AGILE-CORE®
Distributed Edge Architecture

Fault-Managed Power (FMP) Transmitter, 1U - 6kW



AGILE-CORE® FMP Transmitter Front View



AGILE-CORE® FMP Transmitter Rear View

OVERVIEW

The AGILE-CORE® FMP Transmitter is a component in a Digital Electricity line powering system. When the transmitter is paired with a compatible AGILE-CORE® PDM receiver, a Digital Electricity® (DE) system is formed (see diagram). The circuit between the transmitter and receiver is a Fault-Managed Power (FMP) circuit and is installed as a Class 4 circuit according to NFPA 70, National Electrical Code (NEC) 2023 and 2026, Article 726. If a fault occurs on the FMP line between the transmitter and receiver (such as a person contacting the conductors) power is disconnected; reducing the risk of fire, equipment damage and personal injury.

FEATURES

- Efficiency up to 96% for DC input and 94% for AC input
- Four Fault-Managed outputs capable of up to 1.5 kW each, 6 kW total
- Remote monitoring and control
- In-line communications from FMP TS4 to PDM
- Output Protections: Short Circuit / Under Voltage / Over Voltage / Overload / Over Temperature
- Web GUI, Rest API, SNMP v3
- 3 year warranty

APPLICATIONS:

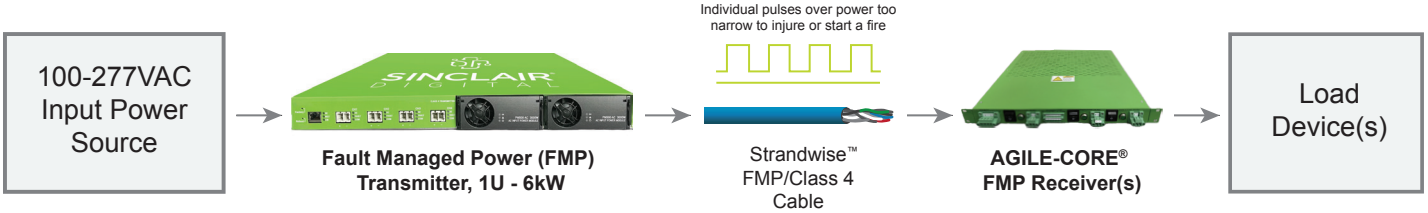
- 5G Small Cell, DAS, & D-RAN Radios
- Broadband & Fixed Wireless Access (FWA)
- Smart Building PoE Switches & GPON ONTs
- Industry 4.0 Control Racks & Cabinets
- Temporary Remote Power
- Rail & Transit

NOTE

For Class 4 compliance, the AGILE-CORE® FMP transmitter unit must be used with compatible Sinclair® Digital receivers and Class 4 listed cables.

For a full list of compatible transmitters, cables and receivers scan the QR code below.

DIAGRAM



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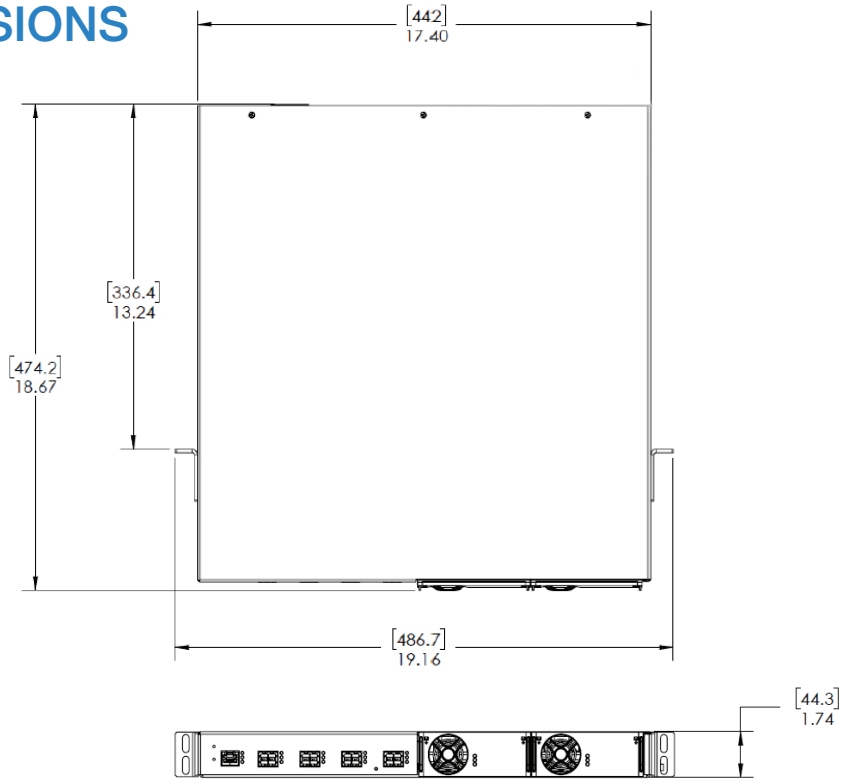
SPECIFICATIONS

TYPE	PARAMETER	TS4-FMP-ACUNV-6K-01		NOTES
		AC	DC	
Input	Voltage	100 - 277 Vac	260 - 400 Vdc	AC input voltage must be 208 Vac or greater for full power operation.
	Max Current per Input	16 A rms	12.2 A	Minimum circuit breaker size is 20 A per input connection.
Output	Voltage	315 - 350 Vdc		Digital Electricity® / FMP / Class 4 output
	Total Power per Shelf	Up to 6 kW		For greater than 3 kW operation, two power modules must be powered.
	Number of Output Channels	4		
	Max Current per Channel	4.68 A		Use design rules for calculating delivered power.
	No Load Power Consumption	40 W max		Based on fully populated unit (two power modules are installed)
	Output Wiring Size	18 - 12 AWG		
	Max Distance	6000 ft		
	Recommended Cable Capacitance	40 pF/ft (131.2 pF/m) max.		Higher capacitance cables may reduce performance.
Environment	Access Location	Operator Accessible		
	Operating Temperature	-20 °C (-4 °F) to 50 °C (122 °F)		Requires operation in a conditioned environment to ensure reliable operation. Derate after 40 °C with 1U spacing [See page 3 for temperature derating curve].
	Altitude	Up to 2000 m		
	Humidity	20% to 70% Non-condensing		
Mechanical	Dimensions	[See page 3]		Fits 19” (482.6 mm) and 23” (584.2 mm) racks
	Weight	15.25 lbs		Weight of fully populated unit (two power modules are installed)
Product Lifetime	Safe Lifetime	30 years max		Dependent on use case
	MTBF	580,922 hrs		
Approvals	Safety	UL 1400-1[1] UL 62368-1 EN IEC 62368-1 CAN/CSA C22.2 No. 62368-1 IEC 61508 ATIS-0600040[2]		[1]Evaluated as part of a FMP system by Underwriters Laboratories. [2]Evaluated with Remee cables DE2P18ISOSPB2B and DE2P14ISOSPB2B.
	EMC	FCC Part 15 Subpart B Class A ICES-003 Class A EN 55032 Class A EN 55035 (multimedia equipment) EN 50121-4 (rail immunity) EN 300 386 (telecom immunity)		
	Other	CE, RoHS, WEEE, UKCA, REACH, ISTA 3A		
Communication	Ethernet	RJ45, 10/100 Mbps		Remote monitoring and control via web GUI, SNMP v1/v3.
	Dry Contact Alarm Output	1x Normally Open (NO) 1x Normally Closed (NC)		Supports alarm circuitry with maximum steady state current of 500 mA at 25 °C. [See page 4]
	Dry Contact Alarm Input	1x Normally Open (NO) 1x Normally Closed (NC)		[See page 4]
Box Contents	Included Parts	[See page 3]		

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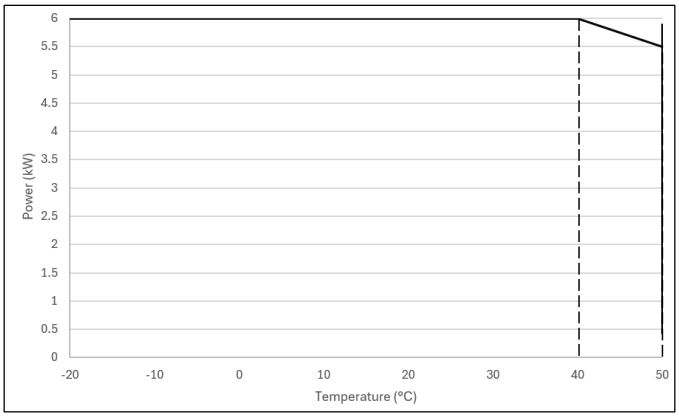
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DETAILED DIMENSIONS



TS4-FMP-ACUNV-6K

TEMPERATURE DERATING CURVE



Derating curve assumes 1U spacing between adjacent units.

TS4-FMP-ACUNV-6K INCLUDED PARTS LIST

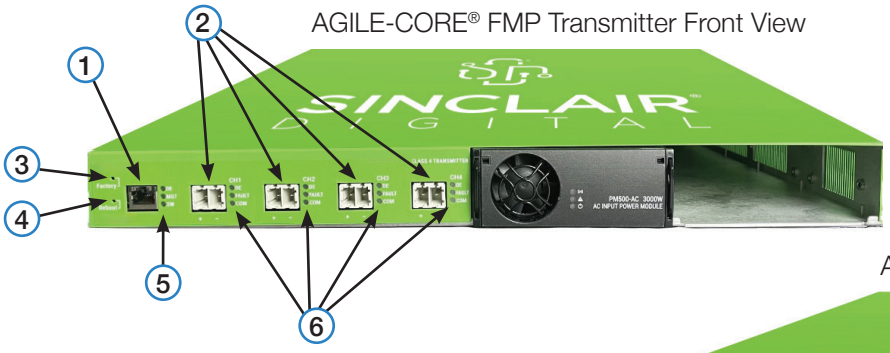
- 1x TS4-FMP-ACUNV-6K-01 Transmitter Chassis
- 1x PSM3K-ACUNV Power Module (already installed)
- 2x Rack Mounting Brackets, fits 19” racks (already installed)
- 4x DE Output Connectors (MFN: 831-1102)
- 1x Dry Contact Input Connector (MFN: 1745894)
- 1x Alarm Relay Output Connector (MFN: 1952283)
- 1x Ground Lug (MFN: LCD10-14A-L)
- 2x ¼”-20 Thread Size, Steel Locknut with External-Tooth Lock Washer
- 2x 6-32 Thread Size, 3/8” Long, Black-Oxide 18-8 Stainless Steel Phillips Head Screws
- 1x Power Cord Saf-D-Grid® 300V Key A to NEMA L7-20P, 6 ft.

Contact Sinclair® Digital for DC power powering information.

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AGILE-CORE® FMP Transmitter Front View



AGILE-CORE® FMP Transmitter Rear View



1 Ethernet Port

The management module provides the system with an Ethernet (IPv4/IPv6) network interface. This allows the system to be connected to a local network for remote monitoring and management.

2 Fault-Managed Power Ports

(4) DE channels with the following pins:

Pin	Description
1	DE Output Pos(+)
2	DE Output Neg(-)

3 Factory Reset Button

Hold for 5 seconds to reset the software settings to factory defaults. The "SW" LED will blink blue while reset is in progress. Transmitter card status will not be affected during the reset process.

4 Software Reboot Button

Push momentarily for SW reboot. The software LED will turn off for about 30 seconds. Once LED has turned back on, software is accessible.

5 MGT LED Indicators

LED information is provided on page 9 of this quick start guide.

6 DE Channel LED Indicators

LED information is provided on page 9 of this quick start guide.

7 Grounding Stud

See the "Grounding" section on page 6.

8 Input Ports for Max 6 kW Operation

Power cords must be installed in both input connectors when both power modules are installed.

9 Input Port for Max 3 kW Operation

Only one power cord must be installed in this input connector when a single power module is installed.

10 Debug Port

For factory use only.

11 Dry Contact Input

The AGILE-CORE® FMP Transmitter features a dry contact input that enables the user's system to trigger the AGILE-CORE® FMP policy software to enable features such as load shedding for battery backup. **The dry contact input should be connected to either an open circuit or closed circuit. Do not apply voltage to the dry contact.** For details on this functionality, contact Sinclair® Digital support.

Maximum Cable Length	3 m
Accepted Wire Gauge	14 - 22 AWG
Default Operating Mode	Open Circuit

12 Alarm Relay Output

The alarm relay output port can be used to notify external devices of fault conditions on the AGILE-CORE® FMP Transmitter.

Pin	Connection	Description
1	NC	Normally closed
2	GND1	Common for NC connection
3	GND2	Common for NO connection
4	NO	Normally open

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WARNING! AVERTISSEMENT!

Ensure that the unit is de-energized before contacting any exposed conductors. Up to 350 Vdc is present inside the unit while running.

Assurez-vous que l'unité est hors tension avant de contacter des conducteurs exposés. Jusqu'à 350 Vdc est présent à l'intérieur de l'unité pendant le fonctionnement.

Do not open the unit. There are no serviceable parts within the unit.

N'ouvrez pas l'appareil. Il n'y a aucune pièce réparable dans l'unité.

The minimum wire gauge for use with AGILE-CORE® Transmitters is 18 AWG copper conductors.

Le calibre de fil minimum à utiliser avec les émetteurs AGILE-CORE® est constitué de conducteurs en cuivre de 18 AWG.

AGILE-CORE® TS4 Transmitter outputs are intended to be used with AGILE-CORE® PDM Receiver products only. Ensure that only AGILE-CORE® PDM Receiver products are powered by this transmitter unit.

Les sorties de l'émetteur AGILE-CORE® TS4 sont destinées à être alimentées uniquement avec les produits récepteurs AGILE-CORE® PDM. Assurez-vous que seuls les produits récepteurs AGILE-CORE® PDM sont sont alimentés par cet émetteur.

The voltage rating of the transmission wiring between AGILE-CORE® TS4 Transmitter and PDM Receiver(s) must be a minimum of 450 Vrms.

La tension nominale du câblage de transmission entre l'émetteur AGILE-CORE® TS4 et le(s) récepteur(s) PDM doit être d'au moins 450 Vrms.

Splice connections on the output of the transmitter are to be made within a UL listed junction box if installed within concealed spaces or where the splice may come in contact with a flammable material.

Les connexions d'épissure à la sortie du transmetteur doivent être effectuées dans une boîte de jonction homologuée UL si elles sont installées dans des espaces cachés ou là où l'épissure peut entrer en contact avec un matériau inflammable.

Line conductors cannot be separated by more than 8 inches.

Les conducteurs de ligne ne peuvent pas être séparés de plus de 8 pouces.

Concerned industries should practice accurate assessment and recording of direct stray currents to gauge and control any adverse effects.

Les industries concernées doivent procéder à une évaluation et à un enregistrement précis des courants vagabonds directs afin d'évaluer et de contrôler tout effet indésirable.

The device is equipped with one or dual detachable power cords. To remove mains, disconnect all power cords at appliance coupler.

L'appareil est équipé d'un ou de deux cordons d'alimentation détachables. La mise hors tension se fait en débranchant tous les cordons de l'appareil.

This equipment is not suitable for use in locations where children are likely to be present.

Cet équipement ne convient pas à une utilisation dans des endroits où des enfants sont susceptibles d'être présents.

FCC CAUTION

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CAN ICES-003(A) / NMB-003(A)

WARRANTY STATEMENT

There are no serviceable parts within the AGILE-CORE® FMP Transmitter TS4. Disassembling or modifying the unit and/or factory attached cables will void the warranty.

SYMBOLS



Hazardous Voltages present when energized. Do not open the unit while it is energized.



The device is equipped with one or dual detachable power cords.



PROTECTIVE EARTH REQUIREMENTS

Caution: All AGILE-CORE® FMP Transmitter units must have a protective earth grounding connection to a facility earth connection for safe operation.

Attention: Toutes les unités émettrices AGILE-CORE® FMP doivent avoir une connexion de mise à la terre de protection avec une connexion de mise à la terre de l'installation pour un fonctionnement sûr.

Note: Protective earth is provided by the corded connection. It is required that the protective earthing connection of the socket-outlet is verified before installation.

CAUTION: HIGH TOUCH CURRENT
ATTENTION: COURANT DE CONTACT ÉLEVÉ



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INSTALLATION INSTRUCTIONS

CAUTION / ATTENTION

Input and Output wiring and over-current protection must be installed in accordance with all local and national electrical codes and requirements.

Le câblage d'entrée et de sortie et la protection contre les surintensités doivent être installés conformément à tous les codes et exigences électriques locaux et nationaux.

CAUTION / ATTENTION

Ensure source power is de-energized prior to making input connection.

Assurez-vous que l'alimentation source est hors tension avant d'établir la connexion d'entrée.

NOTE

After making/terminating input and output connections, ensure that there are no bare contacts or conductors. Conductors must be properly insulated from contact.

Readily accessible disconnect devices, such as a breaker, must be incorporated external to the AGILE-CORE® FMP Transmitter TS4 for each source.

The plug/appliance coupler functions as a disconnect device. Ensure that the input socket/outlet is readily accessible.

GROUNDING

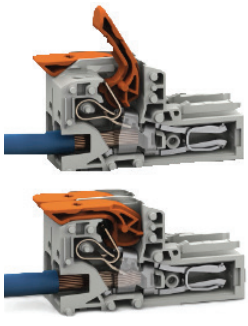
In addition to the protective earth connection provided by the input power cord, ground studs have been included for bonding the enclosure earth to that of the equipment rack or other related equipment. To make a connection to the ground studs, use the ground lug and locknuts included in the accessory kit. 10 AWG wire is recommended.

OUTPUT POWER CONNECTIONS & WIRING

AGILE-CORE® FMP Transmitter uses a two pin pluggable output connector. 18 - 12 AWG wire is recommended for output connections. Larger conductors are recommended for long cable runs. Use copper conductors only.

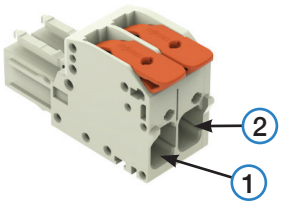
Output Conductor Installation:

1. Strip conductors by 0.45" before inserting into connector.
2. Lift orange lever and insert conductor in correct pin location based on the table below.
3. With conductor fully inserted, push down on orange lever.
4. Pull on conductor to ensure it is fully inserted.



DE Output Connector (MFN: 831-1102)

Pin	Description
1	DE Output Pos(+)
2	DE Output Neg(-)



AC INPUT POWER SOURCE AND CONNECTIONS

There is one variant that accepts an AC input:

TS4-FMP-ACUNV-6K-01: Accepts 100 - 277 Vac

This variant requires one connection to the AC power mains per each PSM3K-ACUNV module used. For full power capability, greater than 208 Vac is required. The AC input connections are single phase or "bi-phase" connections consisting of L1 and L2 or Line and Neutral connections.

Any of the following cables should be used for the AC input connections to TS4-FMP-ACUNV-6K-01:

- **Saf-D-Grid® 300V Key A to IEC C20 (Sold separately)**
- **Saf-D-Grid® 300V Key A L6-20P (Sold separately by Sinclair® Digital)**

The following cable should be used for the AC input connections to TS4-FMP-ACUNV-6K-01:

- **Saf-D-Grid® 300V Key A to NEMA L7-20P (Included with Transmitter)**

Note: Sinclair® Digital recommends using 208 Vac or greater for all installations. Use of 120 Vac should only be used for small demo or test systems.

DC INPUT POWER SOURCE AND CONNECTIONS

There is one variant that accepts a DC input:

TS4-FMP-DCHV-6K-01: Accepts 260 - 400 Vdc

This variant requires one connection to a controlled DC source per each PSM3K-DCHV module used.

Note: The input power source must be a conditioned DC power supply system.



Saf-D-Grid® 300V Key A
Input Connector

Note: The maximum (and recommended) circuit breaker size for each input connection is 20 A.

Contact Sinclair® Digital for more information.

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INSTALLATION INSTRUCTIONS (CONT.)

PHYSICAL INSTALLATION

The AGILE-CORE® FMP Transmitter is designed to be rack-mounted in a 19" rack using provided rack-mount brackets. Use 19" to 23" rack mounting adapters, as required. The transmitter unit may be mounted in a horizontal or vertical orientation.

Note: If the unit is mounted vertically, the power modules must be at the bottom of the unit.

Follow the instructions below for rack-mount installations:

A) Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

B) Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

C) Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

D) Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

E) Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

Note: For full power operation, allow 1U separation between the AGILE-CORE® FMP Transmitter transmitter and other equipment. For installations operating at half power (or installations with full redundancy), no separation between adjacent units is required.

PSM3K-ACUNV POWER MODULE INSTALLATION

Up to two PSM3K-ACUNV modules may be installed in the AGILE-CORE® FMP Transmitter. All PSM3K-ACUNV Power Modules may be "hot swapped" for in-service maintenance purposes.

1. Place a small screwdriver under the release button in the windows located in the upper corners of the PSM3K module.



2. Pull the screwdriver downwards to release the PSM3K extraction handle, repeat on opposite side.



3. Push PSM3K module into a bay of the transmitter shelf until it firmly seats in the connector.



4. Press extraction levers upward until they fully seat and lock into place. The PSM3K module is now locked into place. Repeat the above steps for each PSM3K module to be populated. To remove a PSM3K module, perform the above steps to release the extraction handles, and pull the PSM3K from the transmitter using the handles.



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WEB INTERFACE AND NETWORK CONFIGURATION

For initial configuration or troubleshooting, connect a standard Ethernet cable from the transmitter Ethernet port to a laptop or PC.

The default hostname, network settings, and password are printed on the unit label, typically located on the top of the transmitter.

By default, units are factory-configured with:

- ***Static IP Address: 192.168.1.100***
- ***Subnet Mask: 255.255.255.0***



ACCESSING THE WEB INTERFACE

Open a supported web browser and try one of the following addresses:

- ***http://169.254.42.42 — default AutoIP address***
- ***http://192.168.1.200 — default static IP address***



AutoIP (no laptop network changes):

If your laptop supports AutoIP, you can connect to ***http://169.254.42.42*** without configuring a static IP.

Note: If the page does not load, temporarily disable your Wi-Fi adapter to ensure traffic is routed over the Ethernet connection.

Static IP (if AutoIP fails):

Configure a static IPv4 address on your laptop's Ethernet adapter in the same subnet, for example:

- ***Static IP Address: 192.168.1.100***
- ***Subnet Mask: 255.255.255.0***
- ***Gateway: 192.168.1.1***

Then open ***http://192.168.1.200***

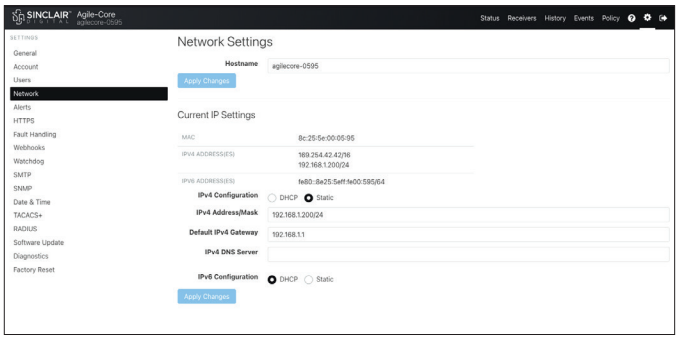
Note: If you cannot reach the device at either address, verify link lights on the Ethernet port and ensure no VPN software is active on the laptop.

IP CONFIGURATION & HOSTNAME

The device hostname and IP address can be changed from the Network Settings page in the web interface.

1. Update the desired network settings
2. Click Apply Changes

After the settings are applied, the browser will automatically redirect to the new IP address or hostname. In most cases, you will need to log in to the web interface again after the redirect.



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OUTPUT CHANNEL LED CODES

NORMAL STATES	LED PATTERN	NOTE
Normal Operation	GRN DE ON RED FAULT OFF BLU COM BRIEF BLINK (heartbeat)	
Boot-up	GRN DE OFF RED FAULT OFF BLU COM BLINK (booting up)	Start-up sequence occurs when power is first applied to the receiver.
Pre-charge DE	GRN DE BLINK (slow) RED FAULT OFF BLU COM OFF	Part of normal start-up sequence
Pre-charge Load	GRN DE BLINK RED FAULT OFF BLU COM OFF	Part of normal start-up sequence

LED PATTERN	FAULTS	FAULT CODE	TROUBLESHOOTING
GRN OFF RED BLINKS=FAULT CODE BLU OFF	Disconnected	1 Blink	Check DE wiring and connections
	Startup	2 Blinks	Check wiring Check receiver Check cable length & gauge
	Transmission	3 Blinks	Check wiring Check receiver Check cable length & gauge Reduce load on the receiver output
	Overload	4 Blinks	Reduce load on the receiver output Check receiver Check wiring
	Temperature	5 Blinks	Reduce ambient temperature Reduce load
	Short Circuit	6 Blinks	Check for damaged wiring Check for short in termination/ connectors Reduce load
	Input Power	8 Blinks	Check wiring Check power module and main power
	Internal	9 Blinks	Internal hardware failure Contact Sinclair® Digital support
GRN OFF RED BLINKS=FAULT CODE BLU BLINKS=FAULT CODE	Internal	Red/Blue Alternate	Internal hardware failure Contact Sinclair® Digital support

MANAGEMENT UNIT (MGT) “SW” LED CODES

LED PATTERN	DURATION	MEANING
BLU	5s after power on/ reboot	Software module power-on and pre-boot. Pushing the “Factory” button during this time will cause the device to boot into Recovery Mode
GRN	30s (approx.)	Software is booting (green “heartbeat” blink pattern)
GRN	Until reboot	Software is running
BLU	20s (approx.)	Factory reset is in progress
BLU	Until reboot	Software is in Recovery Mode (blue “heartbeat” blink pattern)

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