SEIKO

Time Server
Pro.

TS-2910

Carrier-grade compact grandmaster for 5G network timing

TS-2910

TS-2912

GNSS | PTP | 1PPS 10MHz

▌Features

- Simple structure in a half-rack unit with functions required for high-precision time embossing logic.

- Meets highly strict 5G network synchronization requirement by installing in backhaul.

- Compliant with PRTC-B by multi GNSS support and signal reception algorithm improvement.

How TS-2910 realizes 5G Network

- GM deployed in backhaul enables transformation to 5G network without significant change of its current architecture.

- Outdoor GM can be connected to in-house facilities with optical fibers to form robust backhaul network.

5G Time Synchronization Accuracy Requirements

Category	Application/Function	Time Budget Error
A+	MIMO or TX diversity transmission, at each carrier frequency	65ns
A	Intra-band contiguous carrier aggregation with or without MIMO or TX diversity	130ns
B	Intra-band non-contiguous carrier aggregation with or without MIMO or TX diversity, and Inter-band carrier aggregation, with or without MIMO or TX diversity	260ns
C	TD-LTE	1.5µs

C-RAN architecture to realize 5G Network
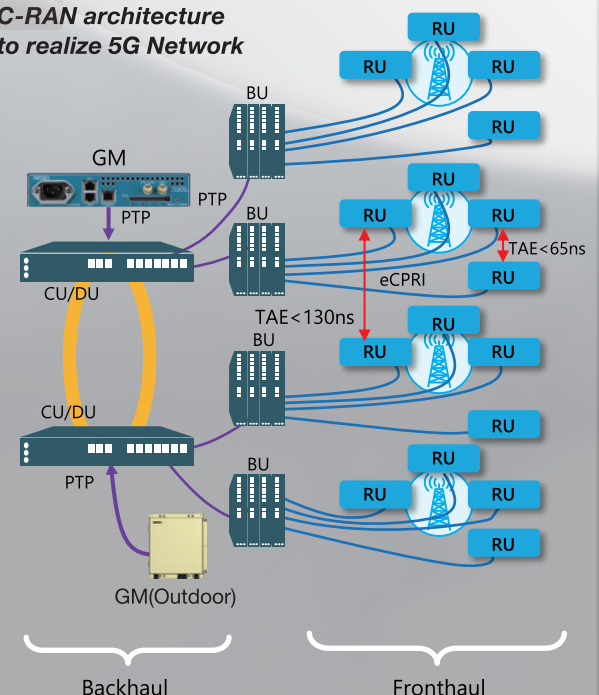
GM in backhaul of C-RAN keeps TAE between RUs within the prescribed value to meet 5G NW requirement

GM : Grandmaster
PTP : Precision Time Protocol
C-RAN : Centralized Radio Access Network
eCPRI : evolved Common Public Radio Interface

TAE : Time Alignment Error
CU : Centralized Unit   DU : Distributed Unit
RU : Radio Unit   BU : Baseband Unit

TS-2910 series

Basic model with two versatile Ethernet ports.
Suitable for a system with all equipment
gathered in the same facility.

DC model

TS-2912 series

Carrier optimized model with a traditional
Ethernet port and a SFP port.
Ideal for a system installed in a wide area
connected with optical cables.

DC model

TS-2914 OUTDOOR model

IP65 Compliant. Function and performance are the same as
TS-2912 series.

GNSS Antenna

TS-210/TS-211

Operation Temperature	-40ºC～85ºC
External dimensions	φ66.5×47.5 (H) mm
Weight	approx. 150g (10m cable included)

Model			TS-2910				TS-2912			
			-10	-20	-12	-22	-10	-20	-12	-22
Time reference	GNSS	GPS	Yes							
		QZSS	Yes							
		GLONASS	Yes							
		Galileo	Yes							
Holdover accuracy[1]		OCXO Type-A	–	400ns/5Hrs 1.5μs/24Hrs		–		400ns/5Hrs 1.5μs/24Hrs		
		OCXO Type-C	1.5us/2Hrs 50us/24Hrs		–		1.5us/2Hrs 50us/24Hrs		–	
Pulse output			1PPS / 10MHz							
Ethernet interface			100BASE-TX / 1000BASE-T 2 ports				SFP-optical (1000BASE-X) 1 port, 100BASE-TX / 1000BASE-T 1 port			
PTP	Number of available interface port		2							
	Correction accuracy (GPS locked)		UTC within 40 ns							
	Profile		Telecom profile for Frequency (G.8265.1) Telecom profile for phase/time (G.8275.1) Telecom profile for phase/time (G.8275.2)							
	Protocol		IPv4 UDP/ Ethernet							
	Delay mechanism		Delay request-response							
	Sync. message transmission type		1 step							
	Processing capability (max.)		Sync : 128 packets/sec[2] Delay request (receive) : 128 packets/sec[2] Announce : 8 packets/sec							
	Maximum connectable number of slave devices		128[2]							
SyncEther			Yes							
HTTP, HTTPS			Yes							
syslog			Yes							
Telnet, SSH			Yes							
IPv6			Yes							
VLAN			Yes							

Characteristics	TS-2910		TS-2910		TS-2910		TS-2910	
	-20	-22	-20	-22	-10	-12	-10	-12
Rated voltage	AC100V ~ AC240V±10% (50/60Hz) [3]				DC -40.5V ~ -57V			
Rated current	0.34A/0.19A				0.37A			
Power consumption	20W				18W			
Calorific value	72.0kJ/h				64.8kJ/h			
Operation temperature	0 ~ 50 °C							
Operation humidity	15 ~ 85% RH (no condensation)							
Installation style	On the shelf (horizontal)							
Dimensions	208(W) x 282(D) x 44(H) mm (projection not included)							
Weight	Approx. 2kg							
Certificates	VCCI-A, RoHS							
GNSS antenna	Multi GNSS antenna antenna holder							

*1 Depending on the Oscillator (hardware) selected for the required holdover performance.
*2 Maximum processing capability depending on the number of the slave are 128 packets/sec for up to 32 nodes, 64 packets/sec for up to 64 nodes and 32 packets/sec for up to 128 nodes.
*3 In case the device is used at AC 240V an applicable AC power cord is necessary.