FD5000

FUJI ELECTRIC

ONE UNIVERSAL PANEL METER FOR A VARIETY OF INPUT NEEDS

Fuji Electric's new FD5000 is a highly-modular 1/8 DIN panel meter with up to 18 different field-replaceable input boards. No need to stock a variety of panel meters — simply install the appropriate input board for each process.

The FD5000 offers optional alarms and analog outputs, in addition to RS232 or RS485 communications functions. Easily connect the FD5000 to a PC to process and control various data.

The FD5000 accepts inputs from temperature probes, pressure transducers, load cells, strain gauges, potentiometers, pulse inputs, large voltage and current signals. This makes it ideal for demanding process applications such as Food, Textiles, and Automotive.

FEATURES

- **Free Power Supply Voltage**
  90 to 264VAC, 9 to 60VDC
- **RS-232 or RS-485 Function**
  For serial communication with a computer
- **Digital Zero Function**
  Zeroes indication at any time
- **Hold Feature**
  Temporarily retains the indication
- **Peak Hold Function**
  Retains maximum or minimum value and provides corresponding output
- **Comparison Output Function**
  Relay output based on HI and LO setpoints
- **Analog Output Function**
  Scalable DC voltage or current output

MODULAR FIELD-REPLACEABLE BOARDS

Main Board — 2 Types

90 to 264VAC power supply, or
9 to 60VDC power supply

Display Board — 2 Types

Single display, or
Multiple (HI and LO setpoint) display

Output Board — 7 Types

HI&LO setpoint,
Analog output,
RS-232,
RS-485,
HI&LO setpoint + analog output,
HI&LO setpoint + analog output + RS-232, or
HI&LO setpoint + analog output + RS-485

Input Board — 18 Types

DC voltage (±99.99mV),
DC voltage (±999.9mV to ±600V),
DC current (±9.999mA to ±999.9mA),
AC voltage AVG (99.99mV to 9.999V),
AC voltage AVG (99.99V to 600V),
AC voltage RMS (99.99mV to 9.999V),
AC voltage RMS (99.99V to 600V),
AC current AVG (9.999mA to 999.9mA),
AC current AVG (5A),
AC current RMS (9.999mA to 999.9mA),
AC current RMS (5A),
Resistance (99.99Ω to 99.99kΩ),
Temperature (Thermocouple),
Temperature (RTD),
Frequency (Open collector, Logic, Magnet),
Frequency (50 to 500Vrms),
Strain gauge, or
1 to 5V, 4 to 20mA

FD5000 INPUT SPECIFICATIONS

DC VOLTAGE, CURRENT

RANGE	Measurement Range	Maximum Resolution	Accuracy
11	±99.99mV	10µV	±(0.1% of FS)
12	±999.9mV	100µV	±(0.1% of FS)
13	±9.999V	1mV	±(0.1% of FS)
14	±99.99V	10mV	±(0.1% of FS)
15	±600V	100mV	±(0.15% of FS)
23	±9.999mA	1µA	±(0.2% of FS)
24	±99.99mA	10µA	±(0.2% of FS)
25	±999.9mA	100µA	±(0.3% of FS)

AC VOLTAGE, CURRENT (AVERAGE)

RANGE	Measurement Range	Maximum Resolution	Accuracy
11	99.99mV	10µV	±(0.2% of rdg + 10 digit)
12	999.9mV	100µV	±(0.2% of rdg + 10 digit)
13	9.999V	1mV	±(0.2% of rdg + 10 digit)
14	99.99V	10mV	±(0.2% of rdg + 10 digit)
15	600V	100mV	±(0.3% of rdg + 10 digit)
23	9.999mA	1µA	±(0.5% of rdg + 10 digit)
24	99.99mA	10µA	±(0.5% of rdg + 10 digit)
25	999.9mA	100µA	±(0.5% of rdg + 10 digit)
26	5A	1mA	±(0.5% of rdg + 10 digit)

AC VOLTAGE, CURRENT (TRUE-RMS)

RANGE	Measurement Range	Maximum Resolution	Accuracy
11	99.99mV	10µV	±(0.2% of rdg + 20 digit)
12	999.9mV	100µV	±(0.2% of rdg + 20 digit)
13	9.999V	1mV	±(0.2% of rdg + 20 digit)
14	99.99V	10mV	±(0.2% of rdg + 20 digit)
15	600V	100mV	±(0.3% of rdg + 20 digit)
23	9.999mA	1µA	±(0.5% of rdg + 20 digit)
24	99.99mA	10µA	±(0.5% of rdg + 20 digit)
25	999.9mA	100µA	±(0.5% of rdg + 20 digit)
26	5A	1mA	±(0.5% of rdg + 20 digit)
INPUT FREQUENCY	40 Hz to 1KHz for mA, mV and V. 50 Hz to 60 Hz for 5A		

RESISTANCE

RANGE	Measurement Range	Maximum Resolution	Accuracy
11	99.99Ω	10mΩ	±(0.2% of FS)
12	999.9Ω	100mΩ	±(0.1% of FS)
13	9.999Ω	1Ω	±(0.1% of FS)
14	99.99kΩ	10Ω	±(0.1% of FS)

THERMOCOUPLE

RANGE	Measurement Range	Maximum Resolution	Accuracy	Sensor Type
KA	-50.0 to 199.9°C	0.1°C	±(0.5% of FS)	K
KB	-50 to 1200°C	1°C	±(0.2% of FS)	K
J	-50 to 1000°C	1°C	±(0.2% of FS)	J
T	-50 to 400°C	1°C	±(0.6% of FS)	T
S	0 to 1700°C	1°C	±(0.4% of FS)	S
R	-10 to 1700°C	1°C	±(0.4% of FS)	R
B	100 to 1800°C	1°C	±(0.4% of FS) over 500°C	B
DISPLAY	Fahrenheit or celsius display available			
COLD JUNCTION COMPENSATOR ACCURACY	±1°C (10 to 40°C)			
SENSOR LEAD RESISTANCE	Less than 50Ω			
LINEARIZING METHOD	Digital linearizing			

RTD

RANGE	Measurement Range	Maximum Resolution	Accuracy	Sensor Type
PA	-100.0 to 199.9°C	0.1°C	±(0.15% of FS)	Pt100Ω
PB	-100 to 600°C	1°C	±(0.3% of FS)	Pt100Ω
DISPLAY	Fahrenheit or Celsius display available			
CURRENT FOR RESISTANCE	Approx. 1mA			
EXTERNAL LEAD RESISTANCE	Less than 10Ω/lead			
LINEARIZING METHOD	Digital linearizing			

FREQUENCY

RANGE	Measurement Range	Maximum Resolution	Accuracy
11	0.1 to 200Hz	0.1Hz	±(0.2% of FS)
12	1 to 2000Hz	1Hz	±(0.2% of FS)
13	0.01 to 20kHz	10Hz	±(0.2% of FS)
14	0.1 to 200kHz	100Hz	±(0.2% of FS)
INPUT TYPE	Input Voltage Level		Input Protection
OPEN COLLECTOR	L: less than 1V (5V, 2.2KΩ)pullup		30V
LOGIC	L: less than 1V HI: 2.5 to 15V		15V
MAGNET	0.3 to 30V P-P		15V
VOLTAGE	50 to 500V rms		500V

STRAIN GAUGE

POWER SUPPLY FOR SENSOR	Zero Adjustment Range	Maximum Resolution	Accuracy
5V	-0.3 to +2mV/V	0.5µV/digit	±(0.1% of FS)+2 digit
10V	-0.3 to +2mV/V	1µV/digit	±(0.1% of FS)+2 digit
SENSOR	350Ω		
POWER SUPPLY FOR SENSOR	5V ±5% (less than 15mA) 10V ±5% (less than 30mA)		

PROCESS

RANGE	Measurement Range	Accuracy
1V	1 to 5V	±(0.2% of FS)
2A	4 to 20mA	±(0.2% of FS)

FD5000, CONTINUED

GENERAL SPECIFICATIONS

DISPLAY	Main display: Red LED 14.2mm height Sub display: Green LED 8mm height
CONVERSION RATE	12.5 times/sec
MAXIMUM DISPLAY	9999
OVERRANGE INDICATION	When input exceeds the maximum display: display OL or -OL
ZERO DISPLAY	Leading zero suppression
DECIMAL POINT	Settable to any digit position
EXTERNAL CONTROL	Start/Hold, Peak Hold, Digital Zero
OPERATING TEMP.	0 to 50°C 35 to 85% RH
STORAGE TEMP.	-10 to 70°C less than 60% RH
POWER SUPPLY	AC100 to 240V±10% (AC main unit) DC9 to 60V (DC main unit)
POWER CONSUMPTION	Approx 4VA (at 100V)
DIMENSIONS (WxHxD)	96 x 48 x 147.5mm (1/8 DIN)
WEIGHT	Approx. 450g
DIELECTRIC STRENGTH (AC)	Power supply/input terminal/output terminal: AC2000V/1min Input terminal/output terminal: DC500V/1min Case/power supply/input terminal/output terminal: AC2000V/1min.
DIELECTRIC STRENGTH (DC)	Power supply/input terminal/output terminal: DC500V/1min Input terminal/output terminal: DC500V/1min Case/power supply/input terminal/output terminal: AC2000V/1min.
INSULATION RESISTANCE	DC500V: more than 100MΩ at the above terminals

HI & LO SETPOINT OUTPUT

COMPARATIVE CONDITION	Indication > High setpoint: HI HIgh setpoint ≥ Indication ≥ Lo setpoint: GO Indication < Lo setpoint: LO
SETTING RANGE	-9999 to 9999
HYSTERESIS	1 to 999 digit for each setpoints
RELAY CONTACT CAPACITY	AC240V 8A resistive load DC30V 8A resistive load

ANALOG OUTPUT

OUTPUT	0 to 1V: >10KΩ resistive load 0 to 10V: >10KΩ resistive load 1 to 5V: >10KΩ resistive load 4 to 20mA: <550Ω
ACCURACY	± (0.5% of FS)
OUTPUT METHOD	PWM method
SCALING	Digital scaling

RS-232C OUTPUT

COMMUNICATION METHOD	Full duplex
TRANSMISSION SPEED	2400/4800/9600/19200/38400 bps
START BIT	1 bit
DATA LENGTH	7 bit/8 bit
PARITY	Even/odd
STOP BIT	1 bit/2 bit
CHARACTER CODE	ASCII code

RS-485 OUTPUT

COMMUNICATION METHOD	Full duplex
TRANSMISSION SPEED	2400/4800/9600/19200/38400 bps
START BIT	1 bit
DATA LENGTH	7 bit/ 8 bit
PARITY	Even/odd
ERROR DETECTION	BCC
STOP BIT	1 bit/2 bit
CHARACTER CODE	ASCII code
SIGNAL NAME	+non reversal output -reversal output
MAXIMUM NO OF METER CONNECTED	31
LINE LENGTH	Up to 500m in total

ORDERING INFORMATION

F	D	5	A	B	C	–	D	D

To create a part number fill in the boxes above with the appropriate number and/or letter from the corresponding box below.

Box A: Main Board

1 = 90 to 264VAC power supply	$ 149
2 = 9 to 60VDC power supply	149

Box B: Display Board

1 = Single display	N/C
2 = Multiple (monitor HI and LO setpoint) display	30

Box C: Output

0 = None	N/C
1 = HI & LO setpoint	40
2 = Analog output	40
3 = RS-232C	40
4 = RS-485	40
5 = HI & LO setpoint + analog output	70
6 = HI & LO setpoint + analog output + RS-232C	100
7 = HI & LO setpoint + analog output + RS-485	100

Box D: Input Signal

01 = DC voltage (±99.99mV)	N/C
02 = DC voltage (±999.9mV to ±600V)	N/C
03 = DC current (±9.999mA to ±999.9mA)	N/C
04 = AC voltage AVG (99.99mV to 9.999V)	N/C
05 = AC voltage AVG (99.99V to 600V)	N/C
06 = AC voltage RMS (99.99mV to 9.999V)	$ 20
07 = AC voltage RMS (99.99V to 600V)	20
08 = AC current AVG (9.999mA to 999.9mA)	20
09 = AC current AVG (5A)	20
10 = AC current RMS (9.999mA to 999.9mA)	20
11 = AC current RMS (5A)	20
12 = Resistance (99.99Ω to 99.99kΩ)	N/C
13 = Temperature (Thermocouple)	N/C
14 = Temperature (RTD)	N/C
15 = Frequency (Open collector, Logic, Magnet)	20
16 = Frequency (50 to 500Vrms)	20
17 = Strain gauge	20
18 = 1 to 5V, 4 to 20mA	N/C

Information subject to change without notice. Prices in USD.