



Built-in measurement unit
30 channels model

TS-963

CE

High-speed, High-accuracy, High-functionality Data Logger

T-ZACCS 9

Built-in measurement unit
10 channels model

TS-960



Tokyo Measuring Instruments Laboratory Co., Ltd.

**Top Model
of
T-ZACCS
series**

**New model with built-in measurement unit
30 channels!**

30ch TS-963

**Measuring every 0.1 seconds
with high-speed mode**



Capable of measuring strain gauges, strain gauge transducers, thermocouples, platinum RTD (resistance temperature detector), DC voltage, etc.

High-speed mode allows measurements every 0.1 sec. (High-speed mode allows measurements every 0.1 sec.)

Built-in measuring unit capable of monitoring and displaying all 30ch points

Our unique next-generation A/D method eliminates noise and realizes highly accurate and stable measurement.

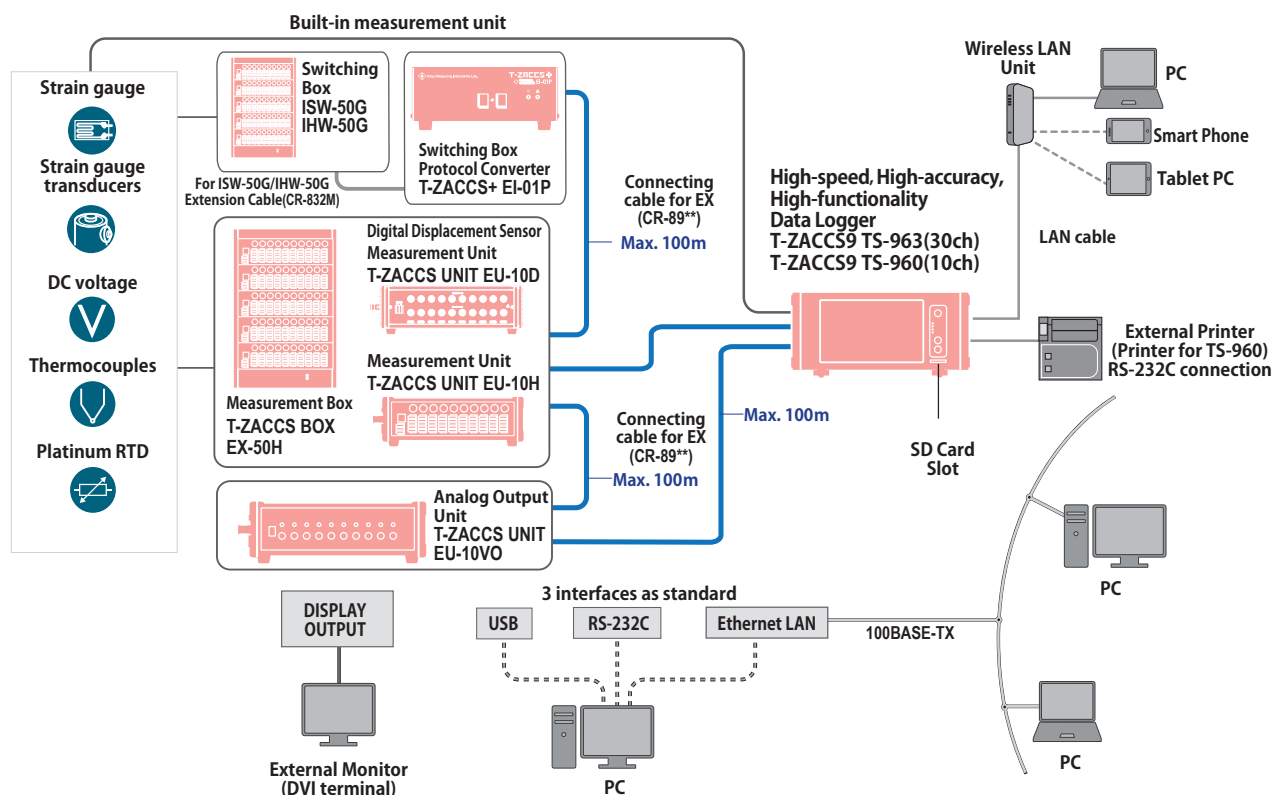
Measurement data can be recorded in 4GB internal memory, SD card is used as external recording media

Equipped with 9-inch wide LCD touch panel

Comfortable operation with wide widescreen and user-friendly screen configuration

Remote data logger functionality enables operation from a web browser

▼ Systems block diagram TS-963 (30ch) / TS-960(10ch)



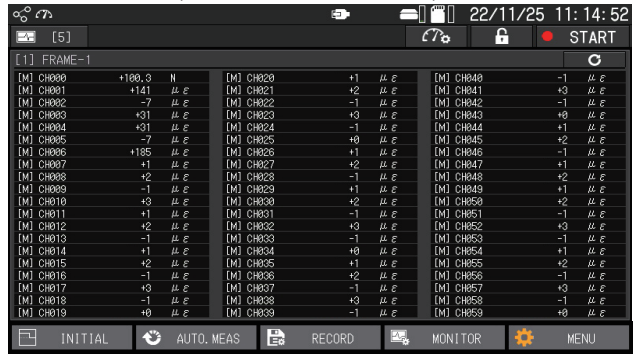
Enhanced monitor display functions

Monitor update 0.1 sec.

- ▶ TS-963's built-in measurement unit can monitor 30 channels!

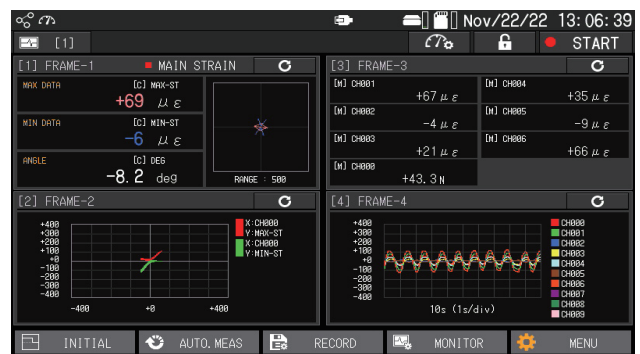
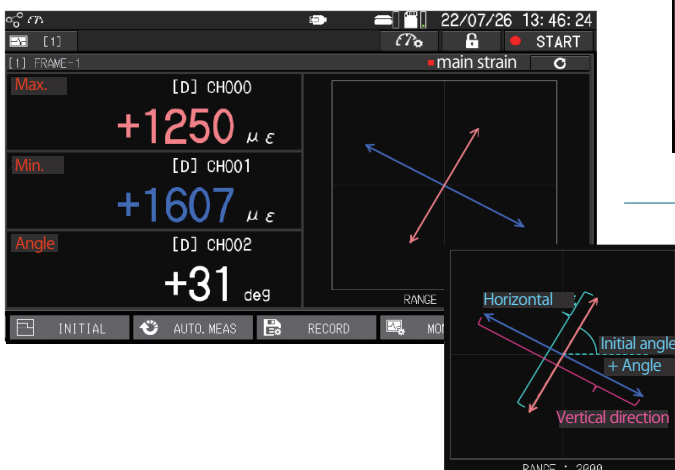


- ▶ And up to 60 measurement data points can be displayed simultaneously!

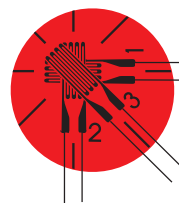


Switching monitor display settings

Monitor function that can have 5 tables of screen display settings and can display in 4 frames



Vector display function [New function]



Vector graphs can be displayed with arrows, mapping data to lengths and angles

Operability Environment

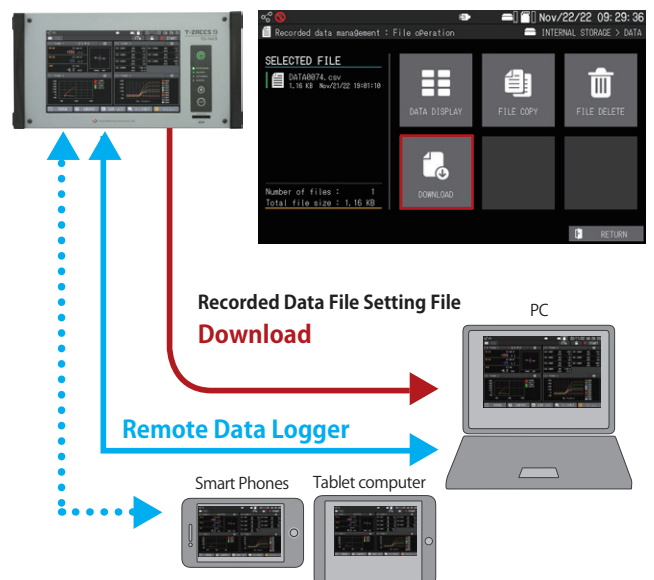
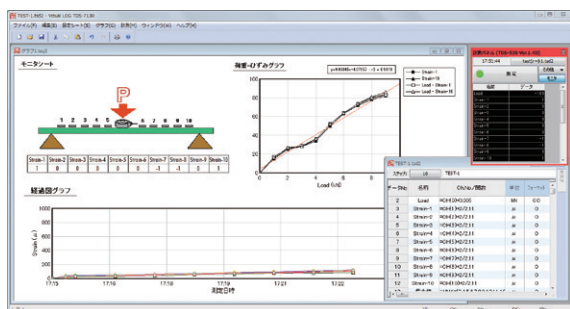
Real-time operation is possible even with high-speed sampling

Remote data logger function[New function]

- ▶ Remote operation and downloading of recorded data files via web browser

TDS-7130v2 (measurement software)

- ▶ Stress-free even with high-speed sampling



Support various
measurements

Support various automatic measuring functions

Interval Measurement

Repeat measurement by setting time interval and start time

Comparator measurement

Measurements are performed by comparing large and small values of reference channel values

Alarm measurement

Sets a channel to be monitored and executes alarm operation (measurement, display, beep) when the measured value exceeds a threshold value

Sampling measurement

Repeatedly measures and records at intervals of 0.1 second at the fastest

Sequence measurement

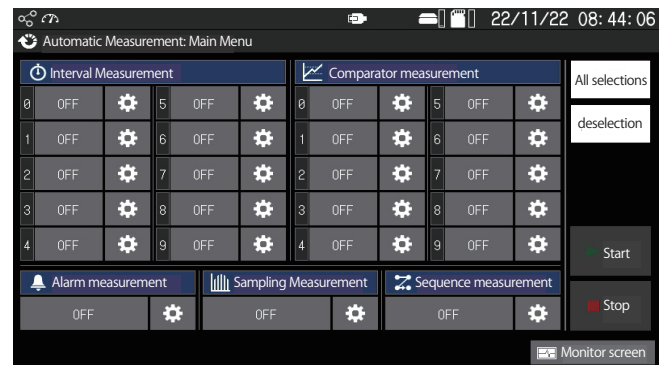
Controls other automatic measurement functions

Automatic measurement functions (set various conditions and start measurement automatically) are provided.

Each automatic measurement function can be operated simultaneously.

Ten systems can be used for each of "interval measurement" and "comparator measurement".

Automatic Measurement: Main Menu



Advanced arithmetic processing is possible with a single measuring instrument

Four arithmetic operations 4 types

General functions 7 types
(absolute value/logarithm/exponentiation, etc.)

Trigonometric functions 15 types

Rosette functions 7 types

Multi-stage ramp 3 types

Logic functions 8 types
(IF / MAX / MIN etc.)

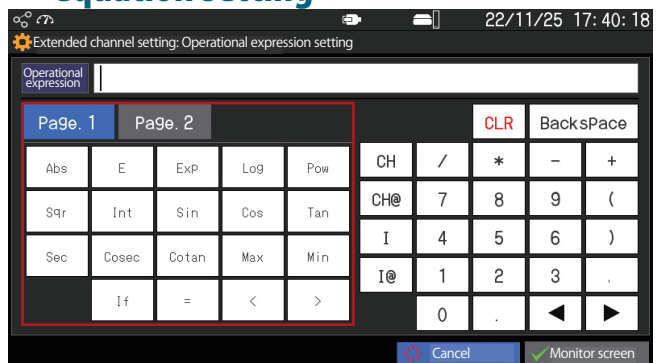
Other functions 1 type

100 extended channels (with the ability to obtain calculation results based on a user-defined formula for each measurement value collected) are available!

Extended Channel Settings

CH	Operational expression	Display digit	Unit	Name	GRP
@00	Ex1(CH(1), CH(2), CH(3))	#####	μ ε	MAX-ST	
@01	En1(CH(1), CH(2), CH(3))	#####	μ ε	MIN-ST	
@02	Gx1(CH(1), CH(2), CH(3))	#####	μ ε	MAX-GS	
@03	P1(CH(1), CH(2), CH(3))	#####	deg	DEG	
@04	Ex1(CH(4), CH(5), CH(6))	#####	μ ε	MAX-ST	
@05	En1(CH(4), CH(5), CH(6))	#####	μ ε	MIN-ST	
@06	Gx1(CH(4), CH(5), CH(6))	#####	μ ε	MAX-GS	
@07	P1(CH(4), CH(5), CH(6))	#####	deg	DEG	
@08		#####	μ ε		ALL
@09		#####	μ ε		CLR

Extended channel setting: arithmetic equation setting



Pa9e. 1		Pa9e. 2						
Atn	Arcsin	Arccos	Arccosec	Arccotan				
Hsin	Hcos	Htan	Hsec	Fy4				
Ex1	En1	Gx1	P1	Sx1				
Sn1	Tx1	Icd	Icv	Icp				

▼ TS-963 (30ch) / TS-960(10ch) Main Specifications

Measuring performance			
Number of measuring point	Using Measurement box	1000 points at maximum	
	Using both Measurement box and Built-in measurement unit	(2000 points at maximum when temperature-integrated strain gauges are used)	
	Using Built-in measurement unit	TS-960 : 10 points (possible up to 20 points when temperature-integrated strain gauges are used)	
		TS-963 : 30 points (possible up to 60 points when temperature-integrated strain gauges are used)	
Data update rate		Display and record measurements update cycle 0.1 sec.	
Measuring speed		High-speed mode (0.1 seconds) High-accuracy mode (0.4 seconds(50Hz)/0.34 seconds(60Hz))	
Measurement mode		Initials, Direct, Simple Measure	
Compensation mode		Comet NON, Comet A, Comet B	
Monitor	Number of setting table	5	
	Number of display frame	0~4	
	Display mode	Value, MAX • MIN, Chart (Y-T), Chart (X-Y), Chart (BAR) Vector	
Measurement	Manual measurement	Start key (START button on touch screen)	
	Automatic measurement	Interval measurement, Comparator measurement, Alarm measurement, Sampling measurement, Sequence measurement	
	Interface	LAN, USB, RS-232C	
	Coefficient	± (0.00000~200000)	
	Unit	μ ε , mV, ° C, kgf, mm, etc.	
	Decimal point	Display after decimal point is set arbitrarily to 0 ~ 5 digit	
	Offset	Possible to write to each measurement channel	
	Channel setting	Sensor mode	Type of connected sensor is set
			Strain Quarter bridge 3-wire 120 / 240 / 350 Ω Half bridge common dummy, Half bridge Full bridge, Full bridge constant current 350Ω Full bridge high resolution mode Full bridge constant current 350Ω high resolution mode Full bridge 0-2V mode Temperature-integrated strain gauge 120 / 240 / 350 Ω
Voltage 640mV, 64V			
Temperature Thermocouple T/ K/ J/ B/ S/ R/ E/ N, Pt100 3W			
Channel name	Arbitrarily set by alphabet capital letter, numeral and/or symbol of up to 8 digits		
Sensor ID	Function	Reading and setting of sensor ID, Writing to sensor ID	
Extended channel setting	Function	Operation with function and operation between channels	
	Number of channel	100 channels	
	Usable variable	Channel, Extended channel, Constant	
Check function	Operation	Four arithmetic operations/General functions/Trigonometric functions/Functions for rosette analysis/Functions for multi-layer inclinometer/Logical functions/Other function	
	During measurement	Open check	
	Sensor	Insulation check, Sensitivity check, Dispersion check, Thermocouple burnout check, Leadwire resistance check, Bridge output check	
	Extended channel	Processing time check	
	Analog output	Calibration output Zero and arbitrary output in the range of output level	
	Setting list display	Measurement channel setting, Channel setting, Reference junction setting, Extended channel setting, Analog output setting, Interval setting, Comparator setting, Alarm setting, Sampling setting, Sequence setting, Initial value, Leadwire resistance, Bridge output, etc.	
Time			
Setting		Year, Month, Day, Hour, Minute, Second	
Display / Operation			
Display device	LCD panel	9 inch TFT liquid crystal display (with touch screen)	
	Resolution	800 × 480 dots	
Output		DVI	
Operation		Touch screen, POWER key, FUNCTION key, START key Remote data logger function	
Recording			
Internal memory	Function	Measured data recording/reproduction, Setting file save	
	Capacity	4 Gbyte	
SD card	Function	Measured data recording/reproduction/copy, Setting file save/copy, Sensor ID writing/reading	
	Capacity	4 Gbyte (specified by TML)	
Analog output			
Function		Voltage output of measured value of arbitrary channel	
Number of output point		20 points	
Output range		± 10V, ± 5V, 0-5V	
Capacity (Full scale)		± 999999 at maximum	
Output accuracy		Output specifications conform to the specifications of each unit	
Data renewal time		Linked to measurement cycle, fastest 0.1 sec.	
*Analog output unit EU-10VO is required for every 10 points.			
Power supply			
Power supply voltage		AC100~240V 50/60Hz	
Maximum power consumption		TS-960 : 70VA MAX / TS-963 : 152VA MAX	
Environment			
Operating environment		0~+50°C 85%RH or less (No condensation)	
Others			
External dimensions		TS-960 : 328 (W) × 148 (H) × 200 (D) mm TS-963 : 328 (W) × 174 (H) × 424 (D) mm (Excluding rubber protectors and projecting parts)	
Weight		TS-960 : Approx.5kg / TS-963 : Approx.10kg	

Built-in measurement unit (common to all mode)

Common to all mode	
Number of measuring point	TS-960 : 10points / TS-963 : 30points
Input terminal	Accepts both screwing and soldering
Quick connection terminal	NDIS connector receptacle

High-speed mode

Strain measurement (High-speed mode)			
Bridge excitation		DC2V 4ms(50Hz)	
Initial value memory range		±160000×10 ⁻⁶ strain	
Temperature coefficient of accuracy		±0.002%rdg/°C	
Secular change of accuracy		±0.02%rdg/year	
Measuring range and resolution	Measuring range		Resolution
	± 40000×10 ⁻⁶ strain		1×10 ⁻⁶ strain
	± 80000×10 ⁻⁶ strain		2×10 ⁻⁶ strain
	± 160000×10 ⁻⁶ strain		4×10 ⁻⁶ strain
	± 320000×10 ⁻⁶ strain		8×10 ⁻⁶ strain
± 640000×10 ⁻⁶ strain		16×10 ⁻⁶ strain	
Accuracy (23°C ± 5°C)		± (0.08%rdg+3digit)(Quarter bridge, Half bridge, Full bridge) ± (0.08%rdg+6digit)(Full bridge 0 - 2V mode)	
Strain measurement with constant current method (Full bridge only) (High-speed mode)			
Bridge excitation		DC6mA 4ms(50Hz)	
Bridge resistance		350Ω	
Initial value memory range		±160000×10 ⁻⁶ strain	
Temperature coefficient of accuracy		±0.002%rdg/°C	
Secular change of accuracy		±0.02%rdg/year	
Measuring range and resolution	Measuring range		Resolution
	± 40000×10 ⁻⁶ strain		1×10 ⁻⁶ strain
	± 80000×10 ⁻⁶ strain		2×10 ⁻⁶ strain
	± 160000×10 ⁻⁶ strain		4×10 ⁻⁶ strain
	± 320000×10 ⁻⁶ strain		8×10 ⁻⁶ strain
± 640000×10 ⁻⁶ strain		16×10 ⁻⁶ strain	
Accuracy(23°C ± 5°C)		± (0.08%rdg+3digit)	
DC voltage measurement (High-speed mode)			
Initial value memory range	V1/1	±160.000mV	
	V1/100	±16.0000V	
Temperature coefficient of accuracy		±0.0024%rdg/°C	
Secular change of accuracy		±0.024%rdg/year	
Measuring range and resolution	V1/1	Measuring range	Resolution
		± 40.000mV	0.001mV
		± 80.000mV	0.002mV
		± 160.000mV	0.004mV
		± 320.000mV	0.008mV
	V1/100	± 640.000mV	0.016mV
		± 4.0000V	0.0001V
		± 8.0000V	0.0002V
		± 16.0000V	0.0004V
		± 32.0000V	0.0008V
± 64.0000V	0.0016V		
Accuracy(23°C ± 5°C)	V1/1	± (0.08%rdg+6digit)	
When moving average is used	V1/100	± (0.08%rdg+6digit)	
Accuracy(23°C ± 5°C)	V1/1	± (0.08%rdg+50digit)	
When moving average is not used	V1/100	± (0.08%rdg+50digit)	
Pt-RTD temperature measurement (JIS C1604:2013, IEC 60751-1:2008 Pt100) (High-speed mode)			
Applicable Pt-RTD		Pt100	
Measuring method		3-wire (Pt3W)	
Linearization		Digital processing	
Temperature coefficient of accuracy		±0.0020%rdg/°C	
Secular change of accuracy		±0.05%rdg/year	
Measuring range		-200~+850°C	
Resolution		0.1°C	
Accuracy(23°C ± 5°C)		± (0.1%rdg+0.3°C)	
Thermocouple temperature measurement (JIS C1602:2015, IEC 60584-1:2013) (High-speed mode)			
Applicable thermocouple		T,K,J,B,S,R,E,N	
Linearization		Digital processing	
Type	Measuring range	Resolution	Accuracy(23°C ± 5°C)
T	- 250 ~ - 200°C	0.1°C	(External RJC) (Internal RJC)
	- 200 ~ - 100°C	0.1°C	± (0.31%rdg+1.9°C) ± (0.31%rdg+5.2°C)
	- 100 ~ 0°C	0.1°C	± (0.14%rdg+0.8°C) ± (0.14%rdg+2.1°C)
	- 100 ~ 0°C	0.1°C	± (0.11%rdg+0.5°C) ± (0.11%rdg+1.2°C)
	0 ~ + 400°C	0.1°C	± (0.08%rdg+0.4°C) ± (0.08%rdg+0.9°C))
Note: For K, J, B, S, R, E, N thermocouples, see QR Code Detailed Specifications.			
Note: Accuracy of sensor is not included. Thermocouple B does not use reference junction.			
Connection of box / unit			
Applicable type	Measurement box	EX-50H,	
	Measurement unit	EU-10H, EU-10D, EI-01P	
	Output unit	EU-10VO	
Number of connection	Measurement box	100 units at maximum	
	Measurement unit	2 units at maximum	
Extension distance		100 m (between instruments)	
Connection cable		EX connection cable CR-892M(2m), CR-895M(5m), CR-8901(10m), CR-8902(20m), CR-8905(50m), CR-8910(100m)	
Note: Concerning the number of connected measuring boxes, one EX-50H is converted into five boxes			
Standard accessories			
Operation manual (CD)		1	
AC power cable (CR-01)		1	
Ground wire (CR-20)		1	
SD card		1	
Warranty certificate		1 copy	

Note: For K, J, B, S, R, E, N thermocouples, see QR Code Detailed Specifications.

Note: Accuracy of sensor is not included. Thermocouple B does not use reference junction.

Connection of box / unit

Applicable type	Measurement box	EX-50H, EU-10H, EU-10D, EI-01P
	Measurement unit	EU-10VO
Number of connection	Output unit	100 units at maximum
	Output unit	2 units at maximum
Extension distance	100 m (between instruments)	
Connection cable	EX connection cable CR-892M(2m), CR-895M(5m), CR-8901(10m), CR-8902(20m), CR-8905(50m), CR-8910(100m)	

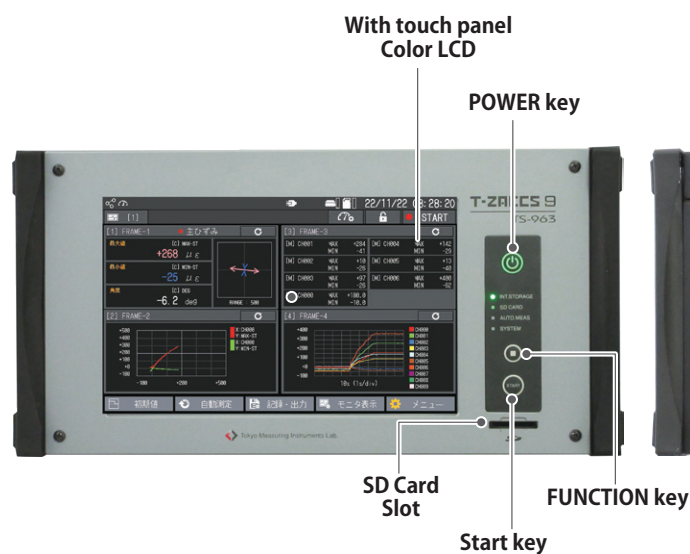
Note: Concerning the number of connected measuring boxes, one EX-50H is converted into five boxes

Standard accessories

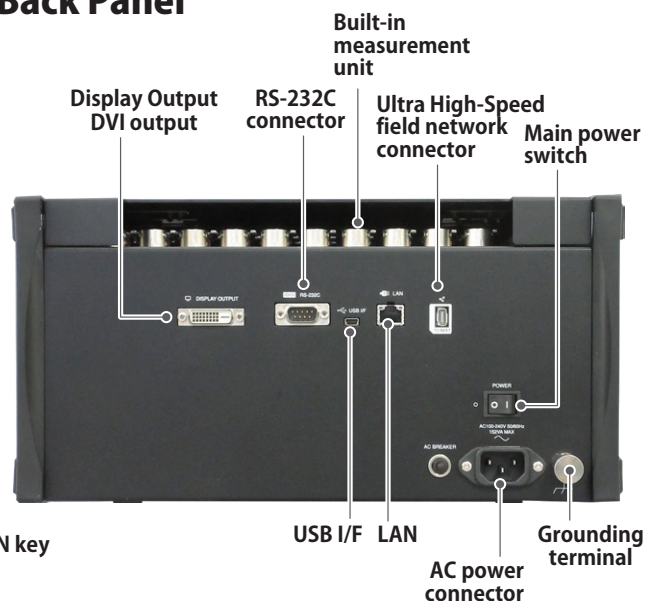
Operation manual (CD)	1
AC power cable (CR-01)	1
Ground wire (CR-20)	1
SD card	1
Warranty certificate	1 copy

▼ TS-963 (30ch) / TS-960(10ch) Specifications - Appearance and dimensions

Front Panel



Back Panel

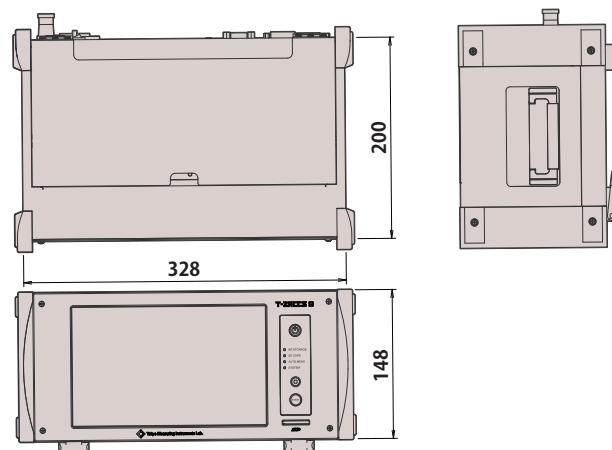
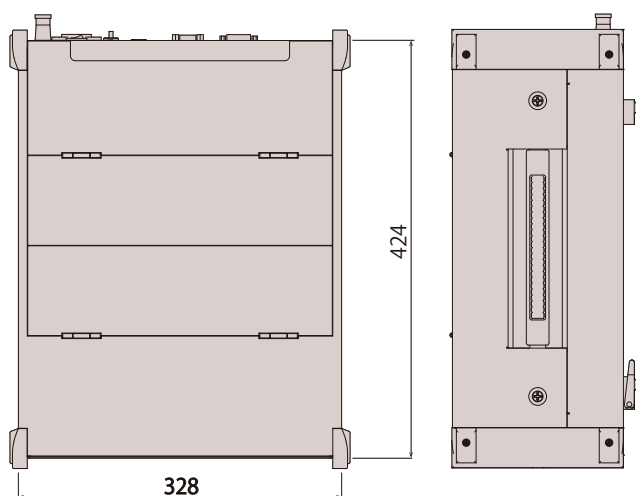
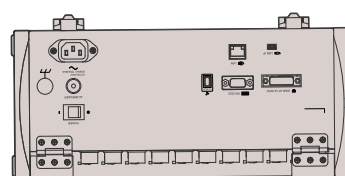
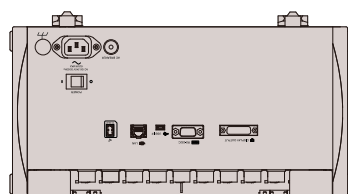


*The image shows TS-963 (30ch)

30ch▶
TS-963



10ch▶
TS-960








Unit: mm

T-ZACCS BOX

MEASUREMENT BOX EX-50H



-  Strain gauge
-  Strain gauge type transducer
-  DC voltage
-  Thermocouple
-  Pt-RTD

MEASUREMENT BOX






High-speed processing achieved by the adoption of new communication system in addition to our unique measurement capability with high accuracy and stability

- Measures 50 points in 0.1 seconds at the fastest (Measurement of up to 1000 points possible connecting 20 boxes)
- Highly accurate and stable measurement achieved by our unique next-generation A/D conversion method
- Measurement of strain gauges, strain gauge type transducers, thermocouples, Pt-RTDs and dc voltage

T-ZACCS UNIT

MEASUREMENT UNIT EU-10H



-  Strain gauge
-  Strain gauge type transducer
-  DC voltage
-  Thermocouple
-  Pt-RTD

MEASUREMENT UNIT

High-speed processing achieved by the adoption of new communication system in addition to our unique measurement capability with high accuracy and stability

- Measures 10 points in 0.1 seconds at the fastest, 100 units connection at maximum (including the TS-960 built-in)
- Highly accurate and stable measurement achieved by our unique next-generation A/D conversion method
- Measurement of strain gauges, strain gauge type transducers, thermocouples, Pt-RTDs and dc voltage

▼ TS-963 (30ch) / TS-960(10ch) - Related Product

T-ZACCS UNIT

DIGITAL DISPLACEMENT SENSOR MEASUREMENT UNIT

EU-10D

MEASUREMENT UNIT

This is a 10-channel measuring unit exclusively for TS-960/TS-963. It can measure digital displacement sensors with 10 measurement points. Can be used with T-ZACCS BOX EX-10H, T-ZACCS UNIT EU-10H, and EU-10VO at the same time.

ANALOG OUTPUT UNIT

EU-10VO

OUTPUT UNIT



Outputs analog data corresponding to the measured data or calculation result acquired by TS-960/TS-963.

DIGITAL OUTPUT UNIT

EU-10DO

OUTPUT UNIT

This is a digital output unit for T-ZACCS9 TS-963/-960. Up to 10 TTL/LVTTL level digital signals can be output simultaneously based on trigger and alarm conditions set by the TS-960/TS-963. As wiring using BNC cables is possible, it is easy to construct a system using trigger control and synchronisation with measuring instruments, test equipment and PLCs that are matched to TS-960/TS-963 measurements.



T-ZACCS +

SWITCH BOX PROTOCOL CONVERTER

EI-01P

PROTOCOL CONVERTER

This switchbox protocol converter for T-ZACCS9 TS-963/-960 can be connected to T-ZACCS9 TS-963/-960 to operate ISW-50G/IHW-50G switchboxes.

One switchbox can be operated with one unit of this converter.

REPEATER

EE-00R

REPEATER

Repeater for connection between T-ZACCS 9 / T-ZACCS BOX / T-ZACCS UNIT to extend the communication distance.

The repeater can be used to extend the 100 m extension distance between devices by a further 100 m.



Approval Certificate ISO9001
Design and manufacture of
strain gauges, strain measuring
equipment and transducers

The contents of this catalog are subject to change without prior notice.
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TML

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