



HIQuad® X

A New Dimension of Performance for Your Safety System

HIQuad X is a programmable electronic safety system made by HIMA. The flexible and scalable system family is a further development of HIQuad, which has been in use within various applications in the process industries for over 30 years.

The modernization combines tried-and-tested HIQuad I/O technology with the high-availability and high-performance HIMax system technology. HIQuad X is programmable with SILworX, the HIMA engineering tool. HIQuad X safety systems are installed if restrictive safety requirements must be fulfilled – without any compromises on system availability. The safety PLC can be used on a centralized as well as decentralized basis. A huge variety of I/O modules can be used – including intrinsically safe SIL 3 modules.

Typical Applications

- Safety functions for
 - de-energize to trip
 - energize to trip
- Continuous and batch plants
- Burner and boiler protection
- Oil and gas pipelines
- etc.

HIQuad X System Benefits

- One common engineering platform
- Higher performance
- Enhanced reload functions
- Comprehensive communication options
- Safe communication between HIMA systems
- Implementation of the proven HIMA security concept

Modernization Benefits

- Shorter turnaround times for modernization
- Less modernization effort compared to new installation
- No changes of I/O modules including field wiring

Technical Highlights

- Two systems: H51X and H41X
- Common usage of the same modules for H51X and H41X
- Supports 24 existing HIQuad I/O modules
- Per H51X system up to 16 I/O extension racks with up to 256 I/O modules
- Per H41X system with up to one I/O extension rack with up to 28 I/O modules
- Flexible I/O architecture mono and redundant loops can be mixed, which reduces footprint
- Reload of application, hardware and communication
- Reduced cycle times
- Faster REAL calculation
- Freedom of interference between F-CPU 01 and I/O modules
- Cross connection between modules increases system availability
- Multitasking with up to 32 application programs
- Improved diagnosis for faster maintenance and troubleshooting
- Improved haptics
- Extended system bus
- Better EMC stability

Communication Features of HIQuad X

A new communication module F-COM 01 comes included with HIQuad X. It supports the consistent HIMA security concept. With HIQuad X, you have new opportunities as well as well-known existing communication paths. Additionally, HIQuad X increases the availability of the communication to redundant third-party systems.

You can connect HIQuad X systems to each other via the HIMA safety protocol SafeEthernet. Also, HIMax, HIMatrix systems and RIOs can be combined safely. To establish a safety-related connection to existing HIQuad installations, the protocol HIPRO-S V2 is implemented in HIQuad X.

- 2 Ethernet interfaces on F-CPU 01 and F-COM 01.
- Interference-free, peer-to-peer connections between each F-CPU 01 and each of the up to 10x F-COM 01 modules.
- The whole IP address range can be used.
- Enhanced communication options such as subnet masks and virtual LAN to segregate nets can be programmed.
- One serial interface per F-COM 01.

Supported Communication Protocols

Safe communication via
F-CPU 01 or F-COM 01

- SafeEthernet to communicate to:
 - HIQuad X
 - HIMax
 - HIMatrix F
 - HIMatrix RIO
 - X-OPC Server (as substitute for HIQuad OPC DA and OPC A&E Server)
 - PADT SILworX
- HIPRO-S V2 to communicate to HIQuad F 8627X

Standard communication via
F-COM 01

- Modbus TCP Master & Slave
- Modbus RTU Master & Slave
- Profibus DP Slave
- SNTP time synchronization
- COM User Task (CUT) for individual protocol programming

HIQuad X Components

- F-CPU 01
processor module H51X, H41X (2x RJ-45, SIL 3)
- F-COM 01
Communication module for Ethernet, Profibus DP and serial communication (2x RJ-45, 1x 9-pole D-Sub with 2x RS 485)
- F-IOP 01
I/O processing module (SIL 3) with redundant system bus
- F-PWR 01
Power supply module 24 VDC / 5 VDC, 50 W, H41X, H51X
- F-PWR 02 (optional)
Watchdog supply module for extension rack, H51X
- F-BASE RACK 01
Base rack H51X, 19 inches, 4 units high
- F-BASE RACK 02
Base rack H41X, 19 inches, 4 units high, 12 slots for I/O modules
- F-FAN 01
System fan for racks, 19 inches, 1 unit high

Standards

HIQuad X will be certified in accordance with the relevant safety regulations:

- IEC 61508, up to SIL 3
- IEC 61511, up to SIL 3
- EN 50156
- EN 298
- EN 12067
- EN 60079-15 ATEX Zone 2
- NFPA 72, 85, 86
- EN 54-2
- EN ISO 13849-1, up to PL e
- IEC 62443, SL1 (under preparation)
- And others