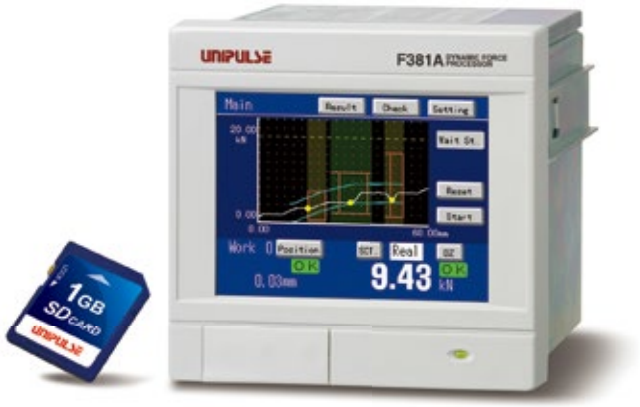
F381A

GRAPHIC DISPLAY
TOUCH PANEL TYPE DIGITAL INDICATOR

CC-Link
DeviceNet
CE DIN 96 RoHS2

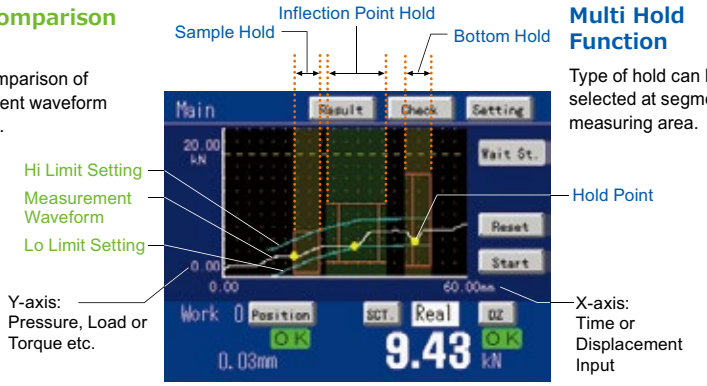


Comparison & Hold Function by Waveform Display

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.

Waveform Comparison Function

Hi and Lo limit comparison of overall measurement waveform can be performed.

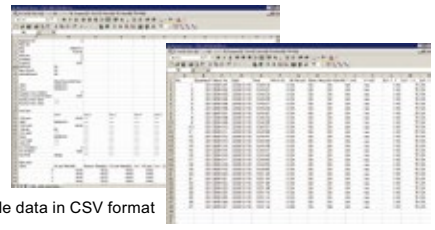


Multi Hold Function

Type of hold can be selected at segmented measuring area.

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 Excel or its like.



Example data in CSV format

- 4000 times/sec. high-speed processing
- Analog monitor output
  Voltage output is proportionate to the input signal making the recording on recorder convenient. Approx. 2 V per 1 mV/V strain gauge input
- Variety of interfaces
  RS-232C / CC-Link / DeviceNet / 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.

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.

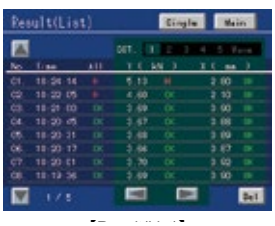
Displacement input as a standard equipment

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.

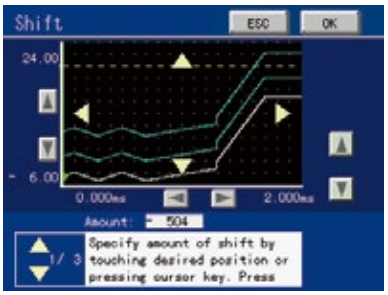
* When nothing is connected with X-axis, Waveform Comparison & Multi Hold by the time series can be done.
* The voltage input is an option.

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)



Waveform comparison function



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.

▲Setup Waveform Creation Screen

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

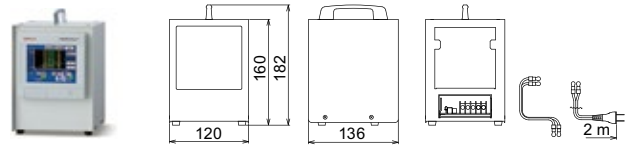
Specifications

Sensor input	
- Sensor input for load (strain gauge input)	
Excitation voltage	DC 10 V, 2.5 V ±10% (Depending on setting) Output current: Within 30 mA
Signal input range	−3.0 to +3.0 mV/V
Accuracy	Non-linearity: Within 0.02% FS±1 digit (at 3.0 mV/V input) Zero drift: Within 0.5 μV/℃ RTI Gain drift: Within 0.01%/℃
Analog filter	Low-pass filter (-6 dB/oct.) Selectable from 10, 30, 100, and 300 Hz
A/D converter	Speed: 4000 times/sec. Resolution: 24 bit (binary) Effective resolution: Approx. 1/30000 to 3.0 mV/V
Analog voltage output	Output level: Approx. 2 V per 1 mV/V input Load resistance 2 kΩ or more
- Sensor input for displacement (standard: pulse input open collector) Option: Pulse input (Line driver [LDI])	
Maximum input frequency	50 kHz
Internal count range	Approx. 1,000,000
Adaptable rotary encoder	Output: Incremental type 2-phase output (A/B-phase 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 = 30 V or more, Ic = 30 mA 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 +5 V
Input impedance	Approx. 10 MΩ
Zero adjustment range	−5 to +5 V Automatic adjustment by digital processing
Equivalent input calibration range	−5 to −1 V, +1 to +5 V
Equivalent input calibration error	Within 0.1% FS
Actual calibration range	−5 to +5 V * In Approx. −0.01 to +0.01 V, a zero calibration point to calibration is impossible.
Accuracy	Non-linearity: Within 0.02% FS±1 digit (at 5 V input) Zero drift: Within 50 μV/℃ RTI Gain drift: Within 0.02%/℃
Analog filter	Low-pass filter (-6 dB/oct.) Selectable from 10, 30, 100, and 300 Hz
A/D converter	Speed: 4000 times/sec. Resolution: 24 bit (binary) Effective resolution: Approx. 1/30000 to 5 V
Display	
Display	TFT color LCD module Display area: 71(W) × 53(H) mm Dot configuration: 320 × 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.
External signal	
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: 30 V Rated current: 30 mA Isolation: Photocoupler
Input signal (16)	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: 12 V or more OFF Voltage: 3 V or less At 24 V Load: Approx. 5 mA Isolation: Photocoupler

Interface	
	232: RS-232C communication interface CCL: CC-Link interface (option) ODN: DeviceNet 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
General specification	
Power supply voltage	DC 24 V (±15%)
Power consumption	6 W typ.
Inrush current typ.	2 A, 10 msec (cold start at room temperature)
Operating conditions	Operation temperature: -10 to +40℃ Storage temperature: -20 to +60℃ Humidity: 85% RH or less (non-condensing)
External dimension	96(W) × 96(H) × 117.3(D) mm (Not including projections)
Weight	Approx. 1.0 kg
Attachments	
	FCN series I/O connector (with cover) ..... 1 Operation manual ..... 1 SD card 1 GByte ..... 1 Analog I/O connector terminal block (Already mounted on the main unit) ..... 1 CC-Link connector (when CC-Link option is selected) ..... 1 DeviceNet connector (when DeviceNet option is selected) 1
Optional accessories	
	DTC1: Case for F381A (with AC power supply) SD1G: SD card 1 GByte (Same as the attachment) SD2G: SD card 2 GByte CA81-232X: miniDIN-D-Sub9p cross cable 1.5 m CN52: FCN series I/O connector (with cover)(Same as the attachment) CN57: FCN series I/O connector (with diagonal cover) CN60: Circular DIN 8p connector for RS-232C CN71: CC-Link connector CN72: Double row connector for CC-Link CN81: Analog I/O connector terminal block (Same as the attachment) CND01: DeviceNet connector GMP96x96: Rubber packing TSU03: DC Lightning surge unit
CE marking certification	EMC Directives EN61326-1

* Please note that there are possibilities of individual differences in a color tone on display devices such as LEDs, fluorescent display tubes and LCDs due to manufacturing process or production lots.

DTC1: Case for F381A (with AC power supply) Unit: mm



Structure of product code

F381A-SDC □ □ □
① ② ③ ④

① Standard unit

② Displacement sensor input

Sign	Displacement sensor
Standard	Open collector
LDI	Line driver
VIN	Voltage

③ I/O output

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

④ Interface

Sign	Interface
Standard	RS-232C

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

CCL	CC-Link
ODN	DeviceNet
ETN	Ethernet

A digital contact sensor designed for F381A-LDI

Digital contact sensor

ULE-50

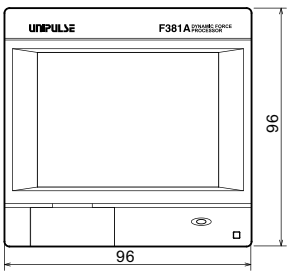
You can perform OK/NOK judgment with a Force vs Displacement curve.

Measuring range: 50 mm
Resolution: 2.5 μm

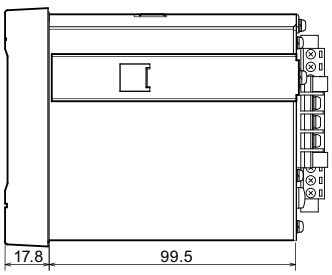
* For specification & drawing of ULE-50, please refer to page 118 for more details.

External dimension

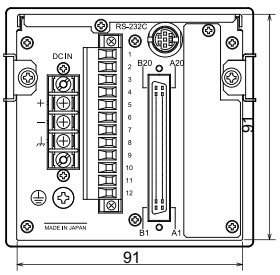
(Front)

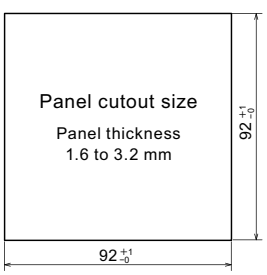


(Side)



(Rear)





Unit: mm