

## CURRENT CLAMP TRANSFORMERS AND FLEXIBLE LOOP CURRENT PROBES TO BE USED WITH POWER SUPPLY REGISTERING AND ANALYSING DEVICES REM-221 AND REM-370



### Clamp transformers type C

Clamp transformers type **C15** and **C52** are used for measuring of AC current in power supply conductors operating at the voltage not exceeding 600 VAC in relation to earth potential. Their mechanical construction enables quick mounting on cables with **maximum diameters 15 mm or 52 mm** (depending which type of the transformer is used) without the necessity for switching off the supply and for observing any special safety measures. These transformers are designed to be used with analysers type REM-221 and REM-370. When transformers are used with devices type REM-221, it is possible to select one of the following rating currents: **100 A, 200 A, 300 A, 500 A, 600 A, or 1000 A**. When transformers are used together with multi-range analysing devices type REM-370 it is enough to use the clamps with nominal current 200A or 1000A.

When measuring nominal currents, transformers generate the voltage signal 1 VAC at their output.

### Flexible loop current probes

Flexible loop current probes type **PP45** with the standard length of **450 mm** are used for measuring AC currents in conductors and power bus bars operating at the voltage not exceeding 600 VAC in relation to earth potential. They are used in all circumstances, when using clamp transformers would be difficult or impossible. Due to the high protection class (**IP 65**), they can be used in **outdoor measuring**. The housing of the flexible current probe is **resistant to oils, solvents and other aggressive substances**. Such a high protection class ensures the high accuracy of measurements in any environmental conditions.

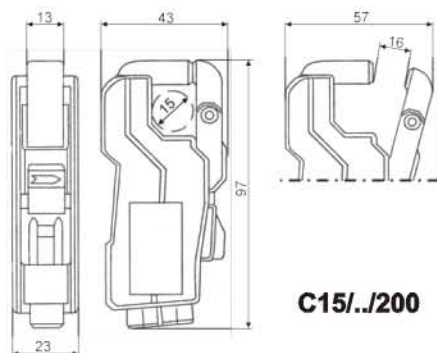
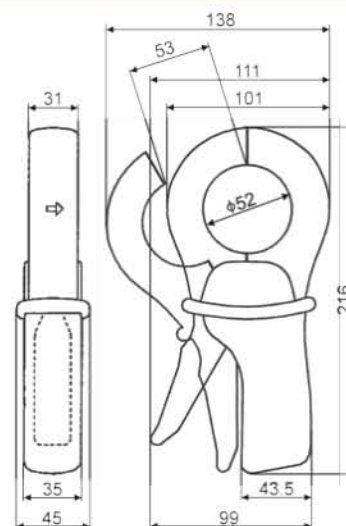


Flexible current probes are **designed to be used with REM-221 and REM-370** power supply quality analysing devices. When used with devices type REM-221, it is possible to select one of the following nominal currents: 100A, 200A, 300A, 500A, 600A, 1000A or 2000A. When used with multi-range analyzing devices type REM-370, nominal current 2000A shall be used.

Significant advantage of current loops is the **lack of rigid magnetic circuit**. Thanks to that loops are elastic, **do not get heated, have low sensitivity for overloads** (all loops can be overloaded with alternating current 3000 A for the period of 40 minutes) and have low and constant phase angle error for the wide range of measured currents. Depending on the type of apparatus used together with clamp transformers or flexible current probes, their connecting leads are equipped with the relevant type of connectors.



## Measurements of current transformers


**C15/..J200**
**C52/..J..**


## Technical parameters of clamp transformers for REM-221 and REM-370 analysers

Type	C52/ttt/1000/x	C52/ttt/600/x	C52/ttt/500/x	C52/ttt/300/x	C52/ttt/200/x	C15/ttt/200	C52/ttt/100/x
Used together with REM - 221	+	+	+	+	+	+	+
Used together with REM - 370	+				+	+	
Length of connecting cable	1,5 m	1,5 m	1,5 m	1,5 m	1,5 m	1,5 m	1,5 m
IP protection class	IP 40	IP 40	IP 40	IP 40	IP 40	IP 40	IP 40
Insulation class	II	II	II	II	II	II	II
Operating temperature	-40°C - +70°C	-40°C - +70°C	-40°C - +70°C	-40°C - +70°C	-40°C - +70°C	-40°C - +70°C	-40°C - +70°C
Allowed relative humidity in operating environment	85%	85%	85%	85%	85%	85%	85%
Nominal current (In)	1000A~	600A~	500A~	300A~	200A~	200A~	100A~
Measurement range	2 - 1000A~	1,2 - 600A~	1 - 500A~	0,6 - 300A~	0,4 - 200A~	0,4 - 200A~	0,2 - 100A~
Allowed overload (for 40 minutes period)	1200A	720A	600A	360A	240A	240A	120A
Ratio	1000A~/1V~	600A~/1V~	500A~/1V~	300A~/1V~	200A~/1V~	200A~/1V~	100A~/1V~
Frequency range	30Hz - 5kHz	30Hz - 5kHz	30Hz - 5kHz	30Hz - 5kHz	30Hz - 5kHz	40Hz - 5kHz	30Hz - 5kHz
Phase angle error for range 20% - 100% In	< 0,50°	< 0,55°	< 0,60°	< 0,70°	< 0,75°	< 2,00°	< 1,00°
Amplitude error for range 20% - 100% In	< 0,50%	< 0,50%	< 0,50%	< 0,50%	< 0,50%	< 1,00%	< 0,50%

## Technical parameters of flexible loop current probes for REM-221 and REM-370 analysers

Typ	PP45/ttt/2000	PP45/221/1000	PP45/221/600	PP45/221/500	PP45/221/300	PP45/221/200	PP45/221/100
Used together with REM - 221	+	+	+	+	+	+	+
Used together with REM - 370	+						
Length of connecting cable	2,5 m	2,5 m	2,5 m	2,5 m	2,5 m	2,5 m	2,5 m
Loop length	450 mm	450 mm	450 mm	450 mm	450 mm	450 mm	450 mm
Internal diameter of closed loop	130 mm	130 mm	130 mm	130 mm	130 mm	130 mm	130 mm
IP protection class	IP 65	IP 65	IP 65	IP 65	IP 65	IP 65	IP 65
Insulation class	II	II	II	II	II	II	II
Operating temperature	-25°C - +55°C	-25°C - +55°C	-25°C - +55°C	-25°C - +55°C	-25°C - +55°C	-25°C - +55°C	-25°C - +55°C
Allowed relative humidity in operating environment	90%	90%	90%	90%	90%	90%	90%
Nominal current (In)	2000A~	1000A~	600A~	500A~	300A~	200A~	100A~
Measurement range	4 - 2000A~	2 - 1000A~	1,2 - 600A~	1 - 500A~	0,6 - 300A~	0,4 - 200A~	0,2 - 100A~
Allowed overload (for 40 minutes period)	3000 ARMS~	3000 ARMS~	3000 ARMS~	3000 ARMS~	3000 ARMS~	3000 ARMS~	3000 ARMS~
Ratio	2000A~/1V~	1000A~/1V~	600A~/1V~	500A~/1V~	300A~/1V~	200A~/1V~	100A~/1V~
Frequency range	10Hz - 20kHz	10Hz - 20kHz	10Hz - 20kHz	10Hz - 20kHz	10Hz - 20kHz	10Hz - 20kHz	10Hz - 20kHz
Phase angle error for range 20% - 100% In	< 0,50°	< 0,50°	< 0,50°	< 0,70°	< 0,80°	< 1,00°	< 1,00°
Amplitude error for range 20% - 100% In	< 0,50%	< 0,50%	< 0,50%	< 0,50%	< 0,50%	< 0,50%	< 0,50%

tt it is the designation of the analyser type, for which the transformers are designed (tt=221 for REM-221, tt=370 for REM-370)

Example of the correct order for transformers: C52/221/1000 (clamp-type transformer for a cable with maximum diameter 52 mm / equipped with the connector for supply recorder type REM-221 / with nominal current 1000 A).

Current transformers C15 and C52 fulfill requirements of the following directives:

- (LDV) 73/23/EWG, 93/68/EWG
- (EMC) 89/336/EWG, 91/263/EWG, 92/31/EWG, 93/68/EWG.

Flexible current probes PP45 fulfill requirements of the following directives:

- (LDV) 73/23/EWG, 93/68/EWG