User's Manual

NGS01

Hardware Manual

Rev 1.2

2019/12/27

Revision record

Rev.	Date	Change Description	Editor
1.0	2018-5-05	Initial Version	Yong Yang
1.1	2018-8-10	Update block diagram	Yong Yang
1.2	2019-4-22	Update LED function Description	Yong Yang
1.3	2019-12-27	Update Mechanical Instructions Description	Du Bi

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1 Introduction

1.1 Products Description

Steelcase, Inc. offers both ARM and ATOM based Single Boards Computer (SBC) platforms including Cirrus LogicEP9315,RockChipRK3128, RK3368,RK3288,RK3399, Freescale iMX6, iMX8, TI OMAP35xx CortexA8 series, and Intel Skylake and ApolloLake processor boards. In additional to offering the standard SBCs, we also provide professional customization board design services. Our seamless project management, efficient error-free development process, strong fundamentals in technology, sufficient in human resources, and on-time delivery will guarantee the success in your project development.

Based on idea of "Application Ready" products and services, our embedded computers have embedded basic operation system which includes the drivers of its interfaces. So it is easy to be used by adding your application software only. It can speed Time to Market of your products, and saving more cost.

1.2 Connectors Description

This table is the respective describe valid signal of connector on Steelcase, Inc. board.

Figure type:

N/C	Not connect
GND	Ground
/	active low signal
+	Positive of difference signal
-	negative of difference signal

Signal type:

I	Input
O	Output
I/O	input/output
P	Power or ground
A	Analog
OD	Open drain
CMOS	3.3 V CMOS
LVCMOS	Low Voltage CMOS

LVTTL	Low Voltage TTL
3.3V	3.3 V signal level
5V	5 V signal level
USB	5 V tolerant signal
PCIe	PCI Express signal, not 3.3 V tolerant
NC	No Connection

2 Foreword

2.1 Copyright Notice

While all information contained herein have been carefully checked to assure its accuracy in technical details and printing, Steelcase, Inc. assumes no responsibility resulting from any error or features of this manual, or from improper uses of this manual or the software. Please contact our technical department for relevant operation solutions if there is any problem that cannot be solved according to this manual.

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2.2 Notes

Applicable notes are listed in the following table:

Sign	Notice Type	Description
	Notice	Important information and regulations
	Caution	Caution for latent damage to system or harm to personnel

2.3 Statement

It is recommended to read and comply with this manual before operating board, which provides important guidance and helps decreasing the danger of injury, electric shock, fire, or any damage to the device.

2.4 Disclaimer

Steelcase, Inc. assumes no legal liability of accidents resulting from failure of conforming to the safety instructions.

2.5 Limitation of Liability/Non-warranty

For direct or indirect damage to this device or other devices of Steelcase, Inc. caused by failure of conforming to this manual or the safety instructions on device label, Steelcase, Inc.

assumes neither warranty nor legal liability even if the device is still under warranty.

2.6 Safety Instructions

- ✧ Keep and comply with all operation instructions, warnings, and information.
- ✧ Pay attention to warnings on this device.
- ✧ Read the following precautions so as to decrease the danger of injury, electric shock, fire, or any damage to the device.

2.7 Precautions

- ✧ Pay attention to the product labels/safety instructions printed on silk screens.
- ✧ Do not try repairing this product unless declared in this manual.
- ✧ Keep away from heat source, such as heater, heat dissipater, or engine casing.
- ✧ Do not insert other items into the slot (if any) of this device.
- ✧ Keep the ventilation slot ventilated for cooling.
- ✧ System fault may arise if other items are inserted into this device.
- ✧ Installation: ensure correct installation according to instructions from the manufacturer with recommended installation tools.
- ✧ Ensure ventilation and smoothness according to relevant ventilation standard.

2.8 Safety Instructions for Power Cables and Accessories

 Proper power source only

Start only with power source that satisfies voltage label and the voltage necessary according to this manual. Please contact technical support personnel of Steelcase, Inc. for any uncertainty about the requirements of necessary power source.

 Place cables properly:

Do not place cables at any place with extrusion danger.

 Cleaning Instructions

- ✧ Please power off before cleaning the device.
- ✧ Do not use spray detergent.
- ✧ Clean with a damp cloth.
- ✧ Do not try cleaning exposed electronic components unless with a dust collector.
- ✧ Support for special fault: Power off and contact technical support personnel of Steelcase, Inc. in case of the following faults:

- The device is damaged.
- The temperature is excessively high.
- Fault is still not solved after the operation according to the manual.

3 Over View

3.1 Introduction

NGS01 is an Ultra Low power Human Machine Interface Device based on Rockchip RK3288W;

3.2 Specifications

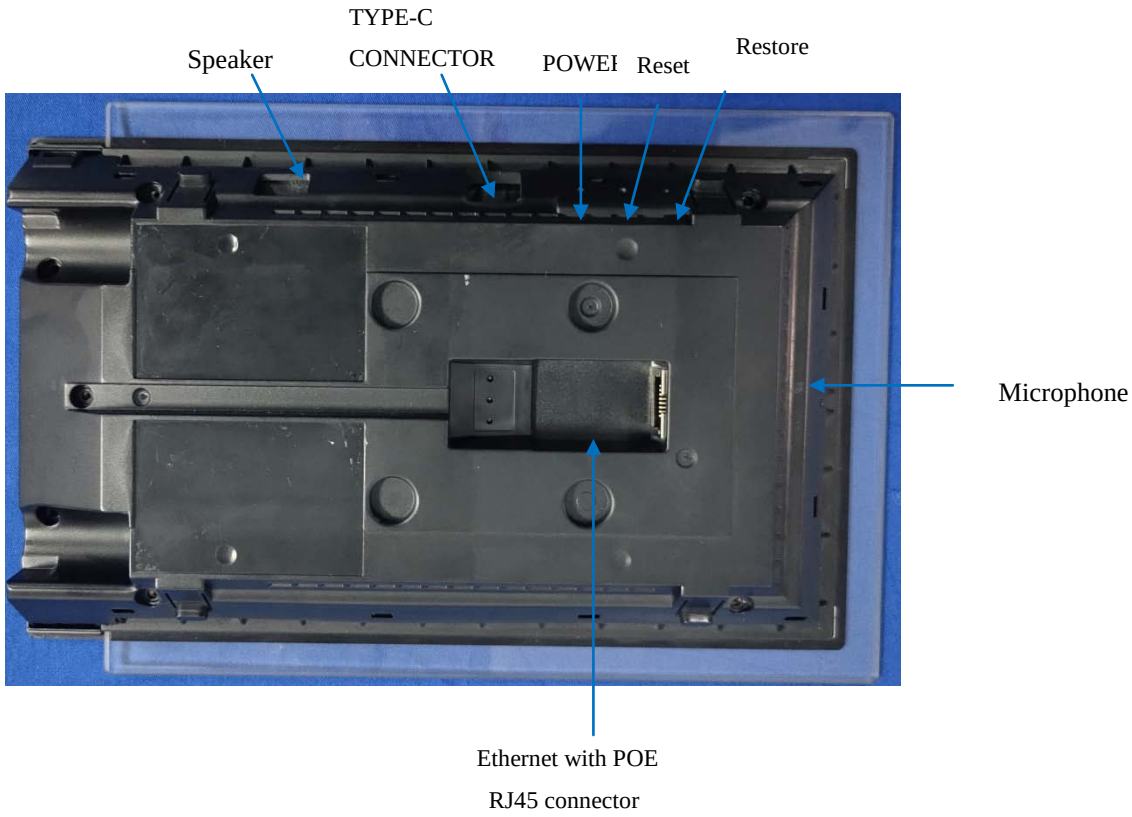
Specifications		
CPU	Processor	RockChip, RK3288W, ARM Cortex-A17, Quad Core, 1.6GHz
Memory	On Board RAM	LPDDR3 1866MHz, 2GB or 4GB
	ROM	EMMC5.1 32GB
Wireless Communication	WLAN/BT	WLAN Module,IEEE802.11a/b/g/n/ac , 2.4G/5G, BT 4.2, internal Antenna
Interfaces	Ethernet	1x1000M, with POE,IEEE 802.3at
	Speaker	1x1W 8Ω
	MIC	6x2.7mm , 38db
	LCD	7" ,1920X1200,16:9 400cd/m2(Min.)
	LED Light	Tri-Color LED Light Pipes
	RTC	Supported, separately RTC chip
Power	Input	42.5-57VDC 600mA
EEPROM	EEPROM	2Kb;
Mechanical	Dimension	217x144x30mm
	Weight	670g

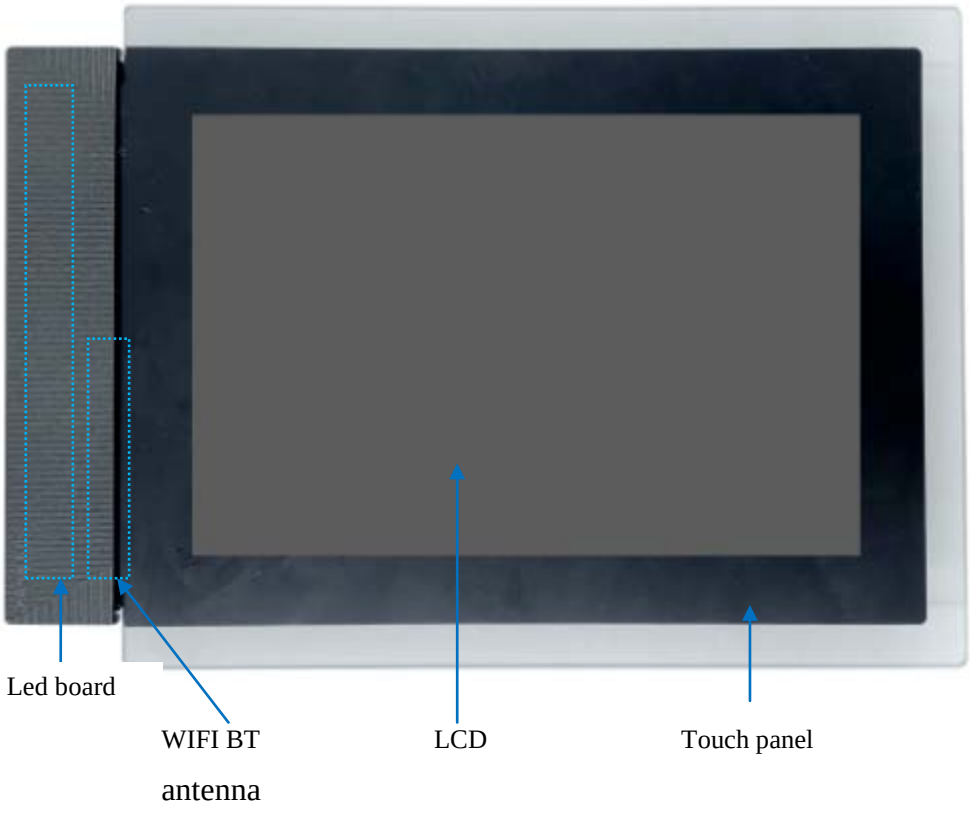
4 Hardware Instructions

4.1 Appearance

Front View

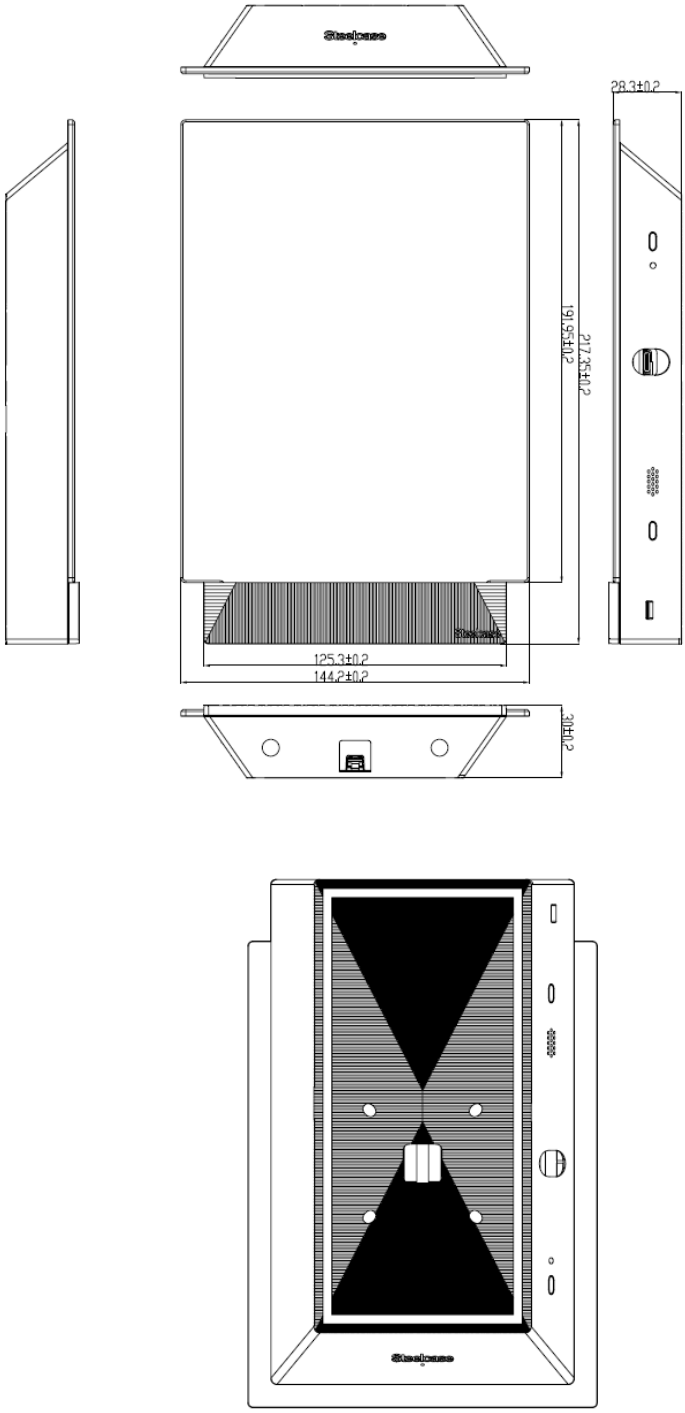
4.2 Interface Description





4.3 Structure

Get the device structure document from Steelcase, Inc. sustain.



Unit: mm

Figure 4-4

5 Hardware Operation Notes

This section provides a guide to set up and use the functions of the Device. For more detailed information on any aspect of thisdevice see Hardware Description.

5.1 Environment

The device should be assembled，debugged or used under suggested environment condition to avoid the risk of device damage. The working environment requirements are as follows:

Operation Temperature: 0°C ~ +40°C

Operation Humidity:5%-85%RH at 25-35 (No-Condensation)

6 Hardware Description

This chapter describes the hardware features, including switches, jumpers, connectors and function.

The interface description ought to consult the connector sketch map, and attach to necessary message such as picture. Indicate the feature of functions.

6.1 PowerIn and Ethernet

- Power input by POE, POE 802.3atcompliant.
- Ethernet:RJ45, 1000Mbps;

Position is shown as follow:

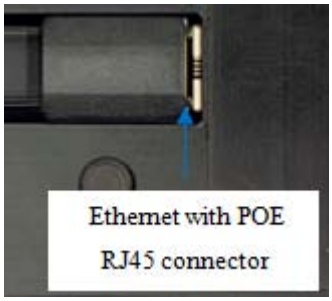


Figure 5-2: Power input interface

6.2 USB type-c

USB type-C connector for usb disk or usb cable for engineering commissioning. Position is shown as follow:

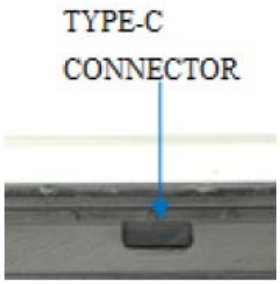
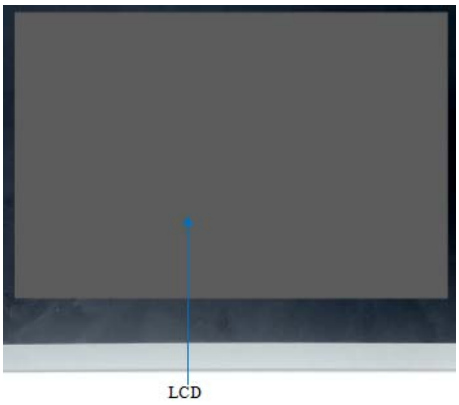


Figure 5-3: USB

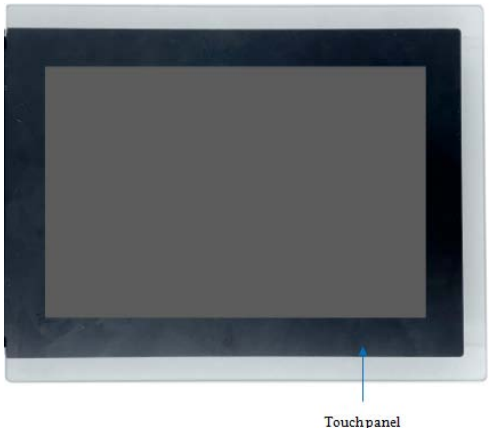
6.3 LCD

LCD：7" 1200x1920400cd/m2(min)，Position is shown as follow:



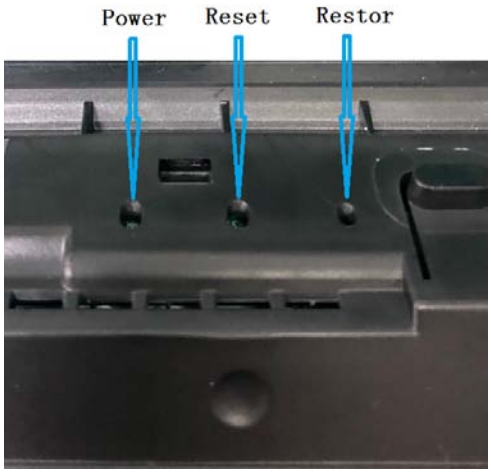
6.4 Touch panel

Support 5 points touch；lines：16+24；7"1200x1920；Position is shown as follow:



6.5 Buttons

Three buttons：reset，restore and power；Position is shown as follow:

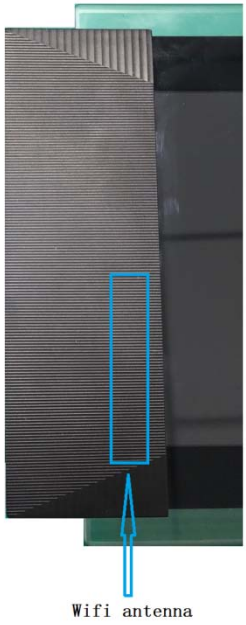


6.6 LED LIGHT BOARD

LED light board have six RGB lights that are used to decorate only， each light can be controlled by software, Position is shown as follow, :

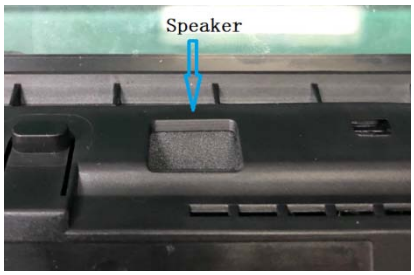
6.7 Antenna

Internal WLAN and BT antenna， Position is shown as follow:



6.8 Speaker

Internal 8Ω-1w speaker， Position is shown as follow:



6.9 Microphone

Internal 38db 6x2.7mm Microphone, Position is shown as follow:

7 Software Instructions

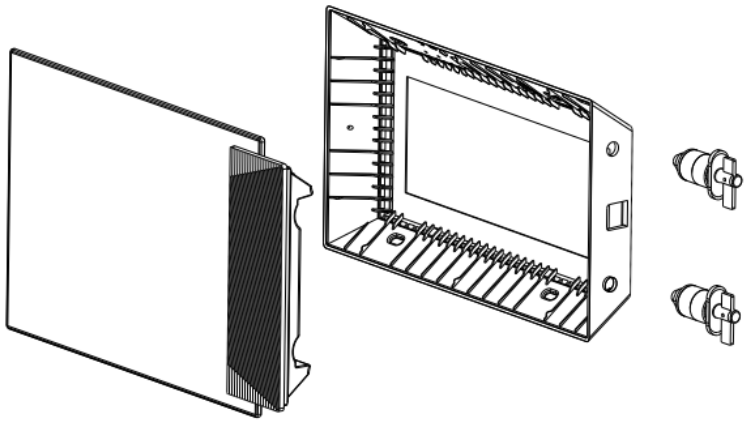
NGS01 has been pre-loaded software, please refer to Software User’s Manual.

8 Mechanical Instructions

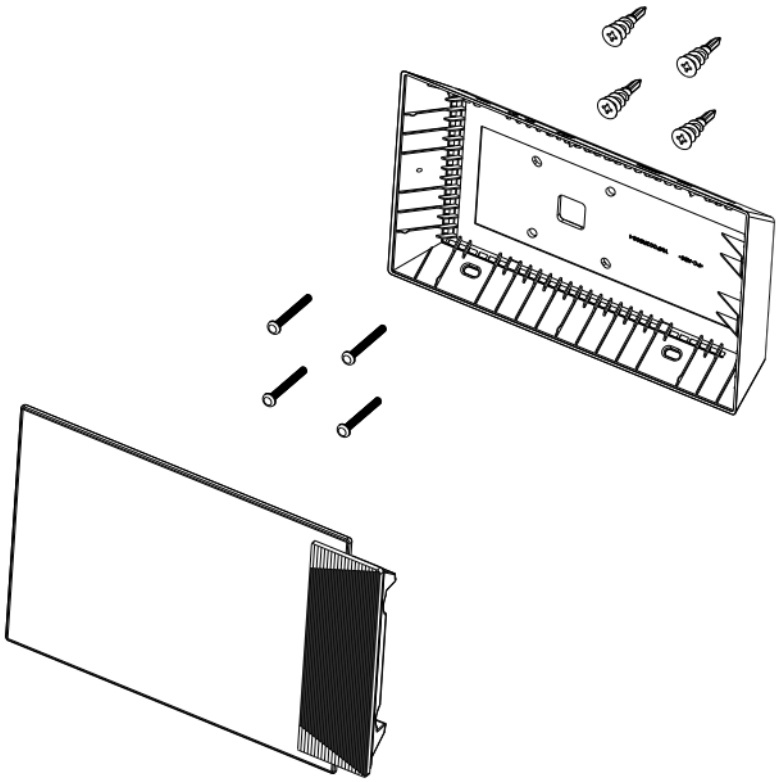
NGS01 have 3 different mount forms. The highest installation height is less than 2 meters.

As following image：

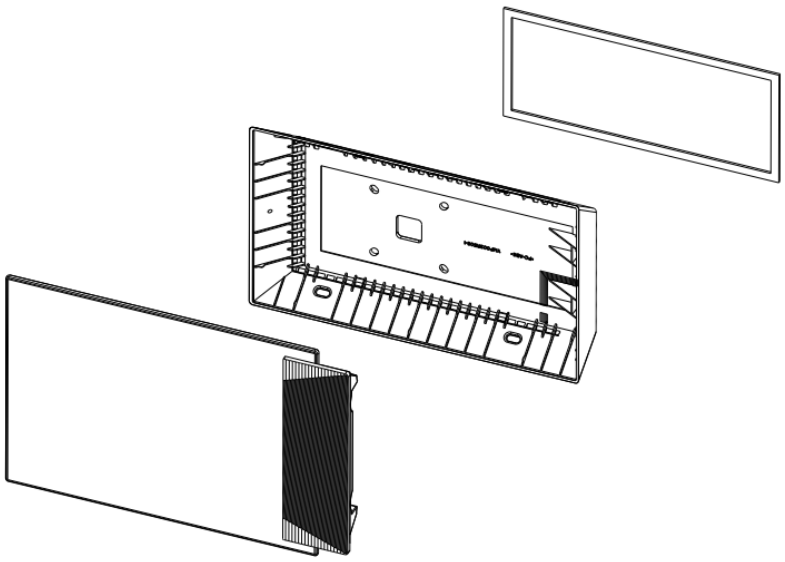
1) Side mounting on the wall



2) Back mounting on the wall



3) Paste mounting on the wall



9 Tips

 Waste Disposal

It is recommended to disassemble the device before abandoning it in conformity with local regulations. Products or product packages with the sign of "explosive" should not be disposed like household waste but delivered to specialized electrical&electronic waste recycling/disposal center. Proper disposal of this sort of waste helps avoiding harm and adverse effect upon surroundings and people's health. Please contact local organizations or recycling/disposal center for more recycling/disposal methods of related products.

Comply with the following safety tips:

 Do not use in combustible and explosive environment

Keep away from combustible and explosive environment for fear of danger.

 Keep away from all energized circuits.

Operators should not remove enclosure from the device. Only the group or person with factory certification is permitted to open the enclosure to adjust and replace the structure and components of the device. Do not change components unless the power cord is removed. In some cases, the device may still have residual voltage even if the power cord is removed. Therefore, it is a must to remove and fully discharge the device before contact so as to avoid injury.

 Unauthorized changes to this product or its components are prohibited.

In the aim of avoiding accidents as far as possible, it is not allowed to replace the system or change components unless with permission and certification. Please contact the technical department of Steelcase, Inc. or local branches for help.

 Pay attention to caution signs.

Caution signs in this manual remind of possible danger. Please comply with relevant safety tips below each sign. Meanwhile, you should strictly conform to all safety tips for operation environment.

 Notice

Considering that reasonable efforts have been made to assure accuracy of this manual, Steelcase, Inc. assumes no responsibility of possible missing contents and information,

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FCC Warning

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

FCC Caution

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The user manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

RF Exposure Statement

This equipment must be installed and operated in accordance with provide instructions and the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operation in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

ISED statement

This device complies with Innovation, Science and Economic Development Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) This device may not cause interference, and

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d' Innovation, science et développement économique au Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes:

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en

compromettre le fonctionnement.

RF Exposure Statement

This equipment must be installed and operated in accordance with provide instructions and the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operation in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

ce matériel doit être installé et exploité conformément à des instructions et l'antenne utilisée pour cet émetteur doit être installé pour fournir une distance d'au moins 20 cm de toutes les personnes et ne doit pas être installé ou opération conjointement avec toute autre antenne ou transmitter.les utilisateurs finals et les installateurs doivent fournir des instructions d'installation et d'antennes - conditions relatives à l'exposition aux champs rf de conformité.