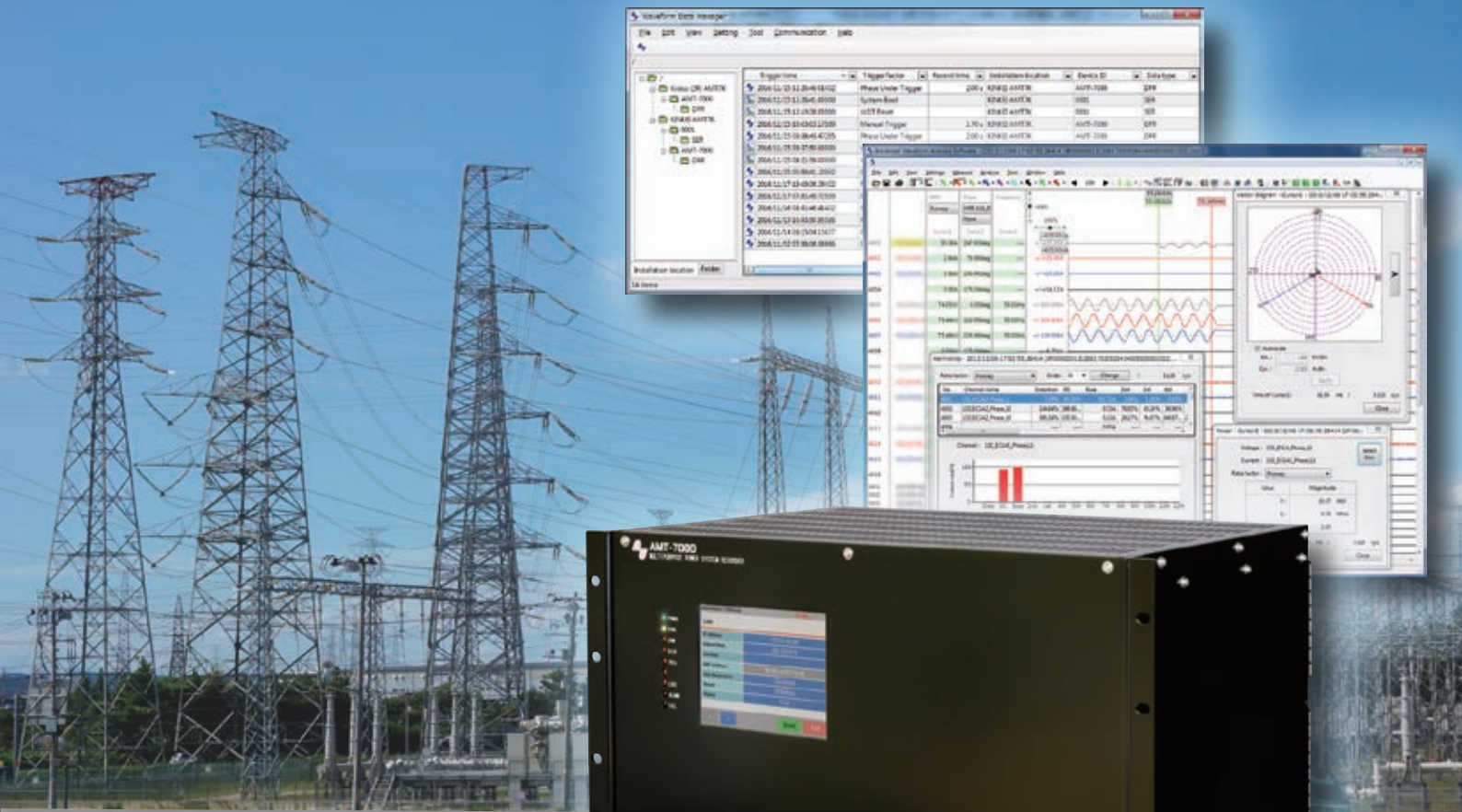# AMT-7000

MULTIPURPOSE POWER SYSTEM RECORDER

■ KEY FEATURES

All-in-one type measurement equipment
Multi-functional and high accuracy device needed by power system measurement.

User Friendly Operation
Build-in web server provides browser based HMI. Users can access the AMT-7000 from anywhere remotely or locally. AlsoColor LCD with touch panel is equipped.

Advanced Waveform Analysis Software
Waveform Analysis Software displays and analyzes waveforms and measured values, and calculates waveforms.
The Data Manager can automatically acquire DFR, DDR, SER and self-diagnosis status from the AMT-7000.

Grid Measurement & Solutions

KINKEI SYSTEM CORPORATION

■ OVERVIEW

Applications
- Transmission/distribution line fault monitoring
- System disturbance monitoring
- Protection relay monitoring
- Synchrophasor measurement
- Generator operation monitoring
- Harmonics analysis

Many Analog and Digital Input circuits in single enclosure
Analog Inputs(VT/CT)	Up to 64ch
Digital Inputs	64ch (or 128ch insulated per 8ch)
Virtual Inputs	128ch (IEC61850 GOOSE message)

Multiple functions for multipurpose use
Digital Fault Recorder (DFR)	Dynamic Disturbance Recorder (DDR)
Sequence of Event Recorder (SER)	Synchrophasor(PMU)

High sampling rate 256spc
15,630Hz for 60Hz system / 12,800Hz for 50Hz system

Zero Spindle Design
No rotating parts such as hard disk drive and cooling fan

Highly operable Human Machine Interface
Build in web server, Touch controlled LCD
Data Manager / Waveform Analysis Software

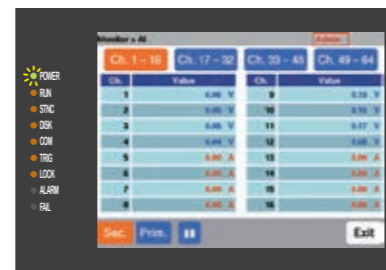# ■ MULTIPLE HUMAN MACHINE INTERFACE

- **Web Human Machine Interface**
  →display status, operate, change setting with built-in web server
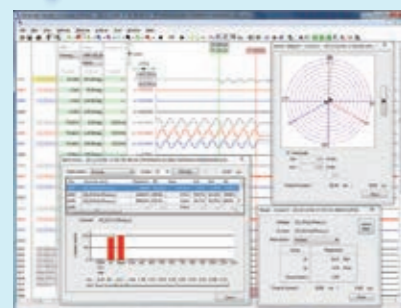- **Touch controlled color LCD(Option)**
  →quick confirmation at site
- **E-mail notification**
  →send DFR/DDR & self-inspection record via E-mail automatically

Touch controlled color LCD

Data Manager / Advance Waveform Analysis Software (Applied OS : WINDOWS 10)
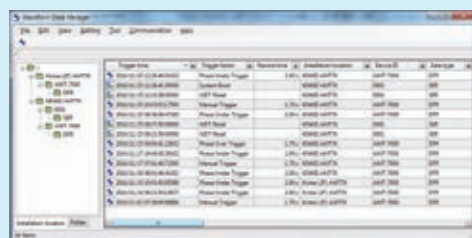
- **The Waveform Analysis Software**
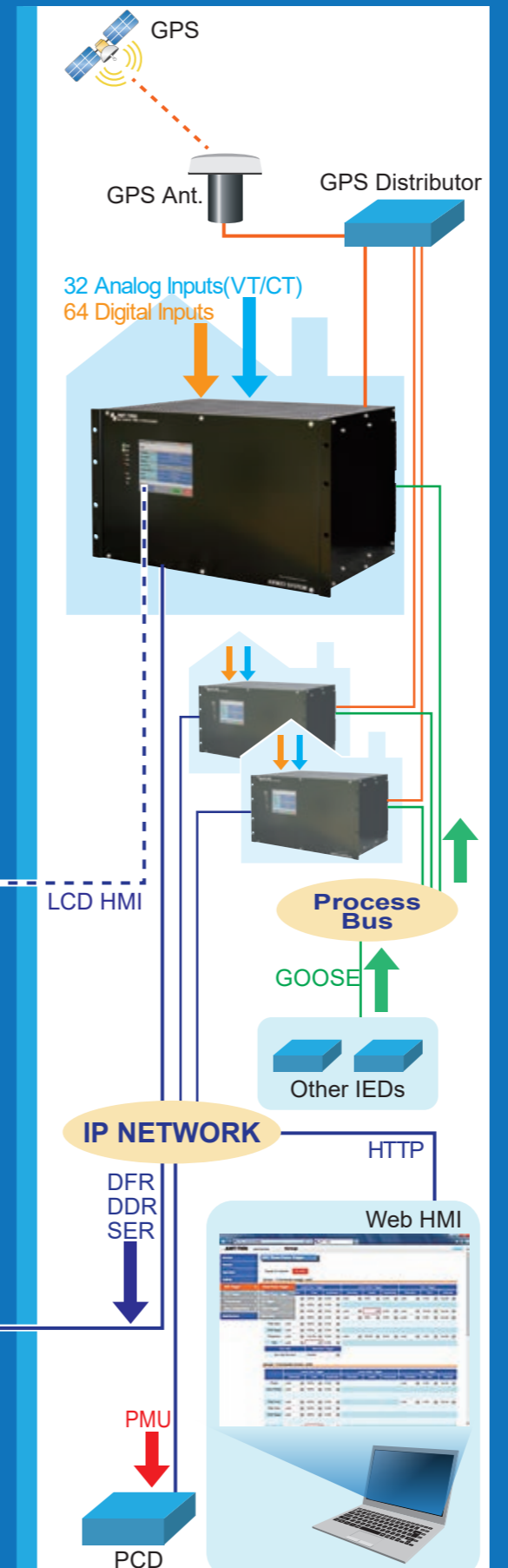 display and analyze DFR/DDR waveforms.

- **The Data Manager**
  manage setting file and get DFR/DDR/SER records automatically.

■ SYSTEM CONFIGURATION EXAMPLE

GPS

GPS Ant.   GPS Distributor

32 Analog Inputs(VT/CT)
64 Digital Inputs

LCD HMI

Process Bus

GOOSE

Other IEDs

IP NETWORK

DFR DDR SER

HTTP

Web HMI

PMU

PCD

■ FEATURES

■ Digital Fault Recording(DFR)
Recorded data:	Raw sampled value
Resolution:	16 bits
Recording rate:	256spc/128spc/64spc (Selectable)
Triggering:	RMS / Frequency / T.H.D.
	Digital Inputs / Manual trigger
	Cross triggering by DDR
Recording length:	Pre-fault 0.1sec. to 5.0sec.
	Post-fault 0.1sec. to 30.0sec.
	Total Up to 30sec.
Number of record:	≦1000 (Cyclic recording), depends on available space
File format	IEEE C37.111 COMTRADE standard

■ Sequence of Event Recording(SER)
Recorded event:	Digital input state change
	Trigger detection
	Abnormal detection by self-diagnostic
	Other operation event
Number of record:	≦1000 (Cyclic recording)
Export	CSV file

■ Synchrophasor(PMU) <Option>
Input range:	Voltage 30V to 150V
	Current 0.5A to 10A
	Frequency ±3.14416rad (±180°)
Accuracy:	TVE ≦1%
Frame rate:	1, 10, 25, 50fps (@50Hz)
	1, 10, 12, 15, 20, 30, 60fps (@60Hz)
Protocol:	IEEE C37.118-2011/2014

■ Dynamic Disturbance Recording (DDR) <Option >
Recorded data:	Calculated value
Sample rate(Selectable):	1, 10, 25, 50, 100Hz for 50Hz
	1, 10, 12, 15, 20, 30, 60, 120Hz for 60Hz
Triggering:	Fundamental RMS and angle/Frequency/Unbalanced rate
	Power (P, Q, S)/DFP/ Digital Inputs/ Manual trigger
	Cross triggering by DFR
Recording length:	Pre-fault 1sec. to 600sec.
	Post-fault 1sec. to 1800sec.
	Total 2sec. to 2400sec.
Number of record:	≦100 (Cyclic recording), depends on available space
File format	IEEE C37.111 COMTRADE standard

■ Time Correction
Internal clock:	With backup function
	Backup period ≧24h
	Accuracy ±4sec per week (0 to 40℃)
NTP:	SNTP Version 4
IRIG-B (Option):	B00x/B12x (DCLS or AM)
	Accuracy ± 26μs
GPS (Option):	Internal GPS receiver
	Accuracy ± 1μs

■ IEC61850 protocol <Option>
GOOSE Subscriber as Virtual Inputs.
GOOSE Publiser or MMS Report for output alarm and operation indication.

Item		Specification

NUMBER of INPUT CHANNELS	Physical Inputs	- Analon Inputs
		  16,32,48 or 64ch
		- Digital Inputs
		  64ch Insulated individually or 128ch Insulated per 8ch

	Virtual Inputs	≦128ch of IEC61850 GOOSE
ANALOG INPUTS	Voltage Inputs	Rated 57.7Vrms / 63.5Vrms / 66.4Vrms Full scale 163.84Vrms Accuracy ±0.1% / Full scale Burden 0.2VA/channel or less
	Current Inputs	Rated 1.0Arms/5.0Arms Full scale 20.48Arms / 102.40Arms Accuracy ±0.1% /Full scale Burden 0.2VA/channel or less
DIGITAL INPUTS	Rated	110Vdc / 125Vdc
	Maximum	300Vdc
	ON/OFF level	ON: ≧80Vdc, OFF: ≦30Vdc
	Burden	≦0.5W/channel
ALARM CONTACT		Fuse blown, Device failure, Time Sync. Failure
DATA STORAGE	Record Media	Solid State Disk (SDHC) 8GB for system, 16GB for data storage
HMI	LCD	Color LCD with touch control
	LED	(x9) for status display
	Web Server	Embedded web server
COMMUNICATIONS	Interface	100Base-TX 2 ports RJ-45 / UTP CAT5 or higher
	Protocol	HTTP, SFTP, SMTP, SNTP IEEE Std C37.118 Synchrophasor IEC61850 GOOSE/MMS
POWER SUPPLY	Input range	110/125Vdc
	Consumed power	≦100VA
STANDARD	Immunity	Conforms to IEC60225-26
	Mecahanical(Vibration, Shock, Bump, Seismic)	Conforms to IEC60225-21
	Safety related to Erectrical	Conforms to IEC60225-27
OPERATING ENVIRONMENT	Operating Temperature	-10 to 55℃
	Humidity	0 to 95% (non-condensation)
EXTERNAL DIMENSIONS and MASS	Size	19 inch 6U 460(W) x 266(H) x 303(D)mm
	Mass	15kg or less
COUNTRY of ORIGIN		Japan

■ AMT-7000 external view

Front view

Side view

KINKEI SYSTEM CORPORATION