 'Errors' panel at the bottom shows a table of error messages.

Property	V...
Outdoor Units	2
Indoor Units	5
Outdoor Combined Nomina...	24
Outdoor Combined Nomina...	68
Outdoor Combined Nomina...	76.5
Indoor Combined Nominal ...	39.4
Indoor Combined Nominal ...	44.5
Capacity Ratio (Cooling)	0.58
Capacity Ratio (Heating)	0.58
Total Pipe Length	41
Farthest Piping Real Length	21
Farthest Piping Equivalent ...	23.6
Farthest Piping From 1st I...	14
Farthest Piping Between O...	0
Main Piping Real Length (L1)	8
Main Piping Equivalent Len...	9.6
Greatest IndoorUnit Conne...	28
Greatest Outdoor Unit Con...	0
Greatest Piping Between B...	6
Highest Outdoor Unit	0
Lowest Outdoor Unit	0
Highest Indoor Unit	0
Lowest Indoor Unit Height	0
Greatest Height Between I...	0
Greatest Height Difference...	0
Greatest Height Difference...	0
Limit Density	0
Additional Charge	0

Level	Description	Advice	Category
Critical	Minimum height of Indoor Unit	Indoor Unit is at 0m, which is lowe...	Indoor Unit
Critical	Minimum height of Indoor Unit	Indoor Unit is at 0m, which is lowe...	Indoor Unit
Critical	Minimum height of Indoor Unit	Indoor Unit is at 0m, which is lowe...	Indoor Unit

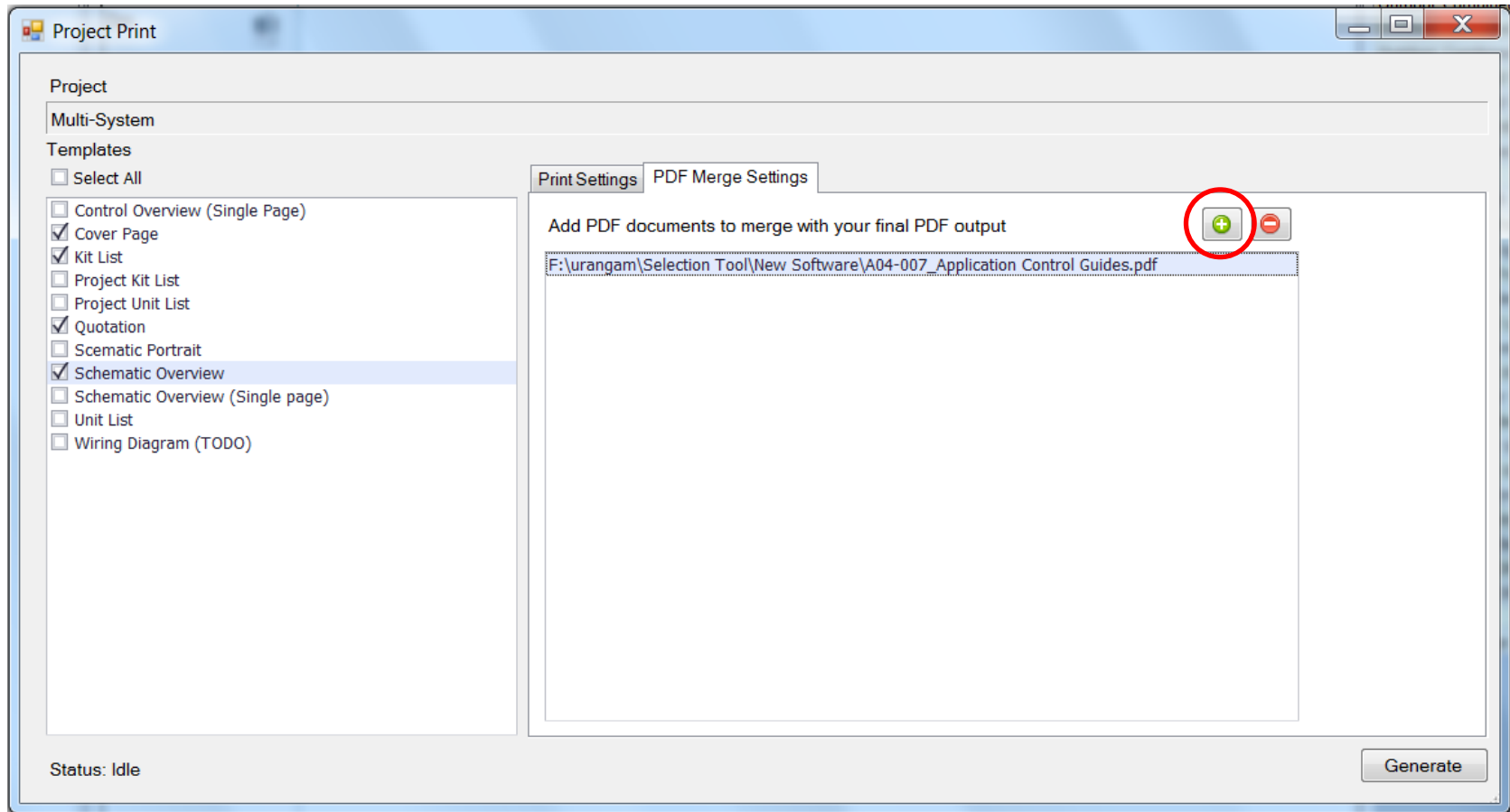
# OUTPUT

Select the pages to be included in the printout from the left-hand list:



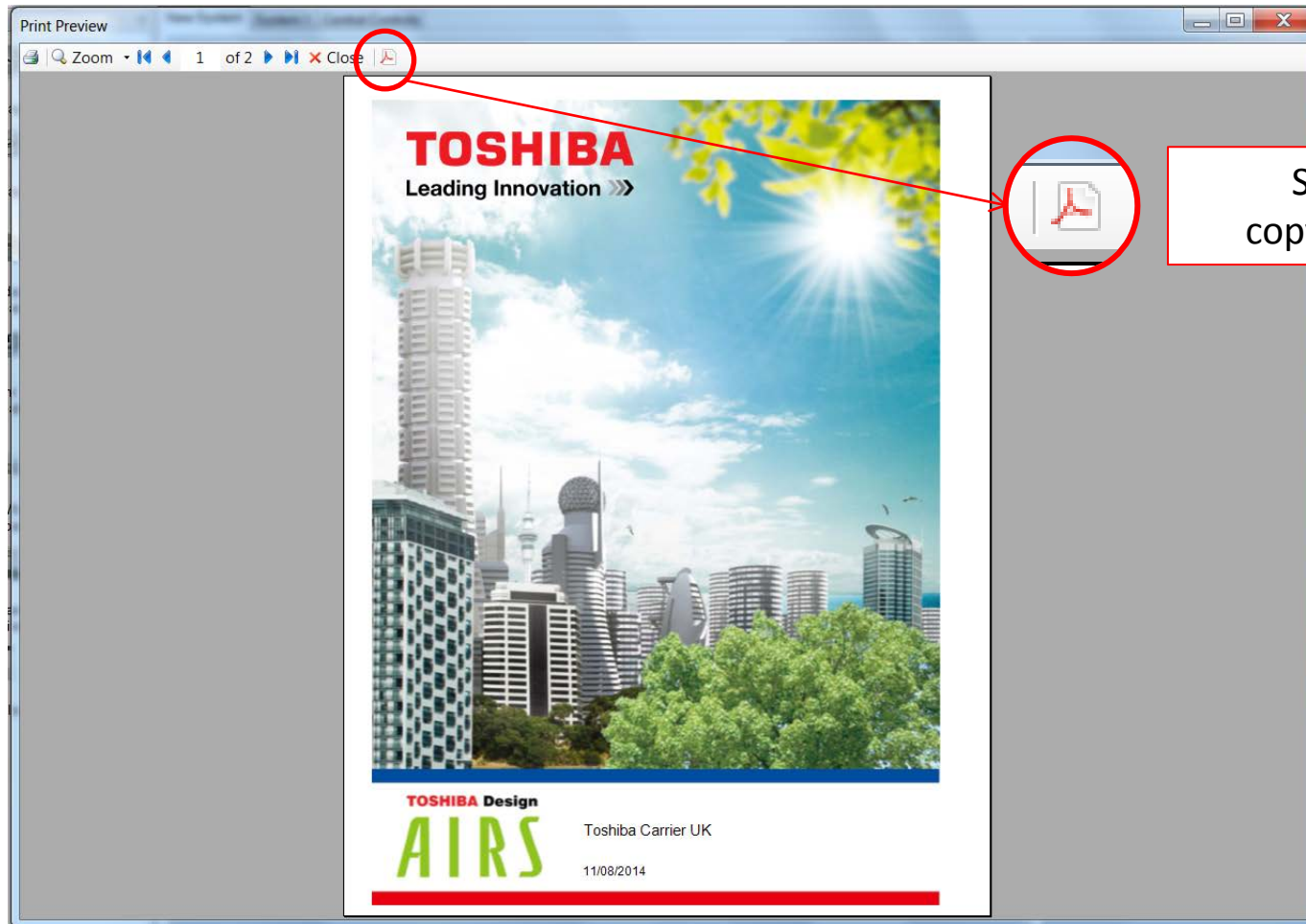
# OUTPUT

Add as many PDF files as you want to the software output and press Generate:



# OUTPUT

The print preview will be opened:

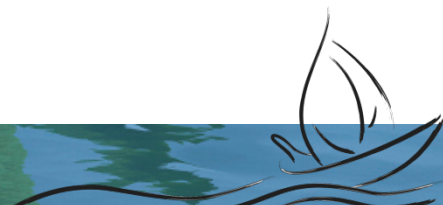
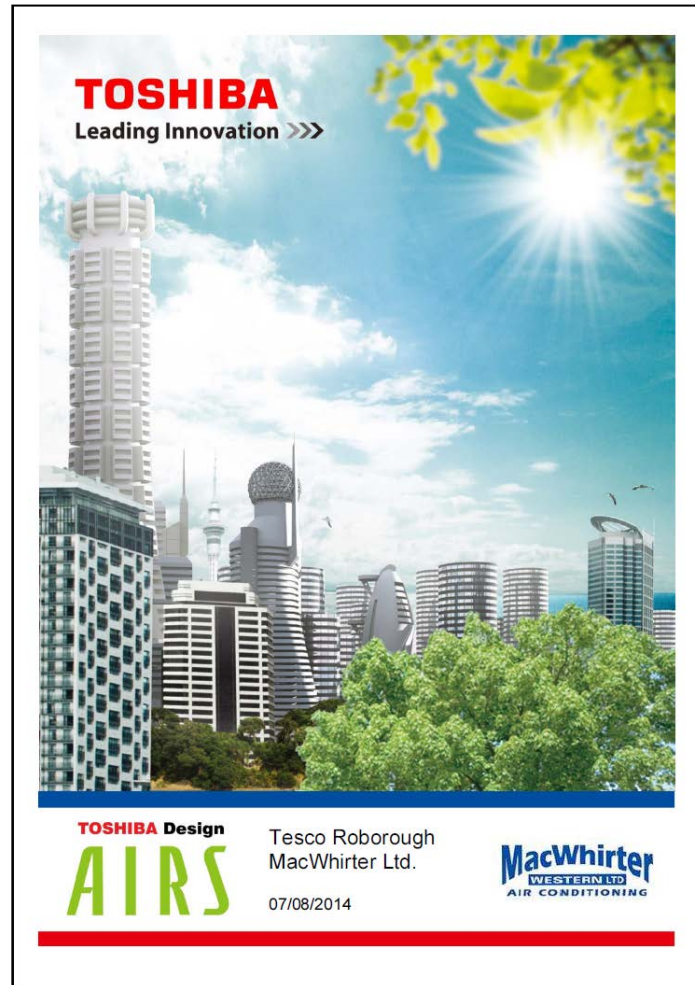






# OUTPUT

Cover page:





# OUTPUT


## Project Quotation:

<b>Toshiba DesignAirs - Project Quotation</b>	
<b>Client:</b> MacWhirter Ltd. <b>To:</b> Nigel Froude <b>Tel:</b> 01803 314566 <b>email:</b> <a href="mailto:nigel.froude@macwhirter.com">nigel.froude@macwhirter.com</a>	<b>Client Address:</b> Unit 2 Chatto Road Ind. Estate Torquay Devon TQ1 4UE
<b>Project Name:</b> Tesco Roborough <b>Quote No.</b> Q38987 <b>Quote Ref.</b> 1002 <b>Revision ID:</b> Rev 0	
<b>Site Name:</b> Tesco Roborough <b>Contact:</b> Bert <b>Tel:</b> 01752 754109 <b>email:</b> <a href="mailto:Bert@tesco.com">Bert@tesco.com</a>	<b>Site Address</b> Tavistock Road Roborough Plymouth Devon PL6 8RT
<b>Prepared By:</b> W. Dolley <b>Company:</b> Toshiba Carrier UK Ltd.	<b>Address</b> Porsham Close Belliver Industrial Estate Roborough Devon PL6 7DB
<hr/> Prepared By: W. Dolley      Registered To: Toshiba Carrier UK Ltd.      V1.0.0.29      #page	



# OUTPUT

Index:

	
Toshiba DesignAirs - Index	
#ProjectName	
Project Quotation	2
Index	3
Project Equipment List	4
Project Compliance	5
#1stSystemName	6
#1stSystemName Equipment List	6
#1stSystemName Details	7
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# OUTPUT

## Project Equipment List:

**TOSHIBA** Leading Innovation >>>

**Toshiba DesignAirs - Project Equipment List**

#ProjectName Equipment List

**Outdoor Units**

Model name	Description	Quantity	Price
MMY-MAP1624HT8-E	16HP SMMSi High Efficiency	1	£16,000.00
MMY-MAP0804HT8-E	8HP SMMSi	1	£8,000.00

**Indoor Units**

Model name	Description	Quantity	Price
MMD-AP0094SPH-E	1HP Slim Duct Unit	6	£1,000.00
MMD-AP0124SPH-E	1.25HP Slim Duct Unit	1	£1,500.00
MMD-AP0184SPH-E	2.0HP Slim Duct Unit	4	£2,000.00
MMK-AP0074MH-E	0.8HP High Wall Compact (Series 4)	10	£8,000.00

**Y joints**

Model name	Description	Quantity	Price
RBM-BY55E	Two Y joint kit	8	£275.00
RBM-BY205E	Two Y joint kit	2	£100.00

**Header**

Model name	Description	Quantity	Price
RBM-HY2043	4 Header Branch	3	£300.00

**Accessories**

Model name	Description	Quantity	Price
RBC-AMSS1E-EN	Multi Language wired Remote Controller	6	£1,200.00
RBM-PMV0362E	PMV Kit	5	£300.00

**Central Control Devices**

Model name	Description	Quantity	Price
TCB-HLN642TLE	Lonworks Gateway	1	£500.00

**Piping Length**

Pipe diameter	Gas side (m)	Liquid side (m)	Total Length (m)	Price
6.4mm	--	91.5	91.5	£200.00
9.5mm	59.5	45	104.5	£250.00
12.7mm	44	--	39	£160.00
15.9mm	33	21	54	£210.00
19.1mm	--	--	--	£0.00
22.2mm	3	--	3	£10.00
28.6mm	21	--	21	£80.00

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**Refrigerant Charge Amount**

Refrigerant (R410A)	Description	Amount (kg)	Price
Outdoors	Refrigerant amount charged in factory	23	£0.00
Additional refrigerant	Amount needed for the pipes at the site	20.4375	£75.00

Labour	£2,000.00
Other materials	£300.00
<b>TOTAL #ProjectName (VAT not included)</b>	<b>£42,460.00</b>

**Outdoor Design Temperature**

System	Mode	Description	Temperature
System 1	Cooling	Dry Bulb Temperature	35°C
	Heating	Web Bulb Temperature	0°C
System 2	Cooling	Dry Bulb Temperature	35°C
	Heating	Web Bulb Temperature	0°C

Notes:

- Equivalent length is calculated by coefficient 1.300
- The user is responsible for ensuring that all data entered is correct
- Equipment selections have been based on the Design Guidelines stated within the Toshiba SMMS-iSHRM/Mini-SMMS Installation Manual
- It is the responsibility of the consultant or contractor, to verify and confirm that the equipment selection and system design is correct before installation.
- Please note that in the event of future system expansion being allowed for in the system design or a change in cooling/heating requirements, a re-evaluation of the air conditioning system must be made prior to final installation.
- All equipment selections have been based on the equipment SES equipment schedules provided.
- The above prices are nett, exclusive of VAT
- The prices shown are for this project only, as agreed with your account manager
- Delivery will be free of charge on a day nominated by Toshiba during normal business hours and to a level site on mainland UK only
- Stock of equipment should be confirmed at time of ordering
- Quotation remains valid and open for acceptance for a period of 60 days
- It is the responsibility of the recipient to verify and confirm that the equipment selection and system design is correct before installation.


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# OUTPUT

## Project Compliance:

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**Toshiba DesignAirs - Project Compliance**

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**#ProjectName Compliance**

**#1stSystemName**

Rules	Specification	Design	Ok?
Max. number of Indoor Units	27	11	✓
Capacity Ratio	50-135%	97.86%	✓
Total Pipe length	300	189	✓
<b>Overall #1stSystemName</b>			✓

**#2ndSystemName**

Rules	Specification	Design	Ok?
Max. number of Indoor Units	13	10	✓
Capacity Ratio	50-135%	137.00%	x
Total Pipe length	300	132	✓
<b>Overall #2ndSystemName</b>			x

WARNING! The #2ndSystemName design is out of the specifications of Toshiba

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## System Equipment List:

**TOSHIBA** Leading Innovation >>>

### Toshiba DesignAirs - System Equipment List

#1stSystemName Equipment List

**Outdoor Units**

Model name	Description	Quantity	Price
MMY-MAP1624HT8-E	16HP 3MMSI High Efficiency	1	£16,000.00

**Indoor Units**

Model name	Description	Quantity	Price
MMD-AP0094SPH-E	1HP Slim Duct Unit	6	£6,000.00
MMD-AP0124SPH-E	1.25HP Slim Duct Unit	1	£1,250.00
MMD-AP0184SPH-E	2.0HP Slim Duct Unit	4	£8,000.00

**Y joints**

Model name	Description	Quantity	Price
RBM-BY55E	Two Y joint kit	6	£200.00
RBM-BY205E	Two Y joint kit	1	£50.00

**Header**

Model name	Description	Quantity	Price
RBM-HY2043	4 Header Branch	1	£100.00

**Accessories**

Model name	Description	Quantity	Price
RBC-AM551E-EN	Multi Language wired Remote Controller	6	£1,200.00

**Piping Length**

Pipe diameter	Gas side (m)	Liquid side (m)	Total Length (m)	Price
6.4mm	--	45.5	45.5	£100.00
9.5mm	13.5	28	41.5	£100.00
12.7mm	39	--	39	£110.00
15.9mm	21	21	42	£130.00
19.1mm	--	--	--	£0.00
22.2mm	--	--	--	£0.00
28.6mm	21	--	21	£80.00

**Refrigerant Charge Amount**

Refrigerant (R410A)	Description	Amount (kg)	Price
Outdoor	Refrigerant amount charged in factory	11.5	£0.00
Additional refrigerant	Amount needed for the pipes at the site	16.5375	£50.00

**TOTAL #1stSystemName**      **£33,370.00**

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**TOSHIBA** Leading Innovation >>>

**Outdoor Design Temperature**

Mode	Description	Temperature
Cooling	Dry Bulb Temperature	35°C
Heating	Wet Bulb Temperature	0°C

**Electric information (Outdoor Units)**

Property	Description	Value
MOCP (A)	Maximum Overcurrent Protection	50
MCA (A)	Minimum Circuit Amps	36.5
Protection Device size (A)		*
Wire (cable size) (mm <sup>2</sup> or AWG(#))		*

**Electric information (Indoor Units)**

Property	Description	Value
Total MCA (A)		5.47
Protection Device size (A)		*
Wire (cable size) (mm <sup>2</sup> or AWG(#))		*

\* Manually filled by user


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## System Details:



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**Toshiba DesignAirs - System Details**

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**#1stSystemName Details**

**Outdoor Unit Models**

Model Name	Header	Follower 1	Follower 2	Follower 3
MMY-AP1624HT8	MMY-	MAP0804HT8	MAP0804HT8	--

**Outdoor Unit**

Model Name	Cooling (kW)		Heating (kW)		Diversity
	Rated	Corrected	Rated	Corrected	
MMY-AP1624HT8	45	39.21	50	37.12	95%

**Indoor Units**

Model Name	Capacity Code	Fan Speed	Mode	Capacity (Total/Sensible) [kW]		
				Rated	Corrected	Required
MMD-AP0094SPH	1HP	High	Cooling	2.8 / 2.1	2.67 / 2.00	
			Heating	3.2	2.51	
MMD-AP0094SPH	1HP	High	Cooling	2.8 / 2.1	2.61 / 1.96	
			Heating	3.2	2.51	
MMD-AP0094SPH	1HP	High	Cooling	2.8 / 2.1	2.59 / 1.94	
			Heating	3.2	2.51	
MMD-AP0094SPH	1HP	High	Cooling	2.8 / 2.1	2.59 / 1.94	
			Heating	3.2	2.51	
MMD-AP0094SPH	1HP	High	Cooling	2.8 / 2.1	1.94 / 2.59	
			Heating	3.2	2.51	
MMD-AP0094SPH	1HP	High	Cooling	2.8 / 2.1	2.59 / 1.94	
			Heating	3.2	2.51	
MMD-AP0124SPH	1.25HP	High	Cooling	3.6 / 2.5	3.35 / 2.33	
			Heating	4	3.14	
MMD-AP0184SPH	2HP	High	Cooling	5.6 / 3.9	5.20 / 3.62	
			Heating	6.3	4.94	
MMD-AP0184SPH	2HP	High	Cooling	5.6 / 3.9	5.20 / 3.62	
			Heating	6.3	4.94	
MMD-AP0184SPH	2HP	High	Cooling	5.6 / 3.9	5.20 / 3.62	
			Heating	6.3	4.94	

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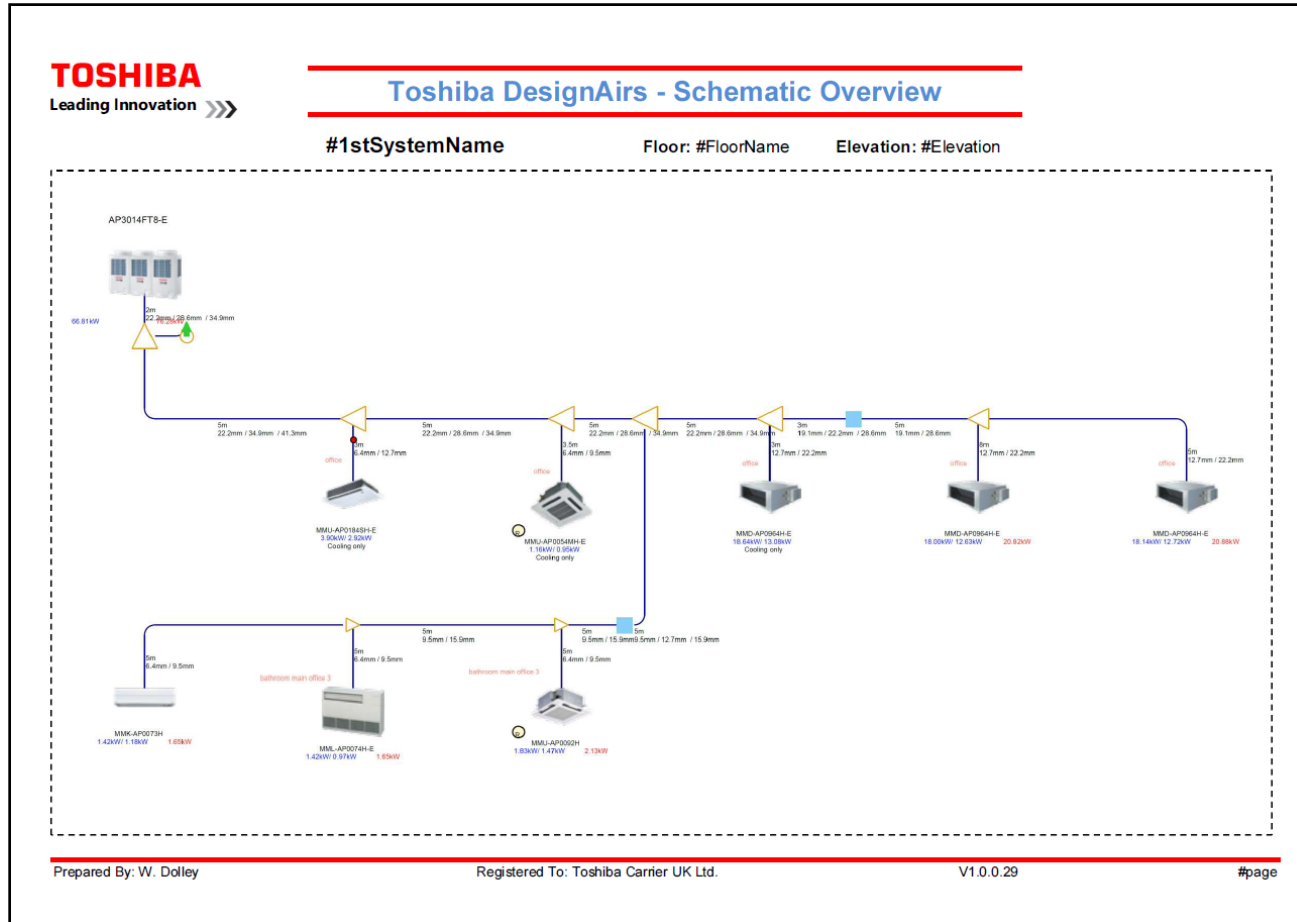
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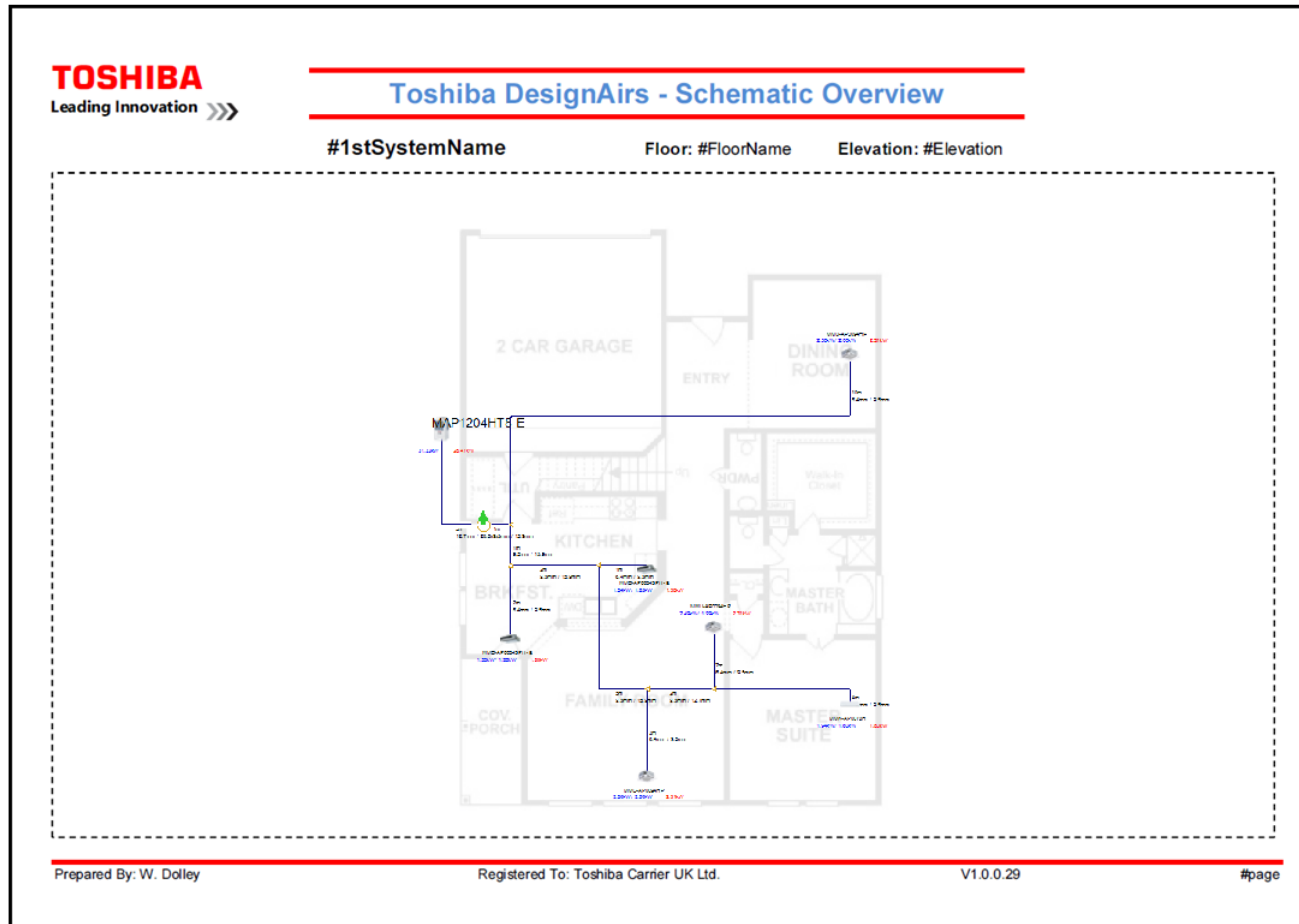
# OUTPUT

## System Schematic Overview:



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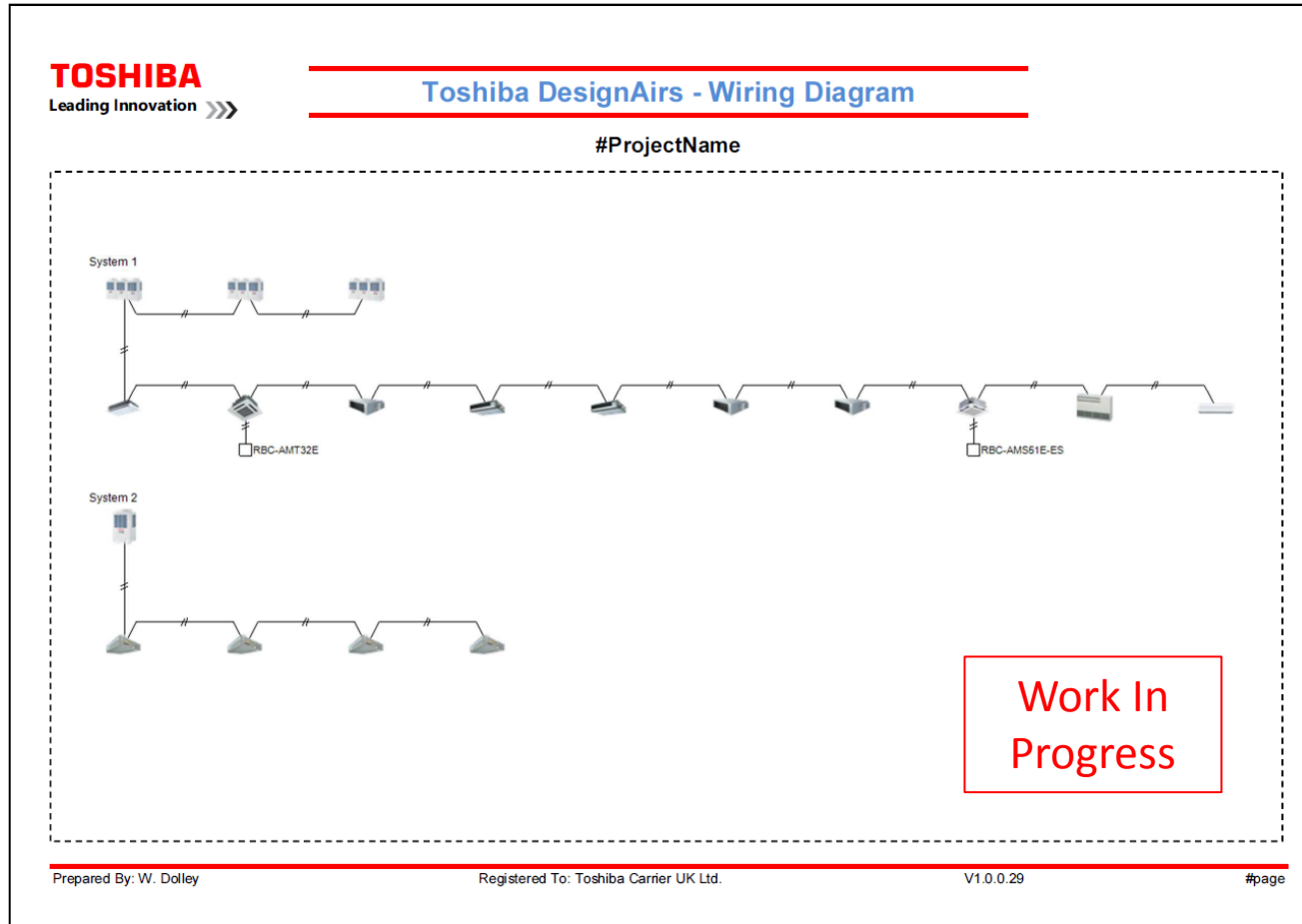
## System Schematic Overview:





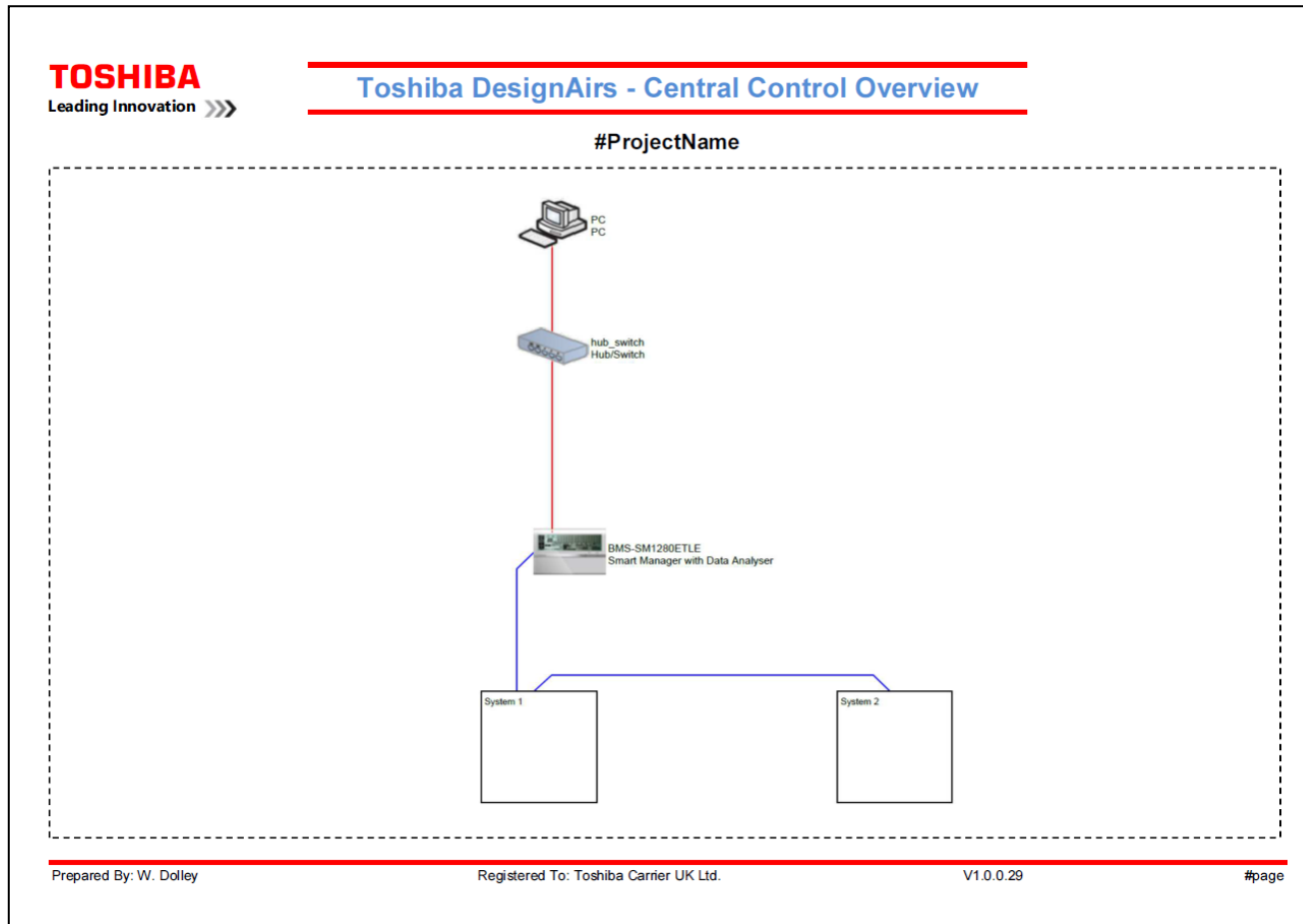
# OUTPUT

Wiring Diagram:



# OUTPUT

Central Control overview:





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## Sales Data:

TOSHIBA Design-Airs		DRAWING DIMENSIONS	
<b>TOSHIBA</b> Leading Innovation >>>	Customer: MacWhirter Ltd. Project: Tesco Roberough		
	Type: 4 Way Cassette Model: MMU-AP0274HP Reference: 000001	Date: 07/08/14 Scale: None Unit: mm Page: 14/15	

TOSHIBA Design-Airs		NCC CURVE					
<b>MMU-AP0244HP-E, AP0274HP-E</b>							
		<table border="1"> <tr> <td>Sound pressure level(dB(A))</td> <td>H-M-L</td> </tr> <tr> <td></td> <td>35-31-28</td> </tr> </table>		Sound pressure level(dB(A))	H-M-L		35-31-28
Sound pressure level(dB(A))	H-M-L						
	35-31-28						
<b>TOSHIBA</b> Leading Innovation >>>	Customer: MacWhirter Ltd. Project: Tesco Roberough						
	Type: 4 Way Cassette Model: MMU-AP0274HP Reference: 000001	Date: 07/08/14 Scale: None Unit: mm Page: 15/15					





## END OF THE THEORY

