



# Protection & Control

The ENTES Protection & Control product group consists of a wide range of products that provide solutions for the safe operation of systems and all control needs.

## Motor Phase Protection Relays

- MKS Series
- MCS Series

## Phase Sequence Protection Relays

- FR-02

## Voltage Protection Relays

- DGRC-01
- GKRC-E Series
- GKRC Series
- MCC Series

## Current Protection Relays

- AKC Series

## Over Current Secondary Protection Relays

- CKR Series

## Time Relays

- ERTC Series
- ERB Series
- MCB Series
- EF Series
- DG Series
- SSR-2X
- SER-YU

## Multifunctional Timer Relays

- MCB-100/200
- ERTC-100 Series

## Astronomical Time Relays

- DTR Series
- MCB-50 Series

## Programmable Time Clocks

- MCB-50/50T
- MCB-A

## Liquid Level Control Relay

- SSRC Series

## Photocell Relays

- FG Series

## Power Supplies

- PS Series

## Control-Insulation Transformers

- ENT.PST/ENT.IST Series

# ENTES

**Reliable protection to your equipment with ENTES Voltage Protection Relay with Display...**



## **GKRC-E Series**

**Over Voltage and Low Voltage Protection**

**Voltage Imbalance Protection**

**Over Frequency Protection**

**Low Frequency Protection**

**Phase Sequence Protection**

**Phase Failure Protection**

### Motor Phase Protection Relays



## MKC - MKS Series

MKS-MKC Motor Protection Relays are designed to prevent 3-phase motors from overheating and being damaged due to phase failure or imbalance in industrial facilities.

1. Lack of Phase
2. Phase Sequence Error
3. PTC Protection
4. Fixed Asymmetry (Voltage Imbalance)
5. Adjustable Asymmetry (Voltage Unbalance)

Reliable protection  
experience combined with  
quality  
by ENTES MKC/MKS Series...



### Benefit

MK Series Motor Protection Relays protect your equipment and systems against phase breaks and unbalances.



### Usage Areas

They are preferred by all businesses that want to protect their equipment against costly failures with features such as neutral break, absence of phase, phase sequence and PTC protection.

# Motor (Phase) Protection Relays



## Product Comparison Chart

Product Name		Neutral Break Detection	Lack of Phase	Phase Sequence Error	PTC Protection	Constant Asymmetry	Adjustable Asymmetry	Without neutral	Adjustable OFF Delay	Adjustable ON Delay	1 C/O Contact	1 N/O Contact	220-230 VAC	380-400 VAC	160-690 VAC	DIN1 Rail Mount	DIN2 Rail Mount
MK-01	Motor (Phase) Protection Relays	●	●			%20					●	●					
MKC-01	Motor (Phase) Protection Relays	●	●			%20					●	●					●
MKS-01	Motor (Phase) Protection Relays	●	●			%20						●	●				●
MKC-03	Motor (Phase) Protection Relays	●	●	●		%40					●	●					●
MKC-03P	Motor (Phase) Protection Relays (With PTC3)	●	●	●	●	%40					●	●					●
MKS-03	Motor (Phase) Protection Relays	●	●	●		%40						●	●				●
MKC-04	Motor (Phase) Protection Relays		●	●		%40		●			●	○	●				●
MKC-04-U69	Motor (Phase) Protection Relays		●	●		%10		●			●				●		●
MKC-05	Motor (Phase) Protection Relays	●	●	●		%5-15 ; OFF		●		●	●	●	●				●
MKC-05P	Motor (Phase) Protection Relays (With PTC3)	●	●	●	●	%5-15 ; OFF		●		●	●	●	●				●
MKC-06	Motor (Phase) Protection Relays		●	●		%5-15 ; OFF		●	●	●	●			●			●
MKC-06P	Motor (Phase) Protection Relays (With PTC3)		●	●	●	%5-15 ; OFF		●	●	●	●			●			●
MKC-30	Motor (Phase) Protection Relays	●	●	●		%5-25 ; OFF				●	●	●					●

○ Optional

### Protection Features

#### 1. Absence of Phase

If there is voltage in the 3 phases monitored; output relay is in ON position. In case of failure of any of the 3 phases, the output relay automatically switches to OFF.

#### 2. Phase Sequence Failure

When the phase sequence is correct (clockwise L1, L2, L3), the output relay is in the ON position; however, if the sequence changes, the output relay automatically switches to OFF.

#### 3. PTC Protection

If the winding temperatures in the motors exceed the PTC limit temperature value, the output relay automatically switches to OFF.

#### 4. Constant Asymmetry (Voltage Unbalance)

If the Phase-Neutral voltage shows voltage unbalance over a certain constant value (over 20% or 40%), the output relay switches to OFF in 0.2 seconds.

#### 5. Adjustable Asymmetry (Voltage Unbalance)

If the Phase-Phase (MKC-06/06P) or Phase-Neutral (MKC-05/05P) voltage unbalance is lower than the value set by the user, the output relay switches ON. If the unbalance value exceeds the limit value set by the user (5% - 15%), the output relay switches to OFF after the delay time (0.1... 20s) defined by the user. If the fault disappears within the delay time, the output relay will not turn OFF and the motor will continue to run normally. In addition to these features, if the L3 phase falls below 50% of the operating voltage of the device (MKC-05/05P), the relay switches to OFF without delay. In this case, the phase sequence and asymmetry LEDs start to flash.

## Phase Sequence Relay / Thermistor Relay

# FR-02 / PT-01



### FR-02

The FR-02 Phase Sequence Relay controls the sequence of the 3 phases feeding the motors. If the R, S and T phases are in the correct order, the OUT LED on the front panel lights up. If the phase sequence is wrong, the OUT (output) LED turns off and the output relay automatically turns OFF.

### PT-01

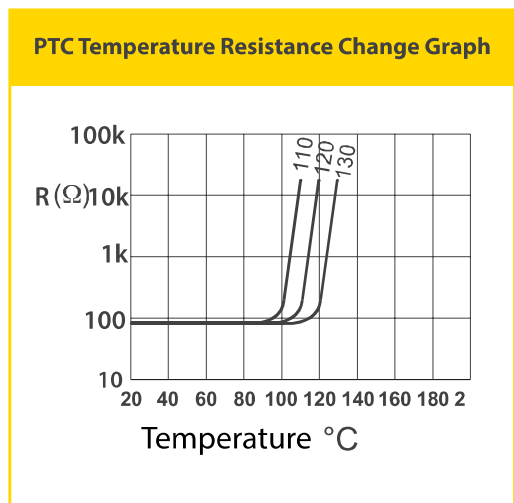
The PT-01 Thermistor Relay has been developed for the protection of motors with PTC. If the winding temperatures in the motors exceed the PTC limit temperature value, the output relay automatically switches to OFF. Please refer to the graphic below to see the heat characteristics of the PTC at 3 different shutdown temperatures (110 °C, 120 °C, 130 °C).



## Product Comparison Chart

Product Name		Neutral Fault Detection	Lack of Phase	Phase Sequence Error	PTC Protection	1 C/O Contact	DIN2 Rail Mount
FR-02	Phase Sequence Protection Relay	●	●	●		●	●
PT-01	Thermistor Relay				●	●	●
PTC-3	Triple Thermistor Group (Auxiliary Circuit Element)						

Features	
Operating Voltage	230 VAC
Operating Frequency	50/60 Hz
Operating Range	(0,9-1,1) x Un
Connection	3-phase / neutral (FR-02) / 1-phase / neutral (PT-01)
Contact Output	1 CO contact, 8A, 2000 VA (FR-02) 5A, 1250 VA (PT-01)
Protection Class	IP20
Ambient Temperature Range	-5 / +55°C
Dimension	36x90x60 mm (FR-02, PT-01)
Mounting	Rail Mounting; Screw Terminal Block
Weight	0.15 kg/pc (FR-02) 0.2 kg/pc (PT-01)



Voltage Protection Relays

# GKRC / DGRC / MCC Series



### GKRC Series

GKRC Series Voltage Protection Relays are designed to protect single or three phase systems from sudden voltage changes and phase sequence disturbances.

When the nominal voltage of any phase increases or decreases by 50%, the relay switches to OFF without delay.

### DGRC Series

DGRC Series Voltage Protection Relays are designed to protect single or three phase systems in permanent undervoltage.



## Product Comparison Chart

Product Name	LCD Display	Neutral Break Detection	3-Phase	Single-Phase	Undervoltage	Overvoltage	Under Frequency	Over Frequency	Voltage Unbalance	Phase Failure Protection	Phase Sequence Protection	ON Delay	OFF Delay	TURN-OFF Delay	Without-Neutral	Auxiliary Supply	230 VAC	400 VAC	85-300VAC	150-500VAC	Relay	DIN1 Rail Mounting	DIN2 Rail Mounting
GKRC-31E LCD	●		●		●	●	●	●	●	●	●	●	●		●					●	1		●
GKRC-21E LCD	●	●	●		●	●	●	●	●	●	●	●	●						●		1		●
GKRC-32E LCD	●		●		●	●	●	●	●	●	●	●	●		●					●	2		●
GKRC-22E LCD	●	●	●		●	●	●	●	●	●	●	●	●						●		2		●
DGRC-01		●	●		■							●		●			●						●
GKRC-01		●	●			■						●		●			●						●
GKRC-02		●	●		■	■						●		●			●						●
GKRC-02F		●	●		■	■				●	●	●		●			●						●
GKRC-02FA			●		■	■				●	●	●		●	●	●	●						●
GKRC-03			●		■	■						●		●	●		●						●
GKRC-03F			●		■	■				●	●	●		●	●		●						●
GKRC-M2		●	●		■	■						●		●			●						●
MCC-1D	5-15 min. ON Delay	●	●		■					●		●					●						●
MCC-3D	5-15 min. ON Delay	●	●		■					●		●					●						●
GKRC-30F		●	●		○	○				●	○			●			●						●

■ Adjustable and Closeable.  
○ Selectable

## Current Protection Relays



# AKC Series

AKC Series Current Protection relays measure the current of the systems and shut down the systems when the measured current values are above or below the adjusted level.



### Product Comparison Chart

Product Name		Low Current Protection	Over Current Protection	.../5A	CT-25 Included	230 VAC	DINZ Rail Mount
AKC-01D	Low Current Protection (0.5-5A)	●		●		●	●
AKC-01A	Over Current Protection (0.5-5A)		●	●		●	●
AKC-03D	Low Current Protection (with CT-25 between 1.5A and 60A)	●			●	●	●
AKC-03A	Over Current Protection (with CT-25 between 1.5A and 60A)		●		●	●	●

Experience reliable protection with **ENTES AKC Series**, which combines innovation and superior quality...



### Benefit

ENTES AKC Series Current protection Relays are designed to protect systems against to current imbalances.



### Application

ENTES AKC Series is a reliable solution for all facilities require an equipment protection within a certain current range.

## Over Current Secondary Protection Relays

## CKR Series



CKR Series Overcurrent Relays combine reverse and independent time relays in a single device. CKR Series Overcurrent Relays are used to protect transformers, motors, generators and power transmission lines in the power distribution system against short circuits and ground failures. "Selective protection" should be applied to ensure the highest level of protection. The main purpose of the selective protection is to limit the fault to the minimum and disconnect as soon as possible.

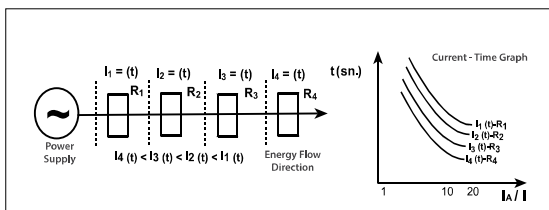


## Product Comparison Chart

Product Name	
CKR-93T	3 Phase + 1 Ground (Adjustable inverse and fixed time, for phase and ground) 85-265 VAC / DC
CKR-92T	2 Phase + 1 Ground (Adjustable inverse and fixed time, for phase and ground) 85-265 VAC / DC; 24 VDC

Correct protection for inverse time overcurrent relays can be realized under the following conditions:

- 1) Relays with the same operating characteristics should be connected in series with each other.
- 2) TURN-OFF Delay of the relays used in the system should be set as "Current/time steps". The current dependent TURN-OFF Delay time of the relays should be designed in such a way that the "current/time steps" decrease with distance from the source. In this way, the relay at the end of the line (R4 as follows) should have the shortest TURN-OFF time. This can be seen from the diagrams and the current-time characteristics given below:



A. The CKR series has the following I/t characteristics. According to EC-255, BS-142 these are:

- a - Normal Inverse
- b - Very Inverse
- c - Extreme Inverse
- d - Long Time Inverse (CKR-93T)
- e - Independent Time 1 (2.5 sec.)
- f - Independent Time 2 (5 sec.)
- g - Independent Time 3 (10 sec.)
- h - Independent Time 4 (15 sec.)

The instantaneous TURN-OFF current, time multiplier and current time characteristic settings can be selected separately for phase and neutral.

- Double Isolation (□)
- Measurement Category III
- Terminal Connection
- Flush Mounting
- IP40 (front panel)
- IEC 60255-3
- IEC 60255-6
- IEC 529

Time Relays



MCB / SER /ERTC / SSR / DG Series

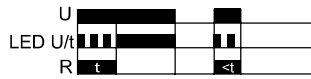
Product Comparison Chart

Product Model	Product Description	Time	ON Delay	OFF Delay	ON Flasher	OFF Flasher	Down Counter	Star - Delta	Right-Left	Power OFF Delay	OFF Delay with Control Output	ON Delay with Control Output	Symmetrical Flasher	Single Shot Leading Edge with Control Input	Single Shot Trailing Edge with Control Input	Pulse	Yükseklen Kenarda Çakırmada Düşen Kenarda Brakırmada Geçikmeli	Yükseklen ve Düşen Kenarda Tetiklemeli Brakırmada Geçikmeli	With Trigger	24VAC / DC	230 VAC	12-240 VAC / DC	24-240 VAC / DC	DIN I	DIN II	DIN III
			ON Delay	OFF Delay	ON Flasher	OFF Flasher	Down Counter	Star - Delta	Right-Left	Power OFF Delay	OFF Delay with Control Output	ON Delay with Control Output	Symmetrical Flasher	Single Shot Leading Edge with Control Input	Single Shot Trailing Edge with Control Input	Pulse	Yükseklen Kenarda Çakırmada Düşen Kenarda Brakırmada Geçikmeli	Yükseklen ve Düşen Kenarda Tetiklemeli Brakırmada Geçikmeli	With Trigger	24VAC / DC	230 VAC	12-240 VAC / DC	24-240 VAC / DC	DIN I	DIN II	DIN III
ERTC-01-DIN	Multi-Functional Time Relay	1sn - 100 hour	●	●	●	●	●												●	●					●	
MCB-30	Time Relay	2-30sec	●																				●	●		
MCB-60	Time Relay	4-60sec	●																				●	●		
MCB-7	Time Relay	0,1sn - 30 hour	●	●																			●	●		
MCB-8	Time Relay(Fine Adjustment)	0,1sn - 999 min.	●	●																			●	●		
MCB-9	Multi-Functional Time Relay	0,5sn - 30 hour	●	●	●	●																●		●		
MCB-15	Multi-Functional Time Relay	0,1sn-100 hour	●	●							●		●							●			●	●		
MCB-20	Multi-Functional Time Relay	0,1sn-100 hour	●	●							●	●	●	●	●					●		●				
MCB-24	Multi-Functional Time Relay	0,1sn-100 hour	●	●							●	●	●	●	●					●		●				
MCB-25	LCD Multi-Functional Time Relay	0,1sn- 999 hour	●	●	●	●					●		●	●		●	●	●	●			●	●			
EF-10	Flasher Relay	1-10sn / 0,5sn			●																●	●		●		
SER-YU	Star - Delta Relay	Y:1-60sn / Y→Δ:20-500ms						●												●	●				●	
SSR-2X	Right - Left Relay	0.1sn - 60 hour							●													●		●		
DG-10	Delayed in Drop	0,6 sn - 10dk								●												●			●	
DG-60	Dishwasher Relay	1 sn - 60dk								●												●			●	
ERB-50	Dishwasher Relay(With Buzzer)	Washing Time (Stable): 30sec, 60sec, 90sec, 120sec, 180sec, Waiting (Stable) : 3sec, Rinse (Adjusted) : 1-30sec																								
ERB-50 BUZZER	Bulaşık Makinesi Rölesi (Buzzerli)	Washing Time (Stable): 30sec, 60sec, 90sec, 120sec, 180sec, Waiting (Stable) : 3sec, Rinse (Adjusted) : 1-30sec																								

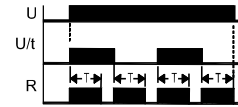
ENTES MCB Time Relays; It brings you together with reliable and flexible productivity solutions with its wide range of function alternatives.

## Functions

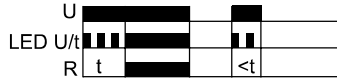
### OFF Delay [MCB-15 & MCB-20 & MCB-7/8/9]



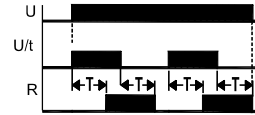
### Single Shot Leading and Trailing Edge with Control Output



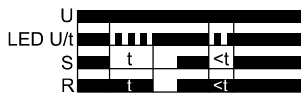
### ON Delay [MCB-15 & MCB-20 & MCB-7-8-9-30-60]



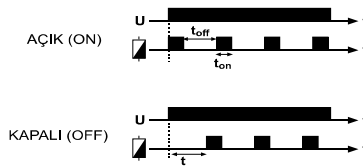
### ON Delay with Control Input Leading Edge OFF Delay with Control Input Trailing Edge



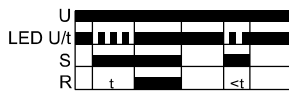
### OFF Delay with Control Input [MCB-15 & MCB-20]



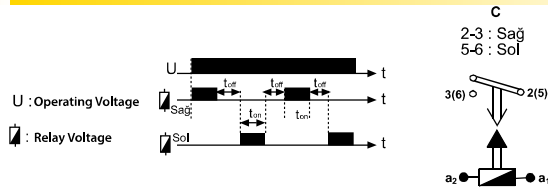
### Flasher



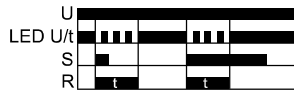
### ON Delay with Control Input [MCB-20]



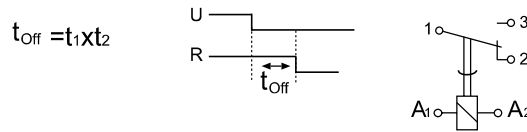
### Right-Left Operating (SSR-2X)



### Single Shot Leading Edge with Control Input (Ts) [MCB-20]

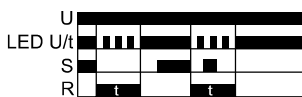


### Power OFF Delay (DG-10 / DG-60)

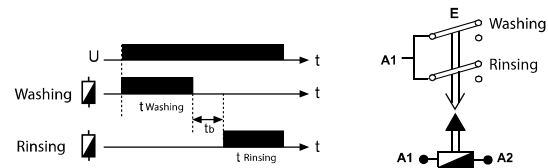


No voltage, Delay Trigger

### Single Shot Trailing Edge with Control Input (Ta) [MCB-20]



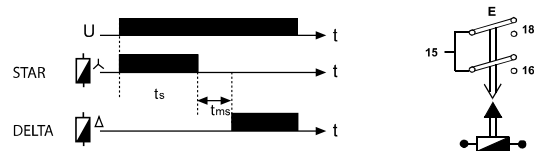
### Dishwasher Relay (ERB-50)



### Symmetrical Flasher [MCB-15 & MCB-20]



### Star-Delta Relay (SER-Y/U)



\* For SER - Y/U, 24 VAC/DC input is applied between A2-A3.

## Multifunctional Timer Relays



# MCB-100/200 ERTC-100 Series

### Multifunctional Digital Time Relays

- Ability to work with internal battery without the need for power supply (MCB-200)
- 1.000.000 contact turn/off abilities (MCB-200)
- Easy installation with user-friendly menu
- In addition to the main functions, flexible solutions suitable for the purpose in applications with sub-functions that can be controlled by triggering.
- With the memory feature, the ability to save time and status information in memory when the power supply is interrupted in some functions and to continue from where it left off when the power is restored.
- It has the features of performing the functions according to the real time clock with the digital time setting.



## Product Comparison Chart

Product Name		Time	Triggered	ON Delay	OFF Delay	Pulse	Asymmetric Flasher	Symmetrical Flasher	Start/Stop	Counter	Right-Left	Star/Delta	2 Steps ON Delay	2 Steps OFF Delay	Memory	12-30 VAC/DC	85-315 VAC/DC	Internal Battery	DIN2 Rail Mount	
MCB-100	7 Functional Time Relay	0,1sn-9999min.	●								●	●	●	●	*		●		●	
MCB-101	7 Functional Time Relay	0,1sn-9999min.	●								●	●	●	●	*	●			●	
MCB-120	17 Functional Time Relay	0,1sn-9999min.	●	●	●	●	●	●							*		●		●	
MCB-121	17 Functional Time Relay	0,1sn-9999min.	●	●	●	●	●	●							*	●			●	
MCB-125	21 Functional Time Relay	0,1sn-9999min.	●	●	●	●	●	●	●	●					*		●		●	
MCB-126	21 Functional Time Relay	0,1sn-9999min.	●	●	●	●	●	●	●	●					*	●			●	
MCB-130	28 Functional Time Relay	0,1sn-9999min.	●	●	●	●	●	●	●	●	●	●	●	●	*		●		●	
MCB-131	28 Functional Time Relay	0,1sn-9999min.	●	●	●	●	●	●	●	●	●	●	●	●	*	●			●	
MCB-200	Multifunctional Time Relay Without Supply	0,2sn-9999sn/0,1dk-9999min.	●	○	○	○	○	○	○										●	●
ERTC-100	Sayıcı / Impulse Zaman Rölesi	0,1sn-9999min.	●			●				●					*		●		●	
ERTC-101	Sayıcı / Impulse Zaman Rölesi	0,1sn-9999dk	●		●				●						*	●			●	

○ Functions with Triggered

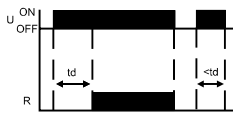
To see the sub-functions included in the main functions, see the function table.

\* Memory feature is not valid for all functions of the device. See the instructions for use for the details of the applicable functions.

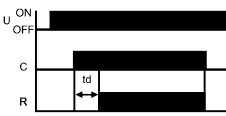
## Main Functions

### ON Delay

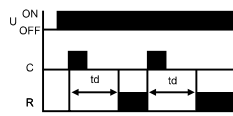
a) Power Supply Start



b) Control Input(\*)

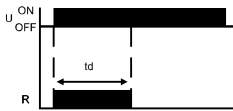


c) Resettable with Leading Edge Trigger(\*)

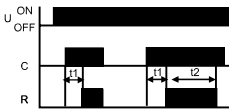


### OFF Delay

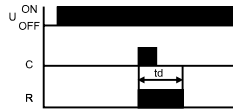
a) with Supply Voltage



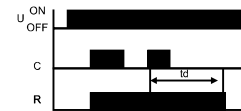
b) with Control Output(\*)



c) with Leading Edge Trigger



d) Resettable with Leading Edge Triggerger

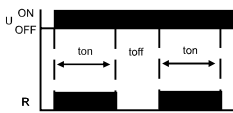


e) Resettable with Trailing Edge Triggerger

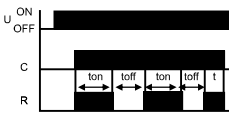


### Flasher

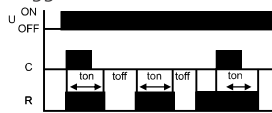
a) Asymmetric ON Start



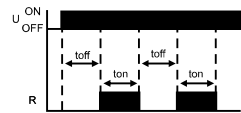
b) Asymmetric ON Start with Control Input(\*)



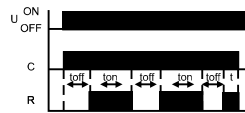
c) Resettable Asymmetric ON Start with Leading Edge Trigger(\*)



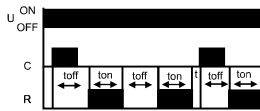
d) Asymmetric OFF Start



e) Asymmetric OFF Start with Control Input(\*)



f) Resettable Asymmetric OFF Start with Leading Edge Trigger(\*)



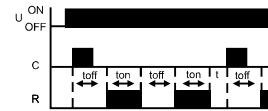
g) Symmetric ON Start with Control Input(\*)



h) Symmetric OFF Start with Control Input(\*)

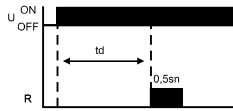


i) Resettable Symmetric OFF Start with Leading Edge Trigger(\*)

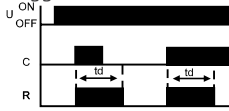


### Pulse

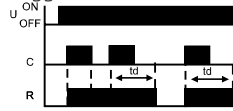
a) Single Pulse with ON Delay After Supply Voltage



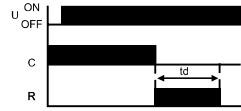
b) Adjustable OFF Delay Pulse with Leading Edge Trigger(\*)



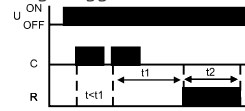
c) Resettable OFF Delay Pulse with Trailing Edge Trigger(\*)



d) Adjustable OFF Delay Pulse with Leading Edge Trigger

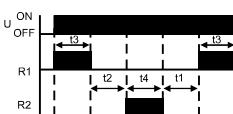


e) Resettable Adjustable OFF Delay Pulse with Leading Edge Trigger(\*)

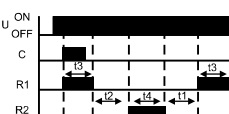


### Right-Left Switcher(with Adjustable Time)

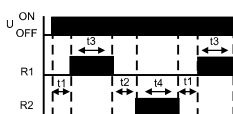
a) ON Start



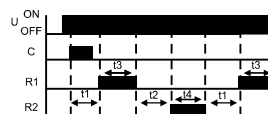
b) ON Start with Leading Edge Trigger



c) OFF Start with Adjustable Delay

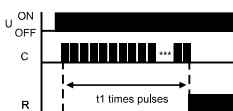


d) OFF Start with Leading Edge Trigger

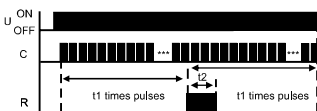


### Counter

a) Up Pulse Counter



b) Up Pulse CPunter with Adjustable Pulse Output

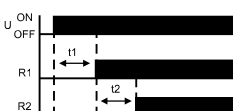


c) Down Time Counter with Leading Edge Trigger

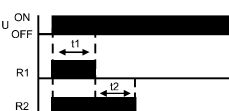


### 2 Steps ON and OFF Delay/ Start-Stop

a) 2 Steps ON Delay



b) 2 Steps OFF Delay



c) Start-Stop Leading Edge Trigger

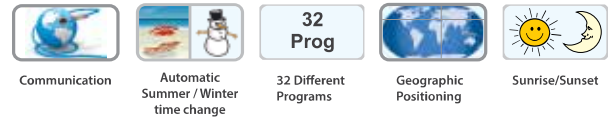


\*MCB-200 contains only the functions marked with (\*) under Main Functions

## Astronomical Time Relays



## DTR Series



- Sunset, Sunrise Auto-Adjustment
- Automatic Switch To Summer Time
- 24/7 Programming By City Name Or Geographical Coordinate
- 15 Or 32 Program Numbers And Seconds Precision
- Modbus RS-485 Communication (DTR-20S/TS)
- Battery Level Indicator
- Display Illumination
- Password Protection
- Vacation Mode

## DTR-PROG Software

DTR-PROG Setting Software enables all settings made via DTR devices to be made easily and quickly in the computer environment. These settings are loaded into DTR-IR-PROG devices, enabling easy programming of DTRs. DTR-IR-PROG is non-contact with IR (Infrared Ray) and DTR-PROG performs the programming process by attaching to the device thanks to the PROG module.

With ENTES DTR Series  
uninterrupted efficiency is  
by the side of you...



### Benefit

ENTES DTR Series is designed to control your devices based on user-set time or automatically calculated sunrise/sunset



### Application

DTR Series Astronomical Time Relays provide a beneficial solution for applications such as lighting, irrigation, agricultural spraying for both commercial and residential applications.

# Astronomical Time Relays / Time Clock



## Product Comparison Chart

Product Name		Data Transfer	Changeable Battery	Ability to Program According to Prayer Times	24 hour Time Setting	Geographic Coordinate Programming (Astronomical)	15 Programs	32 Programs	1 Relay Output (16A)	2 Relay Output (16A)	85-265 VAC	190-260 VAC	DIN2 Rail Mounting
DTR-10	Astronomical Time Relay		●		●	●	●			●	●		●
DTR-10t	Astronomical Time Relay		●		●	●	●		●		●		●
DTR-20	Astronomical Time Relay, External Memory	PROG			●	●		●		●		●	●
DTR-20S	Astronomical Time Relay (Double Contact)	RS-485	●		●	●		●		●	●		●
DTR-20TS	Astronomical Time Relay (with Communication)	RS-485	●		●	●		●	●		●		●
DTR-20M	Astronomical Time Relay, IR Programming	IR			●	●		●		●		●	●
DTR-25	Astronomical Time Relay			●	●	●		●		●		●	●
<b>Programmers</b>													
DTR-PROG	Programmer (for DTR-20)												
DTR-IR-PROG	Infrared Programmer (for DTR-20M)												

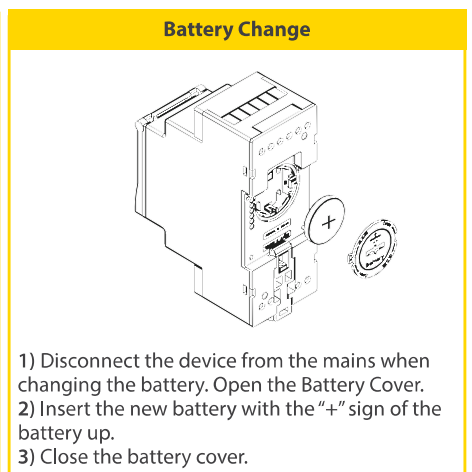
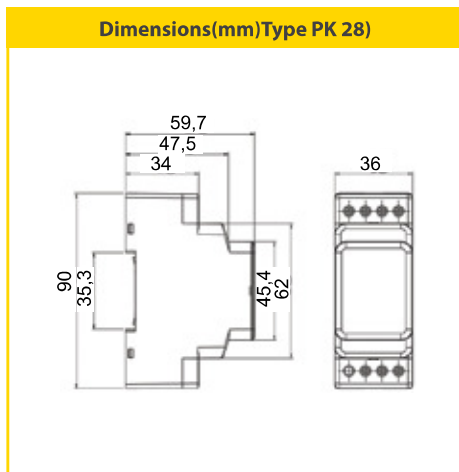
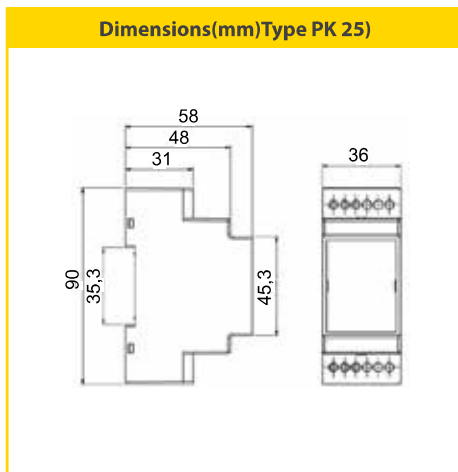
DTR-10/10t: DTR-10/10t: Astronomical Time Relay

DTR-20: DTR-20: Astronomical Time Relay (External Memory)

DTR-20M: DTR-20M: Astronomical Time Relay (IR Programming)

DTR-25: DTR-25: Astronomical Time Relay (Calculating Prayer Hours)

DTR-20S/DTR-20TS: DTR-20S/DTR-20TS: Astronomical Time Relay (Double Contact/Communication)



Programmable Time Clocks



# MCB-50/50T

## MCB-A

**MCB-50/50T:** It controls the daily and weekly operation of the devices with its user-friendly menu and 24/7 precise programming.

**MCB-A:** It controls the daily operation of electrical appliances with each ratchet gear corresponding to a time of 15 minutes.



### Product Comparison Chart

Product Model	Product Description	Daily Programming (24 hours)	Weekly Programming	Number of Programs	Minimum Switching Time	Reserve Time	1 Relay Output	2 Relay Output	230 VAC	DIN I	DIN II
<b>MCB-A</b>	Analog Time Clock	●			15 min.	100 h	●		●	●	
<b>MCB-50T</b>	Digital Time Clock	●	●	32	1 sec.	●	●	●			●
<b>MCB-50</b>	Digital Time Clock	●	●	32	1 sec.	●		●	●		●

## “Maximum comfort minimum energy with DTR series astronomic time relays!”

Interchangeable Battery

24/7 Programming by City Name and Geographical Coordinate



Password Protection

Modbus RS-45 Communication

Remote Monitoring&Control

## Liquid Level Control Relays



# SSRC Series

SSRC Series Liquid Level Control Relays are used to control liquid levels in liquid tanks in water wells and industrial facilities. Sensitivity (resistance / impedance between electrodes) can be adjusted between 5-50 kΩ or 5-100 kΩ for different liquids.



### Product Comparison Chart

Product Name		5-50 kΩ Adjustable	5-100 kΩ Adjustable	Small Electrode	Big Electrode	8 Pin Socket	230 VAC	DIN2 Rail Mounting	Socket Mounting
SSRC-04	Liquid Level Control Relay	●					●	●	
SSRC-04P	Liquid Level Control Relay (8 Pins)		●				●		●
LLS-01	Liquid Level Electrode			●					
LLS-02	Liquid Level Electrode				●				
PGS-108	SSRC-04P Socket					●			

Liquid Level Electrodes cannot be used with flammable, corrosive liquids and foodstuffs. The liquids whose level is to be controlled must have the property of conducting electricity. olması gerekmektedir.

## Socket Mounting, Innovative Liquid Level Control Solutions...



### Benefit

Liquid Level Relays in storage areas ensure the liquid level remain within the specified range to prevent any damage.



### Application

ENTES Liquid Level Control Relays are ideal for industrial and agricultural projects aim an uninterrupted continuity in production processes.

Photocell Relays

# FG Series



FG Series Photocell Relays control the lighting systems according to the ambient light level with the lux setting on them.

## Product Comparison Chart

Product Name		1-3 Lux Adjusted	1-10 Lux Adjusted	Hand Operated	Fuse Protection	Triac Output	Relay Output	Sensor	190-260 VAC	DIN2 Box
FG-4	Photocell Relay	●					●		●	●
FG-4A	Photocell Relay		●				●		●	
FG-4R	Photocell Relay		●	●	●		●		●	
FG-4T	Photocell Relay (Triac output)		●	●	●	●			●	
FG-GÖZ	Photocell Relay							●		

With **ENTES FG Series**,  
Correct Illumination Level is  
under your control...



### Benefit

ENTES FG Series Photocell Relays are designed to activate and deactivate lighting or other systems based on required illumination level.



### Application

ENTES FG Series Photocell Relays are ideal solutions for controlling lighting or other systems in all industrial or residential applications.

Power Supplies



# PS Series

PS Series Power Supplies provide safe DC output voltage for systems with its wide supply (AC/DC voltage range) and adjustable output voltage.



## Product Comparison Chart

Product Name		Universal Input Voltage 85-265 VAC	110-350 VDC	1A Output Current	1.5A Output Current	3A Output Current	5A Output Current	Contact Output	Parallel/Serial Connection	LED Display	Adjustable Output Voltage	Under/High Voltage Supply Protection	Overload Protection	Thermal Protection	Output Short Circuit Protection	DIN 3 Rail Mounting	DIN 4 Rail Mounting
PS-242	24W-1A-24 VDC	●	●						●	●			●	●	●	●	
PS-361	36W-3A-12 VDC	●				●			●	●		●	●	●	●		●
PS-362	36W-1,5A-24 VDC	●		●				●	●	●	●	●	●	●	●		●
PS-722	72W-3A-24 VDC	●							●	●	●	●	●	●	●		●
PS-1202	120W-5A-24 VDC	●				●	●		●	●	●	●	●	●	●		

**Reliable DC Output Voltage with superior ENTES Quality...**



### Benefit

ENTES PS Series Power Supply provides reliable DC power.



### Usage Areas

ENTES PS Series are ideal for Industrial and commercial building projects require stable DC power.

## Power Supplies

### PS-242 Power Supply 24W-1A-24 VDC

- Wide Supply Voltage (85-265 VAC/ 110-350 VDC)
- 24 VDC Output Voltage
- 1A Nominal Output Current
- High Efficiency Operation with >82%
- Overload, Overheat and Output Short Circuit Protection
- Class 2 Protection Not Requiring Ground Connection

### PS-361 Power Supply 36W-3A-12 VDC

- Wide Supply Voltage(85-265VAC/ 110-350VDC)
- 12 VDC Output Voltage
- 3A Nominal Output Current
- High Efficiency Operation with >85%
- Auto-Reset feature to protect itself and the system by automatically shutting down in cases such as overload, overheating, low/high input or output voltages short circuit, automatic activation when the fault disappears
- Class 2 Protection Not Requiring Ground Connection

### PS-362 Power Supply 36W-1,5A-24 VDC

- Wide Supply Voltage(85-265VAC/ 110-350VDC)
- Ability to work in the desired voltage range with adjustable output voltage (21.6-27.6 VDC)
- 1,5A Nominal Output Current
- High Efficiency Operation with >85%
- Auto-Reset feature to protect itself and the system by automatically shutting down in cases such as overload, overheating, low/high input or output voltages short circuit, automatic activation when the fault disappears
- Remote monitoring of the power source with 1 NC contact (10A -250 VAC / 5A 30 VDC), integrating it into the automation system
- Class 2 Protection Not Requiring Ground Connection

### PS-722 Power Supply 72W-3A-24 VDC

- Wide Supply Voltage(85-265VAC/ 110-350VDC)
- Ability to work in the desired voltage range with adjustable output voltage (21.6-27.6 VDC)
- 3A Nominal Output Current
- High Efficiency Operation with >87%
- Auto-Reset feature to protect itself and the system by automatically shutting down in cases such as overload, overheating, low/high input or output voltages short circuit, automatic activation when the fault disappears
- Class 2 Protection Not Requiring Ground Connection
- In case of thermal protection, after the device cools down, the power supply must be disconnected and reconnected.

### PS-1202 Power Supply 120W-5A-24 VDC

- Wide Supply Voltage(85-265VAC/ 110-350VDC)
- Ability to work in the desired voltage range with adjustable output voltage (20.7-27.6 VDC)
- 5A Nominal Output Current
- Auto-Reset feature to protect itself and the system by automatically shutting down in cases such as overload, overheating, low/high input or output voltages short circuit, automatic activation when the fault disappears
- It occupies less space with its slip-type design in panels where mounting space is important.
- Class 2 Protection Not Requiring Ground Connection

## Function Charts

### MOTOR (PHASE) PROTECTION RELAYS

No Phase + Constant Asymmetry		MKC-01	MKS-01	
No Phase + Constant Asymmetry + Phase Sequence	MKC-03	MKS-03	MKC-04 / 04-U69	
No Phase + Constant Asymmetry + Phase Sequence + PTC	MKC-03P			
No Phase + Adjust. Asymmetry + Phase Sequence + Adjustment. ON and/or OFF Delay	MKC-05	MKC-06	MKC-30	
No Phase + Adjust. Asymmetry + Phase Sequence + Adjustment. ON and OFF Delay + PTC	MKC-05P	MKC-06P		
No Phase + Phase Sequence	FR-02			
PTC	PT-01			

### VOLTAGE PROTECTION RELAYS

Low Voltage + Adjustable ON and OFF Delay	DGRC-01			
Low Voltage + Adjustable ON Delay	MCC-1D	MCC-3D		
Overvoltage + Adjustable ON and OFF Delay	GKRC-01			
Under Voltage + Over Voltage + Adjustable. ON and OFF Delay	GKRC-02	GKRC-03	GKRC-M2	
No Phase+Undervoltage+Overvoltage+Adjustable Tripping and OFF-ON Delay+Phase Sequence	GKRC-02F	GKRC-02FA	GKRC-03F	GKRC-30F

### CURRENT PROTECTION RELAYS

Under Current	AKC-01D	AKC-03D		
Over Current	AKC-01A	AKC-03A		

### TIME RELAYS

ON Delay	MCB-30	MCB-60		
ON Delay +OFF Delay	MCB-7	MCB-8		
Open Flasher	EF-10	EF-10T		
ON Delay +OFF Delay+ON Flasher +OFF Flasher	MCB-9			
ON Delay +OFF Delay+ON Flasher +OFF Flasher+ Down Counter	ERTC-01			
ON Delay +OFF Delay+ON Delay with Control Input + OFF Delay with Control Input + Triggered	MCB-15			
ON Delay +OFF Delay+ON Delay with Control Input + OFF Delay with Control Input + Triggered+ Symmetric Flasher	MCB-20	MCB-25		
Single Shot Leading and Trailing Edge with Control Input ON Delay with Control Input Leading Edge Delay with Control Input Trailing Edge	MCB-25			
Power OFF Delay	DG-10	DG-60		
Star- Delta	SER-YU			
Right-Left	SSR-2X			
Dishwasher Relay	ERB-50			

### ASTRONOMIC TIME RELAYS

Astronomic+ 15 Programmes	DTR-10	DTR-10t		
Astronomic+ 32 Programmes	DTR-20	DTR-20S/TS	DTR-20M	DTR-25



### Control Transformers



## ENT.PST Series

ENTES Control Transformers ensure safe operation of devices with 24 VAC output voltage. In addition to 230V or 400V constant input options, alternative input voltage (400; 230+15-15) options are also available.

Control Transformers are designed for continuous operation at 50°C ambient temperature. All ENTES Control Transformers are **CE** marked and compatible with EN standards.

### SPECIFICATIONS

- Compatible with TS.EN 61558-2-2
- Air-gapped sheet welding minimizing the body grounding resistance
- Vacuum impregnated varnish method, which increases efficiency by reducing heat losses, provides protection against humidity and quiet operation.
- Ability to maintain the nominal output value up to 50°C ambient temperature
- Iron core with high magnetic permeability
- High quality copper winding Class 1 transformer
- Minimum primary-secondary isolation voltage values: 2200 VAC for 400V transformers, 1800 VAC for 230V transformers

## Reliable 24VAC by ENTES Control Transformers...



### Benefit

ENTES Control Transformers are designed to provide secure 24VAC to ensure the safe operation of measuring devices.

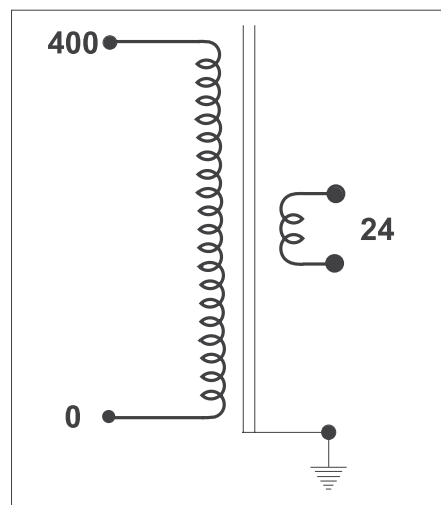
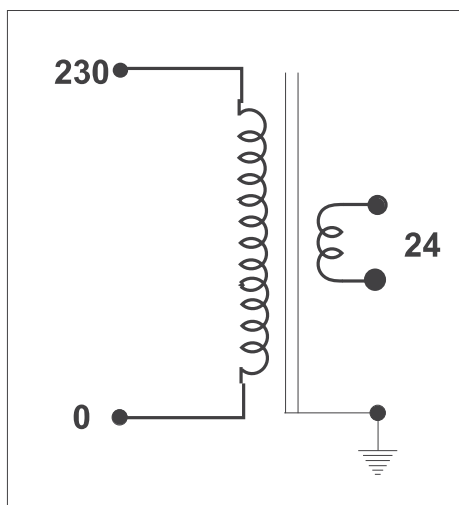


### Application

Any electrical panel requires stable and reliable 24VAC.

ENT.PST. Series

	Nominal Power (VA)(at 50°C)	Short Term Power	Weight(kg)	Terminal Diameter	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	H (mm)
<b>230V / 24V</b>											
ENT.PST.2324.25	25	51	1	4 mm	66	76	80	50	64	80	5*8
ENT.PST.2324.50	50	97	1,5	4 mm	84	76	91	64	64	82	5*8
ENT.PST.2324.100	100	209	1,9	4 mm	84	76	91	64	64	96	6*9
ENT.PST.2324.160	160	338	2,4	4 mm	96	89	99	84	74	100	6*9
ENT.PST.2324.200	200	419	3	4 mm	96	89	99	84	74	100	6*9
ENT.PST.2324.250	250	559	3,4	4 mm	96	102	99	84	87	114	6*9
ENT.PST.2324.320	320	689	4,4	4 mm	120	90	127	90	83	92	6*9
ENT.PST.2324.400	400	961	5,6	4 mm	120	102	127	90	95	106	7*13
ENT.PST.2324.500	500	1260	7,1	4 mm	120	122	127	90	109	126	7*13
ENT.PST.2324.630	630	1520	7,6	10 mm	150	113	141	122	89	120	7*13
<b>400V / 24V</b>											
ENT.PST.4024.25	25	51	1	4 mm	66	76	80	50	64	80	5*8
ENT.PST.4024.50	50	96	1,5	4 mm	84	76	91	64	64	82	5*8
ENT.PST.4024.100	100	218	2	4 mm	84	76	91	64	64	96	6*9
ENT.PST.4024.160	160	344	2,4	4 mm	96	89	99	84	74	100	6*9
ENT.PST.4024.200	200	460	2,9	4 mm	96	89	99	84	74	100	6*9
ENT.PST.4024.250	250	584	3,4	4 mm	96	102	99	84	87	114	6*9
ENT.PST.4024.320	320	749	4,4	4 mm	120	90	127	90	83	92	6*9
ENT.PST.4024.400	400	909	5,5	4 mm	120	102	127	90	95	106	7*13
ENT.PST.4024.500	500	1241	7,1	4 mm	120	122	127	90	109	126	7*13
ENT.PST.4024.630	630	1556	7,6	10 mm	150	113	141	122	89	120	7*13



## ENT.PST. Series

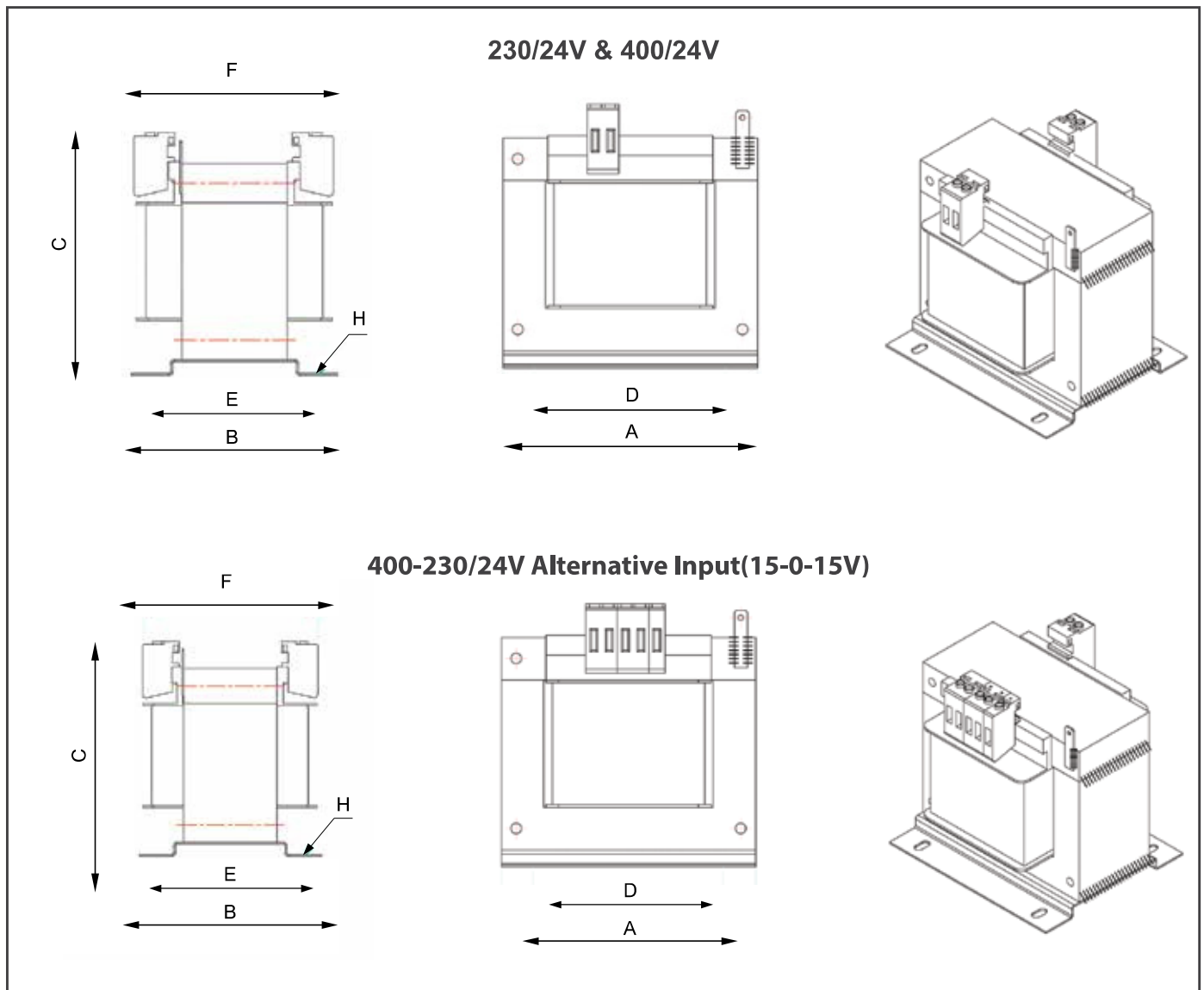
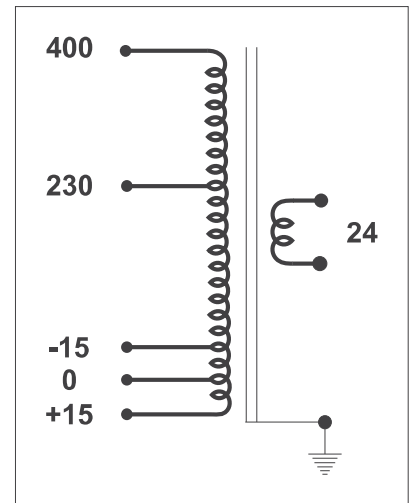
### 400 - 230 / 24 V Alternative Input (15-0-15 V)

	Nominal Power (VA)(at 50°C)	Primary Voltage(V)	Short Term Power	Weight(kg)	Terminal Diameter	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	H (mm)
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#### 400-230/24V

ENT.PST.A4024.25	25	400	51	1	4 mm	68	76	80	50	64	80	5*8
ENT.PST.A4024.50	50	400	97	1,5	4 mm	84	76	91	64	64	82	5*8
ENT.PST.A4024.100	100	400	218	2	4 mm	84	76	91	64	64	96	6*9
ENT.PST.A4024.160	160	400	344	2,4	4 mm	96	89	99	84	74	100	6*9
ENT.PST.A4024.200	200	400	460	2,9	4 mm	96	89	99	84	74	100	6*9
ENT.PST.A4024.250	250	400	584	3,4	4 mm	96	102	99	84	87	114	6*9
ENT.PST.A4024.320	320	400	749	4,4	4 mm	120	90	127	90	83	92	7*13
ENT.PST.A4024.400	400	400	909	5,5	4 mm	120	102	127	90	95	106	7*13
ENT.PST.A4024.500	500	400	1214	7,1	4 mm	120	122	127	90	109	126	7*13
ENT.PST.A4024.630	630	400	1556	7,6	10 mm 4 mm	150	113	141	122	89	120	7*13

#### ENT.PST.A Series



## Isolation Transformer

**ENT.IST Series**

ENTES Isolation Transformers ensure safe operation of devices by isolating the secondary side from the primary voltage. Input and output voltages of isolation transformers are constant (230V or 400V). It is generally used to obtain a neutral point in places where galvanic isolation is required and in networks without a neutral point.

All insulation transformers compatible with **CE** mark and EN standards.

**SPECIFICATIONS**

- Compatible with TS.EN 61558-2-2
- Vacuum impregnated varnish method, which increases efficiency by reducing heat losses, provides protection against humidity and quiet operation.
- Air-gapped sheet welding minimizing the body grounding resistance
- Ability to maintain the nominal output value up to 50°C ambient temperature
- Iron core with high magnetic permeability
- High quality copper winding Class 1 transformer
- High Efficiency

High isolation against to damaging impacts of voltage with ENTES Isolating Transformers...

**Benefit**

ENTES Isolating Transformers are designed to protect equipments against to instantaneous changes on voltage.

**Application**

Preferred by the industrial projects require protection of sensitive and valuable equipment.

## Isolation Transformer

	Nominal Power (VA)(at 50°C)	Short Term Power	Weight(kg)	Terminal Diameter	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	H (mm)
<b>230/230</b>											
ENT.IST.2323.25	25	51	1	4 mm	66	76	80	50	64	80	5*8
ENT.IST.2323.50	50	104	1,5	4 mm	84	76	91	64	64	82	5*8
ENT.IST.2323.100	100	199	2	4 mm	84	76	91	64	64	96	6*9
ENT.IST.2323.160	160	338	2,4	4 mm	96	89	99	84	74	100	6*9
ENT.IST.2323.200	200	428	2,9	4 mm	96	89	99	84	74	100	6*9
ENT.IST.2323.250	250	548	3,4	4 mm	96	102	99	84	87	114	6*9
ENT.IST.2323.320	320	701	4,4	4 mm	120	90	127	90	83	92	6*9
ENT.IST.2323.400	400	959	5,4	4 mm	120	102	127	90	95	106	7*13
ENT.IST.2323.500	500	1259	7,1	4 mm	120	122	127	90	109	126	7*13
ENT.IST.2323.630	630	1493	8,1	4 mm	150	113	141	122	89	102	7*13
<b>400/230</b>											
ENT.IST.4023.25	25	51	1	4 mm	66	76	80	50	64	80	5*8
ENT.IST.4023.50	50	95	1,5	4 mm	84	76	91	64	64	82	5*8
ENT.IST.4023.100	100	216	2	4 mm	84	76	91	64	64	96	6*9
ENT.IST.4023.160	160	330	2,5	4 mm	96	89	99	84	74	100	6*9
ENT.IST.4023.200	200	454	3	4 mm	96	89	99	84	74	100	6*9
ENT.IST.4023.250	250	555	3,6	4 mm	96	102	99	84	87	114	6*9
ENT.IST.4023.320	320	744	4,5	4 mm	120	90	127	90	83	92	6*9
ENT.IST.4023.400	400	942	5,6	4 mm	120	102	127	90	95	106	7*13
ENT.IST.4023.500	500	1174	7,1	4 mm	120	122	127	90	109	126	7*13
ENT.IST.4023.630	630	1555	8,3	4 mm	150	113	141	122	89	102	7*13

