

နည်းပညာတက္ကသို(တောင်ငူ)

စဉ်	လုပ်ငန်းအမည်	အရေအတွက်
1	COD Test Tube Heater	2
2	Le Chatelier Flask	4
3	Miniprism with small pole (Japan)	5
4	Microbiological Water quality laboratory potatest Size (W×L×H): Single heavy duty field case 464×366×176mm Weight: 9kg Physico- Chemical Parameters: Free Chlorine, Combined Chlorine, Total Chlorine, Turbidity, pH	1
5	BOD self Check measurement Controller-driven Simultaneous measurement of up to 100 samples Statistical evaluation Automatic sample ID	1
6	AC Power Transmission Training System (8010-85), FESTO LabVolt Series AC Power Transmission Training System consists of Quantity Description 1 Workstation Model No (8134-20) 1 Resistive LoadModel No (8311-05) 2 Inductive LoadModel No (8321-05) 1 Three Phase Transmission LineModel No (8329-05) 3 Capacitive LoadModel No (8331-05) 1 Three Phase Transformer BankModel No (8348-45) 1 Three Phase Regulating AutotransformerModel No (8349-05) 1 Power SupplyModel No (8823-05) 1 Connection Lead SetModel No (8951-L0) 1 Connection lead SetModel No (8951-N0) 1 Data Acquisition and Control InterfaceModel No (9063-B0) 1 24 VAC Power SupplyModel No (30004-25) List of Manuals Description AC Transmission Lines (Student Manual) (20521-15) AC Transmission Lines ( Instructor Guide) (20521-15) Electric Power Technology Training Equipment Three Phase AC power Circuits (Instructor Guide) (86349-00) Three Phase Transformer Banks (Student Manual) (8348-45)	1

7	<p><b>Motor Generator System Trainer (Model Number ; LEM-MGS series) –Motor Generator System</b>  Trainer of specification Power Supply :220/380 VAC,3A Power Indicator: Indicate the incoming power at L1/R,L2/Y,L3/B Power Control :Start Button, Stop Button, Emergency Button Lamp Indicator: Indicate run, overload and emergency condition on Instrument panel. Circuit Breaker: ELCB (Earth Leakage Circuit Breaker) MCB (Miniature Circuit Breaker) AC Voltmeter: Used to measure AC voltage AC Ammeter: used to measure AC Current Motor Switch :Used To connect – disconnect the motor with the power supply. Generator Switch: used to connect – disconnect the genotor output to load. Generator Excitation: DC Voltmeter, DC Ammeter, DC MCB for short circuit Protection ,Excitation switch,  Excitation Control, Variable DC power Supply (3 to 180 VDC) List of Generator</p> <ol style="list-style-type: none"> <li>1. DC Shunt Wound Generator,350 W (Model No LEM-MGS-G1)</li> <li>2. DC Series Wound Generator,350 W(Model No LEM-MGS-G2)</li> <li>3.DC Compound Wound Generator,350 W(Model No LEM-MGS-G3)</li> <li>4.DC Multifunction Generator (Shunt, Series, Compound),350 W(Model No LEM-MGS-G4) List of Alternators</li> </ol> <ol style="list-style-type: none"> <li>1.1Ph Alternator with Cylindrical Rotor, Stator Wound Rotor exited, 300VA (Model No LEM-MGS-A1)</li> <li>2.1Ph Alternator with Salient Pole Rotor, Rotor Wound Stator exited, 300VA (Model No LEM-MGS-A2)</li> <li>3.3Ph Alternator with Cylindrical Rotor, Stator Wound Rotor exited, 300VA (Model No LEM-MGS-A3)</li> </ol>	1
8	<p><b>Three-Phase Transformer Bank (8348-45) FESTO LabVolt Series Three-Phase transformer Bank (8348-45) Specification Rating (Each Transformer) Primary voltage –380V Secondary Voltage– 380/220 V Secondary Voltage– 380/220 V Power – 250 VA Full-Load Current – 0.66 A Dimension (HxWxD) (6.1 x11.3x16.1in) Net Weight – 13.9 kg (30.6lb)</b></p>	2
9	<p><b>Inductive Load (8321-05) FESTO LabVolt Series Inductive Load(8321-05) Specifications Quantity- Three identical banks of three inductors Inductance Vaiues (Each Bank)- 3.5/7/14H Reactance Values (Each Bank)- 1100/2200/4400 Ω Nominal Voltage– 220V-50Hz Inductance Value Accuracy- ±5% Load at Nominal Voltage (Each Bank) Reactive Power- 11-77 var Current- 0.05-0.35 A Steps- Seven, of equal increment Current Increment- 0.05 A Physical Characteristics Dimensions (HxWxD)- 154x287x440 mm (6.1x11.3x16.1 in) Net Weight- 10.1 kg (22.3 lb)</b></p>	2
10	<p><b>Transformer (8353-00) FESTO LabVolt Series Transformer (8353-00) FESTO LabVolt Series Specifications Nominal Power –240 VA Primary Rating (2 wings) –24 VAC- 5A for each winding Secondary Rating (2 wings) –120Vac- 1A for each winding Protection –10 kΩ thermistor, type 2 Dimensions (HxWxD)- 154x287x440 mm (6.1x11.3x16.1 in)</b></p>	2
11	<p><b>Synchronous Module/ Three-Phase Contactor (8621-A5) FESTO LabVolt Series Synchronous Module/ Three-Phase Contactor(8621-A5) FESTO LabVolt Series Specifications Power input – 220 V – 50 mA – 50 Hz Contacts – 600 V- 1.5 A ac Light Bulbs (3) Rating – 28 V-2.3 W- T3 1/4 Remote Control input Voltage – 3.5-5 V dc Dimensions (HxWxD)- 154x287x440 mm (6.1x11.3x16.1 in) Net Weight- 5.2 kg (11.4 lb)</b></p>	2

12	<b>DC Motor / Generator (3211-05) FESTO LabVolt Series</b> DC Motor / Generator (3211-05) FESTO LabVolt Series Specifications Motor Output Power – 175 W Generator Output Power –110 W Armature Voltage – 220 V dc Shunt Field Voltage –220 V dc Full-Load Speed – 1500 r/min Full-Load Motor Current – 1.3 A Full-Load Generator Current – 0.5 A Dimensions (HxWxD)– 308x287x445 mm (12.1x11.3x17.5 in) Net Weight– 14.1 kg (31 lb)	2
13	<b>Capacitive Load (8331-05) FESTO LabVolt Series</b> Capacitive Load (8331-05) FESTO LabVolt Series Specifications Three identical banks of three capacitors Capacitance value (Each Bank) – 0.72/1.45/2.89 $\mu$ F Reactance values (Each Bank) – 1100/2200/4400 $\Omega$ Nominal voltage – 220 V – 50 Hz Nominal Voltage– 220V–50Hz Inductance Value Accuracy– $\pm$ 5% Load at Nominal Voltage (Each Bank) Reactive Power– 11–77 var Current– 0.05–0.35 A Steps– Seven, of equal increment Current Increment– 0.05 A Physical Characteristics Dimensions (HxWxD)– 154x287x440 mm (6.1x11.3x16.1 in) Net Weight– 5.7 kg (12.6 lb)	2
14	<b>Capacitor-Start Motor (8251-05) FESTO LabVolt Series</b> Capacitor-Start Motor (8251-05) FESTO LabVolt Series Specifications Line Volage– 220 V Mechanical Power –175 W Full-Load Speed – 1400 r/min Full-Load Current – 2.2 A Dimensions (HxWxD)– 308x287x420 mm (12.1x11.3x16.5 in) Net Weight– 13.8 kg (30.4 lb)	2
15	<b>Universal Motor (8254-05) FESTO LabVolt Series</b> Universal Motor (8254-05) FESTO LabVolt Series Specifications Volage– 220 V ac/dc Mechanical Power –175 W Full-Load Speed – 1500 r/min Full-Load Current – 1.4 A Dimensions (HxWxD)– 308x287x420 mm (12.1x11.3x16.5 in) Net Weight– 14.4 kg (31.7 lb)	2
16	<b>Power Supply (8821-25) FESTO LabVolt Series</b> Power Supply (8821-25) FESTO LabVolt Series Specifications 3 phase (220/380 V–50 Hz) Star (wye) configuration including neutral and ground wires, protected by a 20 A circuit breaker Ac Power Network Connector – NEMA L22–20 Maximum Current – 10 A 3 m (10 ft) ac power cord NEMA L22–20 wall connector with wall plate (1) Square metal outlet box (1) outlet box connector (1) Padlock (1) Dimensions (HxWxD)– 308x287x495 mm (12.1x11.3x19.5 in) Net Weight– 18.4 kg (40.5 lb)	2
17	<b>Synchronous Function (9069-CO) FESTO LabVolt Series</b> The function emulates the operation of an actual synchroscope by showing on screen the dial indicating the phase angle difference between the generator voltage and the network voltage	2
18	<b>TSGC 2 3 kVA Variac 3 phase Variable Voltage Transformer 4 Amps</b>	2

19	<b>AC Induction Motor Winding Training System(EM-3360)</b> Specification of AC induction motor winding training system 1. Induction motor 1. Induction motor (1) Input voltage : 3 phase 220V, 50Hz/60Hz (2) Rated current : 1.2A (3) Output power : 0.3KW (a) The motor main body can be connected to the Magnetic Power Brake Unit by direct couple.\ (b) The motor with thermal switch for overheating protection. (c) With single-phase starting resistor, starting capacitor and running capacitor, simulation centrifugal swith. 2. AC Voltmeter : 0 ~ 600V 3. AC Ammeter : 0 ~ 6A 4. Tachometer : 0.1 ~ 9999 rpm EM-3340-3B System transformer 1. Rated power : 1.5KVA 2. Primary : Depend on the local line voltage 3. Secondary : 3 phase, 220V AC 4. Frequency : 50Hz/60Hz The System Transformer EM-3340-3B must be included if 3 phase 220V is not available. Measurement of Different Types Motor Characteristics EM-3310-1E Three-phase power Supply EM-3320-1N Brake Controller EM-3320-1C Magnetic Powder Brake Unit EM-3360-3A AC induction Motor Winding Trainer Winding Example EM-3360-3A 1 phase-2P-A EM-3360-3A 1 phase-4P-A EM-3360-3A 1 phase-6P-A	1
20	<b>Synchronous Motor/ Generator (8241-25)</b> FESTO LabVolt Series -Rower requirement 240/415V - Motor -Stator Voltage 240/415 V,3 Phase Rotor Voltage 0-260V dc Output Power 200W Synchronous Speed 1500 r/min Full Load Current 0.3A -Generator -Power Factor 0.8 Dimension (H×W×D) 308×291×440mm	2
21	THERMODYNAMICS Engine test stand for single cylinder engines, 7.5kW GTAT-T005, GTEE, China	1
22	Four stroke petrol engine module,GTAT-T005, GTEE, Dimensiona: 440×400×470mm Power output: 5KW at 500 rpm	1
23	<b>Expansion Processes of a Perfect Gas</b> overall dimenaions Vessel assembly: heigh-0.8m, width-0.46m, depth-0.28m Electrical console: heigh-0.22, width-0.22, depth-0.30shipping sepcification: volume 0.34m3, gross weight-22kg requirements: single phase electrical supply THS-A: 220-240 V/1ph/50hs,1A THS-B: 120V/1ph/60hs, 2A THS-G: 220-240V/1ph/60hz, 1A	1
24	<b>Anemoscopes Uni-T UT 362</b> data hold: display 'H' max/min mode-display 'max' or '2/3max' sleep mode; around 10 minute working temperature; 0-40C deposited temperature: -10-55 C (1F-122F) low battery display; <7.2V relative humdity:<7.5%	2
25	Anemometer (Benetech GM8903)	2
26	<b>REFRIGERATION AND AIR CONDITIONING</b> 1. Compressor power source-220VAC (Variable frequency) referigernat-R-410A 2.Condenser forced cooling heat exchange capacity-4.1kW 3.Evaporator cooling type-direct expansion, cooling capacity 3.5kW 4.Refrigerant controller type-capillary tube, the outdoor expansion type 5.Filter and Drier (Weld type) 6.Three way service valve Gas Line service vavle-3.8", Low pressure service liquid line-1.2",2set on the panel 7.Pressure Gauge steel material, Unit-Psi & kg/cm2, oil	1

27	HEAT EXCHANGER Computer Controlled Heat Exchanger Service Unit Bench top service unit, designed to accommodate a range of different small scale heat exchangers Comprises hot water vessel, hot water recirculation pump, cold water control system, computer interface and all necessary instrumentation.	1
28	Tubular Heat Exchanger overall dimensions Vessel assembly: height-0.16m, width-0.51m, depth-0.39m shipping specification: volume 0.05m <sup>3</sup> , gross weight-4kg Essential accessories: requires the Armfield HT30XC, computer controlled heat exchanger service unit	2
29	Plate Heat Exchanger overall dimensions Vessel assembly: height-0.17m, width-0.18m, depth-0.39m, shipping specification: volume 0.03m <sup>3</sup> , gross weight-6kg Essential accessories: requires the Armfield HT30XC, computer controlled heat exchanger service unit	2
30	Shell & Tube Heat Exchanger overall dimensions Vessel assembly: height-0.19m, width-0.43m, depth-0.39m shipping specification: volume 0.06m <sup>3</sup> , gross weight-5kg Essential accessories: requires the Armfield HT30XC, computer controlled heat exchanger service unit	2
31	Microcomputer Control Equipment MTS-100 Tutor for Arduino (K and H Products) Specifications 1-Power (1) Input: 110V/220V AC, 50 Hz/60 Hz,(2) Output: +5V/1.5A, +3.3V/0.5A 2-Control Board (1) Arduino UNO R3 compatible, (2) Core: ATMEGA328P, (3) Digital IO :14 (D0-D13) (4) Analog IO : 6 (A0-A5), (5) PWM output:6 (D3, D5, D6, D9, D10, D11) (6) Support AREF pin, (7) Support Tx/Rx pin, (8) Support I2C interface (9) Support ISP download, (10) Programming interface: USB Type B 3-Input module (1) Digital input a.4x4 Keypad: Touch button b. DIP Switch :8 bits (2) Analog input a. Slide potentiometer :20K $\Omega$ x 2 b. Joystick x 1 c. Microphone x 1 (3) Sensor Unit a. CDS sensor x 1, b. Temperature and humidity sensor x 1, c. Accelerometer : 3 axis d. Ultrasonic x 1, e. IR line tracer x 1 4-Output Module (1) LED matrix display : 8x8 (2) 4-digit 7-segment display (3) LED Bar :10 bits (4) RGB LED x 4 (5) High Power LED : 1 W (6) Serial RGB LED x20	1

32	<p>Microcomputer Control Equipment MTS-200 Tutor for Raspberry Pi (K and H Products) Specifications</p> <p>1-Power (1) Input: 110V/220V AC, 50 Hz/60 Hz, (2) Output: +5V/1.5A, +3.3V/0.5A</p> <p>2-Control Board (1) Raspberry Pi 3 B+, (2) Memory card: 16G micro SD card (3) Power : built-in USB power</p> <p>3-Display (1) Size : 7 inch, touch screen, (2) Resolution : 800x480@60 fps, 24 bit color (3) Protection : metal frame with protective sticker 4-Prototyping area (1) Device : RGB LED, button, buzzer, (2) ADC/DAC : 2sets, address 0x48 and 0x49 NXP PCF 8591, b-bit resolution, analog input x4, analog outputx1 (3) Power jack: +5V/GND jump wire socket x4+5V/GND wafer socket x4 (4) I/O socket : 40 pin female connector x3(5) Brick plate : 32x16 brick unit 5-faya-nugget electronic blocks (NGT-603) All blocks contain two wafer sockets for power connection, a DuPont pin-holder for signal connection, and four corner holes for perfect fixing on the brick plate. (1) Digital input a. BCD switch b. 8-bit DIP switch c. Self-lock switch d. 5-bit TACT switch e. Toggle switch (2) Analog input</p>	2
33	<p>Industrial Control Equipment KL-500 Industrial Electronic Trainer(K AND H PRODUCTS) Specification</p> <p>(1) power supply unit(KL-51001) ACV output voltage :18v ~ 0 ~ 18V/ 0.5A ACV output voltage :12v ~ 0 ~ 12V/0.5A DCV output voltage : +12V/0.5A DCV output voltage : +5V/0.5A(2) Meter/Motor Unit (KL-58001) Dual-scale ACV :150V~300V,class 2.5 Dual-scale ACA :0~100mA ~1A,class 2.5 Dual-scale DCV :0~10V~20V,class 2.5 Dual-scale DCA :0~100mA ~1A, class 2.5 AC 110V/220V motor (3) Isolation Transformer (KL- 58002) AC 110V/220V</p>	1

34	<p><b>Industrial Control Equipment KL-620</b></p> <p><b>Basic Sensor Experimental Lab(K AND H PRODUCTS) Specification</b></p> <p><b>(1) Power supply Unit</b>  Fixed DC power supply  - Output Voltage : +5V,-5V,+12V,-12V  - Max.output current :+5V/3A, -5V/0.3A,+12V/1.5A,  12V/0.3A  - With output overload protection</p> <p><b>(2) A/D Converter 1×12-bit ADC</b>  - Input voltage range : 0~ +5V, - Time pulse frequency 3.58MHZ  - Control signals : Status,pole over range indication</p> <p><b>(3) Interface port</b>  -USB interface : Type B</p> <p><b>(4) D/A Converter :1×12-bit DAC</b>  Analog output &amp;control  - OUT+ : +DC OFFSET 0 ~ +4.096V unipolar - OUT- : -DC OFFSET 0 ~ -4.096V unipolar -OUT  BP : DC OFFSET -2.048V~ +2.048Vbipolar</p> <p><b>(5) Preset Level : 4-digit thumbwheel switch,Max.value : 4095</b></p> <p><b>(6) Status Display &amp; DCV Input Voltage Measurement- Range : 200mV,20V-Accuracy : ±  0.05% of reading + 4 counts-InputImpedanc : 10MΩ</b>  -Display : 4 1/2 digits (7) Mode Selector</p>	2
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