



Advanced SyncPro: IEC 61850-3 HV Certified NTP Server & IEEE 1588 PTP Grandmaster

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Advanced SyncPro: NTS8600 Series

IEC 61850-3 HV & IEEE 1613 Certified Industrial Grandmaster Clock



NTS8600I Series Front Side
NTS8600I-AC Back Side
NTS8600I-DC Back Side



Economical Prices

- Non-compromised Quality
- Feature-Rich Design
- No Extra SW License Fees



Compact Design

Durability

- -40 to +85°C Operating Temperature
- IP 30 & 5100M Operating Altitude
- Certified for IEC 61850-3 & IEEE1613
- MIL-STD 810 Military Grade Reliability
- 20 Years MTBF and 5/10 Year Warranty

Reliability

- Seamless Device Redundancy
- DC/AC Power Redundancy
- Network Link Redundancy
- SFP & Copper Auto-Failover

Accuracy

- Proven PRTC-B (<40ns)
- PTP < 40 ns & NTP < 50 μs accuracy
- IRIG-B Demodulated ±40 ns
- Holdover < 2 μs / 72 hours (OCXO)

Signal Resilience

- IP69K High-Gain Low Noise Antenna
- Support Multiple Constellations
- Jamming and Spoofing Detection
- Selectable Advanced Surge Protector

Synchronization

- 2 x 100/1000 RJ45/SFP Combo Port for PTP & NTP
- 1 x 10/100 RJ45 for NTP & MGT
- Up to 6 Configurable Sync-Outs
- IRIG-B AM /TTL, 10MHZ or PPS Outs

Applicability

- Power Industries
- Telecommunication & Enterprise 5G
- Automation - TSN
- Enterprise

Advanced SyncPro: NTS8610 Series

IEC 61850-3 HV & IEEE 1613 Certified Industrial Grandmaster Clock



NTS8610 Series Front Side
NTS8610-S2 Back Side
NTS8610-S3 Back Side

- Standard 1U Design
- Power Industry Focus
- LCD & Rear Panel I/O

- Cost-Efficient Prices
 - Non-compromised Quality
 - Feature-Rich Design
 - No Extra SW License Fees

Durability

- -40 to +85°C Operating Temperature
- IP 40 & 5100M Operating Altitude
- Certified for IEC 61850-3 & IEEE1613
- MIL-STD 810 Military Grade Reliability
- 20 Years MTBF and 5/10 Year Warranty

Reliability

- Seamless Device Redundancy
- Dual AC/DC Hot Pluggable Modules
- Network Link Redundancy
- SFP & Copper Auto-Failover

Accuracy

- Proven PRTC-B (<40ns)
- PTP < 40 ns & NTP < 50 μs accuracy
- IRIG-B Demodulated ±40 ns
- Holdover < 2 μs / 72 hours (OCXO)

Signal Resilience

- IP69K High-Gain Low Noise Antenna
- Support Multiple Constellations
- Selectable Multiband GNSS
- Jamming and Spoofing Detection
- Selectable Advanced Surge Protector

Synchronization

- 2 x 100/1000 RJ45/SFP Combo Port for PTP & NTP
- 2 x 10/100 RJ45 for NTP & MGT
- Up to 6/7 Configurable Sync In/Outs
- IRIG-B AM /TTL,PPS In/Outs

Applicability

- Power Industries Focus
- Telecommunication & Enterprise 5G
- Automation - TSN
- Enterprise

GMC Selection Made Easy: Find the Model That Fits Your Needs

Key Differences at a Glance

Features	NTS8600	NTS8610
Dimension	1/2U+	1U
Installation	Rack-Mount or DIN-Rail	Rack-Mount
IP Rating	IP30	IP40
Pannel I/O	Front & Rear	Rear
LCD & Key Pad	N/A	Display & Configuration
GNSS	Single Band only	Single Band or Multi-Bands (NTS8610M Model)
Concurrent Constellations	Up to 3	Up to 3 (NTS8610) or Up to 4 (NTS8610M)
Ethernet Ports	2 x 100/1000 RJ45/SFP combo ports and 1 x 10/100 RJ45 port	2 x 100/1000 RJ45/SFP combo ports and 2 x 10/100 RJ45
Power Redundancy	DC version or AC (with External Adapters)	Dual Hot Swappable AC/DC Modules
IRIG-B DCLS/PPS Cascading	Recommend only on IRIG-B RS-485 Channel	Yes
10 MHZ	YES	NO
Legacy Timig Input	No	Yes (NTS8610-S3 or NTS8610M-S3)
TTL Driving Capacity	Up to 20mA per Channel	Up to 125mA per Channel
Relay Alarm	1 (Normal Open) , 24 VDC	1 (Normal Open & Normal Close) , 24 ~ 250 VDC

Application-Based Quick Selection Guides & Model Comparison

Industries	GMC Time-Sync Applications	PTP Precision Requirement	Legacy Timing Necessity	Power Supply Availability	Suggested Product Model	Key Decision Logic
Power Utility	Substation Master Sync	High	Medium	Critical	NTS8610-S2	Central timing source for the entire substation; requires high availability, dual hot-swappable power, and stable PTP performance.
	Event & Fault Recorder	High	Medium	Critical	NTS8610-S2	Reliable and consistent time stamping is essential for SOE and fault analysis; high availability power is mandatory to avoid data gaps.
	Line Differential Protection	High	High	Critical	NTS8610-S2	Protection accuracy depends on precise and stable timing; high power reliability, legacy timing support, and cascading capability are critical.
	PMU / Synchrophasor	High	Medium	Critical	NTS8610-S2	Requires stable sub-microsecond PTP accuracy and continuous operation to ensure reliable phasor measurement and system visibility
	IEC 61850 Process Bus	High	Low	Critical	NTS8610	PTP is the primary timing method; precision must meet Process Bus requirements, with interoperability with IEDs as the key focus.
	Traveling-Wave Fault Location	Ultra-High	Low	Critical	NTS8610M	Ultra-high timing precision is mandatory; multi-band GNSS and maximum timing stability are critical for accurate fault location.
	Feeder Automation	Medium	High	Low	NTS8600-DC/AC NTS8600I-DC/AC	Sub-millisecond-level timing is sufficient; cost efficiency, compact size and basic time synchronization are the main considerations.
	Legacy Timing Input & Conversion	Low	High	Medium	NTS8610-S3	Designed to support legacy IEDs requiring IRIG-B or discrete timing signals; conversion capability is the key requirement.

Industries	GMC Time-Sync Applications	PTP Precision Requirement	Legacy Timing Required	Power Supply Availability	Suggested Product Model	Key Decision Logic
Telecom	5G NR TDD Phase Sync	Ultra-High	SyncE	Critical	NTS8610M	Ultra-high phase accuracy is mandatory for 5G TDD; multi-band GNSS and PTP phase performance are the key requirements.
	Telecom Core / Backhaul Master	High	1PPS/ToD T1/E1 2.048/1.544 MHz SyncE	Critical	Not Supported if T1/E1 and 2.048/1.544 MHz are required	The NTS86X0 series is designed for packet-based timing using PTP, 1PPS/ToD, and SyncE where applicable.
	Central Office (Legacy BITS)	High	1PPS/ToD T1/E1 2.048/1.544 MHz SyncE	Critical		Requires legacy BITS interfaces (T1/E1 and 2.048/1.544 MHz), which are not supported by NTS8600/NTS8610.
	Physical Layer Sync (Frequency)	Medium	10 MHz SyncE	Medium	NTS8600-DC NTS8600-AC	Provides dedicated frequency synchronization through 10 MHz and SyncE, ensuring stable physical-layer timing for telecom equipment.
	O-RAN Distributed Unit (DU)	High	SyncE 1PPS	Critical	NTS8600-DC NTS8600-AC	Tailored for O-RAN DU deployment, combining SyncE and 1PPS support to deliver reliable and cost-effective timing for open RAN architectures.
	Small Cell / Street Furniture	High	SyncE	Medium	NTS8600-DC NTS8600-AC	Compact and cost-efficient timing solution leveraging SyncE-based frequency synchronization, ideal for dense small cell and outdoor deployments.

Industries	GMC Time-Sync Applications	PTP Precision Requirement	Legacy Timing Required	Power Supply Availability	Suggested Product Model	Key Decision Logic
Automation	Motion Control & Robotics	High	1PPS (Optional)	Medium	NTS8600-DC	Provides robust and cost-efficient time alignment for coordinated motion and robotics, ensuring consistent synchronization across controllers without legacy timing complexity.
	Industrial Ethernet (TSN)	Ultra-High	N/A	Medium	NTS8610M	Delivers ultra-high precision timing for TSN networks, enabling deterministic traffic control with a robust and scalable synchronization architecture.
	Machine Vision & Inspection	High	1PPS (Optional)	Medium	NTS8600-DC	Ensures reliable and cost-efficient synchronization across multiple cameras and inspection systems, supporting precise trigger alignment and event correlation.
	High-Speed DAQ & Test Systems	High	10 MHz (Optional)	Medium	NTS8600-DC	Offers a robust common time reference for distributed DAQ systems, enabling accurate high-speed data correlation while keeping system integration cost-efficient.
	Distributed PLC Synchronization	Medium	N/A	Critical	NTS8600-DC	Provides a reliable external time reference when multiple PLC systems or domains require consistent plant-wide time alignment beyond local controller synchronization.
Enterprise	High-Frequency Trading (HFT)	Ultra-High	N/A	Critical	NTS8610M	Provides robust and deterministic timing to support fair order sequencing and accurate timestamps, meeting latency-sensitive trading requirements cost-effectively.
	Financial Transaction Timestamping (MiFID II Compliance)	Medium	N/A	Critical	NTS8600-DC	Delivers traceable and reliable timestamps for regulatory compliance, offering a robust and cost-efficient solution for audit-ready transaction logging.
	Private 5G	High	N/A	Medium	NTS8600-DC	Provides stable and precise PTP timing for private 5G deployments, supporting reliable radio synchronization and scalable enterprise network rollout without telecom-grade complexity.

NTS8600 Series Specifications & Capabilities

General Information		NTS8600			
Model Number	NTS8600-DC	NTS8600-AC	NTS8600I-DC	NTS8600I-AC	
Design & Manufacture	Taiwan				
Harsh Environment Readiness					
Operating & Storage Temperature	-40 to +85°C (-40°F to 185°F)				
EMC Compliance	Industrial Grade EMC with IEC 61850-3 HV & IEEE 1613 Certified				
Safety	UL 62368-1 , CB IEC62368-1/EN62368-1				
Ruggedness	Military Grade MIL-STD 810F				
Operating Altitude	5100m				
Reliability - MTBF	20 Years				
Warranty Period	Standard: 5 years / Optional: 10 years (paid upgrade)				
Mechanical Specification					
Housing	Metal Housing with SPCC w/Zinc Plated Body + Aluminum cover				
Installation	1U Rack-mount				
Panel I/O	Front & Rear				
IP Rating	IP30				
Dimensions (L x W x H) mm	252.8 x 220 x 44				
Power Range & Inputs					
Input Voltage Range	19 – 66 VDC	85 – 264 VAC / 88 – 300 VDC	19 – 66 VDC	85 – 264 VAC / 88 – 300 VDC	
Total Power Inputs	2	1	2	1	
Relay Alarm	1 (Normal Open) , 24VDC ,1A , Pickup time: 2.5ms, Turn-off time: 1ms				
Network Connectivity & Management					
Total Ethernet Ports	Total 3 (2 x 100/1000 RJ45/SFP combo ports and 1 x 10/100 RJ45 port)				
PTP Capable Ports	2 x 100/1000 RJ45/SFP combo ports				
NTP Capable Ports	2 x 100/1000 RJ45/SFP combo ports and 1 x 10/100 RJ45 port				
Management Ports	1 x 10/100 RJ45 port				
Console Ports	1 RS-232 DB9 Console Port				
Support for SyncE Standard					
ITU-T G.8261	Yes				
ITU-T G.8262	Yes				
ESMC G.8264	Yes				
GNSS Receiver Specification					
Receiver Bands	Single Band				
GNSS Supported Systems	GPS, Galileo, GLONASS, BeiDou				
Constellation Support	Up to 3 Concurrent				
Legacy Time Synchronization Features					
Total Time Sync Channels	2 (2 x BNC)		6 (5 x BNC + 1 x TB3)		
Configurable Sync-Out Signals	1 PPS / 10MHZ / IRIG-B TTL		1 PPS / 10MHZ / IRIG-B TTL / IRIG-B AM / IRIG-B RS-485		
Configurable Sync-In Signals	N/A				
TTL Drive Level per Sync-Out Interface	5VDC 20mA TTL Compliant Per Channel				
Max. PPS Out and In Channels	Output: 2 Input: 0		Output: 5 Input: 0		
Max. IRIG-B TTL Out and In Channels	Output: 2 Input: 0		Output: 5 Input: 0		
Max. IRIG-B AM Out and In Channels	0		Output: 3 (Shared configuration) Input: 0		
Max. IRIG-B RS-485 Out and In Channels	0		Output: 1 Input: 0		
Time Accuracy					
PPS Accuracy	< 40ns				
PTP Accuracy	±40 ns				
NTP Accuracy	±50 us Peak				
Holdover Accuracy	< 2 µs / 24 hours				
PTP Profiles					
Power Profiles	IEC/IEEE61850-9-3-2016 & IEEE C37.238-2011 & IEEE C37.238-2017				
Telecom Profiles	ITU-T G.8265.1 Frequency & ITUT-G.8275.1 Phase/Time & ITUT-G.8275.2 Phase/Time				
Automation Profiles	802.1AS				
Media Broadcast	SMPTE ST 2059-2 & AES67 Media Profile				
Enterprise	Enterprise				
Depth of Redundancy					
Power Redundancy	•		•		
SFP & Copper Auto Failover	•	•	•		•
Device Clustering (NTP)	•	•	•		•
PTP Over PRP	•	•	•		•
NTP Over PRP	•	•	•		•
NTP Over Bonding	•	•	•		•
Display Interface					
LED Status Indicator	3 x 3 Grid - Front Panel LED Indicators				
LCD Display	N/A				
Storage Interface					
Micro SD Slot	1x micro-SD slot for Log ,FW and Configuration Backup & Restore				

NTS8610 Series Specifications & Capabilities

General Information		NTS8610				
Model Number	NTS8610	NTS8610M NTS8610M (OSNMA)	NTS8610-S2	NTS8610M-S2 NTS8610M-S2 (OSNMA)	NTS8610-S3	NTS8610M-S3 NTS8610M-S3 (OSNMA)
Design & Manufacture	Taiwan					
Harsh Environment Readiness - Grandmaster						
Operating & Storage Temperature	-40 to +85°C (-40°F to 185°F)					
EMC Compliance	Industrial Grade EMC with IEC 61850-3 HV & IEEE 1613 Certified					
Safety	UL 62368-1, CB IEC62368-1/EN62368-1					
Ruggedness	Military Grade MIL-STD 810F					
Operating Altitude	5100m					
Reliability - MTBF	20 Years					
Warranty Period	Standard: 5 years / Optional: 10 years (paid upgrade)					
Mechanical Specification						
Housing	Metal Housing with SPCC w/Zinc Plated Body + Aluminum cover					
Installation	1U Rack-mount					
Panel I/O	Rear					
IP Rating	IP40					
Dimensions (L x W x H) mm	440 x 300 x 44					
Power Range & Inputs						
Input Voltage Range	AC Power Module: 85–264 VAC or 88–300 VDC DC Power Module: ±20 to ±66 VDC					
Total Power Inputs	Supports up to 2 hot-swappable power modules					
Relay Alarm	1 (Normal Open & Normal Close), 24 - 250 VDC, 75VA, Pickup time: <8 ms, Turn-off time: <6 ms					
Network Connectivity & Management						
Total Ethernet Ports	Total 4 (2 x 100/1000 RJ45/SFP combo ports and 2 x 10/100 RJ45 port)					
PTP Capable Ports	2 x 100/1000 RJ45/SFP combo ports					
NTP Capable Ports	2 x 100/1000 RJ45/SFP combo ports and 2 x 10/100 RJ45 port					
Management Ports	2 x 10/100 RJ45 port					
Console Ports	1 RS-232 DB9 Console Port					
Support for SyncE Standard						
ITU-T G.8261	Yes					
ITU-T G.8262	Yes					
ESMC G.8264	Yes					
GNSS Receiver Specification						
Receiver Bands	Single Band	Multiple Bands	Single Band	Multiple Bands	Single Band	Multiple Bands
GNSS Supported Systems * OSNMA model does not support GLONASS	GPS, Galileo, GLONASS, BeiDou	GPS, Galileo, GLONASS, BeiDou, NavIC	GPS, Galileo, GLONASS, BeiDou	GPS, Galileo, GLONASS, BeiDou, NavIC	GPS, Galileo, GLONASS, BeiDou	GPS, Galileo, GLONASS, BeiDou, NavIC
Constellation Support	Up to 3 Concurrent	Up to 4 Concurrent	Up to 3 Concurrent	Up to 4 Concurrent	Up to 3 Concurrent	Up to 4 Concurrent
Legacy Time Synchronization Features						
Total Time Sync Channels	2 (2 x BNC)		6 (5 x BNC + 1 x TB3)		7 (5 x BNC + 1 x TB3 + 1 x Fiber ST)	
Configurable Sync-Out Signals	1 PPS / IRIG-B TTL / AFNOR		1 PPS / IRIG-B TTL / IRIG-B AM / IRIG-B RS-485		1 PPS / IRIG-B TTL / IRIG-B AM / IRIG-B RS-485	
Configurable Sync-In Signals	N/A					1 PPS / IRIG-B TTL / IRIG-B AM / IRIG-B RS-485
TTL Drive Level per Sync-Out Interface	5VDC 125mA TTL Compliant					
Max. PPS Out and In Channels	Output: 2 Input: 0		Output: 5 Input: 0		Output: 4 Input: 1	
Max. IRIG-B TTL Out and In Channels	Output: 2 Input: 0		Output: 5 Input: 0		Output: 4 Input: 1	
Max. IRIG-B AM Out and In Channels	0		Output: 3 (Shared configuration) Input: 0		Output: 1 Input: 1	
Max. IRIG-B RS-485 Out and In Channels	0		Output: 1 Input: 0		1 (Output or Input)	
Time Accuracy						
PPS Accuracy	< 40ns					
PTP Accuracy	±40 ns					
NTP Accuracy	±50 us Peak					
Holdover Accuracy	< 2 μs / 24 hours					
PTP Profiles						
Power Profiles	IEC/IEEE61850-9-3-2016 & IEEE C37.238-2011 & IEEE C37.238-2017					
Telecom Profiles	ITU-T G.8265.1 Frequency & ITUT-G.8275.1 Phase/Time & ITUT-G.8275.2 Phase/Time					
Automation Profiles	802.1AS					
Media Broadcast	SMPTE ST 2059-2 & AES67 Media Profile					
Enterprise	Enterprise					
Depth of Redundancy						
Power Redundancy	•	•	•	•	•	•
SFP & Copper Auto Failover	•	•	•	•	•	•
Device Clustering (NTP)	•	•	•	•	•	•
PTP Over PRP	•	•	•	•	•	•
NTP Over PRP	•	•	•	•	•	•
NTP Over Bonding	•	•	•	•	•	•
Display Interface						
LED Status Indicator	3 Front-Panel LED Groups and 1 Rear-Panel Power LED					
LCD Display	40x2 Character LCD for Status and Configuration					
Storage Interface						
Micro SD Slot	1x micro-SD slot for Log, FW and Configuration Backup & Restore					

OFFICIAL WEBSITE



LITERATURE LIBRARY



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