



Visor Remote Monitoring and Diagnostics

Remote Support for Drives and Automation Systems

gepowerconversion.com



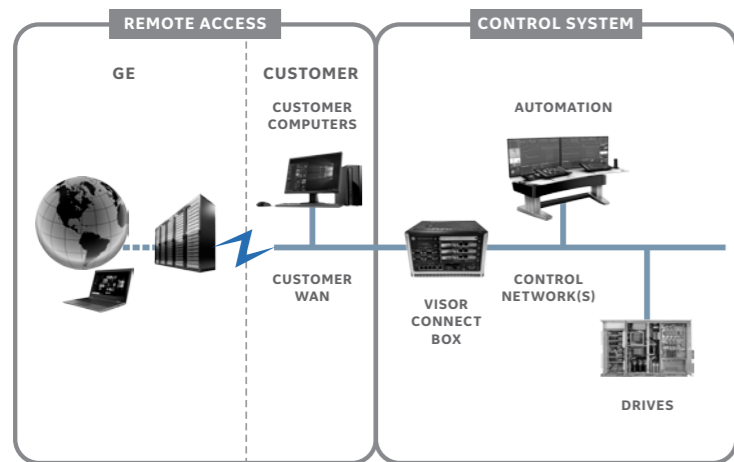
Safe and Secure

GE's Power Conversion business already provides you with drives and automation control systems. Now, your systems can be remotely monitored—and issues diagnosed—safely and securely through GE's Visor Remote Monitoring & Diagnostics (RM&D) system.

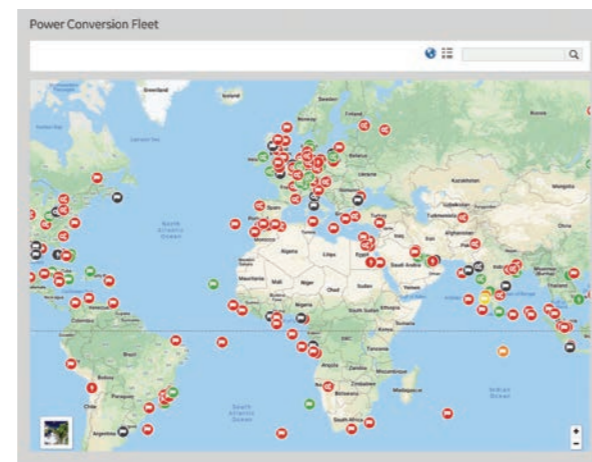
Visor RM&D consists of:

- **Visor Connect Box (VCB).** The compact VCB is installed at your site to monitor control system devices. It hosts integrated Data Historian and Engineering servers that provide a repository for control system data as well as project and engineering information. GE Engineers can access all of this information remotely via a secure site connection.
- **Visor Service Portal (VSP).** The GE VSP provides GE Engineers a secure gateway for remote support and monitoring of assets.

Our system security follows best practices, including the use of hardware firewalls to create a demilitarized zone (DMZ) to isolate the control networks from external networks. Remote connectivity is performed via a single secure encrypted tunnel to the site.



VISOR SYSTEM ARCHITECTURE



VISOR SERVICE PORTAL (VSP) MAP VIEW



VSP ANALYTICS

Help Meet Your Complete Needs, Visor is Available in Three Versions:

- **Read-Only Visor.** This variant allows GE engineers remote viewing of application software and extraction of files. To comply with some industry practices, all remote access is read-only for Marine applications.
- **Dedicated Write-Enabled.** This version of RM&D is for customers who would like GE to conduct remote changes—when necessary and following strict access protocols.
- **Visor Switchable Read/Write.** Providing the security of Read-Only with the functionality of Write-Enabled leaves the Visor Connect Box in a read-only state as default, but allows you to enable the write-enabled mode with the press of a button that is located on the hardware. By doing this, Visor 2.7 offers the functionality and cost-reducing features of the write-enabled Visor.

In addition the Visor solution allows for the optional inclusion of a VCB DMZ PC for hosting local analytics on premise together with the option of a second VCB Control PC that can be used for hosting 3rd party logging applications, such as IBA Server.

Note: Based on GE's RXi controller hardware, the VCB is a robust and compact solution. If your control system requires enterprise storage and processing capabilities such as large storage capacity or server redundancy, please refer to the GE SeaStream Insight product.



Key Benefits

- **Worldwide remote service support.** Customer sites are accessible via the Visor Service Portal (VSP) and can be securely accessed globally from any internet-enabled location.
- **Increased security.** Strict user access management is controlled by workflows that require multi-level approval. Limited personnel access to sites and SSO authentication required at all times.
- **Reduced response time.** Drive trips or Marine vessel black outs or drift offs are highlighted by GE's Data Historian through the automatic incident detection and notification system, together with incident data upload (including drive trip histories). GE's service engineers and specialists then can quickly analyze the incident data and remotely connect to the installed site system to further help with diagnostics, if required.
- **Compact and cost-effective.** Visor 2.7 brings the hardware into one cubical, reducing Visor's physical footprint and allowing expansion inside the cubical for optional DMZ or Control PCs.
- **Fast tag processing.** The integrated VCB site Data Historian is capable of handling more than 250,000 tags per second, together with support for the open OPC UA (HA & DA) standard for access from third-party clients.
- **Single, onsite repository.** An integrated VCB site engineering server holds and manages all project information in one place on site.
- **Automatic remote data analysis.** Integrated Cloud support is provided for remote analytics, and time-series data can be streamed to the VSP to support automatic remote data analysis.
- **Third-party application support.** Third-party logging and analytic applications can be hosted within the Visor cubicle.
- **On-prem support for embedding solutions.** For instance, SeaStream* Optimizer can be embedded into the Visor system.



VISOR CONNECT BOX (VCB)



Achilles Level 1 Certified

Visor Basic Features

| | |
|----------------------------------|---|
| Cyber Security | Integrated hardware firewalls to customer WAN and to control network. Site initiated connection to VSP over encrypted IPsec secure tunnel. VSP access control using GE identity (SSO)/site with access logging. Achilles Level 1 certified. |
| Configuration | Via P80-Pilot Engineering Software |
| Historian Logging Rate | >250,000 tags/s |
| Historian Logged Data Classes | Time series analogues and digitals Alarms and events Trip histories (up to 150 drives) Generic files (logs, reports, office docs, third-party logger, CCTV) |
| Historian Logging Rate | 512 GB SSD (supports 3-6 months storage on typical system) |
| Control Network Interface | Single or Dual Ethernet connection to Control Network |
| Customer WAN Interface | Single network connection via integrated firewall |
| Automatic VSP Event Notification | On incident detection: Automatic notification, associated logged time series and alarms/events data upload |
| Data Streaming | Streaming of time-series data to GE Cloud (Predix and/or Visor Service Portal) for remote analytics |
| Access to VCB Historian Data | Web-based user interface OPC-UA clients may extract data via the VCB OPC-UA server (HA & DA access) Manual selection and storage on USB storage device |
| Logged Data Archive | Automatic archive of logged data to USB connected storage device |
| Remote Engineering Access | Full RDP access to engineering tool suite hosted/managed by P80-Pilot View of operator screens (read-only screen sharing) View controller and HMI web pages View all historian data |
| Access Control | Dependant on system variant, the method to gain remote access to a site varies. For Read-Only units, authorized engineers can gain access at any time to troubleshoot and collect logs. For Write-Enabled variants and Switchable Read/Write variants the engineer must gain customer approval prior to connecting. This is done via a robust workflow requiring written approvals. |

Additional Features for Marine Applications

Automatic DP Drift and Blackout Alerts

If a vessel experiences a Dynamic Positioning (DP) drift-off, blackout or partial blackout scenario, the VCB will automatically capture the relevant alarms and time series data from the inbuilt Data Historian (by default, approximately 15 minutes before and five minutes after the incident). This data then will be automatically sent to the GE Contact Center (via the VSP), which will analyze the data aiming to ensure that the issue is handled in a timely manner.

Visor 2.7: It's Time for an Upgrade

A new and improved cabinet enclosure

- **New front panel with a touchscreen HMI.** This front panel displays Data Historian information and Visor status as well as indicating the mode the Visor box is set to—read or write.
- **On-prem analytics PC (VCB DMZ PC).** An optional analytics PC can be added into the Visor box for use with other products such as SeaStream* Optimizer or other Asset Performance Management (APM) solutions.
- **Engineering PC (VCB Control PC).** Mandatory for the new Visor Switchable Read/Write functionality, an Engineering PC added to the Visor box is used for write-enabled activities but also will be available for all product variants when there is a need for onsite engineering.



Visor 2.7 Update: PcVue Alarm Logging to Data Historian

This update expands Visor from just remote access and fault diagnostic file collection to alarm logging to the Data Historian. Remote Read-Only view of HMI mimics allows GE to remotely assist you by giving specific instructions and monitoring feedback and to see faults and errors as they occur.

Remote Data Access, Enhanced Tech Support

Among the many new features of Visor 2.7 is the ability to connect your data to the cloud for customized analytics, enabling data-driven decisions and performance measuring in real time. Connecting your data to the cloud—the key to driving down OPEX—allows you to intelligently plan maintenance and monitor your asset's health. At the heart of GE's digital eco-system, Visor collects and processes data and provides you with remote access and enhanced technical support.

Visor Compatibility Matrix

| Equipment | Engineering Tools | Logging Protocols | Time Series Data | Alarms & Events | Trip Histories | Files | HMI View | Web Pages | Monitor |
|--------------|------------------------------|---|------------------|-----------------|----------------|-------|----------|-----------|---------|
| HPCi | P80i | Ethernet: WDDE, KPI, OPC UA , Monipert | ● | | ● | | | ● | ● |
| PECe / -Lite | P80i, HDM, Pertu | Ethernet: WDDE, KPI, OPC UA , Monipert | ● | | ● | | | ● | ● |
| CDC | | | | | ● #1 | | | | |
| AMCx (DP) | DP toolkit, ISaGRAF | Ethernet: proprietary, serial | ● | | ● | | | ● | ● |
| AMCx (AVC) | EMS, Marine toolkit, ISaGRAF | Ethernet: proprietary | ● | | | | | ● | ● |
| HMI PCs | | Various Proprietary Protocols | | ● | | | ● | ● | |
| Third Party | | Shared network drive, OPC-UA and EGD for RX3i | | | ● | ● | | ● | |
| HPC | | WDDE | ● | | | | | | |
| PEC | | WDDE | ● | | | | | | |
| Logidyn | | File logging | ● | | ● #2 | ● #2 | | ● #2 | ● #2 |
| SunIQ | P80i, HDM, Pertu | Various protocols | ● | | ● | ● | ● | ● | ● |

#1 via a separate data gatherer PC
#2 via separate gateway PC



Services

With a comprehensive global network of service engineers and technicians, GE is uniquely positioned to provide the knowledge, experience and skills to help you protect your assets, maintain critical processes, lower risk and increase productivity.

GE delivers original equipment spare parts around the world and repairs, refurbishes and upgrades customer systems with our latest technology. GE offers risk protection through contractual services based on system experience and sophisticated application calculations.

About GE's Power Conversion Business

A business unit of GE Power, GE's Power Conversion business applies the science and systems of power conversion to help drive the electric transformation of the world's energy infrastructure. It does so by making and delivering advanced motor, drive and control technologies that evolve today's industrial processes for a cleaner, more productive future. Serving specialized sectors such as energy, marine, renewables and industry through customized solutions and advanced technologies, GE's Power Conversion business works with customers to increase efficiency.

For more information, please visit gepowerconversion.com or email escs.geem@ge.com

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