Mark VIe and Mark VIeS Functional Safety UCSC Controller Summary Sheet*

The Mark* VIe and Mark VIeS Functional Safety UCSC controller is a compact, stand-alone controller that runs application-specific control system logic. It can be used in a diverse range of applications, from small industrial controllers to large combined-cycle power plants. The UCSC controller is a base-mounted module, with no batteries, no fans, and no hardware configuration jumpers. All configuration is done through software settings that can be conveniently modified and downloaded using the Mark controls platform software configuration application, ToolboxST*, running on a Windows© operating system. The UCSC controller communicates with I/O modules (Mark VIe and Mark VIeS I/O packs) through on-board I/O network (IONet) interfaces.

The Mark VIeS Safety controller, IS420UCSCS2A, is a dual core controller that runs the Mark VIeS Safety control applications used for functional safety loops to achieve SIL 2 and SIL 3 capabilities. The Mark VIeS Safety product is used by operators that are knowledgeable in safety-instrumented system (SIS) applications to reduce risk in safety functions. The UCSCS2A controller can be configured for Simplex, Dual, and TMR redundancy.

The non-safety Mark VIe controller, IS420UCSCH1B, can be interfaced with the Safety control system (through EGD protocol on UDH Ethernet port) as a controller for non-SIF loops or as a simple communication gateway to provide data with OPC® UA Server or Modbus® Master feedback signals, if needed by the application.

The following table provides the specifications for the UCSC controllers. For more information on the UCSC controller, refer to the *Mark VIeS Functional Safety Systems for General Market Volume II System Guide for General-purpose Applications* (GEH-6855_Vol_II), the section *UCSC Controllers*.

Safety Controller

Gateway Controller

UCSC Controller Specifications

Item	Controller	
	IS420UCSCS2A	**IS420UCSCH1B**
Product Name	Mark VIeS Safety Controller	Mark VIe Gateway Controller
Life-cycle Status	Active	Active
Redundancy Configurations	Simplex, Dual, and TMR	Simplex, Dual
Safety Controller	Yes, compliant with IEC 61508	Non-interferring
Microprocessor	Dual core, 1.6 GHz AMD G-Series	Quad core, 1.2 GHz AMD G-Series
Memory	2 GB DDR3-1066 SDRAM, with error correcting code (ECC)	2 GB DDR3-1066 SDRAM, with error correcting code (ECC)
Memory Storage	128 GB Solid State Drive	128 GB Solid State Drive
Non-Volatile SRAM	No	Supports 3,067 non-volatile program variables, 338 forces, and 64 totalizers

UCSC Controller Specifications (continued)

Item	Controller	
	IS420UCSCS2A	**IS420UCSCH1B**
Ethernet Ports/Controller Communications Support	3 IONet ports (R/S/T) for I/O module communications (simplex, dual, and TMR supported); ENET 1 - EGD/UDH communications to ToolboxST PC, HMIs, UCSCH1B Gateway controller, and GE PACSystems products; Modbus TCP Slave, Read-only; Supports Black Channel communication between other Mark VIeS Safety controllers	3 IONet ports (R/S/T) for I/O module communications (simplex, dual, TMR, and Shared I/O supported). ENET 1 - EGD/UDH communications to ToolboxST PC, HMIs, UCSCS2A Safety controller, and GE PACSystems products. Modbus TCP Slave, Read/Write. ENET 2 - Secondary UDH communications, Modbus TCP Slave and OPC UA. IICS Cloud port for Embedded Field Agent (EFA).
Supports Modbus Master with PSCA	No	Yes, through IONet ports to PSCA; Refer to *Mark VIe Modbus Master Communication Module Summary Sheet* (GEI-100868).
Health and Status LEDs	Power, Boot, Online, Ethernet link and activity, and Diagnostics LEDs. Refer to *Mark VIeS Functional Safety Systems for General Market Volume II System Guide for General-purpose Applications* (GEH-6855_Vol_II), the section *UCSC Controllers*.	
Input Power	18 to 30 V dc, 28 V dc nominal, 30.8 W max	
Input Power Connector	Phoenix® contact (MC 1,5 / 3-STF-3,81 – 1827716) (Included)	
Programming	Function Block Diagram (FBD) Relay Ladder Diagram (RLD) Cause and Effect Matrix Refer to *ToolboxST User Guide for Mark VIeS Functional Safety Systems* (GEH-6862).	Function Block Diagram (FBD) Relay Ladder Diagram (RLD) Sequential Function Chart (SFC) Refer to GEH-6862.
Control Logic Execution (Frame Rate)	10 ms, 40 ms, 80 ms, 160 ms (synchronization across controllers in frame for Dual and TMR configurations)	
Dimensions (H x W x D)	UCSC: 168 x 150 x 55 mm (6.6 x 5.9 x 2.2 in) UCSC with mounting base: 204 x 152 x 55 mm (8.0 x 6.0 x 2.2 in)	
Weight	1,327 g (46.8 oz)	
Mounting Method	Base-mounted For mounting details and spacing requirements details, refer to *Mark VIeS Functional Safety Systems for General Market Volume II System Guide for General-purpose Applications* (GEH-6855_Vol_II), the section *UCSC Controllers*.	
Cooling	Convection	
Hazardous Locations Capability	Class 1, Div 2 / Class 2, Zone 2 / ATEX For ratings and further details, refer to the *Mark VIeS Functional Safety System Equipment in Hazardous Locations (HazLoc) Instruction Guide* (GEH-6861).	
G3 Compliant	Yes	
Ambient Operational Temperature	-40 to 70°C (-40 to 158 °F); ambient 25 mm (0.98 in) from any point on UCSC	
Storage Temperature	-40 to 85°C (-40 to 185 °F)	
Humidity	95% non-condensing	
Controller Replacement Part Number	IS420UCSCS2A	IS420UCSCH1B

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Please send comments or suggestions to controls.doc@ge.com
For further assistance or technical information, contact the nearest GE Sales or Service Office, or an authorized GE Sales Representative.