

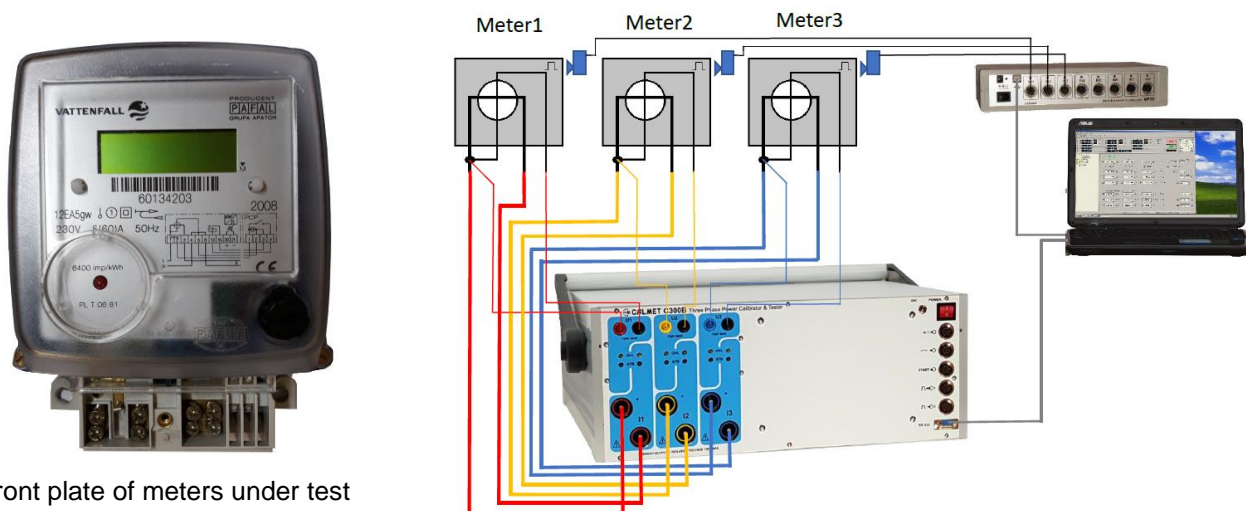
# How to test 3 units of single phase energy meters using C300B Calibrator?

## Application Note No30

The measurement system consists of:

- **C300B** Three-phase power calibrator & tester;
- **MPX8** Eight-channel Meter Error Calculator;
- Laptop with installed **TB PC-Soft** Software;
- Devices under test – 3 units of single phase meters.

The test is performed in a measurement system where each energy meter under test (DUT) is connected to the C300B Calibrator separately on each phase, respectively: DUT1 to L1, DUT2 to L2, and DUT3 to L3, as presented below:

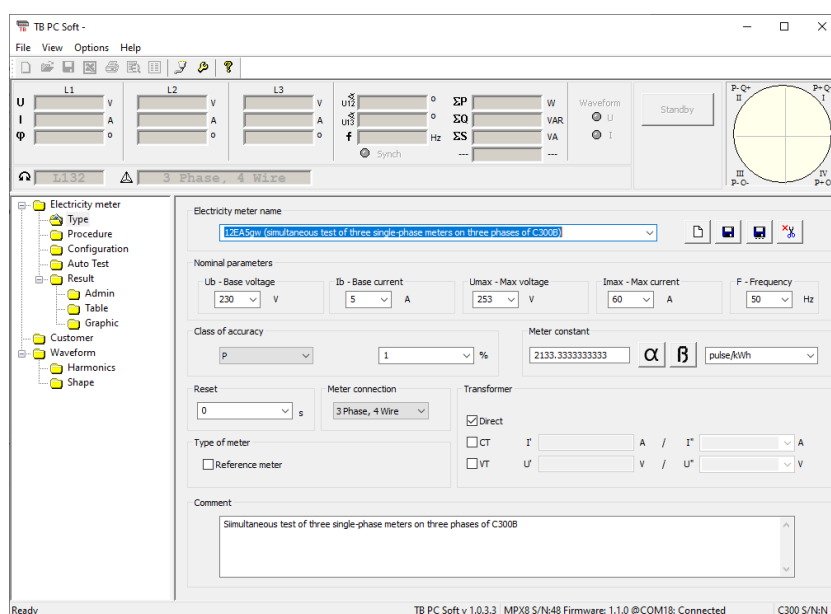


Front plate of meters under test

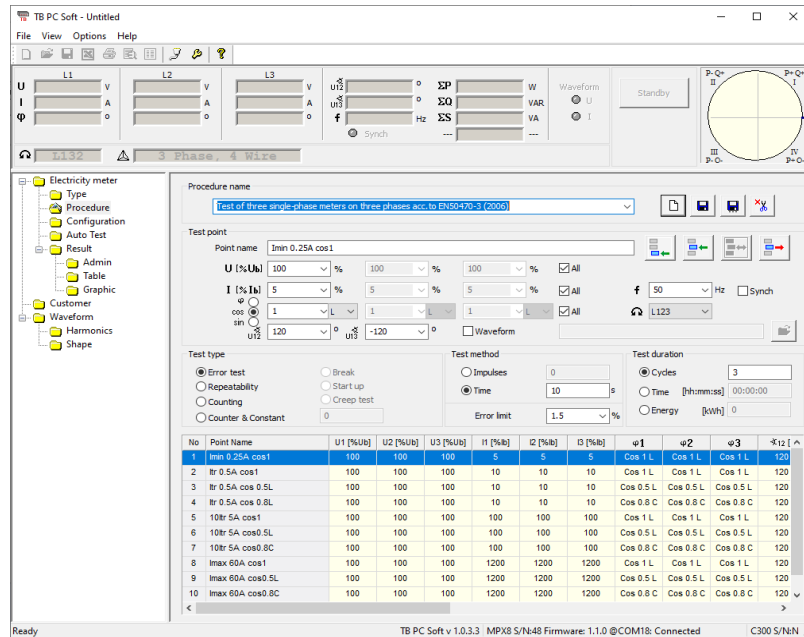
The C300B Calibrator works as three-phase voltage, current source and reference meter.

To initiate the test, the user should perform the following steps in *TB PC-Soft*:

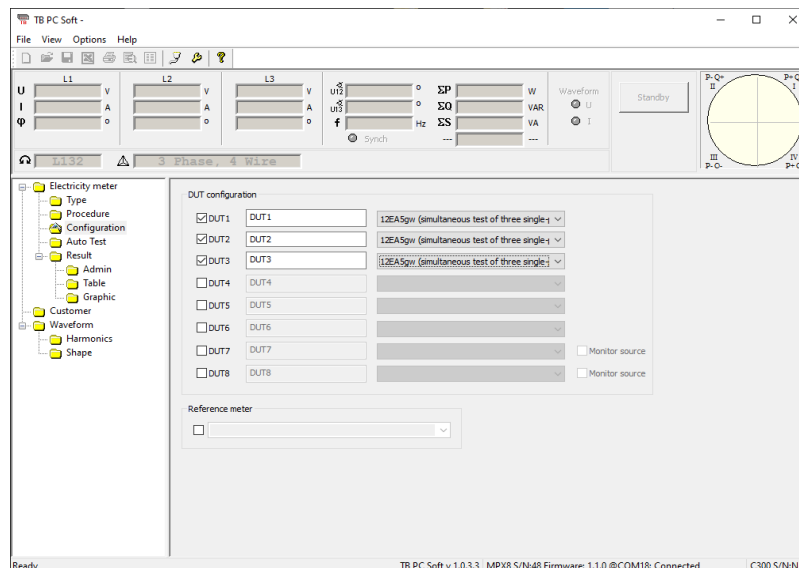
1. In *Type* function – set all parameters of the tested energy meters.  
Attention: Because the C300B generates energy in three phases and the *Meter connection* field is set to *3 Phase, 4 wire*, the value of impulse constant entered in the *Meter constant* field must be divided by 3 (instead of 6400 imp/kWh, 2133.333333 imp/kWh is entered).



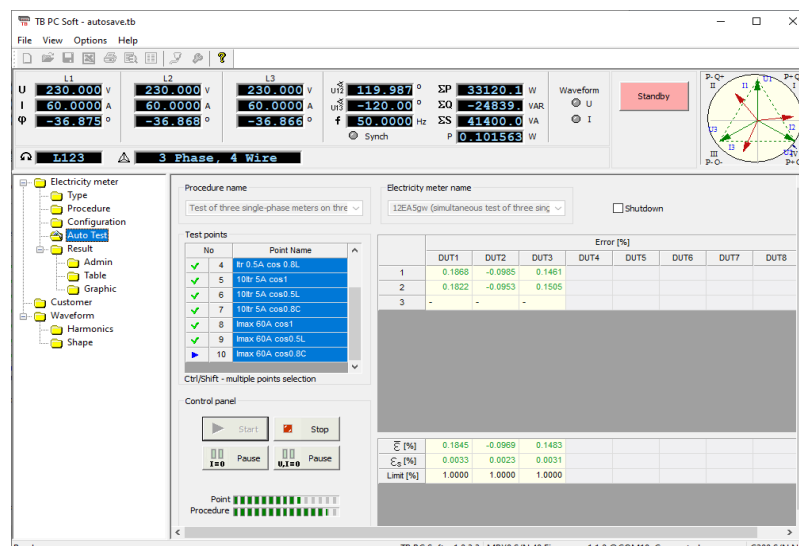
- The *Procedure* function allows the user to prepare a set of load points acc. to requirements of standard (in this case acc. to EN 50470-3) or acc. to the individual requirements of the user.



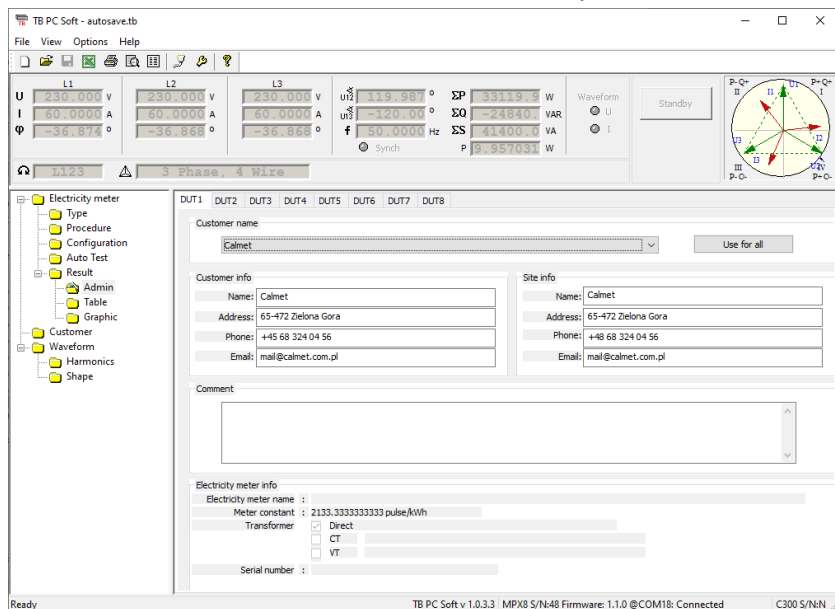
- In *Configuration* function the specific type of energy meter, defined earlier, is assigned to the specific input of the MPX8 Multiplexer.



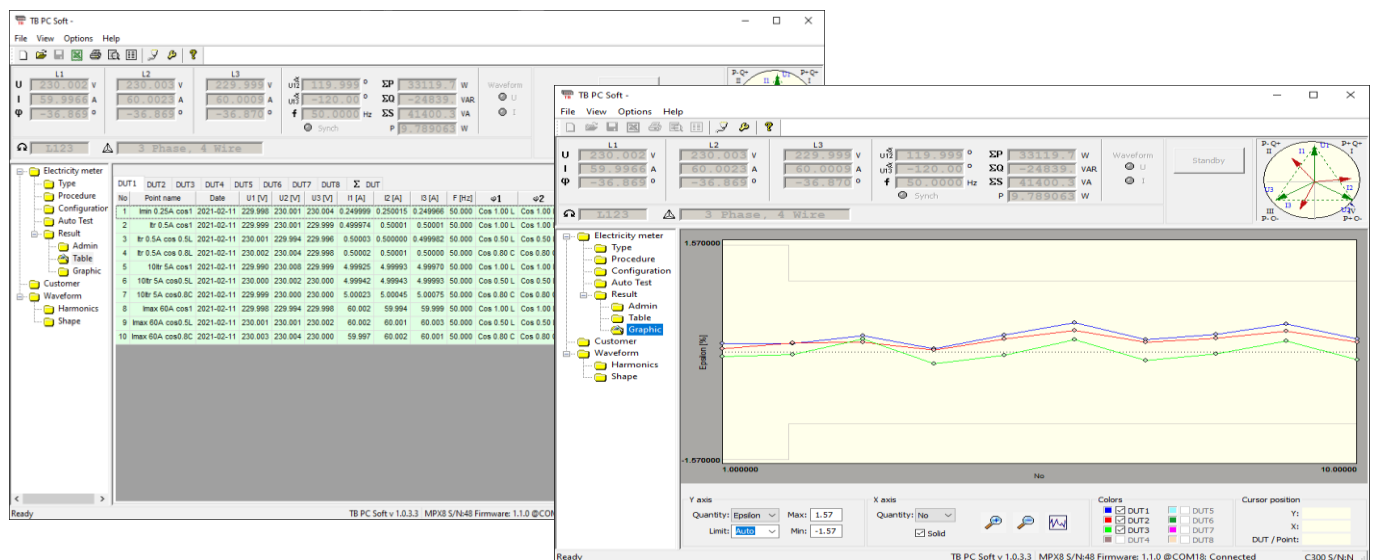
- The *AutoTest* function takes the load points acc. to the procedure and generates them automatically. For each load point, the accuracy of the energy meter under test is calculated.



5. In the Result function the administrative data for a measurement report is entered,



and the achieved results are presented in the form of a table and diagram.



6. The administrative data and results for each DUT can be exported to MS Excel in order to prepare a measurement report.

Customer info	
1 Customer info	
2 Name:	Calmet
3 Address:	65-472 Zielona Gora
4 Phone:	+45 68 324 04 56
5 Email:	mail@calmet.com.pl
6	
7 Site info	
8 Name:	Calmet
9 Address:	65-472 Zielona Gora
10 Phone:	+48 68 324 04 56
11 Email:	mail@calmet.com.pl
12	
13 Comment	
14	
15 Electricity meter name	
16 Meter connection	Direct
17 Meter constant	2133.333333333 pulse/kWh
18 Serial number	DUT1
19	
20	

No	Point name	Date	U1 [V]	U2 [V]	U3 [V]	I1 [A]	I2 [A]	I3 [A]	F [Hz]	Ph1	Ph2	Ph3	Connection	Rotation	Test power	Limit	Epsilon [%]	Epsilons [%]	OK
1	imin 0.25A cos1	2021-02-11	229,998	230,001	230,004	0,249999	0,250015	0,249966	50	1 Cos L	1 Cos L	1 Cos L	3P4W	L123	172,49 W	1,5	0,0481	0,0389 +	
2	itr 0.5A cos1	2021-02-11	229,998	230,001	229,999	0,499974	0,500001	0,500001	50	1 Cos L	1 Cos L	1 Cos L	3P4W	L123	344,99 W	1	0,1337	0,0035 +	
3	itr 0.5A cos 0.5L	2021-02-11	230,001	229,994	229,996	0,500003	0,5	0,499982	50	0,5 Cos L	0,5 Cos L	0,5 Cos L	3P4W	L123	172,5 W	1	0,1382	0,0222 +	
4	itr 0.5A cos 0.8L	2021-02-11	230,002	230,004	229,998	0,500002	0,500001	0,5	50	0,8 Cos C	0,8 Cos C	0,8 Cos C	3P4W	L123	276,01 W	1	0,0486	0,1256 +	
5	10tr 5A cos1	2021-02-11	229,998	229,994	229,998	4,999925	4,99993	4,99997	50	1 Cos L	1 Cos L	1 Cos L	3P4W	L123	3449,68 W	1	0,2423	0,0051 +	
6	10tr 5A cos0.5L	2021-02-11	230	230,002	230	5,000023	5,000045	5,00075	50	0,5 Cos L	0,5 Cos L	0,5 Cos L	3P4W	L123	1724,85 W	1	0,4179	0,0105 +	
7	10tr 5A cos0.8L	2021-02-11	229,998	229,994	229,998	4,999925	4,99993	4,99997	50	0,8 Cos C	0,8 Cos C	0,8 Cos C	3P4W	L123	41397,66 W	1	0,1446	0,0057 +	
8	10tr 5A cos0.5L	2021-02-11	230	230,002	230	5,000023	5,000045	5,00075	50	0,5 Cos L	0,5 Cos L	0,5 Cos L	3P4W	L123	1724,85 W	1	0,4179	0,0105 +	
9	10tr 5A cos0.8L	2021-02-11	229,998	229,994	229,998	4,999925	4,99993	4,99997	50	0,8 Cos C	0,8 Cos C	0,8 Cos C	3P4W	L123	41397,66 W	1	0,1446	0,0057 +	
10	10tr 5A cos0.5L	2021-02-11	230	230,002	230	5,000023	5,000045	5,00075	50	0,5 Cos L	0,5 Cos L	0,5 Cos L	3P4W	L123	1724,85 W	1	0,4179	0,0105 +	
11	10tr 5A cos0.8L	2021-02-11	229,998	229,994	229,998	4,999925	4,99993	4,99997	50	0,8 Cos C	0,8 Cos C	0,8 Cos C	3P4W	L123	41397,66 W	1	0,1446	0,0057 +	
12	10tr 5A cos0.5L	2021-02-11	230	230,002	230	5,000023	5,000045	5,00075	50	0,5 Cos L	0,5 Cos L	0,5 Cos L	3P4W	L123	1724,85 W	1	0,4179	0,0105 +	
13	10tr 5A cos0.8L	2021-02-11	229,998	229,994	229,998	4,999925	4,99993	4,99997	50	0,8 Cos C	0,8 Cos C	0,8 Cos C	3P4W	L123	41397,66 W	1	0,1446	0,0057 +	
14	10tr 5A cos0.5L	2021-02-11	230	230,002	230	5,000023	5,000045	5,00075	50	0,5 Cos L	0,5 Cos L	0,5 Cos L	3P4W	L123	1724,85 W	1	0,4179	0,0105 +	
15	10tr 5A cos0.8L	2021-02-11	229,998	229,994	229,998	4,999925	4,99993	4,99997	50	0,8 Cos C	0,8 Cos C	0,8 Cos C	3P4W	L123	41397,66 W	1	0,1446	0,0057 +	
16	10tr 5A cos0.5L	2021-02-11	230	230,002	230	5,000023	5,000045	5,00075	50	0,5 Cos L	0,5 Cos L	0,5 Cos L	3P4W	L123	1724,85 W	1	0,4179	0,0105 +	
17	10tr 5A cos0.8L	2021-02-11	229,998	229,994	229,998	4,999925	4,99993	4,99997	50	0,8 Cos C	0,8 Cos C	0,8 Cos C	3P4W	L123	41397,66 W	1	0,1446	0,0057 +	
18	10tr 5A cos0.5L	2021-02-11	230	230,002	230	5,000023	5,000045	5,00075	50	0,5 Cos L	0,5 Cos L	0,5 Cos L	3P4W	L123	1724,85 W	1	0,4179	0,0105 +	
19	10tr 5A cos0.8L	2021-02-11	229,998	229,994	229,998	4,999925	4,99993	4,99997	50	0,8 Cos C	0,8 Cos C	0,8 Cos C	3P4W	L123	41397,66 W	1	0,1446	0,0057 +	
20	10tr 5A cos0.5L	2021-02-11	230	230,002	230	5,000023	5,000045	5,00075	50	0,5 Cos L	0,5 Cos L	0,5 Cos L	3P4W	L123	1724,85 W	1	0,4179	0,0105 +	
21	10tr 5A cos0.8L	2021-02-11	229,998	229,994	229,998	4,999925	4,99993	4,99997	50	0,8 Cos C	0,8 Cos C	0,8 Cos C	3P4W	L123	41397,66 W	1	0,1446	0,0057 +	
22	10tr 5A cos0.5L	2021-02-11	230	230,002	230	5,000023	5,000045	5,00075	50	0,5 Cos L	0,5 Cos L	0,5 Cos L	3P4W	L123	1724,85 W	1	0,4179	0,0105 +	
23	10tr 5A cos0.8L	2021-02-11	229,998	229,994	229,998	4,999925	4,99993	4,99997	50	0,8 Cos C	0,8 Cos C	0,8 Cos C	3P4W	L123	41397,66 W	1	0,1446	0,0057 +	
24	10tr 5A cos0.5L	2021-02-11	230	230,002	230	5,000023	5,000045	5,00075	50	0,5 Cos L	0,5 Cos L	0,5 Cos L	3P4W	L123	1724,85 W	1	0,4179	0,0105 +	
25	10tr 5A cos0.8L	2021-02-11	229,998	229,994	229,998	4,999925	4,99993	4,99997	50	0,8 Cos C	0,8 Cos C	0,8 Cos C	3P4W	L123	41397,66 W	1	0,1446	0,0057 +	
26	10tr 5A cos0.5L	2021-02-11	230	230,002	230	5,000023	5,000045	5,00075	50	0,5 Cos L	0,5 Cos L	0,5 Cos L	3P4W	L123	1724,85 W	1	0,4179	0,0105 +	
27	10tr 5A cos0.8L	2021-02-11	229,998	229,994	229,998	4,999925	4,99993	4,99997	50	0,8 Cos C	0,8 Cos C	0,8 Cos C	3P4W	L123	41397,66 W	1	0,1446	0,0057 +	
28	10tr 5A cos0.5L	2021-02-11	230	230,002	230	5,000023	5,000045	5,00075	50	0,5 Cos L	0,5 Cos L	0,5 Cos L	3P4W	L123	1724,85 W	1	0,4179	0,0105 +	
29	10tr 5A cos0.8L	2021-02-11	229,998	229,994	229,998	4,999925	4,99993	4,99997	50	0,8 Cos C	0,8 Cos C	0,8 Cos C	3P4W	L123	41397,66 W	1	0,1446	0,0057 +	
30	10tr 5A cos0.5L	2021-02-11	230	230,002	230	5,000023	5,000045	5,00075	50	0,5 Cos L	0,5 Cos L	0,5 Cos L	3P4W	L123	1724,85 W	1	0,4179	0,0105 +	
31	10tr 5A cos0.8L	2021-02-11	229,998	229,994	229,998	4,999925	4,99993	4,99997	50	0,8 Cos C	0,8 Cos C	0,8 Cos C	3P4W	L123	41397,66 W	1	0,1446	0,0057 +	
32	10tr 5A cos0.5L	2021-02-11	230	230,002	230	5,000023	5,000045	5,00075	50	0,5 Cos L	0,5 Cos L	0,5 Cos L	3P4W	L123	1724,85 W	1	0,4179	0,0105 +	
33	10tr 5A cos0.8L	2021-02-11	229,998	229,994	229,998	4,999925	4,99993	4,99997	50	0,8 Cos C	0,8 Cos C	0,8 Cos C	3P4W	L123	41397,66 W	1	0,1446	0,0057 +	