

TOOLweb® RGA Gateway

Hardware Platform for Multiplexing Software and
Sensor Integration Platform Software



The SECS/GEM communications protocol (SEMI Equipment communications Standard/Generic Equipment Model) is the main protocol for automation communications between a fab host and equipment in the semiconductor industry. In general, equipment design usually supports only a single client (tool) communication to a host (MES/FDC) system and does not allow communications to external third-party applications. For this reason, integration of many third-party devices such as a Residual Gas Analyzer (RGA) into OEM tools requires the fab end-user to provide the means for data integration between the sensor and the host. The TOOLweb® RGA Gateway is a hardware platform for the Multiplexing Software and the Sensor Integration Platform Software. It is a fanless,

compact Linux embedded computer which runs on a Linux kernel. All required kernel drivers are preloaded to support current hardware requirements. The TOOLweb RGA Gateway converts machine analog or digital communication protocols to SECS/GEM transmitting the data to the equipment or host GEM controllers; it also acts as a data multiplexer. The TOOLweb RGA Gateway enables communication between one process tool and various hosts at the same time and is logically located between a process tool and up to four hosts. In addition, the TOOLweb RGA Gateway can inject or map information from several sensors into the data flow from the tool to the hosts by means of Virtual IDs.

Product Features

- Compact device for easy integration
- 128GB data storage
- RJ-45 Ethernet connectivity
- Anti-vibration 3 Grms/5 ~ 500Hz/operation
- Anti-shock 50G, IEC 68-2-27, half sine, 11 ms duration



Key Benefits

- Communicates with up to four hosts, reducing the need for additional equipment
- Local data storage and data log signals makes debugging issues easier
- Enables data synchronization of third party devices/sensors, simplifying data collection methods

Integration

The TOOLweb RGA Gateway is a High-Speed SECS Message Services (HSMS) multiplexer that can convert machine analog or digital communication protocols to SECS/GEM, transmitting the additional data into the data stream between the equipment and host controllers. Figure 1 shows MKS' TOOLweb RGA gateway integrated with a production tool. Tool metadata is passed to the host via SECS/GEM. Data from multiple data sources now has time sync alignment. The TOOLweb RGA Gateway enables RGA control and RGA data to be fed into the SECS/GEM data stream. Other sensor data, e.g. arcing detector, can also be fed into the SECS/GEM data stream.



Back view of the TOOLweb® RGA Gateway.

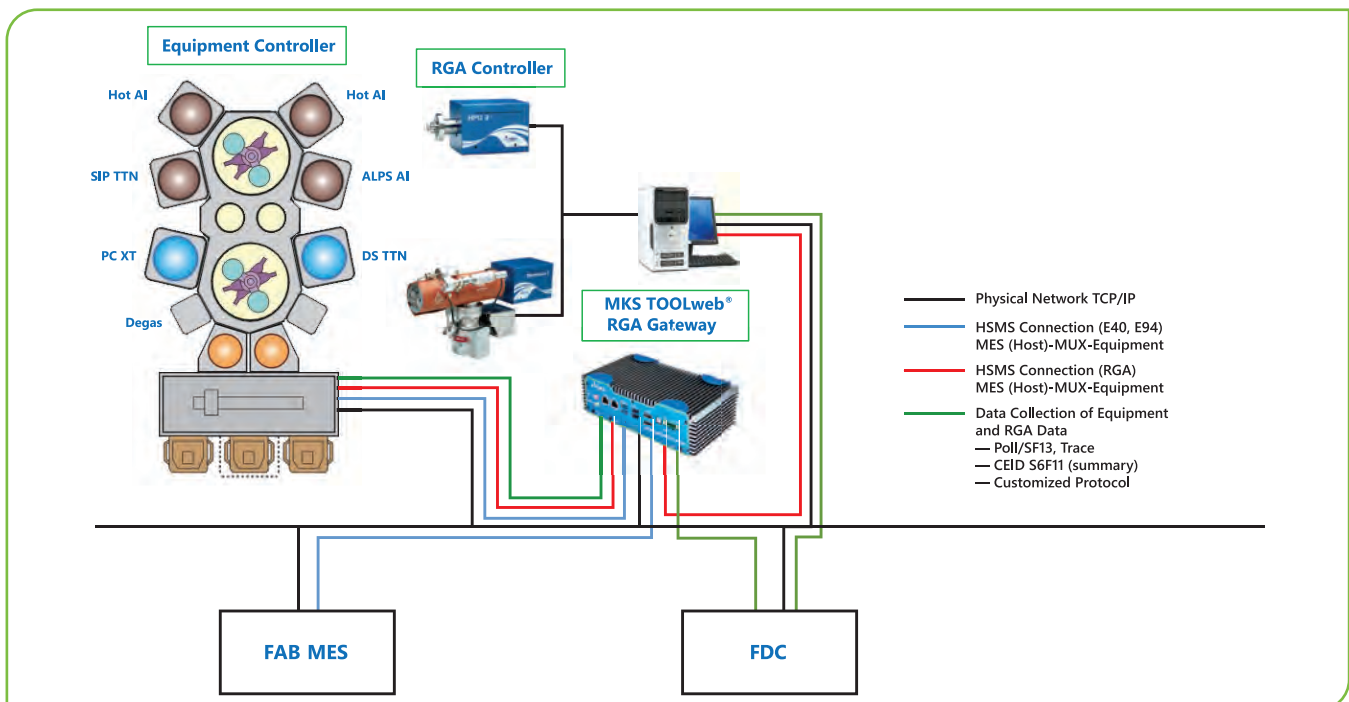
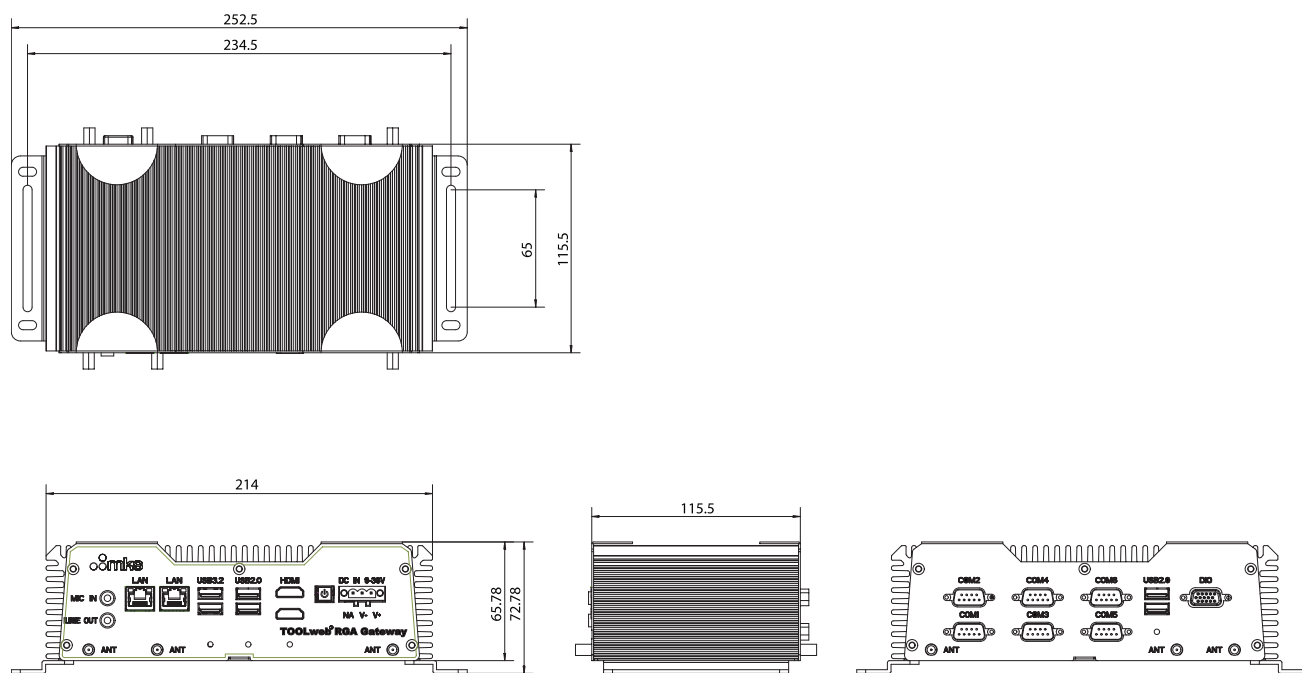


Figure 1 – An example integration using MKS' TOOLweb® RGA gateway.

Specifications

| System | | |
|------------------------|--|--|
| CPU | Intel® Atom x7211E | |
| Chipset | Intel® SoC | |
| System Memory | DDR5 8GB 4800MHz SODIMM x 1 | |
| Display Interface | HDMI x 2 | |
| Storage Device | M.2 2280 M-Key x 1 (PCIe [x2]) 2.5" SATA 128GB SSD x 1 | |
| Ethernet | RJ-45 x 2 for 2.5GbE LAN (Intel® I226) | |
| I/O | <div><div><ul style="list-style-type: none">• HDMI x 2• RJ-45 x 2 for 2.5GbE LAN (Intel I226)• USB 3.2 Gen 2 x 2 (Type-A)• USB 2.0 x 4 (Type-A)• DB-9 x 6 for RS-232/422/485• Mic-in/Line-out</div><div><ul style="list-style-type: none">• D-Sub connector for DIO 8 bit• 3-Pin Terminal Block for DC In x 1 2-Pin• Remote On/Off x 1• Reset Button x 1• Power Button with LED x 1</div></div> | |
| Expansion | <div><div><ul style="list-style-type: none">• M.2 2280 M-Key x 1 (PCIe [x2])• M.2 2230 E-Key x 1</div><div><ul style="list-style-type: none">• M.2 3052 B-Key x 1• SIM Slot x 1</div></div> | |
| Indicator | <div><div><ul style="list-style-type: none">• System LED</div><div><ul style="list-style-type: none">• Storage active LED</div></div> | |
| OS Support | Linux Redhat 9 | |
| Power Supply | | |
| Power Requirement | 9-36 VDC input for 3-Pin Terminal Block | |
| Power Consumption | 12/7A (84W) | |
| Mechanical | | |
| Mounting | Wall Mount | |
| Dimensions (W x H x D) | 8.42" x 4.54" x 2.59" (214 mm x 115.5 mm x 65.8 mm) without brackets | |
| Gross Weight | 6.17 lb. (2.8Kg) | |
| Net Weight | 4.4 lb. (2Kg) | |
| Environmental | | |
| Operating Temperature | 32°F ~ 104°F (0°C ~ 40°C) | |
| Storage Temperature | -40°F ~ 176°F (-40°C ~ 80°C) | |
| Storage Humidity | 5 ~ 95% @ 40°C, non-condensing | |
| Anti-Vibration | 3 Grms/5 ~ 500Hz/operation (with SSD) | |
| Anti-Shock | 50G, IEC 68-2-27, half sine, 11 ms duration (with SSD) | |
| Certification | CE/FCC Class A | |

Dimensional Drawing



Unless otherwise specified, dimensions are nominal values in millimeters.

Ordering Information

| Product Number | Description |
|----------------|---|
| TWR-GATE-510 | TWRGA Gateway with HSMS SECS/GEM sense stream w/o failsafe |
| TWR-GATE-530 | TWRGA Gateway with RS232 SECS/GEM sense stream w/o failsafe |