

MetaScope XT



Device for measuring the thickness of tin-, silver- and nickel-coating

THE QUALITY CONNECTION

LEONI

Wire • Cable • Wiring Systems

Contents

- 3 Description of functions
- 4 Operating instructions
- 5 Conducting a measurement
- 5 Used hydrochloric acid
- 5 Stopping of a measurement
- 6 Maintenance
- 6 Technical Data
- 7 Measurement chart for
MetaScope XT



Description of functions

The MetaScope XT is a device for measuring the thickness of the tin- silver- and nickel-coating on copper wires, which works in accordance with the coulometric principle. In this process, the charge transported by the electrolytic release is, with a defined wire surface, proportional to the respective coating.


The complete device consists of the electronic unit with microprocessor, the power source, a digital transducer, and an LCD display and the electrolysis device with beaker and lowering device for the wire test piece.

The device works in accordance to the
DIN EN ISO 2177.



Operating Instructions






LEONI 
METASCOPE XT
V 2.0

PROGRAM 1: SN-CU

PLEASE, PRESS START

PROGRAM 1: SN-CU



STIR: ON 
UNIT: μm

LANGUAGE: ENGLISH 
RS 232: VALUE 
UNIT: μm 
BEEPER: ON

Start display

Press start button

button  start measurement

buttons  choose programme 1 to 8
 and after programme 8 to setup of the device

button  activate the programme SETUP

Programme setup

buttons  choose parameter


button  change parameter

button  leave the SETUP programme

stir: the stirrer for the hydrochloric can be switched on and off

unit: after the measurement, the measured value can be shown up either in μm or $\mu\text{-inch}$

Device-setup

buttons  choose parameter


button  change parameter

button  leave the programme SETUP

language: change from German to English

RS 232: after each measurement the function **measured value** sends one measured value. The function **curve** sends all measured values during the whole measurement process

unit: the display unit can be adjusted for all programmes. By choosing the **individual** parameter, the unit can be set individually in each programme

beeper: the audio-call announcing the start and the end of the measuring process can be switched on and off.

Conducting a measurement

Fill the beaker from the electrolysis device with the correspondent electrolysis. Please, use thereby only chemically pure hydrochloric acid, otherwise it could lead to inaccurate measurement results. The same has to be done with the distilled water.

Prepare a hook of approximately 1 mm thick copper wire and clip it to the upper part of the lowering device (see Maintenance). Connect the electrolysis device with the connectors (+ anode and – cathode) to the front of the device (please observe: **red** to **red**, **blue** to **blue**.)

Connect the MetaScope device to the power supply. Activate the device; the device is warmed up after approximately 5 minutes and indicates the values with the best accuracy. Cut the wire test piece to be measured to the length given in the chart (page 7) according to its diameter and wrap it around a ring.

Hang the wire test piece on the copper hook of the lowering device and lower it completely into the hydrochloric acid. Please be careful that the wire does not come into contact with the cathode plate.

Especially for the measurement of silvered wires it is recommended to work without a copper hook as contact. Therefore the wire to be measured has to be cut a little bit longer than needed and to be connected directly to the test piece holder after having marked the wire at the correct length. The wire may only be dipped in until the mark.

Start the measurement by pressing the green start button.

After having finished the measurement, the thickness of the tin-coating is indicated in micrometers (μm) or $\mu\text{-inch}$ on the display.

Used hydrochloric acid

For tinned wires:

1 part chemical pure hydrochloric acid and 4 parts distilled water.

For nickel-plated wires:

1 part chemical pure hydrochloric acid and 9 parts distilled water.

For silvered wires:

100 g potassium-fluoride filled up to 1000 ml with distilled water.

Stopping of a measurement

A measurement in process can be stopped by re-pressing the green start button. It also occurs if the release current drops abruptly to zero, e.g. by the withdrawal of the wire test piece from the hydrochloric acid.



Maintenance

The hydrochloric should be replaced after each use. A strong change of colour or clouding is the sign for a used up hydrochloric. For measuring wires of less than 0.10 mm, fresh acid should generally be used.

Is the measuring device not in use, the cathode must be rinsed with water. Also during that time hydrochloric should be preserved in a closable box. If these instructions are not followed, the hydrochloric will be used up more quickly and strong variation of measurements are the results.

The test piece holder (copper hook) corrodes during the measurements and must occasionally be replaced.



Technical Data

dimensions:	approx. 240 x 90 x 210 mm
weight:	approx. 2.5 kg
power source:	max. 30 W
surrounding temperature:	5–45 °C
LCD Display:	4 lines, 20 characters each
power connection:	230 V 50–60 Hz 115 V 50–60 Hz (optional)
interface:	RS 232 (V 24)
measurement range:	thickness of tin-coating from 0.5 to 20 µm

interface RS232:

adjustment: 9600 baud no parity
8 databits, 1 stopbit

data output:

by adjusting the **measured value** programme; value; unit [CR LF]
seperated by a semicolon at the end
of the measurement process.

by adjusting the **curve** programme [CR LF]
voltage; time; current [CR LF]
seperated by a semicolon during
the measurement.
value; unit [CR LF]
seperated by a semicolon at the end
of the measurement process.

Subject to technical modifications.

Measurement chart for MetaScope XT



Diameter	Test Piece Length	Diameter	Test Piece Length	Diameter	Test Piece Length	Diameter	Test Piece Length
in mm	in mm	in mm	in mm	in mm	in mm	in mm	in mm
0.05	2120	0.62	171	1.19	89	1.76	60
0.06	1766	0.63	168	1.20	88	1.77	60
0.07	1514	0.64	166	1.21	88	1.78	60
0.08	1325	0.65	163	1.22	87	1.79	59
0.09	1178	0.66	161	1.23	86	1.80	59
0.10	1060	0.67	158	1.24	85	1.81	59
0.11	963	0.68	156	1.25	85	1.82	58
0.12	883	0.69	154	1.26	84	1.83	58
0.13	815	0.70	151	1.27	83	1.84	58
0.14	757	0.71	149	1.28	83	1.85	57
0.15	707	0.72	147	1.29	82	1.86	57
0.16	662	0.73	145	1.30	82	1.87	57
0.17	623	0.74	143	1.31	81	1.88	56
0.18	589	0.75	141	1.32	80	1.89	56
0.19	558	0.76	139	1.33	80	1.90	56
0.20	530	0.77	138	1.34	79	1.91	55
0.21	505	0.78	136	1.35	79	1.92	55
0.22	482	0.79	134	1.36	78	1.93	55
0.23	461	0.80	132	1.37	77	1.94	55
0.24	442	0.81	131	1.38	77	1.95	54
0.25	424	0.82	129	1.39	76	1.96	54
0.26	408	0.83	128	1.40	76	1.97	54
0.27	393	0.84	126	1.41	75	1.98	54
0.28	379	0.85	125	1.42	75	1.99	53
0.29	365	0.86	123	1.43	74	2.00	53
0.30	353	0.87	122	1.44	74	2.01	53
0.31	342	0.88	120	1.45	73	2.02	52
0.32	331	0.89	119	1.46	73	2.03	52
0.33	321	0.90	118	1.47	72	2.04	52
0.34	312	0.91	116	1.48	72	2.05	52
0.35	303	0.92	115	1.49	71	2.06	51
0.36	294	0.93	114	1.50	71	2.07	51
0.37	286	0.94	113	1.51	70	2.08	51
0.38	279	0.95	112	1.52	70	2.09	51
0.39	272	0.96	110	1.53	69	2.10	50
0.40	265	0.97	109	1.54	69	2.11	50
0.41	258	0.98	108	1.55	68	2.12	50
0.42	252	0.99	107	1.56	68	2.13	50
0.43	246	1.00	106	1.57	68	2.14	50
0.44	241	1.01	105	1.58	67	2.15	49
0.45	236	1.02	104	1.59	67	2.16	49
0.46	230	1.03	103	1.60	66	2.17	49
0.47	225	1.04	102	1.61	66	2.18	49
0.48	221	1.05	101	1.62	65	2.19	48
0.49	216	1.06	100	1.63	65	2.20	48
0.50	212	1.07	99	1.64	65	2.21	48
0.51	208	1.08	98	1.65	64	2.22	48
0.52	204	1.09	97	1.66	64	2.23	48
0.53	200	1.10	96	1.67	63	2.24	47
0.54	196	1.11	95	1.68	63	2.25	47
0.55	193	1.12	95	1.69	63	2.26	47
0.56	189	1.13	94	1.70	62	2.27	47
0.57	186	1.14	93	1.71	62	2.28	46
0.58	183	1.15	92	1.72	62	2.29	46
0.59	180	1.16	91	1.73	61	2.30	46
0.60	177	1.17	91	1.74	61	2.31	46
0.61	174	1.18	90	1.75	61	2.32	46

LEONI Draht GmbH

Treuchtlinger Strasse 20

D-91781 Weissenburg

Phone +49 9141-918-135

Fax +49 9141-918-125

draht@leoni.com

www.leoni.com