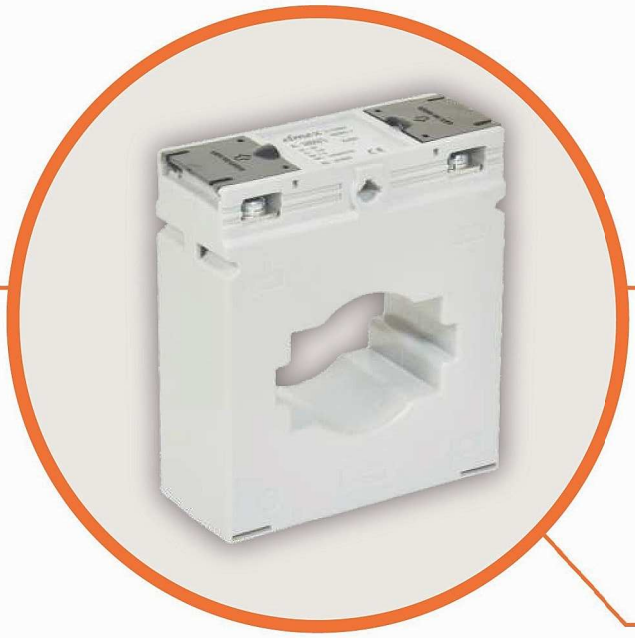
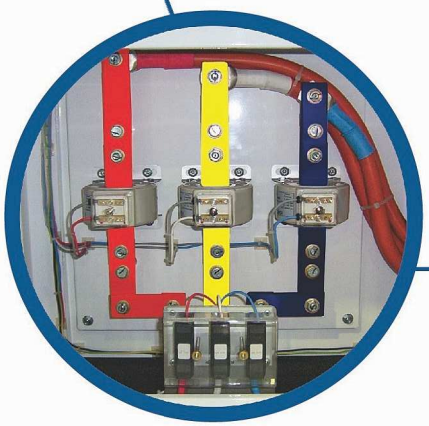
elmex®

since 1963

Converging Innovations
Expanding Solutions





POLYCARBONATE ENCAPSULATED CURRENT TRANSFORMERS
TAPE INSULATED CURRENT TRANSFORMERS
RESIGN CAST CURRENT TRANSFORMERS

Solutions For Low Voltage Current Transformers

APPLICATIONS

"*elmex*" Current Transformers are available for various combinations of Burden and class of accuracy for various applications. The Insulating materials used are complying with requirements of IEC: 60085 for Insulation Class-E (or better).

Metering	Protection	Revenue	Core Balance
Indication	Summation	Auxiliary	Interposing
Neutral Displacement	Differential Protection	Meters & UPS Manufacturers	Motor/Power Control Centre

CONSTRUCTION

"*elmex*" Low Voltage Current Transformers are designed for supplying to Measuring Instruments and Protective Devices. These are suitable for System Voltage 415V/660V/1000 V and frequency 50/60 Hz. Basic construction is in three different Groups as under, meeting various application requirements.

POLYCARBONATE ENCAPSULATED | **RESIN ENCAPSULATED** | **TAPE INSULATED**

CONFIGURATION

Wound Primary Type (WPL)

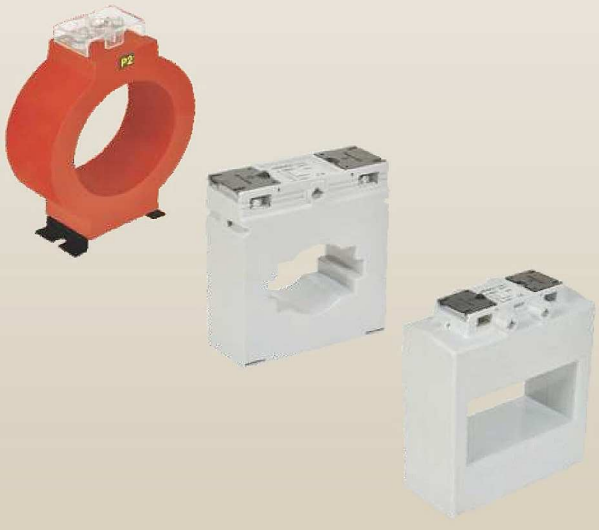
(CT having Two or more number of Primary turns)

- ✓ Preffered for Rated Primary current below 100A.
- ✓ Offered for higher Accuracy with lower Burdens (viz. 5VA/Class-1.0 or 2.5VA/Class-0.5 for metering) for lower primary current.
- ✓ Available in Resin cast and Polycarbonate casing.

Window/ Plug - In Type (BPL)

(CT having an opening of suitable size is provided in the centre for Primary conductor)

- ✓ Preffered when Rated Primary current is above 100A and above.
- ✓ Economic design
- ✓ Available in Resin cast and Polycarbonate casing.



All '*elmex*' Current Transformers are CE marked

GENERAL SPECIFICATIONS

Highest System Voltage: 720V (max.), 50/60 Hz.	**Insulation Class:** E (Offered B on request)
Basic Insulation Level: 0.72/4.0kV	**Average Ambient:** -20°C to +45 °C
Rated Primary Current: 1A to 7000A	**Connections:** (S1-S2) Two brass terminals of M5 size
Rated Secondary Current: 5A or 1A	**Applicable Standard:** IEC-61869-2 / IS-2705
Short - Time Thermal Current (Ith.): 60xIn	**Standard Burden:** 1.25, 2.5, 3.75, 5, 7.5, 10, 15, 20, 30, 40,60VA
Dynamic Current (Idyn.): 2.5 x Ith.	**Instrument Security Factor:** 5 or Less

CLASS OF ACCURACY

0.2S, 0.5S for tariff (revenue)	3.0, 5.0 for Indication purpose
0.2, 0.5 for Precise measurement and laboratory	5P/10P for Protection and PS for Special protection
1.0 for General Metering	

CHARACTERISTIC

A Current Transformer converts an alternating current generally very high in a proportion to its transformation ratio. Measuring CT's convert the primary current, at the class of accuracy, as designed over a current range from 1 to 120 % (as the case may be) of its rated primary current. The design of Measuring CT requires CT to perform within the limits of error as given by the standard specifications, when connected to its rated burden. Measuring CT advantageously saturates above the normal working range to protect an instrument connected against damages by limiting the secondary current during the fault that may appear in the system.

Measuring Transformer

A transformer intended to supply indicating & measuring instruments, integrated meters and other similar apparatus.

Current Transformer

An Instrument Transformer in which the secondary current, in normal condition of use, is substantially proportional to the primary current and differs in phase by an angle which is approximately zero for an appropriate direction of connections.

Rated Primary Current

The value of primary current intended to measure and on which the performance of the current transformer is based.

Rated Secondary Current

The value of secondary current which is of use in normal condition and on which the performance of the current transformer is based.

Rated Transformation Ratio

The ratio of the rated primary current to the rated secondary current.

Current Error (Ratio Error)

The error which a transformer introduces into the measurement of a current and which arises from the fact that actual transformation ratio is not equal to the rated transformation ratio.

The current error is expressed in percentage and is given by the formula:

Current error (%) = (Ka . Is - Ip) x 100 / Ip

Where,

Ka= rated transformation ratio

Ip= actual primary current

Is= actual secondary current when Ip is flowing under the conditions of measurement

Phase Displacement

The difference in phase between the primary and secondary current vectors, the direction of the vectors being so chosen that the angle is zero for a perfect transformer. The phase displacement is said to be positive when the secondary current vector leads the primary current vector. It is usually expressed in minutes.

Accuracy Class

A designation assigned to a current transformer, the errors of which remain within specified limit under prescribed conditions of use.

Burden

The impedance of the secondary circuit in ohms and power factor. It is usually expressed as apparent power (in VA), at the rated secondary current and at a specified power factor.

Rated Burden

The impedance of the secondary circuit on which the accuracy requirements of the specifications are based. Standard value of burdens are as given in general specifications.

Rated Output

The value of the apparent power (in volt-amperes at a specified power factor), which the current transformer is intended to supply to the secondary circuit at the rated secondary current and with rated burden connected to it.

Highest System Voltage

The highest r.m.s. line to line voltage which can be sustained under normal operating conditions at any point of time on the system. It excludes voltage variation due to fault condition and sudden disconnection of a heavy load.

Rated Insulation Level

The combination of voltage values, which characterizes the insulation of a transformer with regard to its capability to withstand dielectric stresses even during fault condition.

Rated Short-Time Thermal Current (Ith.)

The r.m.s. value of the primary current which the current transformer will withstand for a rated time without suffering harmful effects, the secondary winding being short-circuited.

Rated Dynamic Current (Idyn.)

The peak value of the primary current which a current transformer will withstand, without being damaged electrically or mechanically by the resulting electromagnetic forces, the secondary winding being short-circuited.

Rated Continuous Thermal Current

The value of current which can be permitted to flow continuously in the primary winding, without the temperature rise exceeding the specified values for a given class of insulation, the secondary windings being connected to the rated burden.

Instrument Security Factor (ISF)

The ratio of rated instrument limit primary current to the rated primary current. The safety of the apparatus connected to the transformer is more when the value of ISF is small.

GUIDELINES FOR RATED BURDEN AND LIMITS OF PERMISSIBLE ERROR

INSTRUMENT BURDEN*	
Type of Instrument	VA
Moving iron ammeter	1.0
Bimetal instruments (.../5A)	3.0
Wattmeter	5.5
Power factor meter	4.0
Current transducer	0.5
Power transducer	0.5
kWh-meter	2.5
Trivector meter	5.0

Limits of ratio error & phase displacement as per IEC: 61869-2**												
Accuracy Class	± Percentage Current (Ratio) Error at % of Rated Current shown below							± Phase displacement - Minutes at % of Rated Current shown below				
	1	5	20	50	100	120		1	5	20	100	120
0.2		0.75	0.35		0.2	0.2			30	15	10	10
0.5		1.5	0.75		0.5	0.5			90	45	30	30
1.0		3.0	1.5		1.0	1.0			180	90	60	60
0.2S	0.75	0.35	0.2		0.2	0.2		30	15	10	10	10
0.5S	1.5	0.75	0.5		0.5	0.5		90	45	30	30	30
3.0				3.0		3.0						
5.0				5.0		5.0						

Lead Burden of a respective wire size used for connection [VA] **

Cross Section mm²	For CT having Secondary Current 1 Amp							For CT having Secondary Current 5 Amp				
	Distance between CT and Measuring Instrument / Device in meters											
	2 x 2	2 x 4	2 x 6	2 x 8	2 x 10	2 x 15	2 x 20	2 x 2	2 x 4	2 x 6	2 x 8	2 x 10
1.5	0.053	0.106	0.159	0.213	0.266	0.399	0.532	1.33	2.66	3.99	5.32	6.65
2.5	0.032	0.064	0.095	0.12	0.16	0.24	0.32	0.79	1.59	2.40	3.19	3.99
4.0	0.02	0.039	0.059	0.079	0.099	0.148	0.19	0.495	0.99	1.485	1.98	2.48
6.0	0.013	0.026	0.04	0.053	0.066	0.099	0.132	0.33	0.66	0.99	1.32	1.65

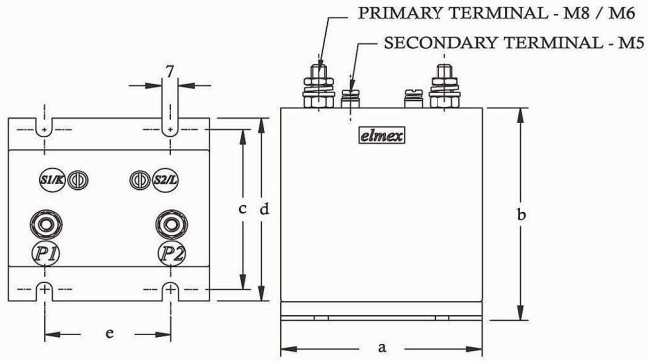
*The actual burden is normally declared by the manufacturer
**Given data are for guidelines only

Product conforms to IS:2705 & IEC:61869-2

RESIN CAST CURRENT TRANSFORMERS

EWR							
TYPE	RATIO	VA/CLASS	a	b	c	d	e
A	5/5 TO 125/5	5/0.5 OR 5/1.0	80	100	80	90	60
B		7.5/0.5 OR 10/1.0	100	120	80	90	60
C		10/0.5 OR 15/1.0	120	140	80	90	80
D	5/5 TO 150/5	10/5P10	120	140	110	120	80
E		15/5P10	120	140	110	120	80

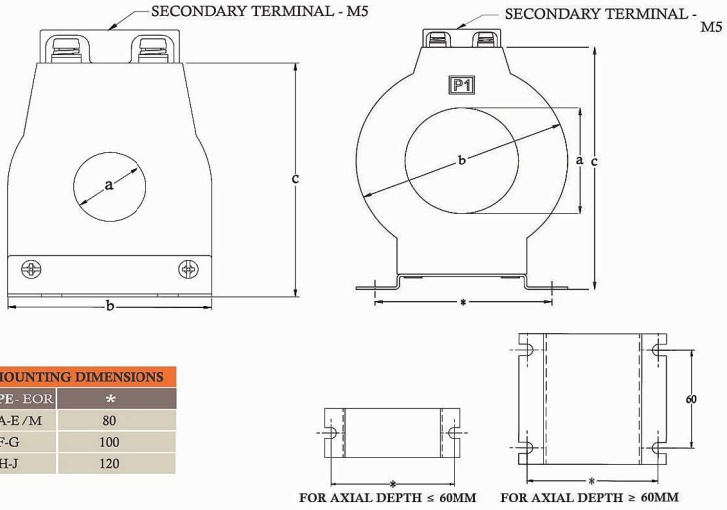
TOLERANCE ± 2.00 mm



RESIN CAST RING TYPE CURRENT TRANSFORMERS

EOR				
TYPE	RATIO RECOMMENDED	a	b	c
EORN	100 TO 300 A	25/30	70	85
EOR	100 TO 400 A	30/40	80	92
EORA	100 TO 400 A	30/40	80	110
EORB	150 TO 500 A	30/40	100	130
EORC	200 TO 600 A	40/50	110	140
EORD	200 TO 600 A	50/55	120	150
EORE	300 TO 800 A	70/75	130	160
EORM	300 TO 800 A	80/85	140	170
EORF	400 TO 1000 A	85/90	150	180
EORG	400 TO 1250 A	100	160	190
EORH	500 TO 1600 A	115	180	210
EORI	600 TO 2000 A	140	210	240
EORJ	800 TO 3200 A	200	270	300

Axial depth will be as per relevant offer. **TOLERANCE ± 5 %**

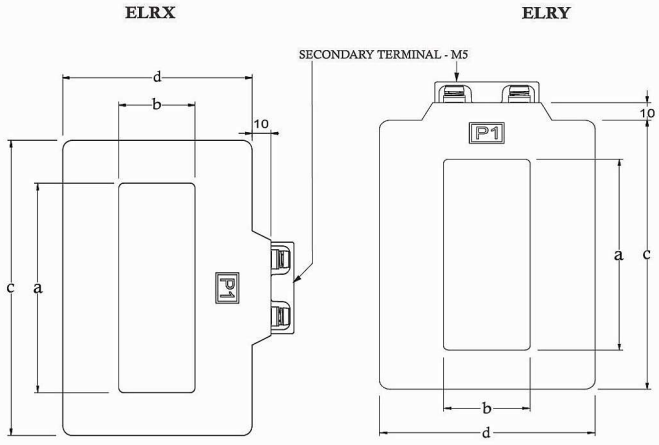


MOUNTING DIMENSIONS	
TYPE- EOR	*
A-E/M	80
F-G	100
H-J	120

RESIN CAST RECTANGULAR TYPE CURRENT TRANSFORMERS

ELR					
TYPE	RATIO RECOMMENDED	a	b	c	d
ELRV3	150 TO 250 A	25	20	55	55
ELRV2	200 TO 300 A	35	20	65	65
ELRV4	300 TO 600 A	65	30	90	90
ELRO	400 TO 800 A	85	45	125	85
ELRP	500 TO 1000 A	85	60	125	105
ELRH	600 TO 1000 A	55	45	125	115
ELRA	800 TO 1600 A	80	45	140	105
ELRI	800 TO 1600 A	85	45	150	110
ELRB	1000 TO 2000 A	130	60	170	110
ELRC	1000 TO 3200 A	130	85	170	130
ELRJ	1000 TO 3200 A	130	60	180	120
ELRK	1000 TO 3200 A	130	85	180	140
ELRD	1200 TO 4000 A	130	85	195	150
ELRQ	1200 TO 4000 A	130	85	200	145
ELRM	1600 TO 4000 A	160	60	210	115
ELRL	2000 TO 5000 A	130	85	210	145
ELRN	2000 TO 5500 A	170	85	245	145
ELRE	2000 TO 5500 A	170	85	245	160
ELRF	2000 TO 6300 A	210	85	285	160

TOLERANCE ± 5 %



Note: 1. Terminal arrangement shall be "Y" type if not mentioned in the order.
2. Axial depth will be as per relevant offer.

Product conforms to IS:2705 & IEC:61869-2

"elmex" RANGE OF CURRENT TRANSFORMERS

Window / Plug In Type Polycarbonate Encapsulated: (Bar/Cable through) - (BPL)

Application	RING TYPE		RECTANGULAR	
	CT Ratio	Type	CT Ratio	Type
Metering	30/5 TO 3200/5	EOPX/A - F	25/5 TO 7000/5	ELP - ELPT
Protection				

Wound Primary Type: (WPL)

POLYCARBONATE ENCAPSULATED (Metering)			RESIN ENCAPSULATED (Metering & Protection)		
CT Ratio	VA/Class	Type	CT Ratio	VA/Class	Type
5/5 TO 30/5	5 / 0.5 OR 10 / 1.0	EWPHN	5/5 TO 125/5	5 / 0.5 OR 5 / 1.0	EWRA
	7.5 / 0.5 OR 15 / 1.0	EWPA		7.5 / 0.5 OR 10 / 1.0	EWRB
	10 / 0.5 OR 20 / 1.0	EWPIA		10 / 0.5 OR 1 5 / 1.0	EWRC
40/5 TO 150/5	7.5 / 0.5 OR 15 / 1.0	EWPB	5/5 TO 150/5	10 / 5P10	EWRD
				15 / 5P10	EWRE

Window / Plug In Type Tape / Resin Encapsulated: (Bar/Cable through) - (BPL)

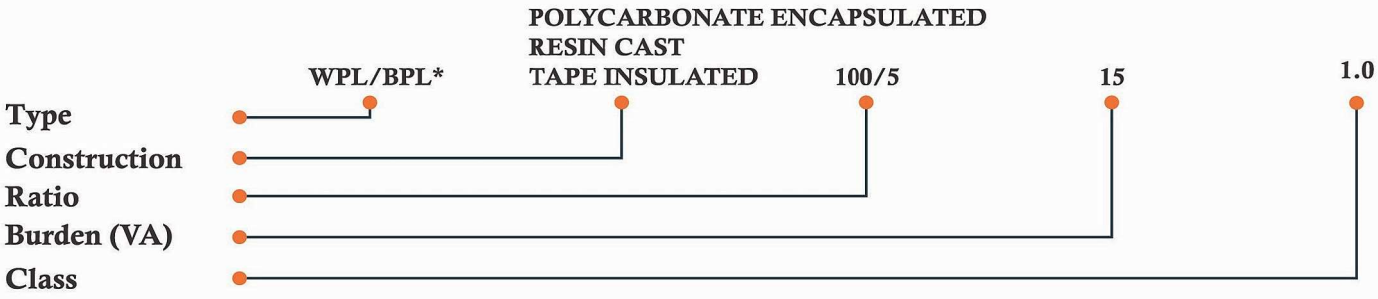
Application	RING TYPE			RECTANGULAR		
	CT Ratio	Tape	Resin	CT Ratio	Tape	Resin
Metering	100/5 TO 6000/5	EOTA - J	EORA - J	400/5 TO 7000/5	ELTA - L	ELRA - L
Protection	150/5 TO 6000/5	EOTD - J	EORD - J			

Note: All types can also be supplied with 1 Amp rated secondary currents

Salient Features

- Maintenance Free
- Compact Design
- Can be mounted in any position
- High Dielectric strength & Tracking Index
- Can withstand mechanical stresses during fault condition
- Continuous Thermal Current - 120% Rated Primary Current

HOW TO ORDER:



* In case of BPL inner dimensions are essential for correct offer.

For Differential Protection CT (Class-PS), please specify Minimum Knee Point Voltage (Vk), Maximum Winding Resistance corrected at 75 °C (RCT) and Permissible Exciting Current (Iex) at Vk or part thereof. Alternatively formula for Vk may be given.

- Mounting clamp and Terminal block for Tape Insulated CT can be offered on request.
- Third party Type Test Reports can be furnished on request.
- Terminal sealing arrangement for Resin CT can be offered on request.
- Custom requirements other than standard can be offered on request.

POLYCARBONATE ENCAPSULATED CURRENT TRANSFORMERS

TAPE INSULATED CURRENT TRANSFORMERS

RESIN ENCAPSULATED CURRENT TRANSFORMERS

Elmex Controls Pvt. Ltd.
Elmex Electric Pvt. Ltd.

12, GIDC Estate, Makarpura Road, Vadodara 390010, Gujarat, India
marketing@elmex.net & csct@elmex.net www.elmex.net
+91-265 2642021, 2642023

ElmexControls Pvt. Ltd. Elmexcontrols Elmex Controls Pvt. Ltd.