

## 2. VOLTAGE TRANSFORMERS

Support type

Support type with fuse

Touch-proof type



## 2. VOLTAGE TRANSFORMERS

### INTRODUCTION

Voltage transformers reduce the voltage in the medium voltage line to proportional and manageable values, and separate the measuring instruments, meters, relays, etc. from the power circuit.



Support type



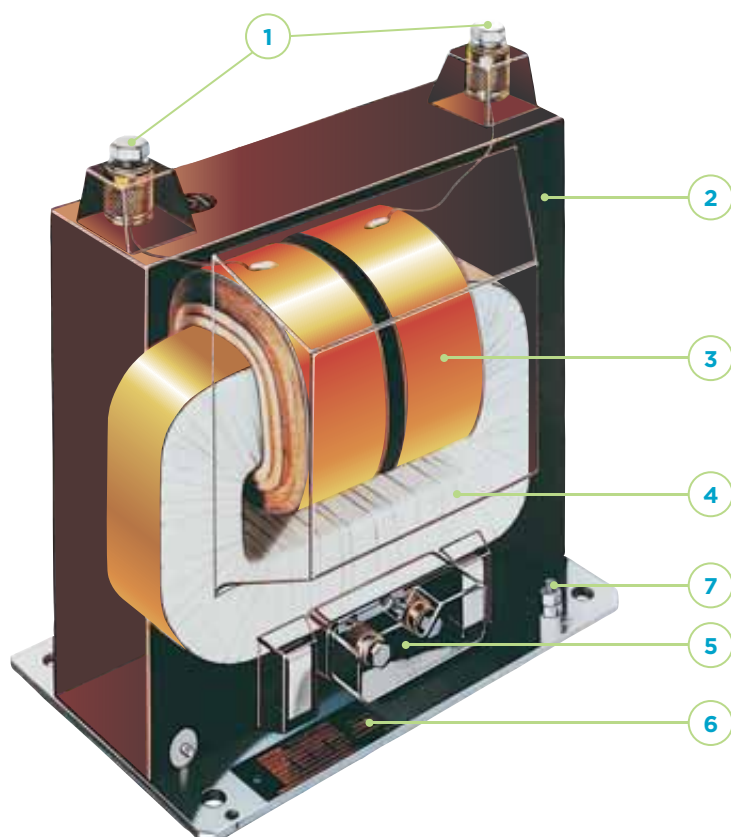
Support type with fuse



Touch-proof type

### SECTION

1. Primary terminals
2. Insulator (resin)
3. Primary winding
4. Magnetic core
5. Secondary terminal box
6. Base
7. Earth terminal



> Model VCL



› UCL-7  
Voltage transformer  
compartment in  
medium voltage  
switchgear.



› UCL-24  
Support type  
voltage transformer  
for medium voltage  
switchgears.



› UCJF-24  
Voltage transformer with  
integrated fuse; reduces  
the space needed in the  
switchgear.

## 2. VOLTAGE TRANSFORMERS > Support type

### SUPPORT TYPE

Voltage transformers for indoor service encapsulated in resin for installation phase-earth (1 pole) or phase-phase (2 poles).

#### RANGE

- > Transformers for phase-earth connections with insulation levels up to 72.5 kV.
- > Transformers for phase-phase connections with insulation levels up to 36 kV.
- > Frequencies: 50 Hz, 60 Hz.
- > Secondary voltages:  
Measuring -  $100:\sqrt{3}$ ,  $110:\sqrt{3}$ ,  $120:\sqrt{3}$ ; 110, 115, 120V.  
Residual - 100:3, 110:3, 120:3.

#### APPLICATIONS

- > Medium voltage air insulated primary distribution switchgears.
- > Medium voltage air insulated secondary distribution switchgears.
- > Power generation.
- > Capacitor banks.
- > Power supply for auxiliary services or distribution automation up to 3 kVA.

#### ADVANTAGES

- > Possibility of frequencies different from the standardized ones (50 and 60 Hz).
- > Sealable cover for secondary terminal box.
- > Designed to withstand vibrations.
- > Stainless steel screws, bolts and nuts available.
- > Transformer assembly in any position (horizontal, vertical, etc.)
- > Excellent response under extreme weather conditions.
- > Wide product range, designed to comply with DIN 42600 standard.
- > Designs approved by Underwriters Laboratories (UL-USA) available.
- > Medium voltage fuses and fuse holders on demand.
- > Safety valve for relieving internal overpressure available (model UX/VX).
- > Secondary outputs with cables for the required length.



> Model UCI



> Model VCJ



> Model VCT



> Model UCN



> Model VCN

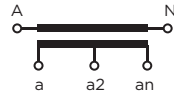
# Single phase

## MARKING

> SINGLE PRIMARY RATIO AND ONE SECONDARY



> DOUBLE PRIMARY RATIO BY SECONDARY TAPPING AND ONE SECONDARY



> SINGLE PRIMARY RATIO AND TWO SECONDARIES



> SINGLE PRIMARY RATIO AND TWO SECONDARIES WITH TAPS



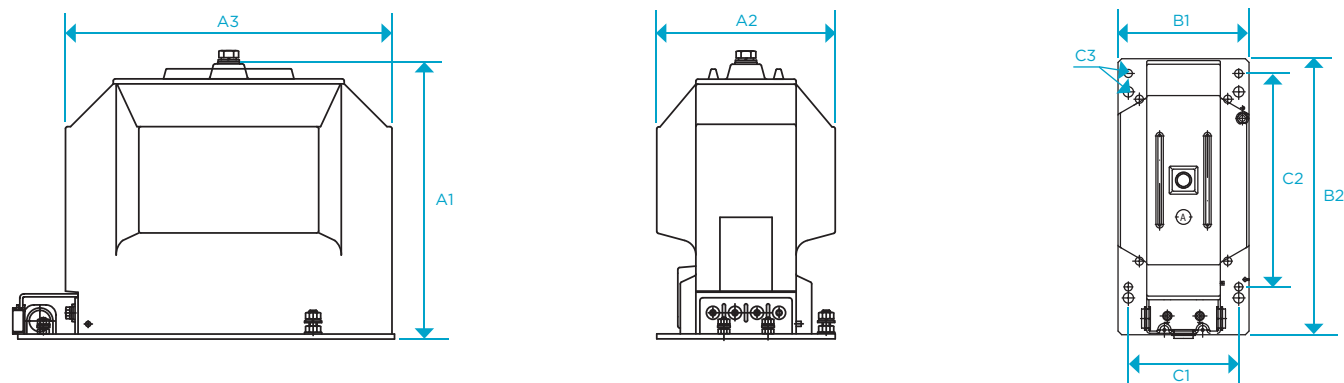
### Electrical characteristics

Model	Highest voltage (kV)	Rated insulation level		Thermal burden (VA)	
		Power frequency (kV)	Lightning impulse (BIL) (kVp)		
UCD-7	-	7.2	20	60	300
UCE-7	-	7.2	20	60	750
UCL-7	UXL-7	7.2	20	60	450
UCI-12	UXI-12	12	28	75	350
UCL-12	UXL-12	12	28	75	450
UCN-12	UXN-12	12	28	75	600
UCD-17	-	17.5	38	95	1,000
UCE-17	-	17.5	38	95	1,500
UCI-17	UXI-17	17.5	38	95	350
UCL-17	UXL-17	17.5	38	95	450
UCG-24	UXG-24	24	50	125	650
UCI-24	-	24	50	125	350
UCJ-24	UXJ-24	24	50	125	600
UCL-24	UXL-24	24	50	125	450
UCN-24	UXN-24	24	50	125	600
UCS-24	UXS-24	24	50	125	1,500
UCG-36	UXG-36	36	70	170	650
UCN-36	UXN-36	36	70	170	600
UCS-36	UXS-36	36	70	170	1,500
UCS-52	UXS-52	52	95	250	1,500
UCS-72	UXS-72	72.5	140	325	1,500
UCT-72	-	72.5	140	325	1,500

Rated Voltage factor: 1.2 Un continuous, up to 1.9 Un / 8 h.  
Subject to technical change.

## 2. VOLTAGE TRANSFORMERS > Support type > Single phase

### DIMENSIONS



#### Dimensions and weights

Model	Dimensions (mm)			Base (mm)		Mounting (mm)			Weight (kg)	
	Height (A1)	Width (A2)	Length (A3)	Width (B1)	Length (B2)	Width (C1)	Length (C2)	Hole diameter (C3)		
UCD-7	-	187.5	162	185	152	258	131	184/234	11	15
UCE-7	-	168	160	184	162	236.5	139.8	189/216	11	15
UCL-7	UXL-7	285	185	300	150	362	120/150	220/290	11	27
UCI-12	UXI-12	225	148	275	148	340	125	270	11	27
UCL-12	UXL-12	285	185	300	150	362	120/150	220/290	11	27
UCN-12	UXN-12	350	222	375	225	432	150/200	290/350	11	44
UCD-17	-	233.5	228	278	235	334	203	260/330	11	39
UCE-17	-	250	230	283	234	333.5	203	260.3/312	11	36
UCI-17	UXI-17	225	148	275	148	340	125	270	11	27
UCL-17	UXL-17	285	185	300	150	362	120/150	220/290	11	27
UCG-24	UXG-24	300	186	375	186	432.5	150/165	290/300	11	45
UCI-24	-	225	148	275	148	340	125	270	11	27
UCJ-24	UXJ-24	275	178	325	178	375	120/150/150	220/280/290	11/14/11	30
UCL-24	UXL-24	285	185	300	150	362	120/150	220/290	11	27
UCN-24	UXN-24	350	222	375	225	432	150/200	290/350	11	44
UCS-24	UXS-24	367	240	410	240	502	200	300	14	76
UCG-36	UXG-36	300	186	375	186	432.5	150/165	290/300	11	45
UCN-36	UXN-36	350	222	375	225	432	150/200	290/350	11	44
UCS-36	UXS-36	367	240	410	240	502	200	300	14	76
UCS-52	UXS-52	482	255	410	240	502	200	300	14	82
UCS-72	UXS-72	770	285	410	285	475	200	300	14	102
UCT-72	-	750	350	410	285	250/475	250	250	14	150

Brass primary terminals (silver-plated on request) with M12 zinc-plated, bichromated steel screw.  
 Brass M5/M6 secondary terminals. Zinc-plated, bichromated steel M8/M12 earth terminals.  
 Polycarbonate secondary terminal cover. Zinc-plated, bichromated steel covers available on request.  
 Approximate dimensions and weights.

# Phase-phase

## MARKING

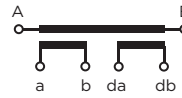
> SINGLE PRIMARY RATIO AND ONE SECONDARY



> DOUBLE PRIMARY RATIO BY SECONDARY TAPPING AND ONE SECONDARY



> SINGLE PRIMARY RATIO AND TWO SECONDARIES



> SINGLE PRIMARY RATIO AND TWO SECONDARIES WITH TAPS



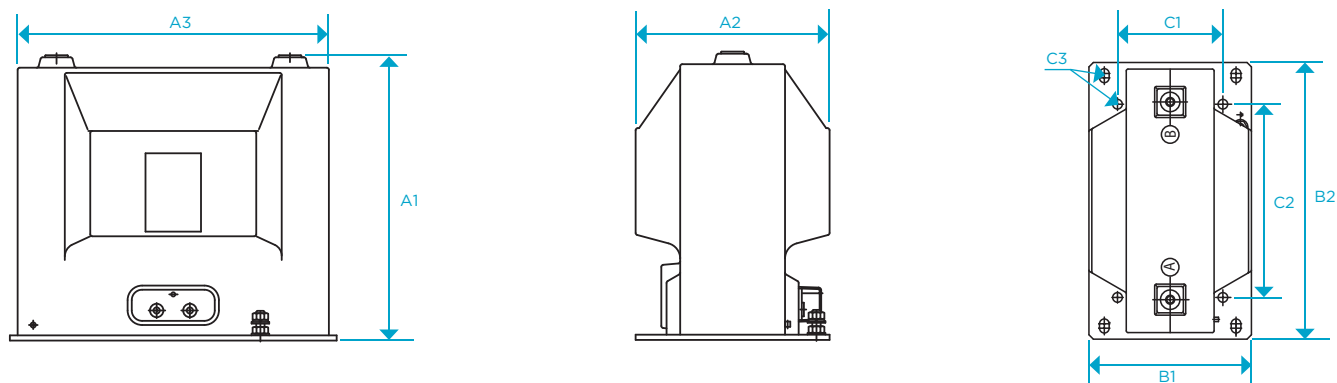
### Electrical characteristics

Model	Highest voltage (kV)	Rated insulation level		Thermal burden (VA)
		Power frequency (kV)	Lightning impulse (BIL) (kVp)	
VCD-7	-	20	60	750
VCE-7	-	20	60	750
VCL-7	VXL-7	20	60	600
VCI-12	VXI-12	28	75	400
VCL-12	VXL-12	28	75	600
VCN-12	VXN-12	28	75	750
VCO-12	-	28	75	600
VCD-17	-	38	95	1,500
VCE-17	-	38	95	1,500
VCL-17	VXL-17	38	95	600
VCLR-17	-	38	95	600
VCJ-24	VXJ-24	50	125	600
VCL-24	VXL-24	50	125	750
VCN-24	VXN-24	50	125	750
VCO-24	-	50	125	500
VCS-24	VXS-24	50	125	1,500
VCT-24	-	50	125	4,000
VCN-36	VXN-36	70	170	750
VCS-36	VXS-36	70	170	1,500

Rated Voltage factor: 1.2 Un continuous, up to 1.9 Un / 8 h.  
Subject to technical change.

## 2. VOLTAGE TRANSFORMERS > Support type > Phase-phase

### DIMENSIONS



#### Dimensions and weights

Model	Dimensions (mm)			Base (mm)		Mounting (mm)			Weight (kg)	
	Height (A1)	Width (A2)	Length (A3)	Width (B1)	Length (B2)	Width (C1)	Length (C2)	Hole diameter (C3)		
VCD-7	-	187	162	195	152	258	131	177.4/237.7	11	15
VCE-7	-	168	160	184	162	236.5	139.8	189/216	11	15
VCL-7	VXL-7	275	185	300	185	315	120/150	220/290	11	28
VCI-12	VXI-12	225	148	275	148	337.5	125	270	11	28
VCL-12	VXL-12	275	185	300	185	315	120/150	220/290	11	28
VCN-12	VXN-12	415	222	375	225	380	150/200	290/350	11	45
VCO-12	-	310	175	328	140	260	78	240	M6	35
VCD-17	-	295.7	228	278	235	334	203.2	260.2/311.2	11	39
VCE-17	-	250	230	283	234	333.5	203	260.3/312	11	36
VCL-17	VXL-17	275	185	300	185	315	120/150	220/290	11	28
VCLR-17	-	245	172.6	289	170	285	142.5	252.5	14	24
VCJ-24	VXJ-24	275	178	325	178	375	120/150/150	220/280/290	11/14/11	32
VCL-24	VXL-24	275	185	300	185	315	120/150	220/290	11	28
VCN-24	VXN-24	415	222	375	225	380	150/200	290/350	11	45
VCO-24	-	310	175	328	140	260	78	240	M6	35
VCS-24	VXS-24	367	275	410	240	502	200	300	14	75
VCT-24	-	371	240	450	240	366	210	366	16	45
VCN-36	VXN-36	415	222	375	225	380	150/200	290/350	11	45
VCS-36	VXS-36	367	405	410	240	502	200	300	14	76

Brass primary terminals (silver-plated on request) with M12 zinc-plated, bichromated steel screw.  
 Brass M5/M6 secondary terminals. Zinc-plated, bichromated steel M8/M12 earth terminals.  
 Polycarbonate secondary terminal cover. Zinc-plated, bichromated steel covers available on request.  
 Approximate dimensions and weights.



## SUPPORT TYPE WITH FUSE

Voltage transformers for indoor service, encapsulated in resin for phase-earth (1 pole) or phase-phase (2 pole) installations and with a built-in fuse with resin housing on the primary side.

### RANGE

- > Transformers for phase-earth connections with insulation levels up to 36 kV.
- > Transformers for phase-phase connections with insulation levels up to 12 kV.
- > Frequencies: 50 Hz, 60 Hz.
- > Secondary voltages:  
 Measurement -  $100:\sqrt{3}$ ,  $110:\sqrt{3}$ ,  $120:\sqrt{3}$ ; 110, 115, 120 V.  
 Residual -  $100:3$ ,  $110:3$ ,  $120:3$  V.

### APPLICATIONS

- > Medium voltage air insulated primary distribution switchgears.
- > Medium voltage air insulated secondary distribution switchgears.

### ADVANTAGES

- > Possibility of frequencies different from the standardized ones (50 Hz and 60 Hz).
- > Stainless steel screws, bolts and nuts available.
- > Double primary ratio by secondary tapping.
- > Safety valve for relieving internal overpressure available.
- > 2 A rated current fuse. Other currents also available.
- > Easy fuse assembly.
- > Quick connection of the primary terminal.



&gt; Model VCIF



&gt; Model UCIF



&gt; Model UCLF

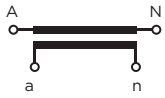


&gt; Primary terminal with spring or fix connection for different applications.

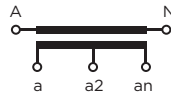
## 2. VOLTAGE TRANSFORMERS > Support type with fuse

### MARKING

> SINGLE PHASE SINGLE PRIMARY RATIO AND ONE SECONDARY



> SINGLE PHASE DOUBLE PRIMARY RATIO BY SECONDARY TAPPING AND ONE SECONDARY



> SINGLE PHASE SINGLE PRIMARY RATIO AND TWO SECONDARIES



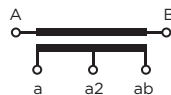
> SINGLE PHASE SINGLE PRIMARY RATIO AND TWO SECONDARIES WITH TAPS



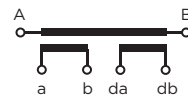
> PHASE-PHASE SINGLE PRIMARY RATIO AND ONE SECONDARY



> PHASE-PHASE DOUBLE PRIMARY RATIO BY SECONDARY TAPPING AND ONE SECONDARY



> PHASE-PHASE SINGLE PRIMARY RATIO AND TWO SECONDARIES



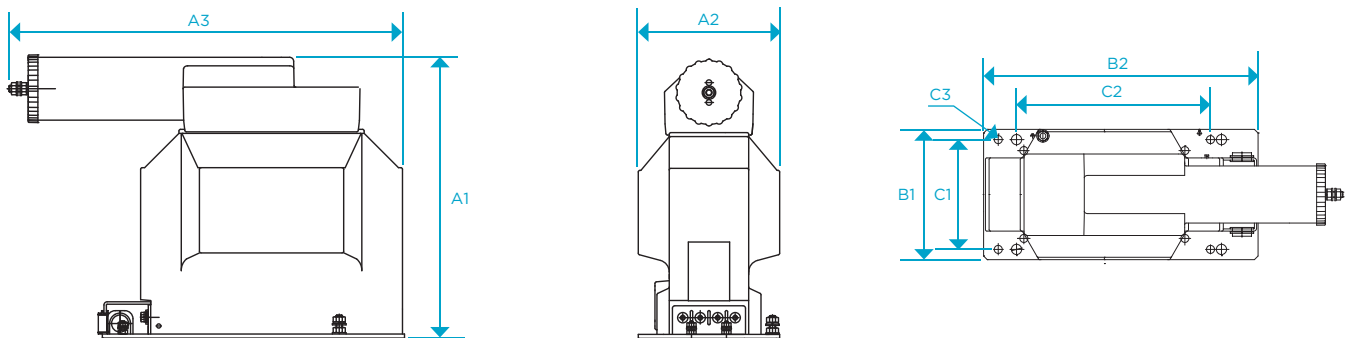
> PHASE-PHASE SINGLE PRIMARY RATIO AND TWO SECONDARIES WITH TAPS



Model		Highest voltage (kV)	Rated insulation level		Thermal burden (VA)	Use
			Power frequency (kV)	Lightning impulse (BIL) (kVp)		
VCIF-12	-	12	28	75	400	PHASE-PHASE
UCIF-17	UXIF-17	17.5	38	95	350	SINGLE PHASE
UCJF-24	UXJF-24	24	50	125	600	SINGLE PHASE
UCLF-24	UXLF-24	24	50	125	450	SINGLE PHASE
-	UXJF-36	36	70	170	600	SINGLE PHASE
UCSF-36	UXSF-36	36	70	170	1,500	SINGLE PHASE

Rated Voltage factor: 1.2 Un continuous, up to 1.9 Un / 8 h. Subject to technical change.

### DIMENSIONS



Model		Dimensions (mm)			Base (mm)		Mounting (mm)			Weight (kg)
		Height (A1)	Width (A2)	Length (A3)	Width (B1)	Length (B2)	Width (C1)	Length (C2)	Hole diameter (C3)	
VCIF-12	-	295	373	275	152	280	130	200	11	29
UCIF-17	UXIF-17	302.5	148	449.5/494.5	148	340	125	270	11	29
UCJF-24	UXJF-24	352	178	467/567/512/612	178	375	150	280	14	32
UCLF-24	UXLF-24	362	185	459.5/559.5/507/607	185	362.5	120/150	220/290	11	29
-	UXJF-36	352	178	467/567/512/612	178	375	150	280	14	32
UCSF-36	UXSF-36	435	240	721/748	240	502	200	300	14	80

Brass primary terminals (silver-plated on request) with M12 zinc-plated, bichromated steel screw.

Brass M5/M6 secondary terminals. Zinc-plated, bichromated steel M8/M12 earth terminals.

Polycarbonate secondary terminal cover. Zinc-plated, bichromated steel covers available on request. Approximate dimensions and weights.

## TOUCH-PROOF TYPE

Transformers for indoor service, encapsulated in resin with a metallic coating for installation in medium voltage switchgears insulated in gas.

### RANGE

- > Transformers for phase-earth connections with insulation levels up to 52 kV.
- > Transformers for phase-phase connections with insulation levels up to 36 kV.
- > Frequencies: 50 Hz, 60 Hz.
- > Secondary voltages:  
 Measurement - 100: $\sqrt{3}$ , 110: $\sqrt{3}$ , 120: $\sqrt{3}$ ; 110, 115, 120 V.  
 Residual - 100:3, 110:3, 120:3 V.

### APPLICATIONS

- > Medium voltage primary distribution switchgears insulated with SF<sub>6</sub> gas.
- > Medium voltage secondary distribution switchgears insulated with SF<sub>6</sub> gas.

### ADVANTAGES

- > Connection in the primary through a plug-in cable bushing as per EN 50181.
- > Possibility of frequencies different from the standardized currents (50 and 60 Hz).
- > Possibility of built-in primary fuse.
- > Possibility of Metalclad type metallic coating.
- > Possibility of silicone primary terminal type 1, 2, 3 as per EN 50181.
- > Sealable metal secondary box cover.
- > Safety valve for releasing internal overpressure.
- > Stainless steel screws, bolts and nuts available.
- > Transformer assembly in any position (horizontal, vertical, etc).



&gt; Model UEG



&gt; Model UEN



&gt; Model UMI



&gt; Model UEGF



&gt; Model VEG


 > UEI-24  
 Touch-proof transformer for MV switchgears insulated with gas.

## 2. VOLTAGE TRANSFORMERS > Touch-proof type

### MARKING

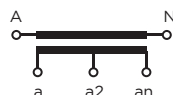
> SINGLE PRIMARY RATIO AND ONE SECONDARY



> SINGLE PRIMARY RATIO AND TWO SECONDARIES



> DOUBLE PRIMARY RATIO BY SECONDARY TAPPING AND ONE SECONDARY



> SINGLE PRIMARY RATIO AND TWO SECONDARIES WITH TAPS

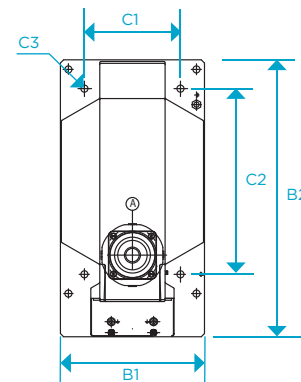
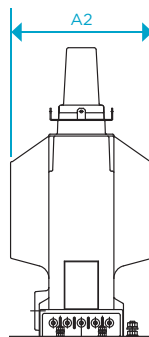
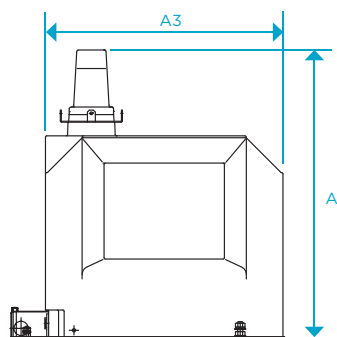


#### Electrical characteristics

Model	Highest voltage (kV)	Rated insulation level		Thermal Burden (VA)	Use
		Power frequency (kV)	Lightning impulse (BIL) (kVp)		
UEN-12	12	28	75	600	SINGLE PHASE
VEI-12	12	28	75	450	PHASE-PHASE
UEG-24	24	50	125	650	SINGLE PHASE
VEG-24	24	50	125	600	PHASE-PHASE
UEI-24	24	50	125	350	SINGLE PHASE
UEJ-24	24	50	125	600	SINGLE PHASE
UEN-24	24	50	125	600	SINGLE PHASE
UMI-24	24	50	125	350	SINGLE PHASE (METALCLAD)
UEG-36	36	70	170	650	SINGLE PHASE
UEGF-36	36	70	170	650	SINGLE PHASE WITH FUSE
UEN-36	36	70	170	600	SINGLE PHASE

Rated Voltage factor: 1.2  $U_n$  continuous, up to 1.9  $U_n$  / 8 h. Subject to technical change.

### DIMENSIONS



#### Dimensions and weights

Model	Dimensions (mm)			Base (mm)		Mounting (mm)			Weight (kg)
	Height (A1)	Width (A2)	Length (A3)	Width (B1)	Length (B2)	Width (C1)	Length (C2)	Hole diameter (C3)	
UEN-12	467	222	375	225	432	150/200	290/350	11	45
VEI-12	313,5	148	275	148	340	125	205/270	11	32
UEG-24	389	186	375	186	432,5	165	300	11	27
VEG-24	429	186	375	186	432,5	150	240/300	11	48
UEI-24	304,5	148	275	148	337,5	125	205/270	11	27
UEJ-24	349,5	178	325	178	375	120/150/150	220/280/290	11/14/11	30
UEN-24	467	222	375	225	432	150/200	290/350	11	45
UMI-24	306	148	280	148	338	128	270	11	30
UEG-36	429	186	375	186	432,5	150/165	300	11	48
UEGF-36	400	186	602	186	439,5	150/165	290/300	11	65
UEN-36	467	222	375	225	432	150/200	290/350	11	45

Brass primary terminals (silver-plated on request) with zinc plated and bichromated steel bolts, with primary lead to insulated cable in accordance with standard DIN 47636. Brass M5/M6 secondary terminals. Zinc-plated, bichromated steel M8/M12 earth terminals. Polycarbonate secondary terminal cover. Zinc-plated, bichromated steel covers available on request. Approximate dimensions and weights.