

SSEG - Smart Serial-Ethernet Gateway



Quick Hardware Reference Guide

Rev02 – February 2022



SSEG Description

Designed for quick integration with minimal engineering effort, the small SSEG - Smart Serial-to-Ethernet Gateway provides simplicity and flexibility making it the easiest and fastest networking-enabling module on the market.

The SSEG Serial-to-Ethernet Gateway is an extremely compact networking solution that enables Ethernet connectivity on virtually any device with a serial interface, including autopilots and payloads. The included industry-proven device server application and full IP stack allow seamless remote access to device data simplifying design integration while providing robust connectivity. The module has been designed with the core focus of enabling non-IP based autopilot and flight controller, to be easily integrated in a complete native IP-based environments. This open new operational scenarios for VLOS and BVLOS operations using IP-based long-range datalinks including broadband COFDM, 4G/5G and satellite links.

A key difference with the Smart Serial-to-Ethernet Gateway is that there is virtually no need to write a single line of code, translating to a much lower development cost and faster time-to-market.



SSEG Main Features

The SSEG provides the following features:

- Wired module options only
- RJ45 Ethernet connector
- Complete Device Server Application with Full IP Stack and Web Server
- IEEE 802.3 MAC and PHY, 10BaseT and 100Base-TX with HP Auto-MDIX
- DHCP Client v4/v6
- Serial Port, Telnet, Internal Web Server (HTTP/HTTPS), SNMP
- TCP and UDP Server Mode, TCP and UDP Client Mode, Multi-host Connect; TLS Client and Server
- Link Activity LED Indicators
- Data Rates: 4Mbps (software selectable)
- CMOS (Asynchronous) 3.3V Level Signals
- Data Bits: 7 or 8; Stop Bits: 1 or 2; Parity: Odd, Even or None
- Control signals: DTR/DCD, RTS/CTS
- Flow Control: XON/XOFF (software), RTS/CTS (hardware), None
- 256-bit AES Encryption
- Extended Temperature: -40° to +85° C
- UART Connector pinout compatible with Pixhawk Autopilots
- FCC, EU, Canada Class B emission/immunity and UL/CB 60950/62368 safety

SSEG Operational Requirements

The following table provides the facilities requirements that must be met for the SSEG.

Туре	Requirements
Electrical	 Primary DC input: 5-14 VDC Current Consumption: 210 mA @ 5V UART DC inputs: 5 VDC
Thermal	• Ambient air temperature not exceeding -40 to +85 ° C while the SSEG is operating
Installation	 Can be strapdown installed using 2x M3 screws (w/enclosure). Can be installed in vertical or horizontal position Can be installed upside down



SSEG Board Mechanical Specs

The top view of the SSEG shows all available connectors and pin header available on the top side of board. There are other connectors or pin headers on the bottom side of the board.



<- 25 mm ->

Max height: 29 mm* Weight: 19g* * Including RG45 Connector



SSEG Connectors, Buttons and LEDs

Туре	Function
Power	J1: 5-12 VDC-In J2: 5 VDC-In
UART	J2: Tx/Rx/RTS/CTS/VIN/GND
Ethernet	RJ45
Buttons	B1: Reset
Activity LED	Power, Ethernet, Serial



SSEG Connectors



J1 Power IN



RJ45 Ethernet

Top View

Bottom View



J1: DC Power Input Connector

Pin	Signal	Function
1	VDC_IN	5-14 VDC positive power input
2	VDC_GND	VDC negative power input



J1 Front View

Mating Connector

- Manufacturer: Molex
- Part Name: PicoBlade Receptable Crimp Housing, 2 Circuits
- Mfg. Part Number: 510210200
- Pre-Crimped Lead 150 mm: 797580006
- Pre-Crimped Lead 300 mm: 797580014



J6: UART_1 – PRIMARY AP UART

Pin	Signal	Function
1	5 VDC_IN	5V positive power input
2	RXD	UART Receiving pin
3	TXD	UART Transmitting pin
4	СТЅ	UART Clear to Send flow control pin
5	RTS	UART Request to Send flow control pin
6	5 VDC_GND	5V negative power input



J2 Front View

Mating Connector

- Manufacturer: Molex
- Part Name: PicoBlade Receptable Crimp Housing, 6 Circuits
- Mfg. Part Number: 510210600
- Pre-Crimped Lead 150 mm: 797580006
- Pre-Crimped Lead 300 mm: 797580014



J2: UART to PixHawk

Pin	Signal	Function	Pixhawk TELEM 1 & 2
1	5 VDC_IN	5V positive power input	5 VDC_OUT
2	RXD1	UART_1 receiving pin	TX (OUT)
3	TXD1	UART_1 transmitting pin	RX (IN)
4	RTS1	UART_1 Request to Send flow control	CTS
5	CTS1	UART_1 Clear to Send flow control	RTS
6	GND	5V negative power input	GND





Cube Top View



J2 Front View

PX4 Top View



RJ45: Ethernet

Pin	Signal	Function	T-568A	T-568B
1	TX+	Transmit +	White/Green	White/Orange
2	TX-	Transmit -	Green	Orange
3	RX+	Receive +	White/Orange	White/Green
4			Blue	Blue
5			White/Blue	White/Blue
6	RX-	Receive -	Orange	Green
7			White/Brown	White/Brown
8			Brown	Brown



8 7 6 5 4 3 2 1 RG45 Front View





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