

FORCE Measurement



FORCE & TORQUE

Measurement



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EFG series Force Gauge

Features

- Accuracy: $\pm 0.2\%$ of Full Scale
- Ergonomic, durable, heavy-duty metal construction
- Automatic reversible display
- Selectable Units: N, kgf, lbf, ozf and/or gf
- Protection Mechanism to prevent overload damage
- Variety of alarm output function
- Data upload to PC
- Calibration certificate Included



Models

Model		N	kgf	lbf	ozf	gf	mN
EFG2	Capacity	2.0000	--	-	7.000	200.00	2000.0
	Resolution	0.0005			0.001	0.05	0.5
EFG5	Capacity	5.0000	--	1.1000	18.000	500.00	5000.0
	Resolution	0.0005		0.0001	0.005	0.05	0.5
EFG10	Capacity	10.000	1.0000	2.2000	35.00	1000.0	10000
	Resolution	0.001	0.0001	0.0005	0.01	0.1	1
EFG20	Capacity	20.000	2.0000	4.400	70.00	2000.0	20000
	Resolution	0.005	0.0005	0.001	0.01	0.5	5
EFG50	Capacity	50.000	5.0000	11.000	180.00	5000.0	50000
	Resolution	0.005	0.0005	0.001	0.05	0.5	5
EFG100	Capacity	100.00	10.000	22.000	350.0	10000	-
	Resolution	0.01	0.001	0.005	0.1	1	
EFG200	Capacity	200.00	20.000	44.00	700.0	20000	
	Resolution	0.05	0.005	0.01	0.1	5	
EFG500	Capacity	500.00	50.000	110.00	1800.0	-	
	Resolution	0.05	0.005	0.01	0.5		
EFG1000	Capacity	1000.0	100.00	220.00	3500		
	Resolution	0.1	0.01	0.05	1		



Specifications

Accuracy	± 0.2% F.S.
Selectable Units	N, gf, kgf, ozf, and lbf.(Selectable)
Display	240*128 dot matrix LCD with LED Backlight
Overload Capacity	120% F.S.
Overload Protection	Overload Protection Mechanism
Measurement Mode	Track, Peak, AutoPeak
Sampling Rate	1000 Hz
Memory	1000 data
Temperature Effects	<0.03% FS per °C
Power	3.6VDC 800mAH Ni-MH rechargeable batteries
Battery Life	Approx. 20 hours per charge
Charger / Adaptor	Universal USB/BM charger, Input:110~240VAC
Outputs	USB, set point output
Operating environment	Temperature:- 10 to 40°C Relative Humidity: 20 to 80%
Dimensions	160*73*34mm
Weight	0.7 kg (1.5 lb)

Accessories



Optional



EFG series Force Gauge

Features

- Accuracy: $\pm 0.3\%$ of Full Scale
- Ergonomic, durable, heavy-duty metal construction
- Reversible display
- Selectable Units: N, gf, kgf, ozf, and lbf
- Calibration certificate Included
- Overload Protection Mechanism
- Charger with US/EUR/UK Plugs selectable



Models

Models		N	kgf	gf	lbf	ozf
EFG10E	Capacity	10.00	1.000	1000	2.200	35.00
	Resolution	0.01	0.001	1	0.001	0.01
EFG50E	Capacity	50.00	5.000	5000	11.00	180.0
	Resolution	0.01	0.001	1	0.01	0.1
EFG100E	Capacity	100.0	10.00	-	22.00	350.0
	Resolution	0.1	0.01		0.01	0.1
EFG500E	Capacity	500.0	50.00		110.0	1800
	Resolution	0.1	0.01		0.1	1
EFG1000E	Capacity	1000	100.0		220.0	3500
	Resolution	1	0.1		0.1	1

Specifications

Accuracy	$\pm 0.3\%$ F.S.
Selectable Units	N, gf, kgf, ozf, and lbf.
Display	160*128 dot matrix LCD with LED Backlight
Overload Capacity	120% F.S.
Overload Protection	Overload Protection Mechanism
Measurement Mode	Track, Peak, PreSet
Sampling Rate	500 Hz
Memory	500 data
Power	3.6VDC Ni-MH rechargeable batteries
Battery Life	Approx. 10 hrs per charge
Charger / Adaptor	Universal USB/BM charger, Input: 110~240VAC
Outputs	USB, RS-232, overload output
Operating environment	Temperature: -10 to 40°C Relative Humidity: 20 to 80%
Dimensions	150*72*33mm
Weight	0.45 kg (1 lb)

Accessories



Optional



EFGS series Force Gauge

Features

- Accuracy: $\pm 0.2\%$ FS
- Ergonomic, durable, heavy-duty metal construction
- Touch Pad
- Automatic reversible display
- Automatic load cell identification (ALI)
- Units: N, kN, kgf, tf, and lbf
- Connect to PC easily



Models

No.	Model	Capacity /Resolution	Load cell	Order No.
1	EFG10S-1K-S	1KN	ESP-F1K-S	41310011
2	EFG10S-2K-S	2KN	ESP-F2K-S	41310021
3	EFG10S-5K-S	5KN	ESP-F5K-S	41310051
4	EFG10S-10K-S	10KN	ESP-F10K-S	41310101
5	EFG10S-20K-S	20KN	ESP-F20K-S	41310201
6	EFG10S-10K-R	10KN	ESP-F10K-R	41310102
7	EFG10S-20K-R	20KN	ESP-F20K-R	41310202
8	EFG10S-50K-R	50KN	ESP-F50K-R	41310502
9	EFG10S-100K-R	100KN	ESP-F100K-R	41311002
10	EFG10S-200K-R	200KN	ESP-F200K-R	41312002



EFG10S Force Indicator

No.	Model	Order No.
1	EFG10S	41301000

Model	Capacity/Resolution				
	N	kgf	lbf	kN	tf
ESP-F1K-S	1000/0.1	100/0.01	220/0.05		
ESP-F2K-S	2000/0.5	200/0.05	450/0.1		
ESP-F5K-S	5000/1	500/0.1	1100/0.1		
ESP-F10K-S	10000/1	1000/0.1	2250/0.5	10/0.001	
ESP-F20K-S		2000/0.5	4500/1	20/0.005	
ESP-F10K-R	10000/1	1000/0.1	2250/0.5	10/0.001	
ESP-F20K-R		2000/0.5	4500/1	20/0.005	
ESP-F50K-R		5000/1	11k/0.001k	50/0.01	5/0.001
ESP-F100K-R			22k/0.005k	100/0.01	10/0.001
ESP-F200K-R			44k/0.01k	200/0.05	20/0.005



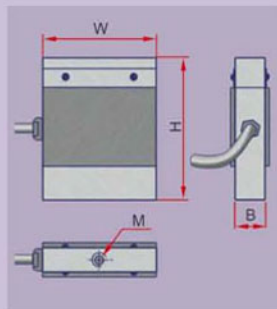
Load Cell

No.	Model	Capacity			Order No.	Type
		N	kgf	lbf		
1	ESP-F1K-S	1k	100	220	41001011	S-beam 
2	ESP-F2K-S	2k	200	440	41001021	
3	ESP-F5K-S	5k	500	1100	41001031	
4	ESP-F10K-S	10k	1k	2.2k	41001041	
5	ESP-F20K-S	20k	2k	4.4k	41001051	
6	ESP-F10K-R	10k	1k	2.2k	41001012	Ring 
7	ESP-F20K-R	20k	2k	4.4k	41001022	
8	ESP-F50K-R	50k	5k	11k	41001032	
9	ESP-F100K-R	100k	10k	22k	41001042	
10	ESP-F200K-R	200k	20k	44k	41001052	

	S type 	R type 
Rated Output(mV / V)	2.0±1	1.5±5
Zero Balance(%F.S.)	±2	±2
Non-linearity(%F.S.)	0.03	0.05~0.1
Hysteresis(%F.S.)	0.03	0.05~0.1
Temp. Effect(F.S./10°C)	0.03	0.05%
Operation Temp.(°C)	-20 ~ 60	-35 ~ 65
Safe Overload(F.S.)	150%	120%
Input Impedance(Ω)	410±10	410±10
Output Impedance(Ω)	350±5	350±5
Protection Class	IP76	IP76

S-Beam load cell

	Capacity	Dimension(mm)			
		W	H	B	M
ESP-F1K-S	1kN	51	76.2	19	M12X1.75
ESP-F2K-S	2kN			25.4	M18X1.5
ESP-F5K-S	5kN				
ESP-F10K-S	10kN				
ESP-F20K-S	20kN	76.2	108		



Accessories(optional)

Measuring Head

Flat Push Tip	Name	Model of Load cell
	Flat Push Tip M12	ESP-F1K-S,ESP-F2K-S,ESP-F5K-S,ESP-F10K-S
	Flat Push Tip M18X1.5	ESP-F20K-S

Adapter	Name	Model of Load cell
	Adapter M12	ESP-F1K-S,ESP-F2K-S,ESP-F5K-S,ESP-F10K-S
	Adapter M18X1.5	ESP-F20K-S

Pull Clamp	Name	Model of Load cell
	Pull Clamp M12	ESP-F1K-S,ESP-F2K-S,ESP-F5K-S,ESP-F10K-S
	Pull Clamp M18X1.5	ESP-F20K-S

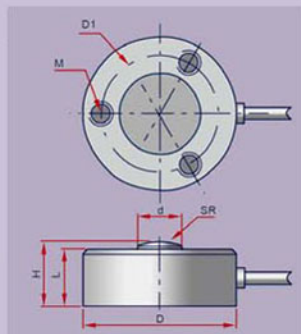


Ring load cell

	Capacity	Dimension(mm)						
		D	d	L	H	SR	D1	M
ESP-F10K-R	10kN	32	8	14	16	16	24.5	3-M5
ESP-F20K-R	20kN	38	11				30	
ESP-F50K-R	50kN							
ESP-F100K-R	100kN	82	22	32	44	50	68	4-M8
ESP-F200K-R	200kN	100	28	36	48	120	80	

Accessories

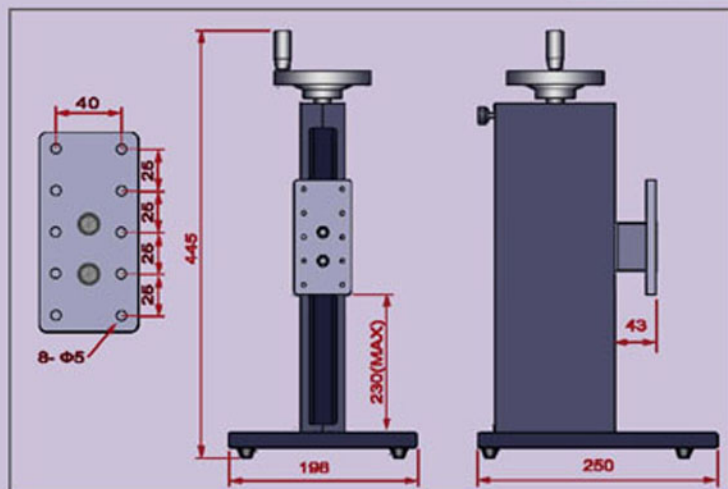
Base		Model of Load cell							
Protect									
Plate		1 pcs(Mount on Load cell)							
		ESP-F10K-R,ESP-F20K-R,ESP-F50K-R							



EST-FG1M1 Manual Handwheel Test Stand

Features

- Easy to Use, Rugged Construction
- Precision Manual Handwheel
- Capacities Up to 125 kg (250 lbf, 1200 N)
- Stand travels 3 mm for every turn.
- Maintenance-free Design
- Weight: 13Kg



Optional accessories

- 1 Digital Scale Kit 200mm
- 2 Tensile Frame Kit



Horizontal



ETTA series Torque Gauge

Features

- Accuracy: $\pm 0.3\%$ FS
- Ergonomic, durable, heavy-duty metal construction
- Touch Pad
- Automatic reversible display
- Automatic load cell identification (ALI)
- Units: N-m, N-cm, kgf-cm, lbf-ft, lbf-in
- Display Mode: Data/Graph
- Connect to PC easily



Model

Model	N-m			N-cm			kgf-cm			lbf-ft			lbf-in			Interface Type
	Capacity		Res.	Capacity		Res.	Capacity		Res.	Capacity		Res.	Capacity		Res.	
	Min	Max		Min	Max		Min	Max		Min	Max		Min	Max		
ETTA1	0.05	1	0.001	5	100	0.1	0.5	10	0.005	0.3	7.4	0.005	4.42	88.5	0.05	Drill
ETTA5	0.25	5	0.001	25	500	0.1	2.5	50	0.01	1.8	36.8	0.01	22	442.5	0.1	chuck

Specifications

Accuracy	$\pm 0.3\%$ F.S.
Selectable Units	N-m, N-cm, kgf-cm, lbf-ft, lbf-in (Selectable)
Display	Matrix LCD with LED Backlight
Overload Capacity	120% F.S.
Measurement Mode	Track, Peak, First Peak, PreSet
Sampling Rate	1000 Hz
Memory	1000 data
Power	3.6VDC 800mAh Ni-MH rechargeable batteries
Battery Life	Approx. 16 hours per charge
Charger / Adaptor	Universal USB/BM charger, Input:110~240VAC
Outputs	USB, set point output
Operating environment	Temperature:-10 to 40°C Relative Humidity: 20 to 80%
Dimensions	Display Device:160*73*34mm; Sensor: ETTA1: $\Phi 42 \times 160$; ETTA5: $\Phi 50 \times 178$
Weight	Display Device:0.7kg Sensor: ETTA1:1.2kg; ETTA5:1.6kg



FORCE
Measurement



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