

DANEO 400

What's New in Version 5.00

Compared to Version 4.40



1. Overview

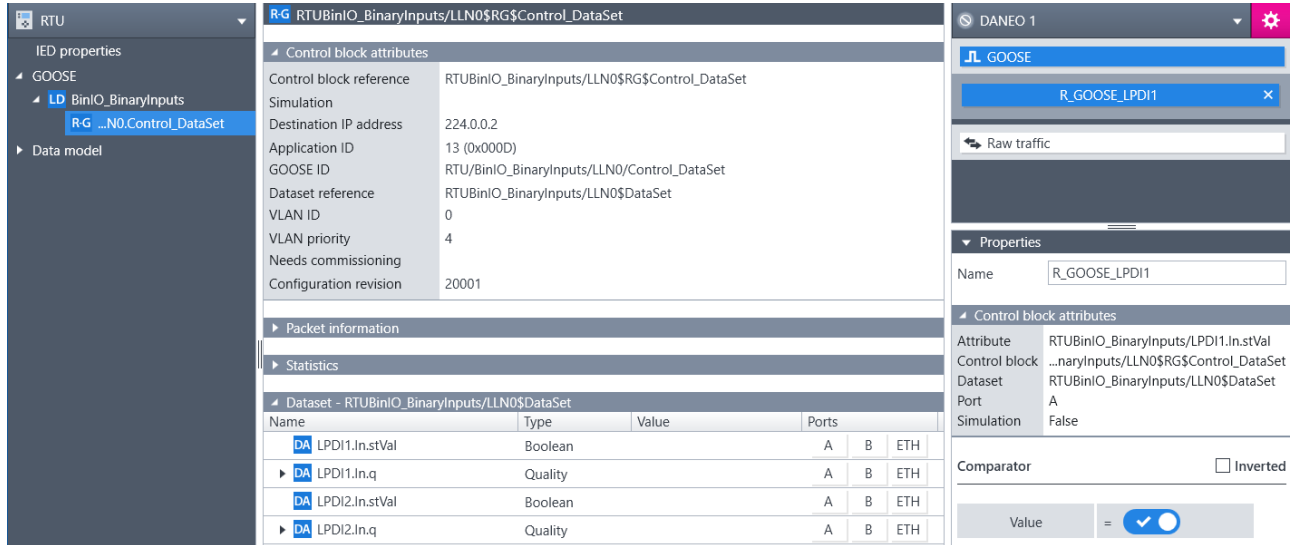
DANEO Control 5.00, improves *DANEO 400* in several ways.

Find more information here:

- [Routable GOOSE \(R-GOOSE\) Support](#)
- [In Depth Network Redundancy Testing](#)
- [Use DANEO 400 as PTP Grandmaster](#)
- [Extended Merging Unit \(MU\) Troubleshooting](#)
- [Flexible Network Traffic Recording](#)
- [Sampled Values Publishing](#)
- [Further improvements](#)
- [Bug fixes](#)

2. Routable GOOSE (R-GOOSE) Support

All existing *DANE0 400* functions such as verification, observation, supervision and recording now support R-GOOSE messages. This allows you to view all protocol details, statistics and data values, and to map attributes as binary signals for further processing and recording.



The screenshot displays the software interface for configuring and monitoring R-GOOSE (Routable GOOSE) messages. The interface is divided into several panes:

- Left Pane (RTU):** Shows a tree view of the configuration structure:
 - RTU
 - IED properties
 - GOOSE
 - LD BiniO_BinaryInputs
 - R-G ...N0.Control_DataSet
 - Data model

- Center Pane (R-G RTUBiniO_BinaryInputs/LLN0\$RG\$Control_DataSet):** Displays control block attributes:
- Control block reference: RTUBiniO_BinaryInputs/LLN0\$RG\$Control_DataSet
- Simulation: (empty)
- Destination IP address: 224.0.0.2
- Application ID: 13 (0x000D)
- GOOSE ID: RTU/BiniO_BinaryInputs/LLN0/Control_DataSet
- Dataset reference: RTUBiniO_BinaryInputs/LLN0\$DataSet
- VLAN ID: 0
- VLAN priority: 4
- Needs commissioning: (empty)
- Configuration revision: 20001
- Bottom Center Pane (Dataset - RTUBiniO_BinaryInputs/LLN0\$DataSet):** Shows a table of dataset attributes:

Name	Type	Value	Ports
DA LPD11.In.stVal	Boolean		A B ETH
DA LPD11.In.q	Quality		A B ETH
DA LPD12.In.stVal	Boolean		A B ETH
DA LPD12.In.q	Quality		A B ETH
- Right Pane (DANE0 1):** Shows the configuration for the DANE0 1 function:
- GOOSE
 - R_GOOSE_LPD11
- Raw traffic
- Properties
 - Name: R_GOOSE_LPD11
 - Control block attributes
 - Attribute: RTUBiniO_BinaryInputs/LPD11.In.stVal
 - Control block: ...naryInputs/LLN0\$RG\$Control_DataSet
 - Dataset: RTUBiniO_BinaryInputs/LLN0\$DataSet
 - Port: A
 - Simulation: False
 - Comparator: Inverted
 - Value: =

3. In Depth Network Redundancy Testing

View PRP trailer and HSR header information for GOOSE and Sampled Values (SV) to verify correct configuration and behavior of network redundancy architectures (i.e. RedBox, QuadBox functions). With automatic detection and documentation in a test report, you can identify issues such as missing PRP trailers and HSR headers, or incorrect IED cabling. This prevents messages from being published to the wrong LAN or in the wrong direction in the HSR ring.

Network Redundancy Check

Device: ✔ DANE0 1 (AJ023D)








Type	Port A	Port B	Result
Raw traffic	1,6 MB/s	1,6 MB/s	0,0 B/s
SV Sampled Values	2	2	✔
	MU0001 A	MU0001 B	✔
	MU0002 A	MU0002 B	✔
R-G R-GOOSE	1	1	✔
	RTUBinIO_BinaryInputs/LLN0\$RG\$Control_DataSet A	RTUBinIO_BinaryInputs/LLN0\$RG\$Control_DataSet B	✔
SV Sampled Values simulated	1	1	✔
	OMICRON_CMC_SV1 A	OMICRON_CMC_SV1 B	✔
G GOOSE	4	4	✘ 1
	AA1_Bay1_M1Master/LLN0\$GO\$Trip A	AA1_Bay1_M1Master/LLN0\$GO\$Trip B	✔
	ISIO_123456789CB/LLN0\$GO\$GCB B	ISIO_123456789CB/LLN0\$GO\$GCB A	✘
	LPUSystem/LLN0\$GO\$gcb01 A	LPUSystem/LLN0\$GO\$gcb01 B	✔
	TFPULine1_CB_QA1/LLN0\$GO\$SETGooseCB_1 A	TFPULine1_CB_QA1/LLN0\$GO\$SETGooseCB_1 B	✔

▶ Start
↵ Clear
■ Stop
00:00:49
Close

4. Use DANE0 400 as PTP Grandmaster

You can set a *DANE0 400* as a PTP TimeTransmitter and configure it according to your application. This is especially useful when time synchronization is required but a PTP clock is not available. In addition, there are more PTP configuration settings and a new supervisor event for changes in the PTP Grandmaster Clock Class, which enables triggered recording during PTP time synchronization tests.

Time source	
<input type="radio"/>	Internal clock
<input checked="" type="radio"/>	PTP
PTP configuration	
Mode	TimeTransmitter
Network port	ETH
Profile	Utility - IEC/IEEE 61850-9-3:2016
Domain	0
Accepted GM accuracy	≤ 250 ns
Announced GM accuracy	≤ 1 μs
Priority 1	254
Priority 2	254
Enable VLAN	<input checked="" type="checkbox"/>
VLAN ID	0
VLAN priority	1

<input type="checkbox"/>	 PTP
<input type="checkbox"/>	 Synchronization lost
<input type="checkbox"/>	 Grandmaster accuracy changed
<input type="checkbox"/>	 Grandmaster clock class changed
<input type="checkbox"/>	 Synchronization established
<input type="checkbox"/>	 Grandmaster ID changed
<input type="checkbox"/>	 UTC offset updated

5. Extended Merging Unit (MU) Troubleshooting

Work more efficiently with new capabilities for testing SV quality and MU synchronization issues. Now you can trigger recording of quality issues by quality data attributes mapped to binary signals and by a new supervisor event for MU synchronization status changes.

SV GT4_MU02_SMV

Control block attributes

SV ID	GT4_MU02_SMV
Simulation	False
Control block reference	GT4_MU02MU01/LLN0\$MS\$MSVCB01
Destination MAC address	01-0C-CD-04-00-90
Application ID	16384 (0x4000)
Sample rate	80
Sample mode	Samples per cycle
noASDU	1
Dataset reference	GT4_MU02MU01/LLN0\$PhsMeas1
VLAN ID	0
VLAN priority	4
Configuration revision	1
Optional fields	not present

Dataset - GT4_MU02MU01/LLN0\$PhsMeas1

Name	Type	Value	Ports
DA I01ATCTR1.AmpSv.instMag.i	Integer		A B ETH
▶ DA I01ATCTR1.AmpSv.q	Quality		A B ETH
DA I01BTCTR2.AmpSv.instMag.i	Integer		A B ETH
▶ DA I01BTCTR2.AmpSv.q	Quality		A B ETH
DA I01CTCTR3.AmpSv.instMag.i	Integer		A B ETH
▶ DA I01CTCTR3.AmpSv.q	Quality		A B ETH

DANE0 1

Sampled Values

SVq_Bad_Ref

Raw traffic

Properties

Name: SVq_Bad_Ref

Control block attributes

Attribute	...4_MU02MU01/I01ATCTR1.AmpSv.q
Control block	..._MU02MU01/LLN0\$MS\$MSVCB01
Dataset	GT4_MU02MU01/LLN0\$PhsMeas1
Port	A
Simulation	False

Comparator Inverted

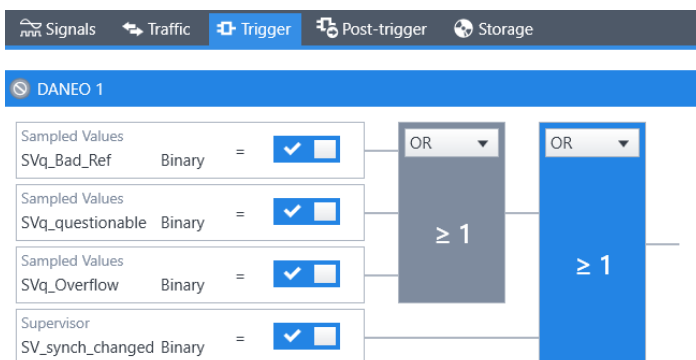
Validity

Overflow

Out of range

Bad reference =

Oscillatory






6. Flexible Network Traffic Recording

Select easily what you want to capture in your PCAP file with new features and improved configuration options for network traffic recording. You can record GOOSE, R-GOOSE, and SV messages with filter options for MAC and IP addresses, custom network protocols, or all traffic on a network port.

Packet capture

DANEO 1

-  A
-  B
-  ETH

Traffic filter

Only mapped and supervised G/SV
Custom protocol filters
All traffic

Protocols

<input checked="" type="checkbox"/> G GOOSE	Destination MAC addresses	01-0C-CD-01-00-95; 01-0C-CD-01-00-90
<input checked="" type="checkbox"/> R-G R-GOOSE	Destination IP addresses	all
<input checked="" type="checkbox"/> SV Sampled Values	Destination MAC addresses	01-0C-CD-04-00-90; 01-0C-CD-04-00-1E
<input type="checkbox"/> Internet Protocol version 4 (IPv4)	Source IP addresses	all
<input checked="" type="checkbox"/> Precision Time Protocol (PTP)		
<input checked="" type="checkbox"/> Parallel Redundancy Protocol (PRP)		
<input checked="" type="checkbox"/> High-availability Seamless Redundancy (HSR)		

+ Add protocol

7. Sampled Values Publishing

Now you can easily use **DANEO Control** to configure SV publishing with *DANEO 400* devices.

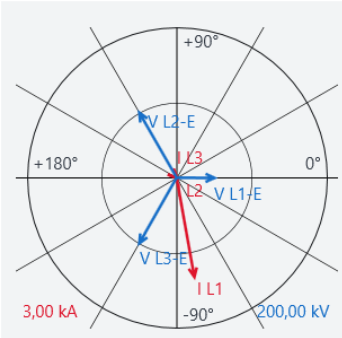
Sampled Values

Network port	A	Sampling rate	4800 Hz
Number of ASDUs	2	Synchronization offset	150 μ s

SV
OMICRON_SV1
+

Configuration	Values
SV ID	OMICRON_SV1
Use simulation flag	<input checked="" type="checkbox"/>
Synchronization status	Locally synchronized (1)
Destination MAC address	01:0C:CD:04:00:00
Source MAC address	From device
Application ID (hex)	4000
Enable VLAN	<input checked="" type="checkbox"/>
VLAN ID	0
VLAN priority	4
Configuration revision	1

Nominal frequency	50 Hz
Primary voltage	100,00 kV
Primary current	1,00 kA
Quality	0x0000
Fault type (L1-E)	<input checked="" type="checkbox"/>
Fault voltage	50 %
Fault current	200 %
Fault angle	80 °



Optimize zoom

8. Further improvements

- Product cyber security improvements of the *DANE0 400* and **DANE0 Control** software
 - The web interface for *DANE0 400* has been removed to improve security
 - *DANE0 400* now starts Socks Proxy only on demand
- The SV IDs are now displayed in the packet propagation analysis instead of the MAC addresses

9. Bug fixes

- Fixed: Missing HSR header in PCAP Recordings

For more information, additional literature,
and detailed contact information of our
worldwide offices please visit our website.

www.omicronenergy.com

Subject to change without notice.