MarkVIe* UCSC
Outcome optimizing control for power plants

Designed for Real-world Demands
GE’s MarkVIe control system is an integrated control system that is widely used in a diverse range of applications including gas and steam turbines, safety systems, wind turbines, gasification, hydro, nuclear, and combined cycle power plants. These diverse applications require a compact controller that can deliver the high performance and flexibility needed to run application specific control reliably.

The MarkVIe UCSC, part of GE’s Industrial Internet Control System, is the industry’s first outcome-optimizing controller. It augments real-time deterministic control with embedded Field Agent technology, delivering near-real time advice through market analysis, fleet and enterprise data, or asset/process knowledge to optimize the outcomes that today’s businesses require.

Industrial Internet Enabled
Outcome Optimizing controllers use real-time hypervisor technology to run real-time deterministic control applications concurrently with the embedded Field Agent technology (EFA) without any adverse impact of one over the other. EFA technology is a platform for securely applying Predix applications and secure connectivity to the Predix Cloud as well as run edge apps. Running the Field Agent concurrently with the real-time control applications allows the UCSC to rapidly leverage external data. External monitoring may be used to analyze and optimize entire business operations. The analysis can then be used to dynamically adjust real-time industrial controls to align with changing business objectives in today’s Industrial Internet age.

Advanced Security
In today’s Internet age, industrial controls are constant targets of cyber threats. We at GE understand the risk involved in securing our customer’s most important assets. We believe in defense in depth architecture to secure the asset from potential cyber threats.

The MarkVIe UCSC has been developed to be secure by design, incorporating technologies such as Trusted Platform Modules, secure, trusted, and measured boot. A centralized configuration allows encrypted firmware updates to be executed from a secure central location. A broad suite of cyber-security technology and tools help prevent unauthorized updates while built-in security protocols help protect against man-in-the-middle and denial of service attacks.

Key Benefits

Reduced risk. Built on the strong foundation of GE’s 40 years’ experience providing real-time, deterministic controls for the world’s industrial assets. The controller is secure by design, enabling secure operations and connectivity from edge to cloud.

Reduced lifecycle cost. Advanced capabilities simplify system architecture and reduce applied engineering costs. Further costs are reduced with embedded PROFINET, allowing for dedicated I/O to be chosen for application specific needs.

Optimized business outcomes. Embedded Field Agent technology allows for secure connection to the Industrial Internet, leveraging data to analyze and optimize business operations.
Specifications

**Input Power**
- 30Watts

**Input Voltage**
- 18-30VDC

**Operating Temperature**
- -30°C to 65°C

**Storage Temperature**
- -40°C to 85°C

**Humidity**
- Up to 95% non-condensing

**Microprocessor**
- IS420UCSCH1 - Quad core, 1.2GHz AMD G-Series
- IS420UCSCH2 - Dual core, 1.6GHz AMD G-Series

**Memory**
- IS420UCSCH1 - 4GB DDR3-1333 SDRAM
- IS420UCSCH2 - 2GB DDR3-1066 SDRAM
- 32KB supporting 3067 saved variable, 338 forces and 64 totalizers

**HMI**
- ControlST Software Suite

**Ports**
- 5 Ethernet
- 1 Ethernet ICS Cloud – Dedicated Cloud Port
- 2 USB – Disabled after boot
- 1 Com – No customer connection
- 1 Display – Disabled after boot
- 1 microSD – Not supported

**Dimensions**
- UCSC module – 168 x 150 x 55 mm (H x D x W)
- UCSC with mounting – 204 x 152 x 55 mm (H x D x W)

**Mounting**
- Vertical with unobstructed air flow through fins
- Direct mount to base via two screws
- Thermal
  - 100mm minimal air gap above and below UCSC
  - Parallel mounted UCSC to UCSC minimal spacing
  - 50mm (no temperature derating)
  - Ambient temperature envelope is 25mm from any point on UCSC

**Miscellaneous**
- 121T8700P00002 – UCSB to UCSC power cable adapter
- 121T6659P0001 – UCSC COM port adapter

EU
- CE Mark
- EMC Directive
  - IEC/EN 61131-2: 2007 (sections 8-10, Zone Bl)
  - IEC/EN 61000-6-2: 2005 Ed 2.0
  - IEC/EN 61000-6-4: 2006 Ed 2.0
  - CISPR 24: 2010 / EN55024: 2010
- IEC/EN 61131-2: 2007 (sections 4 & 6)
- ATEX Directive
  - Category 3 equipment - [II 3 G]
- RoHS Directive
- REACH Regulation
- WEEE Directive

US
- FCC 47 CFR 15 Subpart B, Class A
- Hazardous Locations
  - ISA 12.12.01: 2015, Class I Div. 2 Groups ABCD
  - UL 60079-0 Ed 6.0 (2013), Class I, Zone 2 Gas Group A
  - UL 60079-15 Edition 4.0 (2013), [Ex nA]
- Hazardous Locations
  - CSA C22.2 No. 213-15
  - CAN/CSA-C22.2 NO. 60079-0:15, Class I, Zone 2
  - CAN/CSA-C22.2 NO. 60079-15:12
- WEEE & Battery Regulations

Canada
- ICES-003:2016 [Class A]
- Hazardous Locations
  - CSA C22.2 No. 213-15
  - CAN/CSA-C22.2 NO. 60079-0:15, Class I, Zone 2
  - CAN/CSA-C22.2 NO. 60079-15:12
- WEEE & Battery Regulations

Environmental
- IEC/EN 61131-2: 2007 (sections 5 & 6)
- Storage
  - Dry Heat - IEC 60608-2-2: 1974 test Bb [70C @16hrs, unpowered]
  - Cold Temp - IEC 60608-2-1: 2007 test Ab [40C @16hrs, unpowered]
- Damp Heat
  - IEC 60608-2-30: 2005 test Db (unpowered, SSC, 2x)
- Marine Damp Heat
  - IEC 60608-2-30: 2005 test Db (powered & unpowered, SSC, 95%RH, 12hr x 2cycles)
- Sinusoidal Vibration
  - IEC 60608-2-6: 1995 [test Fc]
- Shock

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11.16 GFA2120B