

HEAT LOAD CALCULATING TOOL

QUICK START MANUAL



EMERSON[™]
Climate Technologies

Disclaimer Of Warranty On Software

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INTRODUCTION

This software is developed by Emerson Climate Technologies to assist in calculation of heat of any building. It has weather data of 44 countries in Asia. Easy step-by-step input of building parameters allows OEMs sales engineers to calculate the precise load requirement and help them decide on an optional system for building.



ABOUT THE MANUAL

This Manual aims to provide the user sufficient information about the use of the Heat Load Calculating Tool® (HLCT) developed by Emerson Climate Technologies. With the aid of this tool, engineers can compute the Heat Load of any building and provide a summary of all Heat Load Computations.

This Manual will help the user quickly adapt to the **HLCT** environment by providing step-by-step instructions on how to design a project, how to properly input data, and how to preview and print the summary of results.

Heat Load Calculating Tool Quick Start Manual

Disclaimer

Introduction

About the Manual

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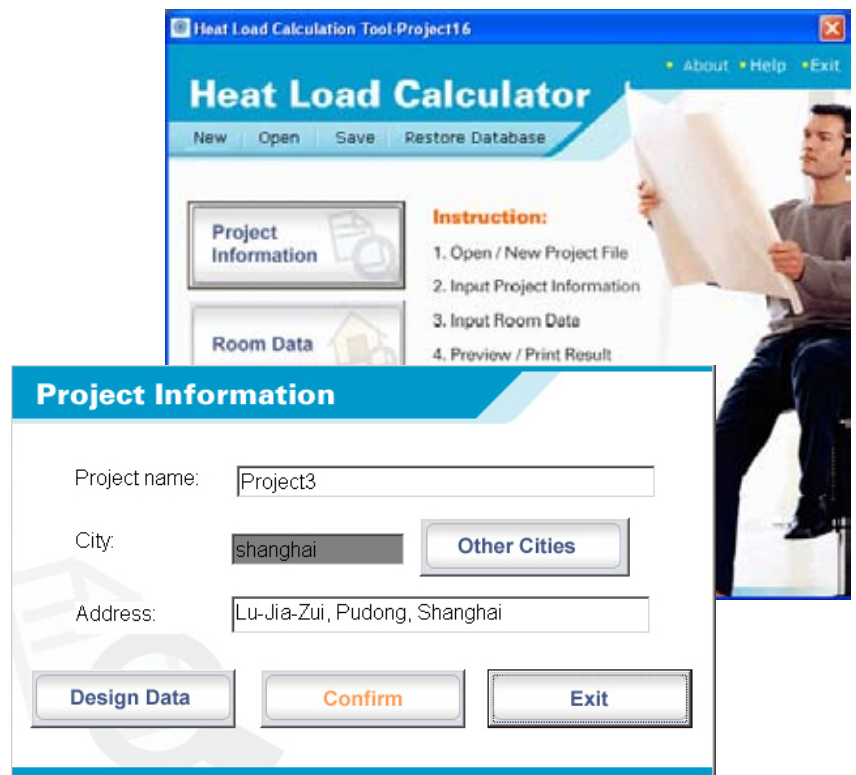
Glossary

Index (Nomenclature)

HOW TO USE THIS MANUAL

The following pages contain actual HLCT environment pictures that will visually assist the user throughout the course of the Manual. For common understanding, please refer to the figure below. The colored picture corresponds to the active screen, while the black and white picture corresponds to the root or previous screen.

HLCT Main Screen



Project Information Main Screen

Technical Support

For queries regarding the Heat Load Calculating Tool, please send us an e-mail at:

digitalinfo_en@emersonclimate.com

Or visit us at <http://www.digitalscroll.com/>

SOFTWARE INSTALLATION

Installing your HLCT

To install the **Heat Load Calculating Tool®** version 2.0, you must have administrative privileges. This step-by-step Manual will walk you through the installation process with ease.



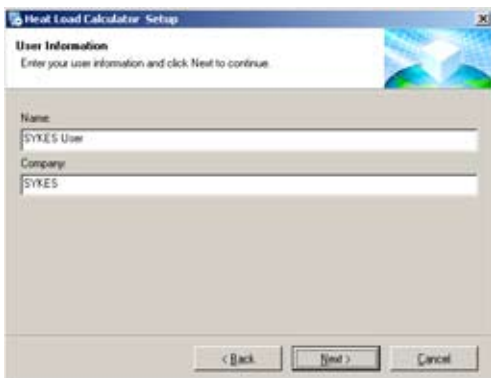
Step 1. Installation Set-Up

After opening the installer, you will see the Heat Load Calculating Tool Setup Main Screen. Read each page and then click on the **Next** button to be directed through each process.



Step 2. License Agreement

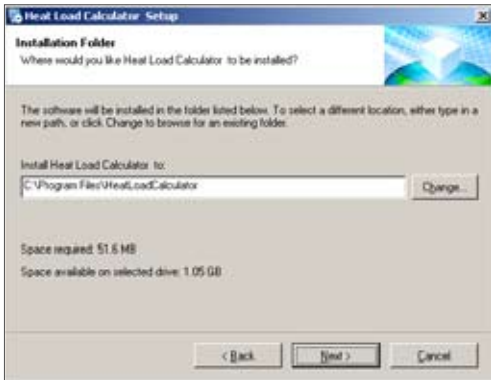
Read through the Terms and Conditions outlined in the End User License Agreement. Click **Next** to agree and proceed with the installation.



Step 3. User Information

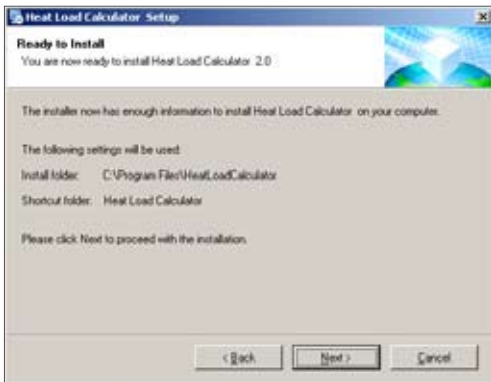
Type your name and your company name. Click **Next** to proceed with the installation.

SOFTWARE INSTALLATION



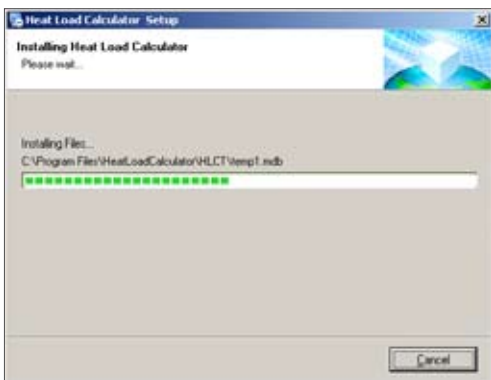
Step 4. Choosing Destination Locations

By default, your Heat Load Calculating Tool will be installed in your Programs File folder located on your C: drive. To change this, click on **Change**, then click on **Next** to proceed with the installation.



Step 5. Start of Installation

This will confirm all set up information and proceed with the software installation. Click on **Next** to proceed with the installation.



Step 6. Installation Progress

The installer program will begin adding the Heat Load Calculating Tool to your computer. Do not interrupt the installation until it is complete.



Step 7. End of Installation

The Heat Load Calculating Tool has been loaded and ready for use. To exit the installation set up, click on **Finish**.

KEY REGISTRATION

Activating your HLCT

For activation, please see instructions as stated in the Activation Screen shown below:




EMERSONTM
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In order for us to provide you with the license key. Register the hardware number generated below in the www.digitalscroll.com website.

Refer to this link for the registration procedure <http://www.digitalscroll.com/sb/instruction.htm>.

Hardware Number: %FINGERPRINT%

Name:

Key:

GETTING STARTED

User Environment and Interface

■ Heat Load Calculating Tool Main Screen

1. Creates a new Project
2. Opens an existing **.mdb** Project
3. Saves all current Project Information
4. Resets all current Project information in the Heat Load Calculating Tool database
5. Opens the **Project Information Screen**
6. Opens the **Room Data Screen**
7. Opens the **Preview and Print Screen**
8. Opens the **About Screen**
9. Opens the **Help Screen** and a Sample Project Manual
10. Closes the Heat Load Calculator



GETTING STARTED

■ Project Information Main Screen

1. Opens the Weather Data of 44 countries in Asia.
2. Allows you to Change the Weather Data of the chosen City.
3. Accepts the Data and returns to the Heat Load Calculating Tool Main Screen

The screenshot shows the 'Project Information' screen with the following fields and buttons:

- Project name:** Project3
- City:** shanghai (with an **Other Cities** button next to it)
- Address:** Lu-Jia-Zui, Pudong, Shanghai
- Buttons:** Design Data, Confirm, Exit

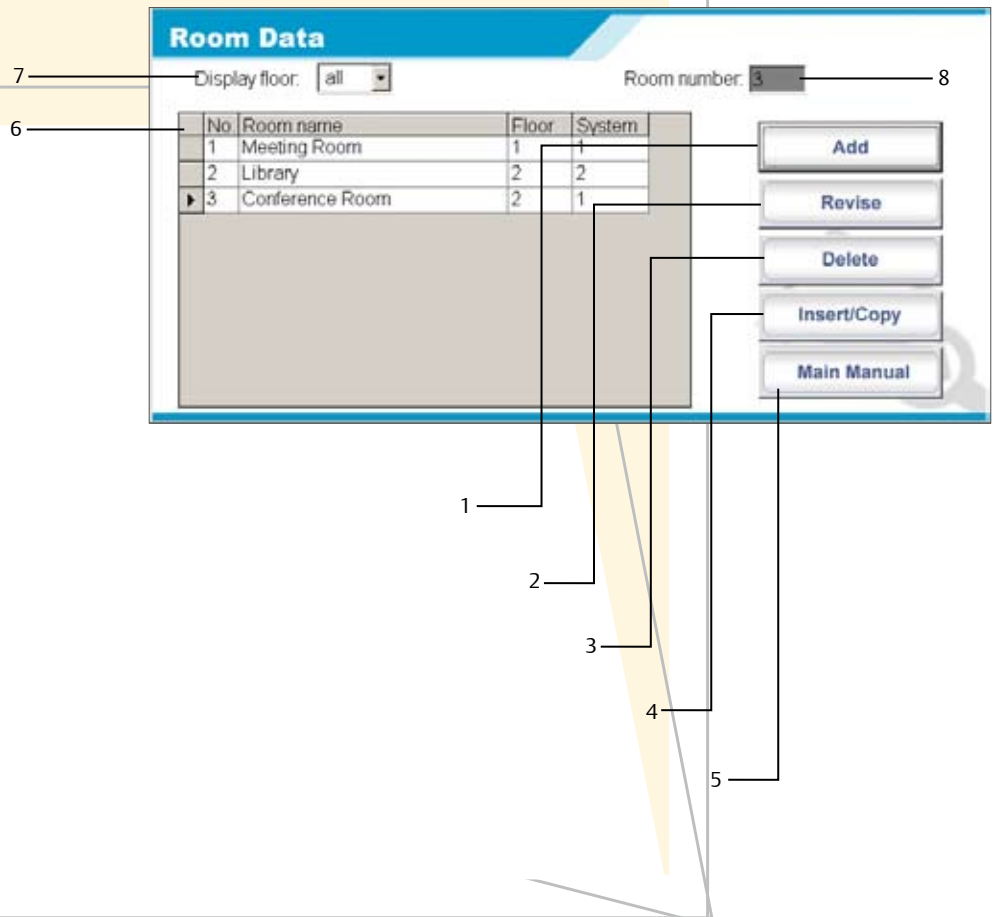
Numbered callouts indicate the following actions:

- 1:** Points to the **Other Cities** button.
- 2:** Points to the **Design Data** button.
- 3:** Points to the **Confirm** button.

GETTING STARTED

■ Room Data Main Screen

1. Displays Room Specification and Factors used during Computation. This also allows you to customize all building parameters.
2. Allows you to **Revise** existing Room Data
3. Allows you to **Delete** existing Room
4. Allows you to **Create New** or **Copy** Existing Room Designs and add them in the Order List
5. Accepts the Data and returns to Heat Load Calculating Tool Main Screen
6. The Order List shows the list of Rooms, Room name, Floor, and System
7. Filters the Rooms based on the chosen Floor
8. Displays the Room Number of selected Room



GETTING STARTED

■ Print / Preview Main Screen

1. Sets the Standard units to be used during computation and during printing
2. Selects the items to be viewed and printed
3. Documentation and Details
4. Prints the corresponding hours reflected in the Time Schedule screen
5. Displays Computation Results
6. Accepts the Data and returns to the Heat Load Calculating Tool Main Screen

The screenshot shows a 'Preview/Print' dialog box with the following elements:

- 1:** Unit to be used: kcal/h W
- 2:** Checkboxes for content selection:
 - Cover page
 - System table
 - Individual room's peak load
 - System peak load/Building peak load
 - Room data details
 - Room's cooling/heating load table
- 3:** Cover page details:
 - Title:
 - ATTN:
 - Calculated by:
 - Date:
- 4:** Time selection: Please input time you want to print from :00 clock to :00 clock
- 5:**
- 6:**

HOW TO INPUT DATA

Starting a Project

You can start a project by either creating a New Project or opening an existing .mdbe project.

■ Creating a New Project

1. Click **New** to start a New Project. This opens the Project Information Screen.
2. Fill up the Project Name and Project address
3. By Clicking **Other Cities**, you can either choose or customize weather data

HLCT Main Screen



Project Information Main Screen

HOW TO INPUT DATA

■ Selecting the Weather Data

1. Select from the Listed Locations on the left side of the screen by choosing the Country, Province, and City
2. Click **Select** to accept the changes

* Please refer to the List of Nomenclature at the end of this Manual for more information.

Project Information Main Screen

The screenshot shows the 'Project Information' dialog box. At the top, there is a text input field for 'Project name:' containing 'Project3'. Below this, the dialog is divided into two main sections. On the left, there is a 'Location' section with three dropdown menus: 'Country' (set to 'China'), 'Province' (with a list including Anhui, Beijing, Fujian, Gansu, Guangdong, Guizhou, Jiangsu, Jiangxi, and Jilin), and 'City' (with a list including HaoZhou, BangBu, HuoShan, HeFei, and AnQing). On the right, there is a table of weather data with columns: Hour, Co.DBT (°C), Co.rh (%), Co.M.C. (g/(kg.drh)), Latitude, Clear Grade, He.DBT (°C), He.rh (%), He.M.C. (g/(kg.drh)), and Earth Type. The table contains 24 rows of data. At the bottom of the dialog, there are two buttons: 'Select' and 'Exit'.

Hour	Co.DBT (°C)	Co.rh (%)	Co.M.C. (g/(kg.drh))	Latitude	Clear Grade	He.DBT (°C)	He.rh (%)	He.M.C. (g/(kg.drh))	Earth Type
1	27.66			30	5	-1.5			40
2	28.41			30	5	-2.57			40
3	28.38			30	5	-3.46			40
4	26.1			30	5	-4.21			40
5	26.87			30	5	-4.82			40
6	26.23			30	5	-5.25			40
7	26.91			30	5	-5.46			40
8	26.85			30	5	-4.99			40
9	26.68			30	5	-3.76			40
10	31.37			30	5	-1.86			40
11	32.24			30	5	0.26			40
12	36.23			30	5	2.87			40
13	36.82			30	5	3.7			40
14	37.58			30	5	4.72			40
15	38.26			30	5	5.51			40
16	37.79			30	5	4.8			40
17	37.18			30	5	4.41			40
18	36.18			30	5	3.84			40
19	34.89			30	5	3.12			40
20	33.21			30	5	2.31			40
21	31.82			30	5	1.41			40
22	28.88			30	5	0.48			40
23	27.58			30	5	-0.5			40
24	25.8			30	5	-1.45			40

Weather Design Data

HOW TO INPUT DATA

■ Selecting the Design Data

1. From the Project Information Screen, click **Design Data**
2. By choosing **Revise**, you can change the data in the spreadsheet by simply clicking on the cells
3. To accept the changes, click **Confirm**. To close the window without saving the data, click **Exit**.

Design Data

Design Data										
	Hour	SummerDB	SummerRH	SummerX	Latitude	Cleargrade	WinterDB	WinterRH	WinterX	EarthType
▶	1	28.12	69	10.518	30	5	0.40	95.4	3.704	#0
	2	27.39	72.6	16.67	30	5	-0.74	100	3.540	#0
	3	26.79	71.6	15.833	30	5	-1.84	100	3.232	#0
	4	26.34	80.0	17.405	30	5	-2.78	100	2.983	#0
	5	26.00	82.1	17.465	30	5	-3.52	100	2.602	#0
	6	26.2	81.3	17.41	30	6	-4.01	100	2.688	#0
	7	26.73	76	16.795	30	5	-4.23	100	2.638	#0
	8	27.63	62.0	14.504	30	5	-2.93	100	2.944	#0
	9	28.82	51.0	15.418	30	5	-1.25	100	3.402	#0
	10	30.10	50.2	15.094	30	5	0.8	100	3.99	#0
	11	31.54	53.5	15.579	30	5	2.4	66.1	5.205	#0
	12	32.81	48.1	15.017	30	5	4.74	58.1	3.002	#0
	13	32.93	49	15.25	30	5	6.07	43.0	2.527	#0
	14	34.5	42.6	14.613	30	5	6.75	21.3	1.207	#0
	15	34.74	48.9	17.078	30	5	6.72	42.8	2.684	#0
	16	34.53	49.5	17.077	30	5	6.54	50.1	3.591	#0
	17	34.00	68.2	10.65	30	5	6.10	67.8	3.06	#0
	18	33.41	60.8	19.806	30	5	5.72	100	5.076	#0
	19	32.53	59.7	19.447	30	5	5.10	50.2	2.74	#0
	20	31.48	61.6	17.804	30	5	4.61	66.2	5.101	#0
	21	30.31	75.0	20.663	30	5	4.06	63.8	4.82	#0
	22	29.05	55.4	15.520	30	5	3.55	61.0	4.05	#0
	23	27.78	60	13.706	30	5	3.14	70.6	3.378	#0
	24	26.55	69.8	15.218	30	5	2.83	99.8	4.028	#0

City:

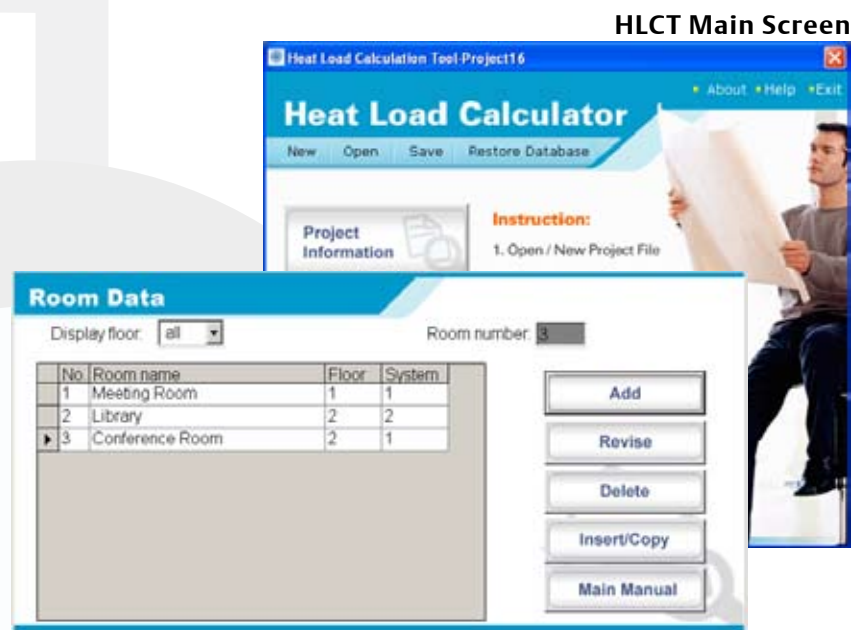
HOW TO INPUT DATA

■ Input of Room Specifications

A large portion of all Heat Load Computations is based on the parameters entered in this part of the program.

Room Specifications include Building Material Characteristic, Factors, Design Room Temperature, Time, other Sources of Heat, and more.

* Please refer to the List of Nomenclature at the end of this Manual for more information.



HOW TO INPUT DATA

■ Adding a New Room

By choosing **Add** from the Room Data Main Screen, you can insert a new Room to your current Project. Completely fill-up all Room Specification Details.

Room's Specification:

- Identifies the Room number. It also corresponds to the order that the Room was created.
- The name of the Room
- The Floor where the Room is located
- Common air conditioning system being used by multiple conditioned Rooms
- The specific function of the Room
- Floor Area of the Room in metric units (sq.m)
- Ceiling height of the Room in metric units (m)

Room Data Main Screen

Room Data

Display floor: Room number:

No	Room name	Floor	System
1	Meeting Room	1	1
2	Library	2	2

Room's Specification

a. Number: Room name: Floor: System:

e. Room's function:

f. Room area: sqm Ceiling height: m

Ceiling(no A/C in higher floor)		Floor(no A/C in lower floor)		Equipment Heat	
Ceiling area belongs to the followings:		Floor area belongs to the followings:		Sensible heat:	
Upstair is boiler room:	<input type="text" value="0"/> sqm	Downstair is boiler room:	<input type="text" value="0"/> sqm	<input type="text" value="0"/> kcal/h	
Upstair is kitchen:	<input type="text" value="0"/> sqm	Downstair is kitchen:	<input type="text" value="0"/> sqm	Latent heat:	
Upstair Rm facing outdoor air:	<input type="text" value="0"/> sqm	Downstair is car park:	<input type="text" value="0"/> sqm	<input type="text" value="0"/> kcal/h	
Upstair Rm facing interior area:	<input type="text" value="0"/> sqm	Downstair Rm facing outdoor air:	<input type="text" value="0"/> sqm	Safety factor	
Roof area:	<input type="text" value="0"/> sqm	Downstair Rm facing interior area:	<input type="text" value="0"/> sqm	Sensible SF1=	<input type="text" value="1.05"/>
Skylight area:	<input type="text" value="0"/> sqm	Ground area:	<input type="text" value="0"/> sqm	Latent SF2=	<input type="text" value="1.05"/>
		Depth in earth:	<input type="text" value="0"/> m		

Room Specification Main Screen

HOW TO INPUT DATA

Load Components:

Load Components are factors that affect Heat Transmissions.

If unconditioned areas are located above, below, or adjacent to the room being designed, heat loads will greatly vary.

Ceiling(no A/C in higher floor)
Ceiling area belongs to the followings:

a	Upstairs is boiler room:	<input type="text" value="0"/>	sqm
b	Upstairs is kitchen:	<input type="text" value="0"/>	sqm
c	Upstairs Rm facing outdoor air:	<input type="text" value="0"/>	sqm
d	Upstairs Rm facing interior area:	<input type="text" value="0"/>	sqm
e	Roof area:	<input type="text" value="0"/>	sqm
f	Skylight area:	<input type="text" value="0"/>	sqm

Ceiling (in metric units, sq.m)

- Boiler Room area located above the conditioned space
- Kitchen Room area located above the conditioned space
- Floor area located above the conditioned space that is exposed to outside air
- Interior floor area above the conditioned space that does not have air conditioning. (Ex. Corridors)
- Roof Area exposed to solar radiation
- Skylight area exposed to solar radiation. Skylights are windows set into a ceiling or roof that provide natural lighting.

Floor(no A/C in lower floor)
Floor area belongs to the followings:

a	Downstairs is boiler room:	<input type="text" value="0"/>	sqm
b	Downstairs is kitchen:	<input type="text" value="0"/>	sqm
c	Downstairs is car park :	<input type="text" value="0"/>	sqm
d	Downstairs Rm facing outdoor air:	<input type="text" value="0"/>	sqm
e	Downstairs Rm facing interior area:	<input type="text" value="0"/>	sqm
f	Ground area:	<input type="text" value="0"/>	sqm
g	Depth in earth:	<input type="text" value="0"/>	m

Floor (in metric units, sq.m and m)

- Boiler Room area located below the conditioned space
- Kitchen Room area located below the conditioned space
- Unconditioned car park area located below the conditioned space
- Floor area located below the conditioned space that is exposed to outside air
- Interior floor area below the conditioned space that does not have air conditioning. (Ex. corridors)
- For Lower Floor without basement levels, enter the Ground or Earth area under Lower Floor
For Lower Floor with basement levels, enter the Basement Level Floor area
- Depth of each Basement Level

Equipment Heat

Sensible heat:

a	<input type="text" value="0"/>	kcal/h
---	--------------------------------	--------

Latent heat:

b	<input type="text" value="0"/>	kcal/h
---	--------------------------------	--------

Safety factor

c	Sensible SF1=	<input type="text" value="1.05"/>
d	Latent SF2=	<input type="text" value="1.05"/>

Equipment

- Internal loads brought about by sensible heat generated by indoor equipment
- Internal loads brought about by latent heat generated by indoor equipment
- Acceptable allowance for Sensible heating
- Acceptable allowance for Latent heating

HOW TO INPUT DATA

■ Calculating the Conductivity Factor (k)

This portion of the calculator allows you to select or customize the type of material that makes up the structural wall, roof, ceiling, floor and others.

The Conductivity factor denoted by k is measured as:

$$kcal/m^2-hr-^{\circ}C$$

The Shielding coefficient for Skylights and glass is denoted by S_c and $S_c(RF)$.

Conductivity Factor Main Screen

The screenshot displays the 'Conductivity Factor K, Sc, OW Type, RF Type' main screen. It features a table of building components with 'Selection' and 'Calculation' buttons, and input fields for their respective conductivity factors (K) and shielding coefficients (Sc). A 'Help' button is located in the top right corner. At the bottom, there are 'Confirm', 'Exit', and 'Back To Preset' buttons.

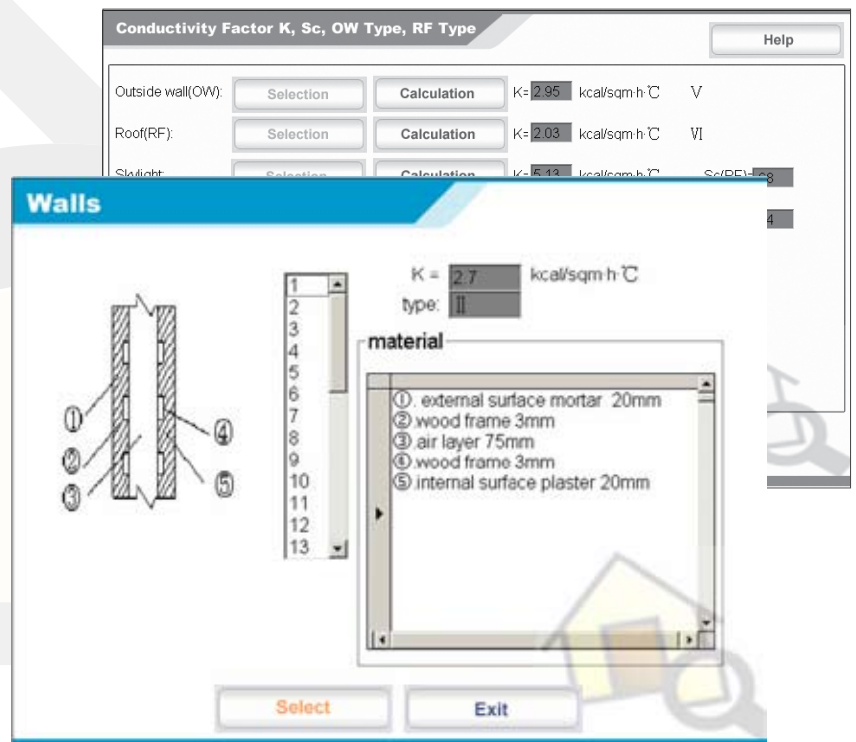
Component	Action	Value	Unit	Other Values
Outside wall(OW):	Selection / Calculation	K= 2.95	kcal/sqm h °C	V
Roof(RF):	Selection / Calculation	K= 2.03	kcal/sqm h °C	VI
Skylight:	Selection / Calculation	K= 5.13	kcal/sqm h °C	Sc(RF)= 68
Outside glass(OG):	Selection / Calculation	K= 4.27	kcal/sqm h °C	Sc= 54
Internal wall(IW):	Selection / Calculation	K= 2.85	kcal/sqm h °C	
Ceiling(CL):	Selection / Calculation	K= 1.68	kcal/sqm h °C	
Floor(FL):	Selection / Calculation	K= 1.68	kcal/sqm h °C	
Floor above earth:		K= 5	kcal/sqm h °C	

HOW TO INPUT DATA

■ Material Selection for Walls, Roof, Floors and Ceilings

By choosing **Selection**, you can choose from the HLCT database specific construction types of various walls, roofs, floors, and ceilings.

1. Select composite material from the roll-down menu
2. Equivalent k values and structure type are automatically displayed
3. Choose **Select** to accept the changes or **Exit** to ignore the changes



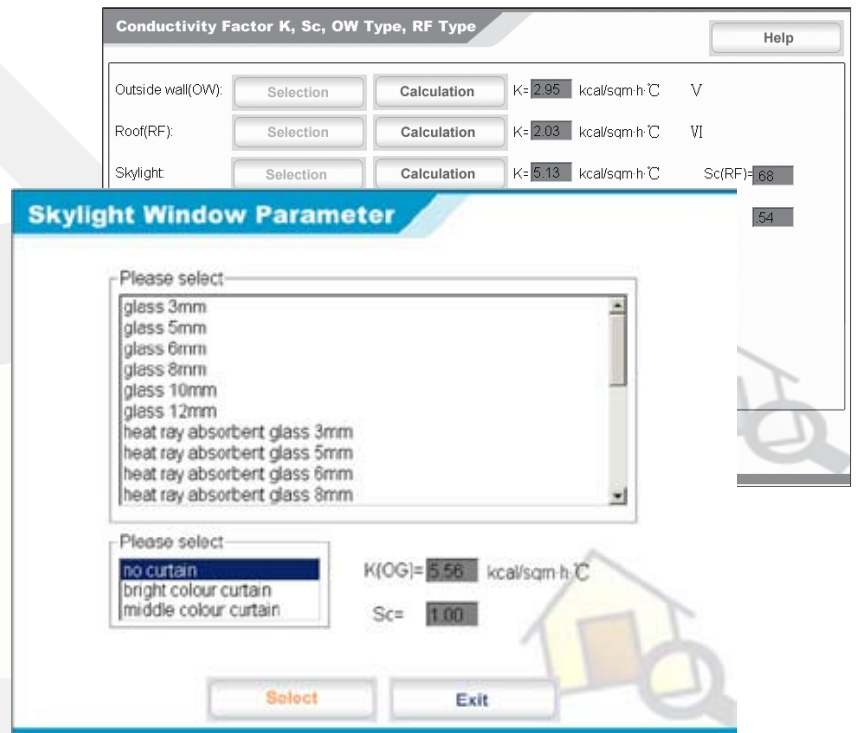
Material Selection Screen

HOW TO INPUT DATA

■ Material Selection for Skylight and Glass

By choosing **Selection**, you can choose from the HLCT database specific construction types of Skylights and Outside Glass.

1. Select Window Type with its corresponding thickness from the roll-down menu
2. Select Curtain Type
3. Equivalent K(OG) and Sc are automatically displayed
4. Choose Select to accept the changes or Exit to ignore the changes



Material Selection (Glass) Screen

HOW TO INPUT DATA

■ Calculate New Composite Material

By choosing **Calculation**, you can create specific construction composite materials that will make up the walls, roofs, floors, and ceilings.

Sample Composite Wall = Tile, Mortar, Brick, Plaster

1. Select from the material list “Tile”
2. Input the material thickness “9mm”
3. To transfer the “Tile” to the spreadsheet, click the **Right pointer arrow**.

To remove the “Tile” from the spreadsheet, highlight the “Tile” entry in the spreadsheet, and then click the **Left pointer arrow**

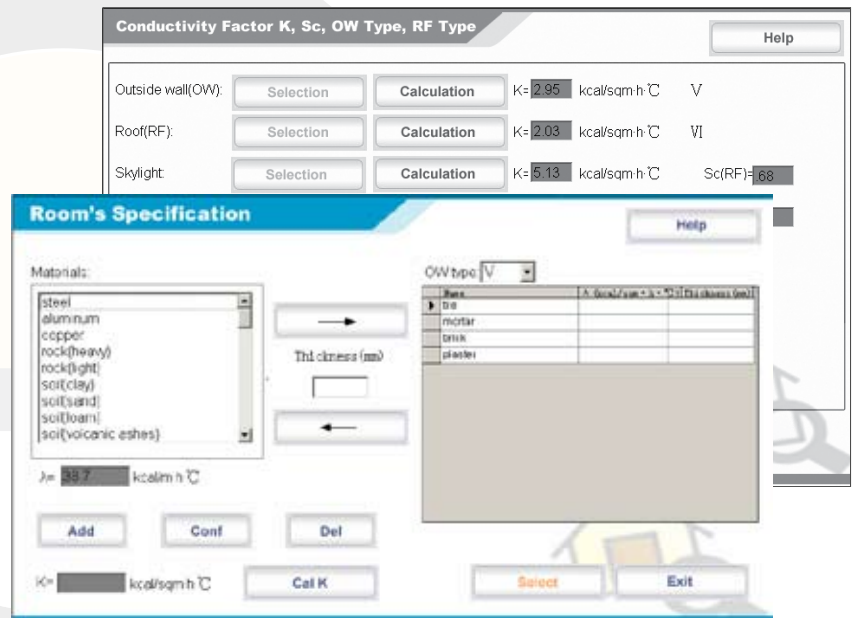
4. Continue data entry for the following materials:

Mortar – 40 mm

Brick – 200 mm

Plaster – 3 mm

5. Click **Cal K** to view the K results
6. Click **Select** to accept the changes



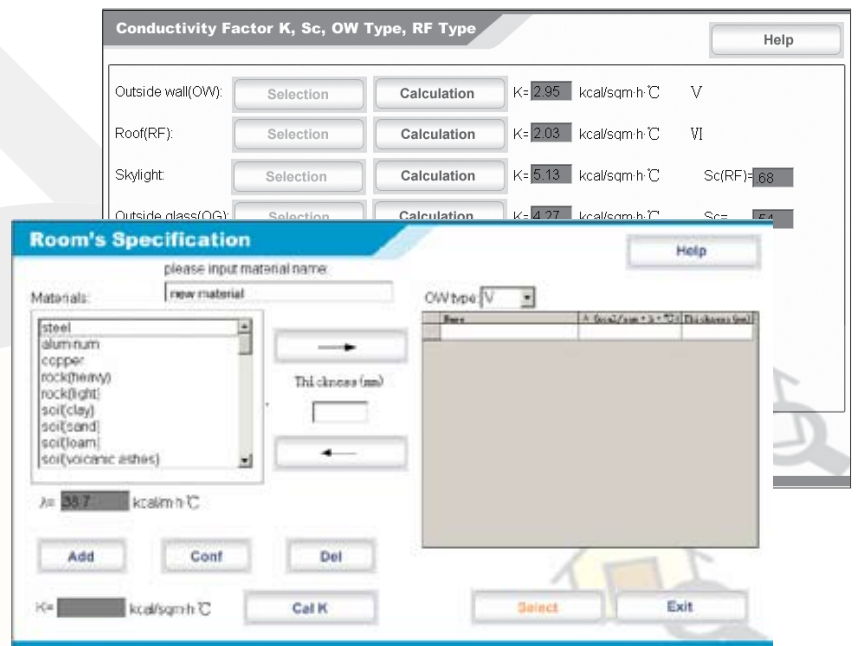
Calculation Screen

HOW TO INPUT DATA

■ Adding a New Material to the List

In case the material you need is not included in the Material List, a new material can be created.

1. Click **Add** and type in the new material name.
2. Enter the specific λ value of the new material at the entry below the Material List.
3. To add the new material to the Material List, click **Conf.**
To permanently remove any material from the Material List, highlight the material and click **Del.**
4. Click **Select** to accept the changes.



Calculation Screen

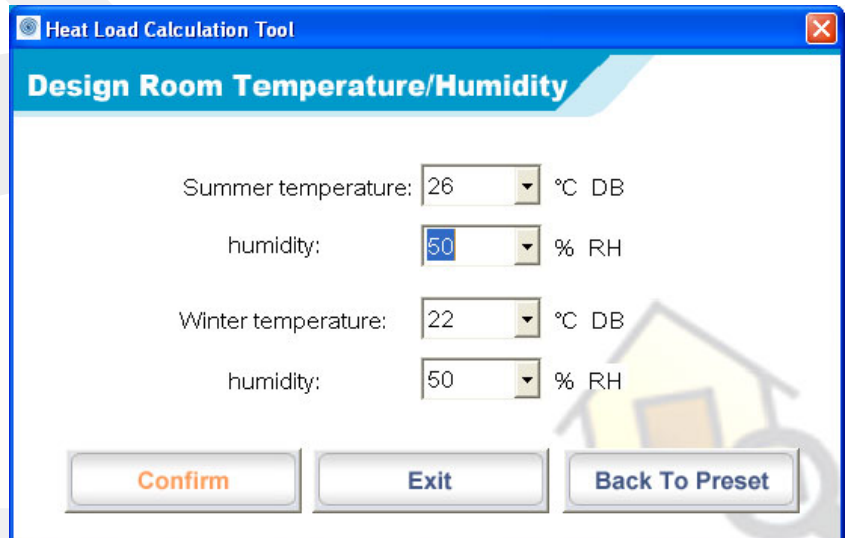
HOW TO INPUT DATA

■ Design Room Temperature and Humidity

By choosing **Temperature/Humidity**, you can change the temperature (°C) and RH (%) that the conditioned space is designed to maintain under the most extreme conditions.

1. Enter the Summer Design Temperature
2. Enter the Summer Design Relative Humidity
3. Enter the Winter Design Temperature
4. Enter the Winter Design Relative Humidity
5. Click **Confirm** to accept the changes
6. To reset the data to Default Design Values, click **Back to Preset**

Design Room Temperature
Humidity Main Screen



The screenshot shows a software window titled "Heat Load Calculation Tool" with a sub-header "Design Room Temperature/Humidity". The window contains four input fields with dropdown menus:

- Summer temperature: 26 °C DB
- humidity: 50 % RH
- Winter temperature: 22 °C DB
- humidity: 50 % RH

At the bottom of the window are three buttons: "Confirm" (highlighted in orange), "Exit", and "Back To Preset".

HOW TO INPUT DATA

■ Load Time Scheduling

By choosing **Time Schedule**, you can assign the amount of internal heat (percentage, %) produced during particular time periods.

- a. Operation Time denotes the exact hours when Lights, People or Equipment generate internal heat
- b. Internal Heat Distribution Table:
 - Column** – Amount of Internal Heat generated by Lights, People, Indoor Equipment and its equivalent Time. (1-24th hour 1 AM-12 Midnight)
 - Row** – Hourly Time Period
- c. To accept the new Operation Time, click **Timing Change**
- d. To reset the data to Default Design Values, click **Back to Preset**
- e. To input new internal heat percentages, click **Figure Change**
- f. Click **Confirm** to accept the changes

Time Schedule Main Screen

The screenshot shows the 'Time Schedule' interface. On the left, there are input fields for 'Room name' (set to 'room1') and 'Operation time' (from 8:00 to 18:00). Below these are four buttons: 'Timing Change', 'Back To Preset', 'Figure Change', and 'Confirm'. On the right is a table titled 'Internal heat percentage (%)' with columns for 'Time', 'Light', 'People', and 'Equipment'. The table shows 24 rows of data, with values of 0 or 100 for each category.

Time	Light	People	Equipment
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	0	0
8	100	100	100
9	100	100	100
10	100	100	100
11	100	100	100
12	100	100	100
13	100	100	100
14	100	100	100
15	100	100	100
16	100	100	100
17	100	100	100
18	100	100	100
19	0	0	0
20	0	0	0
21	0	0	0
22	0	0	0
23	0	0	0
24	0	0	0

HOW TO INPUT DATA

Sample Internal Heat Gain Distribution:

8-18 Hour, 50% Internal Heat Gain

19-24 Hour, 100% Internal Heat Gain

1. Change Default Operation Time, from “8:00 – 18:00” to “8:00-24:00”
2. To accept the new time, click **Timing Change**
3. To manually change the percentages, click **Figure Change**.
Input “50” on the cells under Lights, People, and Equipment and during the time period “8:00-18:00”

Time Schedule Main Screen

Time	Light	People	Equipment
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	0	0
8	50	50	50
9	50	50	50
10	50	50	50
11	50	50	50
12	50	50	50
13	50	50	50
14	50	50	50
15	50	50	50
16	50	50	50
17	50	50	50
18	50	50	50
19	100	100	100
20	100	100	100
21	100	100	100
22	100	100	100
23	100	100	100
24	100	100	100

HOW TO INPUT DATA

■ Outside Wall (OW), Outside Glass (OG), Inside Wall (IW) Input Data

The position of the building in reference to the sun's orientation greatly affects the amount of heat gained through various sides of the building.

At each direction (N, NE, E, SE, S, SW, W, NW), wall and glass dimensions (length and height) are measured in meters (m).

- a. Dimension of outside wall
- b. Dimension of outside wall in earth
Underground wall depth from the ground level
- c. Dimension of outside glass
- d. Dimension of internal wall
- e. Indicates whether the internal wall is adjacent to a boiler room, kitchen, or a room facing outdoor air
If the internal wall is not adjacent to any of these rooms, use the option "**located in interior area**"
- f. Choose **Select** to accept the changes
- g. Choose **Exit** to ignore the changes

OW/OG/IW Input Data Main Screen

OW/OG/IW Input Data

a

Direction	Shadow	N	NE	E	SE	S	SW	W	NW
▶ OW length(m)	0	0	0	0	0	0	0	0	0
OW height(m)	0	0	0	0	0	0	0	0	0

b

Direction	Shadow	N	NE	E	SE	S	SW	W	NW
▶ OW length(in earth)(m)	0	0	0	0	0	0	0	0	0
OW height(in earth)(m)	0	0	0	0	0	0	0	0	0
OW depth(in earth)(m)	0	0	0	0	0	0	0	0	0

c

Direction	Shadow	N	NE	E	SE	S	SW	W	NW
▶ OG length(m)	0	0	0	0	0	0	0	0	0
OG height(m)	0	0	0	0	0	0	0	0	0

d

Direction	Shadow	N	NE	E	SE	S	SW	W	NW
▶ IW length(m)	0	0	0	0	0	0	0	0	0
IW height(m)	0	0	0	0	0	0	0	0	0

e

Internal wall's neighboring room is:

facing outdoor air:

boiler room:

kitchen:

located in interior area:

f

g

Select Exit

HOW TO INPUT DATA

■ Other / Supplementary Load

In addition to the heat transmitted into the conditioned space through walls and air infiltration, any heat gain from other sources must be included in the total cooling / heating load computation.

The infiltration air amount, power consumption from lighting, and people-generated heat is directly affected by the function of each room.

- Type of Ventilation System to be installed
- The amount of fresh air required for building occupants
- Total Heat Exchanger Efficiency; Standard total heat exchanger efficiency is 60%
- Amount (percentage) of infiltrated air during Summer and Winter months

Standard air infiltration is 0.2 time air changes of total room air volume.

- Power consumption of lighting equipment measured in Watt/sq.m.
- Power consumption for equipments that consume power 24 hours each day (Guaranteed Equipment heat)
- The reasonable number of persons occupying the floor based on the declared floor area and specific room function
- Amount of sensible and latent heat generated by the occupants

Others

Ventilation system: Total heat exchanger Ventilation fan Infiltration only

Fresh air amount: CMH= m^3/h

CMH/Person CMH Total heat exchanger efficiency: %

Summer: CMH/Person CMH %

Winter: CMH/Person CMH %

Infiltration air amount: Summer: \dot{V} (Floor area) \dot{V} (Ceiling height), CMH

Winter: \dot{V} (Floor area) \dot{V} (Ceiling height), CMH

Light equipment heat: Fluorescent lamp W/sqm

Electric lamp W/sqm

Guaranteed internal equipment power consumption for heating load calculation

GP= kcal/h

No. of person in the room:

P= No.S (P is preset as $P=Af/N$)

Heat generated by people in the room for cooling load calculation

Sensible heat q1= kcal/h=Person

Latent heat q2= kcal/h=Person

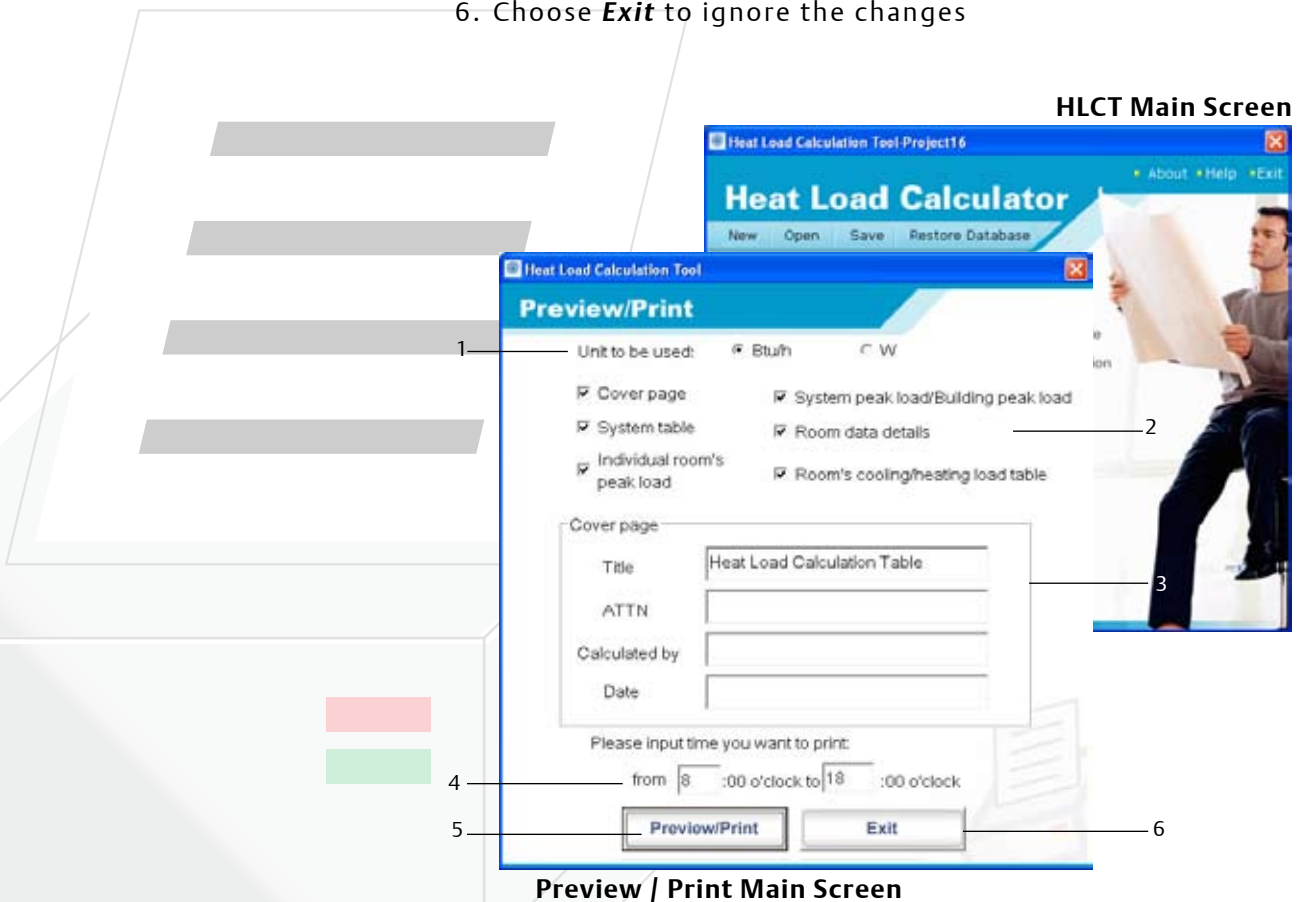
PRINTING AND PREVIEW

■ Viewing and Printing a Project

The Heat Load Calculating Tool generates all the necessary heat load computation results allowing you to view and review them systematically.

By choosing **Preview/Print**, you can either view or print the project result summary.

1. Select the unit (W or Btu/h) to be used.
2. Mark which items to be viewed and printed.
3. Fill-up the Cover page details.
4. Enter the Hours that you wish to Preview and Print. These Times correspond to the Internal Heat Gain Percentage Time Schedule
5. Choose **Preview/Print** to display the summary of the results
6. Choose **Exit** to ignore the changes



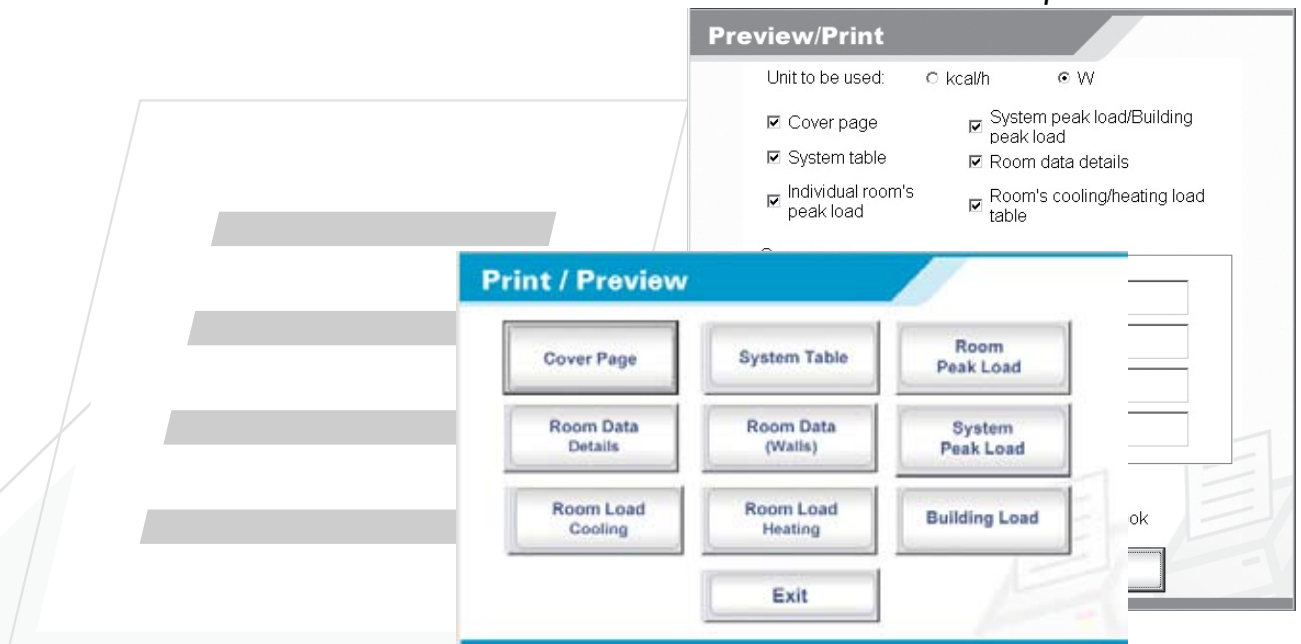
Preview / Print Main Screen

PRINTING AND PREVIEW

From the selection, click on the buttons you want to preview and print.

1. Cover Page
2. System Table
3. Room Peak Load
4. Room Data Details
5. Room Data (Walls)
6. System Peak Load
7. Room Load Cooling
8. Room Load Heating
9. Building Load

Preview / Print Main Screen



Summary of Results

GLOSSARY

Summer DB	Summer Dry Bulb Temperature	°C
	The ambient or outdoor summer temperature samples for each country/city.	
Summer RH	Summer Relative Humidity	%
	The summer relative humidity in relation to the Summer DB and atmospheric pressure. <i>Ratio of water vapor in the air in relation to the amount needed to saturate the air at the same temperature.</i>	
Summer X	Summer Absolute Humidity	g/Kg (Dry Air)
	The summer absolute humidity in relation to the Summer DB and atmospheric pressure. <i>The mass of water vapor divided by the mass of dry air at a given temperature and volume of air.</i>	
Winter DB	Winter Dry Bulb Temperature	°C
	The ambient or outdoor winter temperature samples for each country/city.	
Winter RH	Winter Relative Humidity	%
	The winter relative humidity in relation to the Winter DB and atmospheric pressure. <i>Ratio of water vapor in the air in relation to the amount needed to saturate the air at the same temperature.</i>	
Winter X	Winter Absolute Humidity	g/Kg (Dry Air)
	The winter absolute humidity in relation to the Winter DB and atmospheric pressure. <i>The mass of water vapor divided by the mass of dry air at a given temperature and volume of air.</i>	
K	Thermal Conductivity / Conductivity Factor	Kcal m ² - hr-°C
	Preset or calculated K factors of composite (wall, floors, roofs, ceilings) and non-composite construction materials. <i>The rate of heat transfer through a material or compound structural member with parallel walls.</i>	
S_c and S_c (RF)	Shielding Coefficient	n/a
	The measure of how well glazing blocks solar heat gain relative to 1/8" clear glass under the same conditions. The lower the coefficient, the better the unit blocks solar heat.	

NOMENCLATURE

Quantity	Symbol	Coherent Unit
Ceiling	CL	<i>m</i>
Conductivity Factor	K	<i>Kcal / m²-hr-°C</i>
Conductivity Ratio	λ	<i>Kcal / m²-hr-°C</i>
Floor	FL	<i>m</i>
Fresh Air Amount	CMH	<i>m³/hr</i>
Guaranteed Internal Equipment Power	GP	<i>Kcal / hr</i>
Internal Wall	IW	<i>m</i>
Outside Glass	OG	<i>m</i>
Outside Wall	OW	<i>m</i>
Roof	RF	<i>m</i>
Safety Factor	SF	<i>n/a</i>
Shielding Coefficient	S _c and S (RF)	<i>n/a</i>
Summer Absolute Humidity	Summer X	<i>g/Kg(Dry Air)</i>
Summer Dry Bulb Temperature	Summer DB	<i>°C</i>
Summer Relative Humidity	Summer RH	<i>%</i>
Winter Absolute Humidity	Winter X	<i>g/Kg(Dry Air)</i>
Winter Dry Bulb Temperature	Winter DB	<i>°C</i>
Winter Relative Humidity	Winter RH	<i>%</i>



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This manual is for general guidelines only. For more information please contact any of our representatives at:

Emerson Climate Technologies Asia Pacific Headquarters

10/F Pioneer Building
213 Wai Yip Street, Kwun Tong
Kowloon, Hong Kong S.A.R.
Tel: 852-28663108
Fax: 852-25206227

Emerson Climate Technologies (Suzhou) Co., Ltd.

No. 69 Suhong West Road,
Suzhou Industrial Park, Suzhou
Jiangsu Province, 215021
P.R. China
Tel: 86-512-62575505
Fax: 86-512-62575506

Emerson Climate Technologies (Suzhou) Co., Ltd. Shanghai Representative Office

16/F Jiu Shi Tower
28 Zhong Shan Road (South)
Shanghai 200010, P.R. China
Tel: 86-21-63330808
Fax: 86-21-63330516

Emerson Climate Technologies (Suzhou) Co., Ltd. Guangzhou Representative Office

Room 1001, Dongshan Plaza,
69 XianLie Zhong Road,
Guangzhou 510095, P.R. China
Tel: 86-20-87323008
Fax: 86-20-87322568

Emerson Climate Technologies (Suzhou) Co., Ltd. Beijing Representative Office

Room 310, Canway Building,
66 Nan Lishi Road, Xicheng District
Beijing 100045, P.R. China
Tel: 86-10-68057825
Fax: 86-10-68056301