

Data Center Distribution Panel Intelligent Digital Power Quality Meter, gems7300



HIGH PERFORMANCE DIGITAL POWER QUALITY METER

The gems7300 is a high accuracy digital power quality and energy meter. It makes it possible for enterprises to monitor electric power energy and to control power distribution system. The gems7300 is used as a data(electrical factors) logging and analyzing devices for switchgear panels, distribution feeders and plant automation systems. All gathering data is available via LAN communication port running Modbus TCP.

1. Main function

Precision Measurement

- phase/line voltage
- frequency
- line current
- active/reactive/apparent power
- voltage/current unbalance
- power factor

PQ analysis

- Harmonic analysis (THD on voltage and current, up to the 63rd)
- ITIC curve
- Display waveforms

2. High Accuracy

IEC 62053-22 class 0.2S accuracy

3. True RMS

With gems7300, you can measure highly nonlinear loads with perfectly high accuracy. 533 sampling / cycle (60Hz) true rms measurement can be fulfilled by a high-level sampling technique.

4. Safety and Reliability by CE

gems7300 is certified by CE[EN61326-1:2020] and CE[IEC 61010-1 3rd edition, IEC 61010-2-30]

5. Statistical Data

Statistical information like maximum, minimum, and average of voltage, current, and power within gathering interval on communication can be obtained with gems7300.

The information which measurement parameters instantaneously fluctuate is included, and this makes it possible to precisely analyze the power quality trend of voltage, current, and power.

6. The gems7300 provides detailed PQ and Energy reporting

- Monitors and logs parameters in support of PQ
- Report in EN 50160 format (some items are not supported)
- ITIC (CBEMA) curve
- Harmonic analysis
- Display waveforms and PQ data
- Data and event logging
- 8GB of standard non-volatile memory dedicated to capture data, events, and waveforms.

7. Add-on I/O Modules

You can add modules to the rear side of meter, and this will help you to customize extension of function to meet so many applications. gems7300 has add-on modules like DIO, Ethernet. You can choose up to 2 modules.

8. Gateway function

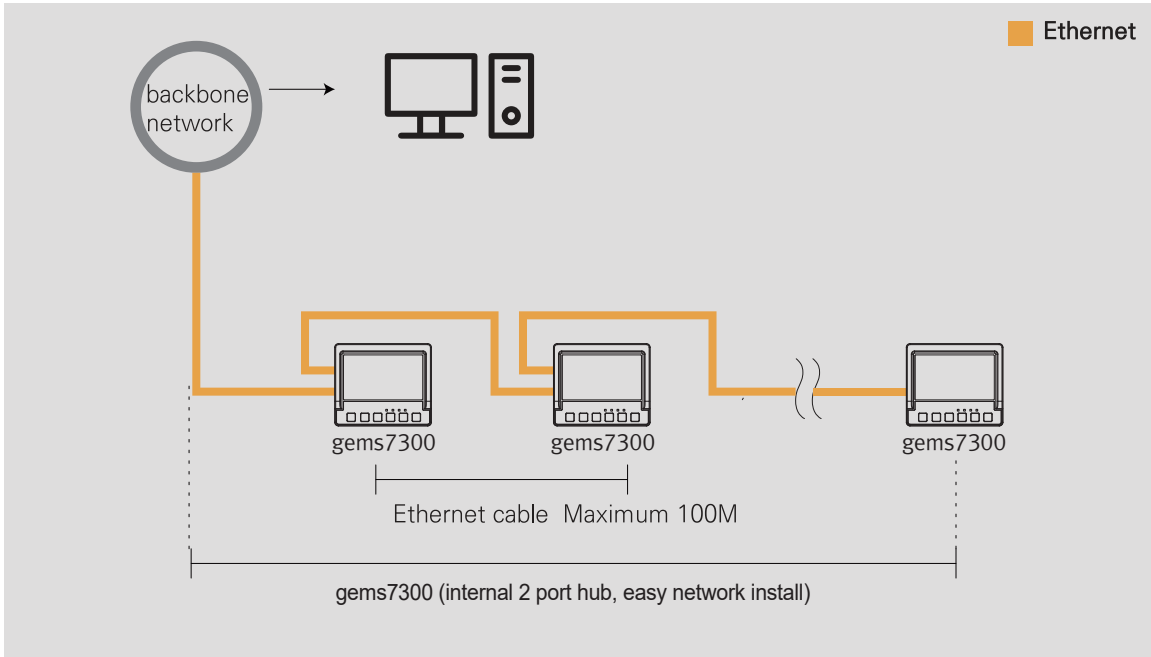
gems7300 supports gateway function based on CAN communication. When the gems7300 acts as a gateway, it can connect up to four gems3600, meaning it can monitor up to 96 three-phase breakers.

gems7300 also serves as an on-site monitor displaying the measurement status of these branch breakers. Since there is no need for a separate display device or panel HMI, on-site configuration is completed using only one IP address.

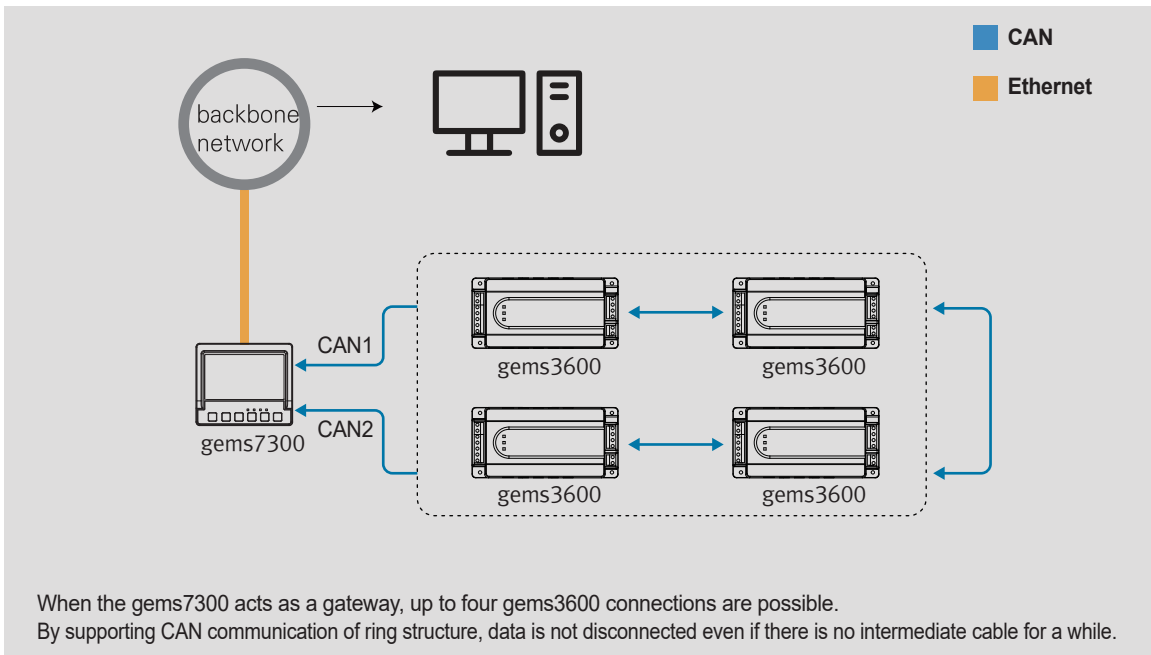
By supporting CAN communication of ring structure, data is not disconnected even if there is no intermediate cable for a while.

gems7300 has two Ethernet ports[bridge] which enables network connection just by direct STP/SFTP cabling between two meters without hubs. gems7300 has a separate CAN communication.

LAN communication



CAN(Controller Area Network) communication





gems7300 provides an accurate measurement of Class 0.2 for voltage and current. Active power/energy conforms to IEC62053–22 Class 0.2S.

Moreover it provides various information essential for electric quality management of switchgear such as Sag, Swell, Crest Factor, K factor and harmonics (up to 63rd).

General	Use on LV, MV, and HV systems		✓
	Current accuracy		Class 0.2
	Voltage accuracy		Class 0.2
	Active energy accuracy		Class 0.2S
	Sample frequency		32kHz
Instantaneous rms values	Current, voltage, frequency		✓
	Active, reactive, apparent power	Total and per phase	✓
	Power factor	Total and per phase	✓
Energy values	Active, reactive, apparent energy		✓
Demand values	Current	Present and max. values	✓
	Active, reactive, apparent power	Present and max. values	✓
Power quality measurements	Harmonic distortion	Current and voltage	✓
	Individual harmonics	Front panel	63rd
	Waveform capture		✓
	Detection of voltage swells and sags		✓
	Fast acquisition	1/2 cycle data	✓
Data recording	Min/max of instantaneous values		✓
	Data logs		✓
	Event logs		✓
	Trending/forecasting		✓
	SER(Sequence of event recording)		✓
	Time stamping		✓
	Memory		8GB
Display and I/O	Front panel display		✓
	Digital Inputs		8
	Digital Outputs		2
Communication	CAN port		2 port, Max 1Mbps
	Ethernet port		2 port switching Hub
	Ethernet port (Modbus/TCP)		✓
	Ethernet to CAN line gateway		✓
	FTP file transfer		✓

Electrical characteristics	Type of measurement		True rms to 533 samples per cycle @ 60Hz
	Measurement accuracy	Current & voltage	Class 0.2 as per IEC 61557-12
		Active Power	Class 0.2 as per IEC 61557-12
		Active Energy	Class 0.2S IEC 62053-22
		Power factor	Class 0.5 as per IEC 61557-12
		Frequency	Class 0.02 as per IEC 61557-12
		THD (Voltage/Current)	Class 1 as per IEC61557-12
	Input-voltage characteristics	Specified accuracy voltage	AC 690V 3~L-L, 400V L-N
		Impedance	2.4M ohm per phase
		Specified accuracy frequency – Frequency	45 to 65 Hz (50/60 Hz nominal)
	Input-current characteristics	Rated nominal current	Built-in 5A CT
		Starting Current	5 mA (Selectable)
	Power supply AC/DC	AC	90–264 VAC
DC		100 - 370 VDC	
Input/outputs	Digital input	8 point, 230V~, external power supply	
	Digital output	2 point, 1-SPST, AC 250V 5A, DC 30V 5A	
Mechanical characteristics	Type		Panel Mounting
	Dimensions		135 x 115 x 124mm
	IP degree of protection	IP 40 - Front degree of protection	
		IP 30 - Rear degree of protection	
	LCD type		5" Color TFT LCD
Weight		498g	

Environmental conditions	Operating temperature	-10 °C to 55 °C
	Storage temperature	-25 °C to 85 °C
	Humidity rating	5 % to 80 % non-condensing
	Installation category	III
	Operating altitude (maximum)	2000 m above sea-level
Electromagnetic compatibility	EMC standards	IEC 61326-1:2020
	Immunity to electrostatic discharge	IEC 61000-4-2
	Immunity to radiated fields	IEC 61000-4-3
	Immunity to fast transients	IEC 61000-4-4
	Immunity to surges	IEC 61000-4-5
	Immunity to conducted disturbances	IEC 61000-4-6
	Immunity to power frequency magnetic fields	IEC 61000-4-8
	Immunity to voltage dips & interruptions	IEC 61010-1 3rd edition
Safety	Safety Construction	Communicates directly with up to 4 unit load devices
Communication	Ethernet to CAN line gateway	2 port, 1Mbps
	CAN	2 port switching hub, 10/100BASE-TX, RJ45 connector (UTP)
	Ethernet port(s)	Modbus, FTP, SNMP, IPv4
	Protocol	



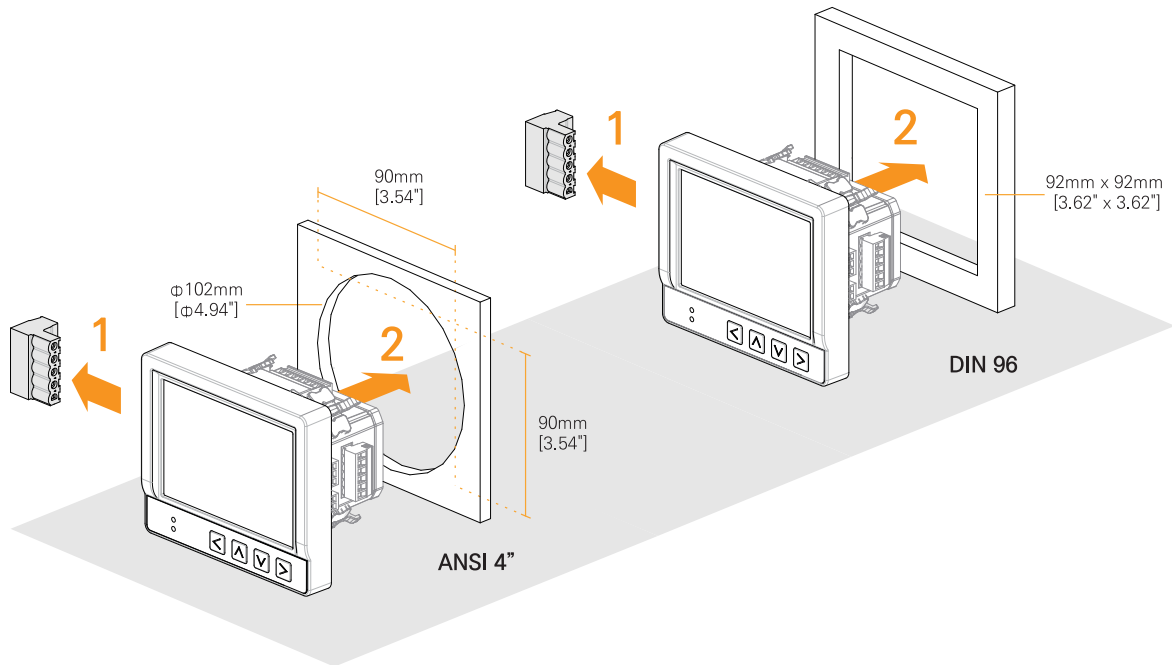
Firmware characteristics	High-speed data recording	1/2 cycle interval recording function: In case of power failure or disturbance, instantaneous voltage and current data should be recorded at 1/2 cycle interval.
	Harmonic distortion	Up to 63rd harmonic
	Sag/swell detection	ITIC Chart Mapping: For analysis of sag and swell effects, the level and duration of sag and swell are mapped to an analysis chart (ITIC).
	Waveform captures	Stores voltage and current samples before and after the trigger point, storage conditions and duration can be specified by the user.
	Alarms	It provides various alarm functions through settings such as threshold designation, delay time, and priority for measurement data.

Standard Compliance

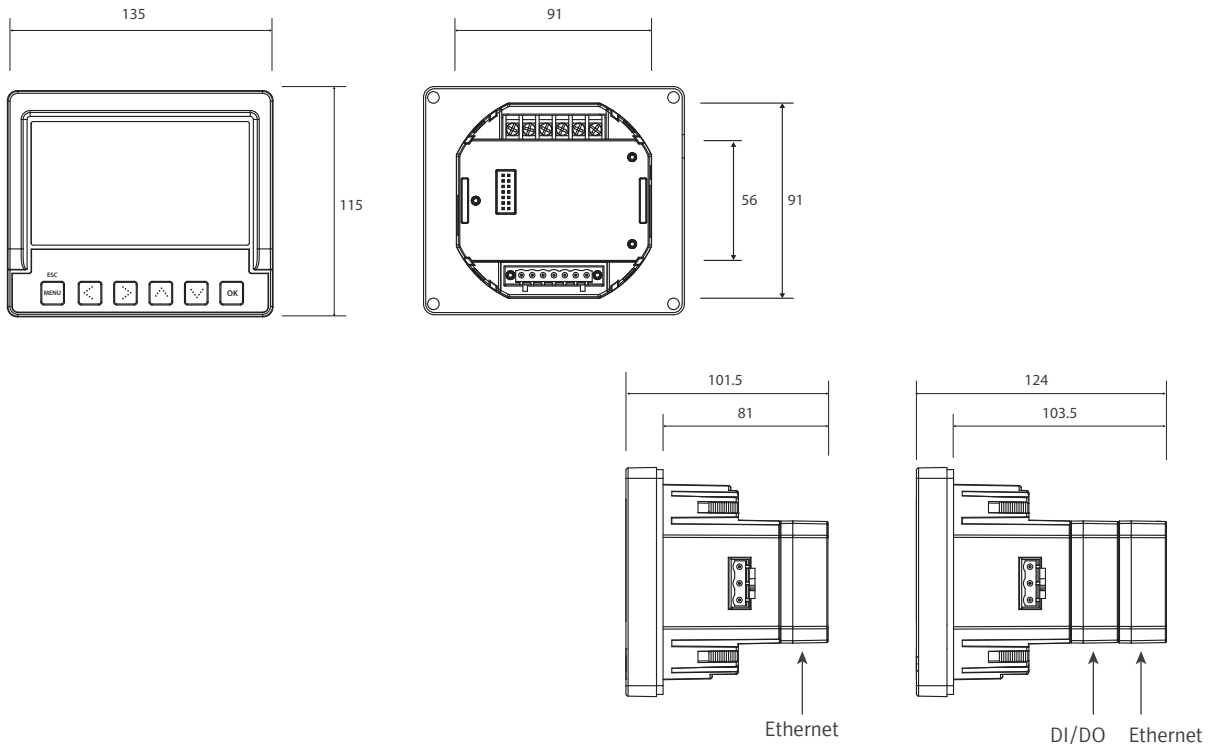
Accuracy	IEC62053-22 Class 0.2S	Static meters for active energy
EMC	IEC 61326-1:2020	Electrical equipment for measurement, control and laboratory use – EMC requirements
Safety	IEC 61010-1 3rd edition	Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements
	IEC 61010-2-30	Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 2-030: Particular requirements for equipment having testing or measuring circuits
Certification	KC, CE	

Panel Mounting

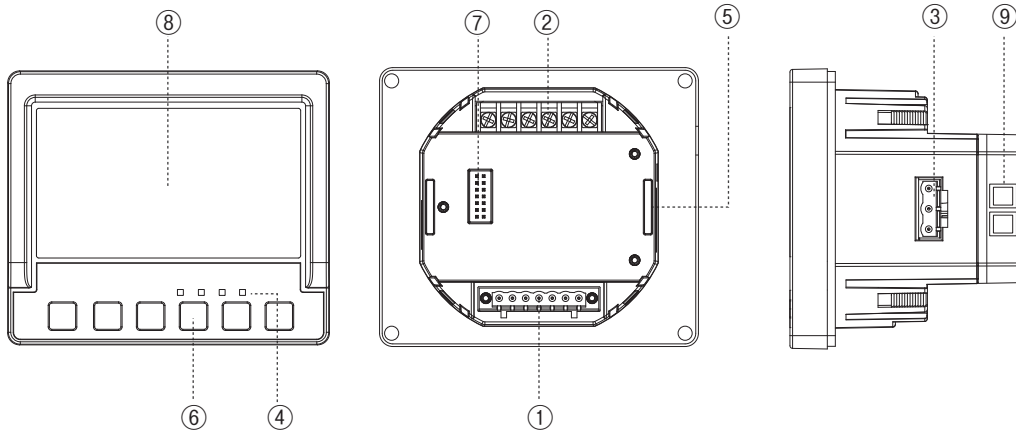
The position of tightening screws diagonally is different according to the type of installation, ANSI 4" or DIN96.



gems7300 Power Quality Meter

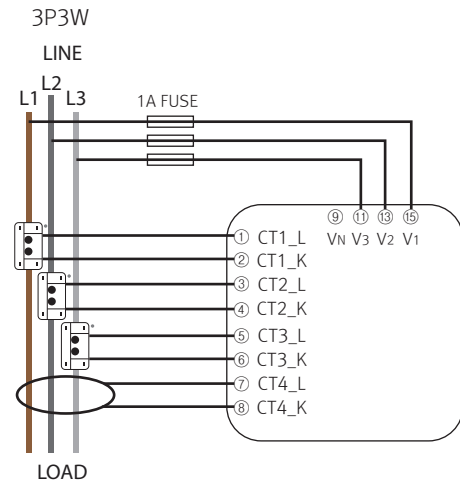
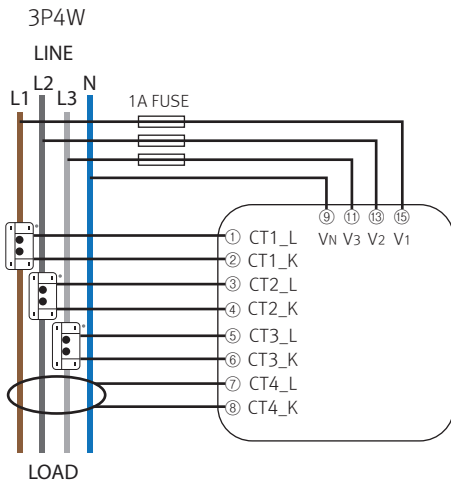


Part Name



No.	Name	Description
1	Voltage Input Terminal	Input Power for Measurement, Wire Size : 12 ~ 24 AWG
2	CT Terminal	CT connection terminal
3	Power	Connect power for device operation(AC/DC 100~240V)
4	LED	Device Status
5	CAN Terminal	2 x CAN, to connect sub device
6	Input Key	6 Control keys
7	Expansion Port	Terminal to connect external expansion module
8	Display	5" Color TFT LCD
9	Ethernet Port	Port connecting the device to the parent system
		Protocol : Modbus TCP/IP (Slave), Speed : 10/100

Wiring Diagram



CT Wiring

Pin #	Input	Function
1	L1	CT1- L
2	K1	CT1- K
3	L2	CT2- L
4	K2	CT2- K
5	L3	CT3- L
6	K3	CT3- K
7	L4	CT4- L
8	K4	CT4- K

PT Wiring

Pin #	Input	Function
9	VN	N
11	V3	C
13	V2	B
15	V1	A

CT Wiring

Pin #	Input	Function
1	L1	CT1- L
2	K1	CT1- K
3	L2	CT2- L
4	K2	CT2- K
5	L3	CT3- L
6	K3	CT3- K
7	L4	CT4- L
8	K4	CT4- K

PT Wiring

Pin #	Input	Function
9	VN	-
11	V3	C
13	V2	B
15	V1	A