

Grid Automation Protection Automation Control

# Firmware/Software Release Note

Date: Dec 2021

Distribution: Public

Reference: MU320E-2021-1

## MU320 Extended Configurator

### v 4.1.1 - Dec 2021

#### Key new features

None

#### **Other new features**

• None

#### Notable defect fixes

• Fixed the configuration converter (Update CID or in the Firmware Update) to not remove datasets with FCD or structured data.

#### **Firmware compatibility**

• MU320 firmware versions 04AXX.

#### **Upgrade procedure**

- If there already is a MU320 Extended Configurator installed, it must be removed before installation of the new version.
- Upgrading to MU320 Extended Configurator can be done by executing "bin\setup.exe", after extracting the "MU320E-configurator.install-4.1.1.zip" file.

### v 4.1.0 - Dec 2021

#### **Key new features**

• Analog Monitoring

Added support to monitor the signals parameters (magnitude and phase) for each electrical signal (voltage and current) connected to the available analog channels. When the value is under 5% and the channel is selected as "In Use", the measure is highlighted in ORANGE.



Nominal Nominal In Use	115 V 1 A Primary	Phase	Quality		
In Use		Phase	Quality		
	Primary	Phase	Quality		
			Quanty		
$\checkmark$	0.27 A	76.43°			
✓	0.26 A	101.25°	•		
$\checkmark$	0.29 A	121.8°			
$\checkmark$	0.11 A	83.72°			
✓	215.57523 kV	25.95°	•		
$\checkmark$	51.64 V	103.9°	•		
✓	19.24 V	111.18°			
	79.84 V	-66.56°			
	Y Y Y	<ul> <li>0.29 A</li> <li>0.11 A</li> <li>215.57523 kV</li> <li>\$1.64 V</li> </ul>	✓         0.29 A         121.8°           ✓         0.11 A         83.72°           ✓         215.57523 kV         25.95°           ✓         5164 V         103.9°	✓         0.29 A         121.8°         ∞           ✓         0.11 A         83.72°         ∞           ✓         215.57523 kV         25.95°         ∞           ✓         51.64 V         103.9°         ∞	✓         0.29 A         121.8°         ∞           ✓         0.11 A         83.72°         ∞           ✓         215.57523 kV         25.95°         ∞           ✓         5164 V         103.9°         ∞

For each monitored and used analog channel, the user will see the validity field of its quality attribute. When Validity equals VALID, then the text is highlighted in GREEN, otherwise for QUESTIONABLE and INVALID the text is highlighted in ORANGE. Out of range is never displayed here.

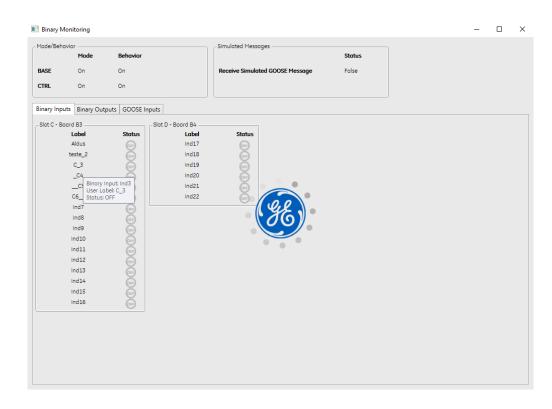
Data are updated each 5 seconds.

• Binary Monitoring

Added support to verify the current state of each available Binary Event (Input/Output and GOOSE) and see the MU/LD Mode/Behavior status and Simulation State. Data are updated each 5 seconds.

**Binary Inputs** 





#### **Binary Outputs**

Binary Mor	nitoring				-	
Mode/Behavio	or	Behavior	Simulated Messages	Status		
BASE	On	On	Receive Simulated GOOSE Message	Folse		
CTRL	On	On				
Binary Inputs	Binary Out	puts GOOSE Inputs				
	d B4 Lobel 	: d 1 /				

#### **GOOSE** Inputs



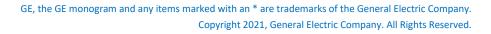
Binary N	Ionitoring											-	
Mode/Beh	avior				Simulated	Messages ———							
	Mode	Behavior						Status					
BASE	On	On			Receive	Simulated GOOSE M	lessage	False					
CTRL	On	On											
Binary Inp	uts Binary Outp	uts GOOSE Inp	outs										
		On N	4U320		From Source				Ont	1U320		From Sourc	е
	Label	Status	Quality	Status	Quality	Test		Label	Status	Quality	Status	Quality	Test
	"O/stVal Good" GOOSE Input: In		•	0		GOOSE Input: I	nd1	Ind17	677	3	•	0	•
ې"				677	0	User Label: "Q/ Test: OFF		Ind18	677	3	0	0	Θ
	"stval Absent"	<u>(</u> )		G	_	(m)		Ind19	<b>OT</b>	3	•	Θ	0
"B(	oth Q/StVal absent	r 💮		Not	Available	$\overline{\mathbf{O}}$		Ind20	(m)	(3)	0	0	0
	"Invalid sub Q"	(m)		077	(8)	017		Ind21	67	Coor	E Input: Ind	20 D	$\overline{\mathbf{O}}$
	onMU320 invalid"		ଁ	077		017		Ind22	677	/ User I	Label: - Ly Details	5	$\overline{\mathbf{O}}$
"Ti	meout/Su User La		nvalid"	õ	0	0		Ind23	(m)	/ Valid	lity: Good flow: 0	5	Ō
	Quality "onMu32 Validity	y: Invalid		õ	õ	0		Ind24	67	Out	of Range: 0 Reference:		õ
	Overflo FromSour Out of	Range: 0			õ	õ		Ind25	6		latory: 0	5	õ
	Ind1 Oscilla	eference: 0 itory: 0	5		õ	õ		Ind26	6	Old [	Data: 0 nsistent: 0	5	õ
	Failure Ind1 Old Da	ita: 0		õ	õ	0		Ind27	6	Inac	curate: 0 ce: Substitu		õ
	Ind1 Inaccu			0	0	0		Ind28	6	Test	False rator Blocke	2	0
	Ind1 Test: F			0	0	0		Ind29	6	1			ž
	Opera Ind14	tor Blocked: 0	6	0	<u> </u>	0		Ind30	<u> </u>	3	0	0	0
	Ind15	6 <del>0</del>	3	0	0	0		Ind31		3	0	Θ	0
		69	3	0	0	0				3	0	0	0
	Ind16		3	Θ	-	Θ		Ind32		3	Ξ	Θ	Θ

• GOOSE Subscriber monitoring

Allows user to see if the IED is receiving messages from a subscribed GOOSE Publisher. Data are updated each 30 seconds

🔣 GOOSE Subse	criber Monitoring	_		×
LGOS	Name	St	tatus	
LGOS 1	MU161_04A01CTRL/LLN0\$GO\$GO	CB32B Offi	ine	

• GOOSE Inputs - Default State definition Allows user to define the default status of a GOOSE Input in absence of the respectively GOOSE message.

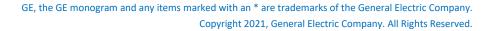


GOOSE Input:         Binary Outputs         Binary Outputs       GOOSE Input:       GOOSE Input:         Binary Outputs       Ind1       _goose1       Lotest         Ind3       GOOSE3_       Geff       v         Ind4       Off       v         Ind8       Off       v         Ind8       Off       v         Ind8       Off       v         Ind1       Off       v         Ind3       GOOSE3_       Off       v         Ind4       Off       v       Ind8       Off       v         Ind1       Off       v       Ind8       Off       v         Ind1       Off       v       Ind1       Off       v         Ind3       GOOSE1       Off       v       Ind2       Off       v         Ind4       Off       v       Ind3       Off       v       Ind1       Off       v         Ind10       Off       v       Ind14       Off       v       Ind14       Off       v         Ind16       Off       v       Ind16       Off       v       Ind16       Off       v	MU320 Extended Configurator					-	×
ED       Power System       Sampled Values       Binary       GOOSE and Report       Logic <ul> <li>Binary</li>             Outputs <li>Binary Inputs</li>             GOOSE Inputs </ul> GOOSE Inputs               Default State               ~                 GOOSE Inputs               GOOSE Inputs               Lotest               ~                 GOOSE Inputs               GOOSE Inputs               GOOSE Inputs               Lotest                 GOOSE Inputs               Ind1               _goose1               Lotest                 Ind3               GOOSE_2               Onf                   Ind4               Off                     Ind6               Off                     Ind10               Off                     Ind13               Off                     Ind14               Off	e Communication						
ED       Power System       Sampled Values       Binary       GOOSE and Report       Logic <ul> <li>Binary Outputs</li> <li>Binary Inputs</li> <li>GOOSE Inputs</li> <li>GOOSE Inputs</li> <li>Ind1</li> <li>Oose1</li> <li>Letest</li> <li>Ind2</li> <li>GOOSE_2</li> <li>On</li> <li>Ind3</li> <li>GOOSE</li> <li>Ind4</li> <li>Off</li> <li>Ind4</li> <li>Off</li> <li>Ind6</li> <li>Off</li> <li>Ind7</li> <li>Off</li> <li>Ind8</li> <li>Off</li> <li>Ind1</li> <li>Off</li> <li>Ind1</li> <li>Off</li> <li>Ind6</li> <li>Off</li> <li>Ind7</li> <li>Off</li> <li>Ind8</li> <li>Off</li> <li>Ind10</li> <li>Off</li> <li>Ind11</li> <li>Off</li> <li>Ind12</li> <li>Off</li> <li>Ind13</li> <li>Off</li> <li>Ind14</li> <li>Off</li> <li>Ind15</li> <li>Off</li> <li>Ind16</li> <li>Off</li> <li>Ind17</li> <li>Off</li> <li>Ind18</li> <li>Off</li> <li>Ind16</li> <li>Off</li> <li>Ind17</li> <li>Off</li> <li>Ind18</li> <li>Off</li> <li>Ind16</li> <li>Off</li> <li>Ind17</li> <li>Off</li> <li>Ind18</li> <li>Off</li> <li>Ind17</li> <li>Off</li> <li>Ind18</li> <li>Off</li> <li>Ind17</li> <li>Off</li> <li>Ind18</li> <l< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th></l<></ul>							
Binary Unputs       GOOSE Input       User Label       Default State         Binary Inputs       Ind1      goose1       Lotest       v         Ind2       GOOSE_2       On       v         Ind3       GOOSE3       Ioff       v         Ind4       Off       v         Ind5       Off       v         Ind6       Off       v         Ind8       Off       v         Ind1       Off       v         Ind3       Off       v         Ind6       Off       v         Ind7       Off       v         Ind8       Off       v         Ind10       Off       v         Ind11       Off       v         Ind12       Off       v         Ind13       Off       v         Ind14       Off       v         Ind15       Off       v         Ind16       Off       v         Ind17       Off       v         Ind18       Off       v	MU320 Extended powered by GE Grid S	Solutions					
GOOSE Input       User Label       Default State         Binary Inputs       Ind1       _goose1       Lotest       v         Ind2       GOOSE_2       On       v         Ind3       GOOSE3_       Ioff       v         Ind4       Off       v         Ind5       Off       v         Ind6       Off       v         Ind8       Off       v         Ind9       Off       v         Ind10       Off       v         Ind11       Off       v         Ind2       Off       v         Ind5       Off       v         Ind6       Off       v         Ind7       Off       v         Ind10       Off       v         Ind11       Off       v         Ind12       Off       v         Ind13       Off       v         Ind14       Off       v         Ind15       Off       v         Ind16       Off       v         Ind16       Off       v         Ind17       Off       v         Ind18       Off       v	D Dawar Sustan Consolid Volum Ringer COOSE on	d Parant Lagia					
GOOSE Inputs       GOOSE Inputs       User Label       Default State         Ind1      goose1       Lotest       v         Ind2       GOOSE_2       On       v         Ind3       GOOSE3_       Ioff							
Ind:		GOOSE Input	User Label	Default Stat	e	^	
Ind3       GCOSE3       Offf       **         Ind4       Off       *         Ind5       Off       *         Ind6       Off       *         Ind7       Off       *         Ind8       Off       *         Ind8       Off       *         Ind9       Off       *         Ind10       Off       *         Ind11       Off       *         Ind12       Off       *         Ind13       Off       *         Ind14       Off       *         Ind15       Off       *         Ind16       Off       *         Ind17       Off       *         Ind18       Off       *	GOOSE Inputs	Ind1	_goose1	Latest	~		
Ind4       0ff       v         Ind5       0ff       v         Ind6       0ff       v         Ind7       0ff       v         Ind8       0ff       v         Ind9       0ff       v         Ind10       0ff       v         Ind11       0ff       v         Ind12       0ff       v         Ind13       0ff       v         Ind14       0ff       v         Ind15       0ff       v         Ind16       0ff       v         Ind17       0ff       v         Ind18       0ff       v		Ind2	GOOSE_2	On	~		
Ind5       Offf       *         Ind6       Offf       *         Ind7       Offf       *         Ind8       Offf       *         Ind9       Offf       *         Ind10       Offf       *         Ind11       Offf       *         Ind12       Offf       *         Ind13       Offf       *         Ind14       Offf       *         Ind15       Offf       *         Ind16       Offf       *         Ind17       Offf       *         Ind18       Offf       *		Ind3	GOOSE3	Off	~		
Ind6       Off       •         Ind7       Off       •         Ind8       Off       •         Ind9       Off       •         Ind10       Off       •         Ind10       Off       •         Ind11       Off       •         Ind12       Off       •         Ind13       Off       •         Ind14       Off       •         Ind15       Off       •         Ind16       Off       •         Ind17       Off       •         Ind18       Off       •		Ind4		Off	~		
Ind7       Off       v         Ind8       Off       v         Ind9       Off       v         Ind10       Off       v         Ind11       Off       v         Ind12       Off       v         Ind13       Off       v         Ind14       Off       v         Ind15       Off       v         Ind16       Off       v         Ind17       Off       v         Ind18       Off       v		Ind5		Off	~		
Ind8       Off       •         Ind9       Off       •         Ind10       Off       •         Ind11       Off       •         Ind12       Off       •         Ind13       Off       •         Ind14       Off       •         Ind15       Off       •         Ind16       Off       •         Ind17       Off       •         Ind18       Off       •		Ind6		Off	~		
Ind9       Off       ~         Ind10       Off       ~         Ind11       Off       ~         Ind12       Off       ~         Ind13       Off       ~         Ind14       Off       ~         Ind15       Off       ~         Ind16       Off       ~         Ind17       Off       ~         Ind18       Off       ~		Ind7		Off	~		
Ind10       Off       ~         Ind11       Off       ~         Ind12       Off       ~         Ind13       Off       ~         Ind14       Off       ~         Ind15       Off       ~         Ind16       Off       ~         Ind17       Off       ~         Ind18       Off       ~		Ind8		Off	~		
Ind11       Off       v         Ind12       Off       v         Ind13       Off       v         Ind14       Off       v         Ind15       Off       v         Ind16       Off       v         Ind17       Off       v         Ind18       Off       v		Ind9		Off	~		
Ind12     Off     v       Ind13     Off     v       Ind14     Off     v       Ind15     Off     v       Ind16     Off     v       Ind17     Off     v       Ind18     Off     v		Ind10		Off	~		
Ind13       Off       v         Ind14       Off       v         Ind15       Off       v         Ind16       Off       v         Ind17       Off       v         Ind18       Off       v		Ind11		Off	~		
Ind14     Off     ~       Ind15     Off     ~       Ind16     Off     ~       Ind17     Off     ~       Ind18     Off     ~		Ind12		Off	~		
Ind15     Off     v       Ind16     Off     v       Ind17     Off     v       Ind18     Off     v		Ind13		Off	~		
Ind16         Off         ~           Ind17         Off         ~           Ind18         Off         ~		Ind14		Off	~		
Ind17 Off		Ind15		Off	~		
Ind18 Off 🗸 🗸		Ind16		Off	~		
		Ind17		Off	~		
		Ind18		Off	~	~	
Cancel Ok			Cancel	Ok			

- With ON default value selected, in the absence of GOOSE Messages, then the Related GOOSE Input shall be set to ON disregarding of its current state.
- With OFF default value selected, in the absence of GOOSE Messages, then the Related GOOSE Input shall be set to OFF disregarding of its current state.
- With LATEST default value selected, in the absence of GOOSE Messages, then the Related GOOSE Input shall not change its state, following the latest received state from the subscribed GOOSE Message.

For users who migrate from older firmware version to 04A01, the default state of the GOOSE input will remain "**Latest**". New configurations will have the GOOSE default state "**Off**" as standard.

 Logic - Possibility to Change from OR to AND Allows user to change the logical OR gate to a logical AND gate to associate binary information for controlling Circuit Breakers, Circuits Switches, Monitoring and Binary Outputs.



MU320 Extended Configurator			– 🗆 X
File Communication			
	ed powered by GE Grid Solutions Binary GOOSE and Report Logic		
Circuit Breakers	Monitoring/SIMG1		
Circuit Switches	Prefix		^
<ul> <li>Monitoring</li> <li>SIMG</li> </ul>			
SIMG SIMG1 SIMG2	Group All v Signal	× 🔁 🖨	
SIMG3	Input	NOT	
SIMG4	CB01/XCBR1.BlkOpn.stVal	$\checkmark$	
SIMG5 SIMG6	CTRL/BININGGIO1.Ind5.stValC5		
SIMG0			
SIMG8			OR Monitoring/SIMG1.In
SIMG9			
SIMG10 SIMG11			OR
SIMG12			AND
SIMG13			AND
SIMG14			
SIMG15 SIMG16			
SIMG17			
SIMG18	Group All v Signal	· 🔂 🖨	
▶ SIML			
<ul> <li>Binary Outputs</li> <li>Slot D - Board B4</li> </ul>	Input	NOT	
SIDE D - BOARD B4			
			OR Monitoring/SIMG1.In
	<		
		Cancel	Ok
MU320 Extended Configurator	Device Connected - MU162_04A	01 - 10.7.77.162	

• Binary Input Setting - Timer Configuration

Allows to set timers (debounce, pickup and dropoff) for each binary input available. It is possible to enable or disable all debounce, pickup and dropoff timers separately. When timer is enabled, the global value is applied for all inputs.

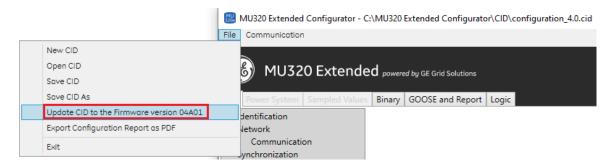
e Communication														
2														
MU320 Extended	powere	d by GE Grid Solutions												
Power System Sampled Values B Binary Outputs	inary	GOOSE and Report	Logic											
Binary Inputs		Slot C - Board B3												
Slot C - Board B3 Slot D - Board B4		Nominal Voltage 2	50 V ~											
GOOSE Inputs			User Label		De	ebounce	Time		Pickup Ti	me	Dropoff T	īme	^	
				[		11	ms	$\checkmark$	100	ms	100	ms		
		1 - Ind1	Aldus			11	ms	$\checkmark$	100	ms	1	ms		
		2 - Ind2	teste_2			11	ms	~	100	ms	1	ms		
		3 - Ind3	C_3			11	ms	$\checkmark$	100	ms	1	ms		
		4 - Ind4	_C4			11	ms	~	100	ms	1	ms		
		5 - Ind5	C5			11	ms	~	100	ms	1	ms		
		6 - Ind6	C6			11	ms	~	100	ms	1	ms		
		7 - Ind7				11	ms	~	100	ms	1	ms		
		8 - Ind8				11	ms	~	100	ms	1	ms		
		9 - Ind9			_	11	ms	~	100	ms	1	ms		
		10 - Ind10												
		11 - Ind11				11	ms	~	100	ms	1	ms		
						11	ms	~	100	ms	1	ms		
		12 - Ind12		[		11	ms	~	100	ms	1	ms		
		13 - Ind13		[		11	ms	$\checkmark$	100	ms	1	ms	$\sim$	
				C	ance	el	Ok							

• Debounce timer is used to validate a binary change specially on noisy channels. This timer can be set from 1ms to 1s with steps of 1ms.

- Pickup timer is used to delay the validation of a binary change from OFF to ON. This timer can be set from 1ms to 60s with steps of 1ms.
- Dropoff timer is used to delay the validation of a binary change from ON to OFF. This timer can be set from 1ms to 60s with steps of 1ms.

#### • Upgrade offline configuration

Allows update a local configuration for the latest FW version that software has compatibility.



This option will be only enabled to configurations compatible with the Firmware version 04A00 (Configuration version 6.0). The configuration will be updated to be compatible with the Firmware version 04A01 (Configuration version 6.1).

• Hardware Reboot

Allows user requests a reboot operation to the IED from the Administrative Tools Interface. User need has administrative privilege to be able to request reboot IED.

Reboot Device Execute Viser ADM Viser ADM Cancel Ok

• I/O Event Log Registering

Allows user to see on the log list, every change on all available physical binary Input and/or Output on the IED.

🛯 Log				- 0	×
Identific	ation —				
IED Nar	ne	MU162_04A01			
IP Addr	ess	10.7.77.162			
Filters -					
Period	All	~ Codes			
Classes			OOSE onfiguratio	Sampled Values Communication Synchronization Firmware Update Clear All Selection	
Timestar	mp Differe	ence		General	
Time		Events	s	Auto Refresh Download Clear Log	
Event	ID 🔻	Timestamp	Code	Description	~
2	727	OCT 02 2021 17:46:24.937	L702	Binary output changed its value: [index: 17; status: on; name: _d_1]	
2	694	OCT 02 2021 17:46:24.905	L701	Binary input changed its value: [index: 32; status: on; name: Ind32]	
2	693	OCT 02 2021 17:46:24.904	L701	Binary input changed its value: [index: 31; status: on; name: Ind31]	
2	692	OCT 02 2021 17:46:24.903	L701	Binary input changed its value: [index: 30; status: on; name: Ind30]	
2	691	OCT 02 2021 17:46:24.902	L701	Binary input changed its value: [index: 29; status: on; name: Ind29]	
2	690	OCT 02 2021 17:46:24.901	L701	Binary input changed its value: [index: 28; status: on; name: Ind28]	
2	689	OCT 02 2021 17:46:24.900	L701	Binary input changed its value: [index: 27; status: on; name: Ind27]	
2	688	OCT 02 2021 17:46:24.899	L701	Binary input changed its value: [index: 26; status: on; name: Ind26]	
2	687	OCT 02 2021 17:46:24.898	L701	Binary input changed its value: [index: 25; status: on; name: Ind25]	
2	685	OCT 02 2021 17:46:24.896	L701	Binary input changed its value: [index: 24; status: on; name: Ind24]	
2	684	OCT 02 2021 17:46:24.895	L701	Binary input changed its value: [index: 23; status: on; name: Ind23]	
2	642	OCT 01 2021 12:16:41.582	L701	Binary input changed its value: [index: 32; status: on; name: Ind32]	
2	641	OCT 01 2021 12:16:41.581	L701	Binary input changed its value: [index: 31; status: on; name: Ind31]	
	640	OCT 01 2021 12:16:41.581	L701	Binary input changed its value: [index: 30; status: on; name: Ind30]	
2					
	639	OCT 01 2021 12:16:41.580	L701	Binary input changed its value: [index: 29; status: on; name: Ind29]	

• GOOSE Message Event Registering Allows user to see on the log list, every change on all GOOSE entries (received and published values).

Log			-	Ш	×
Identification					
IED Name	MU162_04A01				
IP Address	10.7.77.162				
IF Address	10.7.77.102				
Filters			1		
Period All	~ Codes				
CI	ary Inputs and Outputs 🗸 GOOSE	Sampled Values Communication			
	ary Inputs and Outputs 🖌 GOOSE Status 🗌 Configur				
Timestamp Differe	ence	General			
Time	Events	✓ Auto Refresh Refresh Download Clear Log			
Event ID 🔻	Timestamp Cod	Description	-		~
2726	OCT 02 2021 17:46:24.936 L70	GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity: goo	d; quality: 0;	<20]	_
2725	OCT 02 2021 17:46:24.936 L7	5 GOOSE subscribed input [name: Ind31] changed quality from [validity: good; quality: 0x0] to [validity: good	d; quality: 0	x20]	
2724	OCT 02 2021 17:46:24.935 L7	5 GOOSE subscribed input [name: Ind30] changed quality from [validity: good; quality: 0x0] to [validity: goo	d; quality: 0	«20]	
2723	OCT 02 2021 17:46:24.934 L7	5 GOOSE subscribed input [name: Ind29] changed quality from [validity: good; quality: 0x0] to [validity: goo	d; quality: 0	c20]	
2722	OCT 02 2021 17:46:24.933 L7	GOOSE subscribed input [name: Ind28] changed quality from [validity: good; quality: 0x0] to [validity: good	d; quality: 0	c20]	
2721	OCT 02 2021 17:46:24.932 L7	GOOSE subscribed input [name: Ind27] changed quality from [validity: good; quality: 0x0] to [validity: good	d; quality: 0	<20]	
2720	OCT 02 2021 17:46:24.931 L7	5 GOOSE subscribed input [name: Ind26] changed quality from [validity: good; quality: 0x0] to [validity: good	d; quality: 0	<20]	
2719	OCT 02 2021 17:46:24.930 L70				
2718	OCT 02 2021 17:46:24.929 L70				
2717	OCT 02 2021 17:46:24.928 L70				
2716	OCT 02 2021 17:46:24.927 L7				
2715	OCT 02 2021 17:46:24.926 L7		1.1.1.1.1.1.1	-	
2714	OCT 02 2021 17:46:24.925 L7		1.	-	
2713	OCT 02 2021 17:46:24.924 L7		1.	-	
2712	OCT 02 2021 17:46:24.923 L7				
2711	OCT 02 2021 17:46:24.922 L7	5 GOOSE subscribed input [name: Ind17] changed quality from [validity: good; quality: 0x0] to [validity: goo	a; quality: 0	(20]	~
Total Events: 736					

• Event Log Registering Added the Event ID on the registers list.

(ee Ko

🐰 Log			- 🗆 X
dentification —			
IED Name	MU162 04A01		
	-		
IP Address	10.7.77.162		
Filters			
Period All	~ Codes		
	ary Inputs and Outputs G		Sampled Values Communication
	Status Co	onfiguratio	n Synchronization Firmware Update Clear All Selection
Timestamp Differe	ence		General
Time	Events		✓ Auto Refresh Refresh Download Clear Log
Thine	Livents		
Event ID 🔻	Timestamp	Code	Description
2734	OCT 04 2021 22:46:39.363	L500	Procedure to receive configuration: [ok]
	0.07.04.0004.00.00.00.407	L500	Procedure to receive configuration: [ok]
2733	OCT 04 2021 22:30:52.187	LJUU	Proceedure to receive configuration. [ok]
2733 2732	OCT 04 2021 22:30:52.187 OCT 04 2021 10:45:25.642	L500	Procedure to receive configuration: [ok]
2732	OCT 04 2021 10:45:25.642	L500	Procedure to receive configuration: [ok]
2732 2731	OCT 04 2021 10:45:25.642 OCT 02 2021 17:47:42.136	L500 L101	Procedure to receive configuration: [ok] PhyHealth: [ok; cause: Instrument reestablished]
2732 2731 2730	OCT 04 2021 10:45:25.642 OCT 02 2021 17:47:42.136 OCT 02 2021 17:47:42.000	L500 L101 L400	Procedure to receive configuration: [ok] PhyHealth: [ok; cause: Instrument reestablished] Time synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP]
2732 2731 2730 2729	OCT 04 2021 10:45:25.642 OCT 02 2021 17:47:42.136 OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:25.002	L500 L101 L400 L200	Procedure to receive configuration: [ok] PhyHealth: [ok; cause: Instrument reestablished] Time synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP] Ethernet link: [interface: 2; status: on]
2732 2731 2730 2729 2728	OCT 04 2021 10:45:25.642 OCT 02 2021 17:47:42.136 OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:25.002 OCT 02 2021 17:47:25.001	L500 L101 L400 L200 L200	Procedure to receive configuration: [ok] PhyHealth: [ok; cause: Instrument reestablished] Time synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP] Ethernet link: [interface: 2; status: on] Ethernet link: [interface: 1; status: on]
2732 2731 2730 2729 2728 2727	OCT 04 2021 10:45:25.642 OCT 02 2021 17:47:42.136 OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:25.001 OCT 02 2021 17:46:24.937	L500 L101 L400 L200 L200 L702	Procedure to receive configuration: [ok] PhyHealth: [ok; cause: Instrument reestablished] Time synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP] Ethernet link: [interface: 2; status: on] Ethernet link: [interface: 1; status: on] Binary output changed its value: [index: 17; status: on; name: _d_1]
2732 2731 2730 2729 2728 2727 2726	OCT 04 2021 10:45:25.642 OCT 02 2021 17:47:42.136 OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:25.002 OCT 02 2021 17:47:25.001 OCT 02 2021 17:46:24.937 OCT 02 2021 17:46:24.936	L500 L101 L400 L200 L200 L702 L706	Procedure to receive configuration: [ok] PhyHealth: [ok; cause: Instrument reestablished] Time synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP] Ethernet link: [interface: 2; status: on] Ethernet link: [interface: 1; status: on] Binary output changed its value: [index: 17; status: on; name: _d_1] GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity: goo
2732 2731 2730 2729 2728 2727 2726 2725	OCT 04 2021 10:45:25.642 OCT 02 2021 17:47:42.136 OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:25.002 OCT 02 2021 17:47:25.001 OCT 02 2021 17:46:24.937 OCT 02 2021 17:46:24.936 OCT 02 2021 17:46:24.936	L500 L101 L400 L200 L200 L702 L706 L706	Procedure to receive configuration: [ok] PhyHealth: [ok; cause: Instrument reestablished] Time synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP] Ethernet link: [interface: 2; status: on] Ethernet link: [interface: 1; status: on] Binary output changed its value: [index: 17; status: on; name: _d_1] GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind31] changed quality from [validity: good; quality: 0x0] to [validity: goo
2732 2731 2730 2729 2728 2727 2726 2725 2724	OCT 04 2021 10:45:25.642 OCT 02 2021 17:47:42.136 OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:25.001 OCT 02 2021 17:46:24.937 OCT 02 2021 17:46:24.936 OCT 02 2021 17:46:24.935	L500 L101 L400 L200 L200 L702 L706 L706 L706	Procedure to receive configuration: [ok] PhyHealth: [ok; cause: Instrument reestablished] Time synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP] Ethernet link: [interface: 2; status: on] Binary output changed its value: [index: 17; status: on; name: _d_1] GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind31] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind30] changed quality from [validity: good; quality: 0x0] to [validity: goo
2732 2731 2730 2729 2728 2727 2726 2725 2724 2723	OCT 04 2021 10:45:25.642 OCT 02 2021 17:47:42.136 OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:25.001 OCT 02 2021 17:46:24.937 OCT 02 2021 17:46:24.936 OCT 02 2021 17:46:24.936 OCT 02 2021 17:46:24.935 OCT 02 2021 17:46:24.934	L500 L101 L400 L200 L700 L706 L706 L706 L706	Procedure to receive configuration: [ok] PhyHealth: [ok; cause: Instrument reestablished] Time synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP] Ethernet link: [interface: 2; status: on] Ethernet link: [interface: 1; status: on] Binary output changed its value: [index: 17; status: on; name: _d_1] GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind30] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind30] changed quality from [validity: good; quality: 0x0] to [validity: goo
2732 2731 2730 2729 2728 2727 2726 2725 2724 2723 2722 2723 2722	OCT 04 2021 10:45:25.642 OCT 02 2021 17:47:42.136 OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:25.001 OCT 02 2021 17:46:24.937 OCT 02 2021 17:46:24.936 OCT 02 2021 17:46:24.936 OCT 02 2021 17:46:24.935 OCT 02 2021 17:46:24.934 OCT 02 2021 17:46:24.934	L500 L101 L400 L200 L700 L706 L706 L706 L706 L706	Procedure to receive configuration: [ok] PhyHealth: [ok; cause: Instrument reestablished] Time synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP] Ethernet link: [interface: 1; status: on] Binary output changed its value: [index: 17; status: on; name: _d_1] GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind31] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind29] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind28] changed quality from [validity: good; quality: 0x0] to [validity: goo

- The Event ID is unique and incremented monotonically (from 0 to 10000) for each new registered event. The after 10000 registers, the oldest 5000 registers are removed.
- The newest registered events are displayed on top of the list by default.
- The interface displays up to 2000 events in the window.
- The interface shows the total events displayed on the status bar.

#### • Event Log Sorting

Added support to sorting data by the event ID in ascending and descending order.

🐰 Log				- D >
Identificat	tion —			
IED Nam	e	MU162_04A01		
IP Addre	55	10.7.77.162		
Filters —			_	
Period	All	Codes		
Classes		· · · ·	OOSE onfiguratio	Sampled Values Communication Synchronization Firmware Update Clear All Selection
Timestam	p Diffen	ence		General
Time		Events	;	Auto Refresh Refresh Download Clear Log
Event	ID 🔺	Timestamp	Code	Description
1	1	JUN 24 2021 13:11:39.827	L507	ICT requested log cleanup.
1	2	JUN 24 2021 20:00:42.745	L500	Procedure to receive configuration: [ok]
3	3	JUN 24 2021 20:45:52.076	L500	Procedure to receive configuration: [ok]
4	4	JUN 25 2021 09:49:40.000	L400	Time synch: [kind: global; grandmaster: f80278fffe100e1b; source: PTP]
:	5	JUN 25 2021 09:49:40.138	L101	PhyHealth: [ok; cause: Instrument reestablished]
	6	JUN 25 2021 10:31:40.000	L400	Time synch: [kind: holdover; grandmaster: f80278fffe100e1b; source: PTP]
1	7	JUN 25 2021 10:33:42.000	L400	Time synch: [kind: free-running; grandmaster: 00000000000000000; source: PTP]
8	В	JUN 25 2021 10:33:42.138	L101	PhyHealth: [warning; cause: Synch quality]
9	9	JUN 25 2021 10:38:10.000	L400	Time synch: [kind: local; grandmaster: f80278fffe100e1b; source: PTP]
1	0	JUN 25 2021 10:38:10.138	L101	PhyHealth: [ok; cause: Instrument reestablished]
1	1	JUN 25 2021 10:38:23.000	L400	Time synch: [kind: global; grandmaster: f80278fffe100e1b; source: PTP]
1	2	JUN 25 2021 11:03:29.000	L400	Time synch: [kind: holdover; grandmaster: f80278fffe100e1b; source: PTP]
1	3	JUN 25 2021 14:03:51.000	L400	Time synch: [kind: free-running; grandmaster: 0000000000000000; source: PTP]
1	4	JUN 25 2021 14:03:51.138	L101	PhyHealth: [warning; cause: Synch quality]
		JUN 25 2021 14:04:07.000	L400	Time synch: [kind: local; grandmaster: f80278fffe100e1b; source: PTP]
1	5			



The sorting mechanism is applied to all "filtered" items (Period, Codes and Classes) and after that the interface will show up to 2000 events.

• Event Log Filtering

Added support to filter registers by up to 8 classes. It is possible to clear all classes selection through the "Clear All Selection" button.

🐰 Log							
Identification							
IED Name	MU162 04A01						
IP Address	- 10.7.77.162						
IF Address	10.7.77.102						
Filters							
Period All	· Codes						
Classes Bin	ary Inputs and Outputs GOO	CE.	Sampled Values Communication				
	Status Confi						
		garación					
Timestamp Differe	ence		General				
Time	Events		✓ Auto Refresh Refresh Download Clear Log				
Event ID 🔺	Timestamp (	Code	Description				
2	JUN 24 2021 20:00:42.745	L500	Procedure to receive configuration: [ok]				
3	JUN 24 2021 20:45:52.076	L500	Procedure to receive configuration: [ok]				
4	JUN 25 2021 09:49:40.000	L400	Time synch: [kind: global; grandmaster: f80278fffe100e1b; source: PTP]				
6	JUN 25 2021 10:31:40.000	L400	Time synch: [kind: holdover; grandmaster: f80278fffe100e1b; source: PTP]				
7	JUN 25 2021 10:33:42.000	L400	Time synch: [kind: free-running; grandmaster: 0000000000000000; source: PTP]				
9	JUN 25 2021 10:38:10.000	L400	Time synch: [kind: local; grandmaster: f80278fffe100e1b; source: PTP]				
11	JUN 25 2021 10:38:23.000	L400	Time synch: [kind: global; grandmaster: f80278fffe100e1b; source: PTP]				
12	JUN 25 2021 11:03:29.000	L400	Time synch: [kind: holdover; grandmaster: f80278fffe100e1b; source: PTP]				
13	JUN 25 2021 14:03:51.000	L400	Time synch: [kind: free-running; grandmaster: 0000000000000000; source: PTP]				
15	JUN 25 2021 14:04:07.000	L400	Time synch: [kind: local; grandmaster: f80278fffe100e1b; source: PTP]				
	JUN 25 2021 14:04:19.000	L400	Time synch: [kind: global; grandmaster: f80278fffe100e1b; source: PTP]				
17			Time synch: [kind: holdover; grandmaster: f80278fffe100e1b; source: PTP]				
17 18	JUN 25 2021 17:47:13.000	L400	Time synch: [kind: holdover; grandmaster: 1802/8fffe100e1b; source: PTP]				
	JUN 25 2021 17:47:13.000 JUN 25 2021 17:49:15.000		Time synch: [kind: holdover; grandmaster: 1802/8111e100e1b; source: PTP] Time synch: [kind: free-running; grandmaster: 000000000000000; source: PTP]				
18							
18 19	JUN 25 2021 17:49:15.000	L400	Time synch: [kind: free-running; grandmaster: 0000000000000000; source: PTP]				

- Binary Inputs and Outputs: events related to binary I/O change and actions of binary I/O debounce pickup and dropoff.
- GOOSE: events related to GOOSE inputs change, GOCB status, and GOOSE Subscriber.
- Sampled Values: sample quality and SV control block (profile, SVID, status and mode).
- Communication: Ethernet link, IP address, Gateway and Netmask change, MMS connection status and Ethernet settings reset through loopback.
- IED Status: events related to Power Up, PhyHealth, alarm relay, modules, internal voltage, temperature, passwords reset through loopback, IED reboot and log cleanup.
- Configuration: events of receiving and sending configuration.
- Synchronization: time sync and quality.
- Firmware Update: events related to firmware update.
- Log Display Timestamp Format Changed the timestamp format displayed on the Log view to "MON DD YYYY HH:MM:SS.FractionOfSecond".



Period       All       Codes         Classes       Binary Inputs and Outputs       GOOSE       Sampled Values       Communication         IED Status       Configuration       Synchronization       Firmware Update       Clear All Selection	🔡 Log				- D X
IP Address       10.7.77.162         Filters       Period       All       ✓       Codes         Filters       Exercise       Binary Inputs and Outputs       GOOSE       Sampled Values       Communication         Classes       Binary Inputs and Outputs       GOOSE       Sampled Values       Communication       Clear All Selection         Timestamp Difference       Events       Code       Clear Log       Clear Log         Event ID ▼       Timestamp       Code       Description       Clear Log         2734       OCT 04 2021 22:46:39.363       L500       Procedure to receive configuration: [ok]       Procedure to receive configuration: [ok]         2733       OCT 04 2021 12:46:39.363       L500       Procedure to receive configuration: [ok]       Procedure to receive configuration: [ok]         2734       OCT 04 2021 12:46:24:63       L500       Procedure to receive configuration: [ok]       Procedure to receive configuration: [ok]         2731       OCT 02 2021 17:47:42:168       L101       PhyHealth	Identificat	tion —			
Filters         Period       All       Codes         Classes       Binary Inputs and Outputs       GOOSE       Sampled Values       Communication         Classes       Binary Inputs and Outputs       GOOSE       Synchronization       Firmware Update       Clear All Selection         Timestamp Difference       Events        Central       Quarter of the synchronization       Clear Log         Event ID ▼       Timestamp       Code       Description       Clear Log         2734       OCT 04 2021 22:46:39.363       L500       Procedure to receive configuration: [ok]       Procedure to receive configuration: [ok]         2733       OCT 04 2021 22:30:52:187       L500       Procedure to receive configuration: [ok]       Procedure to receive configuration: [ok]         2734       OCT 04 2021 12:30:52:642       L500       Procedure to receive configuration: [ok]       Procedure to receive configuration: [ok]         2730       OCT 02 2021 17:47:42:000       L400       Time synch: [kind: global; grandmaster: c4b512ffe0010b; source: PTP]         2729       OCT 02 2021 17:47:42:001       L200       Ethernet link: [interface: 1; status: on]         2727       OCT 02 2021 17:46:24:937       L702       Binary output changed its value; [indee: 17; status: on; name; _d_1]         2726       OCT 02 2021 17:46:2	IED Nam	e	MU162_04A01		
Period       All       Codes         Classes       Binary Inputs and Outputs       GOOSE       Sampled Values       Communication         Timestamp Difference       Clear All Selection       Synchronization       Firmware Update       Clear All Selection         Timestamp Difference       Event D       Timestamp       Code       Description         Z734       OCT 04 2021 22:46:39.363       L500       Procedure to receive configuration: [ok]       Description         Z733       OCT 04 2021 22:30:52:187       L500       Procedure to receive configuration: [ok]       Description         Z734       OCT 04 2021 12:46:39.363       L500       Procedure to receive configuration: [ok]       Description         Z733       OCT 04 2021 12:46:24:04       L500       Procedure to receive configuration: [ok]       Description         Z730       OCT 02 2021 17:47:42:136       L101       PhyHealth: [ok]; cause: Instrument reestablished]       Description         Z730       OCT 02 2021 17:47:42:00       L400       Time synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP]       Description         Z728       OCT 02 2021 17:47:42:00       L400       Times synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP]       Description         Z727       OCT 02 2021 17:46:24:935       L706       GOOSE subscr	IP Addre	ss	10.7.77.162		
Period       All       Codes         Classes       Binary Inputs and Outputs       GOOSE       Sampled Values       Communication         Timestamp Difference       Clear All Selection       Synchronization       Firmware Update       Clear All Selection         Timestamp Difference       Event D       Timestamp       Code       Description         Z734       OCT 04 2021 22:46:39.363       L500       Procedure to receive configuration: [ok]       Description         Z733       OCT 04 2021 22:30:52:187       L500       Procedure to receive configuration: [ok]       Description         Z734       OCT 04 2021 12:46:39.363       L500       Procedure to receive configuration: [ok]       Description         Z733       OCT 04 2021 12:46:24:04       L500       Procedure to receive configuration: [ok]       Description         Z730       OCT 02 2021 17:47:42:136       L101       PhyHealth: [ok]; cause: Instrument reestablished]       Description         Z730       OCT 02 2021 17:47:42:00       L400       Time synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP]       Description         Z728       OCT 02 2021 17:47:42:00       L400       Times synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP]       Description         Z727       OCT 02 2021 17:46:24:935       L706       GOOSE subscr	Filters				
Classes       Binary Inputs and Outputs       GOOSE       Sampled Values       Communication         IED Status       Configuration       Synchronization       Firmware Update       Clear All Selection         Timestamp Difference       General       Image: Configuration       General       Clear Log         Event ID        Timestamp       Cord 4 2021 22:46:39.363       L500       Procedure to receive configuration: [ok]       Description         2734       OCT 04 2021 12:24:6:39.363       L500       Procedure to receive configuration: [ok]       Description         2733       OCT 04 2021 12:24:6:39.363       L500       Procedure to receive configuration: [ok]       Procedure to receive configuration: [ok]         2734       OCT 04 2021 10:45:25.642       L500       Procedure to receive configuration: [ok]       Procedure to receive configuration: [ok]         2730       OCT 02 2021 17:47:42.136       L101       PhyHealth: [ok] cause: Instrument reestablished]         2730       OCT 02 2021 17:47:42.000       L400       Time synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP]         2729       OCT 02 2021 17:47:42.136       L101       PhyHealth: [nterface: 1; status: on]         2726       OCT 02 2021 17:46:24.937       L702       Binary output changed its value: [indee: 17; status: on; rame: _d_1]         2726       <		All			
IED Status       Configuration       Synchronization       Firmware Update       Clear All Selection         Timestamp Difference       Timestamp       Events	Period	All	° Code	s	
Ited status         Computation         Synchronization         Primware Opdate           Timestamp Difference         General           Time         Events          Call         Auto Refresh         Refresh         Download         Clear Log           Event ID         Timestamp         Code         Description         Clear Log           2734         OCT 04 2021 22:46:39.363         L500         Procedure to receive configuration: [ok]         Description           2733         OCT 04 2021 22:30:52:187         L500         Procedure to receive configuration: [ok]         Description           2732         OCT 04 2021 10:45:25:642         L500         Procedure to receive configuration: [ok]         Description           2739         OCT 02 2021 17:47:42:136         L101         PhyHealth: [ok; cause: Instrument reestablished]         Description           2729         OCT 02 2021 17:47:25:002         L200         Ethernet link: [interface: 2; status: on]         Description         Procedure to receive configuration in data status: da	Classes	🗌 Bin	ary Inputs and Outputs	GOOSE	
Time         Events          Image: Auto Refresh         Refresh         Download         Clear Log           Event ID         Timestamp         Code         Description         Clear Log           2734         OCT 04 2021 22:46:39.363         L500         Procedure to receive configuration: [ok]         Description           2733         OCT 04 2021 22:30:52:187         L500         Procedure to receive configuration: [ok]         Procedure to receive configuration: [ok]           2732         OCT 04 2021 10:45:25:642         L500         Procedure to receive configuration: [ok]         Procedure to receive configuration: [ok]           2731         OCT 02 2021 17:47:42:136         L101         PhyHealth: [ok; cause: Instrument reestablished]           2739         OCT 02 2021 17:47:42:000         L400         Time synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP]           2729         OCT 02 2021 17:47:25:001         L200         Ethernet link: [interface: 2; status: on]           2727         OCT 02 2021 17:46:24:937         L702         Binary output changed its value: [index: 17; status: or; name: _d1]           2726         OCT 02 2021 17:46:24:936         L706         GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity: 2725           2727         OCT 02 2021 17:46:24:935         L706         GO		🗌 IED	Status	Configuratio	n Synchronization Firmware Update Clear All Selection
Time         Events          Image: Auto Refresh         Refresh         Download         Clear Log           Event ID V         Timestamp         Code         Description         Description           2734         OCT 04 2021 22:46:39.363         L500         Procedure to receive configuration: [ok]         Description           2733         OCT 04 2021 22:30:52:187         L500         Procedure to receive configuration: [ok]         Procedure to receive configuration: [ok]           2732         OCT 04 2021 10:45:25:642         L500         Procedure to receive configuration: [ok]         Procedure to receive configuration: [ok]           2731         OCT 02 2021 17:47:42:136         L101         PhyHealth: [ok; cause: Instrument reestablished]           2729         OCT 02 2021 17:47:42:000         L400         Time synch: [kind: global; grandmaster: c4b512fffe00110b; source: PTP]           2728         OCT 02 2021 17:47:25:001         L200         Ethernet link: [interface: 2; status: on]           2727         OCT 02 2021 17:46:24:937         L702         Binary output changed its value: [index: 17; status: or; name; _d1]           2726         OCT 02 2021 17:46:24:936         L706         GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity: 2725           2727         OCT 02 2021 17:46:24:935         L706 <t< td=""><td>Timestam</td><td>n Differ</td><td>ence</td><td></td><td>_ General</td></t<>	Timestam	n Differ	ence		_ General
Event ID         Timestamp         Code         Description           2734         OCT 04 2021 22:46:39.363         L500         Procedure to receive configuration: [ok]           2733         OCT 04 2021 22:30:52:187         L500         Procedure to receive configuration: [ok]           2732         OCT 04 2021 22:30:52:187         L500         Procedure to receive configuration: [ok]           2731         OCT 04 2021 10:45:25:642         L500         Procedure to receive configuration: [ok]           2731         OCT 02 2021 17:47:42:036         L101         PhyHealth: [ok; cause: Instrument resetablished]           2730         OCT 02 2021 17:47:42:000         L400         Time synch: [kind; global; grandmaster: c4b512fffe00010b; source: PTP]           2729         OCT 02 2021 17:47:25:002         L200         Ethernet link: [interface: 2; status: on]           2727         OCT 02 2021 17:46:24:937         L702         Binary output changed its value; [index: 17; status: on; name; _d_1]           2726         OCT 02 2021 17:46:24:936         L706         GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity: 2725           2721         OCT 02 2021 17:46:24:935         L706         GOOSE subscribed input [name: Ind33] changed quality from [validity: good; quality: 0x0] to [validity: 2724           2724         OCT 02 2021 17:46:24:934         L706<		ponier			
2734         OCT 04 2021 22:46:93:63         L500         Procedure to receive configuration: [ok]           2733         OCT 04 2021 22:30:52:187         L500         Procedure to receive configuration: [ok]           2732         OCT 04 2021 10:45:25:642         L500         Procedure to receive configuration: [ok]           2731         OCT 02 2021 17:47:42:136         L101         PhyHealth: [ok; cause: Instrument reestablished]           2730         OCT 02 2021 17:47:42:000         L400         Time synch: [kind: global; grandmaster: c4b512fffe0010b; source: PTP]           2729         OCT 02 2021 17:47:25:002         L200         Ethernet link: [interface: 2; status: on]           2728         OCT 02 2021 17:46:24:937         L702         Binary output changed its value: [index: 17; status: on; name: _d_1]           2726         OCT 02 2021 17:46:24:936         L706         GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity:           2724         OCT 02 2021 17:46:24:935         L706         GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity:           2723         OCT 02 2021 17:46:24:934         L706         GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity:           2724         OCT 02 2021 17:46:24:934         L706         GOOSE subscribed input [name: Ind32] changed quality fro	Time		Ever	nts	Auto Kefresh Download Clear Log
2733         OCT 04 2021 22:30:52:187         L500         Procedure to receive configuration: [ok]           2732         OCT 04 2021 10:45:25.642         L500         Procedure to receive configuration: [ok]           2731         OCT 02 2021 17:47:42.136         L101         PhyHealth: [ok; cause: Instrument reestablished]           2730         OCT 02 2021 17:47:42.000         L400         Time synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP]           2729         OCT 02 2021 17:47:42.000         L400         Ethernet link: [interface: 2; status: on]           2728         OCT 02 2021 17:47:25.002         L200         Ethernet link: [interface: 1; status: on]           2728         OCT 02 2021 17:46:24.937         L702         Binary output changed its value: [inde: 17; status: on; name: _d_1]           2726         OCT 02 2021 17:46:24.936         L706         GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity:           2724         OCT 02 2021 17:46:24.935         L706         GOOSE subscribed input [name: Ind30] changed quality from [validity: good; quality: 0x0] to [validity:           2723         OCT 02 2021 17:46:24.934         L706         GOOSE subscribed input [name: Ind30] changed quality from [validity: good; quality: 0x0] to [validity:           2724         OCT 02 2021 17:46:24.934         L706         GOOSE subscribed input [name: Ind30] changed quality f	Event	ID 🔻	Timestamp	Code	Description
2732         OCT 04 2021 10:45:25.642         L500         Procedure to receive configuration: [ok]           2731         OCT 02 2021 17:47:42.136         L101         PhyHealth: [ok; cause: Instrument reestablished]           2730         OCT 02 2021 17:47:42.000         L400         Time synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP]           2729         OCT 02 2021 17:47:42.000         L400         Time synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP]           2729         OCT 02 2021 17:47:25.002         L200         Ethernet link: [interface: 2; status: on]           2728         OCT 02 2021 17:46:24.937         L702         Binary output changed its value; [index: 17; status: on; name: _d_1]           2726         OCT 02 2021 17:46:24.936         L706         GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity:           2725         OCT 02 2021 17:46:24.935         L706         GOOSE subscribed input [name: Ind31] changed quality from [validity: good; quality: 0x0] to [validity:           2724         OCT 02 2021 17:46:24.934         L706         GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity:           2723         OCT 02 2021 17:46:24.934         L706         GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity:           2723         OCT 02 2021 17:46:24.933 </td <td>27</td> <td>34</td> <td>OCT 04 2021 22:46:39.363</td> <td>L500</td> <td>Procedure to receive configuration: [ok]</td>	27	34	OCT 04 2021 22:46:39.363	L500	Procedure to receive configuration: [ok]
2731         OCT 02 2021 17:47:42.136         L101         PhyHealth: [ok; cause: Instrument reestablished]           2730         OCT 02 2021 17:47:42.000         L400         Time synch: [kind: global; grandmaster: c4b512fffe0010b; source: PTP]           2729         OCT 02 2021 17:47:25.002         L200         Ethernet link: [interface: 2; status: on]           2728         OCT 02 2021 17:47:25.001         L200         Ethernet link: [interface: 1; status: on]           2727         OCT 02 2021 17:46:24.937         L702         Binary output changed its value; [index: 17; status: on; name: _d_1]           2726         OCT 02 2021 17:46:24.936         L706         GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity:           2725         OCT 02 2021 17:46:24.935         L706         GOOSE subscribed input [name: Ind33] changed quality from [validity: good; quality: 0x0] to [validity:           2724         OCT 02 2021 17:46:24.935         L706         GOOSE subscribed input [name: Ind33] changed quality from [validity: good; quality: 0x0] to [validity:           2723         OCT 02 2021 17:46:24.934         L706         GOOSE subscribed input [name: Ind29] changed quality from [validity: good; quality: 0x0] to [validity:           2723         OCT 02 2021 17:46:24.933         L706         GOOSE subscribed input [name: Ind29] changed quality from [validity: good; quality: 0x0] to [validity:           2722	27	33	OCT 04 2021 22:30:52.187	L500	Procedure to receive configuration: [ok]
2730         OCT 02 2021 17:47:42.000         L400         Time synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP]           2729         OCT 02 2021 17:47:25.002         L200         Ethernet link: [interface: 2; status: on]           2728         OCT 02 2021 17:47:25.001         L200         Ethernet link: [interface: 1; status: on]           2727         OCT 02 2021 17:46:24.937         L702         Binary output changed its value: [index: 17; status: on; name: _d_1]           2726         OCT 02 2021 17:46:24.936         L706         GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity:           2725         OCT 02 2021 17:46:24.935         L706         GOOSE subscribed input [name: Ind31] changed quality from [validity: good; quality: 0x0] to [validity:           2724         OCT 02 2021 17:46:24.934         L706         GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity:           2723         OCT 02 2021 17:46:24.934         L706         GOOSE subscribed input [name: Ind29] changed quality from [validity: good; quality: 0x0] to [validity:           2724         OCT 02 2021 17:46:24.934         L706         GOOSE subscribed input [name: Ind29] changed quality from [validity: good; quality: 0x0] to [validity:           2722         OCT 02 2021 17:46:24.933         L706         GOOSE subscribed input [name: Ind29] changed quality from [validity: good; quality: 0x0] to [validit	27	32	OCT 04 2021 10:45:25.642	L500	Procedure to receive configuration: [ok]
2729         OCT 02 2021 17:47:25.002         L200         Ethernet link: [interface: 2; status: on]           2728         OCT 02 2021 17:47:25.001         L200         Ethernet link: [interface: 2; status: on]           2727         OCT 02 2021 17:47:25.001         L200         Ethernet link: [interface: 1; status: on]           2727         OCT 02 2021 17:46:24.937         L702         Binary output changed its value: [index: 17; status: on; name: _d_1]           2726         OCT 02 2021 17:46:24.936         L706         GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity:           2725         OCT 02 2021 17:46:24.935         L706         GOOSE subscribed input [name: Ind31] changed quality from [validity: good; quality: 0x0] to [validity:           2724         OCT 02 2021 17:46:24.935         L706         GOOSE subscribed input [name: Ind39] changed quality from [validity: good; quality: 0x0] to [validity:           2723         OCT 02 2021 17:46:24.934         L706         GOOSE subscribed input [name: Ind29] changed quality from [validity: good; quality: 0x0] to [validity:           2722         OCT 02 2021 17:46:24.933         L706         GOOSE subscribed input [name: Ind29] changed quality from [validity: good; quality: 0x0] to [validity:           2722         OCT 02 2021 17:46:24.933         L706         GOOSE subscribed input [name: Ind28] changed quality from [validity: good; quality: 0x0] to [validity:	27	31	OCT 02 2021 17:47:42.136	L101	PhyHealth: [ok; cause: Instrument reestablished]
2728         OCT 02 2021 17:47:25.001         L200         Ethernet link: [interface: 1; status: on]           2727         OCT 02 2021 17:46:24.937         L702         Binary output changed its value: [index: 17; status: on; name: _d_1]           2726         OCT 02 2021 17:46:24.936         L706         GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity:           2725         OCT 02 2021 17:46:24.936         L706         GOOSE subscribed input [name: Ind31] changed quality from [validity: good; quality: 0x0] to [validity:           2724         OCT 02 2021 17:46:24.935         L706         GOOSE subscribed input [name: Ind30] changed quality from [validity: good; quality: 0x0] to [validity:           2723         OCT 02 2021 17:46:24.934         L706         GOOSE subscribed input [name: Ind30] changed quality from [validity: good; quality: 0x0] to [validity:           2723         OCT 02 2021 17:46:24.934         L706         GOOSE subscribed input [name: Ind29] changed quality from [validity: good; quality: 0x0] to [validity:           2722         OCT 02 2021 17:46:24.933         L706         GOOSE subscribed input [name: Ind28] changed quality from [validity: good; quality: 0x0] to [validity:           2722         OCT 02 2021 17:46:24.933         L706         GOOSE subscribed input [name: Ind28] changed quality from [validity: good; quality: 0x0] to [validity:	27	30	OCT 02 2021 17:47:42.000	L400	Time synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP]
2727         OCT 02 2021 17:46:24.937         L702         Binary output changed its value: [index: 17; status: or; name: _d_1]           2726         OCT 02 2021 17:46:24.936         L706         GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity:           2725         OCT 02 2021 17:46:24.936         L706         GOOSE subscribed input [name: Ind31] changed quality from [validity: good; quality: 0x0] to [validity:           2724         OCT 02 2021 17:46:24.935         L706         GOOSE subscribed input [name: Ind30] changed quality from [validity: good; quality: 0x0] to [validity:           2723         OCT 02 2021 17:46:24.934         L706         GOOSE subscribed input [name: Ind29] changed quality from [validity: good; quality: 0x0] to [validity:           2724         OCT 02 2021 17:46:24.934         L706         GOOSE subscribed input [name: Ind29] changed quality from [validity: good; quality: 0x0] to [validity:           2724         OCT 02 2021 17:46:24.934         L706         GOOSE subscribed input [name: Ind29] changed quality from [validity: good; quality: 0x0] to [validity:           2722         OCT 02 2021 17:46:24.933         L706         GOOSE subscribed input [name: Ind28] changed quality from [validity: good; quality: 0x0] to [validity:           2722         OCT 02 2021 17:46:24.933         L706         GOOSE subscribed input [name: Ind28] changed quality from [validity: good; quality: 0x0] to [validity:	27	29	OCT 02 2021 17:47:25.002	L200	Ethernet link: [interface: 2; status: on]
2726         OCT 02 2021 17:46:24.936         L706         GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity:           2725         OCT 02 2021 17:46:24.936         L706         GOOSE subscribed input [name: Ind31] changed quality from [validity: good; quality: 0x0] to [validity:           2724         OCT 02 2021 17:46:24.935         L706         GOOSE subscribed input [name: Ind30] changed quality from [validity: good; quality: 0x0] to [validity:           2723         OCT 02 2021 17:46:24.934         L706         GOOSE subscribed input [name: Ind29] changed quality from [validity: good; quality: 0x0] to [validity:           2723         OCT 02 2021 17:46:24.933         L706         GOOSE subscribed input [name: Ind29] changed quality from [validity: good; quality: 0x0] to [validity:           2722         OCT 02 2021 17:46:24.933         L706         GOOSE subscribed input [name: Ind28] changed quality from [validity: good; quality: 0x0] to [validity:           2722         OCT 02 2021 17:46:24.933         L706         GOOSE subscribed input [name: Ind28] changed quality from [validity: good; quality: 0x0] to [validity:			OCT 02 2021 17:47:25.001		
2725         OCT 02 2021 17:46:24.936         L706         GOOSE subscribed input [name: Ind31] changed quality from [validity: good; quality: 0x0] to [validity:           2724         OCT 02 2021 17:46:24.935         L706         GOOSE subscribed input [name: Ind30] changed quality from [validity: good; quality: 0x0] to [validity:           2723         OCT 02 2021 17:46:24.934         L706         GOOSE subscribed input [name: Ind29] changed quality from [validity: good; quality: 0x0] to [validity:           2723         OCT 02 2021 17:46:24.934         L706         GOOSE subscribed input [name: Ind29] changed quality from [validity: good; quality: 0x0] to [validity:           2722         OCT 02 2021 17:46:24.933         L706         GOOSE subscribed input [name: Ind28] changed quality from [validity: good; quality: 0x0] to [validity:					
2724         OCT 02 2021 17:46:24.935         L706         GOOSE subscribed input (name: Ind30) changed quality from (validity: good; quality: 0x0) to (validity:           2723         OCT 02 2021 17:46:24.934         L706         GOOSE subscribed input (name: Ind29) changed quality from (validity: good; quality: 0x0) to (validity:           2722         OCT 02 2021 17:46:24.933         L706         GOOSE subscribed input (name: Ind29) changed quality from (validity: good; quality: 0x0) to (validity:           2722         OCT 02 2021 17:46:24.933         L706         GOOSE subscribed input (name: Ind28) changed quality from (validity: good; quality: 0x0) to (validity:					
2723         OCT 02 2021 17:46:24.934         L706         GOOSE subscribed input [name: Ind29] changed quality from [validity: good; quality: 0x0] to [validity:           2722         OCT 02 2021 17:46:24.933         L706         GOOSE subscribed input [name: Ind28] changed quality from [validity: good; quality: 0x0] to [validity:					
2722 OCT 02 2021 17:46:24:933 L706 GOOSE subscribed input [name: Ind28] changed quality from [validity: good; quality: 0x0] to [validity:					
2721 OCL02 2021 17:46:24.932 L/06 GOOSE subscribed input [name: Ind27] changed quality from [validity: good; quality: 0x0] to [validity:					
2720 OCT 02 2021 17:46:24.931 L706 GOOSE subscribed input [name: Ind26] changed quality from [validity: good; quality: 0x0] to [validity:	27	20	OCT 02 2021 17:46:24.931	L/06	GOOSE subscribed input [name: Ind26] changed quality from [validity: good; quality: 0x0] to [validity: goo

- Log Display Timestamp Difference Between Two Events
  - User can select two registered events from the log list and see the time stamp difference between them. The time stamp difference is displayed on the "HH:MM:SS.FractionOfSecond" format. The events ID related to time stamp difference are shown on interface.

🐰 Log			>
dentification			
IED Name	MU162 04A01		
	-		
IP Address	10.7.77.162		
Filters			
Period All	~ Codes		
		OOSE	Sampled Values Communication Clear All Selection
	Status	onfiguratio	In Synchronization Firmware Update
Timestamp Differe	ence		General
Time 1m:17		#2721	I - #2720 Auto Refresh Refresh Download Clear Log
inne initit	.2005 Event	• <del>•</del> 273	1 - #2720 Auto Refresh Refresh Download Clear Log
Event ID 🔻	Timestamp	Code	Description
2734	OCT 04 2021 22:46:39.363	L500	Procedure to receive configuration: [ok]
2733	OCT 04 2021 22:30:52.187	L500	Procedure to receive configuration: [ok]
2732	OCT 04 2021 10:45:25.642	L500	Procedure to receive configuration: [ok]
		L101	PhyHealth: [ok; cause: Instrument reestablished]
2731	OCT 02 2021 17:47:42.136	LIUI	Thynesian [ox, cause instantent reestablished]
2731 2730	OCT 02 2021 17:47:42.136 OCT 02 2021 17:47:42.000	L400	Time synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP]
2730	OCT 02 2021 17:47:42.000	L400	Time synch: [kind: global; grandmaster: c4b512fffe00010b; source: PTP]
2730 2729	OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:25.002	L400 L200	Time synch: [kind: globa]; grandmaster: c4b512fffe00010b; source: PTP] Ethernet link: [interface: 2; status: on] Ethernet link: [interface: 1; status: on] Binary output changed its value: [index: 17; status: on; name: _d_1]
2730 2729 2728 2727 2726	OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:25.002 OCT 02 2021 17:47:25.001	L400 L200 L200 L702 L706	Time synch: [kind: globa]; grandmaster: c4b512fffe00010b; source: PTP] Ethernet link: [interface: 2; status: on] Ethernet link: [interface: 1; status: on] Binary output changed its value: [index: 17; status: on; name: _d_1] GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity: good
2730 2729 2728 2727 2726 2725	OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:25.002 OCT 02 2021 17:47:25.001 OCT 02 2021 17:46:24.937 OCT 02 2021 17:46:24.936 OCT 02 2021 17:46:24.936	L400 L200 L200 L702 L706 L706	Time synch: [kind: globa]; grandmaster: c4b512fffe00010b; source: PTP] Ethernet link: [interface: 2; status: on] Ethernet link: [interface: 1; status: on] Binary output changed its value: [index: 17; status: on; name: _d_1] GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind31] changed quality from [validity: good; quality: 0x0] to [validity: goo
2730 2729 2728 2727 2726 2725 2725 2724	OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:25.002 OCT 02 2021 17:47:25.001 OCT 02 2021 17:46:24.937 OCT 02 2021 17:46:24.936 OCT 02 2021 17:46:24.936 OCT 02 2021 17:46:24.935	L400 L200 L702 L706 L706 L706	Time synch: [kind: globa]; grandmaster: c4b512fffe00010b; source: PTP] Ethernet link: [interface: 2; status: on] Ethernet link: [interface: 1; status: on] Binary output changed its value: [index: 17; status: on; name: _d_1] GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind31] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind31] changed quality from [validity: good; quality: 0x0] to [validity: goo
2730 2729 2728 2727 2726 2725 2725 2724 2723	OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:25.002 OCT 02 2021 17:47:25.001 OCT 02 2021 17:46:24.937 OCT 02 2021 17:46:24.936 OCT 02 2021 17:46:24.935 OCT 02 2021 17:46:24.935 OCT 02 2021 17:46:24.934	L400 L200 L702 L706 L706 L706 L706 L706	Time synch: [kind: globa]; grandmaster: c4b512fffe00010b; source: PTP] Ethernet link: [interface: 2; status: on] Ethernet link: [interface: 1; status: on] Binary output changed its value: [index: 17; status: on; name: _d_1] GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind31] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind31] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind30] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind30] changed quality from [validity: good; quality: 0x0] to [validity: goo
2730 2729 2728 2727 2726 2725 2724 2723 2722	OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:25.002 OCT 02 2021 17:47:25.001 OCT 02 2021 17:46:24.937 OCT 02 2021 17:46:24.936 OCT 02 2021 17:46:24.936 OCT 02 2021 17:46:24.935 OCT 02 2021 17:46:24.934 OCT 02 2021 17:46:24.933	L400 L200 L702 L706 L706 L706 L706 L706	Time synch: [kind: globa]; grandmaster: c4b512fffe00010b; source: PTP] Ethernet link: [interface: 2; status: on] Ethernet link: [interface: 1; status: on] Binary output changed its value: [index: 17; status: on; name: _d_1] GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind31] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind31] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind30] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind29] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind28] changed quality from [validity: good; quality: 0x0] to [validity: goo
2730 2729 2728 2727 2726 2725 2724 2723 2722 2722 2721	OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:25.002 OCT 02 2021 17:47:25.001 OCT 02 2021 17:46:24.937 OCT 02 2021 17:46:24.936 OCT 02 2021 17:46:24.936 OCT 02 2021 17:46:24.935 OCT 02 2021 17:46:24.933 OCT 02 2021 17:46:24.932	L400 L200 L702 L706 L706 L706 L706 L706 L706 L706	Time synch: [kind: globa]; grandmaster: c4b512fffe00010b; source: PTP] Ethernet link: [interface: 2; status: on] Ethernet link: [interface: 1; status: on] Binary output changed its value: [index: 17; status: on; name: _d_1] GOOSE subscribed input [name: Ind32] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind31] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind31] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind30] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind29] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind28] changed quality from [validity: good; quality: 0x0] to [validity: goo GOOSE subscribed input [name: Ind28] changed quality from [validity: good; quality: 0x0] to [validity: goo
2730 2729 2728 2727 2726 2725 2724 2723 2722	OCT 02 2021 17:47:42.000 OCT 02 2021 17:47:25.002 OCT 02 2021 17:47:25.001 OCT 02 2021 17:46:24.937 OCT 02 2021 17:46:24.936 OCT 02 2021 17:46:24.936 OCT 02 2021 17:46:24.935 OCT 02 2021 17:46:24.934 OCT 02 2021 17:46:24.933	L400 L200 L702 L706 L706 L706 L706 L706	Time synch: [kind: globa]; grandmaster: c4b512fffe00010b; source: PTP] Ethernet link: [interface: 2; status: on] Ethernet link: [interface: 1; status: on]

When the time stamp difference is greater than 1 hour (in absolute value), the ICT shows "- : - : " on the interface and a message is added in the software log (C:\MU320 Extended



#### Configurator\logs\logError.log).

imestamp Differe		#2733	- #2731 General Clear Log Clear Log	
Event ID 🔻	Timestamp	Code	Description	
2734	OCT 04 2021 22:46:39.363	L500	Procedure to receive configuration: [ok]	
2733	OCT 04 2021 22:30:52.187	L500	Procedure to receive configuration: [ok]	
2732	OCT 04 2021 10:45:25.642	L500	Procedure to receive configuration: [ok]	
2731	OCT 02 2021 17:47:42.136	L101	PhyHealth: [ok; cause: Instrument reestablished]	

- The Log view is always opened with "Auto Refresh" option selected/enabled.
- The "Auto Refresh" button is unchecked when one or two items are selected.
- When "Auto Refresh" option is selected, the events list is updated, and the selected items/events are unselected.
- When "Refresh" button is clicked, the events list is updated, the "Auto Refresh" option is checked, and the selected items/events are unselected.
- It is not allowed select more than two events.
- The timestamp difference is always positive (newest event oldest event).

#### • Clear Log List

Added support to clear all log events of the device.

🐰 Log				- 🗆 X
ldentifica	ation —			
IED Nar	ne	MU162_04A01		
IP Addr	ess	10.7.77.162		
Filters -				
Period	All	~ Codes		
Classes	Bir	nary Inputs and Outputs GC	OSE	Sampled Values Communication
			nfiguratio	n 🗹 Synchronization 🗌 Firmware Update Clear All Selection
	D://			
Timestar	mp Differ	ence		General
Time		Events		Auto Refresh Download Clear Log
Event		Timestamp	Code	This function requires administrator privilege.
Event	2	JUN 24 2021 20:00:42.745	L500	Procedure to receive configuration: [ok]
	3	JUN 24 2021 20:45:52.076	L500	Procedure to receive configuration: [ok]
	4	JUN 25 2021 09:49:40.000	L400	Time synch: [kind: global; grandmaster: f80278fffe100e1b; source: PTP]
	6	JUN 25 2021 10:31:40.000	L400	Time synch: [kind: holdover; grandmaster: f80278fffe100e1b; source: PTP]
	7	JUN 25 2021 10:33:42.000	L400	Time synch: [kind: free-running; grandmaster: 0000000000000000; source: PTP]
	9	JUN 25 2021 10:38:10.000	L400	Time synch: [kind: local; grandmaster: f80278fffe100e1b; source: PTP]
	11	JUN 25 2021 10:38:23.000	L400	Time synch: [kind: global; grandmaster: f80278fffe100e1b; source: PTP]
	12	JUN 25 2021 11:03:29.000	L400	Time synch: [kind: holdover; grandmaster: f80278fffe100e1b; source: PTP]
	13	JUN 25 2021 14:03:51.000	L400	Time synch: [kind: free-running; grandmaster: 0000000000000000; source: PTP]
	15	JUN 25 2021 14:04:07.000	L400	Time synch: [kind: local; grandmaster: f80278fffe100e1b; source: PTP]
	17	JUN 25 2021 14:04:19.000	L400	Time synch: [kind: global; grandmaster: f80278fffe100e1b; source: PTP]
	18	JUN 25 2021 17:47:13.000	L400	Time synch: [kind: holdover; grandmaster: f80278fffe100e1b; source: PTP]
	19	JUN 25 2021 17:49:15.000	L400	Time synch: [kind: free-running; grandmaster: 00000000000000; source: PTP]
	36 37	JUN 29 2021 13:27:58.296	L500	Procedure to receive configuration: [ok]
	37 44	JUN 29 2021 13:29:43.546 JUN 29 2021 13:32:31.794	L501 L500	New configuration: [ok] Procedure to receive configuration: [ok]
		JUN 29 2021 15:52:51:794	1000	
Total Even	nts: 213			

- The "Clear Log" button will be enabled when user is logged as administrator.
- The software will ask to user confirms the clear action.

#### Access Control CLI

Allows execute actions related to control access by command line. There are two actions:

Validate password
 Command Prompt

C:\MU320 Extended Configurator\CLI>AccessControl.exe -action validatePassword -user1 cfg -pass1 123cfg -ip 10.7.77.162 2000: Password validated C:\MU320 Extended Configurator\CLI>



GE, the GE monogram and any items marked with an \* are trademarks of the General Electric Company. Copyright 2021, General Electric Company. All Rights Reserved.

П

Parameter	Definition
<action></action>	The required action
<user1></user1>	The username which password will be validated
<pass1></pass1>	The user's password
<ip></ip>	The device's IP address

### Change password Command Prompt

WU320 Extended Configurator\CLI>AccessControl.exe -action changePassword -user1 cfg -pass1 123cfg -user2 mon -pass2 123123 -ip 10.7.77.162

C:\MU320 Extended Configurator\CLI>

Parameter	Definition
<action></action>	The required action
<user1></user1>	The username used to connect to device
<pass1></pass1>	The password of username which is used to connect to device
<user2></user2>	The username which password will be changed
<pass2></pass2>	The new password of <user2></user2>
<ip></ip>	The device's IP address

#### **Other new features**

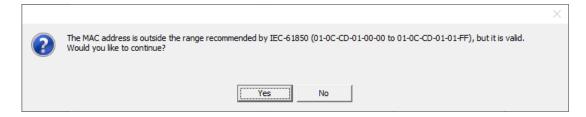
• Extend allowed range of SV publisher MAC addresses User can freely configure all octets. If user configures the MAC address outside of the recommended range by IEC-61850, a message asking the user whether to continue or not is displayed:

		×
?	The MAC address is outside the range recommended by IEC-61850 (01-0C-CD-04-00-00 to 01-0C-CD-04-01-FF), but it is valid. Would you like to continue?	
	Yes No	

If "Yes", the address is kept on the configuration; if "No", the edition interface keeps opened to user to change.

• GOOSE Publisher - Extend MAC Publisher Configuration

Changed the message about MAC address outside the range recommended by the IEC-61850 on the GOOSE Publisher. If user configures the MAC address outside of the recommended range by IEC-61850, a message asking the user whether to continue or not is displayed:



If "Yes", the address is kept on the configuration; if "No", the edition interface keeps opened to user to change.

• ICT does not allow subscribe any Boolean beyond 32 in a published dataset.





() MU320 Extende	ed powered by GE Grid Solutions			
<u> </u>	Binary     GOOSE and Report     Logic       LGOS21.SimSt.stVal     LGOS22.SimSt.stVal       LGOS22.SimSt.q     LGOS22.SimSt.q       LGOS22.SimSt.q     LGOS23.SimSt.q       LGOS23.SimSt.q     LGOS23.SimSt.q       LGOS24.SimSt.q     LGOS24.SimSt.q       LGOS25.SimSt.q     LGOS26.SimSt.q       LGOS26.SimSt.q     LGOS26.SimSt.q       LGOS26.SimSt.q     LGOS26.SimSt.q       LGOS27.SimSt.q     LGOS26.SimSt.q       LGOS28.SimSt.q     LGOS28.SimSt.q       LGOS29.SimSt.q     LGOS29.SimSt.q       LGOS29.SimSt.q     LGOS20.SimSt.q       LGOS30.SimSt.q     LGOS30.SimSt.q       LGOS31.SimSt.q     LGOS32.SimSt.q       LGOS32.SimSt.q     LGOS32.Simst.q       LGOS22.Simst.q     LGOS32.Simst.q       LGOS32.Simst.q     LGOS32.Simst.q       LGOS22.Simst.q     LGOS32.Simst.q       LGOS22.Simst.q     LGOS32.Simst.q       LGOS32.Simst.q     LGOS32.Simst.q       LGOS32.Simst.q     LGOS32.Simst.q	>>	GOOSE 1 (MU161_04A01.b32.BININGGI01.ind21)     GOOSE 2 (MU161_04A01.b32.BININGGI01.ind22)     GOOSE 4     GOOSE 5     GOOSE 6     boolean     quality     GOOSE 6     boolean     quality     GOOSE 7     GOOSE 7     GOOSE 10     GOOSE 10     GOOSE 11     GOOSE 12     GOOSE 13     GOOSE 14     GOOSE 14     GOOSE 15     GOOSE 16     GOOSE 17     GOOSE 16     GOOSE 17     GOOSE 19     GOOSE 20     GOOSE 21     GOOSE 22     GOOSE 22	× *

• Added the Slot identification in the "New" window options.

Cortec	MU320	1	0	<b>B3</b>	<b>B3</b>	<b>B3</b>	B3	B3	B3	A	X	04	i S	E
Slot A - Power Supply		Ц												
1 = 24-48 Vdc		~												
Slot B Hardware Options			Ц											
O = Processing unit + two multimode LC	-type connect	v												
Slot C - Binary Inputs and Outputs														
B3 = 16 × binary inputs		v												
Slot D - Binary Inputs and Outputs					<u></u>									
B3 = 16 × binary inputs		v												
Slot E - Binary inputs and Outputs														
B3 = 16 × binary inputs		v												
Slot F - Binary Inputs and Outputs														
B3 = 16 × binary inputs		~												
Slot G - Flexible Inputs and Outputs														
B3 = 16 × binory inputs		v												
Slot H - Flexible Inputs and Outputs														
B3 = 16 × binary inputs		~												
Functions and Application														
A = Standard Integrated Merging Unit		v												
Reserved												_		
X = Not used		~												
Firmware Version														
04		~												

#### • PTP Monitoring

User will no longer see the information on PTP Monitoring view if the IED is on free running synchronization state (NOK).

#### • SV Configuration

Removed the "Unicast" option into Sample Values configuration. The "Message Type" field is disabled.

MU01 -> Protection	
✓ Enable	
Message Name	MSVCB01
Description	Protection Sampled Value Stream
SVID	IEDNameMU0101
Dataset	PhsMeas1 v
Message Type	Multicost v
Sample Rate	80 ppc Number of ASDUs 1

- Added installer compatible with the MiCOM S1 Agile. Installer to be integrated on the MiCOM S1 Agile package.
- Added option to double click to edit Datasets and Control Blocks.
- Changed the Binary Inputs default voltage to 125 V when a new configuration is created.
- Simplified the PTP settings

User will no longer see the P2P Default profile and will be able to choose the Power or Custom profile. Also, user will no longer see the "Operation Mode" and "Grandmaster Priority" fields. For these fields the default values are "Two-step" and 255, respectively. Changed the Power profile nomenclature.

Time Source	PTP v
Profile	Power (IEEE C37.238-2011 ~
Domain Number	0 ~
Network Protocol	Ethernet Level 2 ULAN
Delay Mechanism	Peer-to-peer v
Announce Receipt Timeout	3 s
	Cancel Ok

#### Notable defect fixes

• Fixed Ethernet validation on PRP mode when configuring two network interfaces on the same subnetwork.

When user configures PRP mode and keeps the two interfaces on the same subnet, ICT changes the Ethernet 2 configuration to the default values:

- o IP Address: 127.0.0.2
- o Network Mask: 255.255.255.0
- o Gateway: 127.0.0.254

Communication				
MU320 Extended Power System   Sampled Values Identification Network	powered by GE Grid Solutions Binary GOOSE and Report Logic			
Communication synchronization Time Source	Communication			
Local Time Settings Mode/Behavior	Network Redundancy	PRP v		
Simulated Messages VT Fuse Failure	Ethernet 1		Ethernet 2	
	IP Address	10.7.77.162	IP Address	127.0.0.2
	Network Mask	255.255.255.0	Network Mask	255.255.255.0
	Gateway	10.7.77.1	Gateway	127.0.0.254
	Serial Port (RS-232)			
	Speed	115200 V bits		
	Data Bits	8 v bits		
	Parity	N (NONE) 🧹		
	Stop Bits	1 v bits		
		Cancel	Ok	

For communication without redundancy, the ICT will not allow user configures the IP address starting with "127" for Ethernet 1 and 2.

• Fixed importing SCL file with several data of the same IED existing in the same file.

MU320 Extended Configurator			- 🗆 X		
File Communication					
MU320 Extende	<b>d</b> powered by GE Grid Solutions				
9					
IED Power System Sampled Values	Binary GOOSE and Report Logic				
Dataset	▲ SubNetworks	GOOSE 1	^		
GOOSE Subscription	▲ PB1	D GOOSE 2			
GOOSE Publisher	IED - AARSC_CcP1_1101	D GOOSE 3			
Report	Control Block = AARSC_CcP1_1101CTRL/LLN0\$GO\$CTRL_1_150_4	GOOSE 4			
	Control Block = AARSC_CcP1_1101PROT/LLN0\$GO\$PROT_1_150_4	D GOOSE 5			
	Control Block = AARSC_CcP1_1101PROT/LLN0\$GO\$PROT_1_150_7	GOOSE 6			
	Control Block = AARSC_CcP1_1101LD_BBP/LLN0\$GO\$BU_Start_PhsA	GOOSE 7			
	Control Block = AARSC_CcP1_1101LD_BBP/LLN0\$GO\$BU_Start_PhsB	GOOSE 8			
	Control Block = AARSC_CcP1_1101LD_BBP/LLN0\$GO\$BU_Start_PhsC	GOOSE 9			
	<ul> <li>Teleprot</li> </ul>	GOOSE 10			
	IED - AARSC_CcP1_1101	GOOSE 11			
	Control Block = AARSC_CcP1_1101LD_TELE/LLN0\$GO\$TELEPROT_PRIM				
	TELEPROTPSCH1.TxPrm.general	GOOSE 13			
	TELEPROTPSCH1.TxPrm.q	>> GOOSE 14			
	▲ Default_subnet	D GOOSE 15			
	▲ IED - Bank1UT	<< > © GOOSE 16			
	Control Block = Bank1UTCB2/LLN0\$GO\$Control_DataSet	D GOOSE 17			
	Control Block = Bank1UTCB3/LLN0\$GO\$Control_DataSet	D GOOSE 18			
	▲ IED - MU416	D GOOSE 19			
	Control Block = MU416CTRL/LLN0\$GO\$FastGOOSE1	D GOOSE 20			
	▲ IED - MU426	D GOOSE 21			
	Control Block = MU426CTRL/LLN0\$GO\$FastGOOSE1 BININGGIO1.ind1.stVal	GOOSE 22 GOOSE 23			
	BININGGIO I.Ind I.stval BININGGIO I.Ind2.stVal	D GOOSE 23			
	BININGGIO1.Ind2.stVal BININGGIO1.Ind3.stVal	V GOOSE 24 E GOOSE 25			
	BININGGIO1.Ind3.stVal	P GOOSE 25			
	BININGGIO1.Ind4.stVal	D GOOSE 20			
	BININGGIO1.Ind6.stVal	D GOOSE 27			
	birvirvo olo Tindostvar	P GOOSE 29			
	Dataset:	0003225	~		
	540354				
	Add SCL File Remove SCL Reference				
	Cancel Ok				
Control On					
MU320 Extended Configurator	Device Connected - MU162_04A01 - 10.7.77.162				

- Fixed translations and interface adjustments on Time Source. Fixed the "Device Connected" label in status bar when language is changed. Adjusted the "Priority" field in the Portuguese language.
- Fixed the "swRev" info in configuration file to save firmware version instead of ICT version.



- Fixed mechanism to ask to save the configuration when closing the window if the user has only changed "Mod / Behavior" or "Simulated Messages" or "VT Fuse Failure" or "Report" or "Logic" data.
- Fixed some Portuguese translation texts.
- Fixed the word 'Electric' on the Identification interface.
- Replaced "Sistema de Potência Elétrico" by "Sistema Elétrico de Potência" in Portuguese language.
- Changed the default IED Name from "IEDName" to "MU320".
- Changed label "SMV ID" to "SV ID".
- Nomenclatures changed in the Reports window according to the IEC 61850-8-1 standard.

MU320 Extended Configurator - C:\MU320 Extended Config	tor\CID\configuration_162.cid		-	×
File Communication				
MU320 Extended powered by GE Grid Soluti	Logic			
Dataset GOOSE Subscription GOOSE Publisher Report	Message Name Description Dataset Options Dataset Options Indexed Trigger Options Data Options Data Update General Interrogation Integrity Option I Fields Sequence Number Data Reference Muffer Overflow	rpt1         Diginput         Buffer Time         Max Instances         1         Integrity Period         Report Timestamp         Reson for Inclusion         Entry ID         Configuration Revision	v ms	
New Ed	Delete	Cancel Ok		

- Changed "VT Failure" to "VT Fuse Failure".
- Fixed serial communication process in two situations: wrong port and lost connection.
- Start, Status and Cortec windows layout fixed to show vertical scrollbar when scale is greater than 100%.
- Fixed AND label size on Logic tab: the "D" of "AND" was a little hidden.

#### **Firmware compatibility**

• MU320 firmware versions 04AXX.

#### Upgrade procedure

Æ

- If there already is a MU320 Extended Configurator installed, it must be removed before installation of the new version.
- Upgrading to MU320 Extended Configurator can be done by executing "bin\setup.exe", after extracting the "MU320E-configurator.install-4.1.0.zip" file.

For questions or further product support, please contact the GE support team using:

----

Region	E-mail	Telephone
Global Contact Centre	GA.support@GE.com	+44 1785 250070
Central, East Asia, Pacific	GA.supportCEAP@GE.com	+61 414 730 964
India	GA.supportIND@GE.com	+91 44 2264 8000
Middle East, North Africa, Turkey	GA.supportMENAT@GE.com	+971 42929467
Europe, Russia, CIS, Sub-Saharan Africa	GA.supportERCIS@GE.com	+34 94 4858854
North America	GA.supportNAM@GE.com	+1 877 605 6777
Latin America	GA.supportLAM@GE.com	+55 48 2108 0300

