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CP-LOGGER RCL892

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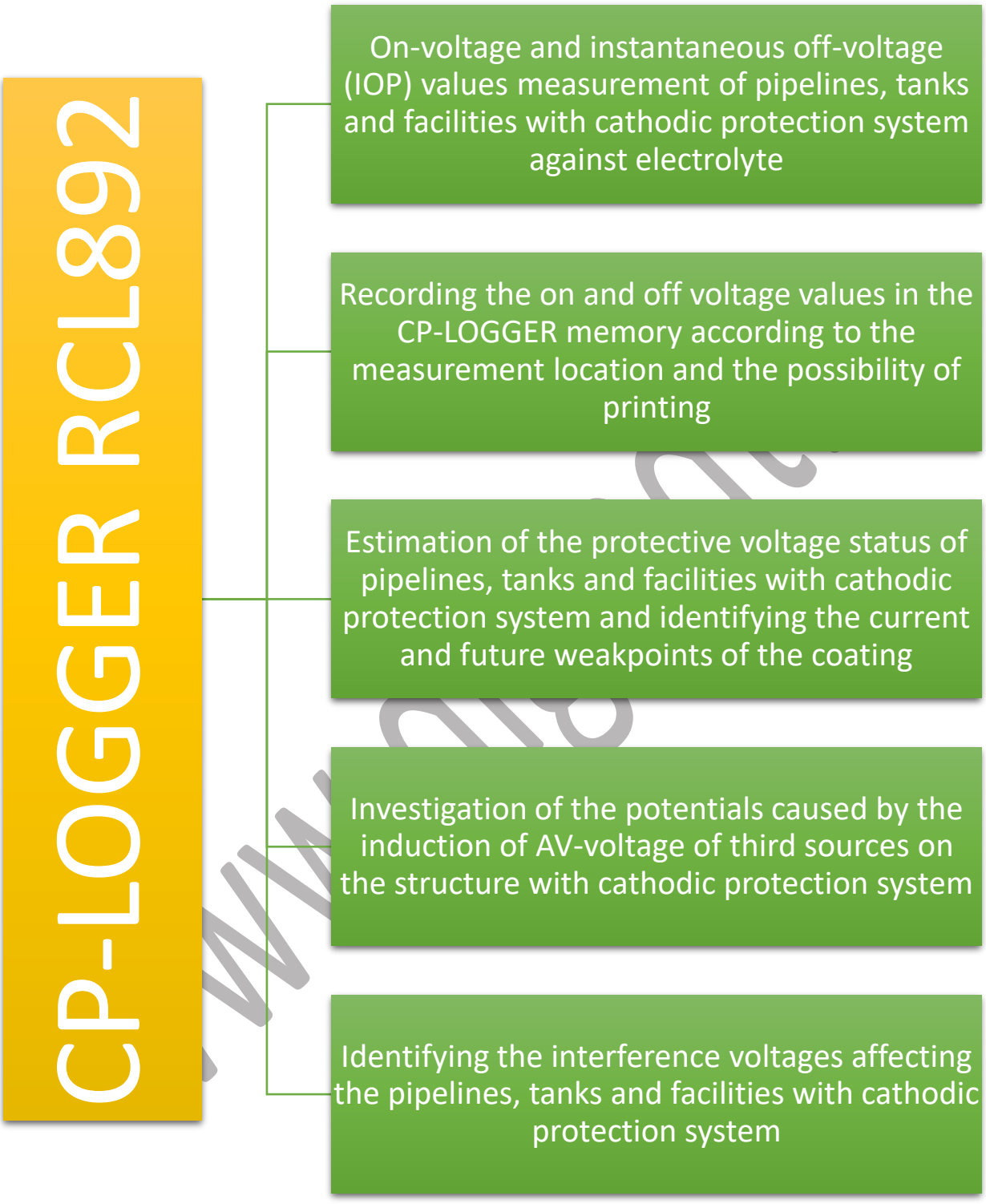
CP-LOGGER RCL892
On-voltage and instantaneous off-voltage (IOP) values measurement of pipelines, tanks and facilities with cathodic protection system against electrolyte
Recording the on and off voltage values in the CP-LOGGER memory according to the measurement location and the possibility of printing
Estimation of the protective voltage status of pipelines, tanks and facilities with cathodic protection system and identifying the current and future weakpoints of the coating
Investigation of the potentials caused by the induction of AV-voltage of third sources on the structure with cathodic protection system
Identifying the interference voltages affecting the pipelines, tanks and facilities with cathodic protection system

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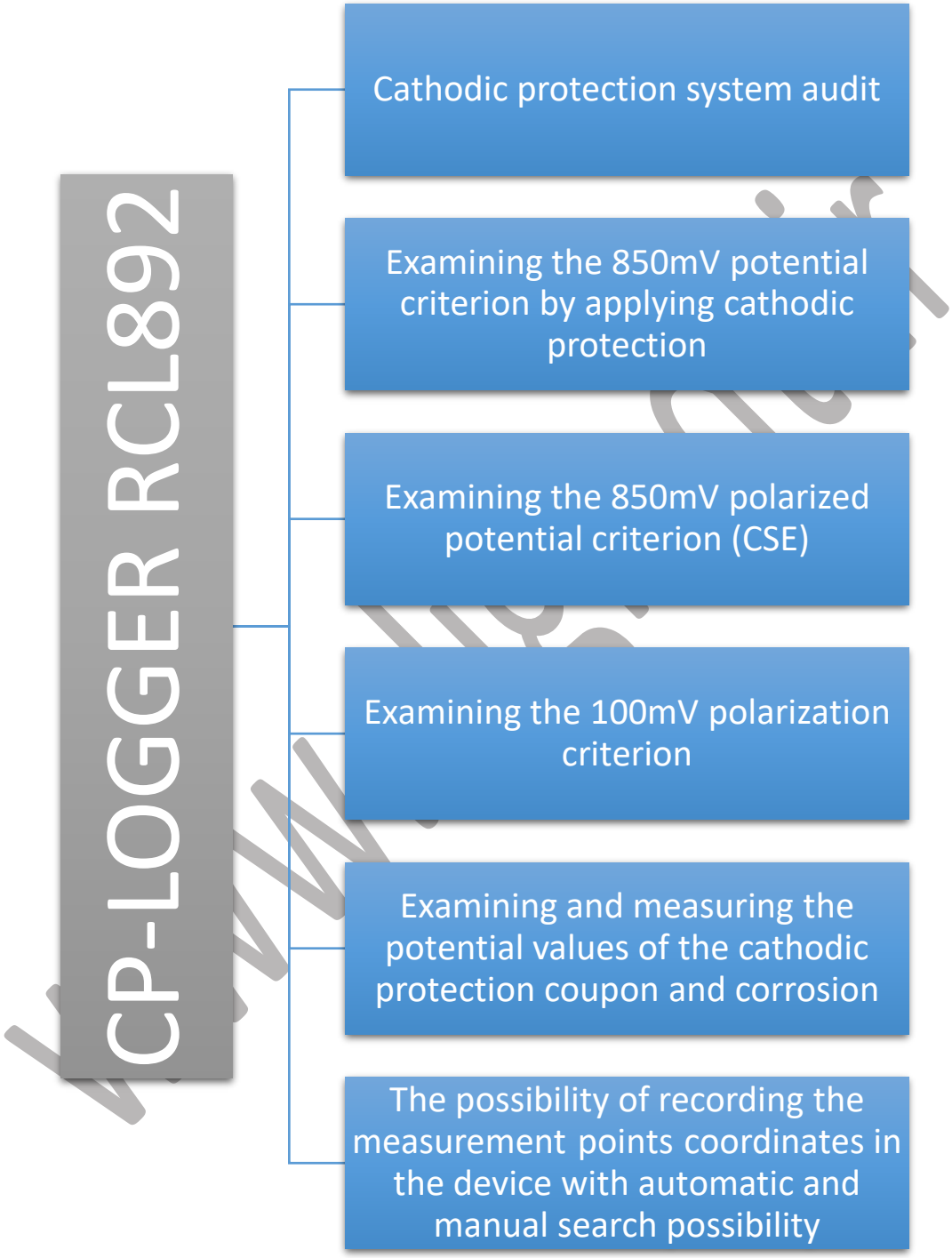

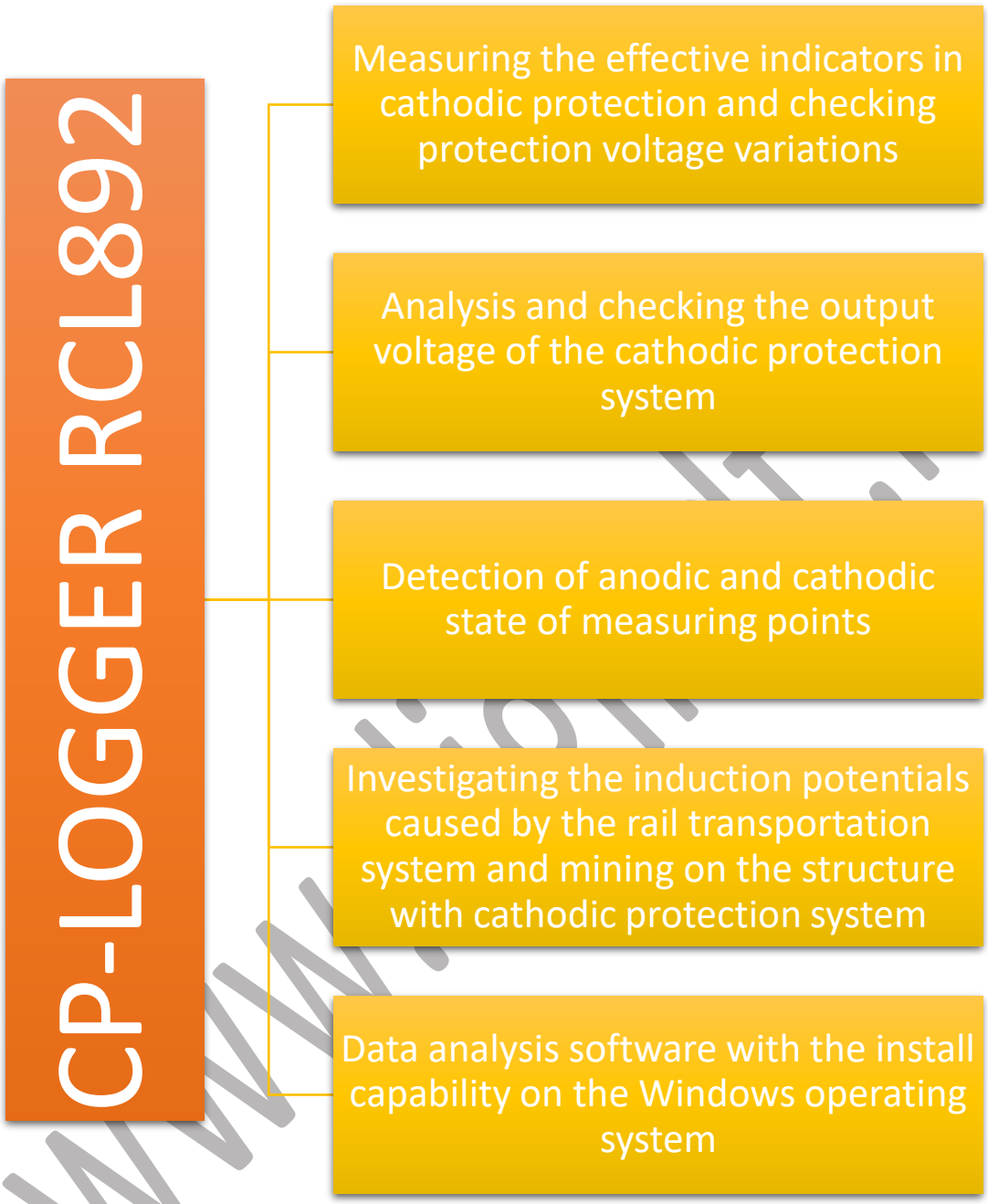

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Technical Specification

Title	Comments
Dimensions	Equipment Case: 450*375*130 mm CP-LOGGER Case: 238*134*58 mm (Handles Case)
Weight	Equipment Case: 5 Kg (10 lb) CP-LOGGER Weight: 900 gram
User Interface	64*128 LCD sunlight readable
Keypad	18-button Touch keyboard
Battery	7.2 V, 4 amp hour NiMH Po
Voltage Reading	DC: -10 ---- +10 V AC: 0 ---- 100 V
Sample Rate	IOP:2000 Log/S Data Logger: 100 Log/S
IOP Reading Time	From 20ms to 700ms
Input Power	DC 12V Adaptor
External Charger	DC 12 V, 3A
GPS	Internal Support 20-Channel GPS Fast TTFF at low signal SiRF Star III high sensitivity solution Determining the cross section of the search
MEMORY	8GB The ability to receive a point information file
LED	Indicative Time(ON/OFF) Logging GPS Reverse polarization detection
SENSOR	ambient temperature Humidity air
Port	1*4 pin with Potential , PRE and Soil moisture sensor 1 serial with data transfer
Troubleshooting	Auto
CD	Cable Convertor Software CP-LOGGER Software
BOOK	CP-LOGGER Training Software Training

Features

Measuring and recording the ON potential value of DP and TP points (periodic readings).

Measuring and recording the instantaneous Off Potential (IOP) value of DP and TP points.

Potential reading range:

-10 - +10VDC

0 - 100VDC

Ambient temperature measurement and recording capability.

Ambient humidity measurement and recording capability.

The ability to detect the anodic and cathodic state of the measuring points.

Ability to operate and synchronize with the connecting and disconnecting hardware of the smart, monitoring, and remote-control system of the RMC-CP cathodic protection system and portable devices that can simultaneously connect and disconnect the output voltage of the cathodic protection system (GPS Synchronize Current Interrupter).

Ability to receive 20,000 measurement points to collect parameter values.

The ability to insert the name and code of measurement points manually.

Ability to automatically display latitude and longitude in the manually inserting the measurement point name section.

The ability to select the measurement point and view the latest voltmeter measurements on the device screen.

The ability to select the measurement point and view the latest IOP (LM) measurements on the device screen.

The ability to search and record measured points based on the file received from the GIS unit in terms of accurate detection of the measurement point and voltage sampling.

Ability to automatically search for measurement points based on:

- Automatic search sensitivity adjustment based on the radius of the local environment with meter quantity.
- Automatic search sensitivity adjustment based on the sensitive ambient radius with meter quantity.

Ability to manually search for measurement points based on:

- Automatic search sensitivity adjustment based on the radius of the local environment with meter quantity.
- Automatic search sensitivity adjustment based on the sensitive ambient radius with meter quantity.

The ability to adjust the measurement point location to two standards:

- WGS84
- UTM

The ability to record and save the longitude and latitude values of the points measured by the device.

The ability to measure the Instantaneous Off Potential (IOP) value as Auto Synchronize.

The ability to set ON and OFF time values.

Ability to convert GPS clock to local time (Time Zone).

The ability to determine and choose the date format based on the Solar or Gregorian year.

The ability to set the Log speed in the data logger section based on at least 10 milliseconds.

The ability to delete and format information stored in the device's memory (Format and Delete Data).

Having a setting option to configure the device.

Password to transfer the stored information to the computer.

Password to clear saved information.

Standby mode for LCD and GPS items to save battery energy.

Having a touch cursor to select different modes and options.

PC connection port.

Four-pin connection port to measure the voltage values (-10 - +10VDC) and (0 - -100VAC).

The ability to display the battery charge status of the device.

Needle port to charge the battery of the device.

The ability to capture the latitude and longitude of facilities, pipelines, roads, rivers, intersections, etc.

Having a portable Connection software to transfer information at the measurement point to a laptop.

Display

The device has a 64*128 Sunlight Readable LCD to read the parameters and 6 LEDs as follows:

Power LED: indicates the device being ON or OFF as the following table.

	RCP-LOGGER	
Power	ON	OFF
Green LED	Green	Black

GPS LED: indicates the device's GPS status in the following table.

	GPS	
GPS	Not Valid	Ok
RED LED	Pilot	Steady On

The number after GPS is an indicator of the receiving satellite's number.

LOG LED: includes 2 display Items:

If one of the modes related to the LOG of the Log Mode set is selected, it displays the sampling status while measuring according to the following table.

If the reading cable is misplaced, the LOG LED displays in Red.

	Log Mode			Reverse Polarization Detection	
	Time Logging				
LOG LED	Data Logger (D&T)	Scope meter	Voltmeter (DC)	True	False
	Pilot in blue	Pilot in blue	Pilot in blue	Black	Red

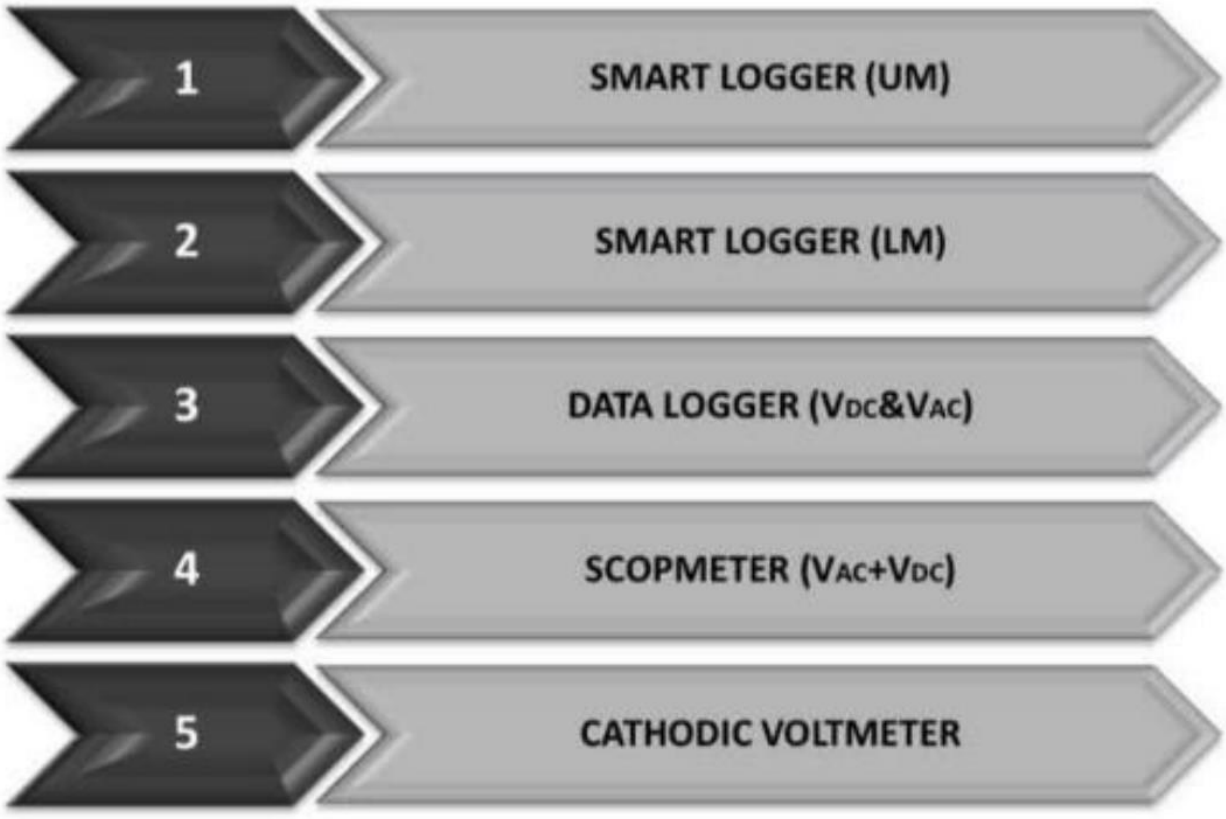
INT LED: It has 2 LEDs and if one of the modes related to the Instant OFF of Log Mode set is selected, it displays the ON and OFF status while measuring.

	Log Mode	
	Time Logging	
INT LED	ON	OFF
	Green	RED

Charger LED: Displays the battery charge status while connected to the adapter as the following table:

	Charging Time	Full Charge
Charger LED	Yellow	Green

LOG MODE



Smart measurement of the Instantaneous OFF Potential of the measuring point in an unlimited sequence of time cycles (SMART LOGGER Unlimited Measurement)

Features:

Smart measurement, recording, and online display of Instantaneous OFF Potential of measuring points in an unlimited sequence of time cycles.

Auto Delay calculation of distance in the smart section.

The smart capability of checking in not measuring the IOP of the test points for the following reasons:

Representing Sample Error in case of non-synchronization of the output disconnection and connection (time discrepancy in the disconnection and connection of the synchrony interrupter) of two cathodic protection systems.

Representing Sample Error in IOP measurement of test points that are under the influence of overlapping cathodic potential of two cathodic protection systems, where the output of one of them has not been connected and disconnected by the synchrony interrupter.

IOP pick-up delay time: 20ms---700ms.

Measuring the polarization potential of measurement points to check the effect of stray currents and AC and DC voltages.

Checking and verifying the ON and OFF time values of simultaneous disconnecting and connecting.

Measuring and checking IOP cathodic protection monitoring coupon.

Measuring and calculating the ΔV of the measurement point to check the IGS-O-TP-002 standard deviation.

Calculating the average amount of DC voltage of the measuring point.

Calculating the maximum and minimum amounts of DC potential for measuring points.

Calculating the average amount of DC_{ON} potential of measuring point.

Calculating the average amount of DC_{IOP} potential of measuring point.

Recording latitude and longitude of measuring points.

Measuring and recording ambient temperature.

Measuring and recording ambient humidity.

Displaying ON and OFF measured values as the table view.

Displaying ON and OFF measured values as an integrated and cumulative graph.

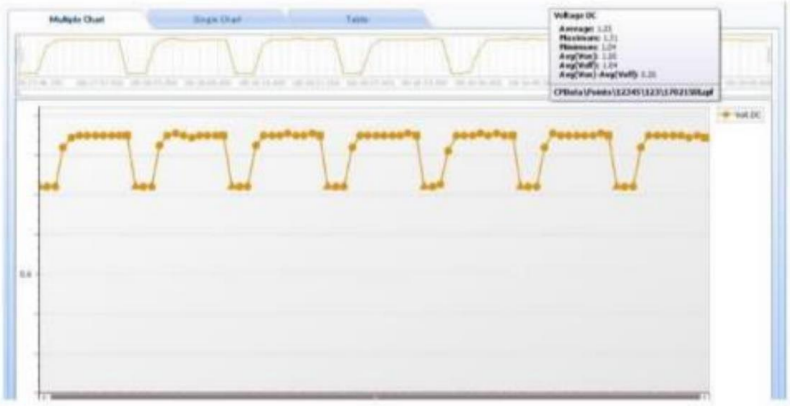
Displaying the latest IOP_{LM} measurements in the device.

IOP Limited Measurement

Instant OFF(IM) **SMART LOGGER(LM)**

Line Name	Point Name	DateTime	V(on)	V(off)	Volt.AC				Longitude
Mokhtar	MV13	1396/03/21 12:32:2	1.65	1.10	---	44.53	7.47	30.706560	51.473730
Mokhtar	MV14	1396/03/21 12:50:1	1.67	1.14	---	44.89	6.49	30.721420	51.465820
Mokhtar	MV15	1396/03/21 13:04:4	1.72	1.12	---	44.58	6.16	30.713520	51.461120
Mokhtar	MV12	1396/03/22 11:50:1	1.63	1.10	---	39.63	7.56	30.702490	51.479580
Mokhtar	MV11	1396/03/22 12:05:1	1.64	1.10	---	38.77	7.29	30.694920	51.483370
Mokhtar	MV10	1396/03/22 12:19:5	1.59	1.06	---	38.83	7.29	30.685520	51.491680
Mokhtar	MV09	1396/03/22 12:33:4	1.60	1.08	---	41.59	6.25	30.682100	51.498880
Mokhtar	MV08	1396/03/22 12:47:3	1.60	1.08	---	44.06	5.82	30.678680	51.505610
Mokhtar	MV07	1396/03/22 13:02:2	1.58	1.06	---	45.98	5.33	30.674280	51.510520
Mokhtar	MV06	1396/03/22 13:18:1	1.56	1.04	---	45.28	5.33	30.669100	51.521170
Mokhtar	MV05	1396/03/23 10:50:5	1.59	1.08	0.00	36.03	9.35	30.673670	51.524870
Mokhtar	MV04	1396/03/23 11:10:1	1.62	1.10	---	38.50	7.59	30.682690	51.529480
Mokhtar	MV03	1396/03/23 11:22:5	1.61	1.10	---	41.27	6.49	30.689240	51.533160
Mokhtar	MV02	1396/03/23 11:34:2	1.61	1.11	---	41.37	6.25	30.691570	51.533120
Mokhtar	MV01	1396/03/23 11:46:5	1.54	1.04	---	40.72	5.88	30.697600	51.533310

IOP **Unlimited Measurement**



▲ Instant OFF

■ ON Potential

Smart measurement of the Instantaneous OFF Potential of the measuring point as a time cycle (SMART LOGGER Unlimited Measurement)

Features:

Smart measurement, recording, and online display of Instantaneous OFF Potential of measuring points in a time cycle.

Auto Delay calculation of distance in the smart section.

The smart capability of checking in not measuring the IOP of the test points for the following reasons:

Representing Sample Error in case of non-synchronization of the output disconnection and connection (time discrepancy in the disconnection and connection of the synchrony interrupter) of two cathodic protection systems.

Representing Sample Error in IOP measurement of test points that are under the influence of overlapping cathodic potential of two cathodic protection systems, where the output of one of them has not been connected and disconnected by the synchrony interrupter.

IOP pick-up delay time: 20ms---700ms.

Measuring and checking Instantaneous OFF Potential of measuring points in annual readings.

Measuring the polarization potential of measurement points to check the effect of stray currents and AC and DC voltages.

Measuring and checking IOP cathodic protection monitoring coupon.

Measuring and calculating the ΔV of the measurement point to check the IGS-O-TP-002 standard deviation.

Calculating the average amount of DC voltage of the measuring point.

Calculating the maximum and minimum amounts of DC potential for measuring points.

Calculating the average amount of DC_{ON} potential of measuring point.

Calculating the average amount of DC_{IOP} potential of measuring point.

Recording latitude and longitude of measuring points.

Measuring and recording ambient temperature.

Measuring and recording ambient humidity.

Displaying the measured values in 2 modes of table view and integrated graph.

IOP Limited Measurement

Instant OFF(IM) **SMART LOGGER(LM)**

Line Name	Point Name	DateTime	V(on)	V(off)	Volt.AC				Longitude
Mokhtar	MV13	1396/03/21 12:32:2	1.65	1.10	---	44.53	7.47	30.706560	51.473730
Mokhtar	MV14	1396/03/21 12:50:1	1.67	1.14	---	44.89	6.49	30.721420	51.465820
Mokhtar	MV15	1396/03/21 13:04:4	1.72	1.12	---	44.58	6.16	30.713520	51.461120
Mokhtar	MV12	1396/03/22 11:50:1	1.63	1.10	---	39.63	7.56	30.702490	51.479580
Mokhtar	MV11	1396/03/22 12:05:1	1.64	1.10	---	38.77	7.29	30.694920	51.483370
Mokhtar	MV10	1396/03/22 12:19:5	1.59	1.06	---	38.83	7.29	30.685520	51.491680
Mokhtar	MV09	1396/03/22 12:33:4	1.60	1.08	---	41.59	6.25	30.682100	51.498880
Mokhtar	MV08	1396/03/22 12:47:3	1.60	1.08	---	44.06	5.82	30.678680	51.505610
Mokhtar	MV07	1396/03/22 13:02:2	1.58	1.06	---	45.98	5.33	30.674280	51.510520
Mokhtar	MV06	1396/03/22 13:18:1	1.56	1.04	---	45.28	5.33	30.669100	51.521170
Mokhtar	MV05	1396/03/23 10:50:5	1.59	1.08	0.00	36.03	9.35	30.673670	51.524870
Mokhtar	MV04	1396/03/23 11:10:1	1.62	1.10	---	38.50	7.59	30.682690	51.529480
Mokhtar	MV03	1396/03/23 11:22:5	1.61	1.10	---	41.27	6.49	30.689240	51.533160
Mokhtar	MV02	1396/03/23 11:34:2	1.61	1.11	---	41.37	6.25	30.691570	51.533120
Mokhtar	MV01	1396/03/23 11:46:5	1.54	1.04	---	40.72	5.88	30.697600	51.533310

Measurement, sampling, and recording AC and DC potential of measuring points as an unlimited cycle with a minimum speed of 10 milliseconds

DATA LOGGER AC & DC

Features:

DATA LOGGER (DC): DC potential measurement and sampling of the pipeline's D.P and T.P points with a minimum speed of 10ms with the following features:

Online display of DC potential of measurement points.

DC potential measurement and sampling of the pipeline's D.P and T.P points with a minimum speed of 10ms in an unlimited time cycle.

Investigating the spike phenomenon caused by disconnecting and connecting the pipeline flow.

DC potential measurement and sampling of the pipeline's D.P and T.P points without the need for an operator in the measurement location in a limited time cycle (meaning: automatic measurement and sampling based on the time and date set by the operator).

DC potential measurement and sampling of the pipeline's D.P and T.P points to verify the impact of the railway transportation system on pipelines as a limited and unlimited time cycle.

DC potential measurement and sampling of the corrosion and cathodic protection monitoring coupons as a limited and unlimited time cycle.

Recording latitude and longitude of measurement points.

Measuring and recording ambient temperature.

Measuring and recording ambient humidity.

Calculating the maximum and minimum sampled amounts of DC potential from the measuring point.

Calculating the average amount of sampled DC potential from the measuring point.

Displaying the measured and sampled values of DC potential for the pipeline's D.P and T.P points in 2 modes of table view and integrated graph.

Displaying the measured and sampled values of DC potential based on the CIPS model in 2 modes of table view and integrated graph.

DATA LOGGER (AC): AC potential measurement and sampling of the pipeline's D.P and T.P points with a minimum speed of 10ms with the following features:

Online display of AC potential for the pipeline's D.P and T.P points.

AC potential measurement and sampling of the pipeline's D.P and T.P points with a minimum speed of 10ms in a limited and unlimited time cycle.

AC potential measurement and sampling of the pipeline's D.P and T.P points to verify the impacts of AC voltage induction on pipelines with environmental factors and the output of the cathodic protection system.

AC potential measurement and sampling of the pipeline's D.P and T.P points without the need for an operator in the measurement location in a limited time cycle (meaning: automatic measurement and sampling based on the time and date set by the operator).

AC potential measurement and sampling of the corrosion and cathodic protection monitoring coupons.

Recording latitude and longitude of measurement points.

Measuring and recording ambient temperature.

Measuring and recording ambient humidity.

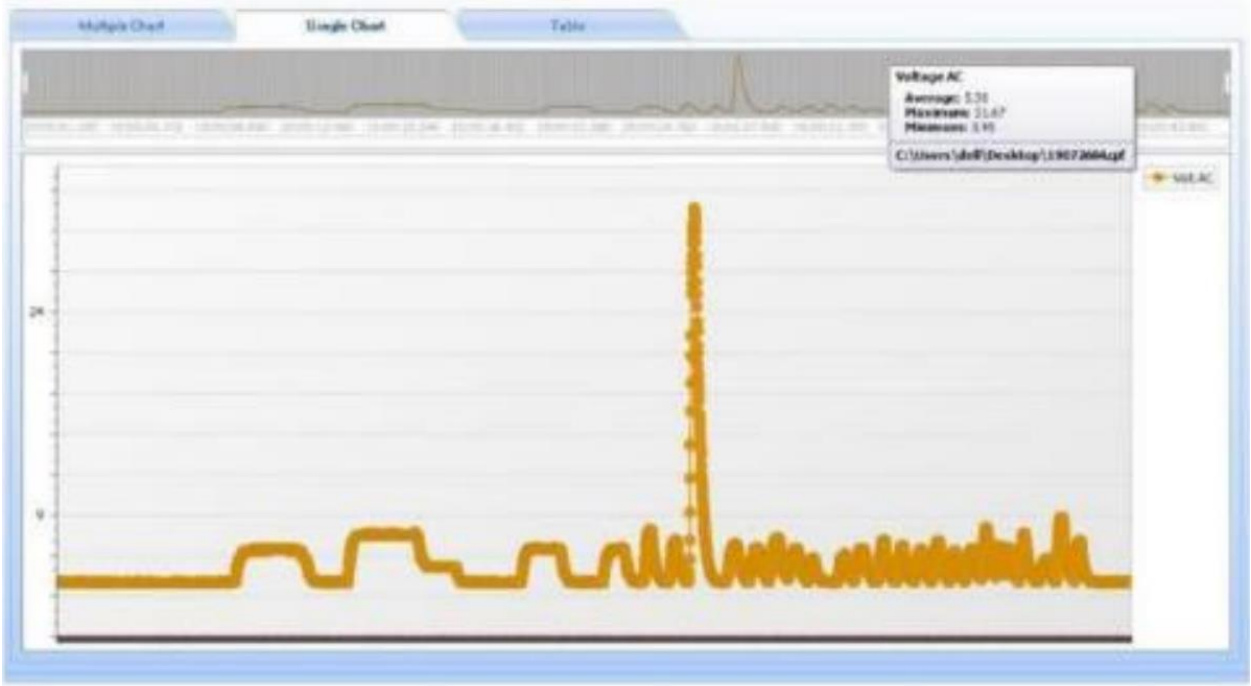
Calculating the maximum and minimum sampled amounts of AC potential from the measuring point.

Calculating the average amount of sampled AC potential from the measuring point.

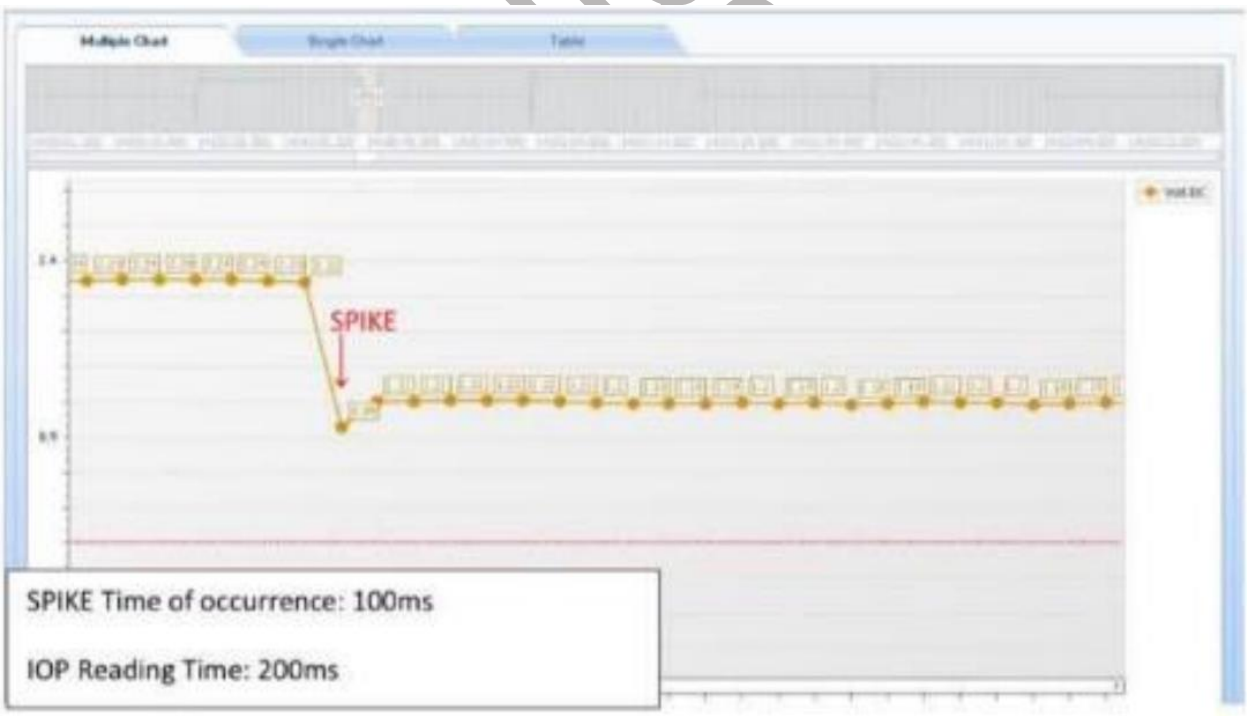
Displaying the measured and sampled values of AC potential for the pipeline's D.P and T.P points in 2 modes of table view and integrated graph.

DC Voltage Sampling

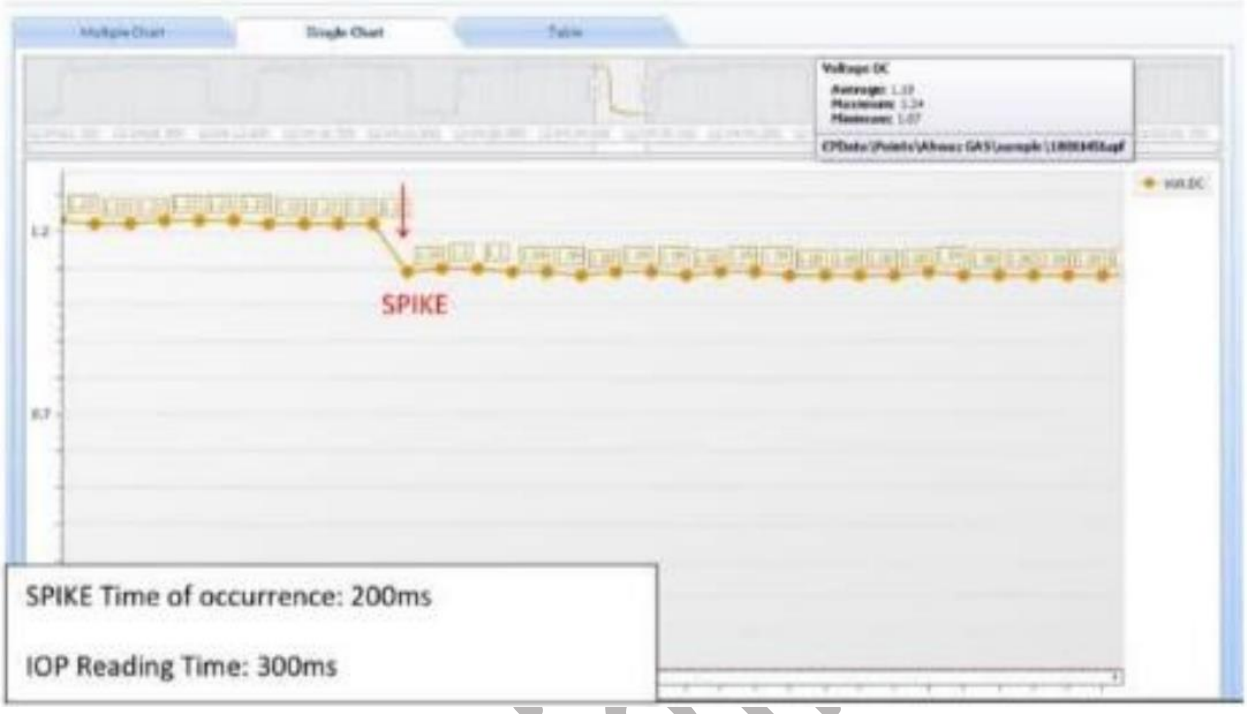
AC Voltage Sampling



Spike Scrutiny



Spike Scrutiny



Measurement and sampling of AC+DC potential of measuring points as an unlimited cycle with a minimum speed of 100 milliseconds

Scope meter AC+DC

Features:

Harmonic online display of AC+DC test points.

Harmonic measurement and sampling of AC+DC test points with a minimum speed of 100 milliseconds as a limited and unlimited time cycle.

Measurement and sampling of the third sources' effective potentials on the structure protected by the cathodic protection system.

Measurement and sampling of the impact of the cathodic protection system output potential in the pipeline's D.P and T.P points.

Harmonic measurement and sampling of corrosion and cathodic protection monitoring coupons.

Recording latitude and longitude of measuring points.

Measuring and recording ambient temperature.

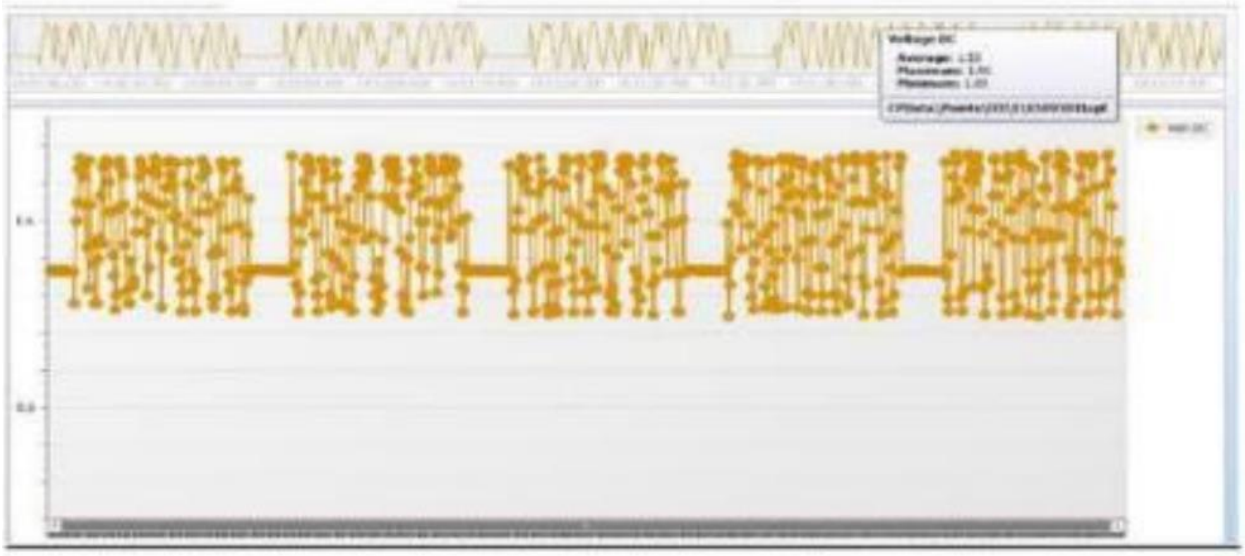
Measuring and recording ambient humidity.

Calculating the maximum and minimum amounts of DC potential for measuring points.

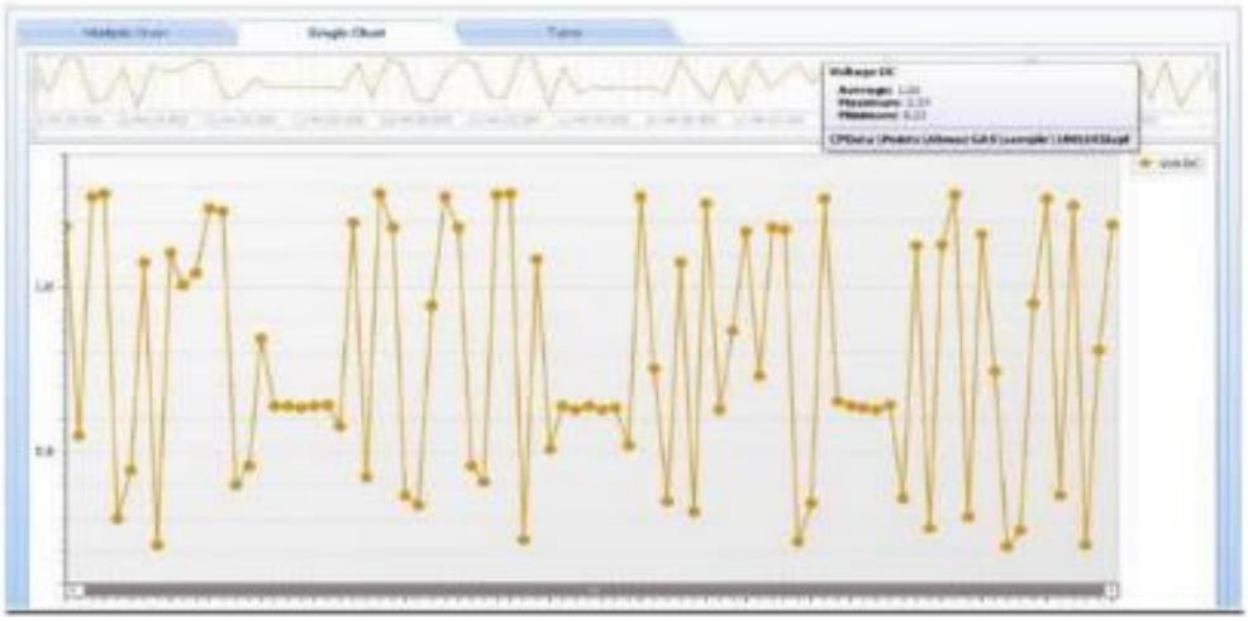
Calculating the average amount of DC potential of the measuring point.

Displaying the measured values in 2 modes of table view and integrated graph.

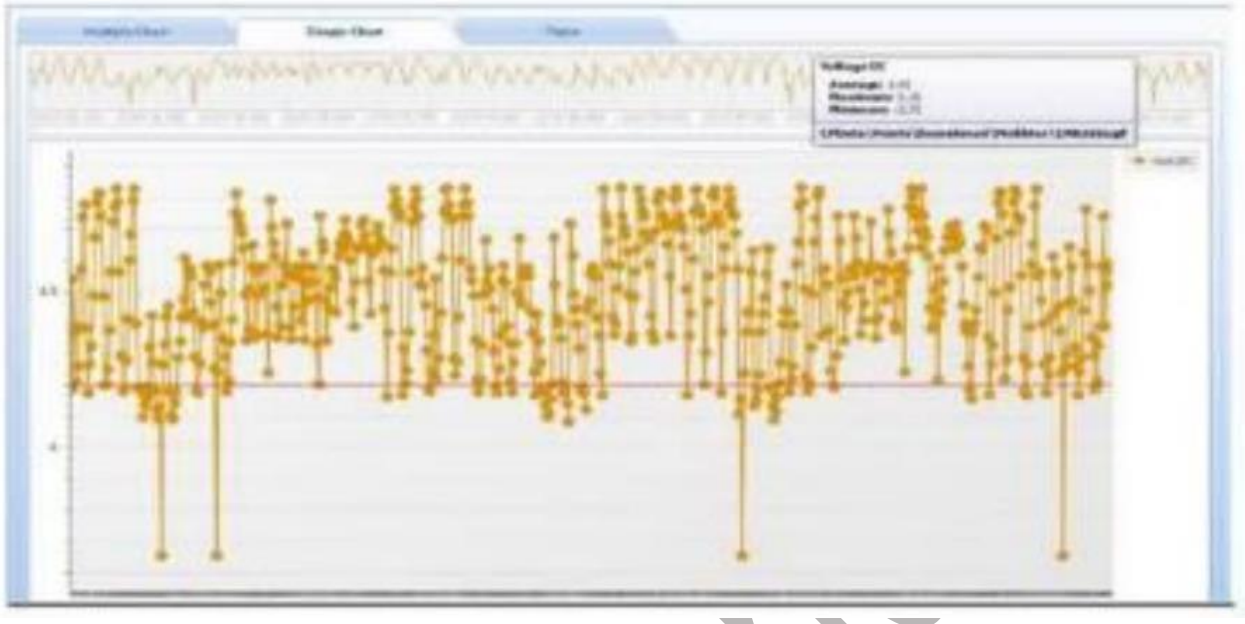
Transformer Rectifier Voltage Ripple



Transformer Rectifier Voltage Ripple



DC+AC Voltage Sampling



Measurement of AC+DC potential for measuring points of the structure under the protection of cathodic protection system

Cathodic Protection Voltmeter AC+DC

Features:

The ability to detect the cathodic and anodic state of the measuring points of the structure under the protection of the cathodic protection system.

Measurement and verification of AC and DC potential of measuring points of the structure under the protection of the cathodic protection system.

Recording latitude and longitude of measuring points.

Measuring and recording ambient temperature.

Measuring and recording ambient humidity.

Displaying the latest voltmeter measurements in the device.

Cathodic Voltmeter

Line Name	Point Name	DateTime	V(on)	Volt.AC	A.Temp	A.Humi	Latitude	Longitude
Mokhtar	MV13	1396/03/21 12:40:43	1.64	0.76	45.55	7.29	30.706560	51.472730
Mokhtar	MV14	1396/03/21 12:55:29	0.01	0.97	45.84	6.80	30.721420	51.465820
Mokhtar	MV15	1396/03/21 13:09:16	0.01	1.17	44.80	6.13	30.713520	51.461120
Mokhtar	MV12	1396/03/22 11:50:06	0.01	0.87	41.12	6.06	30.702490	51.479580
Mokhtar	MV11	1396/03/22 12:11:16	0.01	0.97	37.00	7.26	30.694920	51.483370
Mokhtar	MV10	1396/03/22 12:24:42	1.00	0.78	40.59	7.83	30.685520	51.491680
Mokhtar	MV09	1396/03/22 12:40:03	1.47	0.78	42.45	6.80	30.682100	51.498880
Mokhtar	MV08	1396/03/22 12:55:30	1.61	1.17	45.83	5.57	30.679680	51.505610
Mokhtar	MV07	1396/03/22 13:07:53	0.00	1.36	45.77	5.82	30.674280	51.510320
Mokhtar	MV06	1396/03/22 13:23:32	1.56	1.66	44.20	4.04	30.669100	51.521170
Mokhtar	MV05	1396/03/23 11:00:18	1.60	1.17	37.45	9.23	30.673670	51.524870
Mokhtar	MV04	1396/03/23 11:15:44	0.01	0.68	39.50	6.74	30.682090	51.529480
Mokhtar	MV03	1396/03/23 11:28:08	1.61	1.36	42.17	6.37	30.689240	51.533160
Mokhtar	MV02	1396/03/23 11:41:27	1.20	1.75	40.78	6.25	30.691570	51.533120
Mokhtar	MV01	1396/03/23 11:51:23	1.04	0.48	40.92	5.57	30.697600	51.533310

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This device with all these features, including a cane handle and a copper cable wire reel, becomes to a CIPS device.

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