
SE1700 SMART Edge Server Video Analytics Platform

Getting Started Guide

P/N: 6806876A04B

July 2020



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About this Manual

Overview of Contents

This manual is divided into the following sections.

- [Chapter 1, Getting Started on page 13](#)
- [Chapter 2, Software on page 25](#)



Abbreviations






This document uses the following abbreviations:

Abbreviation	Definition
BMC	Baseboard Management Controller
CPU	Central Processing Unit
DDR	Double Data Rate
DHCP	Dynamic Host Configuration Protocol
ESD	Electro-static Discharge
GPU	Graphics Processing Unit
HDD	Hard Disk Drive
IPMI	Intelligent Platform Management Interface
LAN	Local Area Network
LED	Light Emitting Diode
NVME	Non-volatile Memory Express
PCIe	PCI Express
PSU	Power Supply Unit
RDIMMM	Registered Dual Inline Memory Module
TPE	Twisted Pair Ethernet
UID	Unit Identifier
USB	Universal Serial Bus
VGA	Video Graphics Adapter

Conventions

The following table describes the conventions used throughout this manual.

Notation	Description
0x00000000	Typical notation for hexadecimal numbers (digits are 0 through F), for example used for addresses and offsets
0b0000	Same for binary numbers (digits are 0 and 1)
bold	Used to emphasize a word
Screen	Used for on-screen output and code related elements or commands. Sample of Programming used in a table (9pt)
Courier + Bold	Used to characterize user input and to separate it from system output
<i>Reference</i>	Used for references and for table and figure descriptions
File > Exit	Notation for selecting a submenu
<text>	Notation for variables and keys
[text]	Notation for software buttons to click on the screen and parameter description
...	Repeated item for example node 1, node 2, ..., node 12
.	Omission of information from example/command that is not necessary at the time
..	Ranges, for example: 0..4 means one of the integers 0,1,2,3, and 4 (used in registers)
	Logical OR
	Indicates a hazardous situation which, if not avoided, could result in death or serious injury
	Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury

Notation	Description
	Indicates a property damage message
	Indicates a hot surface that could result in moderate or serious injury
	Indicates an electrical situation that could result in moderate injury or death
<p>Use ESD protection</p> 	Indicates that when working in an ESD environment care should be taken to use proper ESD practices
	No danger encountered, pay attention to important information

Summary of Changes

This manual has been revised and replaces all prior editions.

Part Number	Publication Date	Description
6806876A04B	July 2020	Updated installation procedures and safety information in Section 1.4.
6806876A04A	June 2020	Initial release.

Getting Started

1.1 Introduction

The SE1700 SMART Edge Server is a 1U server and is referred to in this document as the SE1700. The SE1700 motherboard features the AMD EPYC CPU with DDR4 memory, M.2 storage devices, and a PCI Express (PCIe) GPU card.

The SE1700 video analytics platform solution for retail applications can process up to eight cameras and provide the ability for retailers to analyze customer trends, buying habits, and other customer information without storing personally identifiable information.

1.2 Audience

SE1700 installers and users

1.3 Product Overview

1.3.1 Features

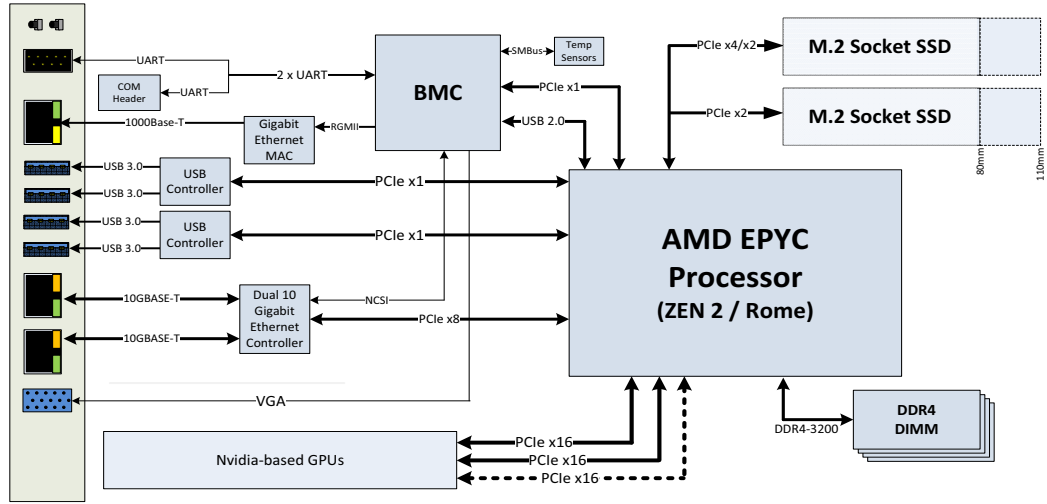
The main features of the SE1700 SMART Edge Server include:

- AMD EPYC 7282 16-core processor (Rome)
- Up to 2TB DDR4 memory operating at 2400MT/s (Default: 64GB)
- Eight (8) independent DDR4 memory channels with one (1) RDIMM per channel
- Standard EIA-310-D 1U form factor
- Up to three (3) x16 PCIe single-wide slots for supported add-on cards (Default: two (2) slots)
 - Up to three (3) NVIDIA Tesla T4 Accelerator
 - One (1) NVIDIA 2080 Ti Accelerator
- Dual 10Gb Ethernet Controller
- Baseboard Management Controller (BMC) supporting:
 - Two (2) redundant Ethernet links
 - Serial over LAN (SOL) to baseboard
 - KVM (VGA) interface to baseboard

1.3.2 Block Diagram

This block diagram shows the major functions and interfaces of the SE1700.

Figure 1-1 SE1700 Block Diagram



1.3.3 Power Requirements

Table 1-1 System Power Requirements

Feature	Value
Voltage	100 to 240VAC
Current	7.5A to 3.5A
Rated frequency	50-60Hz
Chassis maximum power	600W

1.3.4 Dimensions and Weight

The table below lists the dimensions and weight of the SE1700 with system components installed.

Table 1-2 Dimensions and Weight of System

Component	Dimensions W x H x D	Weight
Server (excluding mounting rails)	17.21 in x 1.7 in x 16.9 in (437mm x 43mm x 429mm)	17.0 lbs (7.7kg)

1.3.5 Environmental Conditions

The SE1700 is designed to operate under the following environmental conditions.

Table 1-3 Environmental Conditions

Characteristic	Condition
Storage temperature	-40°C to +70°C
Operating temperature	0°C to 40°C ¹
Humidity range	20% to 90% non-condensing (preliminary)

1. Ambient temperature is defined at the inlet to the SE1700. Some installation locations may have local hot spots that may negatively affect operation.

1.3.6 Chassis User Interfaces

1.3.6.1 Chassis Controls and LEDs

The chassis controls and LED location/functionality is shown in the following figure and tables.

Figure 1-2 Chassis Controls and LED Locations

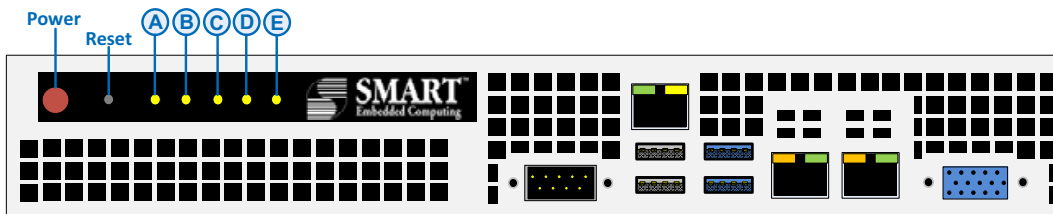


Table 1-4 LED Descriptions

LED	Description
A	Power Indicator
B	HDD Activity
C	ETH0 Activity
D	ETH1 Activity
E	System Status LED

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Table 1-5 System Status LED Information

LED Color/Behavior	Description
Solid Red	An overheat condition occurred
Blinking Red (Fast - 1 second)	Fan failure
Blinking Red (Slow - Every 4 seconds)	PSU failure
Solid Blue	Local UID has been activated
Blinking Blue (Very fast - Every 0.3 seconds)	Remote UID is on

1.3.6.2 Front Panel I/O Interfaces

Figure 1-3 I/O Interface Locations

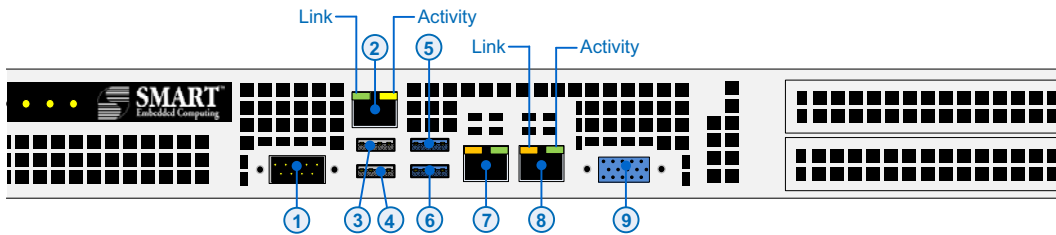


Table 1-6 LAN/Port Descriptions

Port	Description	Port	Description
1	Serial Console DE9 (COM0)	6	USB 3 (3.1)
2	IPMI 10/100/1000 LAN Port (Dedicated BMC)	7	LAN Port ETH0 (Shared by BMC)
3	USB 0 (3.1)	8	LAN Port ETH1
4	USB 1 (3.1)	9	VGA Port
5	USB2 (3.1)		

Table 1-7 ETH0/ETH1 LEDs

LED	Color/Behavior	Description
Link	Off	No link
	Amber	1Gb/s
	Green	10Gb/s
Activity	Flashing Green	Link activity

Table 1-8 IPMI LAN LEDs

LED	Color/Behavior	Description
Link	Off	No link
	Amber	1Gb/s
	Green	10/100Mb/s
Activity	Flashing Yellow	Link activity

1.3.7 Regulatory Compliances

The SE1700 complies with the following:

Table 1-9 Regulatory Standards

Standard	Description
ULCSA 60950-1 EN 60950-1 IEC 60950-1 CB Scheme	Safety requirements
Directive (EU) 2015/863 (amending Annex II to Directive 2011/65/EU)	Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)
EN 55032 Class A (EU) EN 55024 (EU) ETSI EN 300 386 FCC 47 CFR Part 15 Subpart B (US), Class A	EMC requirements
IEC 62368-1:2014 IEC 62368-1:2018	Audio/Video, Information and Communication Technology Equipment - Safety Requirements
CE	Certified

1.3.8 Fan Control

Fans are autonomous and no direct control is offered or required.

1.4 Setting up the SE1700

1.4.1 What's in the Box

Make sure you receive all items of your shipment:

- One SE1700
- One power cable
- Mounting brackets



When installing or servicing the system or accessories, strictly observe the safety precautions noted in this document. Otherwise, personal injury or property damage may occur. Ignoring these instructions can void the system warranty.

Use ESD protection



Use a properly grounded ESD wrist strap or make sure that you are working in an ESD safe environment.

1.4.2 Additional Items Required

Provide a Twisted Pair Ethernet (TPE) cable for connecting from the LAN1 port on the SE1700 to the upstream network.

1.4.3 Prepare the Installation Site



System is to be installed in a restricted access location by trained personnel according to the installation instructions.

Read all installation instructions in this manual before you install the system.

Basic site planning and installation requirements include the following:

- Make sure that all environmental and power requirements defined are met.
- 600W power should be available for the SE1700 system
- System should be positioned so that a power source is easy to reach
- Sufficient space should be available in racks to install the system

- Suitable equipment should be available to lift the system into the rack
- Cables must be long enough to reach the system
- Make sure the inlet and outlet of the SE1700 is not blocked

1.4.4 Mounting Options

The SE1700 can operate on a table top or it can be installed in a standard 19" rack.

When operating the system on a table top or in a rack, you must allow for 50mm (2 inches) on each side of the server for proper airflow.



During the course of handling, shipping, and assembly, the pins, shrouds and mounting screws, fans and other items can become loose or damaged. Do not operate a damaged shelf, this can cause damage to installed devices.

1.4.5 Installation in a 19" Rack



Stability Hazard

The rack may tip over causing serious personal injury.



Personal or System Damage

Unstable system installation in a rack can cause the rack to tip over.

If your system is the only one in the rack, make sure to mount the system in the lowest part of the rack. If other systems are installed in one rack, start with the heaviest component at the bottom.

If the rack is equipped with stabilizing devices, make sure that they are installed and extended so that the rack is secure. Then proceed to mount or service the system.

Rack configuration may vary. Always refer to the mounting guidelines for the rack that you are using.

The mounting mechanism has three sections per side as shown in [Figure 1-4](#):

- Long bracket
- Short bracket
- Inner section (pre-attached to the SE1700 and does not need to be adjusted)

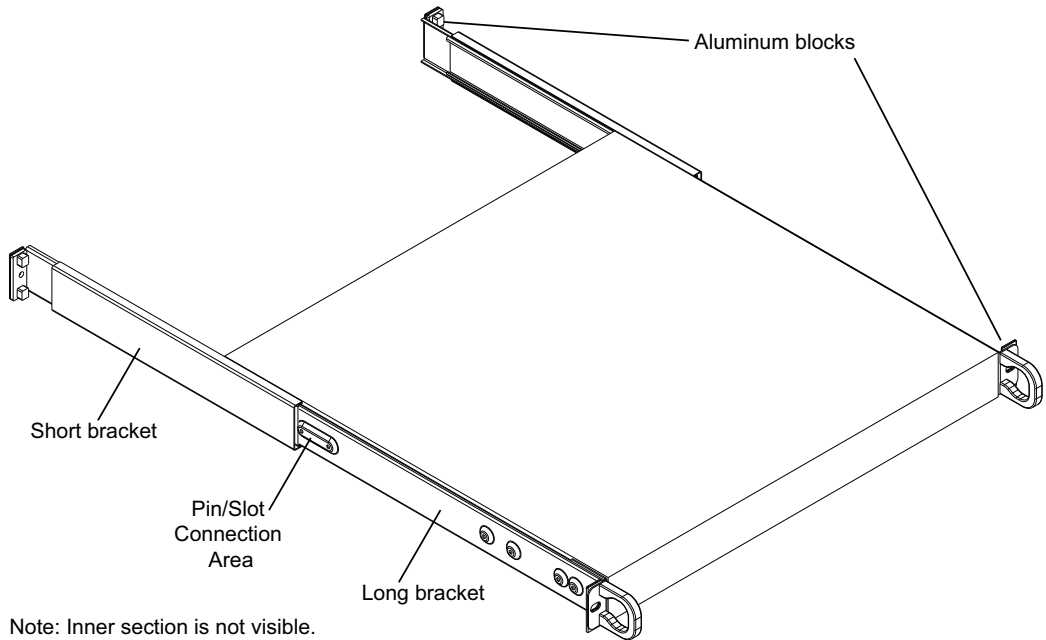
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The short and long brackets connect together and attach to the rack to provide the adjustable element between the vertical rack rails.



The short and long brackets are equipped with aluminum blocks to facilitate installation in the rack (See [Figure 1-4](#)). These aluminum blocks may need to be removed for installation in some rack styles.

Figure 1-4 SE1700 Mounting Mechanism



Procedure – Attach Mounting Mechanisms to Rack

1. Determine the height desired for installation in the rack.



Equipment should be inserted into racks from bottom to top to aid in stability.

2. Connect the short and long bracket at the desired length by inserting the pin on one section into the slot from the other section.



The combined assembly should fit snugly between the inside surfaces of the vertical rack mounting rails.

If necessary, the aluminum blocks can be removed from the brackets to accommodate your rack style.

3. Place the bracket assembly in position between the vertical rack mounting rails at the desired height. The short end of the bracket has features to assist in this and should be oriented towards the rear of the rack.
4. Secure this bracket assembly to the vertical rails. Two M5 screws will be needed in the front and three will be needed in the rear.
5. Repeat steps 1-4 on the opposite side of the rack.



When both bracket assemblies are level and secured to the vertical rack rails, they form the slide rails for the chassis to be installed.

Procedure – Install the SE1700 Chassis in the Rack

1. Lift the chassis horizontally. Do not lift with the handles on the front of the server.
2. Align the pre-installed rails on both sides of the chassis with the bracket assemblies that were installed in the rack.
3. Using even pressure, push the chassis completely into the rack.



The pre-installed rails on the sides of the chassis incorporate a locking feature, and it may be necessary to depress the tabs when inserting the system into the rack.

4. Secure the chassis to the rack with the appropriate rack screws.



**Do not put any load or pressure on the chassis during the installation process.
Make sure the chassis is secured in the rack before operation.**

NOTE: The SE1700 can also be placed on a table top.

Getting Started

1.4.6 Power Up the System

Use ESD protection



Use a properly grounded ESD wrist strap or make sure that you are working in an ESD safe environment.

NOTICE

Grounding

The AC PSU, once connected, provides the necessary grounding needed.

Procedure

To power up the system, follow these steps:

1. Connect the power cord to the SE1700 and plug into a power source
2. When AC power is applied, the BMC powers up
3. Press the Power button or login to the BMC to power up the system

Important Information

If AC power was removed while the system was powered up, the BMC will power it up automatically when AC is restored.

Pressing the power button after the system has been powered up triggers a graceful shutdown of the system.

1.4.7 Power Down the System

Use ESD protection



Use a properly grounded ESD wrist strap or make sure that you are working in an ESD safe environment.

Procedure

To power down the system, follow these steps:

1. Login to the BMC
2. Select the Remote Control tab
3. Select Power Control
4. Select Power Off Server - Orderly Shutdown

5. Select Perform Action

This will trigger a graceful shutdown of the server.



Pressing the power button after the system has been powered up also triggers a graceful shutdown of the system

Software

2.1 Software Introduction

The SE1700 comes with software and firmware pre-installed and ready for use when the system powers up. The CPU is initially configured to boot an Ubuntu Server LTS 18.04.4 with NVIDIA Drivers 440.59. System management and monitoring is accomplished through the BMC and provides a standard IPMI implementation.

2.2 Installed Software

For details of the software package installed on the SE1700, please refer to the links that follow:

- Operating System
<https://ubuntu.com/blog/tag/ubuntu-18-04>
- Drivers
<https://www.nvidia.com/Download/index.aspx>

2.2.1 Default Network Configuration

A default network configuration is enabled as shown in the following tables.

Table 2-1 Network Configuration

Interface	Description	Default IP Address ¹
ETH0	Front panel interface shared by CPU and BMC	Configured to obtain IP address via DHCP (CPU and BMC)
ETH1	Front panel interface for CPU	192.168.1.100
BMC	Dedicated BMC interface	Configured to obtain IP address via DHCP

1. Default IP address may be modified based on the customer network and location of installation

2.2.1.1 Changing the ETH0/ETH1 IP Address

The system is running Ubuntu Server 18.04. The network IP configuration tool is netplan. To get more information on netplan please use see the man page (man netplan) or visit <https://netplan.io/examples>.

The file that controls these assignments is: `/etc/netplan/01-netcfg.yaml` :

```
# This file describes the network interfaces available on your system
# For more information, see netplan(5).
```

```
network:
  version: 2
  renderer: networkd
  ethernets:
    eth0:
      dhcp4: yes
    eth1:
      addresses:
        - 192.168.1.100/24
```

To change ETH0 from DHCP to a static IPV4 address, replace **dhcp4: yes** with something like the following (example DNS servers shown):

```
ethernets:
  eth0:
    addresses:
      - n.n.n.n/n
    gateway4: n.n.n.n
    nameservers:
      addresses: [ 1.1.1.1, 8.8.8.8 ]
```

Then execute the following to make/verify the change:

```
netplan generate
netplan apply
ifconfig eth0
```

2.2.1.2 Changing the BMC IP Address

Login to the server CPU and use `ipmitool lan` commands to change the BMC IP address.

For example, to set/verify a static IPV4 address for the BMC:

```
ipmitool lan set 1 ipsrc static
ipmitool lan set 1 ipaddr n.n.n.n
ipmitool lan set 1 netmask n.n.n.n
ipmitool lan set 1 defgw ipaddr n.n.n.n
ipmitool lan print 1
```

2.2.2 Baseboard Management Controller (BMC)

The BMC could be reached via its web interface using "https://<BMC IP address>".

The BMC user name is ADMIN (all caps) and the password is in the server's front tab.

The BMC IP address can be reached via the dedicated IPMI LAN port, -or- ETH0, whichever has Link. If both have Link, the IPMI LAN port has priority.

Related Documentation

A.1 SMART Embedded Computing Documentation

The documentation listed is referenced in this manual. Technical documentation can be found by using the Documentation Search at <https://www.smartembedded.com/ec/support/> or you can obtain electronic copies of SMART EC documentation by contacting your local sales representative.

Table A-1 SMART EC Documentation

Document Title	Documentation Number
<i>Video Analytics Brochure</i>	N/A
SE1700 SMART Edge Server Quick Reference	6806876A05
SE1700 SMART Edge Server Safety Notes Summary	6806876A02

Related Documentation

