



DC Drive Products

Engineered drive solutions for coordinated drive
and complex control applications



Proven designs support customer objectives

Our drives employ proven hardware used by GE's Power Conversion business in demanding industrial applications. With its structured design it aims highest engineering efficiency, reduced downtimes, increased system reliability, improved process control, and reduces total installed project costs.

GE offers a fully integrated DC Drive retrofit package that lets you extend the life cycle of your existing DC Drive systems and defer moving to AC drive technology until scheduling and budget constraints can be addressed. At the same time it lets you improve drive system reliability and performance while reducing total installed cost and disruption to production. We take a complete system approach, combining field engineering expertise with our exceptional drives and control products. Our fully engineered drive solutions for coordinated drive and complex control applications can substantially improve the quality and efficiency of your processes. GE offers a range of products to support projects that require DC armature supplies, digital firing circuit retrofits, and generator/motor field applications.

We support you from start to finish with project management, application engineering, hardware and software engineering, system testing, technical direction of installation, commissioning and spare parts. The breadth of our experience spans pulp and paper, mining, metals, plastics and rubber, and material handling. From hot strip mills, cold mills, winders and paper machines to hoists

and cranes and more, we know your application, understand your challenges and can help get the highest performance possible from your drive systems.

“Our experts fully understand your application, our drive's features meet your specific requirements”

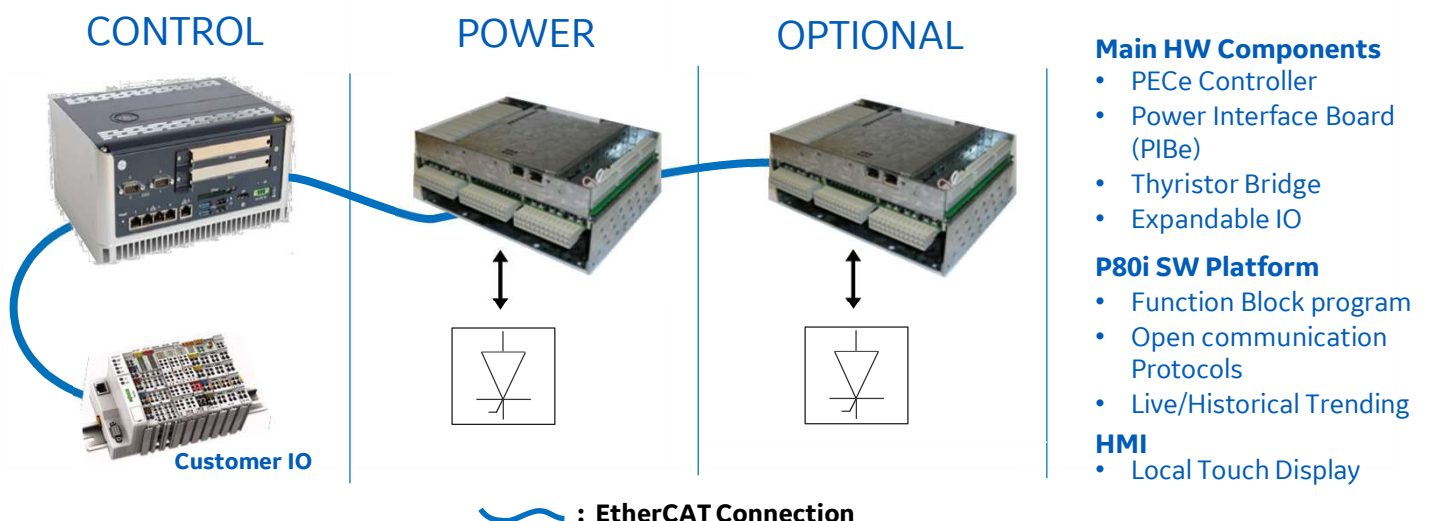
The advantages of an open architecture approach

GE drives are compatible with multiple interface protocols. For customers with older GE and non-GE drives, our engineering drive solution enables a phased upgrade to next generation technology, without having to replace complete systems and large subsystems.

Key benefits

- **Mitigating Platform Obsolescence** via the use of an easily replaceable industrial computer as drive controller and off the shelf non-proprietary components.
- **Open Connectivity for easy integration** to existing master control via the use of non-proprietary networks such as EGD, Modbus TCP, EtherCAT, Profibus, Profinet, and others upon request.
- **No ribbon cables or special harnesses** to connect drive components together. The GE design eliminates points of failure inherent in other designs utilizing ribbon cables and wiring harnesses to connect multiple cards and components.
- **Reducing operating expense** via the use of low parts count design minimizing spare parts inventory.
- **Expandable SW and HW Drive IO** via a configurable SW interface and third-party IO.
- **Proven HW and SW Design** via a common approach to all GE Drive products and Automation Systems. This platform has been used for over 20 years, easy to perform upgrades by maintaining backwards compatibility in all versions and new releases.
- **Updating control and gating system** while having the option of retaining the existing GE or third-party power stacks.

Modular DC Drives architecture



Enhanced technology - DC Drives main components

The system consists of a **Power Electronics Controller (PECe), Power Interface Board (PIBe)**, and depending on system requirement, **EtherCAT I/O or Ethernet I/O (GE RSTi)**.

Features	Advantages
<p>Scalable performance - three dual-core CPU Variants: VIA Nano, Intel Celeron and Intel i7</p> <ul style="list-style-type: none"> • Temperature range -20°C to 60°C • Fan-less, battery-less • Flexible mounting • Two/four PCI slots • Five Ethernet ports • Four USB • Two serial ports (RS232 and RS422/485) option of four serials 	<ul style="list-style-type: none"> • Small footprint • Less cubicle wiring • Scalable • Easy to upgrade • Rugged/reliable



Power Electronics Controller (PECe)

- Standard industrial PC
- Intel based chipset VX Works
- Operating system IEC1131
- Compliant Function Block
- Deterministic Ethernet
- 5 x 10/100 Ethernet ports
- 1.2 to 2.5 GHz
- 60°C Ambient
- Fan-less operation
- 2 or 4 PCI slots allows Profibus, Profinet, Reflective Memory, CANbus, Modbus, EGD, etc

Power Interface Board (PIBe)

- 24 copper or 32 fiber optic outputs to power devices
- 8 digital inputs / 4 digital outputs
- 8 analog inputs / 4 analog outputs
- 2 current transformer inputs
- Capable of 60 V, 10 amp outputs to power devices
- 1 encoder input

Fast EtherCAT Technology

- Real time transmission
- High synchronization
- High speed binary and analog I/O for customer application
- Low cycle-time
- High concurrence

Field I/O

- Modular construction
- Digital inputs/outputs ... 24 VDC
- Analog inputs/outputs ... ±10 VDC, 4-20mA
- Fast deterministic EtherCat interface from PECe

User Interfaces

Touchscreen for operator control and maintenance - Replacing antiquated meters and pushbuttons with modern touchscreen controls will immediately improve your ability to operate and maintain equipment.

Typical HMI Operator Screen - Provides overview of drive for operation, status and alarms.

Typical HMI Alarm Screen - Provides listing of active alarms and alarm history.

P80i Toolbox – Drive Commissioning and Maintenance

Software

GE's P80i is a powerful suite of software tools for carrying out configuration, programming, monitoring and debugging tasks on the HPCi system. The system is used across the complete range of GE Power Conversion's drive, process control and automation solutions. The P80i tools are enhanced for multiple users.

The toolkit includes a suite of IEC style language editors, configuration software and online monitoring tools. P80i enables the structuring and integration of the control application into a system including full support for redundant controller configurations.

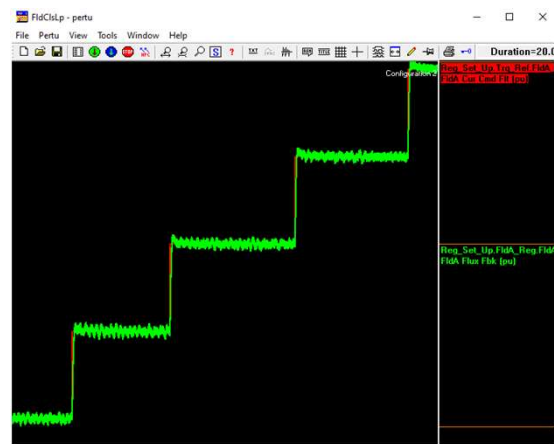
The application is structured according to the IEC 61131-3 model into controllers, CPUs, resources, application tasks and documents. P80i runs on Microsoft Windows and can be operated on any PC running the latest updates. An Ethernet interface for communication with the target controller hardware is required - typically over the system control network

P80i User Interface

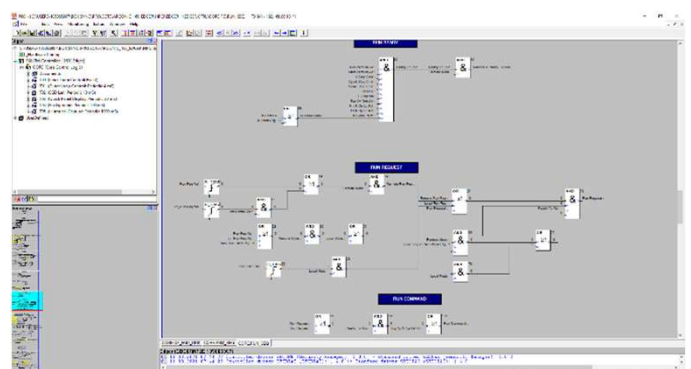
The user interface is divided into four sub-windows, the main P80i window provides the user with an overview of all the parameters. These sub-windows can be freely arranged by being moved or docked in different parts of the window and provide a free and clear workflow for the user.

Key benefits

- Simplifies understanding through common user-friendly application environment across drives, process control and automation solutions.
- Simplifies commissioning and maintenance through comprehensive online monitoring tools and a user-friendly interface with drag and drop, windows docking, context sensitive multi-language menus, and integrated graphical views of the plant.
- Minimizes risk and lead time through top-down application design, modular structure, reusable libraries, version control and offline PC based simulation.



PERTU - Motor Field Close loop Test



P80i – Configuration tool

Rating table and options

* Standard BDM &PDM drives

Drive Series	FLA 150% OL	FLA 200% OL	Dimension (inches)	Weight (lbs)
BDM4-100	90	72	13.25W x 23.1H x 17.61D	101
BDM4-250	226	181	13.25W x 23.1H x 17.61D	101
BDM4-525	474	379	13.25W x 27.99H x 19.33 D	230
BDM4-700	632	505	15.52W x 29.44H x 19.98 D	246
BDM4-1200	1083	867	15.52W x 29.44H x 19.98 D	246

PDM4 Type	FLA 150% OL	FLA 200% OL	Dimensions (inches)	Weight (lbs)
PDM4-100	4000	3500	40W x 40D x 100H	1500
PDM4-84	3100	2700	40Wx 40D x 100H	1500
PDM4-63	1800	1300	40W x 40D x 100H	1300

* UL/CE Certification available

Cubicized DC drives with higher ratings (600 V, 2500KW) are available on request.

* Engineered Solution Drives: Consult engineering for specific system configuration.

Services from GE – a focus on availability

We understand the vital importance of process availability – and our focus on service keeps us actively engaged, both when things are going right, and when they are going wrong.

Our world-class Global Customer Service and Support Center is available 24/7, 365 days a year.

Our strategic distribution centers and authorized distributors carry an extensive inventory of GE's drives, allowing us to quickly fulfill your genuine replacement part needs, no matter where you are located.

With a comprehensive global network of service engineers and technicians, GE is uniquely positioned to provide the knowledge, experience and skills for your full range of industrial service requirements. From system design to maintenance and outage support, we have the resources and capabilities to advance your equipment's performance and reliability.

Some key benefits of GE's support are:

- Single point of contact
- Reduced call-out rates
- 24/7 availability
- Rapid mobilization of engineers
- Routine maintenance visits
- Training
- System health checks
- Spares management
- Obsolescence management

GE also provides managed system upgrade paths for our legacy systems and has significant experience in replacing systems from other manufacturers with low disruption to the existing infrastructure.

Remote support

Visor Connect, GE's remote diagnostic and support system, is based on highly secure satellite communications links. It enables our experts, regardless of their geographical location, to look over the shoulder of your onsite equipment operator or technician and advise and assist you on fault finding and resolution.



About Power Conversion

GE's Power Conversion business applies the science and systems of power conversion to help drive the electrification of the world's energy infrastructure by designing 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, oil and gas, renewable and industry, through customized solutions and advanced technologies, Power Conversion partners with customers to maximize efficiency.

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