EZM-4450,EZM-4950,EZM-7750,EZM-9950
Programmable Timers & Counters



EZM-4450,EZM-4950,EZM-7750,EZM-9950
Universal Input Programmable Timer & Counter with Output Module System
- 6 digits Process (PV) and 6 digits Set (SV) Value Display
- Operation with 2 Set Values
- Reset , Pause and ChA-ChB Counting Inputs
- NPN/PNP input type selection
- Configurable Counter/Totalizer Counter,Batch Counter,Timer, Chronometer , Frequencymeter and Tachometer Functions
-Programmable Time Bases for Timer and Chronometer (Second , Minute ,Hour)
- Operation with Automatic and Manual Reset
- Output Module System
- INC,DEC,INC/INC,INC/DEC,UP/DOWN, x1 / x2 / x4 Counting with Phase Shifting Property in Counter Function
- Multiplication Coefficient and Decimal Point Position
-Different Alarm Alternatives in Frequencymeter and Cycle Measuring Functions
- Absolute or Offset Operation in Counter Function
- RS-232 (standard) or RS-485 (optional) Serial Communication with Modbus ASCII or RTU Protocol

SPECIFICATIONS :
INPUT :
Counting Inputs (Ch-A,Ch-B): Switch, Proximity,Capacitive sensor or encoder can be connected.
Reset Input: Switch, Proximity or Capacitive sensor can be connected.
Pause Input: Switch, Proximity or Capacitive sensor can be connected.
Input Type Selection: It can be selected NPN/PNP with DIP Switch that is located on the device.
Reset Function: Automatic or Manual.
Count Input Types:
INC,DEC,INC/INC,INC/DEC,UP/DOWN ,x1 / x2 / x4: Phase Shifting (for encoder) counting
OUTPUT
Output Modules : There are two module sockets for plugging the output modules.
- Relay Output Module
- SSR Output Module (Max. 26mA, 22V ⎓)
- Digital (Transistor) Output Module (Max.40mA@18V⎓)

SUPPLY VOLTAGE
Supply Voltage :
100-240 V ~ 50/60 Hz (-15%;+10%) -6VA
24V ~ 50/60 Hz (-15% ; +10%) -6VA
24V ⎓ (-15% ; +10%) -6W
(Must be determined in order.)

DISPLAY
Actual Count Value Display :
EZM-4450 : 8 mm Red 6 digit LED Display
EZM-4950 : 13.2 mm Red 6 digit LED Display
EZM-7750 : 10.8 mm Red 6 digit LED Display
EZM-9950 : 13.2 mm Red 6 digit LED Display
Set Value Display :
EZM-4450 : 8 mm Green 6 digit LED Display
EZM-4950 : 8 mm Green 6 digit LED Display
EZM-7750 : 8 mm Green 6 digit LED Display
EZM-9950 : 8 mm Green 6 digit LED Display
LEDs : S1(Set1 value),S2(Set2 value),O1/2(Output Status) LEDs.

ENVIRONMENTAL RATINGS and PHYSICAL SPECIFICATIONS
Operating Temperature: 0...50°C
Humidity : 0-90%RH (none condensing)
Protection Class: IP65 at Front, IP20 at rear.
Mounting: Type-1 Enclosure Mounting
Installation: Fixed installation Category II
Over Voltage Category: II
Pollution Degree: II, office or workplace, none conductive pollution
Weight:
EZM-4450 : 210 gr. ; EZM-4950 : 210 gr.
EZM-7750 : 250 gr. ; EZM-9950 : 340 gr.
Dimensions:
EZM-4450 : (48 x 48mm,Depth:116 mm)
EZM-4950 : (96 x 48mm,Depth:86.5 mm)
EZM-7750 : (72 x72mm, Depth:87.5 mm)
EZM-9950 : (96 x 96mm,Depth:87.5 mm)
Panel Cut-Out:
EZM-4450 : (46 x 46mm)
EZM-4950 : (92 x 46mm)
EZM-7750 : (69 x 69mm)
EZM-9950 : (92 x 92mm)

DIP SWITCH Adjustment

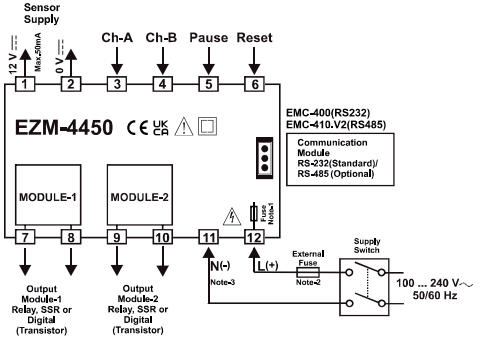
Function Selection

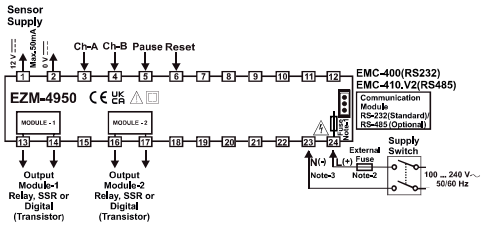
OFF ON 1 2 3	**Counter / Totalizer Counter**
OFF ON 1 2 3	**Batch Counter**
OFF ON 1 2 3	**Timer**
OFF ON 1 2 3	**Frequencymeter / Tachometer**
OFF ON 1 2 3	**Chronometer**

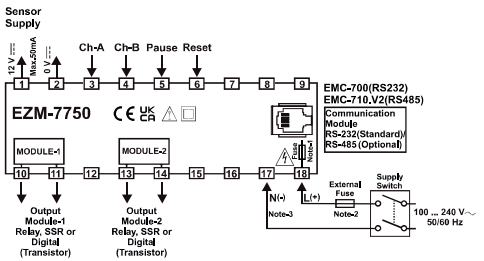
Input Type Selection

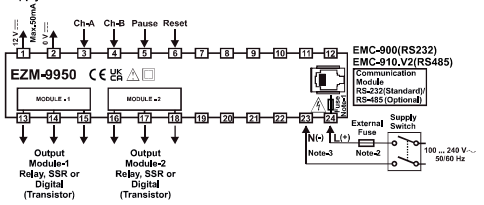
OFF ON 4	**NPN**
OFF ON 4	**PNP**

Electrical Wirings



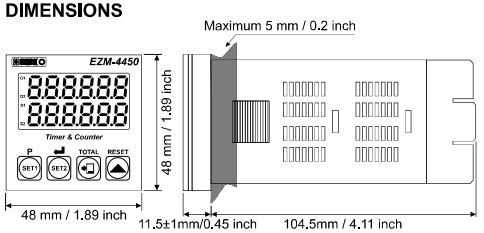


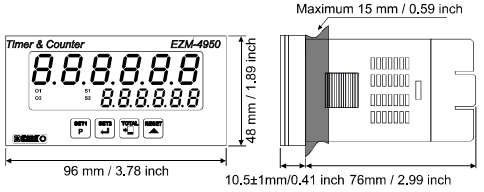


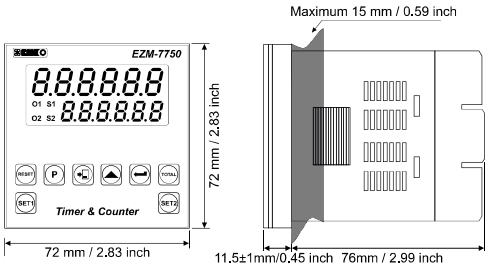


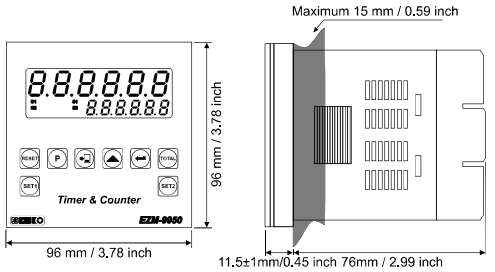
Note-1 : There is an internal fusible flameproof resistor.
Note-2 : External fuse is recommended.
1A~T for power supply 100...240 V~ or 24V~
1A⎓T for power supply 24V⎓
Note-3 : "**L**" is (+) , "**N**" is (-) for 24V⎓ supply voltage

DIMENSIONS

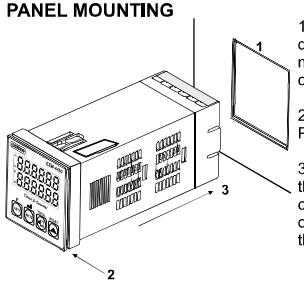








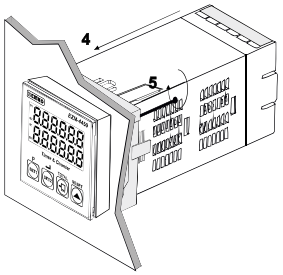
PANEL MOUNTING



1- Before mounting the device in your panel, makesure that the panel cut-out is suitable.

2- Check front panel gasket Position.

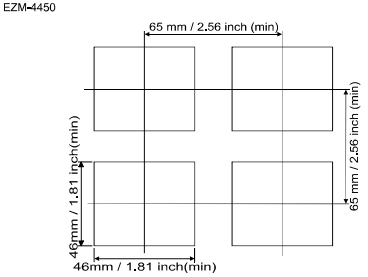
3- Insert the device through the cut-out. If the mounting clamp are on the unit, put out them before inserting the unit to the panel.



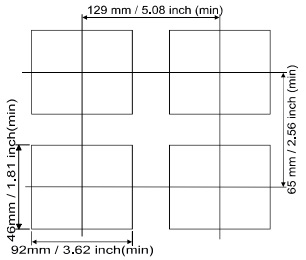
4-Insert the unit in the panel cut-out from the front side.

5-Insert the mounting clamps to the holes that located top and bottom sides of device and screw up the fixing screws until the unit completely immobile within the panel.

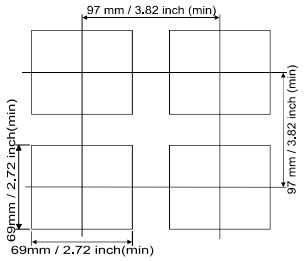
Panel Cut-Out



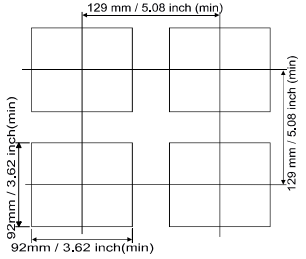
EZM-4950



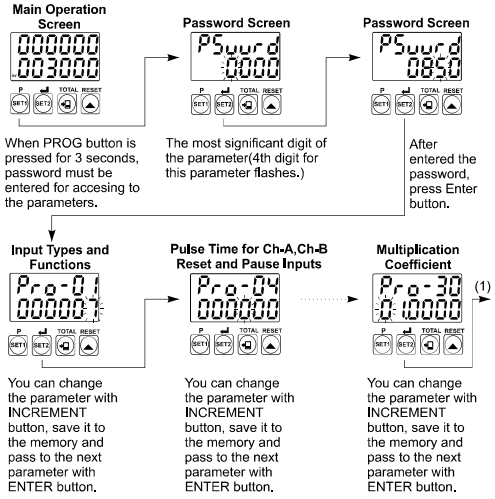
EZM-7750

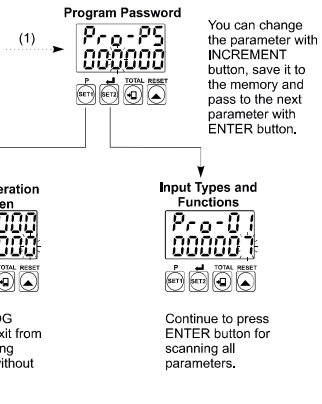


EZM-9950



Accessing to the Program Parameters





Parameter Definitions

Pro-01 : Input Types and Functions

0 : Upcount on rising edge of Ch-A input. (INC)
1 : Downcount on rising edge of Ch-A input. (DEC)
2 : Upcount on rising edge of Ch-A input,Downcount on rising edge of Ch-B input.(INC/DEC)
3 : Upcount on rising edge of Ch-A input,Upcount on rising edge of Ch-B input. (INC/INC)
4 : Upcount on rising edge of Ch-A input when Ch-B is at 0 Downcount on rising edge of Ch-A when Ch-B is at 1.(UP/DOWN)
5 : x1 Phase Shifting.(For Incremental Encoder)
6 : x2 Phase Shifting.(For Incremental Encoder)
7 : x4 Phase Shifting.(For Incremental Encoder)

Pro-02 : Selection of Input Type Function for Chronometer

0 : Period measurement in Ch-A input.
1 : Pulse time measurement in Ch-A input.
2 : Sum of the time difference between Ch-A and Ch-B inputs rising edges.

Pro-03 : Selection of Measuring Method

0 : Frequency or cycle is calculated by measuring cycle time of the signals in Ch-A input.
1 : Frequency or cycle is calculated by counting the pulses in Ch-A input during the time is set in measurement period. Pro-08

Pro-04 : Pulse Time of Ch-A, Ch-B, Reset and Pause Input

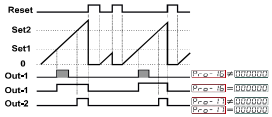
It is used to protect against the electrical contact debounce or the signal that is less than the determined pulse time.
It can be adjusted from 000000 to 000250 millisecond.

Pro-05 : Selection of Time Unit and Scale

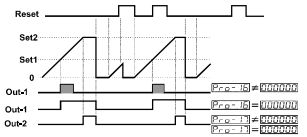
000000 Hour / Minute.It can be adjusted from 0 to 99.59.
000001 Minute / Second .It can be adjusted from 0 to 99.59.
000002 Second / milisecond.It can be adjusted from 0 to 99.99.
000003 Hour / Minute.It can be adjusted from 0 to 23.59.
000004 Hour.It can be adjusted from 0 to 999.99.
000005 Minute.It can be adjusted from 0 to 999.99.
000006 Second.It can be adjusted from 0 to 999.99.

Pro-06: Output Functions

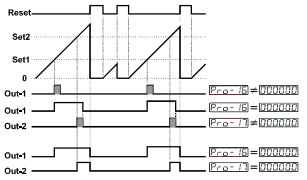
0: **Manual Reset-1**:
Device continues to count till manual reset is applied. When count value reaches the Set value, output position is changed.



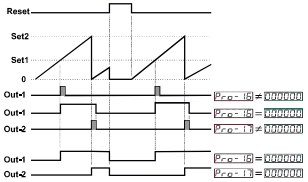
1:**Manual Reset-2:**
Count value is added to total value when manual reset is active in COUNTER/TOTALIZER COUNTER functions.



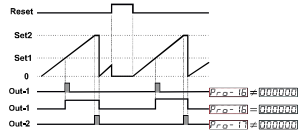
2:**Manual Reset-3:**
Count value is added to total value when manual reset is active in COUNTER/TOTALIZER COUNTER functions.



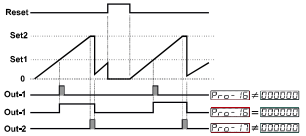
3:**Automatic Reset-1:**
Count value is added to total value when manual reset is active in COUNTER/TOTALIZER COUNTER functions.



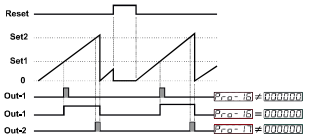
4:**Automatic Reset-2:**
Count value is added to total value when manual reset is active in COUNTER/TOTALIZER COUNTER functions.



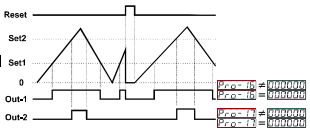
5:**Automatic Reset-3:**
Count value is added to total value when manual reset is active in COUNTER/TOTALIZER COUNTER functions.



6:**Automatic Reset-4:**
Count value is added to total value when manual reset is active in COUNTER/TOTALIZER COUNTER functions.



7:**Automatic Reset-5:**
Count value is added to total value when manual reset is active in COUNTER/TOTALIZER COUNTER functions.



Pro-07: Input Signal Reset Time (Time Out)
Actual count value is reset if no signal is applied to Ch-A input for a time which is bigger than the value is set in this parameter.
It can be adjusted from 000001 to 000099 seconds.

Pro-08: Measurement Period
Number of pulses in Ch-A input is counted during this time.
It can be adjusted from 000001 to 000999 seconds .

Pro-09: Output-1 Function

0 : Output is latched. (Latching).
1 : Non-latched with hysteresis output is selected.
2 : Output-1 is an alarm output.

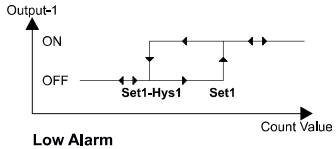
Pro-10: Output-2 Function

0 : Output is latched. (Latching).
1 : Non-latched with hysteresis output is selected.

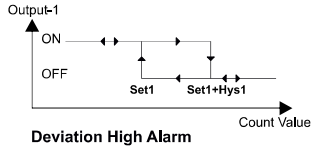
Pro-11: Alarm Functions for Output-1

If Output-1 function parameter Pro-09 is selected 000002 alarm output, then Output-1 becomes active according to this parameter.

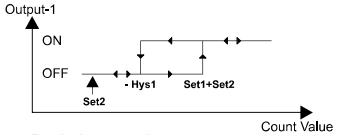
000000 **High Alarm**



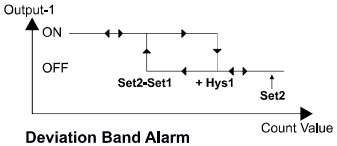
000001 **Low Alarm**



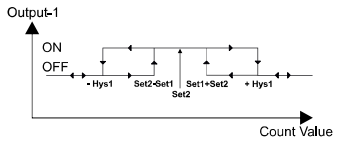
000002 **Deviation High Alarm**



000003 **Deviation Low Alarm**



000004 **Deviation Band Alarm**



Pro-12: Hysteresis for Output-1
Pro-13: Hysteresis for Output-2

Pro-14: Output-1 Operation Form

000000 Output - 1 Normally De-energised.
000001 Output - 1 Normally Energised.

Pro-15: Output-2 Operation Form

000000 Output - 2 Normally De-energised.
000001 Output - 2 Normally Energised.

Pro-16 Output-1 Pulse Time

It determines how long Output-1 will be active.It can be adjusted from 0000.00 to 0099.99 seconds.

Pro-17: Output-2 Pulse Time

It determines how long Output-2 will be active.It can be adjusted from 0000.00 to 0099.99 seconds.

Pro-18: Start of the Controlling

000000 Control is started when the unit is energised.
000001 Control is started when count value reaches to SET1 value.
000002 Control is started when count value reaches to SET2 value.

Pro-19: Direction of Counting

000000 Upcount. (0 --> Preset)
000001 Downcount. (Preset --> 0)

Pro-20: Point position for the Display

000000 No point.
000001 Between first and second digits.
000002 Between second and third digits.
000003 Between third and fourth digits.
000004 Between fourth and fifth digits.

Pro-21: Saving Count Value

000000 Count value is saved to memory when power is disconnected and restored on power up.
000001 Count value is not saved to memory when power is disconnected.

Pro-22: SET1 Operation Form Selection

000000 Absolute operation.SET1 can be adjusted from 000000 to 999999.
000001 Operation with offset. SET1 can be defined ± Offset according to SET2 value.(SET1 = SET1 + SET2)

Pro-23: Communication Accessing Address

Device address for serial communication bus. It can be adjusted from 000001 to 000247.

Pro-24: Modbus Protocol Type Selection

000000 Modbus **ASCII** protocol is selected.
000001 Modbus **RTU** protocol is selected.

Pro-25: Communication Parity Selection

000000 No Parity .
000001 Odd Parity.
000002 Even Parity.

Pro-26: Communication Baud Rate

000000 1200 Baud Rate
000001 2400 Baud Rate
000002 4800 Baud Rate
000003 9600 Baud Rate
000004 19200 Baud Rate

Pro-27:Communication Stop Bit Selection

000000 1 Stop Bit.
000001 2 Stop Bits.

Pro-28:Reset and Set Protection (For Accessing from Front Panel)

000000 No Reset and Set protection.
000001 Only Reset button protection is active.
000002 SET1 and SET2 can not be changed.
000003 Full Protection. Reset protection is active, also SET1 and SET2 can not be changed.
000004 SET1 can not be changed.
000005 SET2 can not be changed.

Pro-29: Frequency / Cycle Coefficient

It can be adjusted from 000001 to 009999 .Count value is multiplied with this parameter.

Pro-30: Multiplication Coefficient

It can be adjusted from 000001 to 009999.

Pro-PS: Program Password

It is used for accessing to the program parameters.
It can be adjusted from 000000 to 009999 .

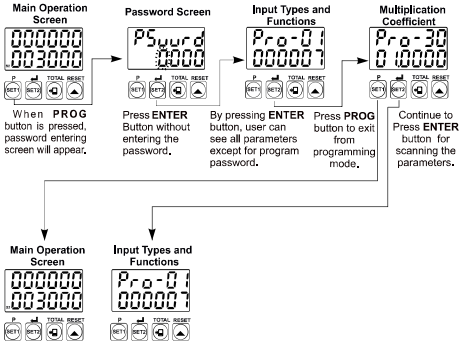
If it is ; 000000 there is no password protection while entering to the program parameters.
When programming Prog button is pressed, will appear on the display.
If this parameter is different from " 0" and user wants to access to the program parameters;
1- If user does not enter the Psword value correctly ; operation screen will appear without entering to operator parameters.
2- When Psword in top display and 000000 in bottom display,if user presses ENTER button without entering password (for observing the parameters):

Failure Messages in EZM-XX50 *Timer & Counter*



1- Position of the DIP Switch is wrong. (DIP Switch determines the operation function of the device and it is under the top cover.)

2- If the password is not 0, user can access to the parameters without entering the password and by pressing ENTER button.





3- If Actual Value is flashing and counting is stopped; It appears if any of the count value is bigger than the maximum count value.(Total count value for Counter/"Totalizer Counter"
Function - Batch count value for Batch Counter FUNCTION)
To remove this warning and reset the count value press RESET button.



4- If actual value is flashing and counting is not performed;
It appears if any of the count value is less than the minimum count value.
(Total count value for Counter/"Totalizer Counter"
Function - Batch count value for Batch Counter FUNCTION)To remove this warning and reset the count value press RESET button.

Installation

Before beginning installation of this product, please read the instruction manual and warnings below carefully.

In package ,
-One piece unit
-Two pieces mounting clamp
-One piece instruction manual

A visual inspection of this product for possible damage occured during shipment is recommended before installation. It is your responsibility to ensure that qualified mechanical and electrical technicians install this product.
If there is danger of serious accident resulting from a failure or defect in this unit, power off the system and the electrical connection of the device from the system.
The unit is normally supplied without a power switch or a fuse. Use power switch and fuse as required.
Be sure to use the rated power supply voltage to protect the unit against damage and to prevent failure.
Keep the power off until all of the wiring is completed so that electric shock and trouble with the unit can be prevented.
Never attempt to disassemble, modify or repair this unit. Tampering with the unit may results in malfunction, electric shock or fire.
Do not use the unit in combustible or explosive gaseous atmospheres.
During the equipment is putted in hole on the metal panel while mechanical installation some metal burrs can cause injury on hands, you must be careful.
Montage of the product on a system must be done with it's mounting clamp. Do not do the montage of the device with in appropriate mounting clamp. Be sure that device will not fall while doing the montage.
It is your responsibility if this equipment is used in a manner not specified in this instruction manual.

Warranty

EMKO Elektronik warrants that the equipment delivered is free from defects in material and workmanship. This warranty is provided for a period of two years. The warranty period starts from the delivery date.
This warranty is in force if duty and responsibilities which are determined in warranty document and instruction manual performs by the customer completely.

Maintenance

Repairs should only be performed by trained and specialized personnel. Cut power to the device before accessing internal parts.
Do not clean the case with hydrocarbon-based solvents (Petrol, Trichlorethylene etc.). Use of these solvents can reduce the mechanical reliability of the device. Use a cloth dampened in ethyl alcohol or water to clean the external plastic case.

Other Informations

Manufacturer Information:
Emko Elektronik Sanayi ve Ticaret A.Ş.
Bursa Organize Sanayi Bölgesi, (Fethiye OSB Mah.)
Turkuaz Cd. No:15 16215 BURSA/TÜRKİYE
Phone : +90 224 261 1900
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Repair and maintenance service information:
Emko Elektronik Sanayi ve Ticaret A.Ş.
Bursa Organize Sanayi Bölgesi, (Fethiye OSB Mah.)
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Order Information

EZM-4450 (48x48 DIN 1/16)
EZM-4950 (96x48 DIN 1/8)
EZM-7750 (72x72 DIN)
EZM-9950 (96x96 DIN 1/4)

A	BC	D	E	/	FG	HI	/	U	V	W	Z
	00		0	/			/			0	0

A	Supply Voltage
1	100-240V ~ (-%15;+%10) 50/60Hz
2	24 V ~ (-%15;+%10) 50/60Hz 24V ⎓ (-%15;+%10)
9	Customer (Maximum 240V ~ (-%15;+%10))50/60Hz

D	Serial Communication	Module Codes
0	None	
1	RS-232	EMC-400,EMC-700,EMC-900
2	RS-485	EMC-410,EMC-710,EMC-910

E	Output-1
0	None

FG	Module-1	Module Codes
00	None	
01	Relay Output Module	EMO-400,EMO-700,EMO-900
02	SSR Driver Output Module (Maximum 26mA, 22V⎓)	EMO-410,EMO-710,EMO-910
03	Digital(Transistor)Output Module (Maximum 40mA@18V⎓)	EMO-420,EMO-720,EMO-920

HI	Module-2	Module Codes
00	None	
01	Relay Output Module	EMO-400,EMO-700,EMO-900
02	SSR Driver Output Module (Maximum 26mA, 22V⎓)	EMO-410,EMO-710,EMO-910
03	Digital(Transistor)Output Module (Maximum 40mA@18V⎓)	EMO-420,EMO-720,EMO-920

Note-1 :
EMO-4xx is used in EZM-4450 and EZM-4950
EMO-7xx is used in EZM-7750
EMO-9xx is used in EZM-9950

Note-2 :
EMO-400 Relay Output Module's rating is 3A@250V on resistive load.
EMO-700 and EMO-900 is 3A@250V on resistive load.

U	Function
0	Counter / Totalizer Counter
1	Batch Counter
2	Timer
3	Frequencymeter / Tachometer
4	Chronometer

V	Input Type
0	NPN
1	PNP

All order information of EZM-xx50 series are given on the table at above.User may form appropriate device configuration from information and codes that at the table and convert it to the ordering codes.
Firstly, supply voltage then other specifications must be determined.
Please fill the order code blanks according to your needs.
Please contact us, if your needs are out of the standards.

This symbol is used for safety warnings. User must pay attention to these warnings.

This symbol is used to determine the dangerous situations as a result of an electric shock. User must pay attention to these warnings definitely.

This symbol is used to determine the important notes about functions and usage of the device

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Thank you very much for your preference to use Emko Elektronik products, please visit our web page to download detailed user manual.

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