

## 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 19 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
- **Loop Power Option**  
1 to 5V, 4 to 20mA input with 12/24V excitation voltage
- **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 — 19 Types

DC voltage ( $\pm 99.99\text{mV}$ ),  
DC voltage ( $\pm 999.9\text{mV}$  to  $\pm 600\text{V}$ ),  
DC current ( $\pm 9.999\text{mA}$  to  $\pm 999.9\text{mA}$ ),  
AC voltage AVG ( $99.99\text{mV}$  to  $9.999\text{V}$ ),  
AC voltage AVG ( $99.99\text{V}$  to  $600\text{V}$ ),  
AC voltage RMS ( $99.99\text{mV}$  to  $9.999\text{V}$ ),  
AC voltage RMS ( $99.99\text{V}$  to  $600\text{V}$ ),  
AC current AVG ( $9.999\text{mA}$  to  $999.9\text{mA}$ ),  
AC current AVG (5A),  
AC current RMS ( $9.999\text{mA}$  to  $999.9\text{mA}$ ),  
AC current RMS (5A),  
Resistance ( $99.99\Omega$  to  $99.99\text{k}\Omega$ ),  
Temperature (Thermocouple),  
Temperature (RTD),  
Frequency (Open collector, Logic, Magnet),  
Frequency ( $50$  to  $500\text{Vrms}$ ),  
Strain gauge,  
1 to 5V, 4 to 20mA, or  
1 to 5V, 4 to 20mA, with 12/24V Excitation Voltage

## FD5000, CONTINUED

### 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	9.999kΩ	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

<b>DISPLAY</b>	Main display: Red LED 14.2mm height Sub display: Green LED 8mm height
<b>CONVERSION RATE</b>	12.5 times/sec
<b>MAXIMUM DISPLAY</b>	9999
<b>OVERRANGE INDICATION</b>	When input exceeds the maximum display: display OL or -OL
<b>ZERO DISPLAY</b>	Leading zero suppression
<b>DECIMAL POINT</b>	Settable to any digit position
<b>EXTERNAL CONTROL</b>	Start/Hold, Peak Hold, Digital Zero
<b>OPERATING TEMP.</b>	0 to 50°C 35 to 85% RH
<b>STORAGE TEMP.</b>	-10 to 70°C less than 60% RH
<b>POWER SUPPLY</b>	AC100 to 240V±10% (AC main unit) DC9 to 60V (DC main unit)
<b>POWER CONSUMPTION</b>	Approx 4VA (at 100V)
<b>DIMENSIONS (WxHxD)</b>	96 x 48 x 147.5mm (1/8 DIN)
<b>WEIGHT</b>	Approx. 450g
<b>DIELECTRIC STRENGTH (AC)</b>	Power supply/input terminal/output terminal: AC2000V/1min Input terminal/output terminal: DC500V/1min Case/power supply/input terminal/output terminal: AC2000V/1min.
<b>DIELECTRIC STRENGTH (DC)</b>	Power supply/input terminal/output terminal: DC500V/1min Input terminal/output terminal: DC500V/1min Case/power supply/input terminal/output terminal: AC2000V/1min.
<b>INSULATION RESISTANCE</b>	DC500V: more than 100MΩ at the above terminals
<b>HI &amp; LO SETPOINT OUTPUT</b>	
<b>COMPARATIVE CONDITION</b>	Indication > High setpoint: HI High setpoint ≥ Indication ≥ Lo setpoint: GO Indication < Lo setpoint: LO
<b>SETTING RANGE</b>	-9999 to 9999
<b>HYSTERESIS</b>	1 to 999 digit for each setpoints
<b>RELAY CONTACT CAPACITY</b>	AC240V 8A resistive load; DC30V 8A resistive load

### ANALOG OUTPUT

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

### RS-232C OUTPUT

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

### RS-485 OUTPUT

<b>COMMUNICATION METHOD</b>	Full duplex
<b>TRANSMISSION SPEED</b>	2400/4800/9600/19200/38400 bps
<b>START BIT</b>	1 bit
<b>DATA LENGTH</b>	7 bit/ 8 bit
<b>PARITY</b>	Even/odd
<b>ERROR DETECTION</b>	BCC
<b>STOP BIT</b>	1 bit/2 bit
<b>CHARACTER CODE</b>	ASCII code
<b>SIGNAL NAME</b>	+non reversal output -reversal output
<b>MAXIMUM NO. OF METERS CONNECTED</b>	31
<b>LINE LENGTH</b>	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
19 = 1 to 5V, 4 to 20mA, with 12/24V Excitation Voltage	20