

## Product Catalogue

# VTEKE®

Архангельск (8182)63-90-72  
 Астана (7172)727-132  
 Астрахань (8512)99-46-04  
 Барнаул (3852)73-04-60  
 Белгород (4722)40-23-64  
 Брянск (4832)59-03-52  
 Владивосток (423)249-28-31  
 Волгоград (844)278-03-48  
 Вологда (8172)26-41-59  
 Воронеж (473)204-51-73  
 Екатеринбург (343)384-55-89  
 Иваново (4932)77-34-06

Ижевск (3412)26-03-58  
 Иркутск (395)279-98-46  
 Казань (843)206-01-48  
 Калининград (4012)72-03-81  
 Калуга (4842)92-23-67  
 Кемерово (3842)65-04-62  
 Киров (8332)68-02-04  
 Краснодар (861)203-40-90  
 Красноярск (391)204-63-61  
 Курск (4712)77-13-04  
 Липецк (4742)52-20-81  
 Киргизия (996)312-96-26-47

Магнитогорск (3519)55-03-13  
 Москва (495)268-04-70  
 Мурманск (8152)59-64-93  
 Набережные Челны (8552)20-53-41  
 Нижний Новгород (831)429-08-12  
 Новокузнецк (3843)20-46-81  
 Новосибирск (383)227-86-73  
 Омск (3812)21-46-40  
 Орел (4862)44-53-42  
 Оренбург (3532)37-68-04  
 Пенза (8412)22-31-16  
 Казахстан (772)734-952-31

Пермь (342)205-81-47  
 Ростов-на-Дону (863)308-18-15  
 Рязань (4912)46-61-64  
 Самара (846)206-03-16  
 Санкт-Петербург (812)309-46-40  
 Саратов (845)249-38-78  
 Севастополь (8692)22-31-93  
 Симферополь (3652)67-13-56  
 Смоленск (4812)29-41-54  
 Сочи (862)225-72-31  
 Ставрополь (8652)20-65-13  
 Таджикистан (992)427-82-92-69

Сургут (3462)77-98-35  
 Тверь (4822)63-31-35  
 Томск (3822)98-41-53  
 Тула (4872)74-02-29  
 Тюмень (3452)66-21-18  
 Ульяновск (8422)24-23-59  
 Уфа (347)229-48-12  
 Хабаровск (4212)92-98-04  
 Челябинск (351)202-03-61  
 Череповец (8202)49-02-64  
 Ярославль (4852)69-52-93

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Current Transformers

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Meters

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Relays

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Transformers and Battery Chargers

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Accessories

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# Current Transformers

- Primary currents from 5A to 6300A
- Secondary current 1A or 5A
- Accuracy classes 0.1, 0.2S, 0.2, 0.5S, 0.5, 1.0, 3.0 or 5.0.
- Hole Sizes until 125mm x 70mm
- Fixing apparatuses are available for DIN rail and on surface fixing.

## Current Transformer Coding Map

XX-XXX-XXXX-X-X-XX

SERIES CODE	HOLE SIZE (mm)	PRIMARY (A)	SECONDARY (A)	CLASS		BURDEN (VA)	
				CODE	CLASS	CODE	VA
CK	20	5	1	1	1	01	1
TK	30S	.	5	2	0.5	02	1.5
DK	30	.		3	0.5S	03	2.5
BK	40	.		4	0.1	04	3.75
	60	6300		5	0.1S	05	5
	80			6	0.2	06	7.5
	100			7	0.2S	07	10
	120			8	5	08	12.5
	125			9	3	09	15
						10	20
						11	25
					12	30	
					13	40	
					14	50	
					15	60	

**Order Example: TK30 600/5A, CL.1.0, 10VA**  
**Code: TK306005107**

Loss in copper wires between instrument and CT for 5A secondary

Wire section in mm <sup>2</sup>	Loss in VA (for both wires)					
	1m	2m	4m	6m	8m	10m
1.5	0.6	1.19	2.38	3.57	4.76	5.95
2.5	0.36	0.71	1.43	2.14	2.86	3.57
4	0.22	0.45	0.89	1.34	1.79	2.23
6	0.15	0.3	0.60	1.89	1.19	1.49
10	0.09	0.18	0.36	0.54	0.71	0.89

# CURRENT TRANSFORMERS

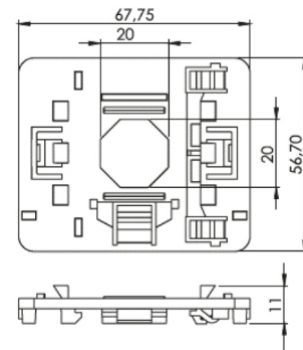
## GENERAL FEATURES

Standards	IEC 60044-1, IEC 61869-2, VDE 0414-1, DIN57414, BS3938, BS7626, EN 61869-2
CT Ratio	From 5A to 6300A
Burden	From 1VA to 40VA
Accuracy class	Class 0.1, Class 0.2S, Class 0.2, Class 0.5S, Class 0.5, Class 1.0, Class 3.0, Class 5
Terminal	Integral terminal cover, high cross section brass terminal for extra safety.
Case	Non-flammable self-extinguishing polycarbonate or ABS
Mounting	DIN Rail or direct surface mounting
Ambient temperature (operation)	-25 C ~ +85 C

## GENERAL TECHNICAL DATA

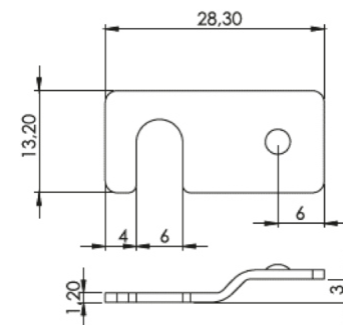
Primary Conductor Width	Until 125 mm
Round Conductor Dia.	Until $\varnothing$ 85 mm
Number of Input	1
Thermal Rated Short-Time current	Until $I_{th} = 60kA$
Rated Frequency	50 Hz ... 60 Hz
Surge Current Limitation Factor	FS 5
Test Voltage	3 kV for 1 min
Max System Voltage	0.72 kV

## DIN rail mounting clip



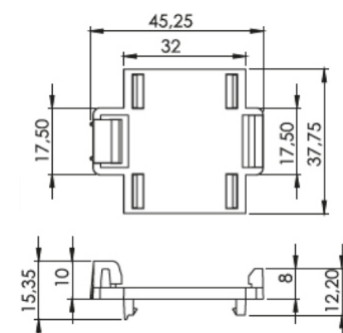
**KK0001**

## Metal feet



**KK0002**

## DIN rail mini mounting clip



**KK0003**

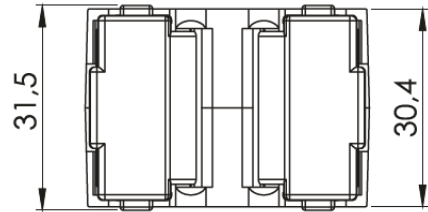
These are general series specifications, therefore specifications may change without notice.  
For specific product datasheets, please contact us.



## CK20 SERIES CURRENT TRANSFORMER

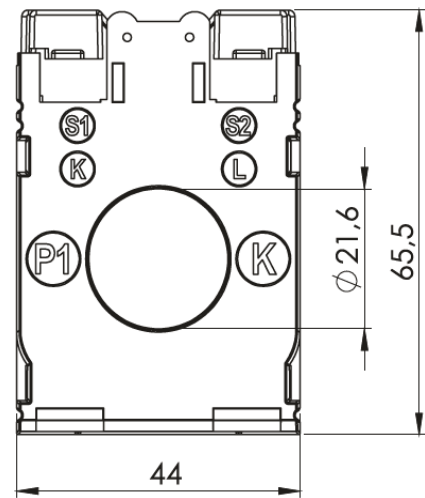
### FEATURES

CT Ratio	From 40A to 300A
Burden	Up to 5VA
Accuracy class	Class 0.5, Class 1.0, Class 3.0
Terminal	Integral terminal cover, high cross section brass terminal for extra safety.
Case	Non-flammable self-extinguishing polycarbonate
Mounting	DIN Rail (KK0003)



### TECHNICAL DATA

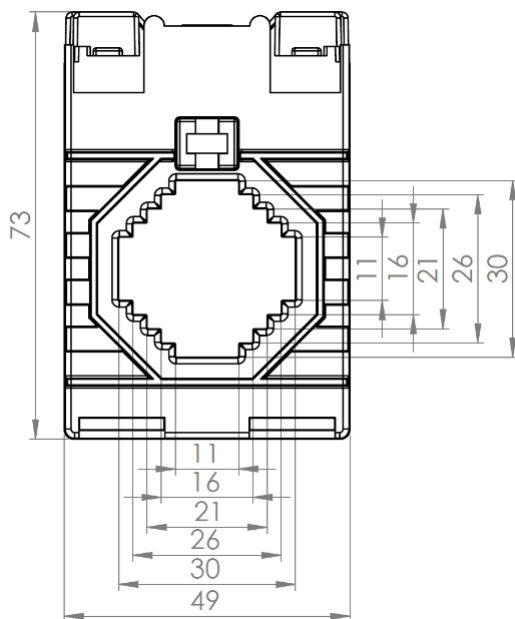
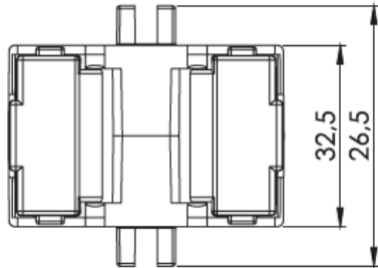
Round conductor	∅ 20 mm
Thermal rated short-time current	$I_{th} = 60 * I_n$
Thermal rated continuous current	$I_d = 1.2 * I_n$



### RANGE

CLASS		3	1	0.5
SERIES	CURRENT RATIO			
CK20	40/5	1	-	-
	50/5	1	-	-
	60/5	1	1	-
	75/5	1.5	1.5	-
	80/5	-	1.5	-
	100/5	-	1.5	1.5
	125/5	-	2.5	1.5
	150/5	-	2.5	1.5
	160/5	-	2.5	1.5
	200/5	-	2.5	-
	250/5	-	2.5	-
	300/5	-	2.5	-

# TK30S SERIES CURRENT TRANSFORMER



## FEATURES

CT Ratio	From 40A to 600A
Rated Power	Up to 5VA
Accuracy class	0.5, 1.0, 3.0, 5.0
Terminal	Integral terminal cover, high cross section brass terminal for extra safety
Case	Non-flammable self-extinguishing ABS
Mounting	KK0002

## TECHNICAL DATA

Primary conductor	30 x 10 mm
Round conductor	Ø 26 mm
Thermal rated short-time current	$I_{th} = 60 * I_n$
Thermal rated continuous current	$I_d = 1 * I_n$

## RANGE

CLASS		5	3	1	0.5
SERIES	CURRENT RATIO	BURDEN (VA)			
TK30S	40/5	1	-	-	-
	50/5	1	-	-	-
	60/5	1.5	1.5	-	-
	75/5	-	1.5	-	-
	80/5	-	-	1	-
	100/5	-	-	1,5	-
	125/5	-	-	1,5	-
	150/5	-	-	2,5	2,5
	160/5	-	-	2,5	2,5
	200/5	-	-	2,5	2,5
	250/5	-	-	2,5	2,5
	300/5	-	-	2,5	2,5
	400/5	-	-	3,75	2,5
	500/5	-	-	3,75	2,5
	600/5	-	-	3,75	2,5



## TK30 SERIES CURRENT TRANSFORMER

### FEATURES

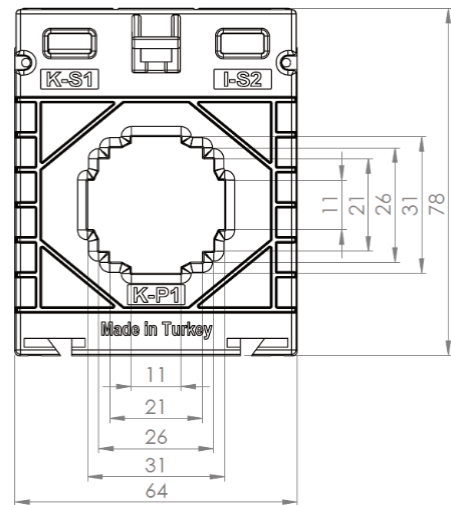
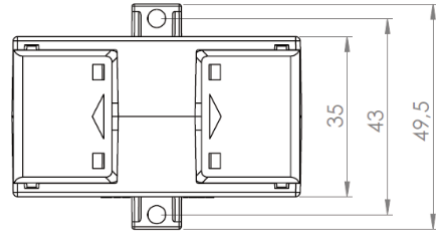
CT Ratio	From 40A to 600A
Rated Power	Up to 10VA
Accuracy class	Class 0.5S, Class 0.5, Class 1.0, Class 3.0
Terminal	Integral terminal cover, high cross section brass terminal for extra safety
Case	Non-flammable self-extinguishing ABS
Mounting	KK0001 or KK0002

### TECHNICAL DATA

Primary conductor	30 x 10 mm
Round conductor	Ø 26 mm
Thermal rated short-time current	$I_{th} = 60 * I_n$
Thermal rated continuous current	$I_d = 1.2 * I_n$

### RANGE

CLASS		3	1	0.5	0.5S
SERIES	CURRENT RATIO	BURDEN (VA)			
TK30	40/5	1	-	-	-
	50/5	1	1	-	-
	60/5	2.5	1	-	-
	75/5	1	1	-	-
	80/5	1,5	1,5	-	-
	100/5	1,5	1,5	1	-
	125/5	2,5	2,5	1	-
	150/5	-	2,5	2,5	1
	160/5	-	2,5	2,5	1.5
	200/5	-	3,75	3,75	1.5
	250/5	-	5	5	2.5
	300/5	-	5	5	3.75
	400/5	-	5	5	5
	500/5	-	7,5	5	5
600/5	-	10	10	10	



# TK30A SERIES CURRENT TRANSFORMER

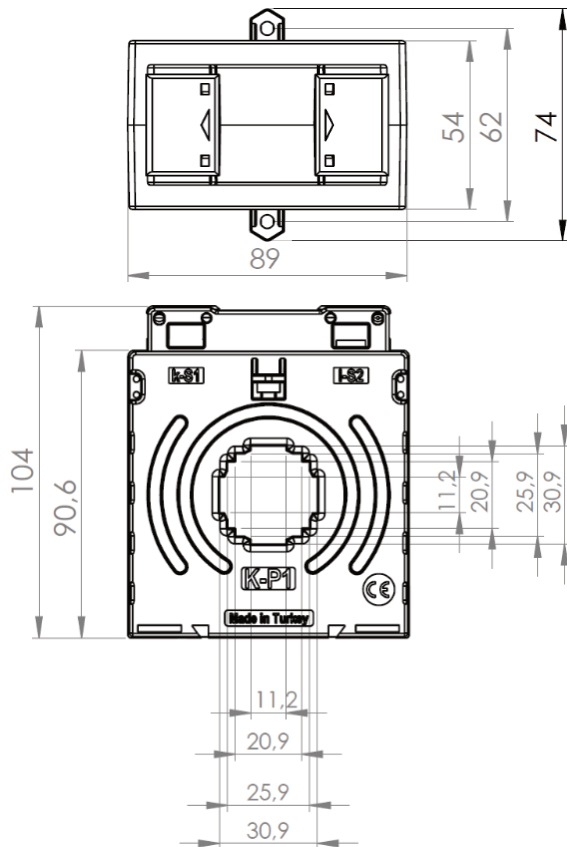


## FEATURES

CT Ratio	From 25A to 600A
Rated Power	Up to 30VA
Accuracy class	Class 0.1, 0.2S, 0.2, Class 0.5S, Class 0.5, Class 1.0,
Terminal	Integral terminal cover, high cross section brass terminal for extra safety
Case	Non-flammable self-extinguishing ABS
Mounting	KK0001 or KK0002

## TECHNICAL DATA

Primary conductor	30 x 10 mm
Round conductor	Ø 26 mm
Thermal rated short-time current	$I_{th} = 60 * I_n$
Thermal rated continuous current	$I_d = 1.2 * I_n$



## RANGE

CLASS		1	0.5	0.5S	0.2	0.2S	0.1
SERIES	CURRENT RATIO	BURDEN (VA)					
TK30A	25/5	1	-	-	-	-	-
	30/5	1	-	-	-	-	-
	40/5	1.5	1.5	1	-	-	-
	50/5	2.5	2.5	2.5	-	-	-
	60/5	3.75	3.75	2.5	1	-	-
	75/5	5	5	5	2.5	1	-
	80/5	5	5	5	2.5	1.5	-
	100/5	7.5	7.5	7.5	5	5	1.5
	125/5	7.5	7.5	7.5	5	5	1.5
	150/5	10	10	10	10	5	2.5
	160/5	12.5	12.5	12.5	10	10	5
	200/5	15	15	15	15	15	10
	250/5	20	20	20	20	20	15
	300/5	25	25	25	25	25	25
	400/5	25	25	25	25	25	25
500/5	30	30	30	30	30	30	
600/5	30	30	30	30	30	30	

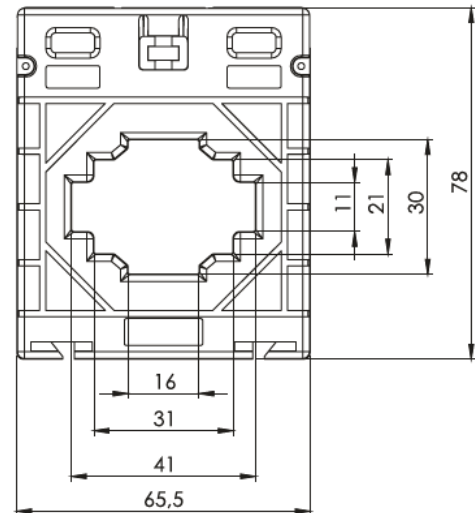
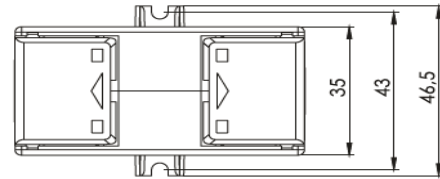




## TK40 SERIES CURRENT TRANSFORMER

### FEATURES

CT Ratio	From 200A to 800A
Rated Power	Up to 10VA
Accuracy class	Class 0.5S, Class 0.5, Class 1.0
Case	Non-flammable self-extinguishing ABS
Mounting	KK0001 or KK0002



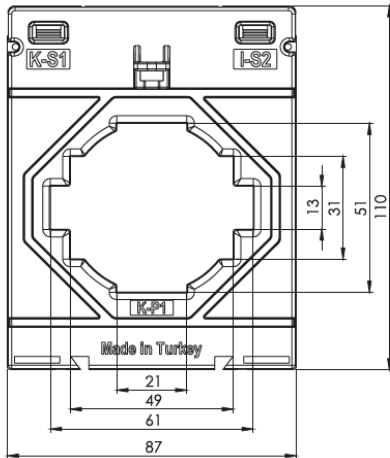
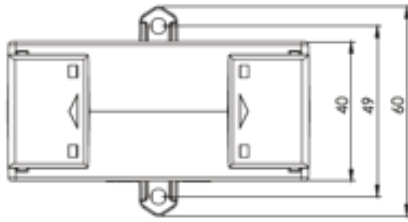
### TECHNICAL DATA

Primary conductor	40 x 10 mm
Round conductor	∅ 30 mm
Thermal rated short-time current	$I_{th} = 60 * I_n$
Thermal rated continuous current	$I_d = 1 * I_n$

### RANGE

CLASS		1	0.5	0.5S	0.2	0.2S
SERIES	CURRENT RATIO	BURDEN (VA)				
TK40	200/5	2.5	2.5	-	-	-
	250/5	2.5	2.5	-	-	-
	300/5	3.75	2.5	1.5	-	-
	400/5	5	5	5	-	-
	500/5	7.5	5	5	5	-
	600/5	7.5	10	7.5	7.5	7.5
	800/5	10	10	10	10	7.5

# TK60 SERIES CURRENT TRANSFORMER



## FEATURES

CT Ratio	From 600A to 1250A
Rated Power	Up to 30VA
Accuracy class	Class 0.1, 0.2S, 0.2, Class 0.5S, Class 0.5, Class 1.0
Case	Non-flammable self-extinguishing ABS
Mounting	KK0001 or KK0002

## TECHNICAL DATA

Primary conductor	60 x 10 mm
Round conductor	Ø 51 mm
Thermal rated short-time current	$I_{th} = 60 \text{ kA}$
Thermal rated continuous current	$I_d = 1 * I_n$

## RANGE

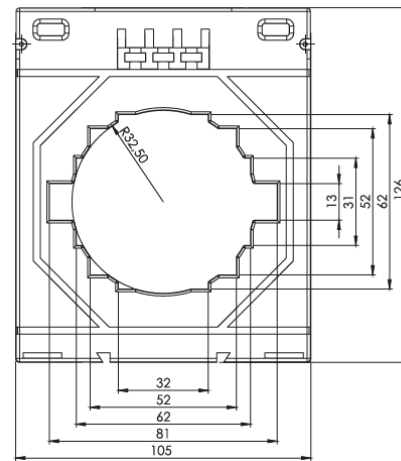
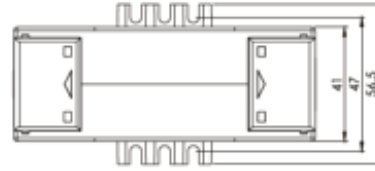
CLASS		1	0.5	0.5S	0.2	0.2S	0.1
SERIES	CURRENT RATIO	BURDEN (VA)					
TK60	600/5	10	7.5	5	5	-	-
	800/5	15	15	10	10	5	-
	1000/5	20	20	15	15	10	-
	1200/5	20	20	20	15	15	15
	1250/5	20	20	20	15	15	15



## TK80 SERIES CURRENT TRANSFORMER

### FEATURES

CT Ratio	From 800A to 2000A
Rated Power	Up to 30VA
Accuracy class	Class 0.1, 0.2S, 0.2, Class 0.5S, Class 0.5, Class 1.0
Mounting	KK0001 or KK0002



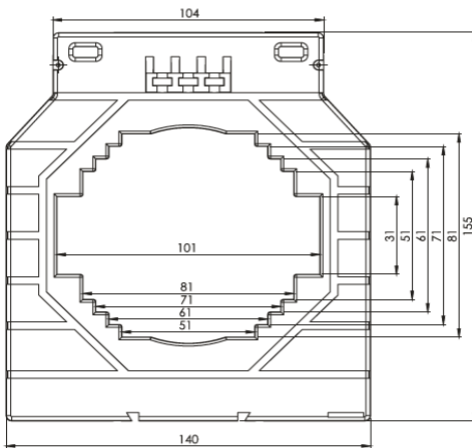
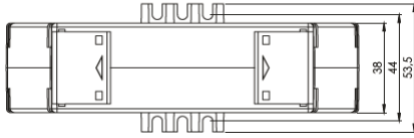
### TECHNICAL DATA

Primary conductor	80 x 10 mm
Round conductor	Ø 65 mm
Thermal rated short-time current	$I_{th} = 60 \text{ kA}$
Thermal rated continuous current	$I_d = 1 * I_n$

### RANGE

CLASS		1	0.5	0.5S	0.2	0.2S	0.1
SERIES	CURRENT RATIO	BURDEN (VA)					
TK80	800/5	20	15	10	7.5	-	-
	1000/5	20	15	15	10	7.5	-
	1200/5	20	20	15	15	7.5	7.5
	1250/5	20	20	15	15	7.5	7.5
	1500/5	20	20	20	20	10	10
	1600/5	25	25	25	20	15	15
	2000/5	30	25	25	20	15	15

# TK100 SERIES CURRENT TRANSFORMER



## FEATURES

CT Ratio	From 1000A to 4000A
Rated Power	Up to 30VA
Accuracy class	Class 0.1, 0.2S, 0.2, Class 0.5S, Class 0.5, Class 1.0
Case	Non-flammable self-extinguishing ABS
Mounting	KK0001 or KK0002

## TECHNICAL DATA

Primary conductor	100x 30mm
Round conductor	Ø 85mm
Thermal rated short-time current	I <sub>th</sub> =60kA
Thermal rated continuous current	I <sub>d</sub> = 1 * I <sub>n</sub>

## RANGE

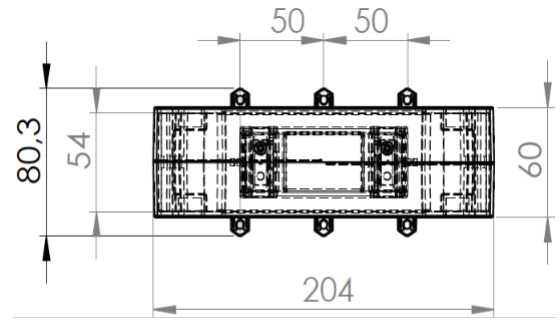
CLASS		1	0.5	0.5S	0.2	0.2S	0.1
SERIES	CURRENT RATIO	BURDEN (VA)					
TK100	1000/5	20	15	5	5	-	-
	1200/5	20	20	10	10	-	-
	1250/5	20	20	15	15	5	-
	1500/5	20	20	20	15	7.5	-
	1600/5	30	25	25	15	7.5	-
	2000/5	30	30	30	30	30	30
	2500/5	40	30	30	30	30	30
	3000/5	40	40	40	30	30	30
	3200/5	40	40	40	30	30	30
	4000/5	40	40	40	30	30	30



## TK120 SERIES CURRENT TRANSFORMER

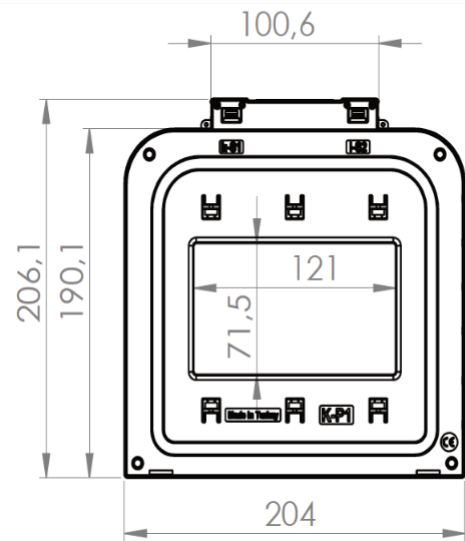
### FEATURES

CT Ratio	From 2000A to 6300A
Rated Power	Up to 60VA
Case	Non-flammable self-extinguishing ABS



### TECHNICAL DATA

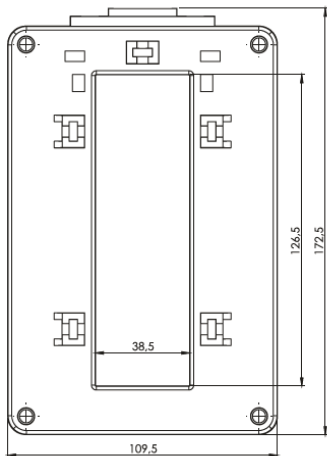
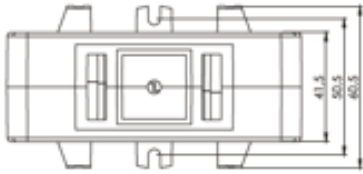
Primary conductor	120 X 70mm
Round conductor	Ø 70mm
Thermal rated short-time current	I <sub>th</sub> =60kA
Thermal rated continuous current	I <sub>d</sub> = 1 * I <sub>n</sub>



### RANGE

CLASS		1	0.5	0.5S	0.2	0.2S	0.1
SERIES	CURRENT RATIO	BURDEN (VA)					
TK120	2000/5	30	30	30	30	30	30
	2500/5	30	30	30	30	30	30
	3000/5	40	40	40	40	40	40
	3200/5	40	40	40	40	40	40
	4000/5	40	40	40	40	40	40
	5000/5	40	40	40	40	40	40
	6000/5	40	40	40	40	40	40
	6300/5	40	40	40	40	40	40

# DK125 SERIES CURRENT TRANSFORMER



## FEATURES

CT Ratio	From 1000A to 4000A
Rated Power	Up to 12.5VA
Accuracy class	Class 0.1, 0.2S, 0.2, 0.5S, 0.5, 1.0
Case	Non-flammable self-extinguishing ABS
Mounting	On busbar

## TECHNICAL DATA

Primary conductor	125 x 39 mm
Thermal rated short-time current	$I_{th} = 60 \text{ kA}$
Thermal rated continuous current	$I_d = 1 * I_n$

## RANGE

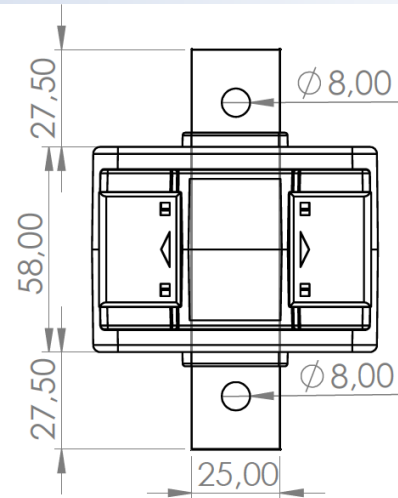
CLASS		1	0.5	0.5S	0.2	0.2S	0.1
SERIES	CURRENT RATIO	BURDEN (VA)					
DK125	1000/5	20	15	5	5	-	-
	1200/5	20	20	10	10	-	-
	1250/5	20	20	15	15	-	-
	1500/5	20	20	20	15	7.5	5
	1600/5	30	25	25	15	7.5	5
	2000/5	30	30	30	30	30	30
	2500/5	30	30	30	30	30	30
	3000/5	30	30	30	30	30	30
	3200/5	30	30	30	30	30	30
	4000/5	30	30	30	30	30	30



## BK SERIES CURRENT TRANSFORMER

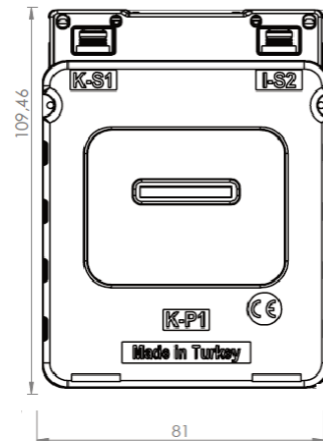
### FEATURES

CT Ratio	From 5A to 250A
Rated Power	Up to 15VA
Accuracy class	Class 0.5S, Class 0.5
Case	Non-flammable self-extinguishing ABS
Mounting	KK0001



### TECHNICAL DATA

CT Ratio	From 5A to 250A
Rated Power	Up to 15VA
Accuracy class	Class 0.5S, Class 0.5
Case	Non-flammable self-extinguishing ABS
Mounting	KK0001



### RANGE 5A secondary

PRIMARY CURRENT (A)	CLASS 0.5		CLASS 0.5S	
	CODE BURDEN 5VA	CODE BURDEN 10VA	CODE BURDEN 5VA	CODE BURDEN 10VA
5	BK55205	BK55207	BK55305	BK55307
10	BK105205	BK105207	BK105305	BK105307
15	BK155205	BK155207	BK155305	BK155307
20	BK205205	BK205207	BK205305	BK205307
25	BK255205	BK255207	BK255305	BK255307
30	BK305205	BK305207	BK305305	BK305307
40	BK405205	BK405207	BK405305	BK405307
50	BK505205	BK505207	BK505305	BK505307
60	BK605205	BK605207	BK605305	BK605307
75	BK755205	BK755207	BK755305	BK755307
80	BK805205	BK805207	BK805305	BK805307
100	BK1005205	BK1005207	BK1005305	BK1005307
125	BK1255205	BK1255207	BK1255305	BK1255307
150	BK1505205	BK1505207	BK1505305	BK1505307
200	BK2005205	BK2005207	BK2005305	BK2005307

# Meters

- *Energy Analyzers*
- *Multimeters*
- *Voltmeters*
- *Ampere meters*
- *Frequency meters*
- *Meter Selector Switches*
- *Power Factor Meter (Relay)*







## ENERGY ANALYZER (EA-C5)

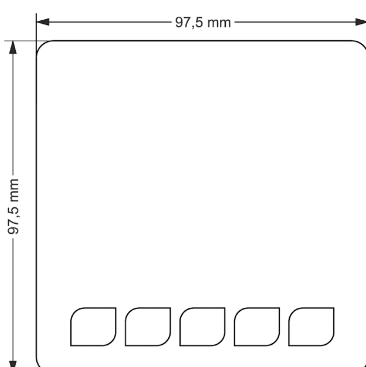
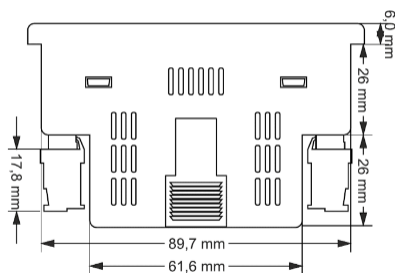
### FEATURES

- Measures up to voltage harmonics 55th [L-N and L-L]
- Measures up to current harmonics 55th.
- 3P3W supports 3P4W connections.
- RS485 Modbus RTU
- 71.5 X 61.5 Custom Design Glass LCD.
- It shows the powers of each phase and total active [P1, P2, P3, PΣ], total reactive [Q1, Q2, Q3, QΣ inductive or capacitive] & total apparent powers [S1, S2, S3, SΣ].
- It shows power factors [PF] and  $\cos\phi$  values of each phases.
- It shows the minimum, maximum, and average values of the phase-to phase and phase-neutral voltages [V].
- It shows the values of each phase and total current [I1,I2,I3, IΣ].
- It shows total import and export active [ΣkWh] energy.
- 2 relay outputs [adjustable], 1 Digital Input.
- Event logs [high voltage, low voltage,

power interruption, voltage irregularity, high current, current irregularity, THDV and THDI limits].

- The date and time can be set.
- Real time clock.
- It shows demands.
- You can delete energies, demand, and event logs.
- The menu is password protected.

Operating Voltage	85V - 300 AC
Operating Frequency	50 / 60 Hz
Operating Power	<10VA
Operating Temperature	-20°C 55°C
Input Voltage	5V - 330V AC
Voltage Measuring Range	1V - 600kV
Input Current	1mA - 5,5A
Current Measuring Range	1mA - 50.000A
Voltage, Current, Accuracy	%±0,2
Active Accuracy	%±0,5
Reactive Accuracy	%± 1
Supported Connection	3P3W, 3P4W
Current Transformer Ratio	1...5000
Voltage Transformer Ratio	1,0....4000
Harmonic Voltage	3 - 55
Harmonic Current	3 - 55
Real Time Clock	>5 year
Communication	RS485 MODBUS RTU
Display	71.5 x 61.5mm Glass LCD
Contact Output	2A / 250V AC [Resistive Load]
Digital Input	9V - 24V DC
Weight	<300Gr
Protection Class	IP40[Front Panel], IP00[Body]
Panel Hole Measurement	91mm x 91mm
Connection Type	Plug-in Terminal Connection
Cable Diameter	1.5mm <sup>2</sup>
Assembly	Assembly to panel front cover
Working Altitude	<2000 meter



**EA-C5**

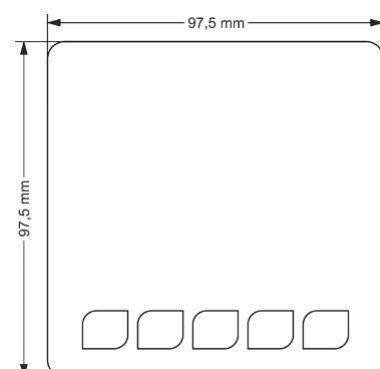
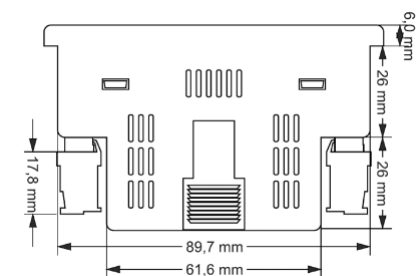
# ENERGY ANALYZER (EA-C1)



Operating Voltage	85V -250V AC
Operating Frequency	50 / 60 Hz
Operating Power	<10VA
Operating Temperature	-20°C 55°C
Voltage Input	5V - 330V AC
Voltage Measurement Range	5V - 330kV
Current Input	10mA - 5,5A
Current Measurement Range	10mA – 5,500A
Voltage Accuracy (L-L)	%±0,5
Voltage Accuracy (L-N)	%±0,5
Current Accuracy	%±0,5
Active Power Accuracy	%± 1
Reactive Power Accuracy	%± 2
THD-V Accuracy	%± 1
THDI- Accuracy	%± 1
Connection Type Supported	3P4W
Current Transformer Ratio	1....1000
Voltage Transformer Ratio	1,0,...999,9
Harmonic Voltage	3- 31
Harmonic Current	3- 31
Neutral Current Measurement	No
Real Time Clock	>5 years
Communication	RS485 MODBUS RTU 1200-38400bps
Stop Bit	1 or 2
Parity	None, Even, Odd
Display	4x4 Digit 14mm LED Display 24 x LEDs
Contact Output	2 x 3A / 250V AC [Resistive Load]
Digital Input	1 X 9V – 24V DC,
Weight	<300Gr.
Protection Class	IP41[Front Panel], IP20[Body]
Panel Hole Dimensions	91mm x 91mm
Connection Type	Plug in Connection
Cable Diameter	1.5mm <sup>2</sup>
Installation	Front-mounted to the panel
Operating Altitude	<2000 meters

## FEATURES

- It measures up to 31rd voltage and current harmonics.
- Supports 3P4W connections
- RS485 Modbus RTU
- 4x4 digit LED Display
- It shows the powers of each phase and total active [P1, P2, P3, PΣ], total reactive [Q1, Q2, Q3, QΣ inductive or capacitive] & total apparent powers [S1, S2, S3, SΣ].
- It shows power factors [PF] and cosΦ values of each phase.
- It shows voltage[V] minimum (min), maximum (max) and mean values of phase-to-neutral and phase-to-phase.
- It shows total current value [I1, I2, I3, IΣ] of each phase.
- It shows total imported & exported active energy [ΣkWh] value.
- It shows total inductive & capacitive reactive energy [ΣkVARh] value.
- Relay Output Adjustable
- It shows voltage & Current unbalance
- It shows demands.
- You can delete the energies and demands.
- Menu is password protected.



**EA-C1**



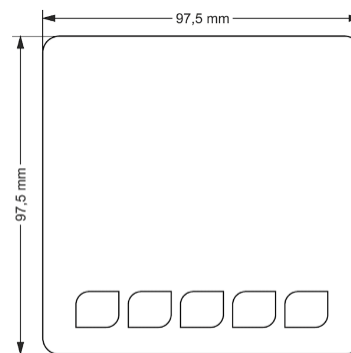
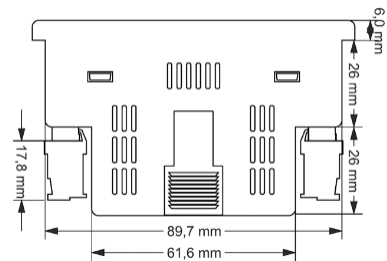
## MULTIMETER WITH ENERGY (VK-M96-C)

### FEATURES

- RS485 Modbus RTU [1200 – 38400bps]
- 71.5 x 61.5 Custom Design Glass LCD
- 3-phase voltage and 3-phase current transformer.
- It shows that V, V2, V3, V12, V23, V31, I1, I2, I3, P1, P2, P3, S1, S2, S3, F1, F2, F3, kWh,  $\Sigma$ kWh
- It shows the minimum, maximum and average values of V1, V2, V3, V12, V23, V31, F1, F2, F3
- It shows the maximum, average and demand values of I1, I2, I3, S1, S2, S3, P1, P2, P3
- Shows phase sequence
- You can delete the demands and active energy records
- Menu is password protected.

### TECHNICAL DATA

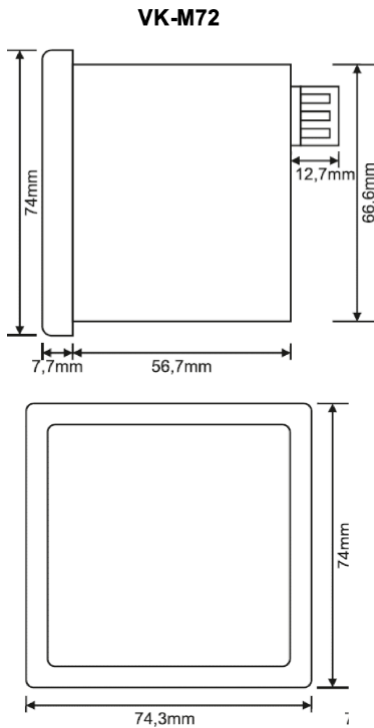
Operating Voltage	85V -240V AC
Operating Frequency	50 / 60 Hz
Operating Power	<10VA
Operating Temperature	-20°C 55°C
Voltage Input	5V - 300V AC
Voltage Measurement Range	5V - 300kV
Current Input	50mA - 5,5A
Current Measurement Range	50mA - 10.000A
Voltage, Current, Accuracy	% $\pm$ 1
Supported Connection	3P4W
Current Transformer Ratio	1....2000
Voltage Transformer Ratio	1....999
Communication	RS485 MODBUS RTU
Display	71.5 x 61.5mm Glass LCD
Output	None
Weight	<300Gr.
Protection Class	IP40(Panel), IP00(Body)
Panel Hole Size	91mm x 91mm
Connection Type	Plug-in Connection
Cable Diameter	1.5mm <sup>2</sup>
Installation	Front panel mounted
Operating Altitude	<2000m.



# DIGITAL MULTIMETER

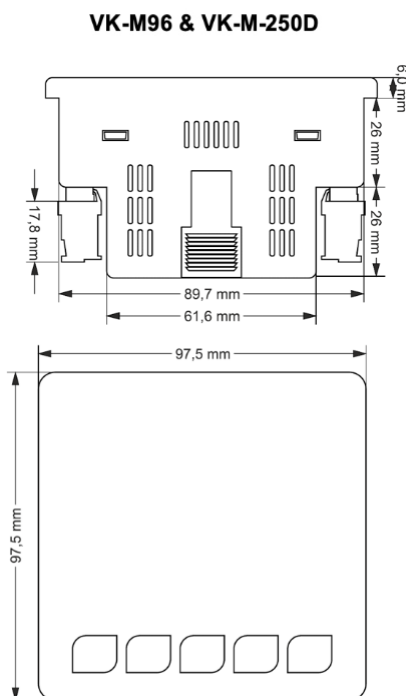


## FEATURES



Measurements	3-P Voltage L-L 3-P Voltage L-N 3-P Ampere 3-P Frequency Phase Sequence Alarm
Phase Squence LED	Glows if phase sequence is reversed.
Accuracy:	±1% (at 10%-100% of the full scale)
Ambient temperature (operation):	-20 C ~ +55 C
Operating Altitude	< 2000 m
Ambient Humidity (operation):	15% - 95%
Display:	3 digit x 6 display & 9 LEDs
Weight:	0.32 kg
Insulation Class (Front Panel):	IP41
Depth :	44.7 mm (low depth)
Panel Hole Size	VK-M96: 91x91mm, VK-M72: 66.6x66.6mm

## TECHNICAL DATA



Operating Voltage (Un):	150-270VAC
Operating Frequency:	45-65Hz
Operating Power:	<6 VA
Voltage Measuring Range (L-N):	1V-300V AC
Voltage Measuring Range (L-L):	1 – 500V AC
Current Transformer Range (.../5A):	5 – 10,000A
Measuring Current Range:	0.05-5.5A (VK-M-250D direct 2A-250A)
Wire Thickness:	2.5 mm <sup>2</sup>

## RANGE

VK-M72	Multimeter 72 x 72
VK-M96	Multimeter 96 x 96
VK-M-250D	Multimeter 96 x 96 (direct connection 250A)



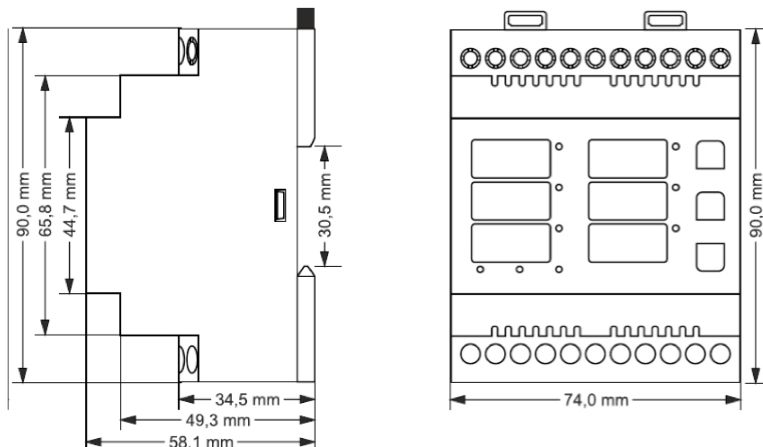
## DIN RAIL DIGITAL MULTIMETER (VK-M-DIN)

### FEATURES

Measurements	3-P Voltage L-L 3-P Voltage L-N 3-P Amper 3-P Frequency Phase Sequence Alarm
Phase Sequence LED	Glows if phase sequence is reversed.
Accuracy:	±1% (at 10%-100% of the full scale)
Ambient temperature (operation):	-20 C ~ +55 C
Operating Altitude	< 2000 m
Ambient Humidity (operation):	15% - 95%
Display:	3 digit x 6 display & 9 LEDs
Weight:	0.32 kg
Insulation Class (Front Panel):	IP41
Depth :	58.1 mm (low depth)
Panel Hole Size	44.7mm X 74mm

### TECHNICAL DATA

Operating Voltage (Un):	150-270VAC
Operating Frequency:	45-65Hz
Operating Power:	<6 VA
Voltage Measuring Range (L-N):	1V-300V AC
Voltage Measuring Range (L-L):	1 – 500V AC
Current Transformer Range (.../5A):	5 – 10,000A
Measuring Current Range:	0.05-5.5A
Wire Thickness:	2.5 mm <sup>2</sup>



# DIGITAL AMMETER



VK-A96



VK-A96-T

## FEATURES

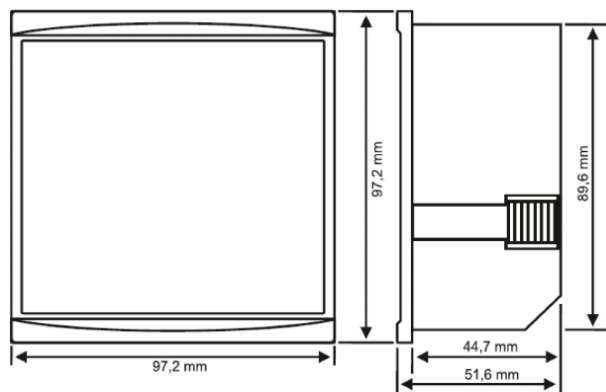
Accuracy:	±1% (at 10%-100% of the full scale)
Ambient temperature (operation):	-20 C ~ +55 C
Operating Altitude	< 2000 m
Ambient Humidity (operation):	15% - 95%
Weight:	0.3 kg max
Insulation Class (Front Panel):	IP41
Depth :	44.7 mm (low depth)
Panel Hole Size	91x91 (VK-A96, VK-A96-T), 68x68(VK-A72)

## TECHNICAL DATA

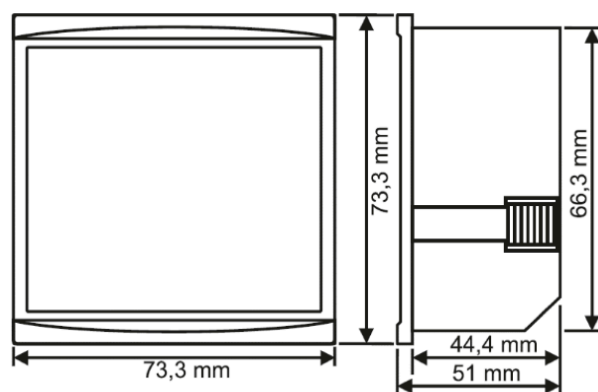
Operating Voltage (Un):	150-260VAC
Operating Frequency:	50 / 60 Hz
Operating Power:	<4 VA
Input Measuring Range:	100mA – 5.5A
Wire Thickness:	1.5 mm <sup>2</sup>

## RANGE

VK-A72	Digital Ammeter 72 x 72
VK-A96	Digital Ammeter 96 x 96
VK-A96-T	Digital Ammeter 3-ph, 96 x 96



VK-A96, VK-A96-T



VK-A72



VK-V72

## DIGITAL VOLTMETER



VK-V72-T  
& VK-V96-T



VK-V72-T2

### FEATURES

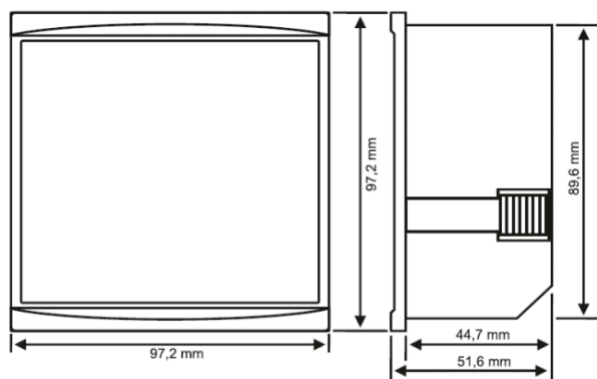
Accuracy:	±1% (at 10%-100% of the full scale)
Ambient temperature (operation):	-20 C ~ +55 C
Operating Altitude	< 2000 m
Ambient Humidity (operation):	15% - 95%
Weight:	0.3 kg max
Insulation Class (Front Panel):	IP41
Depth :	44.7 mm (low depth)
Panel Hole Size	91x91 (VK-V96, VK-V96-T, VK-V96-T2), 68x68(VK-V72, VK-V72-T)

### TECHNICAL DATA

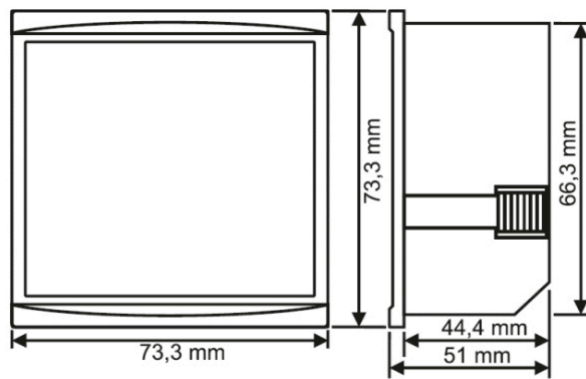
Operating Voltage (Un):	150-260VAC
Operating Frequency:	1-400 Hz
Operating Power:	<4 VA
Input Measuring Range:	0V-300V (other options are available)
Wire Thickness:	1.5 mm <sup>2</sup>

### RANGE

VK-V72	Digital Voltmeter 72 x 72
VK-V96	Digital Voltmeter 96 x 96
VK-V72-T	Digital Voltmeter 3-ph, 72 x 72, Selector
VK-V96-T	Digital Voltmeter 3-ph, 96 x 96, Selector
VK-V96-T2	Digital Voltmeter 3-ph, 96 x 96, 3-display



VK-V96, VK-V96-T, VK-V96-T2



VK-V72, VK-V72-T

# DIGITAL FREQUENCY METER



## FEATURES

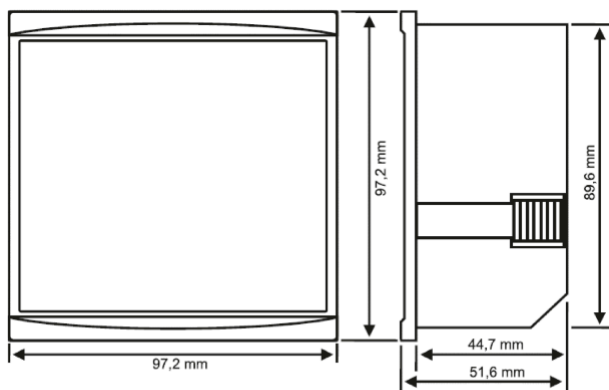
Accuracy:	±1% (at 10%-100% of the full scale)
Ambient temperature (operation):	-20 C ~ +55 C
Operating Altitude	< 2000 m
Ambient Humidity (operation):	15% - 95%
Weight:	0.22 kg max
Insulation Class (Front Panel):	IP41
Depth :	44.7 mm (low depth)
Panel Hole Size	91x91 (VK-F96, 68x68(VK-A72))

## TECHNICAL DATA

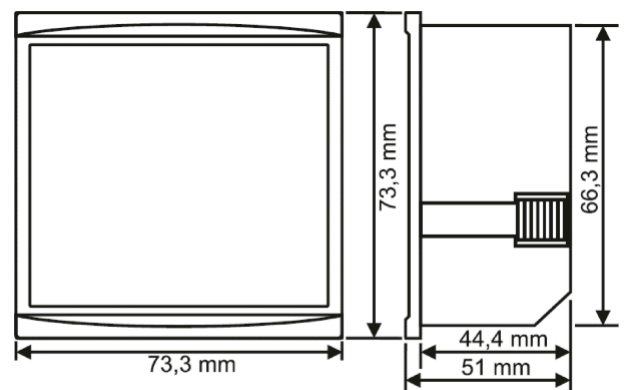
Operating Voltage (Un):	150-260VAC
Operating Frequency:	50 / 60 Hz
Operating Power:	<4 VA
Input Measuring Range:	1-400 Hz
Wire Thickness:	1.5 mm <sup>2</sup>

## RANGE

VK-F72	Digital Frequency 72 x 72
VK-F96	Digital Frequency 96 x 96



VK-F96



VK-F72





## DIGITAL DC AMMETER & VOLTMETER

### FEATURES

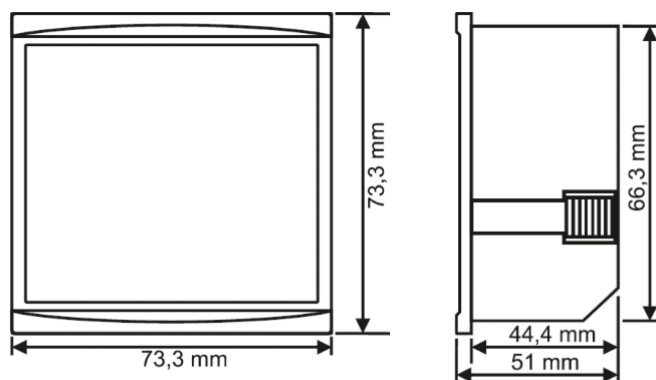
Accuracy:	±2% (DC-V72) ±5% (DC-A72)
Ambient temperature:	-20 C ~ +55 C
Operating Altitude	< 2000 m
Ambient Humidity (operation):	15% - 95%
Weight:	0.22 kg max
Insulation Class (Front Panel):	IP41
Depth :	44.7 mm (low depth)
Panel Hole Size	68x68

### TECHNICAL DATA

Operating Voltage (Un):	150-260VAC
Operating Frequency:	50 / 60 Hz
Operating Power:	<6 VA
Input Measuring Range (DC-V72):	1-300VDC
Input Measuring Range (DC-A72):	0.3mV - 70mV
Shunt Values (DC-A72):	10A- 910A (60mV)
Wire Thickness:	1.5 mm <sup>2</sup>

### RANGE

DC-A72	Digital Ammeter DC 72 x 72
DC-V72	Digital Voltmeter DC 72 x 72



DC-V72, DC-A72

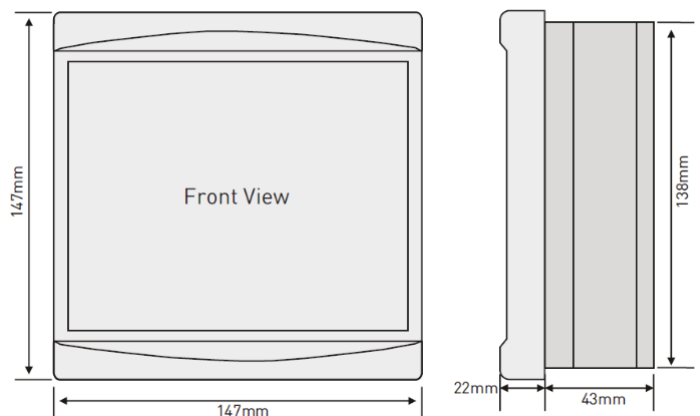
# POWER CORRECTION RELAY (3-PHASE)



Operating Voltage	100V - 300V AC
Operating Frequency	50/60 Hz.
Operating Power	<12VA
Operating Temperature	-20°C +55°C
Storage Temperature	-30°C +80°C
Operating Humidity	<%90
Voltage Measuring Range	5V - 300V AC
Current Measuring Range	5mA - 5,5A
Current Transformer Value	5/5A5000/5A
Voltage, Current Accuracy	%±0.5
Active Power Accuracy	%±1
Reactive Power Accuracy	%±2
Harmonic Voltage Measuring Range	3 - 31
Harmonic Current Measuring Range	3 - 31
Remote Communication Speed	1200, 2400, 4800, 9600, 19200bps
Remote Communication Settings	Databits.:8, Stopbits.:1, Parity:None
Remote Communication Interface	RS485 MODBUS RTU
Display	2.9" (128x64) Graphic LCD and LEDs
Connection Type	Plug-in terminal connection
Contacts	3A / 250V AC Resistive Load
Generator Input Voltage	230V AC 50/60 Hz. (Un %0,8-1,1)
Number of Stages	12 + TCR
Cable Diameter	1.5mm <sup>2</sup> , 2.5mm <sup>2</sup> (Voltage Inputs)
Weight	<900Gr.
Mounting	Mounting on panel front cover
Operating Altitude	<2000meters
Protection Class	IP41 (Front Panel), IP20 (Body)
Panel Hole Sizes	140mm x 140mm

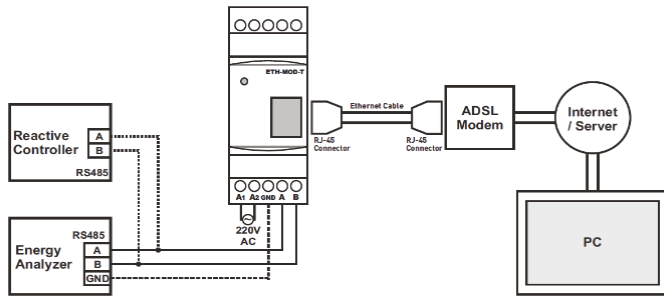
## FEATURES

- Voltage, Harmonic Current/Voltage, Inductive and Capacitive Alarm Output
- 2.9 inch Graphic LCD Screen
- Generator Input and Generator Compensation
- Intervention, Discharge and Settling Times can be Adjustable
- Remote Communication with RS485 (RS485 ModBus RTU)
- Manual Step Value Enterable
- Single, Two, and Three Phase Capacitor and Shunt Reactor can be Connected
- Turkish and English Language Option
- Voltage and Current Harmonics can be Observed Up To 31st Harmonics
- Power Factor and Cosine Values of Each Phase can be Observed
- Capacitive/Active and Inductive/Active Ratios can be Observed
- Total Energies (Import/Export) can be Observed
- THD-V and THD-I values of Each Phase can be Observed
- Creating Power Analysis (20 samples 9999 min.)
- Current and Voltage Values of Each Phase can be Observed
- Password Protected Menu





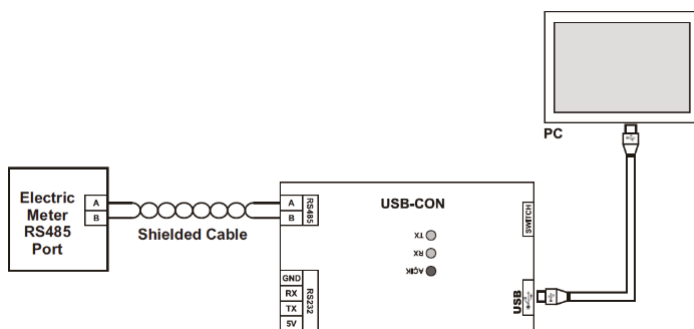
## ETHERNET MODBUS GATEWAY



Code	ETH-MOD
Air ESD Protection	10kV
Impact Resistance	4kV
Operating Power	1VA(System standby), 6VA(System communicat)
Connection Values	<ul style="list-style-type: none"> <li>Max. 19200bps</li> <li>Modbus communicate (Energy Analyzers and Power Factor Controllers)</li> <li>RS485 Connection Interface Max. 32 devices</li> <li>TCP/IP Communication protocol</li> </ul>
Connection Type	Modem with internet connection
Connection Speed	10 / 100 Mbps Ethernet
Operating Voltage	85-300VAC
Case	C5



## RS232/RS485 TO USB CONVERTER



Code	USB-CON
Communication Protocol	RS232, RS485, USB1.0/USB 1.1/USB 2.0 with compatible
Optical Isolation Protection	1.5KV optical isolation protection
Electrostatic discharge	4KV
Connection Values	Databits: 5,6,7,8 Databits Stopbits: 1, 1.5, 2 Stopbits Parity : None, Even, Odd, Space, Mark FIFO: 128 bytes receive buffer, 256 bytes transmit buffer
Connection Type	USB Connector (USB B type female) and terminal connection
Connection Speed	300bps – 230,4 Kbps Baudrate

# ELECTRICAL PANEL AMMETER



## SCALE CHARACTERISTICS

Near linear above 10% off
Nominal full scale value

## FEATURES

Scale interchangeability
Near linear scale
Knife edge pointer
Glass-Polycarbonate housing
Available in 72x72mm & 96x96mm front panel

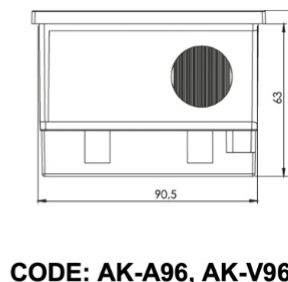
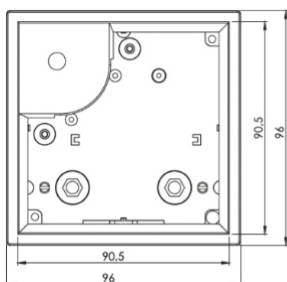
## TECHNICAL DATA

Standards	IEC 60051-2, EN 60051-2
Meter Type	Iron Moving Coil
Accuracy	Class 1.5
Terminal	Integral terminal cover for extra safety
Case	Flame retardant self-extinguishing ABS / polycarbonate
Ambient temperature (operation)	-25 C ~ +85 C
Test voltage	3 kV for 1 min
Max system voltage	0.72 kV
Frequency	45-65 HZ
Pointer Deflection	0 to 90 Degree
Front Panel (mm)	AK-A72: 72x72, AK-A96: 96x96
Control Panel Cut Out (mm)	AK-A72: 66.5 x 66.5 cm , AK-A96: 90.5 x 90.5 cm

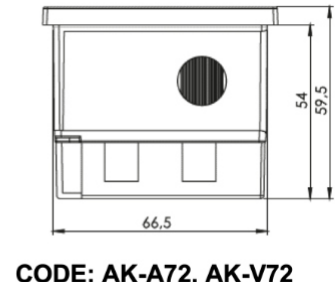
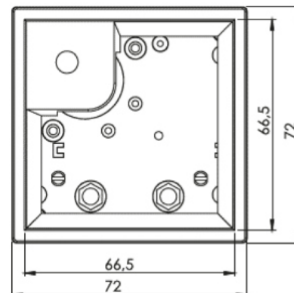
## ANALOG AMMETER (AK-A72 & AK-A96)

## ANALOG VOLTMETER (AK-V72 & AK-V96)

Input Current	0A to 5A (CT Secondary) or 0A to 1A	Measuring Voltage Range	0 – 500V (300V & 600V are available upon request)
Scale	Changeble (5A to 6300A)		



CODE: AK-A96, AK-V96



CODE: AK-A72, AK-V72



## CAM SWITCHES

### FEATURES

Standards	TS EN 60947-3, DIN, VDE 0660, IEC 947
Body Material	PBT
Moveable Contact Elements	Copper and silver riveted compound
Switching Angle	Depends on code
Protection Degree	IP54 (front Protection)
Ambient temperature (operation)	-5 C ~ +55 C

### TECHNICAL DATA

Rated Operating Voltage	110-400 V
Insulation Voltage	0.7KV
Operating Frequency	50-60Hz

CODE	APPLINATION	POSITION	CURRENT
CAV10301	Voltmeter (L-N)	3+0	10
CAV16301	Voltmeter (L-N)	3+0	16
CAV20301	Voltmeter (L-N)	3+0	20
CAV10302	Voltmeter (L-L)	3+0	10
CAV16302	Voltmeter (L-L)	3+0	16
CAV20302	Voltmeter (L-L)	3+0	20
CAV10401	Voltmeter (L-L & L1-N)	4	10
CAV16401	Voltmeter (L-L & L1-N)	4	16
CAV20401	Voltmeter (L-L & L1-N)	4	20
CAV10701	Voltmeter (L-L & L-N)	7	10
CAV16701	Voltmeter (L-L & L-N)	7	16
CAV20701	Voltmeter (L-L & L-N)	7	20
CAV10403	Amperemeter	3+0	10
CAV16403	Amperemeter	3+0	16
CAV20403	Amperemeter	3+0	20

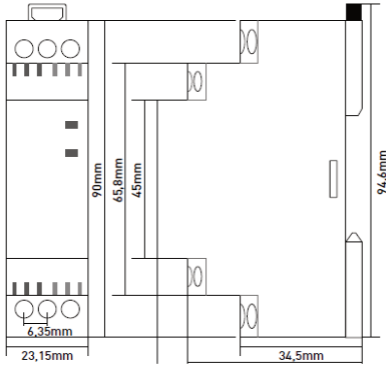
# Relays

- *Timers*
- *Liquid Control*
- *Motor & Pumps Control*
- *Photocell Control*
- *Protection Relays*
- *Electronic Contactors*
- *Auxiliary Relay*

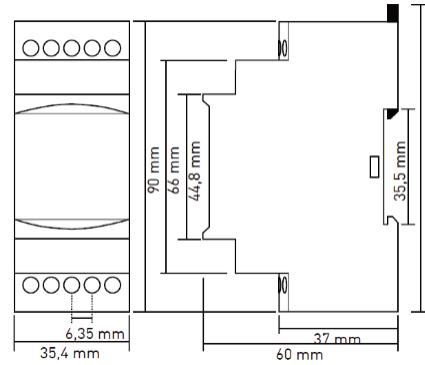


# RELAY CASES

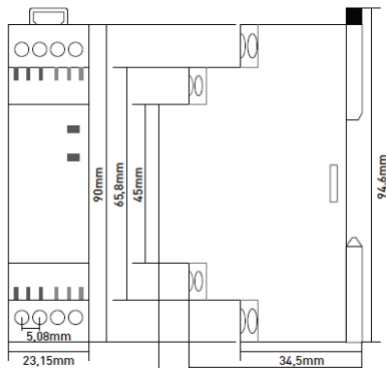
**C1**



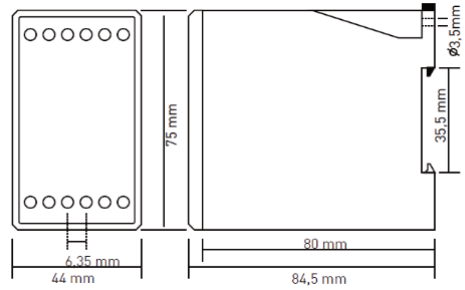
**C5**



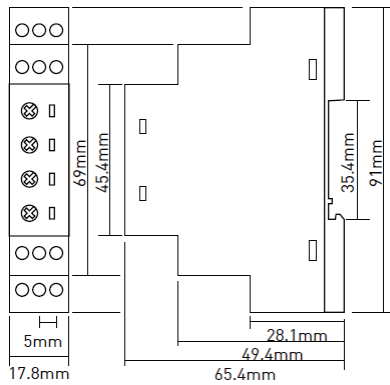
**C2**



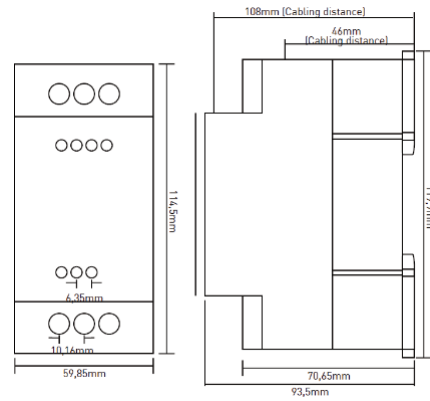
**C6**



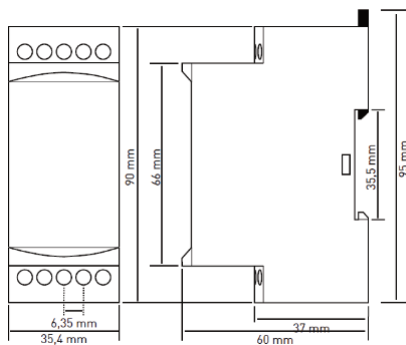
**C3**



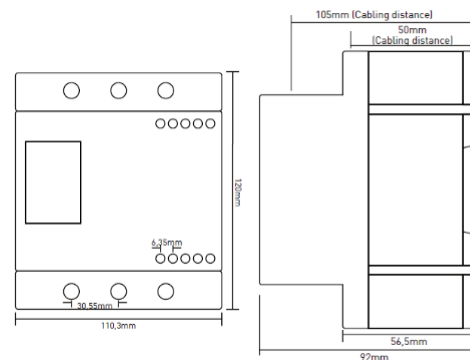
**C7**



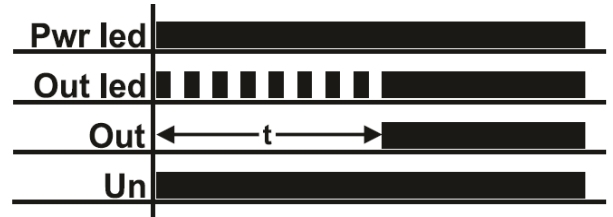
**C4**



**C8**

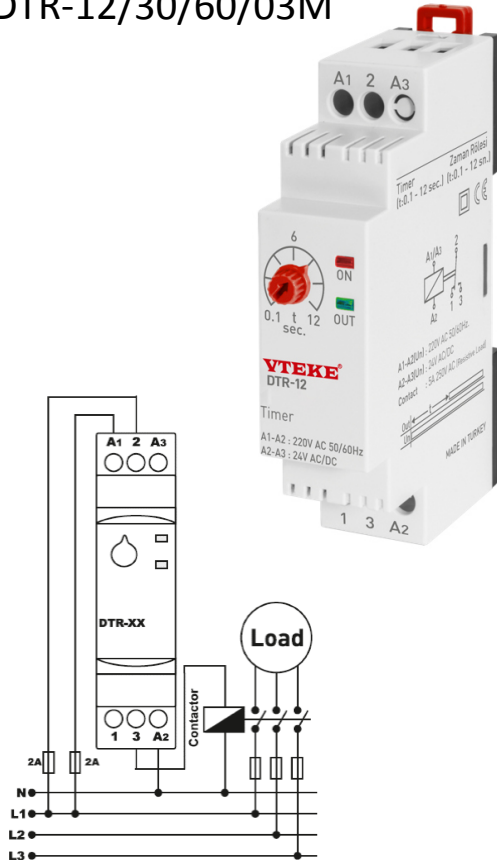


# ON DELAY TIMER



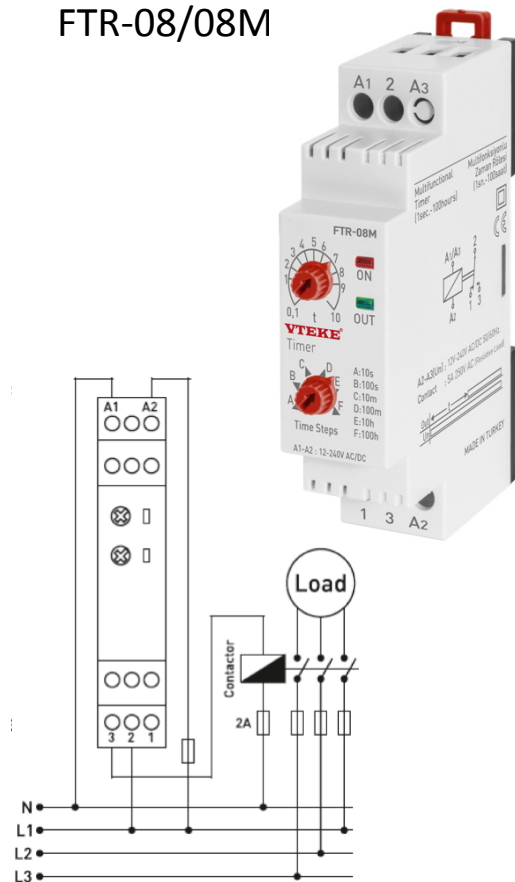
Code	Function	Operating Voltage	Contact	Case
DTR-12	On Delay Timer 0.1sec - 12sec	150V – 260VAC, 24VAC/DC	1NO + 1NC	C1
DTR-30	On Delay Timer 0.1sec - 30sec	150V – 260VAC, 24VAC/DC	1NO + 1NC	C1
DTR-60	On Delay Timer 0.1sec - 60sec	150V – 260VAC, 24VAC/DC	1NO + 1NC	C1
DTR-03M	On Delay Timer 0.1min - 3min	150V – 260VAC, 24VAC/DC	1NO + 1NC	C1
FTR-08	On Delay Timer 0.1min - 100min	150V – 260VAC, 24VAC/DC	1NO + 1NC	C1
FTR-08	On Delay Timer 0.1min - 100min	12V - 240VAC/DC	1NO + 1NC	C3

DTR-12/30/60/03M



DTR-12/30/60/03M FTR-08

FTR-08/08M



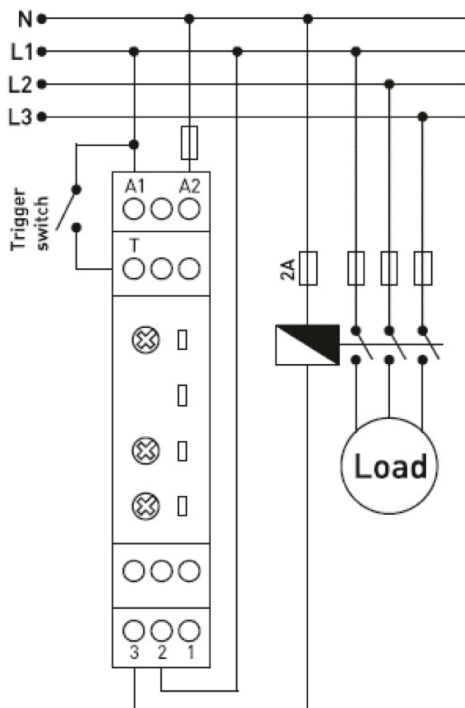
FTR-08M



# MULTI-FUNCTIONAL TIME RELAY (10 PROGRAMMES)

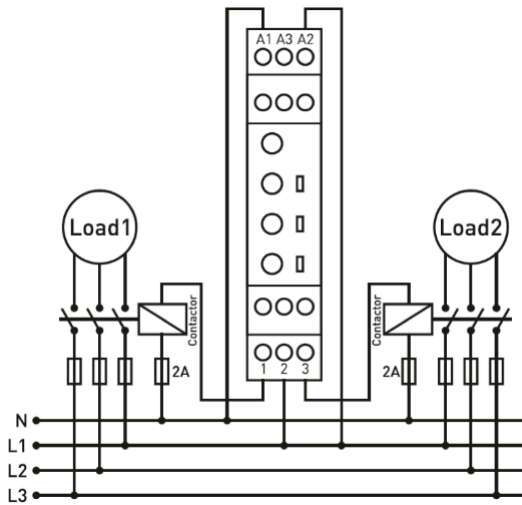


<b>Code</b>	<b>FTR-10</b>
<b>Time Select</b>	Timer 0.1sec – 30 hours
<b>Contact</b>	1NO + 1NC
<b>Operating Voltage</b>	12V - 240VAC/DC
<b>Case</b>	C3

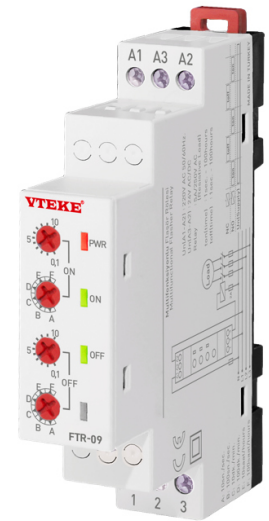


FUNCTION	CHARACTERISTIC FUNCTION
-1- ON Delay	M: R: ON:
-2- OFF Delay	M: R: ON:
-3- Control ON Delay	M: S/T: R: ON:
-4- Control OFF Delay	M: S/T: R: ON:
-5- Single Shot Leading Edge with Control Input	M: S/T: R: ON:
-6- Single Shot Trailing Edge with Control Input	M: S/T: R: ON:
-7- ON delay and OFF Delay with Control	M: S/T: R: ON:
-8- Pulse out-put with Control	M: S/T: R: ON:
-9- Equivalent timed flasher (t=ton=toff)	M: R: ON:
-10- Equivalent timed flasher with control (t=ton=toff)	M: S/T: R: ON:

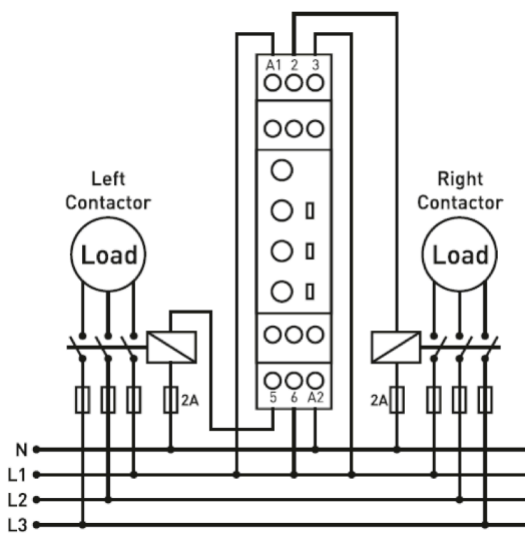
# TIME FLASHER RELAY



Code	FTR-09
Time On	0.1sec – 100 hours
Time Off	0.1sec – 100 hours
Contact	1NO + 1NC
Operating Voltage	160V – 260VAC
Case	C3



# TIME RIGHT-LEFT RELAY



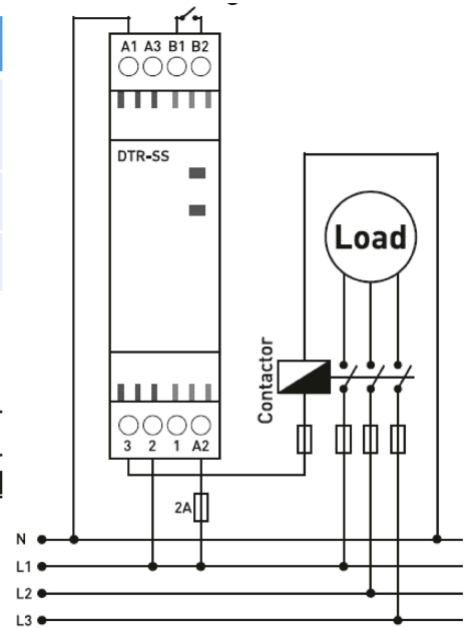
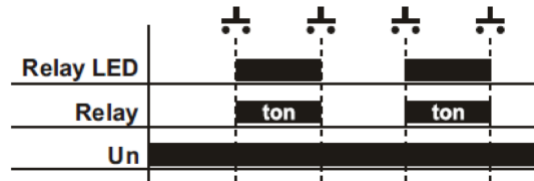
Code	FTR-07
Time On	0.1sec – 100 hours
Time Off	0.1sec – 100 hours
Contact	1NO + 1NO
Operating Voltage	160V – 260VAC
Case	C3



# STAR STOP RELAY



Code	DTR-SS
Operating Voltage	150V – 260VAC
Contact	1NO + 1NC
Case	C1

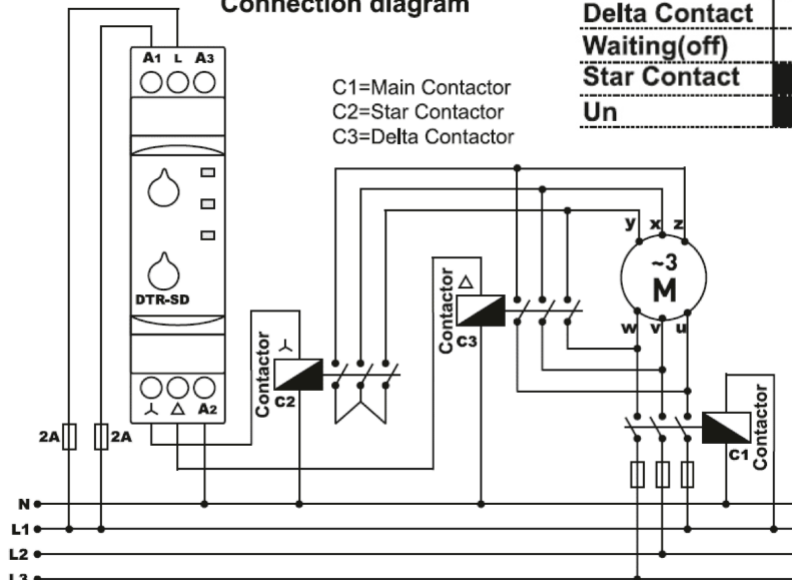


# STAR DELTA RELAY



Code	DTR-SD
Star Contact Waiting Time	0.1-30sec
Star to Delta Switching Time	10 msec - 500 msec
Contact	1NO + 1NO
Operating Voltage	150V – 260VAC
Case	C1

Connection diagram



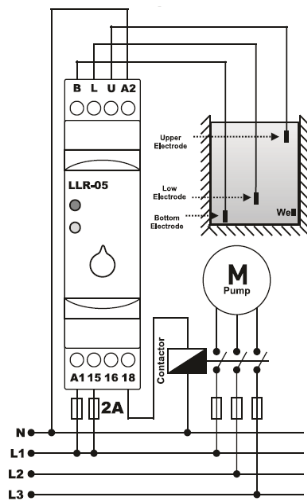
C1=Main Contactor  
C2=Star Contactor  
C3=Delta Contactor

Delta Contact	Waiting(off)	Star Contact	Un
		ton	
	toff		

# LIQUID LEVEL RELAYS

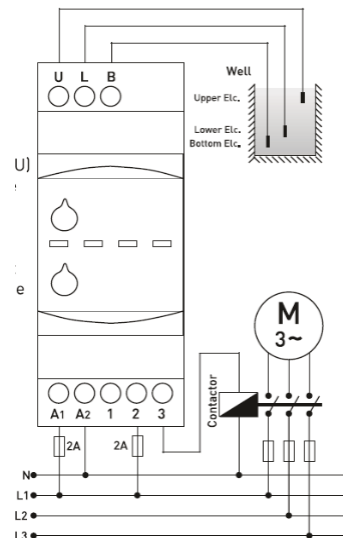
## LIQUID LEVEL RELAY

Code	LLR-05
Sensitivity	<100kΩ
Star to Delta Switching Time	10msec-500msec
Contact	1NO
Operating Voltage	150V – 260VAC
Case	C2

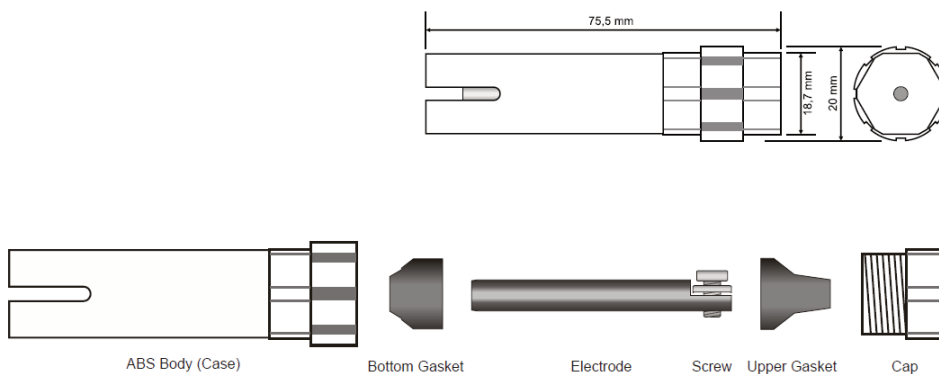


## LIQUID LEVEL RELAY With Upper Electrode Delay

Code	LLR-05U
Sensitivity	<100kΩ
Upper Electrode Waiting Time	2sec - 10sec
Contact	1NO
Operating Voltage	150V – 260VAC
Case	C5

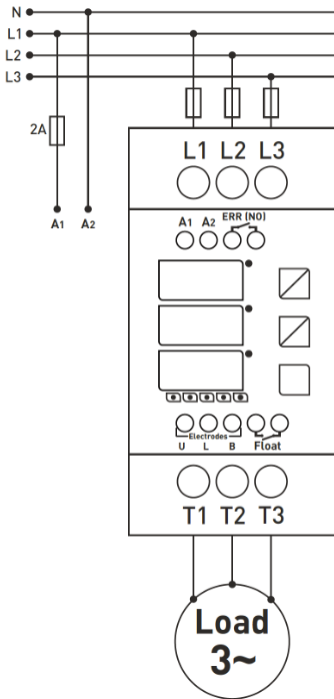


## ELECTRODE (LLE-10)



# SUBMERSIBLE PUMP RELAY

(With Electronic Contactor)

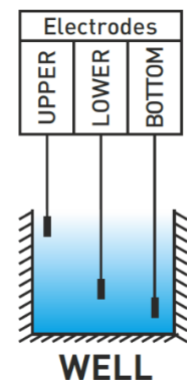
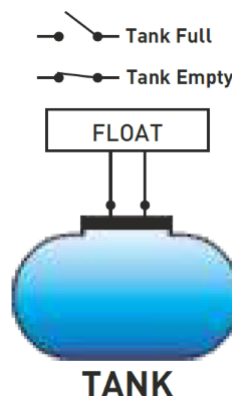


Code	SPR-30
Liquid Sensitivity	<50kΩ
Contact	1NO
Operating Voltage	100V – 250VAC
Case	C7

Parameter Name	Minimum Value	Maximum Value	Default Value	Unit
High Current Set Value	1	30	15	A
High Current Error Delay Time	0	30	5	Sec.
High Current Reset Time	Off/0.1	99	Off	Min.
High Current Reset Count	Off/1	20	Off	-
Low Current Set Value	1	30	0	A
Low Current Error Delay Time	0	30	5	Sec.
Low Current Reset Time	Off/0.1	99	Off	Min.
Low Current Reset Count	Off/1	20	Off	-
Current Asymmetry Set Value	%10	%100	%50	A
Current Asymmetry Error Delay T.	0	30	5	Sec.
Current Asymmetry Reset Time	Off/0.1	99	Off	Min.
Current Asymmetry Reset Count	Off/1	20	Off	-
Demurrage Multiplier	1.0	5.0	2.0	-
Demurrage Time	0	30	5	Sec.
Fuse Protection	On	Off	Off	-
High Voltage Set Value	400	460	430	V
Low Voltage Set Value	200	360	300	V
Voltage Asymmetry Set Value	%5	%50	%20	V
Electrode Set Value	1	100	85	-
Electrode Reading Value	-	-	-	-
Upper Electrode Waiting Time	0.1	99	0.1	Min.
First Opening Waiting Time	1	999	5	Sec.
Relay On/Off Count	-	-	-	-
Relay Operating Time	-	-	-	Hour

## LIQUID LEVEL FLOATER

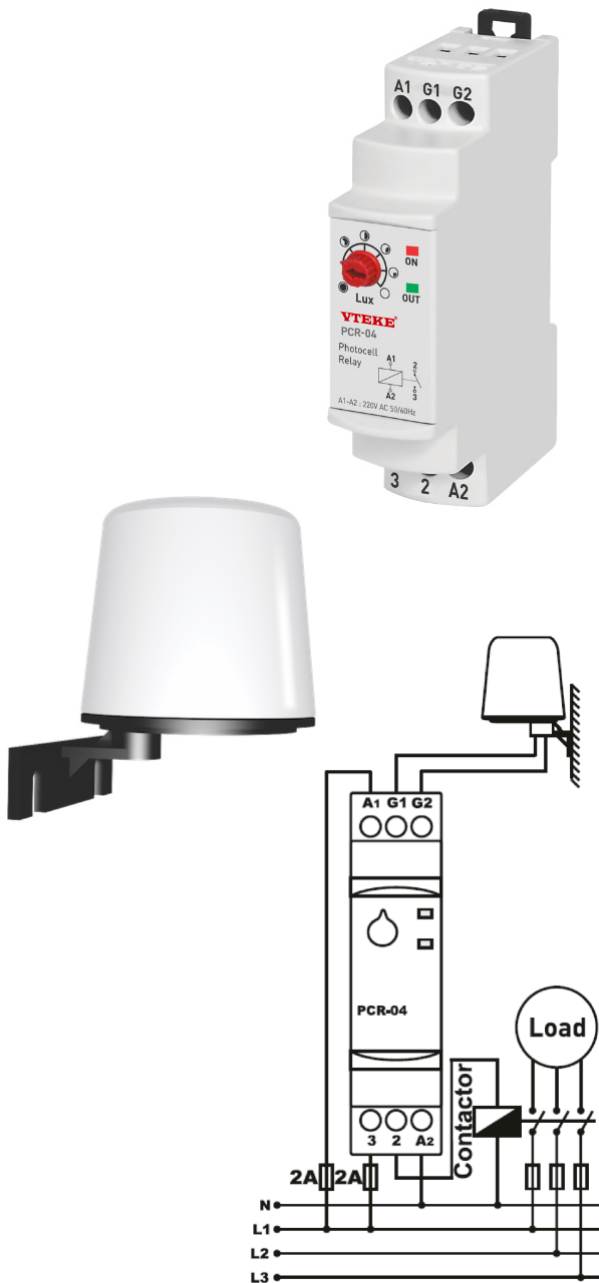
LLF-3	Liquid Level Floater 3 mtr
LLF-5	Liquid Level Floater 5 mtr
LLF-10	Liquid Level Floater 10 mtr
LLF-20	Liquid Level Floater 20 mtr



# PHOTOCELL RELAYS

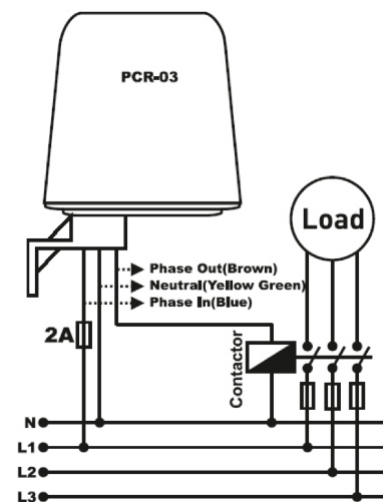
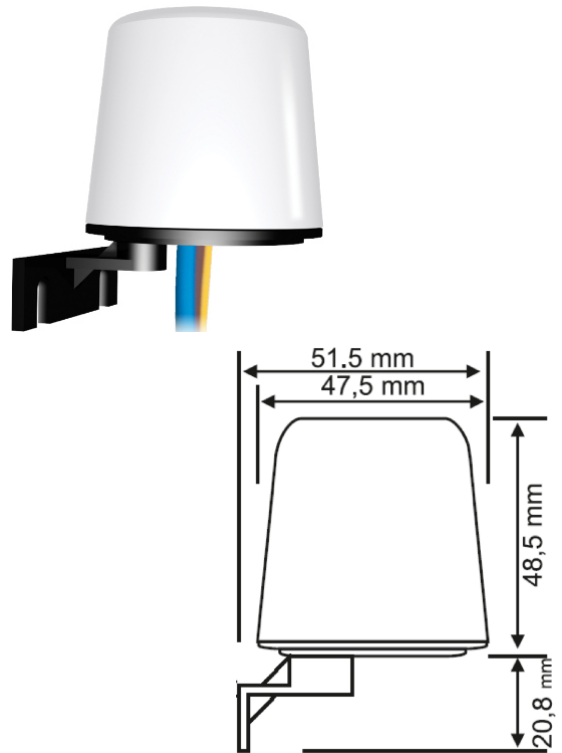
## PHOTOCELL RELAY Adjustable Lux

Code	PCR-04
Lux Measuring Range	1 - 10 Lux
Delay Time	15sec - Fixed
Contact	1 NO
Operating Voltage	150V – 260VAC
Case	C1



## PHOTOCELL RELAY

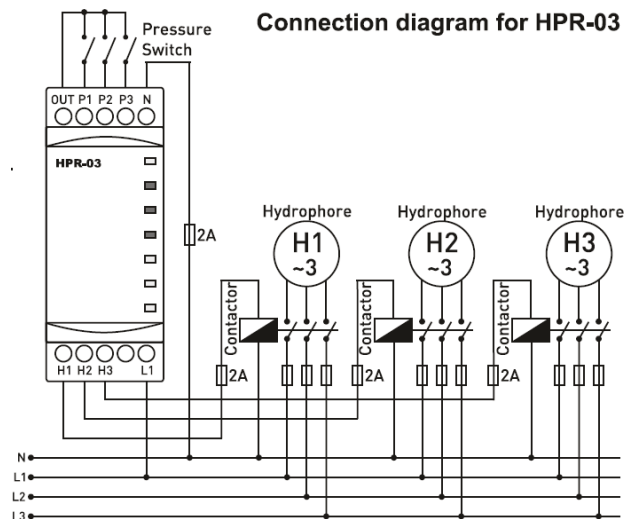
Code	PCR-03
Lux Measuring Range	10 Lux - Fixed
Delay Time	15sec - Fixed
Contact	1NO
Operating Voltage	150V – 260VAC



# HYDROPHORE SEQUENCE

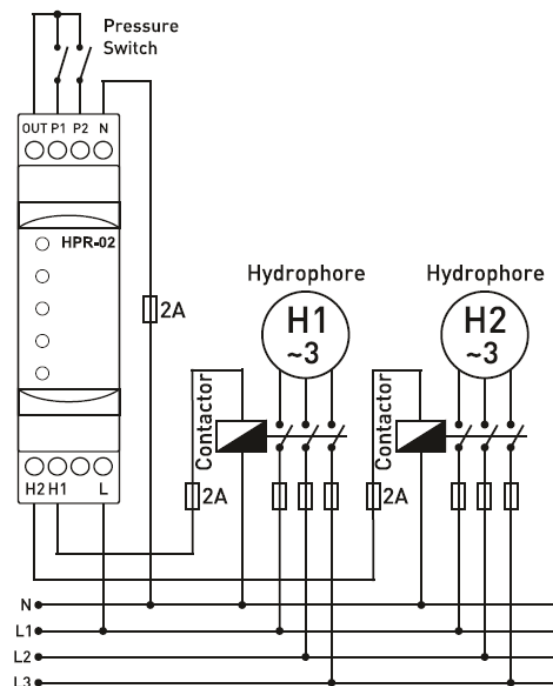
## 3 HYDROPHORE

Code	HPR-03
Hydrophore Number	3
Delay Time	10min - Fixed
Contact	3NO
Operating Voltage	150V – 260VAC
Case	C2



## 2 HYDROPHORE

Code	HPR-02
Hydrophore Number	2
Delay Time	10min - Fixed
Contact	2NO
Operating Voltage	150V – 260VAC
Case	C4



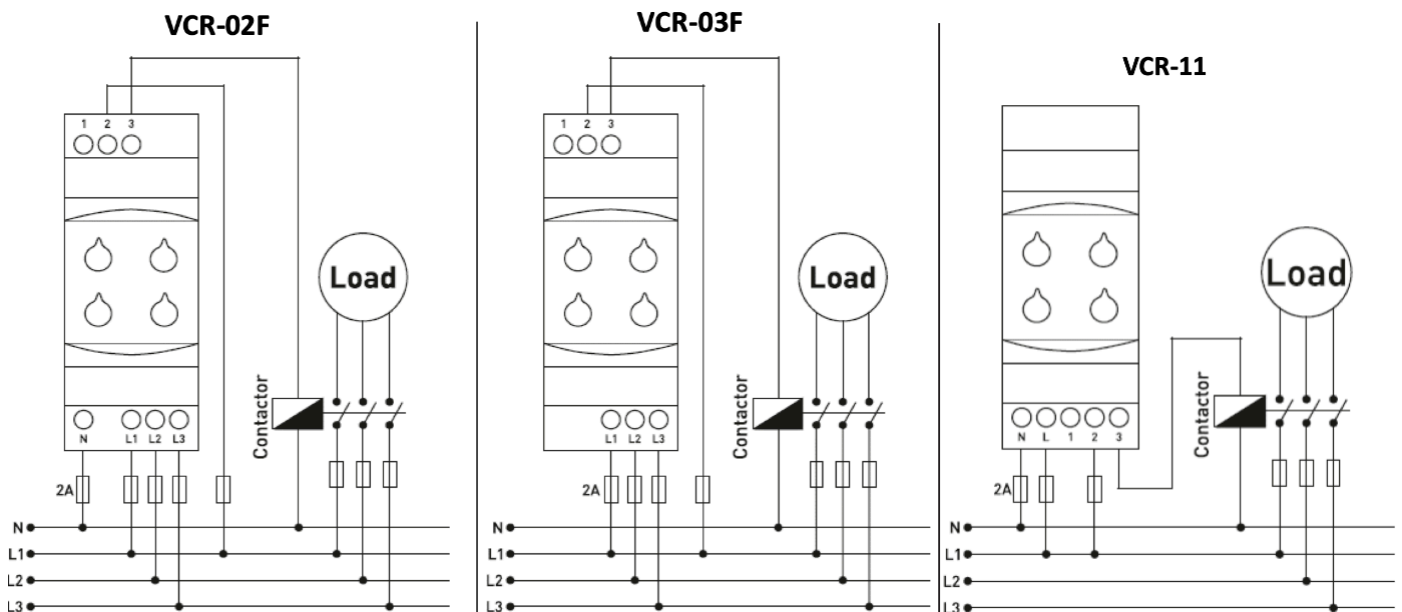
# VOLTAGE PROTECTION RELAYS

## 3-PHASE VOLTAGE PROTECTION RELAY

Code	VCR-02F VCR-03F
Connection	3Phase+N (VCR-02F) 3-Phase (VCR-03F)
Protection Functions	Over/Under Voltage Supply Voltage Phase Sequence Phase Absence Neutral Absence ( VCR-02F)
Over Voltage	230V-300VAC (VCR-02F) 400V-510VAC (VCR-03F)
Under Voltage	140V-210VAC (VCR-02F) 260V-370VAC (VCR-03F)
Delay Time	0.1sec – 20sec
Reset Time	0.1sec – 20sec
Contact	1NO + 1NC
Operating Voltage	140V-300VAC (VCR-02F) 260V-510VAC (VCR-03F)
Case	C5

## 1-PHASE VOLTAGE PROTECTION RELAY

Code	VCR-11
Connection	1-Phase
Protection Functions	Over/Under Voltage
Over Voltage	230V-300VAC
Under Voltage	150V-210VAC
Delay Time	0.5sec – 20sec
Reset Time	0.5sec – 20sec
Contact	1NO + 1NC
Operating Voltage	140V-300VAC
Case	C5

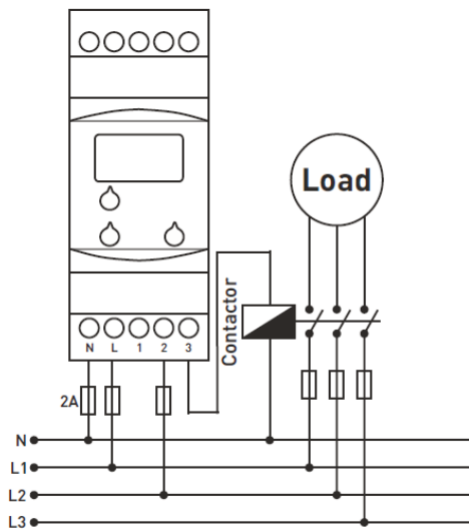




# DIGITAL VOLTAGE PROTECTION RELAYS

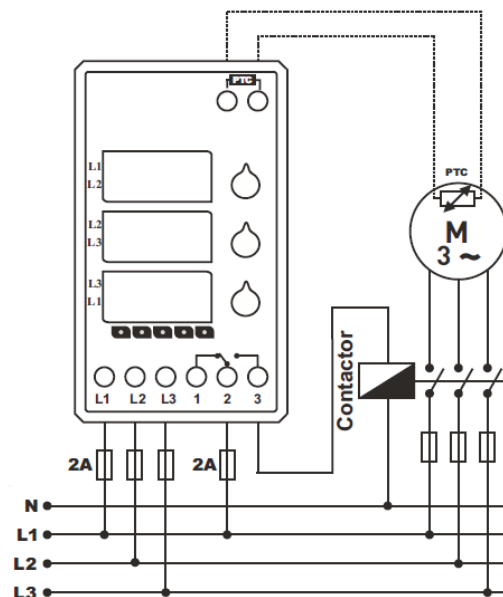
## 1-PHASE DIGITAL VOLTAGE RELAY

Code	DVC-01
Connection	1-Phase
Over Voltage	230V-280VAC
Under Voltage	150V-210VAC
Delay Time	0.1sec – 10sec
Measurement Precision	±%1
Contact	1NO + 1NC
Operating Voltage	160-250V
Case	C5



## 3-PHASE DIGITAL VOLTAGE RELAY

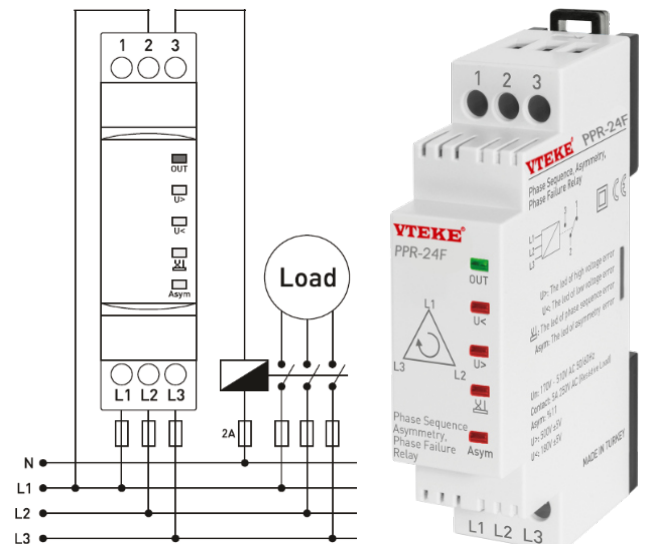
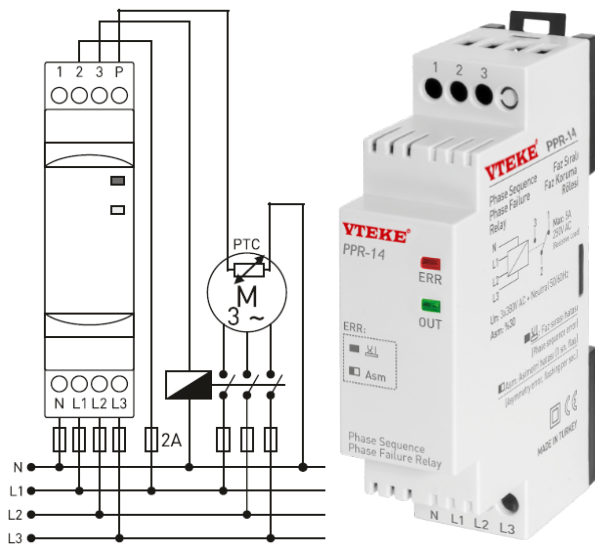
Code	DVC-04
Connection	3-Phase
Over Voltage	400V-460VAC
Under Voltage	230V-360VAC
Delay Time	0.1sec – 10sec
Measurement Precision	±%1
Contact	1NO + 1NC
Operating Voltage	3 x 380V
Case	C6



# PHASE PROTECTION RELAYS

Code	PPR-14 PPR-14P
Connection	3-Phase+N
PTC	No (PPR-14) Yes (PPR-14P)
Asymmetry	%30 - Fixed
Contact	1NO + 1NC
Operating Voltage	380V+N
Case	C2

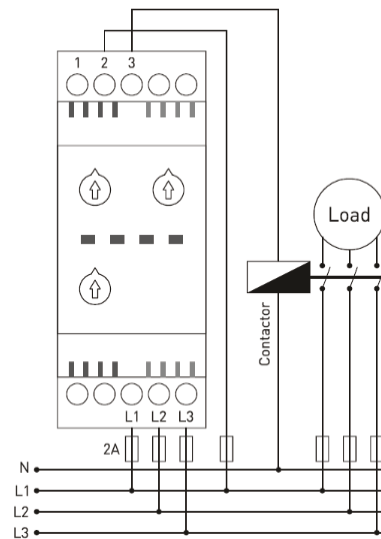
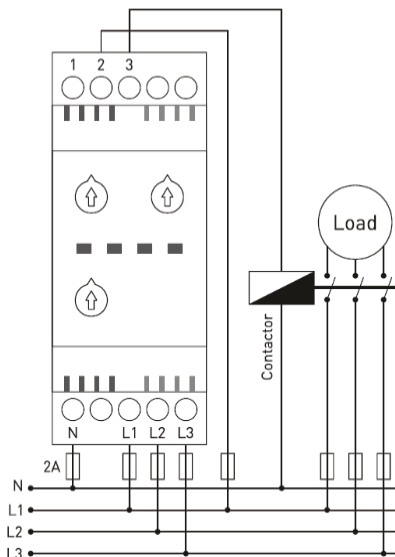
Code	PPR-24F
Connection	3-Phase
Protection Functions	Phase Protection Over/Under Voltage Phase Sequence
Asymmetry	%11 - Fixed
Over Voltage	500VAC - Fixed
Under Voltage	180VAC - Fixed
Contact	1NO + 1NC
Operating Voltage	380V
Case	C1



# PHASE PROTECTION RELAYS

Code	PPR-05F
Connection	3-Phase+N
Protection Functions	Phase Protection Over/Under Voltage Supply Voltage Phase Sequence Phase Absence Neutral Absence(PPR-05F)
Over Voltage	300V
Under Voltage	140V
Asymmetry	%5 - %25
Delay Time	0.1sec - 20sec
Reset Time	0.1sec - 20sec
Contact	1NO + 1NC
Operating Voltage	380V+N
Case	C5

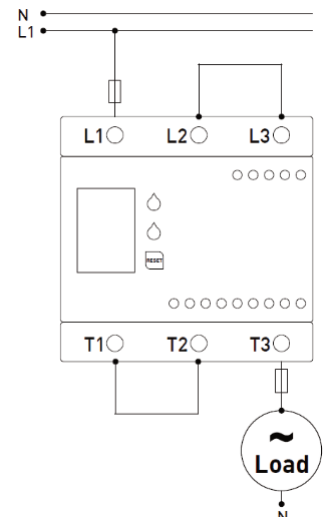
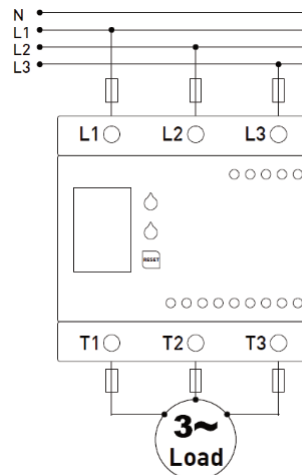
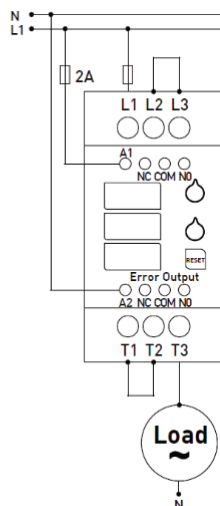
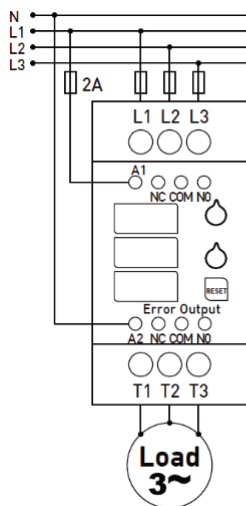
Code	PPR-06F
Connection	3-Phase
Protection Functions	Phase Protection Over/Under Voltage Supply Voltage Phase Sequence Phase Absence
Over Voltage	500V
Under Voltage	240V
Asymmetry	%5 - %25
Delay Time	0.1sec - 20sec
Reset Time	0.1sec - 20sec
Contact	1NO + 1NC
Operating Voltage	380V
Case	C5



# DIGITAL OVERLOAD CONTACTORS

Code	CON-XX
Connection	3-Phase+N
Overload Current	1-12A (CON-12) 1-18A (CON-18) 1-25A (CON-25)
Asymmetry	%50 - FIXED
Delay Time	0.1sec – 10sec
Contact	1NO+1NC Error Contact 1NO+1NC
Operating Voltage	120V – 250V
Case	C7

Code	CON-50
Connection	3-Phase+N
Overload Current	25A – 50A
Asymmetry	%50 - FIXED
Delay Time	1sec -20sec
Contact	2NO+2NC Error Contact 1NO+1NC
Contact	3NO + 3NC
Operating Voltage	120V – 250V
Case	C8





## GENERAL PURPOSE RELAYS

### SRN SERIES RELAY (5A 250VAC/30VDC) WITH LED & TEST MECHANISM

Code	Nominal Voltage	No. of PIN/Channel	
SRN-08-024-AC	24VAC	8/ 2C	
SRN-08-230-AC	230VAC	8/ 2C	
SRN-08-012-DC	12VDC	8/ 2C	
SRN-08-024-DC	24VDC	8/ 2C	
SRN-11-024-AC	24VAC	11/ 3C	
SRN-11-230-AC	230VAC	11/ 3C	
SRN-11-012-DC	12VDC	11/ 3C	
SRN-11-024-DC	24VDC	11/ 3C	
SRN-14-024-AC	24VAC	14/ 3C	
SRN-14-110-AC	110VAC	14/ 3C	
SRN-14-230-AC	230VAC	14/ 3C	
SRN-14-012-DC	12VDC	14/ 3C	
SRN-14-024-DC	24VDC	14/ 3C	

### SRN SERIES SOCKETS

Code	No. of PIN/CONTACT
SRN-08-SOK	8/ 2C
SRN-11-SOK	11/ 3C
SRN-14-SOK	14/ 3C
PYF-08A-ECO	8/ 2C
PYF-11A-ECO	11/ 3C
PYF-14A-ECO	14/ 3C

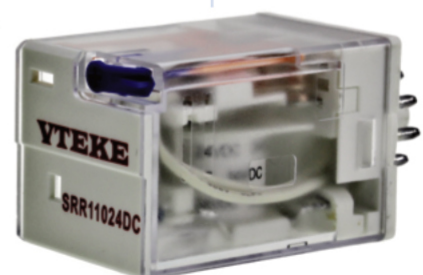


### SRR SERIES RELAY (10A 250VAC/30VDC) WITH LED & TEST MECHANISM

Code	Nominal Voltage	No. of PIN/CONTACT	
SRR-08-024-AC	24VAC	8/ 2C	
SRR-08-230-AC	230VAC	8/ 2C	
SRR-08-012-DC	12VDC	8/ 2C	
SRR-08-024-DC	24VDC	8/ 2C	
SRR-11-024-AC	24VAC	11/ 3C	
SRR-11-230-AC	230VAC	11/ 3C	
SRR-11-012-DC	12VDC	11/ 3C	
SRR-11-024-DC	24VDC	11/ 3C	

### SRR SERIES SOCKETS

Code	No. of PIN/CONTACT
SRR-08-SOK	8/ 2C
SRR-11-SOK	11/ 3C
PF-08A-ECO	8/ 2C
PF-11A-ECO	11/ 3C



# Transformers and Battery Chargers

- Battery Chargers •*
- Control Transformers •*
- Elevator Transformers •*
- Three Phase Transformers •*
- Harmonics Reactors •*
- Shunt Reactors •*



# BATTERY CHARGER



## INPUT

Parameter	VBC1205	VBC1210	VBC2405	VBC3002
AC Input Voltage	220Vac ± %20	220Vac ± %20	220Vac ± %20	220Vac ± %20
DC Input Voltage	200-400Vdc	200-400Vdc	200-400Vdc	200-400Vdc
AC Input Frequency	50 - 400Hz	50 - 400Hz	50 - 400Hz	50 - 400Hz
Efficiency	>%85	>%82	>%85	>%85

## OUTPUT

Parameter	VBC1205	VBC1210	VBC2405	VBC3002
DC Output Voltage	13.80V	13.80V	27.60V	34.5V
DC Output Charge Current	5A	10A	5A	2.2A
Output Power	70W	140W	140W	70W
Output Voltage Ripple	±%1	±%1	±%1	±%1
Voltage Regulation	±%1	±%1	±%1	±%1
Load Regulation	±%1	±%1	±%1	±%1
Start-up Time	100ms	100ms	100ms	100ms

## MECHANICAL SPECIFICATIONS

Weight	700gr
Diemensions (L x W x H)	153 X 98 X 62mm
Mounting	Screw Type Panel Mounting (DIN rail adaptor available on request)

## OPERATION CONDITIONS

Working Temperature	-20C / +50C
Working Humidity	20-70%
Stock Temperature	-20C / +70C

# BATTERY CHARGER (VBC-2410)

## MICROPROCESSOR CONTROLLED

### FEATURES

VBC-2410 is driven by a micro controller which provides extra safety, higher performance and longer product life.

- Power Derating when the temperature increases (reduction of current from 10A to 5A)
- LED controllers
- Error checks (such as blown out fuse)

The microcontroller controls all functions, below are some of them:

For VBC-2410, adding a display is optional at order.

- Temperature protection
- Short circuit protection

### INPUT

AC Input Voltage:	185Vac - 270Vac
DC Input Voltage:	250V - 390Vdc
AC Input Frequency:	50 - 400Hz
Efficiency:	>%85

### OUTPUT

DC Output Charge Current:	10A
Output Power:	275W
Output Voltage Ripple:	±%1
Voltage Regulation:	±%1
Load Regulation:	±%1
Startup Time:	100ms

### PROTECTION

Input Protection:	With 5A Fuse
Output Short Circuit Protection:	With Electronic Protection Can Work Continuously In Short Circuit Condition With 15A Fuse
Battery Reverse Connection Protection:	Device Can Work Again By Changing the Output Fuse
Warning by LEDs:	Green: Device Normally Running Red: Problem in Device Connections
AC/DC Conversation Method:	SMPS High Frequency Conversation
Working Frequency:	100kHz

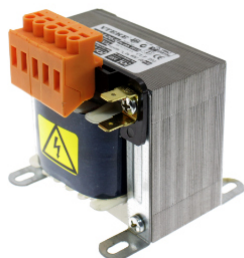
### OPERATING CONDITIONS

Working Temperature:	-20C / +40C
Working Humidity:	20-70%
Stock Temperature:	-20C / +70C

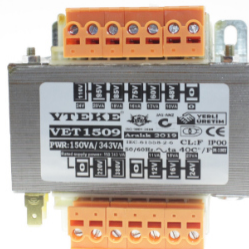


# TRANSFORMERS

**CONTROL TRANSFORMER (VEI)**



**ELEVATOR TRANSFORMER (VET)**



**THREE PHASE TRANSFORMER (TPT)**



VA	Primary: 220V Secondary: 12V	Primary: 220V Secondary: 24V	Primary: 220V Secondary: 24V-12V
10	VEI1210	VEI2410	VEI4210
20	VEI1220	VEI2420	VEI4220
25	VEI1225	VEI2425	VEI4225
30	VEI1230	VEI2430	VEI4230
40	VEI1240	VEI2440	VEI4240
50	VEI1250	VEI2450	VEI4250
65	VEI1265	VEI2465	VEI4265
75	VEI1275	VEI2475	VEI4275
100	VEI12100	VEI24100	VEI42100
120	VEI12120	VEI24120	VEI42120
150	VEI12150	VEI24150	VEI42150
160	VEI12160	VEI24160	VEI42160
200	VEI12200	VEI24200	VEI42200
250	VEI12250	VEI24250	VEI42250
300	VEI12300	VEI24300	VEI42300
350	VEI12350	VEI24350	VEI42350
400	VEI12400	VEI24400	VEI42400
450	VEI12450	VEI24450	VEI42450
500	VEI12500	VEI24500	VEI42500
600	VEI12600	VEI24600	VEI42600
630	VEI12630	VEI24630	VEI42630
750	VEI12750	VEI24750	VEI42750
1000	VEI121000	VEI241000	VEI421000
1250	VEI121250	VEI241250	VEI421250
1500	VEI121500	VEI241500	VEI421500
1600	VEI121600	VEI241600	VEI421600
2000	VEI122000	VEI242000	VEI422000
2500	VEI122500	VEI242500	VEI422500
3000	VEI123000	VEI243000	VEI423000
4000	VEI124000	VEI244000	VEI424000
5000	VEI125000	VEI245000	VEI425000

Code.	VA	Prim.	Sec.	kVA
VET1509	150VA-343VA	220V-380V	12V-16V-24V-48V-60V-75V-85V-95V-110V	0,1
			0,2	
			0,3	
			0,4	
			0,5	
			1	
			2	
			3	
			4	
			5	
VET1005	100VA	220V-380V	12V-24V-36V-110V-220V	7,5
			10	
			12,5	
			15	
			20	
			25	
			30	
			35	
			40	
			45	
				50
				60
				75
				100
				125
				150
				175
				200

**Primary and secondary voltages for control transformers and three phase transformers can be customized.**

# HARMONICS FILTER REACTOR

## SINGLE PHASE HARMONICS FILTER REACTOR

Resonance Frequency 189Hz P:%7, Voltage 230V

Code	Reactive Power (kVAR)
HRS-0.5-07	0.5
HRS-1-07	1
HRS-1.50-07	1.50
HRS-2-07	2
HRS-2.50-07	2.50
HRS-3-07	3
HRS-4-07	4
HRS-5-07	5
HRS-7.50-07	7.50
HRS-10-07	10



## SINGLE PHASE SHUNT REACTOR 230V

Code	Reactive Power (kVAR)
SRS-0.1	0.1
SRS-0.2	0.2
SRS-0.3	0.3
SRS-0.4	0.4
SRS-0.5	0.5
SRS-1	1
SRS-1.5	1.5
SRS-2	2
SRS-2.5	2,5
SRS-3	3
SRS-4	4
SRS-5	5
SRS-6	6
SRS-7	7
SRS-8	8
SRS-9	9
SRS-10	10



## THREE PHASE HARMONICS FILTER REACTOR

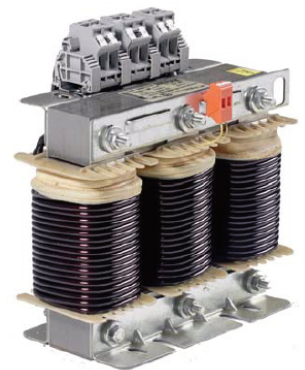
Resonance Frequency 189Hz P:%7, Voltage 3-P 400V

Code	Reactive Power (kVAR)
HRT-1-07	1
HRT-1.50-07	1.50
HRT-2.50-07	2.50
HRT-3-07	3
HRT-4-07	4
HRT-5-07	5
HRT-6.25-07	6.25
HRT-7.50-07	7.50
HRT-10-07	10
HRT-12.50-07	12.50
HRT-15-07	15
HRT-20-07	20
HRT-25-07	25
HRT-30-07	30
HRT-40-07	40
HRT-50-07	50
HRT-60-07	60
HRT-70-07	70
HRT-75-07	75
HRT-80-07	80
HRT-100-07	100



## THREE PHASE SHUNT REACTOR 400V

Code	Reactive Power (kVAR)
SRT-0.5	0.5
SRT-1	1
SRT-1.5	1,5
SRT-2	2
SRT-2.5	2.5
SRT-3	3
SRT-3.5	3.5
SRT-4	4
SRT-4.5	4.5
SRT-5	5
SRT-6	6
SRT-7.5	7.5
SRT-10	10
SRT-12,5	12.5
SRT-15	15
SRT-20	20
SRT-25	25
SRT-30	30
SRT-40	40
SRT-50	50



The three phase harmonics filter reactor can be made also as per the following specifications:

- Resonance Frequency 210Hz P:%5,67
- Resonance Frequency 134Hz P:%14
- Line Reactor

# Accessories

- *DIN Rails*
- *Cable Trunking*
- *Cutters*
- *Earthing Bars*
- *Lugs & Wire Ends*



# DIN RAIL

STEEL DIN RAIL	
SPR35751	Perforated Steel DIN Rail 35mmx7.5mm 1mt.
SPR35752	Perforated Steel DIN Rail 35mmx7.5mm 2mt.
SUR35751	Unperforated Steel DIN Rail 35mmx7.5mm 1mt.
SUR35752	Unperforated Steel DIN Rail 35mmx7.5mm 2mt.
SPR35151	Perforated Steel DIN Rail 35mmx15mm 1mt.
SPR35152	Perforated Steel DIN Rail 35mmx15mm 2mt.
SUR35151	Unperforated Steel DIN Rail 35mmx15mm 1mt.
SUR35152	Unperforated Steel DIN Rail 35mmx15mm 2mt.

ALUMINUM DIN RAIL	
APR35751	Perforated Aluminum DIN RAIL 35mmx7.5mm 1mt.
APR35752	Perforated Aluminum DIN RAIL 35mmx7.5mm 2mt.
AUR35751	Unperforated Aluminum DIN RAIL 35mmx7.5mm 1mt.
AUR35752	Unperforated Aluminum DIN RAIL 35mmx7.5mm 2mt.
APR35151	Perforated Aluminum DIN RAIL 35mmx15mm 1mt.
APR35152	Perforated Aluminum DIN RAIL 35mmx15mm 2mt.
AUR35151	Unperforated Aluminum DIN RAIL 35mmx15mm 1mt.
AUR35152	Unperforated Aluminum DIN RAIL 35mmx15mm 2mt.
RH001	Rail Holder



# SLOTTED CABLE TRUNKING

CODE	WIDTH X HEIGHT (mm)	CODE	WIDTH X HEIGHT (mm)
SCD2525	25x25	SCD6040	60x40
SCD2540	25x40	SCD6060	60x60
SCD2560	25x60	SCD6080	60x80
SCD4040	40x40	SCD8060	80x60
SCD4060	40x60	SCD8080	80x80
SCD4080	40x80	SCD10060	100x60



# CUTTING TOOLS

DIN RAIL CUTTER AND PUNCH EQUIPMENTS	
RCM11	Manual DIN Rail Cutter 1 Sections
RCM31	Manual DIN Rail Cutter 3 Sections
RCM32	Manual DIN Rail Cutter 3 Sections
RCM41	Manual DIN Rail Cutter 4 Sections
RCM42	Manual DIN Rail Cutter 4 Sections
WIRE DUCT CUTTER EQUIPMENTS	
DCM1	Manual Wire Duct Cutter Flat Cutting
DCM2	Manual Wire Duct Cutter Flat & Angle 45 Cutting



# EARTHING AND NEUTRAL BARS

## INCOME/OUTCOME HOLES



Code	Holes	Box QTY
63A Earthing Bar (6x8 mm)		
A010110304	4	1000
A010110305	5	750
A010110306	6	500
A010110307	7	500
A010110309	9	500
A010110310	10	500
A010110312	12	500
A010110315	15	250
A010110322	22	200
80A Earthing Bar (6.5x9 mm)		
A010110004	4	1000
A010110005	5	750
A010110006	6	500
A010110007	7	500
A010110009	9	500
A010110010	10	500
A010110012	12	500
A010110015	15	250
A010110022	22	200
A010110032	32	125
A010110042	42	125
A010110062	65	50
A010110082	82	50
125A Earthing Bar (7x12 mm)		
A010110405	5	250
A010110406	6	250
A010110407	7	250
A010110409	9	250
A010110410	10	250
A010110412	12	250
A010110415	15	150
A010110422	22	100
A010110432	32	100
A010110442	42	50
A010110462	65	50
A010110482	82	50
160A Earthing Bar (10x15 mm)		
A010110000	1 MT 80 A	30
A010110400	1 MT 125 A	20

## ALL HOLES SAME SIZE



Code	Holes	Box QTY
80A Earthing Bar (6.5x9 mm)		
A010110106	6	500
A010110107	7	350
A010110109	9	350
A010110110	10	350
A010110112	12	250
A010110115	15	200
A010110120	20	200
A010110122	22	200
A010110125	25	150
A010110130	30	125
A010110132	32	125
A010110142	42	100
A010110162	62	50
A010110182	82	50
125A Earthing Bar (7x12 mm)		
A010110506	6	125
A010110507	7	125
A010110509	9	100
A010110510	10	100
A010110512	12	100
A010110515	15	75
A010110520	20	50
A010110522	22	50
A010110525	25	50
A010110530	30	50
A010110532	32	50
A010110542	42	40
A010110562	62	30
A010110582	82	15
160A Earthing Bar (10x15 mm)		
A010110609	9	100
A010110612	12	75
A010110615	15	25
A010110622	22	25
A010110632	32	25
A010110642	42	25
Plastic feet for N-Bar		
A010110685	For 80A bar	500
A010110690	For 125A bar	500
A010110695	For 160A bar	500



## INSULATED WIRE END SLEEVE



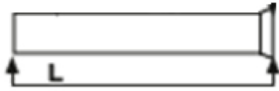
GERMAN CODE	FRENCH CODE	WIRE SIZE (mm <sup>2</sup> )	F (mm)	L (mm)	GERMAN NORM	FRENCH NORM	BOX (pcs)
WCV1005	WCV2005	0.5	8	12	ORANGE	WHITE	1000
WCV1008	WCV2008	0.75	8	14	WHITE	BLUE	1000
WCV1010	WCV2010	1	8	14	YELLOW	RED	1000
WCV1015	WCV2015	1.5	8	14	RED	BLACK	1000
WCV1025	WCV2025	2.5	8	14	BLUE	GREY	500
WCV1040	WCV2040	4	10	17	GREY	ORANGE	500
WCV1060	WCV2060	6	12	20	BLACK	GREEN	250
WCV1100	WCV2100	10	12	22	BEIGE	BROWN	100
WCV1160	WCV2160	16	12	24	GREEN	BEIGE	100
WCV1250	WCV2250	25	16	28	BROWN	BLACK	50
WCV1350	WCV2350	35	16	30	BEIGE	RED	50
WCV1500	WCV2500	50	20	36	GREEN	BLUE	25
WCV1700	WCV2700	70	20	37		YELLOW	25

## TWIN INSULATED WIRE END SLEEVE



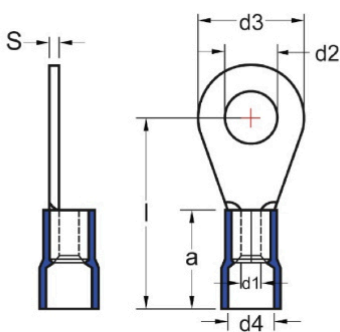
GERMAN CODE	FRENCH CODE	WIRE SIZE (mm <sup>2</sup> )	F (mm)	L (mm)	GERMAN NORM	FRENCH NORM	BOX (pcs)
TCV3005	TCV4005	0,5	8	14	ORANGE	WHITE	1000
TCV3008	TCV4008	0,75	8	14	WHITE	BLUE	500
TCV3010	TCV4010	1	8	14	YELLOW	RED	500
TCV3015	TCV4015	1,5	8	14	RED	BLACK	500
TCV3025	TCV4025	2,5	10	14	BLUE	GREY	250
TCV3040	TCV4040	4	12	17	GREY	ORANGE	200
TCV3060	TCV4060	6	14	20	BLACK	GREEN	100
TCV3100	TCV4100	10	14	27	BEIGE	BROWN	100
TCV3160	TCV4160	16	14	31	GREEN	BEIGE	50

## UNINSULATED WIRE END SLEEVE



CODE	WIRE SIZE (mm <sup>2</sup> )	L (mm)	BOX (pcs)
UCV5005	0,5	10	2000
UCV5008	0,75	10	2000
UCV5010	1	10	2000
UCV5015	1,5	10	2000
UCV5025	2,5	12	2000
UCV5040	4	12	1000
UCV5060	6	12	500
UCV5100	10	15	200
UCV5160	16	15	200
UCV5250	25	16	100
UCV5350	35	16	100
UCV5500	50	20	50

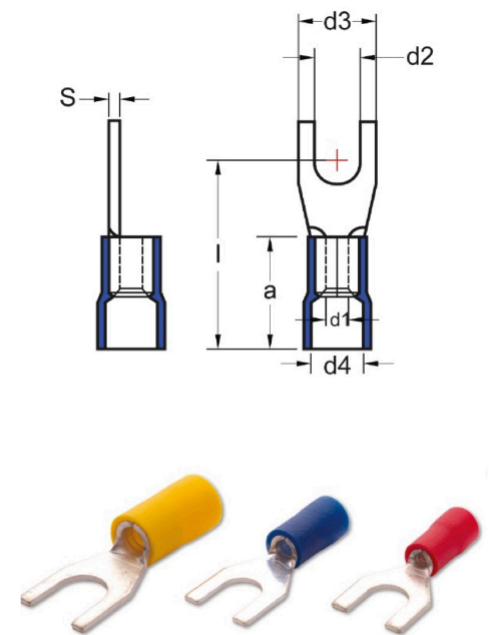
## RING TYPE WIRE END SLEEVE



CODE	DESCRIPTION	BOX
RIT301	0,5 - 1,5 mm <sup>2</sup> Ring Type Terminal M3	200
RIT401	0,5 - 1,5 mm <sup>2</sup> Ring Type Terminal M4	200
RIT501	0,5 - 1,5 mm <sup>2</sup> Ring Type Terminal M5	200
RIT601	0,5 - 1,5 mm <sup>2</sup> Ring Type Terminal M6	200
RIT801	0,5 - 1,5 mm <sup>2</sup> Ring Type Terminal M8	200
RIT302	1,5 - 2,5 mm <sup>2</sup> Ring Type Terminal M3	200
RIT402	1,5 - 2,5 mm <sup>2</sup> Ring Type Terminal M4	200
RIT502	1,5 - 2,5 mm <sup>2</sup> Ring Type Terminal M5	200
RIT602	1,5 - 2,5 mm <sup>2</sup> Ring Type Terminal M6	200
RIT802	1,5 - 2,5 mm <sup>2</sup> Ring Type Terminal M8	200
RIT1002	1,5 - 2,5 mm <sup>2</sup> Ring Type Terminal M10	100
RIT1202	1,5 - 2,5 mm <sup>2</sup> Ring Type Terminal M12	100
RIT406	4,0 - 6,0 mm <sup>2</sup> Ring Type Terminal M4	100
RIT506	4,0 - 6,0 mm <sup>2</sup> Ring Type Terminal M5	100
RIT606	4,0 - 6,0 mm <sup>2</sup> Ring Type Terminal M6	100
RIT806	4,0 - 6,0 mm <sup>2</sup> Ring Type Terminal M8	100
RIT1006	4,0 - 6,0 mm <sup>2</sup> Ring Type Terminal M10	100
RIT1206	4,0 - 6,0 mm <sup>2</sup> Ring Type Terminal M12	50

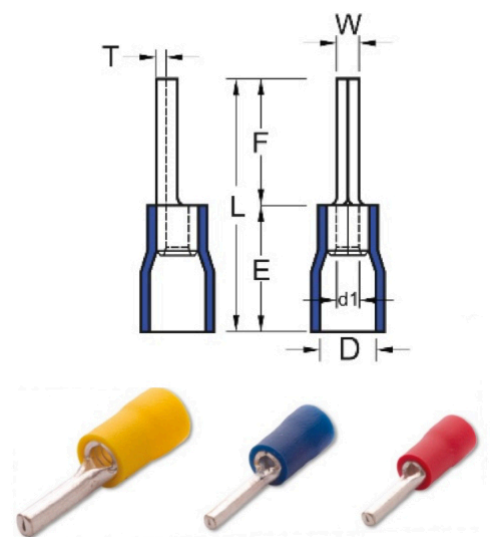
## FORK TYPE WIRE END SLEEVE

CODE	DESCRIPTION	BOX
FIT3001	0,5 - 1,5 mm <sup>2</sup> Spade Type Terminal M3	200
FIT4001	0,5 - 1,5 mm <sup>2</sup> Spade Type Terminal M4	200
FIT5001	0,5 - 1,5 mm <sup>2</sup> Spade Type Terminal M5	200
FIT6001	0,5 - 1,5 mm <sup>2</sup> Spade Type Terminal M6	200
FIT3002	1,5 - 2,5 mm <sup>2</sup> Spade Type Terminal M3	200
FIT4002	1,5 - 2,5 mm <sup>2</sup> Spade Type Terminal M4	200
FIT5002	1,5 - 2,5 mm <sup>2</sup> Spade Type Terminal M5	200
FIT6002	1,5 - 2,5 mm <sup>2</sup> Spade Type Terminal M6	200
FIT4006	4,0 - 6,0 mm <sup>2</sup> Spade Type Terminal M4	100
FIT5006	4,0 - 6,0 mm <sup>2</sup> Spade Type Terminal M5	100
FIT6006	4,0 - 6,0 mm <sup>2</sup> Spade Type Terminal M6	100
FIT8006	4,0 - 6,0 mm <sup>2</sup> Spade Type Terminal M8	100
FIT10006	4,0 - 6,0 mm <sup>2</sup> Spade Type Terminal M10	50



## PIN TYPE WIRE END SLEEVE

CODE	DESCRIPTION	BOX
PIN101	0,5 - 1,5 mm <sup>2</sup> Pin Type Terminal W:1,9 mm.	200
PIN102	1,5 - 2,5 mm <sup>2</sup> Pin Type Terminal W:1,9 mm.	200
PIN106	4,0 - 6,0 mm <sup>2</sup> Pin Type Terminal W:2,8 mm.	100





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