



▶ **NEW**
 Built-in measurement unit
 30 channels model
TS-963

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

T-ZACCS 9



Built-in measurement unit
 10 channels model

TS-960



Tokyo Measuring Instruments Lab.

Top Model
of
T-ZACCS
series

New model with built-in measurement unit
30 channels!

NEW

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.

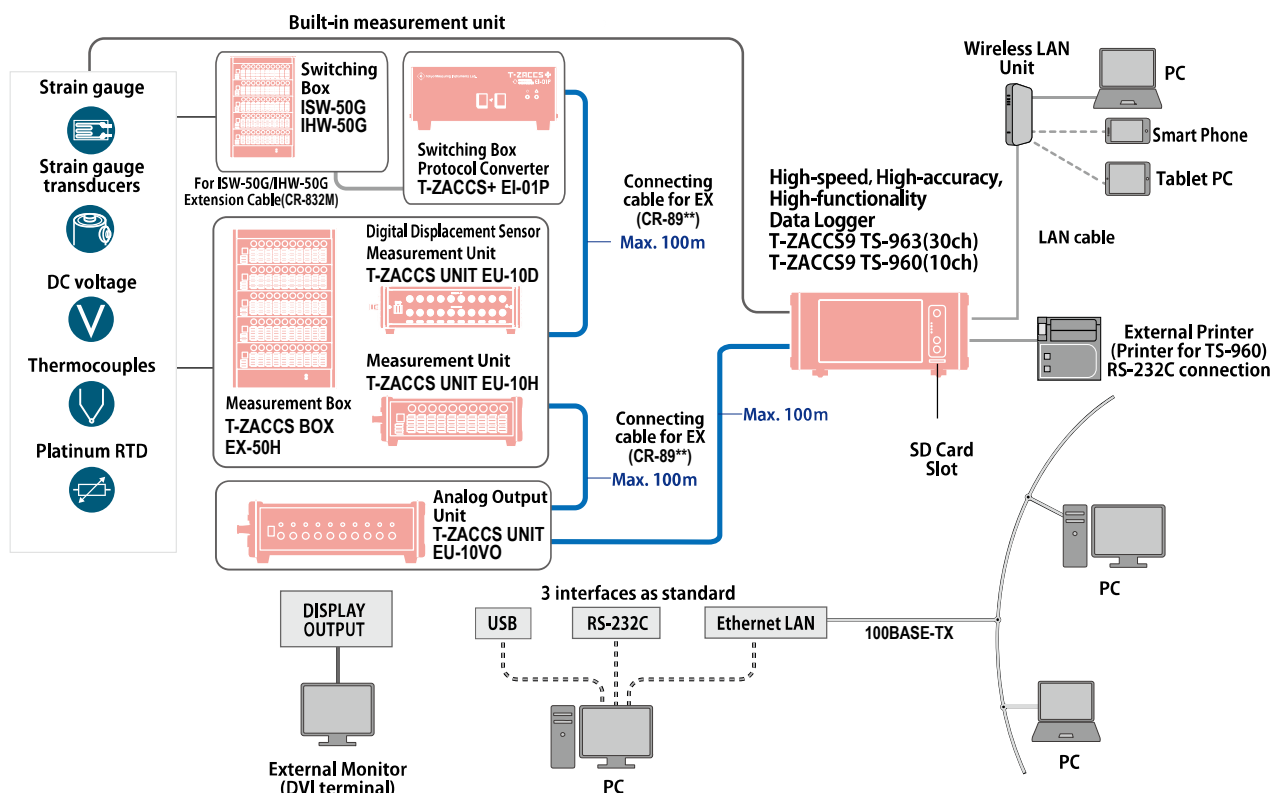
Measurement data can be recorded in 4GB internal memory, SD card is used as external recording media

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)



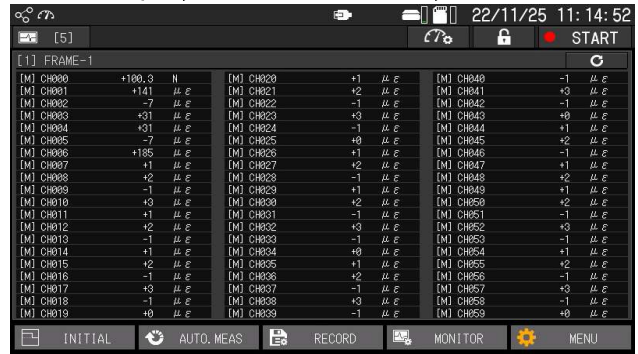
Enhanced monitor display functions

Monitor update 0.1 sec.

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

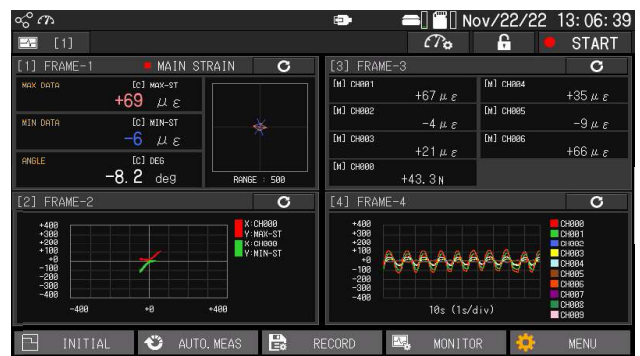


- ▶ And up to 60 measurement data points can be displayed simultaneously!

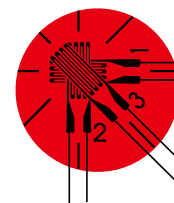


Switching monitor display settings

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

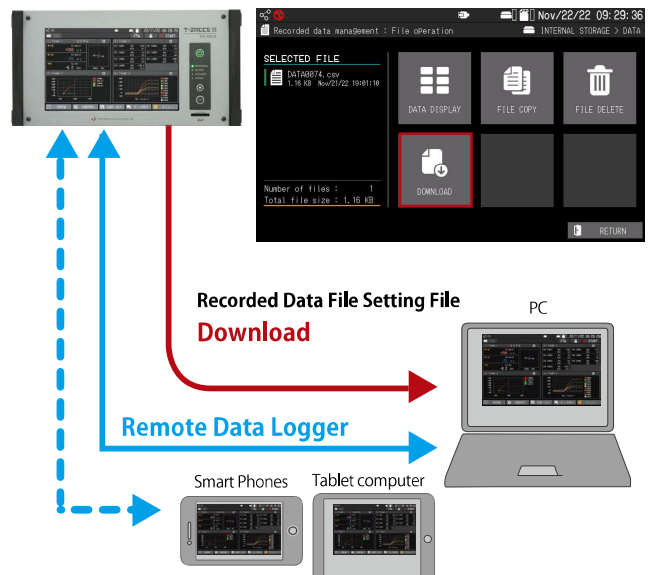
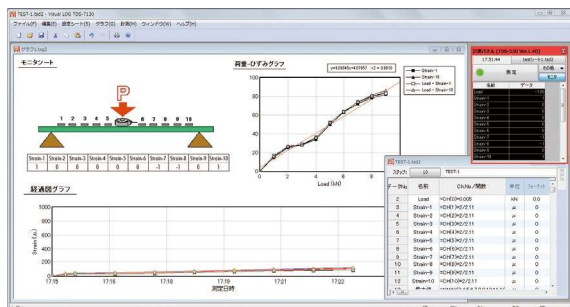
Real-time operation is possible even with high-speed sampling

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



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

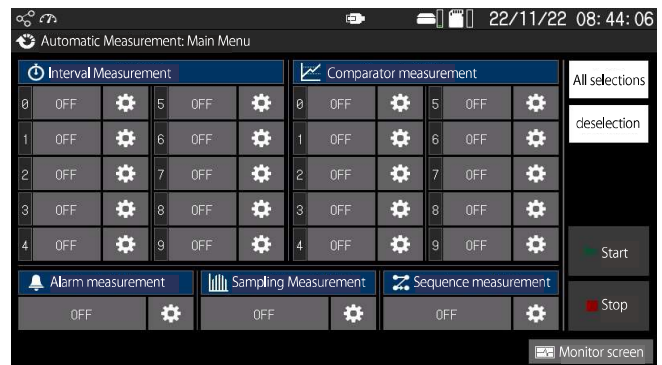
Controls other automatic measurement functions

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

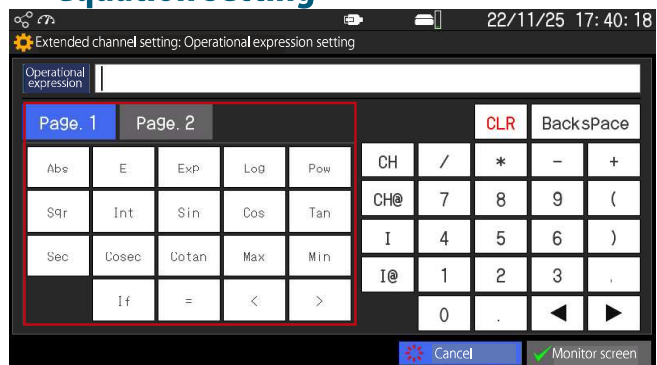
- Four arithmetic operations 4 types
- General functions (absolute value/logarithm/exponentiation, etc.) 7 types
- Trigonometric functions 15 types
- Rosette functions 7 types
- Multi-stage ramp 3 types
- Logic functions (IF / MAX / MIN etc.) 8 types
- Other functions 1 type

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



Extended channel setting: arithmetic equation setting



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

Measuring performance		
Number of measuring point	Using Measurement box Using both Measurement box and Built-in measurement unit	1000 points at maximum (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
	Manual measurement	Start key (START button on touch screen)
Measurement	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
	Function	Operation with function and operation between channels
Extended channel setting	Number of channel	100 channels
	Usable variable	Channel, Extended channel, Constant
	Operation	Four arithmetic operations/General functions/Rigonometric functions/Functions for rosette analysis/Functions for multi-layer inclinometer/Logical functions/Other function
Check 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 receptade

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 ± 80000 × 10 ⁻⁶ strain ± 160000 × 10 ⁻⁶ strain ± 320000 × 10 ⁻⁶ strain ± 640000 × 10 ⁻⁶ strain	1 × 10 ⁻⁶ strain 2 × 10 ⁻⁶ strain 4 × 10 ⁻⁶ strain 8 × 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 ± 80000 × 10 ⁻⁶ strain ± 160000 × 10 ⁻⁶ strain ± 320000 × 10 ⁻⁶ strain ± 640000 × 10 ⁻⁶ strain	1 × 10 ⁻⁶ strain 2 × 10 ⁻⁶ strain 4 × 10 ⁻⁶ strain 8 × 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	Measuring range	Resolution
	V1/1 ± 40.000mV ± 80.000mV ± 160.000mV ± 320.000mV ± 640.000mV	0.001mV 0.002mV 0.004mV 0.008mV 0.016mV
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)	
	(External RJC)	(Internal RJC)		
T	-250 ~ -200°C	0.1°C	±(0.31%rdg+1.9°C)	±(0.31%rdg+5.2°C)
	-200 ~ -100°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, EU-10H, EU-10D, EI-01P
	Measurement 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)

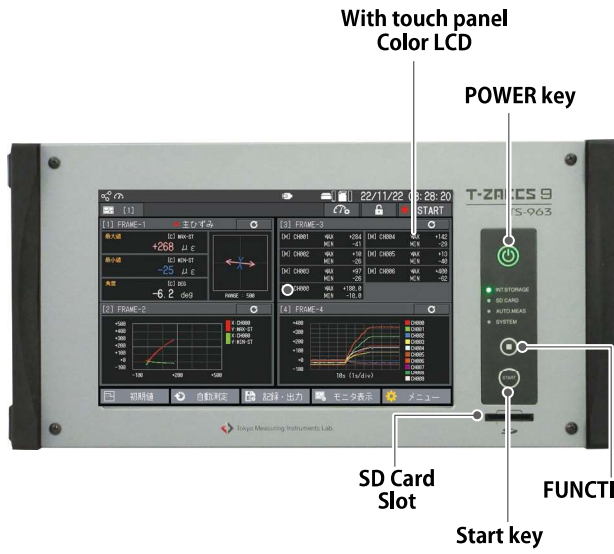
Note: Concerning the number of connected measuring boxes, one EX-50H is converted into five boxes

Standard accessories

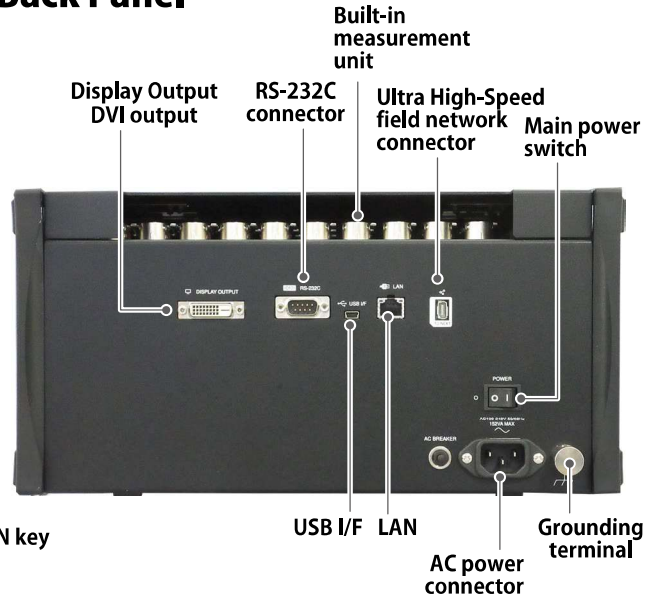
Operation manual (CD)	1
AC power cable (CR-01)	1
Ground wire (CR-20)	1
SD card	1
Warranty certificate	1 copy

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

Front Panel



Back Panel

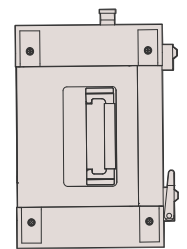
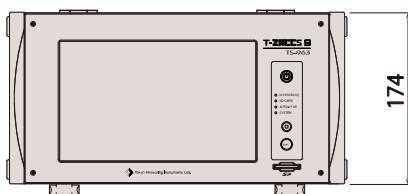
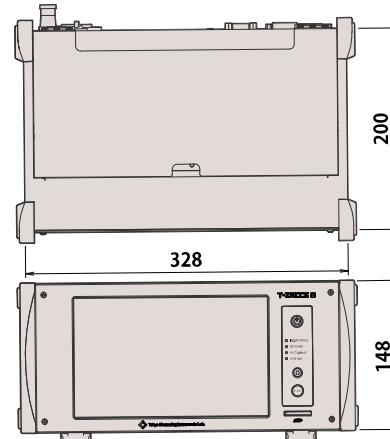
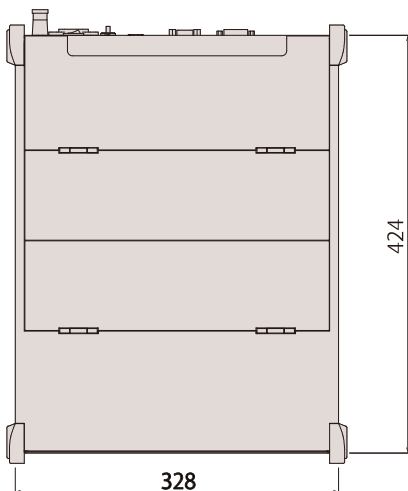
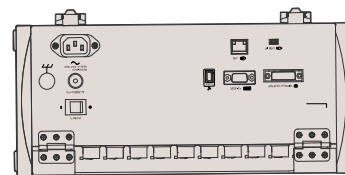
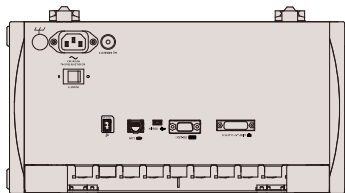


*The image shows TS-963 (30ch)

30ch ▶
TS-963



10ch ▶
TS-960

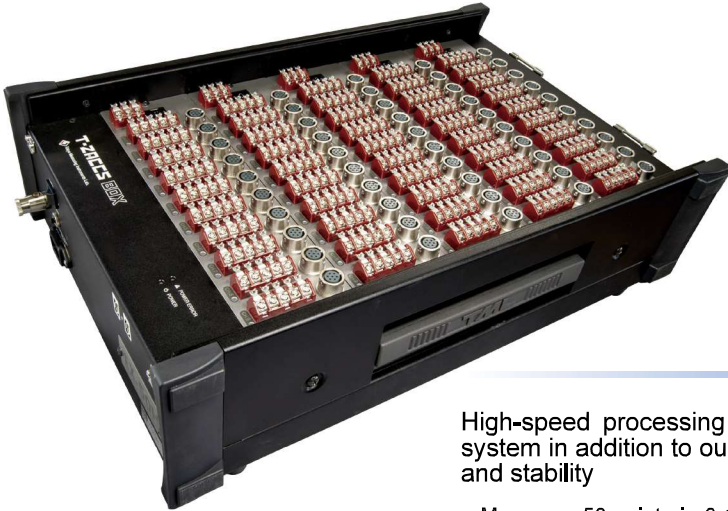







Unit: mm

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

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.



T-ZACCS UNIT

ANALOG OUTPUT UNIT

EU-10VO

OUTPUT UNIT

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



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.



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

The contents of this catalog are as of February 2023. TML Parm E-3016B.



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



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