UNIPULSE

F320

DIGITAL INDICATOR

CE

DIN 96×48

F320 is a digital indicator with DIN 96 x 48 mm size for strain gauge type sensor.
It is most suitable in controlling load pressure such as in pressing, compression and caulking work; as torque controller of nut runner or rotary devices and in production line quality control.
It is built-in with RS-485 (Modbus-RTU protocol) that allows easy construction of a control system that is integrated with PLC or programmable display device.

■ Mini DIN size

A convenient DIN 96 x 48 mm size that can be easily mounted on control panel.

■ Standard built-in RS-485 (Modbus-RTU communication protocol)

Integration with existing system can be easily done with the use of Modbus protocol.
Up to 32 units network connection is possible.

■ 2000 times/sec high-speed A/D conversion (24 bit resolution)

Built-in with high-speed CPU and high-speed A/D converter that digitally process input signal from the sensor and output it at a speed of 2000 times/sec.

■ Hold Function

Uses its quick Peak / Sample Hold Function to immediately detect points requiring analog waveform.

■ BCD parallel data output, D/A converter (voltage output, current output)

Analog Monitor Output

Convenient in recording of voltage output, which is proportionate to the input signal, into recorder or its like.

Equivalent Input Calibration Function

Calibration of sensor's rated output and rated capacity by only pressing the key switch.
Calibration can be performed without having actual load in.

High / Low Limit Comparison Function with Hysteresis

Allows wider range on the timing of high / low limit comparison.
Powerful in preventing chattering during subtle signal fluctuations.

Digital Offset

A function that deducts the preset value from the indicated value.

Digital Zero Function

Indicated value can be display through one-touch key function.

Analog Filter / Digital Filter

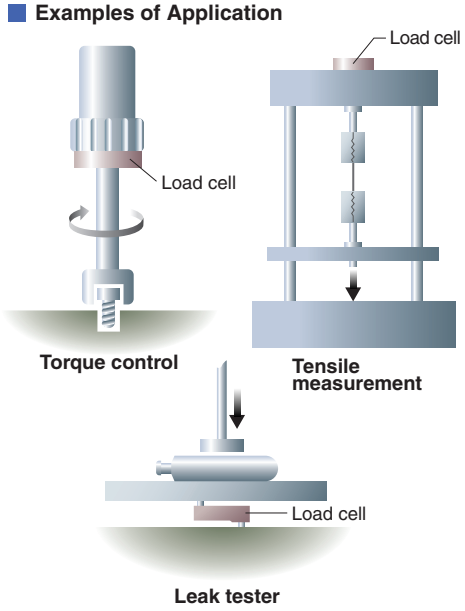
Installed with an analog filter that can cut-off noise or vibration to extract only necessary signals and also a digital filter that can repress drifts in indicated value to give stable indicated value by way of performing running average.

Self-check Function

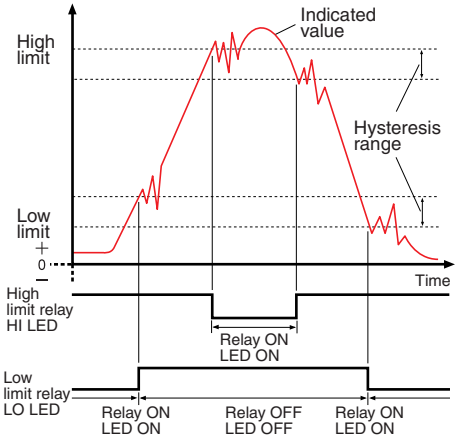
CPU or ROM abnormality check can be automatically performed through key switch operation.

F320 DIGITAL INDICATOR

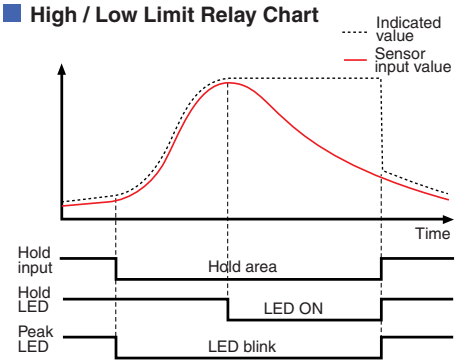
Examples of Application



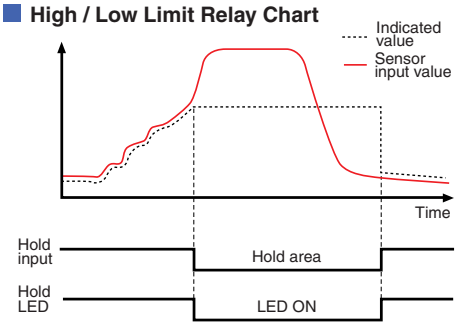
High / Low Limit Relay Chart



High / Low Limit Relay Chart



High / Low Limit Relay Chart



ANALOG SECTION

Sensor excitation voltage	DC10V or 2.5V ±10% (2.5V default setting); Output current: within 30mA
Signal input range	-3.0 ~ 3.0 mV/V
Equiv. input calibration range	0.5 ~ 3.0 mV/V
Equiv. input calibration error	Within 0.1% FS (at 0.5 mV/V input)
Actual load calibration range	0.5 ~ 3.0 mV/V
Zero adjustment range	0 ~ ±2 mV/V
Min. input sensitivity	1 μV/count (1/10000 guaranteed at 1 mV/V input)
Accuracy	Non-linearity: within 0.02% FS (at 3 mV/V input) Zero drift: within 0.5 μV/℃; Gain drift: within 25 ppm/℃
A/D converter	Speed: 2000 times/sec; Resolution: 24 bit (binary)
Analog filter	3, 10, 30, 100, 300, 1 kHz
Peak Hold Function	Digital peak hold at 2000 times/sec

DISPLAY SECTION

Display unit	15 mm character height; 7-segment red LED numerical display (5 digits); Numeric: 5 digits ± 8.8.8.8.8. (display's significant digit is 1 or not displayed); Indicated value: -19999 ~ 19999; Decimal points: Selectable decimal point displaying position at 88.888, 888.88, 8888.8 and 88888
Display items	Status display: 5 red LED display for HI, OK, LOW, PEAK, HOLD Display count: Selectable at 3, 6, 13 and 25 times/sec

SETTINGS

Key switch	5-keys: FNC (+/-), GAIN (▲), CAL (▼), ZERO (▶), HOLD (↵)
Setting items	Calibration·····Zero/Span calibration (Actual load/Equivalent Input Calibration) Setting Mode 1···High limit, low limit, High/low limit comparison mode, hysteresis, digital offset, near zero Setting Mode 2···Digital filter, analog filter, motion detect (time), motion detect (range), zero tracking (time), zero tracking (range), hold mode Setting Mode 3···Set value LOCK, calibration value LOCK, Zero key ON/OFF, HOLD key ON/OFF, scale division, display frequency, decimal place, excitation voltage Setting Mode 4···RS-485 communication configuration, RS-485 ID number, RS-485 transmission delay time, BCD data update rate, D/A converter zero setting, D/A converter full scale setting, D/A output mode

EXTERNAL INPUT/OUTPUT SIGNAL

High limit relay output, low limit relay output, analog voltage output, hold signal input, digital zero signal input

INTERFACES

RS-485 communication interface (Modbus RTU communication protocol)
Depending on the command given, this interface allows the read out of F320 indicated value, status and setting value as well as the entering of setting values from the master equipment. In contrast to RS-232C, this interface is able to perform long distance communication. By setting the ID number, several F320 units can be connected in parallel.

OPTIONS (Only 1 option can be installed)

・BCD parallel data output interface [BCO]
This is the interface used to extract F320 indicated value as BCD-coded data. This interface allows F320 to be connected to computers, process controllers and PLCs to facilitate control, tabulation and record taking etc. The input/output signal circuit and internal circuit are electrically insulated using a photocoupler.
・D/A converter (Voltage output) [DAV]
This is the converter used to obtain analog output in synchrony with F320 indicated value. The analog output range is -10 ~ +10 V. Zero (0 V) to full scale (±10 V) analog output for any pre-set digital value can be obtained using D/A Zero Setting Function or D/A Full Scale Setting Function.
・D/A converter (Current output) [DAI]
This is the converter used to obtain analog output in synchrony with F320 indicated value. The analog output range is 4 ~ 20 mA. Zero (4 mA) to full scale (20 mA) analog output for any pre-set digital value can be obtained using D/A Zero Setting Function or D/A Full Scale Setting Function.

GENERAL SETTINGS

Supply voltage	AC100 V~240V+10% -15 % (Flexible power source 50/60 Hz) DC12 V~24V±15% (Depending on the request at the time of order)
Power consumption	Max 15 W
Inrush current (Typ)	15A, 2msec: AC100V average load condition (cold start at room temperature) 30A, 2msec: AC200V average load condition (cold start at room temperature) 10A, 25msec: DC12V average load condition (cold start at room temperature) 20A, 30msec: DC24V average load condition (cold start at room temperature)
Working conditions	Temperature: operation temperature range -10℃~+40℃, storage temperature range -40℃~+80℃ Humidity: 85% RH or less (non-condensing)
External dimension / Weight	96(W) x 48 (H) x 127.3 (D) mm (protruding areas are not included) App. 700 g
Panel cut dimension	92 x 45 (+1,-0) mm

ATTACHMENTS

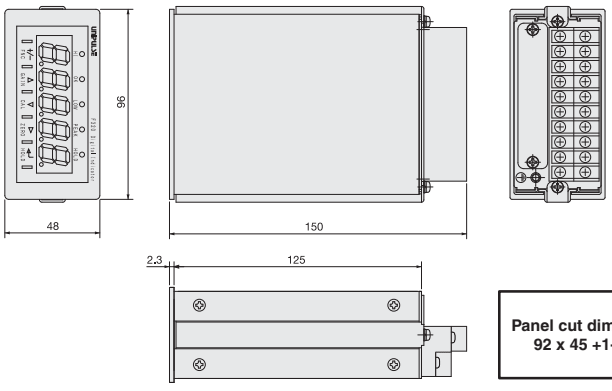
AC power supply cord···1, Ferrite core···2, Terminator···1, 3P-2P converter adapter···1, BCD output connector···1 (with BCD option), F320 Operation Manual···1

CE MARKING CERTIFICATION

EMC Directive EN61326 Safety Standard EN61010-1

External Dimension

Unit : mm



*Please note that specifications or designs shown in this catalog may vary due to our continuous product improvement activities.

http://www.unipulse.com E-mail: sales@unipulse.com

UNIPULSE Corporation
International Sales Department
Nittetsu Kobiki Bldg 7-16-3 Ginza,
Chuo-ku, Tokyo 104-0061
Tel: +81-3-5148-3000
Fax: +81-3-5148-3001

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

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