F395

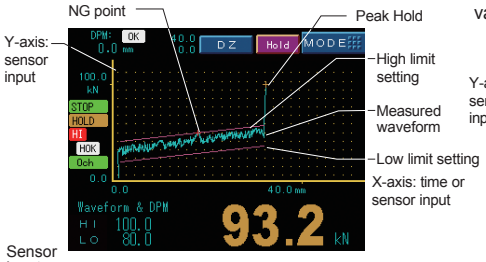
GRAPHIC DISPLAY/TOUCH PANEL TYPE DYNAMIC FORCE PROCESSOR

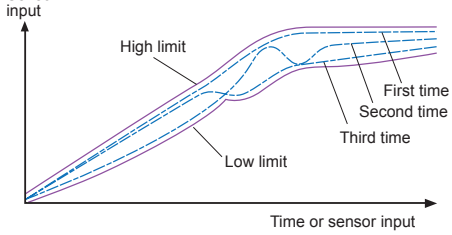
CE RoHS

- CE marking certification
- 4000 times/sec high-speed processing
  Installed with a high-speed A/D convertor and a CPU that can process the sensor input to output data at a speed of 4000 times/sec.
- Has a wide range of comparison control functions
  - Waveform comparison mode
  - Multi hold mode
  - Hysterisis / hysterisis 2 mode
- Analog monitor output
  Voltage output is proportionate to the input signal making the recording on recorder convenient.
  - Approx. 2V per 1 mV/V strain gauge input.
  - Approx. 5.6V for 5V voltage input.
  - Approx. 5.2V for 20mA current input.
- A variety of interfaces
  RS-232C / DeviceNet / CC-Link.
- Large 5.7 inch color LCD module & touch panel
  Improved visibility and operability by the application of color LCD and touch screen panel.
  Provides easy viewing of measured values and tactile setting operation.
- Exclusive communication software
  Except for sampled waveforms and calibration data, other setting values can be edited and controlled in applications such as Microsoft Excel using this communication software.
- Free power source
  Caters for AC100V ~ 240V without having to switch over.

Waveform Comparison Mode

This mode compares the actually measured waveform against waveforms pre-set at the High/Low limits. The measured waveform is an NG waveform when any one of its points exceeds the preset waveforms. The NG points will be indicated with [+] on the screen. During the waveform comparison mode operation, only 1 point can be held in the hold (sample, peak or bottom) function.



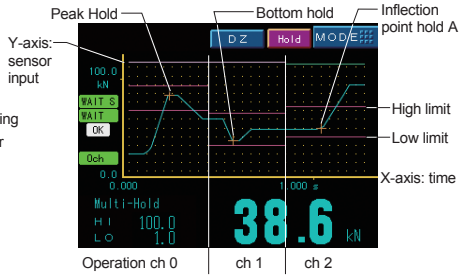


High/Low limit waveform can be easily created by sampling sensor input waveforms or by editing waveforms.

Multi Hold Mode

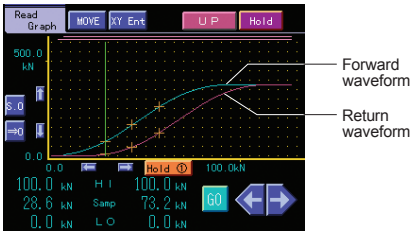
This mode detects required points on the displayed waveform and judges it according to High/Low comparison or its like. Multiple points (max. 9 points) on the measured waveform can be compared with the High/Low limits. Comparison and judgment under a variety of setting conditions can be performed by changing the operation ch※ .

※ Types of hold functions and High/Low limit setting values can be stored up to 32 ch.



Hysteresis / Hysteresis 2 Mode

Hysterisis mode samples the forward/return movement of waveform which changes with the displacement and is able to perform High/Low limit comparison of multiple points (max. 9 points). Hysterisis 2 mode performs the High/Low limit comparison of the difference (up to 3 points) between the forward/return measurement values.



2-Input Sensor

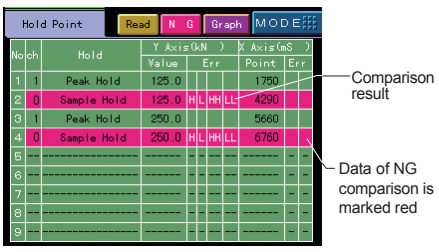
2 ch is provided for sensor input. 2-D judgment is selected by connecting the sensor input to X and Y-axis respectively whereas external signal control can be selected by connecting both 2 ch to Y-axis.

※Std: ch1=strain gauge input; ch2=voltage input
As option, ch1 can have voltage/current input and ch2 can have strain gauge/current input);
ch1: fixed Y-axis; ch2: settable X-Y axes
When pulse input option is installed, Y-axis will be exclusively for sensor input.

Holding Value Display Function

Result obtained at any comparison mode can be checked from the holding value display. The details of holding value display can also be generated.

Example: At Multi Hold Mode



NG Check Function

Up to 4 past NG waveforms can be recorded and checked. (2 for hysterisis/hysterisis 2 mode).
File can also be generated.

Specifications

SENSOR INPUT	2-inputs (Std: ch1=strain gauge input; ch2=voltage input) (As option, ch1 can have voltage/ current input and ch2 can have strain gauge/current input); ch1: fixed Y-axis; ch2: settable X-Y axes (When pulse input option is installed, Y-axis will be exclusively for sensor input (strain gauge/voltage/current).)
・ Strain gauge input	
Excitation voltage	DC10V/2.5V ±5% interchangeable (depending on setting) Output current: 120 mA or less (for 2 inputs total) 4-wire type (When only 1 input is used, up to 4 units of 350Ω loadcells can be connected in parallel)
Signal input range	−3.0∽＋3.0mV/V
Zero / gain adjustment	Automatic adjustment by digital processing
Equiv. input cal. range	＋0.5∽＋3.0mV/V, −3.0∽−0.5mV/V
Equiv. input cal. range error	Within 0.2%/FS
Accuracy	Non-linearity : within 0.02%/FS ±1digit (at 3.0mV/V input) Zero drift : within 0.5 μV/℃ RTI Gain drift : within 0.01%/℃
Analog filter	Bessel low-pass filter (-12dB/oct.) Selectable from 10, 50, 200, 600 Hz
A/D converter	Speed : At 1 input - 4000 times/sec (max); At 2 inputs - 2000 times/sec (at max. speed, sensor 2 inputs); Depending on input waveform, changeable to 100, 200, 500, 1000, 2000 times/sec Resolution : app. 1/30000 at 3.0mV/V 16bit(Binary)
・ Voltage input	
Signal input range	−5∽＋5V
Input impedance	5kΩ or more
Zero / gain adjustment	Automatic adjustment by digital processing
Equiv. input cal. range	＋1∽＋5V, −5∽−1V
Equiv. input cal. range error	Within 0.2%/FS
Accuracy	Non-linearity : within 0.02%/FS ±1digit (at 5V input) Zero drift : within 50 μV/℃ RTI Gain drift : within 0.05%/℃
Analog filter	Bessel low-pass filter (-12dB/oct.) Selectable from 10, 50, 200, 600 Hz
A/D converter	Speed : At 1 input - 4000 times/sec (max); At 2 inputs - 2000 times/sec (at max. speed, sensor 2 inputs); Depending on input waveform, changeable to 100, 200, 500, 1000, 2000 times/sec Resolution : app. 1/27000 at 5V
・ Current input	
Signal input range	−20∽＋20mA
Input resistance	App. 100Ω
Zero / gain adjustment	Automatic adjustment by digital processing
Equiv. input cal. range	＋8∽＋20mA, −20∽−8mA
Equiv. input cal. range error	Within 0.2% FS
Accuracy	Non-linearity : within 0.02%/FS ±1 digit (at 20mA input) Zero drift : within 2 μA/℃ RTI Gain drift : within 0.05%/℃
Analog filter	Bessel low-pass filter (-12dB/oct.) Selectable from 10, 50, 200, 600 Hz
A/D converter	Speed : At 1 input - 4000 times/sec (max); At 2 inputs - 2000 times/sec (at max. speed, sensor 2 inputs); Depending on input waveform, changeable to 100, 200, 500, 1000, 2000 times/sec Resolution : app. 1/26000 at 20mA
・ Pulse input (option) If opted, analog input (strain gauge/current/voltage) will be exclusively for y-axis measurement use	
Max input frequency	50kHz
Internal counting range	0 ~ 65535 1/4, 1/16, 1/64 divider function can be added via setting before the counter
External supply power	DC5V(150mA max)
Applicable rotary encoder	Option-compatible rotary specifications: Output : Incremental type 2-phase output (A, B signal) - also suitable for 1 phase output (A phase input is available. All pulses are counted as plus direction) Output stage circuit: ① Open collector type (NPN type, Vceo=10V or more, Ice=30mA or more) ② Line driver (Based on RS-422)
DISPLAY	
Display	TFT color LCD
Display size	116.8(W)× 88.0(H)mm
Dot structure	320×240 dot
Measured value	Y-axis : 4 digits (-9999 ~ +9999), X-axis: 5 digits (-9999~+19999) Signs : minus sign on measured value and most significant digit
Display frequency	0.1 ~ 9.9 sec/display update selectable
FORCE MEASUREMENT FUNCTIONS	
Multi hold mode	32 ch (setting value can be saved); 20 types of hold modes Sample, Peak, Bottom, P-P (peak to peak), period specified (Peak, Bottom, P-P), time specified (Peak, Bottom, P-P), time specified auto (Peak, Bottom, P-P), minimum value, maximum value, inflection point (A,B, C, D), external pulse
Waveform comparison mode and waveform & displacement mode	Compares the actually measured waveform against the preset High/Low limit waveforms in 16 ch (settings are storable). The measured waveform is an NG if any of its points exceeds the preset waveforms because the entire measured waveform has been set for High/Low limit comparison.
Hysteresis / Hysteresis 2 mode	Displacement input is set as X-axis and forward/return waveform is done for each hold.
Other functions	Interchangeable for digital zero/ digital filter/calibration values and set values LOCK/ weighing mode (Multi holding: 32 ch memory; waveform comparison and waveform & displacement comparison: 16 ch memory(pattern)/ displacement sensor input continuous judgement/NG waveform 4 times storing for checking (up to 2 times for hysteresis mode)

INPUT / OUTPUT	
Output signal (16)	LO1/ OK1/ HI1/ HH1・LL1/ LO2/ OK2/ HI2/ LO displacement 1/ OK displacement 1/ HI displacement 1/ LO displacement 2/ OK displacement 2/ HI displacement 2/ COMPLETE/ WARNING/ hysteresis return Transistor's open collector output (Emitter=COM terminal); Output is LO when transistor is ON. Vceo=30V(max), Ic=120mA(max)
Input signal (24)	Post-measuring display / start via external signal/ waveform end level operation/ touch panel lock/ displacement hold reset/ backlight ON/ HH/LL selection/ auto update reset / D/Z/ T/H/ H/M/ START/ STOP/ HOLD1∽3/ CODE1∽16/ STROBE/ output selection Set to ON when shorted to COM terminal through contact point (relay, switch etc.) or non-contact point (transistor, open collector etc.) Ic=10mA or less
INTERFACE	
	SIF : 2-wire type serial interface (SI/F) 232 : RS-232C communication interface ODN : DeviceNet interface (Option) CCL : CC-Link interface (Option) (Only one option can be installed)
OPTION	
	VI1 : ch1 voltage input CI1 : ch1 current input LI2 : ch2 strain gauge input CI2 : ch2 current input PUI : Pulse input Please inquire with us for options that are compliant with the RoHS Directive.
GENERAL SPECIFICATIONS	
Power supply voltage	AC100∽240V (＋10% −15%) (free power source 50/60Hz)
Power consumption	25W (50VA) max (at constant AC240V)
Inrush current	20A; 5msec: AC100V max. load (cold start at room temperature) 40A; 5msec: AC200V max. load (cold start at room temperature)
Operation condition	Temperature ..... Operation temperature range -10∽+40℃; ..... Storage temperature range -20∽+60℃; Humidity ..... 85% RH or less (non-condensing)
External dimension	174 (W) ×135 (H) ×156 (D) mm (not including projections)
Weight	App. 2.3 kg
ATTACHMENT	
	AC input cord (Nominal rating 125 V) 2m ..... 1 AC input cord converter plug ..... 1 Mini driver ..... 1 57 series 50p connector ..... 1 Ferrite core ..... 4 Pulse input connector (when pulse input option is selected) ..... 1 DeviceNet connector (when DeviceNet option is selected) ..... 1 CC Link connector (when CC-Link option is selected) .....1 Operation Manual 1
OPTIONAL ACCESSORIES	
	CAAC3P-P2: AC input cord 2m CAAC3P-CEE7/7-P1.5: AC input cord (Voltage resistance: 250 V) 1.5m CN3P-2P: 3P-2P converter plug for AC input cord CN20: Pulse input connector CN22: 57 series 50p connector for external input CN34: D-sub9p connector for RS-232C CN71: CC-Link connector CND01: DeviceNet connector CVR57: Dust cover set TSU02: Lightning surge unit
CE marking certification	・EMC Directives EN61326-1 ・Lower Voltage Directives EN61010-1 (※CE marking has not yet acquired for CCL option.)

Model Constitution

F395 □ □ □ □

① ② ③ ④ ⑤

①Standard unit

②ch1 sensor input

Sign	Input type
Standard	Strain gauge input
VI1	Voltage input
CI1	Current input

③ch2 sensor input

Sign	Input type
Standard	Voltage input
LI2	Strain gauge input
CI2	Current input

④Pulse input

Sign	Pulse input
Standard	W/O
PUI	Pulse input

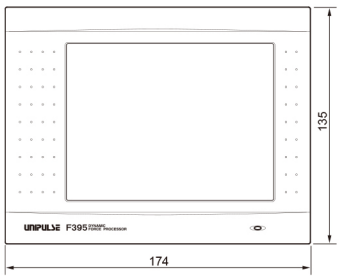
⑤Interface

Sign	Interface
ODN	DeviceNet
CCL	CC-Link

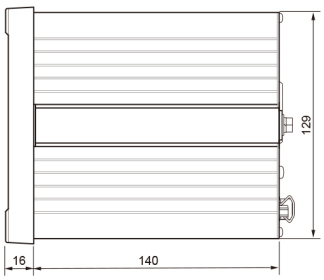
Standard installation：SI/F, RS-232C
1 function can be carried in addition to a standard.

External Dimension

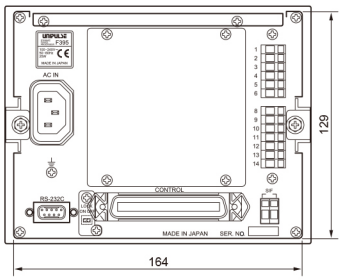
(Front View)

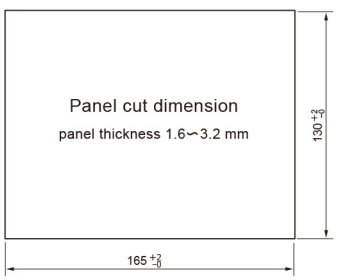


(Side View)



(Rear View)





Unit: mm