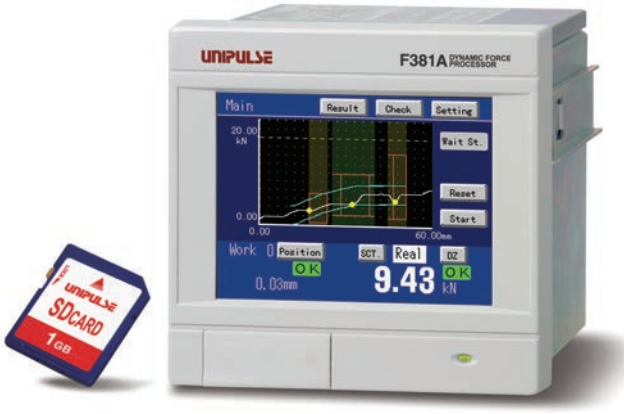
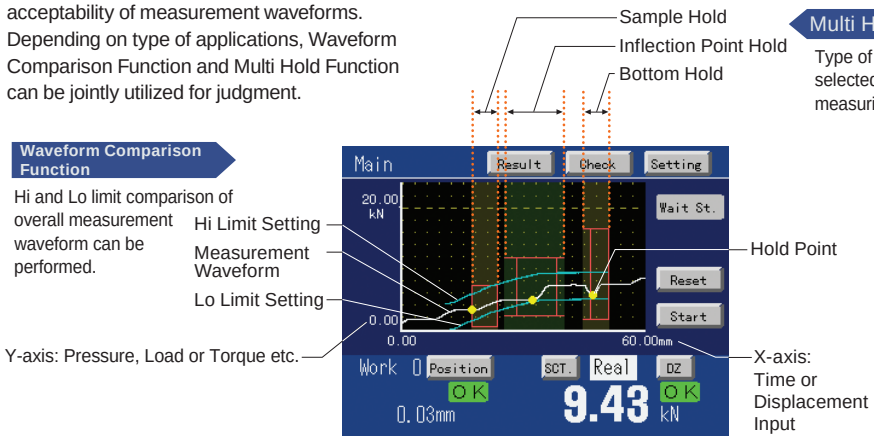
F381A

DIGITAL INDICATOR WITH GRAPHIC DISPLAY/TOUCH PANEL (SD CARD SLOT OPTION AVAILABLE)



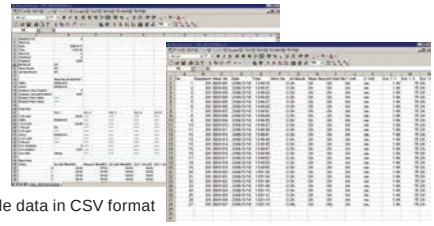
Comparison & Hold Function by Waveform Display

These functions are used to judge the acceptability of measurement waveforms. Depending on type of applications, Waveform Comparison Function and Multi Hold Function can be jointly utilized for judgment.



Saves Measurement Data in SD Card

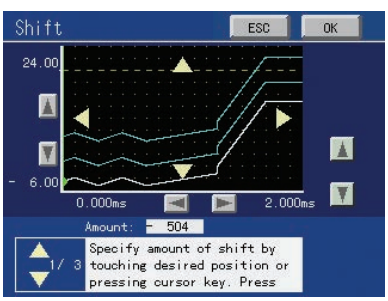
Measurement data and set values can be logged (recorded) in the SD Card where it can be retained as a 100% recorded quality data or be used when setting up equipments or when performing cause analysis or improvement of problems.
The data can be easily converted to CSV format and is therefore easily edited in Microsoft Excel or its like.



Example data in CSV format

- CE marking certification
- RoHS-compliant product
- 4000 times/sec high-speed processing
- 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
- Variety of interfaces
  RS-232C / DeviceNet / CC-Link / Ethernet
- 3.5-inch color LCD module & touch panel
  Operation can be effortlessly performed by a direct touch on the touch panel.
- Excellent operability
  F381A is right-down demanding on straightforwardness and is therefore made able to automatically mask non-required setting items and also to display setting in the required sequence when that particular set item has specific setting sequence.
- I/O Input: Plus common / Minus common shared
  I/O Output: Sink type / Source type selectable.
  It can be connected to various types of external equipments such as PLCs.

Waveform comparison function



▲Setup Waveform Creation Screen

This function compares the actual measurement waveform against the setup High/Low limit waveforms and will give out an NG judgment when any of the point exceeded the preset High/Low limit waveforms. As it compares the overall measurement waveform, accurate judgment can be made even applications that are unable to narrow down its judgment points.

The High/Low limit waveforms can be easily created on the actual measurement waveform or on the setup waveform creation screen.

Multi hold function

After the measuring range is segmented, judgment is carried out while the type of hold (sample, peak, bottom, P-P, Average, max, min, inflection point, End Displacement) is interchanged as set. The multi hold function can specify the Hi/Lo limit value and type of hold at each of the segmented range. Multipoint judgment is possible because the multi hold function is capable of using the peak hold to detect the inhibit timer immediately after the press-fit is started and then uses the inflection point hold to judge the load just before the ramming is commenced.

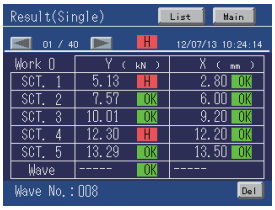
Displacement input as a standard equipment

It performs 2-dimensional waveform comparison & multi hold through its dual input from the displacement sensor and strain gauge sensor. On X-axis, voltage or pulse input can be connected while on Y-axis, strain gauge sensor can be connected.
This is highly effective for applications which are difficult to control only by time factor such as the control for pressing time of press machines and for the imposing time on works with individual differences.
※When nothing is connected with X-axis, Waveform Comparison & Multi Hold by the time series can be done.
※The voltage input is an option.

Judgment results display

The comparison results of Waveform Comparison Function and Multi Hold Function can be verified on the display.【Result(List)】(An individual display) and【Result (Single)】(a list display) to selection is possible.(Latest 40 data)

【Result(List)】



【Result(Single)】

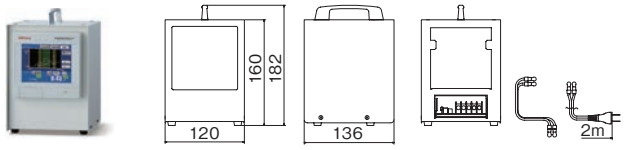
Specifications

SENSOR INPUT	
・Sensor input for load (strain gauge input fixed)	
Excitation voltage	DC 10V or 2.5V ±10%　Output current: Within 30mA
Signal input range	−3.0 to +3.0mV/V
Zero adjustment range	−3.0 to +3.0mV/V Automatic adjustment by digital processing
Equivalent input calibration range	−3.0 to −0.5mV/V、+0.5 to +3.0mV/V
Equivalent input calibration error	Within 0.1% FS
Actual calibration range	−3.0 to +3.0mV/V ※In Approx. −0.005mV/V to +0.005mV/V, a zero calibration point to calibration is impossible.
Accuracy	Non-linearity: Within 0.02%/FS ±1 digit (at 3.0mV/V input) Zero drift: Within 0.5μV/℃ RTI
Analog filter	Gain drift: Within 0.01%/℃
A/D converter	Low-pass filter (-6dB/oct)　Selectable from 10, 30, 100, 300 Hz Speed: 4000 times/sec Resolution: 24 bit (binary)　Effective Resolution: App. 1/30000 to 3.0mV/V
Analog voltage output	Output level　Approx. 2V per 1.0mV/V input Load resistance 2kΩ or more
・Sensor input for displacement (standard: pulse input open collector)　Option: Pulse input（Line driver (LDI))	
Max. input frequency	50 kHz
Internal count range	App. 1,000,000
Adaptable rotary encoder	Output: Incremental type 2-phase output (A/B signal output) Also capable of single-phase output (A-phase input used. All pulses are counted as in the plus direction.) Output stage circuit specification; Open collector (NPN-type, Vceo=30V or more, Ic=30mA or more) Output stage circuit specification (LDI)　Line driver (Based on RS-422)
・Sensor input for displacement（Option:Voltage input［VIN］）	
Signal input range	−5 to +5V
Input impedance	App. 10MΩ
Zero adjustment range	−5 to +5V Automatic adjustment by digital processing
Equivalent input calibration range	−5 to −1V, +1 to +5V
Equivalent input calibration error	Within 0.1% F.S.
Actual calibration range	−5 to +5V ※In Approx. −0.01V to +0.01V, a zero calibration point to calibration is impossible.
Accuracy	Non-linearity: Within 0.02%/FS ±1 digit (at 5V input) Zero drift: Within 50μV/℃ RTI
Analog filter	Gain drift: Within 0.02%/℃
A/D converter	Low-pass filter (-6dB/oct) Selectable from 10, 30, 100, 300 Hz Speed: 4000 times/sec Resolution: 24 bit (binary)　Effective Resolution:App. 1/30000 to 5V
DISPLAY	
Display	TFT color LCD module Display area: 71W x 53H (mm) Dot configuration: 320 x 240 (dot)
Indicated value	Load: -9999 to +9999 Displacement: -9999 to +32000 Decimal place: Selectable display position from 0.000, 0.00, 0.0, 0
Display frequency	Fixed at 3 times/sec
MEASUREMENT FUNCTIONS	
	Multi-hold mode 16 ch (setting values can be stored) Measuring range can be segmented and changeover to any hold for judgment can be performed. Sample, Peak, Bottom, P-P, Relative Maximum, Relative Minimum, Inflection Point, Average, End Displacement
	Waveform comparison mode 16 ch (setting values can be stored) Compares the actually measured waveform against the preset Hi / Lo waveforms. The overall measured waveform will be compared against the preset Hi / Lo and if any of its points exceeds the preset waveform, then the measured waveform will be NG.
INPUT/OUTPUT	
Output signal (16)	Output Type: Sink type/source type selectable. (Source Type is option: [ISC]) Output transistor ON at signal ON. To connect an input unit like a PLC, connect plus common for sink type, and minus common for source type. Rated voltage: 30V Rated current: 30mA
Input signal (16)	Isolation: Photocoupler Input type: Plus common/Minus common shared To connect a transistor, connect NPN output type (sink type) for plus common and PNP output type (source type) for minus common. ON Voltage: 12V or more OFF Voltage: 3V or less At 24V Load: App. 5mA Isolation: Photocoupler

INTERFACE	
	232: RS-232C communication interface ODN: DeviceNet interface（option） CCL: CC-Link interface（option） ETN: Ethernet interface（option） (Only one option can be installed)
OPTION	
	LDI: Pulse input (line driver) VIN: Voltage Input ISC: I/O Source Board SDC: SD Card Slot (1GB SD card is attached.) (1MB for storage capacity of up to 80 waveforms)
GENERAL SPECIFICATION	
Power supply voltage	DC24V(±15%)
Power consumption	6W typ
Inrush current (Typ)	2A, 10msec (at room temperature, cold-start)
Operation condition	Temperature: Operation temperature range: -10℃ to +40℃ Storage temperature range: -20℃ to +60℃ Humidity: 85% RH or less (non-condensing)
External dimension	96 (W) x 96 (H) x 117.3 (D) mm (not including projections)
Weight	App. 1.0 kg
ATTACHMENTS	
	FCN series I/O connector (with cover)..... 1 DeviceNet connector (when DeviceNet option is selected)..... 1 CC-Link connector (when CC-Link option is selected)..... 1 Operation Manual..... 1
OPTIONAL ACCESSORIES	
	DTC1: Special case SD1G: 1 GByte card SD2G: 2 GByte card SD-ADP: SD Card Adapter (ATA TYPE II) CA81-232X: miniDIN-D-Sub9p cross cable 1.5m CN52: FCN series I/O connector (with cover) CN57: FCN series I/O connector (with diagonal cover) CN60: Round DIN 8p connector for RS-232C CN71: CC-Link connector CN72: Double row connector for CC-Link CN81: Analogue I/O connector terminal CND01: DeviceNet connector GMP96x96: Rubber packing TSU03: DC Lightning surge unit
CE MARKING CERTIFICATION	EMC Directives　EN61326-1

DTC1：Special case

Unit: mm



Structure of product code

F381A □ □ □ □ □
① ② ③ ④ ⑤

①Standard unit

②Displacement sensor input

Sign	Displacement sensor
Standard	Open collector
LDI	Line driver
VIN	Voltage

③SD card slot

Sign	Card slot
Standard	W/O
SDC	SD card slot (1GB attached)

④I/O output

Sign	Output type
Standard	Sink type(NPN output)
ISC	Source type(PNP output)

⑤Interface

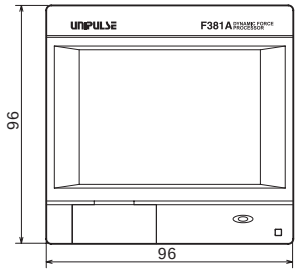
Sign	Interface
Standard	RS-232C

↓ One optional interface can be added in addition the standard interface.

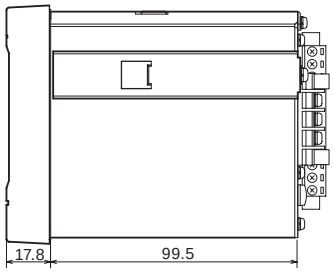
ODN	DeviceNet
CCL	CC-Link
ETN	Ethernet

External dimension

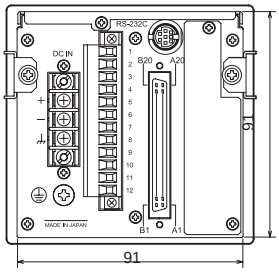
(Front View)

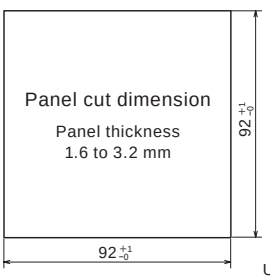


(Side View)



(Rear View)





Unit: mm