Omnitron Systems

Application Note

iConverter®
Managed Fiber Media Converter Product Family

iConverter XG, XG+ and XGT+
Chassis Installation Guidelines for Airflow and Cooling

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1.0 SCOPE

This application note provides chassis, power and airflow installation guidelines for the iConverter XG, XG+ and XGT+ plug-in media converter modules. This application note can be used in conjunction with Omnitron Application Note 002-A0007, which provides selection guidelines between the XG and the XG+ products.

Chassis installation guidelines for the plug-in model numbers listed in Table 1a and 1b are addressed within this document. Section 2.0 outlines the requirements when using XG plug-in modules and Section 3.0 outlines the requirements when using an XG+ or XGT+ plug-in module.

	Plug-in Module Module Numbers	Port 1	Port 2
XG	8599-00	SFP+	SFP+
	8599-01	SFP+	XFP
	8599-11	XFP	XFP
XG+	8599N-01	SFP+	XFP
	8599N-11	XFP	XFP
XGT+	8589N-0	SFP+	RJ45
	8589N-1	XFP	RJ45

Table 1a: Discontinued XG/XG+ and Current XGT+ Model Numbers

	Plug-in Module Module Numbers	Port 1	Port 2
XG	8599P-00	SFP+	SFP+
	8599P-01	SFP+	XFP
	8599P-11	XFP	XFP
XG+	8599R-00	SFP+	SFP+
	8599R-01	SFP+	XFP
	8599R-11	XFP	XFP

Table 1b: Replacement XG/XG+ Model Numbers

Standalone modules do not have any power supply or airflow restrictions, however, do not cover the fan or any ventilations holes on the module during the installation. Also, check the individual data sheets for appropriate transceiver recommendations.

2.0 XG PLUG-IN MODULE REQUIREMENTS

The discontinued and replacement XG plug-in model numbers shown in Table 2a and 2b do not generate elevated levels of heat, and for most chassis installations may not require any specific airflow/cooling or spacing requirements. See Notes on page 4 for special instructions.

	Plug-in Module Module Numbers	Port 1	Port 2
XG	8599-00	SFP+	SFP+
	8599-01	SFP+	XFP
	8599-11	XFP	XFP

Table 2a: Discontinued XG Model Numbers

	Plug-in Module Module Numbers	Port 1	Port 2
XG	8599P-00	SFP+	SFP+
	8599P-01	SFP+	XFP
	8599P-11	XFP	XFP

Table 2b: Replacement XG Model Numbers

The following chassis are recommended.

Model Number	Description
8242-x	1-Module Chassis, 8.3W PS, 100-240VAC
8245-xxx-Z, 8246-xxx-Z, 8247-xxx-Z, 8248-xxx-Z	1-Module Redundant Power Chassis with Power over Ether (PoE) Option, variety of AC and DC powering options, extended temperature models, with Fan
8270-x	1-Module Industrial Chassis, +/-12 to +/-36 VDC or +/-20 to +/-60 VDC, with single or dual power
8230-x	2-Module Chassis, 8.5W PS, 100-240VAC
8231-x	2-Module Chassis, 16.5W PS, 100-240VAC, with Temp Controlled Fan
8232-x	2-Module Chassis, 16.5W High Airflow PS, 100-240VAC, with Fan
8235-x	2-Module Chassis, 6.6W PS, 18 to 60VDC
8236-x	2-Module Chassis, 16.5W PS, 18 to 60VDC, with Temp Controlled Fan
8238-x	2-Module Chassis, 16.5W High Airflow PS, 18 to 60VDC, with Fan
8220-x	5-Module Chassis, 33W PS, 100-240VAC, with Fan
8221-x	5-Module Chassis, 66W High Airflow PS, 100-240VAC, with Fan
8226-x	5-Module Chassis, 33W PS, 18 to 36VDC, with Fan
8225-x	5-Module Chassis, 33W PS, 36 to 60VDC, with Fan
8227-x	5-Module Chassis, 66W High Airflow PS, 36 to 60VDC, with Fan
8200-x	19-Module Chassis, 60W PS, 100-240VAC, with Fan
8201-x	19-Module Chassis, 120W High AirFlow PS, 100-240VAC, with Fan
8206-x	19-Module Chassis, 66W PS, 18 to 36VDC, with Fan
8205-x	19-Module Chassis, 66W PS, 36 to 60VDC, with Fan
8207-x	19-Module Chassis, 120W High Airflow PS, 36 to 60VDC, with Fan

Table 3. Recommended Chassis fort XG Modules

Consult the Power Calculator Tool to make sure there is sufficient power to support the installed iConverter module. If slots are empty, it is recommended that a blank panel (8090-0) is installed ensure even and consistent airflow throughout the chassis.

https://www.omnitron-systems.com/power-calculator

Use the link above to access the online Power Calculator Tool or visit the Support section on Omnitron's website. The tool guides the user in selecting the appropriate power supply(s) for the selected chassis, to ensure sufficient power is available for the selected plug-in module.

NOTES:

1. **It is recommended for chassis with fans that all empty slot have a blank panel (8090-0) installed.**
2. **The XG module can be installed in High Airflow chassis.**
3. **The commercial temperature XG module requires an extended operating temperature 1-Module Redundant Chassis with fan.**
4. **Only one XG module can be installed in a 2-Module Chassis listed above. The XG module must be installed in the bottom slot of the chassis. The top slot can be populated with another iConverter module, such as the NMM2.**
5. **A 2-Module Chassis without a fan does not require a blank panel if only one module is installed.**

3.0 XG+ AND XGT+ PLUG-IN MODULES REQUIREMENTS

The XG+ and XGT+ models shown in Table 4a and 4b can generate elevated levels of heat depending on the installed transceivers. The appropriate chassis must be selected to meet the appropriate power and airflow requirements for these modules.

	Plug-in Module Module Numbers	Port 1	Port 2
XG+	8599N-01	SFP+	XFP
	8599N-11	XFP	XFP
XGT+	8589N-0	SFP+	RJ-45
	8589N-1	XFP	RJ-45

Table 4a: Discontinued XG+ and Current XGT+ Model Numbers

	Plug-in Module Module Numbers	Port 1	Port 2
XG+	8599R-00	SFP+	SFP+
	8599R-01	SFP+	XFP
	8599R-11	XFP	XFP

Table 4b: Replacement XG+ Model Numbers

The Discontinued XG+ module does not have a SFP+/SFP+ model.

Consult the Power Calculator Tool to make sure there is sufficient power to support the installed iConverter module. If slots are empty it must have a blank panel (8090-0) covering the slot to ensure even and consistent airflow throughout the chassis.

https://www.omnitron-systems.com/power-calculator

Use the link above to access the online Power Calculator Tool or visit the Support section on Omnitron's website. The tool guides the user in selecting the appropriate power supply(s) for the selected chassis, to ensure sufficient power and airflow is available for the selected plug-in module.

3.1 Installation Guidelines When Using the 19-Module Chassis

When installed in the iConverter 19-Module Chassis, the XG+ and XGT+ plug-in modules require one or more 120W High Airflow power supplies. These power supplies have high capacity fans which provide sufficient airflow and cooling for the module(s). Table 5 provides the model numbers for the available 19-Module High Airflow Chassis.

Model Number	Description
8201-1	19-Module Chassis with one (1) 120W High AirFlow PS, 100-240VAC, with Fan
8201-2	19-Module Chassis with two (2) 120W High AirFlow PS, 100-240VAC, with Fan
8201-3	19-Module Chassis with three (3) 120W High AirFlow PS, 100-240VAC, with Fan
8207-1	19-Module Chassis with one (1) 120W High Airflow PS, 36 to 60VDC, with Fan
8207-2	19-Module Chassis with two (2) 120W High Airflow PS, 36 to 60VDC, with Fan
8207-3	19-Module Chassis with three (3) 120W High Airflow PS, 36 to 60VDC, with Fan

Table 5. 19-Module Chassis used with XG+ and XGT+ Modules

When installing XG+/XGT+ modules in the 19-Module Chassis, the slot to the right of the installed XG+/XGT+ must be empty and a blank panel (8090-0) must be installed over the empty slot. Also, all unused slots must have a blank panel installed.

Each 120W High Airflow power supply can support up to 6 iConverter modules installed in the chassis, and three of the six modules can be XG+/XGT+. The XG+/XGT+ modules must be installed directly in front of the installed High Airflow power supply and all empty slots must have a blank panel installed. The other iConverter modules can be installed anywhere in the chassis.

Power Supply Chassis Slot Number	Supported XG+/XGT+ Module Chassis Slot Numbers
Slot 20	Slots 14 - 19
Slot 21	Slots 8 - 13
Slot 22	Slots 1 - 7

Table 6. 19-Module Chassis Power Supply and XG+/XGT+ Module Slot Positions

The figure below shows the relationship between the power supply slots and the appropriate slots for the installed XG+/XGT+ modules.

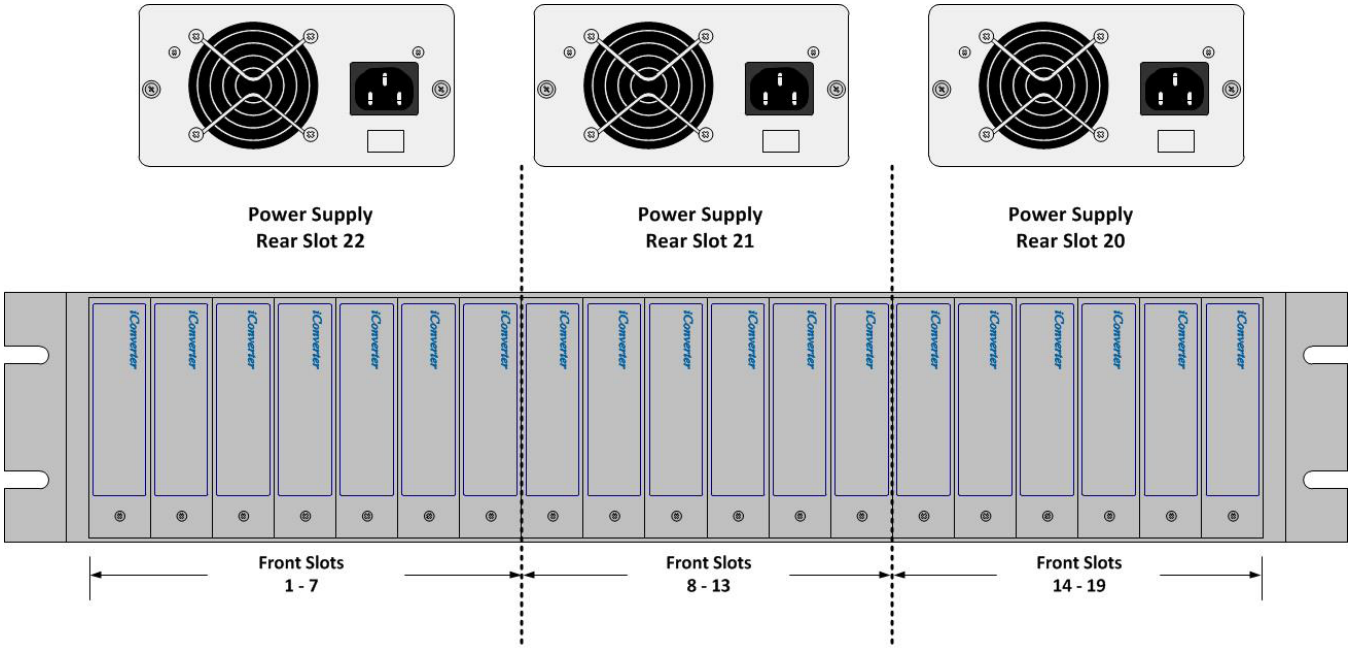

Figure 1. 19-Module Chassis Power Supplies with Supported Module Slot Positions

Figure 2 shows one (1) 120W High Airflow power supply installed in slot 22 and three XG+ modules installed in the appropriate chassis slots. This configuration will provide sufficient airflow and cooling for the modules. Three additional iConverter modules can be installed anywhere in the chassis that does not violate the spacing requirements of the XG+ modules.

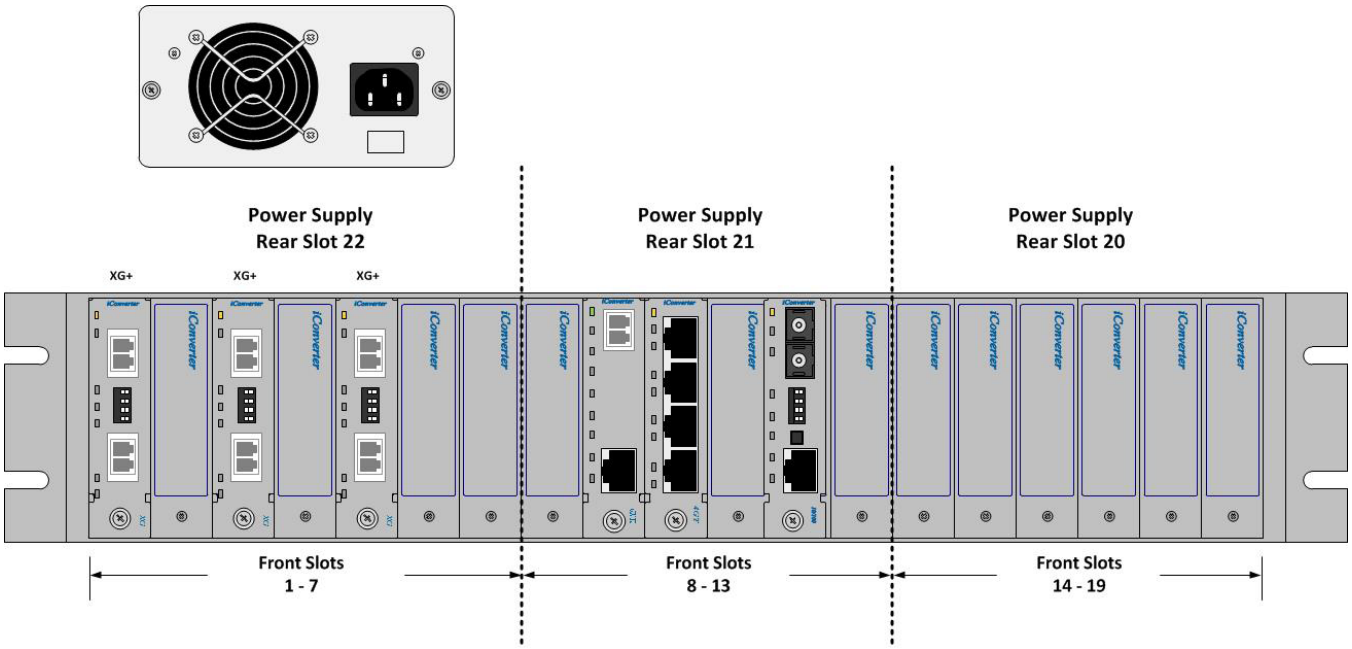

Figure 2. Properly Configured 19-Module Chassis and XG+ Modules

A maximum of nine (9) XG+/XGT+ modules can be installed in a 19-Module Chassis when configured with three (3) 120W High Airflow power supplies installed.

The following figure shows a properly configured 19-Module Chassis fully populated with one NMM2, nine XG+ modules, blank panels and three 120W High Airflow power supplies.

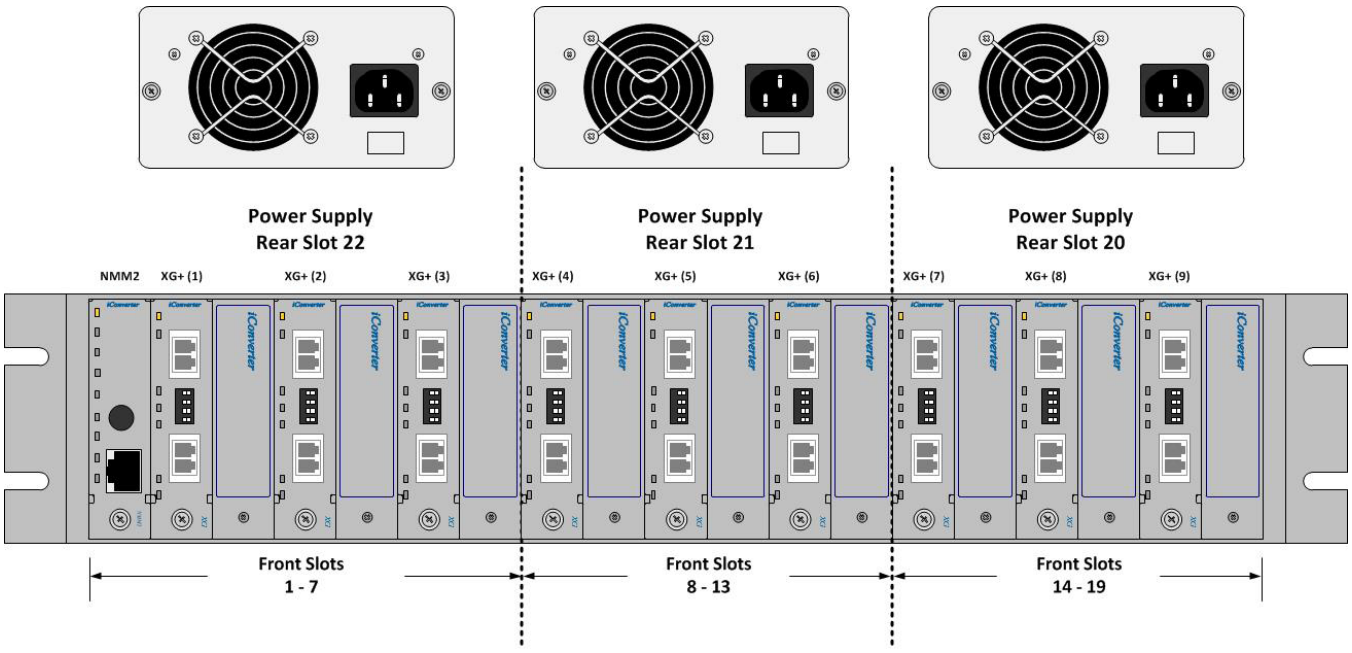

Figure 3. 19-Module Chassis with Nine XG+ Modules

An existing 19-Module Chassis can be retrofitted to support the XG+/XGT+ modules by replacing the power supply in the chassis with 120W High Airflow power supplies. The number of 120W High Airflow power supplies required will depend on the number of XG+/XGT+ modules installed. Table 7 provides the model numbers for the High Airflow power supplies available for the 19-Module Chassis.

The modules installed in the chassis may need to be repositioned in order to meet the airflow and spacing requirements of the XG+/XGT+ modules as stated in this section.

Model Number	Description
8201-9	Spare 19-Module Chassis with one (1) 120W High AirFlow PS, 100-240VAC, with Fan
8207-9	Spare 19-Module Chassis with one (1) 120W High Airflow PS, 36 to 60VDC, with Fan

Table 7. 19-Module Chassis Spare Power Supplies

NOTES:

1. **All empty or unused slots must have a blank panel installed. This includes all front and rear slots.**
2. **High Airflow power supplies (120W) cannot be installed in the same chassis with other types of power supplies.**
3. **XG modules can be installed into any slot as long as the XG+/XGT+ requirements are maintained.**

3.2 Installation Guidelines When Using the 5-Module Chassis

When installed in the iConverter 5-Module Chassis, the XG+ and XGT+ plug-in modules require at least one (1) 66W High Airflow power supply. These power supplies have high capacity fans which provide sufficient cooling for the module(s). Table 8 provides the model numbers for the available 5-Module High Airflow Chassis.

Model Number	Description
8221-1	5-Module Chassis with one (1) 66W High Airflow PS, 100-240VAC, with Fan
8221-2	5-Module Chassis with two (2) 66W High Airflow PS, 100-240VAC, with Fan
8227-1	5-Module Chassis with one (1) 66W High Airflow PS, 36 to 60VDC, with Fan
8227-2	5-Module Chassis with two (2) 66W High Airflow PS, 36 to 60VDC, with Fan

Table 8. 5-Module Chassis with High Airflow Power Supplies

At least one High Airflow power supply must be installed in the chassis.

An XG+/XGT+ module can be installed in any or all slots in the 5-Module Chassis. All empty slots must have blank panels (8090-0) installed, which will ensure even and consistent airflow throughout the chassis. A maximum of five (5) XG+/XGT+ modules can be installed in a 5-Module Chassis.

The following figure shows a 5-Module Chassis fully populated with five XG+ modules.

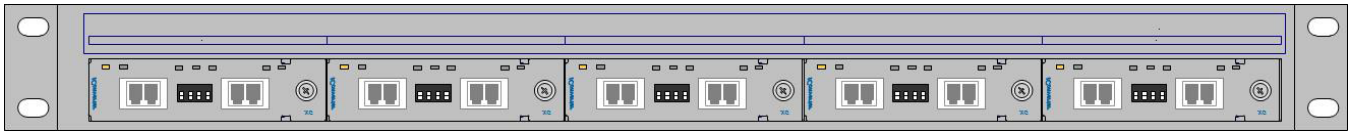

Figure 4. 5-Module Chassis with Four XG+ Modules

An existing 5-Module Chassis can be retrofitted to support XG+/XGT+ modules by replacing the power supplies in the chassis with 66W High Airflow power supplies. The table below indicates the model numbers for the High Airflow power supplies available for the 5-Module Chassis.

Model Number	Description
8221-9	Spare 5-Module Chassis with one (1) 66W High AirFlow PS, 100-240VAC, with Fan
8227-9	Spare 5-Module Chassis with one (1) 66W High Airflow PS, 36 to 60VDC, with Fan

Table 9. 5-Module Chassis Spare Power Supplies

NOTES:

1. **All empty or unused slots must have a blank panel installed. This includes all front and rear slots.**
2. **High Airflow power supplies (66W) cannot be installed in the same chassis with other types of power supplies.**

3.3 Installation Guidelines When Using the 2-Module Chassis

When installed in the iConverter 2-Module Chassis, the XG+ and XGT+ plug-in modules require the 16.5W High Airflow AC or DC chassis. These chassis utilize a high capacity fan which provides sufficient cooling for the XG+/XGT+ module. Table 10 provides the model numbers for the available 2-Module High Airflow Chassis.

Model Number	Description
8232-1	2-Module Chassis, 16.5W High Airflow PS, 100-240VAC, with Fan
8238-1	2-Module Chassis, 16.5W High Airflow PS, 18 to 60VDC, with Fan

Table 10. 2-Module Chassis with High Airflow Power Supply

Only one XG+/XGT+ module can be installed in a 2-Module High Airflow Chassis. The second slot can be populated with another iConverter module, such as the NMM2 or blank panel (8090-0).

Consult the Power Calculator Tool to makes sure there is sufficient power to support the additional iConverter module. If the second slot is empty, it must have a blank panel covering the slot to ensure even and consistent airflow throughout the chassis.

https://www.omnitron-systems.com/power-calculator

Use the link above to access the online Power Calculator Tool or visit the Support section on Omnitron's website. The tool guides the user in selecting the appropriate chassis, to ensure sufficient power and airflow is available for the selected plug-in module.

The following figures show properly configured 2-Module High Airflow Chassis. The figure on the left shows a 2-Module High Airflow Chassis with an NMM2 module installed in the upper slot and a XG+ module installed in the bottom slot. The figure on the right shows a 2-Module High Airflow Chassis with a XG+ module installed in the lower slot and a blank panel installed in the upper slot.

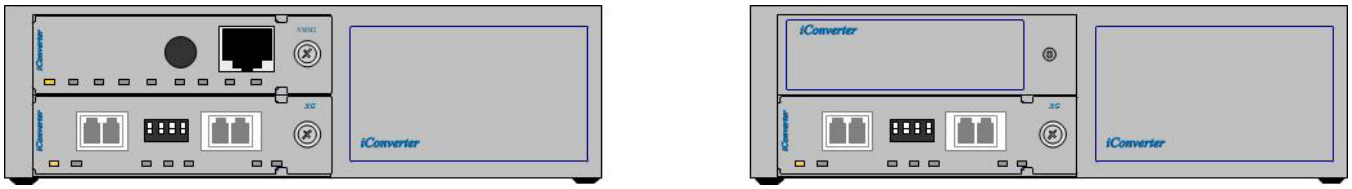

Figure 5. 2-Module Chassis with one XG+ Module

NOTES:

1. **All empty or unused slots must have a blank panel installed.**
2. **An XG module can be installed in a High Airflow chassis.**
3. **Only one XG+/XGT+ module can be installed in a 2-Module Chassis. The XG+/XGT+ module must be installed in the bottom slot of the chassis as shown in Figure 5. Another iConverter module can be installed in the top slot. If the slot is empty, a blank panel (8090-0) must be installed.**

3.4 INSTALLATION GUIDELINES WHEN USING THE 1-MODULE CHASSIS

The XG+ and XGT+ plug-in modules are not supported in the following iConverter 1-Module Chassis.

Model Number	Description	Action
8240-x, 8241-x, 8242-x, 8243-x	1-Module Powered Chassis	Not Supported
8245-xxx, 8246-xxx, 8247-xxx, 8248-xxx	1-Module Redundant Powered Chassis	Not Supported
8270-x	1-Module Industrial Powered Chassis	Not Supported

Table 11. 1-Module Chassis Not Supporting XG+ and XGT+ Installations

For this application, an XG+ or XGT+ Standalone is recommended.