

4000 Times / Sec High-Speed Processing

F381 is installed with a high-speed A/D converter and high-speed CPU that can process sensor signal input at 4000 times/second. With this, fluctuations of narrow-values will not be overlooked.

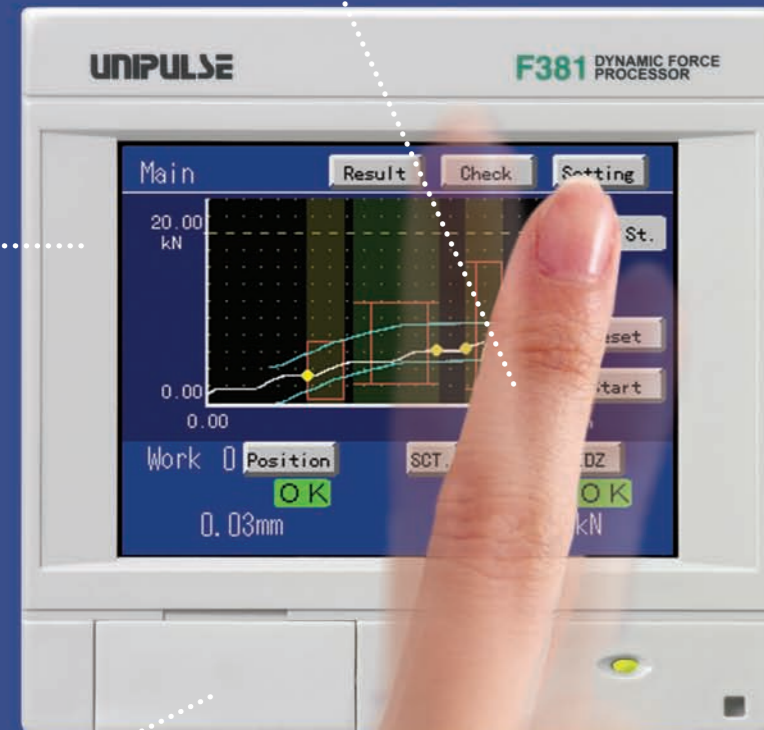
Wide Array of Interfaces

F381 provides a wide array of interfaces to give flexibility in system networking. As starters, there are Ethernet and the proven RS-232C interfaces which can provide direct link to site PLCs such as the OMRON DeviceNet (CompoBus/D) or the MITSUBISHI CC-Link without the need for any bridging devices.

LCD Touch Panel

Operation can be effortlessly performed by a direct touch on the touch panel.

REAL SIZE



F381 SPECIFICATIONS

■ SENSOR INPUT

Sensor input for load (strain gauge input fixed)	
Sensor excitation voltage	10V or 2.5V DC ±10% (factory default: 2.5V) Output current: Within 30mA -3.0mV/V to +3.0mV/V
Signal input range	-3.0mV/V to -0.5mV/V +0.5mV/V to +3.0 mV/V
Equivalent input calibration range	Within 0.1% F.S.
Accuracy	Non-linearity: Within 0.02% F.S. ±1 digit (at 3.0mV/V input) Zero drift: Within 0.5 μV/°C RTI Gain drift: Within 0.01%/°C
Analog filter	Selectable from 10, 30, 100, 300 Hz Low-pass filter (-6dB/oct)
A/D converter	Rate: 4000 times/sec Resolution: 24 bit (binary) Effective Resolution: App. 1/30000 to 3.0mV/V
Analog voltage output	Output level: App. 2V per 1.0mV/V input Load resistance: 2kΩ or more
Sensor input for displacement (standard: pulse input Option: Voltage Input [VIN])	

Pulse Input (Standard)	
Max. input frequency	50 kHz
Internal count range	App. 1,000,000
Adaptable rotary encoder	Output: 2-phase (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, V _{ceo} =30V or more, I _c =30mA or more)

Voltage Input (Option)	
Signal input range	-5V to +5V
Input resistance	App. 10MΩ
Equivalent input calibration range	-5V to -1V +1V to +5V
Equivalent input calibration error	Within 0.1% F.S.
Accuracy	Non-linearity: Within 0.02% F.S. ±1 digit (at 5V input) Zero drift: Within 50 μV/°C RTI Gain drift: Within 0.02%/°C
Analog filter	Selectable from 10, 30, 100, 300 Hz Low-pass filter (-6dB/oct)
A/D converter	Rate: 4000 times/sec Resolution: 24 bit (binary) Effective Resolution: App. 1/30000 to 5V

■ DISPLAY

Display	3.5-inch STN color LCD module Display area: 71.02Wx53.26H (mm) Dot configuration: 320x240 (dot) Load: -9999 to +9999 Displacement: -9999 to +32000 Decimal point: Selectable display position from 0.000, 0.00, 0.0, 0.0
Indicated value	Fixed at 3 times/sec
Display frequency	

■ SETTING

Setting method	Setting via analog touch panel
Saving of set values	NOV RAM (nonvolatile RAM) Backup C-MOS RAM using lithium battery

■ INTERFACE

RS-232C Communication Interface	Start-stop synchronization Baud rate: 1200bps to 38400bps All parameters can be read and written. All comparison waveforms can be read and written. Measurement waveforms and judgment points can be read.
---------------------------------	--

■ INPUT/OUTPUT

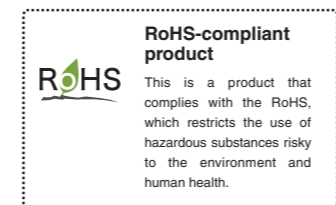
Input signal	16 points Input type: plus common/minus common shared Relay, switch, transistor, etc., connectable. To connect a transistor, connect NPN output type (sink type) for plus common and PNP output type (source type) for minus common. ON voltage: 12V or more; OFF voltage: 3V or less At 24V load: App. 5mA Isolation: Photocoupler
Output signal	16 points 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 Isolation: Photocoupler

■ OPTION

SD Card [SDC]	All parameters can be preserved and reconstructed. All comparison waveforms can be preserved and reconstructed. Measurement waveforms and judgment points can automatically be preserved.
I/O Source Board [ISC]	Output type: Source type To connect an input unit like a PLC, connect minus common.
DeviceNet Interface [ODN]	Connectable with DeviceNet-compliant OMRON CompoBus/D seamlessly. All parameters can be read and written. All comparison waveforms can be read and written. Measurement waveforms and judgment points can be read.
CC-Link Interface [CCL]	Directly linkable with a Mitsubishi (multipurpose) sequencer. All parameters can be read and written. Judgment points can be read.
Ethernet Interface [ETN]	All parameters can be read and written. Waveforms and judgment points can be read.

■ GENERAL PERFORMANCE

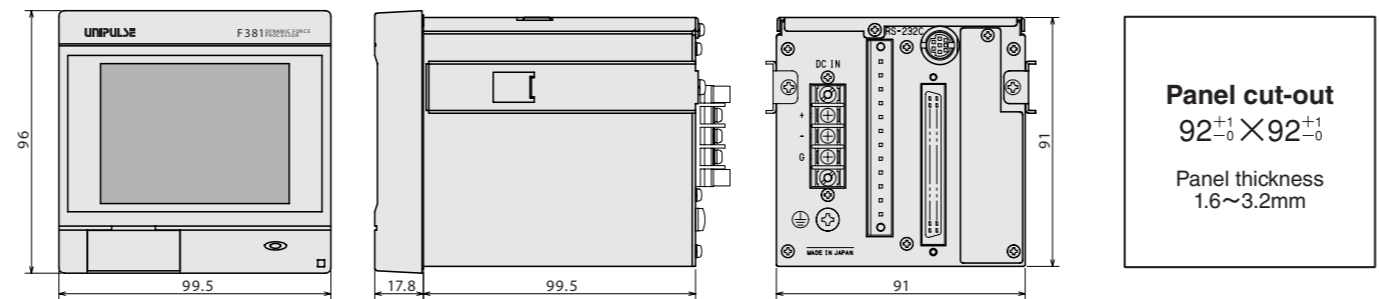
Power supply voltage	DC24V (±15%)
Power consumption	15W max.
Inrush current (Typ)	2A, 10msec (at ordinary temperature, cold-start)
Operating conditions	Temperature: Operating temperature range: 0°C to +40°C Storage temperature range: -20°C to +60°C
External dimension	Humidity: 85% RH or less (non-condensing) 99.5 (W) x 96 (H) x 117.3 (D) mm (not including projections)
Weight	App. 1.0 kg



CE marking has not yet acquired for ODN, CCL and ETN options.

F381 DIMENSIONS

Unit : mm



※ Product names and company names noted in this catalog are the trademark or registered trademark of said companies.
※ Please note that specifications or designs shown in this catalog may be changed without prior notice due to our continuous product improvement activities.

<http://www.unipulse.com>

UNIPULSE Corporation
International Sales Department
Nittetsu Kobiki Bldg 7-16-3 Ginza,
Chuo-ku, Tokyo 104-0061
Tel: +81-3-5148-3867
Fax: +81-3-5148-3001

Headquarter:
Technical Center:
Nagoya Sales Office:
Osaka Sales Office:
Hiroshima Sales Office:
Fukuoka Sales Office:

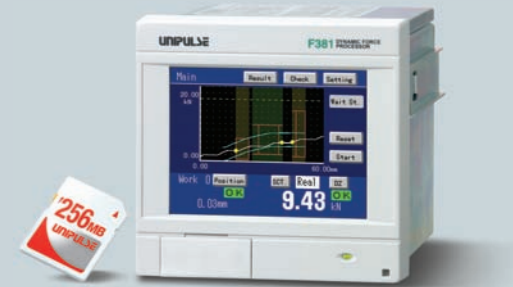
Nittetsu Kobiki Bldg 7-16-3 Ginza, Chuo-ku, Tokyo 104-0061
1-3 Sengendainishi, Koshigaya, Saitama 343-0041
Meihoku Kurokawa Bldg 5-5-3 Shimizu, Kita-ku, Nagoya 462-0844
Sumitomo Seimei Shin Osaka Kita Bldg 4-1-14 Miyahara, Yodogawa-ku, Osaka 532-0003
Funairi Reiku Bldg 9-20 Funairihonmachi, Hiroshima 730-0843
Ota Bldg 1-16 Tsubana-cho, Hakata-ku, Fukuoka 812-0024

Rev.1.01 2006 MAY.

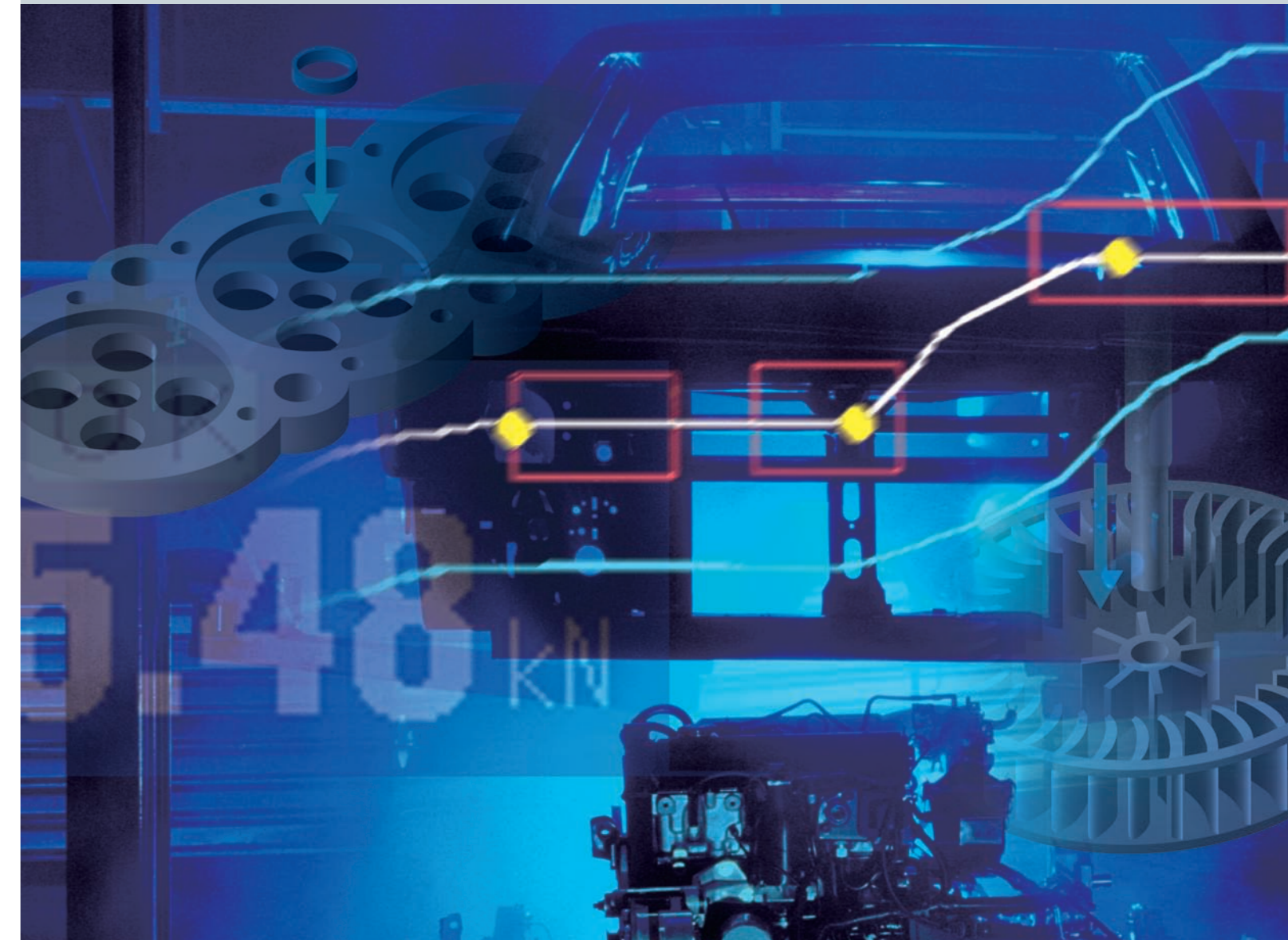
UNIPULSE

Dynamic Force Processor

F381

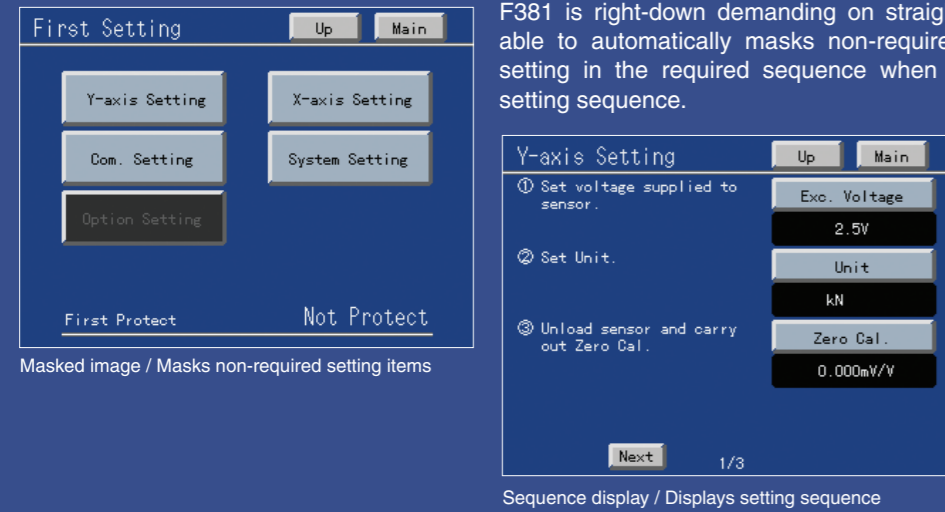


SD Card Available
LCD Touch Panel Display



Excellent Operability

F381 is right-down demanding on straightforwardness and is therefore made able to automatically masks non-required setting items and also to display setting in the required sequence when that particular set item has specific setting sequence.



On-the-spot problem analysis and setting while observing fluctuation of "Force" --- Boundless control on "Force" such as Pressure, Load and Torque!

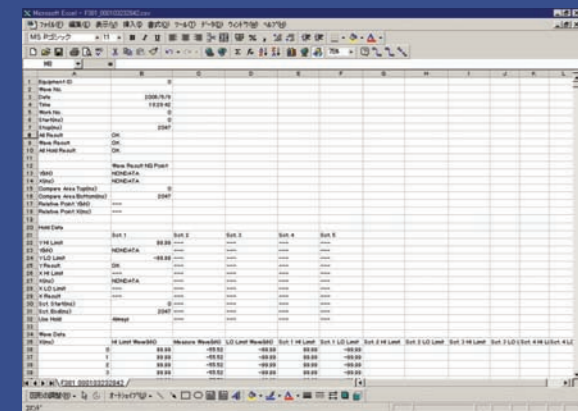
F381 is a dynamic force processor integrated with strain gauge sensor that displays physical values such as pressure, load and torque in waveforms display. It is able to visually capture in waveforms the fluctuations of physical values which are difficult to be captured by numbers alone. With a maximum 4000 times/second high-speed processing, it is also suitable for narrow-values fluctuation and is equipped with the Hi/Lo Limit Comparison Function, various Hold Functions and Judgment Function. F381 can be used in a wide-range of applications such as in control systems used in Production Control, automatic devices or testers.

Plus common / Minus common shared Sink type / Source type selectable

Its input type is combined-use plus common / minus common while its output type is selectable to sink type / source type. It can be connected to various types of external equipments such as PLCs.

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

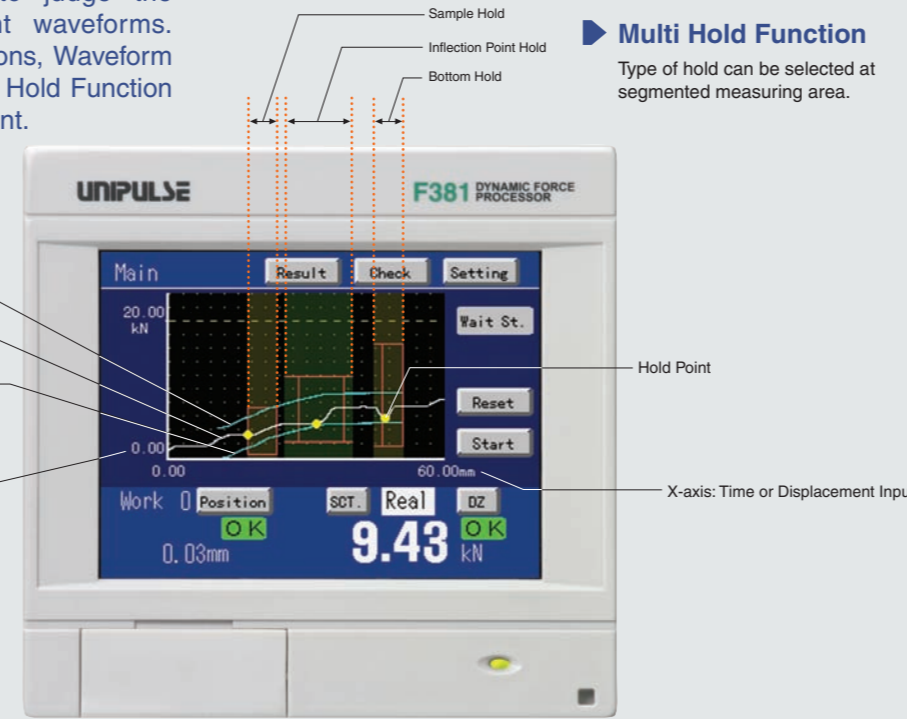
Comparison & Hold Function by Waveform Display

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.

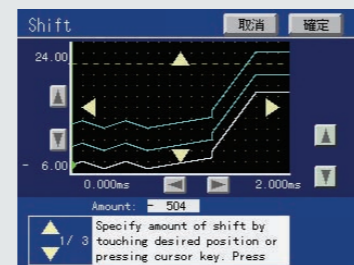
Y-axis: Pressure, Load or Torque etc.



Multi Hold Function

Type of hold can be selected at segmented measuring area.

Waveform Comparison Function



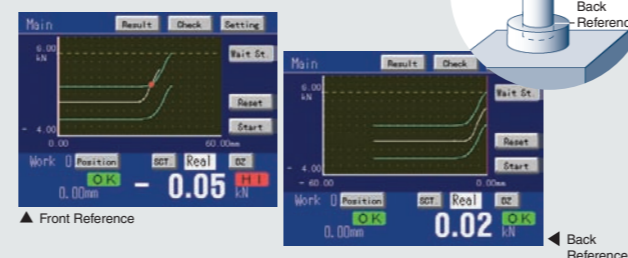
This function compares the actually measurement waveform against the setup Hi/Lo limit waveforms and will give out an NG judgment when any of the point exceeded the set Hi/Lo limit waveforms. As it compares the measurement waveform in overall, accurate judgment can be made even in applications that are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

Setup Waveform Creation Screen

The Hi/Lo limit waveforms can be easily created on the actually measurement waveform or on the setup waveform creation screen.

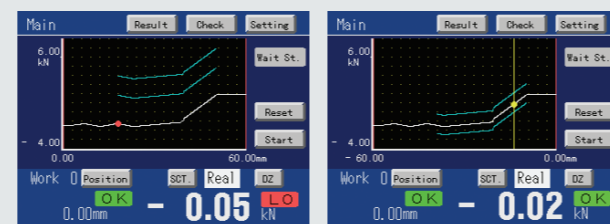
Front Reference & Back Reference

In respect to the measurement waveform, the setup Hi/Lo limit waveforms can be selected to be the front or back reference. With this, accurate judgment can be done even when the work inserting mold is uneven.



Relative Displacement

In respect to the measurement waveform, the setup Hi/Lo limit waveforms can be set to relative displacement. When reference point is set at displacement or time, the set waveform will be in relative displacement at the load reference point of the measurement waveform.



▲ Pre-displacement

▲ Post-displacement

Multi Hold Function

After the measuring area is divided, judgment can be carried out while type of hold (sample, peak, bottom, P-P, max, min, inflection point) is interchanged at will. It is capable in specifying Hi limit value, Lo limit value and type of hold at each interval. Multiple point judgment is available through its processes such as detection of inhibit timer soon after the start of insertion and judgment of load before finishing insertion process via Inflection Point Hold.

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.

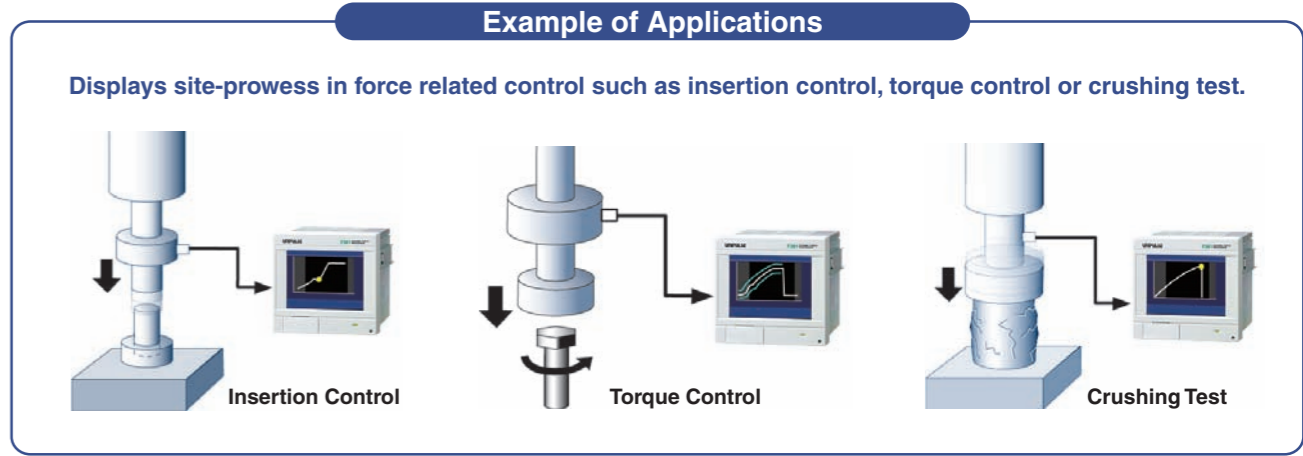
※When nothing is connected with X axis, Waveform Comparison & Multi Hold by the time series can be done.
※The voltage input is an option.

List of Judgment Results Display

The judgment results of Waveform Comparison Function and Multi Hold Function can be verified on the list display. NG points are marked in red.

Wave No.	X (kN)	Y (mm)
SCT. 1	NG	NG
SCT. 2	NG	NG
SCT. 3	NG	NG
SCT. 4	NG	NG
SCT. 5	NG	NG
Wave	0.03	

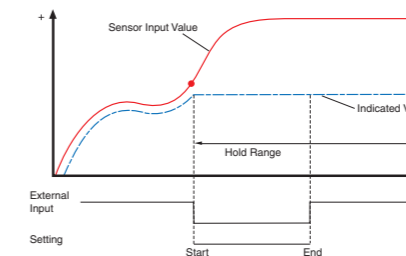
A wave No. can be set on each waveform. It is convenient to retrieve the data preserved on the SD card.



Types of Hold Functions

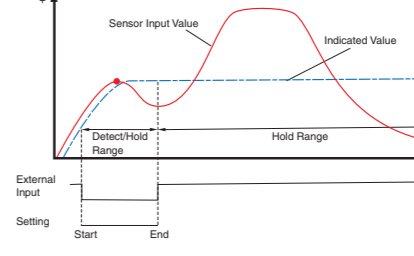
Sample Hold

Holds any point upon receiving external signal (or at preset start point)



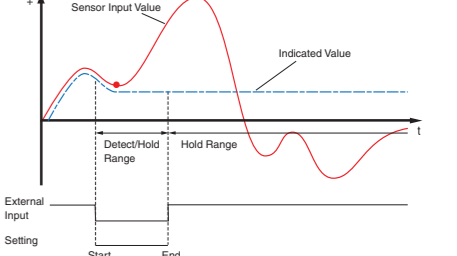
Peak Hold

Holds maximum value (peak value) at plus direction.



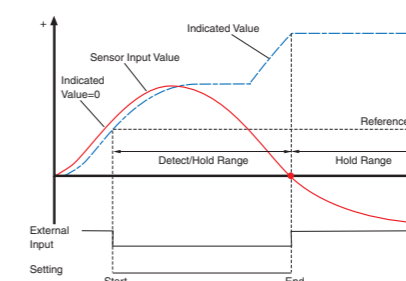
Bottom Hold

Holds maximum value (bottom value) at minus direction.



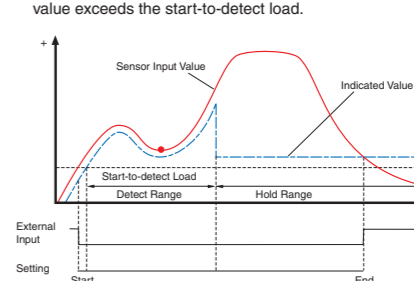
P-P (Peak to Peak) Hold

Holds maximum difference upon onset of trigger.



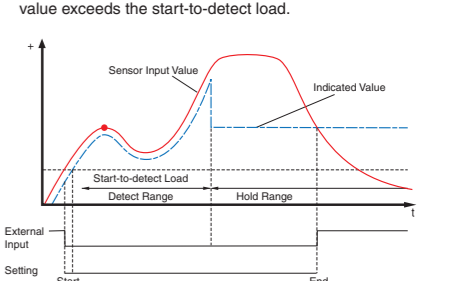
Relative Minimum Value Hold

Detects and holds minimum value when the Indicated value exceeds the start-to-detect load.



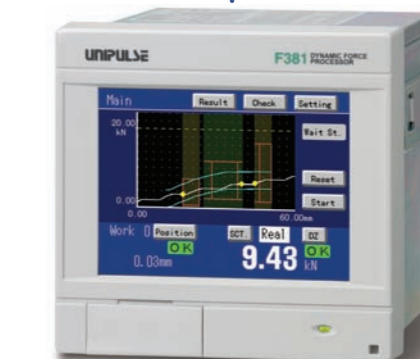
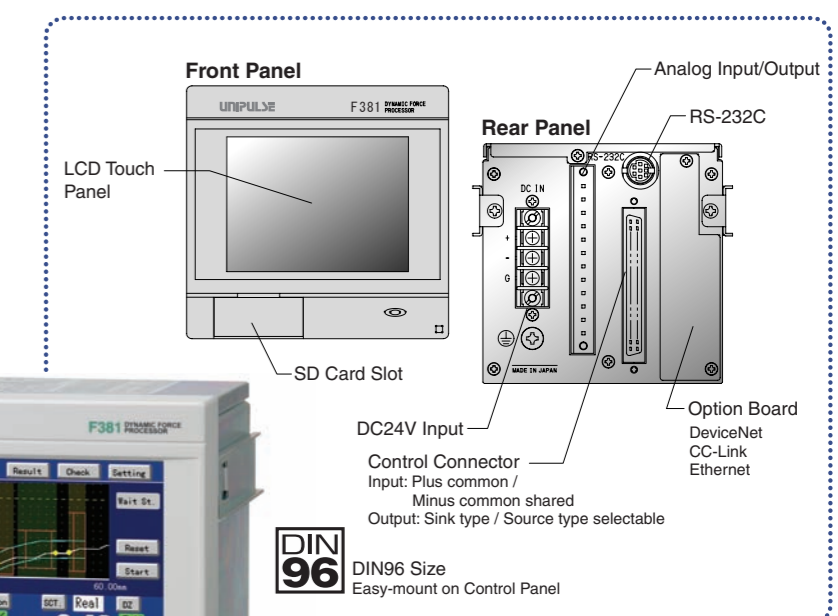
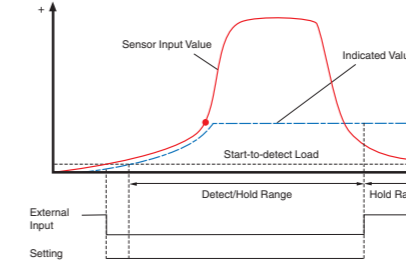
Relative Maximum Value Hold

Detects and holds maximum value when the Indicated value exceeds the start-to-detect load.



Inflection Point Hold

Detects and holds inflection point at the range where Indicated value horizontally cuts on start-to-detect load and where external signal is in (or from preset start to end point).



DIN 96
DIN96 Size
Easy-mount on Control Panel