

**LOW TENSION
CURRENT & VOLTAGE TRANSFORMERS**



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BASIC FUNCTIONS OF C.Ts.

- ❖ TO REDUCE LINE CURRENT TO A VALUE WHICH IS SUITABLE FOR STANDARD MEASURING INSTRUMENTS, RELAYS etc.
- ❖ TO ISOLATE THE MEASURING INSTRUMENTS, METERS, RELAYS etc. FROM LINE VOLTAGE OF AN INSTALLATION
- ❖ TO PROTECT MEASURING INSTRUMENTS AGAINST SHORT CIRCUIT CURRENT.
- ❖ TO SENCE ABNORMALITIES IN CURRENT & GIVE CURRENT SIGNALS TO PROTECTIVE RELAYS TO ISOLATE THE DEFECTIVE SYSTEM.

INTRODUCTION

THE MAIN FUNCTION OF A CURRENT TRANSFORMER IS TO REPRODUCE THE PRIMARY CURRENT ON ITS SECONDARY SIDE & THUS EXTEND THE RANGE OF INSTRUMENTS/PROTECTIVE DEVICES CONNECTED IN ITS SECONDARY CIRCUIT. A C.T. BY ITS VERY NATURE OF APPLICATION, ISOLATES THE DEVICES CONNECTED IN ITS SECONDARY CIRCUIT FROM THE NETWORK SYSTEM INTO WHICH THE C.T. IS CONNECTED.

THERE ARE TWO BASIC TYPES OF C.T.s -

- 1) BAR PRIMARY &
- 2) WOUND PRIMARY

GENERALLY AS FAR AS POSSIBLE C.T.s. OF THE FORMER TYPES ARE SELECTED BECAUSE THEY ARE MECHANICALLY STRONGER & CHEAPER. IN A BAR PRIMARY C.T.s. THE WORKING AMPERETURNS ARE DETERMINED BY THE PRIMARY CURRENT.

THEREFORE THE ACCURACIES THAT CAN BE OFFERED WITH THESE C.T.s. BECOME PROGRESSIVELY INFERIOR AS THE RATED PRIMARY CURRENT DECREASES. IN SUCH CASES, WOUND PRIMARY C.T.s. ARE USED.

A RING TYPE C.T. IS ESSENTIALLY A BAR PRIMARY C.T. WITHOUT THE PRIMARY BAR. THESE RING TYPE C.T.s. ARE VERY EASY TO CONNECT IN EXISTING SWITCHGEAR ASSEMBLIES AS THESE ARE MERELY SLIPPED ON TO THE BUSBARS.

THE INDIAN STANDARD SPECIFICATION 4201 / 1967 (APPLICATION GUIDE FOR CURRENT TRANSFORMER) AS ALSO VARIOUS INTER-

NATIONAL SPECIFICATIONS RECOMMEND THE FOLLOWING VALUES OF RATED BURDENS OF VARIOUS TYPES INSTRUMENTS AND THE REQUIRED CLASS OF ACCURACY FOR VARIOUS METERING APPLICATIONS:-

<u>INSTRUMENT</u>	<u>VA BURDEN</u>
AMMETERS	3
CURRENT COILS OF WATTMETERS, AND POWER FACTOR METERS.	5
CURRENT COILS OF KWH, KVAR METERS	5
RECORDING AMMETERS	3
CURRENT COILS OF RECORDING POWER FACTOR METERS AND WATTMETERS	5

APPLICATION

APPLICATION	CLASS OF ACCURACY
FOR PRECISION TESTING OR AS A SUBSTANDARD FOR TESTING LABORATORY CURRENT TRANSFORMERS	0.1
FOR LABORATORY & TEST WORKIN CONJUNCTION WITH HIGH ACCURACY INDICATING INSTRUMENTS, INTEGRATING METERS & ALSO SUB-STANDARD FOR TESTING INDUSTRIAL CTs.	0.2
FOR PRECISION INDUSTRIAL METERING	0.5
FOR COMMERTIAL & INDUSTRIAL METERING	0.5 OR 1
FOR USE WITH INDICATING & GRAPHIC WATTMETERS & AMMETERS	1 OR 3
FOR PURPOSES WHERE THE RATIO IS OF LESS IMPORTANCE e.g. AMMETERS WHERE APPROXIMATE VALUES ARE REQUIRED	3 OR 5

THUS IN A FACTORY WHERE AN AMMETER, AN ENERGYMTER & A POWER FACTOR METER IS REQUIRED TO BE INSTALLED THE BURDEN THAT SHOULD BE SPECIFIED FOR THE C. T.WILL BE 3+5+5+2 (FOR LEADS) =15 VA &ACUURACY CLASS THAT SHOULD BE 1

WHERE ONLY AN AMMETER IS REQUIRED ,ARATED BURDEN OF 5 VA &ACCURACY CLASS 5 WILL BE SUFFICE.

TYPES OF LOW TENSION CURRENT TRANSFORMER:

TAPE INSULATED RING TYPE C.Ts WITH & WITHOUT MOUNTING ARRANGEMENT.
TAPE INSULATED WOUND PRIMARY C.Ts. **CORE BALANCE C.Ts.** : USED IN DETECTING EARTH FAULTS OF VERY SMALL

MAGNITUDE. A THREE PHASE CABLE IS PASSED THROUGH THESE C.Ts &THE UNBALANCED CURRENT IN THE THREE PHASES SET UP A DIFFERENTIAL FLUX GIVING RISE TO A CURRENT ON THE SECONDARY SIDE OF THESE C.Ts. SUFFICIENT TOACTUATEARELAY.

INTERPOSING C.Ts. : USED IN MATCHING THE RATIOS OF MAIN FEEDER C.Ts.

FOR DIFFERENTIAL PROTECTION

CLASS OF ACCURACY

SCHEMES.THESE ALSO FIND APPLICATION

AS SATURABLE C.Ts. USED IN CONJUNCTION WITH MAIN FEEDER C.Ts.&THUS

PROTECT THE METERS CONNECTED TO THESE BY LIMITING THE CURRENT FLOWING THROUGH THE METERS.



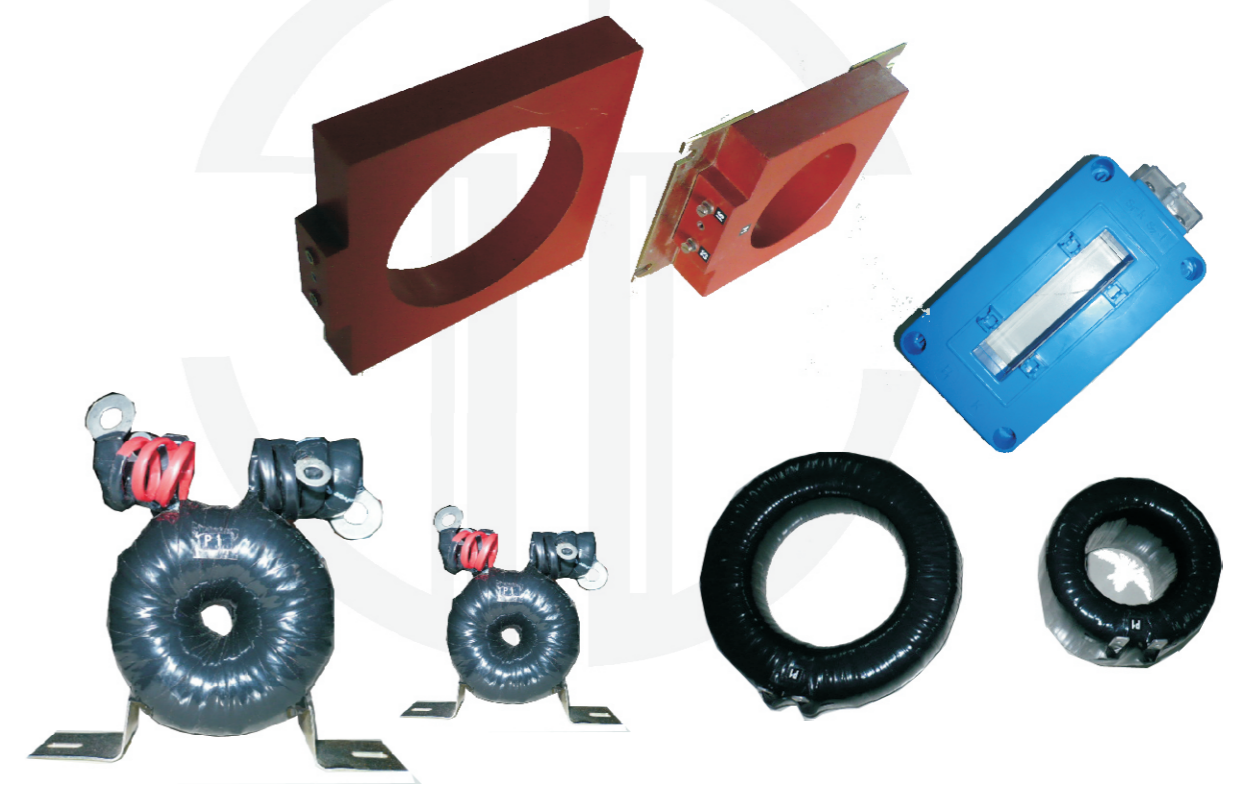
BPL (BAR PRIMARY LOW TENSION) CURRENT TRANSFORMERS

SUMMATION C.Ts. : WHEN CURRENT FLOWING IN MORE THAN ONE ONE FEEDER IS REQUIRED TO BE METERED ,SUMMATION C.Ts .ARE USED .THESE C.Ts .PROVIDED WITH MORE THAN ONE PRIMARY WDG. & ONE COMMON SECONDARY . THE STANDARD PRIMARY & SECONDARY CURRENTS ARE 5 OR 1 AMP. SUMMATION C.Ts . ARE GENERALLY

MANUFACTURE CONFIRMING TO **ISS 6949**

BUSHING TYPE OR BUSDUCT C.Ts. : THESE C.Ts .ARE RING TYPE CONSTRUCTION & CAN BE MOUNTED ON BUSDUCT OR BUSHING TURRET OF POWER TRANSFORMERS .

PRECISION GRADE C.Ts : THESE C.Ts .ARE OF ACCURACY OF 0.1 ,0.2 OR 0.5 & USED AS A STANDARD C.T ,TO CHECK ACCURACIES OF OTHER TRANSFORMERS .THESE C.Ts .ARE EITHER WOUND WOUND PRIMARY OR RING TYPE & MANUFACTURED IN TEAKWOOD CASES .



WPL (WOUND PRIMARY LOW TEBSION C.T.)

RATED BURDEN	15 VA	APPLICABLE STANDARD:
ACCURACY CLASS	1	I.S.S. 2705/1981 OR
RATIO	10/5 TO 200/5 (ANY SINGLE RATIO)	B.S.S. 3938/1973 OR
		I.E.C. 185/1966

NOTES : 1. OTHER RATIOS /ACCURACIES ON REQUEST .
2. RESIN CAST WPL CTs. CAN ALSO BE OFFERED ON REQUEST .

Development is a continuous process and we reserve the right to supply product which differ slightly from those describe