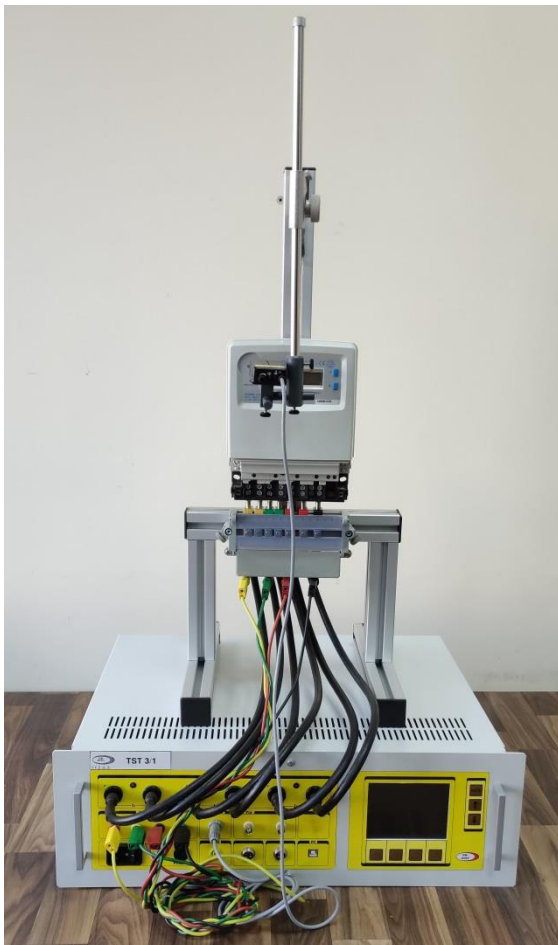


One Position Electricity Meter Test Bench

TST 3/1



General

The **Test Bench TST 3/1** is designed to test one electricity meter class 0.2 or worse, mechanical or electronic; 1-phase or 3-phase 3W or 4W; direct or CT rated; for active, reactive or apparent energy.

Tests – Error, Register, Starting Current, No Load, Meter Constant. Harmonics, Load Only.
A single Test or pre-defined Test Plans can be executed manually (from the panel of the casing) or by a control from a PC with EE Software.

Components of the main Casing :

- Three-Phase Voltage Generator up to 500 Vac;
- Three-Phase Current Generator up to 120 A;
- Three-Phase Energy Standard Class 0.04 .
- **Meter Suspension Rack** equipped with Aluminum Stand for hanging of one Meter, Universal Scanning Head with 3D Mechanics, Electronic Port Reader, Quick Current Connectors, Current Cables and Safety Voltage Sockets.

Tests from the Panel of the Casing

Features: Set-up Menu, Manual Tests, Test Plans, Generation of Load Only, Tools Menu, Save Test Results, View Saved Files, Transfer of Saved Files to a PC with EE Software.

Manual Tests

Error, Register, No Load or Starting Current

MANUAL TEST
 Test OFF Load OFF LOAD MEAS

Test Type	ERROR	V _A =	000.00 V
Circuit Type	WYE	V _B =	000.00 V
Energy Type	Wh	V _C =	000.00 V
Trigger Type	PICK-UP	I _A =	000.00 A
Constant (pulses/kWh)	100000	I _B =	000.00 A
Pulses	1	I _C =	000.00 A
Test Time	15	*V _A I _A =	000.0 *
		*V _A I _B =	000.0 *
		*V _A I _C =	000.0 *
		f =	00.00 Hz
		*V _A V _A =	000.0 *
		*V _A V _C =	000.0 *
		V _{AB} =	000.0 V
		V _{CB} =	000.0 V

Progress: 0 100
ERR -00.008 %
 STAND: 7.1805 Wh
 METER: 7.1800 Wh
 TIME: 14.993 SEC

Save Setup Test ON Load ON

Test Plans -12 Test Points

Maximum 100 pre-defined Test Plans

TEST PLAN No 03 4W WYE

Ph %	Set	Shift (°)	Pulses	Err [%]	V _A =	229.89 V
Σ	100	0.0	600	-0.0022	V _B =	230.05 V
Σ	100	60.0	300	+0.038	V _C =	230.02 V
Σ	100	324.0			I _A =	10.021 A
					I _B =	10.018 A
					I _C =	10.003 A
					*V _A I _A =	060.0 *
					*V _A I _B =	060.1 *
					*V _A I _C =	059.9 *
					f =	49.99 Hz
					*V _A V _A =	120.0 *
					*V _A V _C =	240.0 *
					V _{AB} =	398.5 V
					V _{CB} =	398.4 V

I set = 010.000A

Save Setup Test OFF Load OFF

Tests from a PC with EE Software

Features: Manual Tests, Test Plans, Generation of Load, Harmonics, Save and Search in MySQL Data Base, Print Test Reports, Export in Excel, Statistics – max 10 repeats, Standard Deviation.

Manual Tests

Error, Register, No Load or Starting Current

Electricity Meter Free Test

Set Parameters: Phase A, Phase B, Phase C, I, V, I, φ, Freq., Time, Pulses, <U12, <U13, Dose.

View Parameters: Phase A, Phase B, Phase C, I, V, I, φ, Active Power, Reactive Power, Freq., Dose, Time, Met. En, Error.

Generation: Amps and Volts, Cable Check.

COM Port: COM1 Refresh Start Stop

Test Plans – 200 Test Points

Error, Register, No Load or Starting Current

Electricity Meter Auto Test

Set Parameters: Test Name, Run Mode, Generation, Frequency.

View Parameters: Phase A, Phase B, Phase C, I, V, I, φ, Active Power, Reactive Power, Pulses, Dose, Time, Error.

Start Stop

No	Test	V [%]	I [%]	I [A]	φ [°]	V1	V2	V3	I1	I2	I3	Dose [kWh]	Pulses	Time [sec]	From Error [%]	Count	Time
1	Err	100.00	100.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	10.00	0.20	1.00	1.00	1.00
2	Err	100.00	100.00	-	60.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	10.00	0.20	1.00	1.00	1.00
3	Err	100.00	100.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	10.00	0.20	1.00	1.00	1.00
4	Err	100.00	100.00	-	60.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	10.00	0.20	1.00	1.00	1.00
5	Err	100.00	100.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	10.00	0.20	1.00	1.00	1.00

Passed Test V [%] I [%] I [A] φ [°] V1 V2 V3 I1 I2 I3 Begin End Dose [kWh] Pulses Time [sec] From Error [%] Error [%]

Yes Err 100.00 100.00 - 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00 10 0.20 1.00 1.00

Yes Err 100.00 100.00 - 60.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00 10 0.20 1.00 1.00

Yes Err 100.00 100.00 - 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00 10 0.20 1.00 1.00

Yes Err 100.00 100.00 - 60.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00 10 0.20 1.00 1.00

Yes Err 100.00 100.00 - 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00 10 0.20 1.00 1.00

Status: Load Mode

Harmonics Generation

Up to 20th Harmonic (Optionally – to 50th)

Current Phase A THD: 15.00 %
 Current Phase B THD: 15.00 %
 Current Phase C THD: 15.00 %

Value Phase A THD: 4.00 %
 Value Phase B THD: 4.00 %
 Value Phase C THD: 4.00 %

Send Ia Send Va Send Ib Send Vb Send Ic Send Vc

Harmonics Measured Data: Harmonics: I A, Harmonics: V A, Harmonics: I B, Harmonics: V B, Harmonics: I C, Harmonics: V C

COM Port: COM1 Refresh Start Stop

View Test Reports from MySQL Data Base

Search by Date, Meter ID, Location

Report: Meter with Generation Header: Example Footer: Example Const.: Pulses/kWh

EM SYST Example Title Report

Location ID: ABBY Meter ID: 3918 Date: 06/22/2016

Frequency - 49.98 Hz, Circuit Type - WYE, Meter Constant - 100000 Pulses/kWh

Test Type	Ph	Σ I	V _A [V]	V _B [V]	V _C [V]	I _A [A]	I _B [A]	I _C [A]	φ [°]	V _{AB} [V]	V _{BC} [V]	Dose [kWh]	Pulses	Time [s]	From Error [%]	Time [s]	Err [%]
EmpP	Σ	5	120.02	120.01	120.04	4.997	4.997	4.995	0	120	240	0	60	120.02	0.019		
EmpP	Σ	10	120.02	120.01	120.03	9.994	9.995	9.994	0	120	240	0	120	120.04	0.016		
EmpP	Σ	100	119.99	120.01	120.04	99.910	99.964	99.996	0	120	240	0	12000	120.02	0.002		
EmpP	A	100	120.02	120.01	120.04	-	99.934	-	-	120	-	0	4000	120.04	0.023		
EmpP	B	100	119.99	120.01	120.04	-	-	99.989	-	-	240	0	4000	120.04	0.011		
EmpP	C	100	120.01	120.01	120.03	-	-	-	99.989	-	-	0	1200	240.00	0.011		
EmpP	Σ	10	120	120.02	120.03	10.007	9.999	10.007	60	180	300	0	1200	240.00	0.011		
EmpP	Σ	20	120	120.01	120.03	20.002	19.999	20.006	60	180	300	0	2400	240.00	0.011		
EmpP	Σ	100	120.02	120.01	120.03	99.988	99.941	99.989	60	180	300	0	12000	240.02	0.016		
EmpP	A	100	120.02	120.01	120.03	99.926	-	-	60	-	-	0	4000	240.04	0.045		
EmpP	B	100	119.99	120.01	120.04	-	99.903	-	-	180	-	0	4000	240.04	0.045		
EmpP	C	100	120.03	120	120.03	-	-	99.910	-	-	300	0	4000	241.23	0.046		

TECHNICAL DATA

GENERAL – Meter Test Bench TST 3/1		
Power Supply: 85 ... 265 Vac, 47...63 Hz	Operation Temperature Range: 0°C ... 40°C	
Power Consumption: 600 VA max	Relative Humidity: < 95%, Non-condensing	
Dimensions [HxLxW]: 190x550x450 mm	Weight: 27 kg	
Overvoltage Category: 300V, Cat III	Safety Tests: IEC 61010-1: 2010	
Circuit Types: 4WY, 3WA, Single Phase	Measure: Wh, varh, VAh, U, I, φ, P, Q, S, f, THD, PF	
Tests: Error, Register, No-Load, Start. Current, Meter Const., Harmonics, Max. Demand, Pre-heating		
Standards: IEC 736, IEC 62052-11, IEC 62053-11, 21, 22, 23, 24, EN 50470-1, 2, 3		
THREE-PHASE LOAD		
PARAMETER	CURRENT SOURCE	VOLTAGE SOURCE
Range	10 mA ... 120 A	30 Vac ... 500 Vac (Ph.-N)
Output Power	Max. 70 VA per phase	Max. 36 VA per phase
Accuracy / Resolution	±0.05 % / 0.01 mA	±0.05 % / 0.01 V
Stability	< 0.02 % (in 1 hour)	< 0.005 % (in 1 hour)
Harmonic Distortions	< 0.8 %	< 0.8 %
Harmonics	From 1 to 20 th , 0...40%, 0...360°	From 1 to 20 th , 0..40%, 0..360°
Phase Shift	0.0° ... 359.9°, step 0.1°	0.0° ... 359.9°, step 0.1°
Frequency	45 ... 65 Hz	45 ... 65 Hz
THREE-PHASE STANDARD		
PARAMETER	RANGE	ERROR CL. 0.04
Voltage	30 ... 500Vac (Phase-Neutral)	< ±0.02 %
Current	0.05 ... 120 A	< ±0.04 %
	0.01 ... 0.05 A	< ±0.04 % ¹⁾
Active Power / Energy	0.05 ... 120 A	< ±0.04 % ²⁾
	0.02 ... 0.04 A	< ±0.04 % ^{1) 2)}
Reactive Power / Energy	0.10 ... 120 A	< ±0.04 % ²⁾
	0.04 ... 0.10 A	< ±0.04 % ^{1) 2)}
Phase Shift	0.00° ... 359.99°	< 0.01°
Power Factor	-0.9999...+0.9999	±0.002
Frequency	40 ... 70 Hz	0.01 Hz
Temp. Coefficient	0°C ... 40°C	< 0.003 %/K
Long Term Stability		≤ 0.008 %/year
METER SUSPENSION RACK FOR ONE METER		
Dimensions: [HxLxW]: 700x300x300 mm	Weight: 7 kg (with Pickup and current cables)	

¹⁾ Error related to the maximum value of the range.

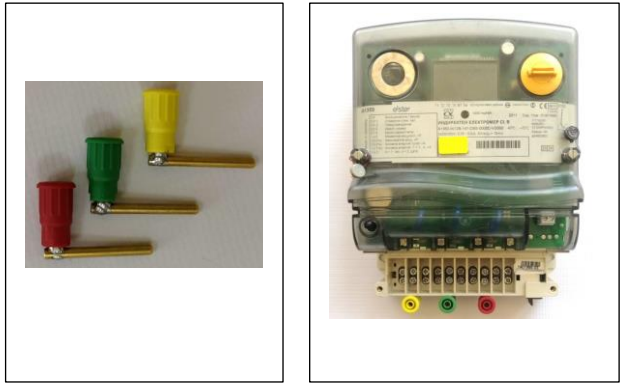
²⁾ Error related to apparent power – to be divided by the Power Factor.

ACCESSORIES for METER TEST BENCH "TST 3/1 UNIVERSAL"

Voltage Cables,



Voltage Sockets for Indirect Meters



Box for SO or Relay Output



Universal Scanning Head



Power Supply Cable



Manual Button

