

Guide to MI 3325 MultiServicerXD

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METREL d.d. Ljubljanska cesta 77 1354 Horjul Slovenia Web site: <u>http://www.metrel.si</u> E-mail: <u>metrel@metrel.si</u>

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1. Introduction

The purpose of this document is to present a complete application solution of the MI 3325 MultiServicerXD instrument with associated optional accessories. It will be shown how to connect optional accessories to the instrument and how to use them for measurement purposes. Part of this document is intended for the preparation and use of user-defined AutoSequences[®] together with the use of work-flow commands, and the use of user-customized visual inspections.

2. Getting started

2.1. MetrelElectricalSafetyManager

Metrel Electrical Safety Manager is a common PC software application for management of the new generation of Metrel's instruments. The wide palette of Metrel's electrical safety testers, portable appliance testers, machine testers and industrial safety testers can be managed by one single application. It has a unified user interface with the new generation of Metrel's instruments – same view same meaning.

2.2. Introduction

After start-up, Metrel ES Manager Welcome screen appear with Menu tabs () on the top and Home tab active in the working area (). When connected to the internet, update status presented in bottom right corner () is automatically checked. Default scope of work area is displayed in the bottom left corner of the window (). Check Work scope setting before start a new data structure file. When existing data structure file is opened, Work scope is automatically set.

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	Docume	nt		Com	nunication			Took	5		Setting								
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3. Auto Sequence® Editor

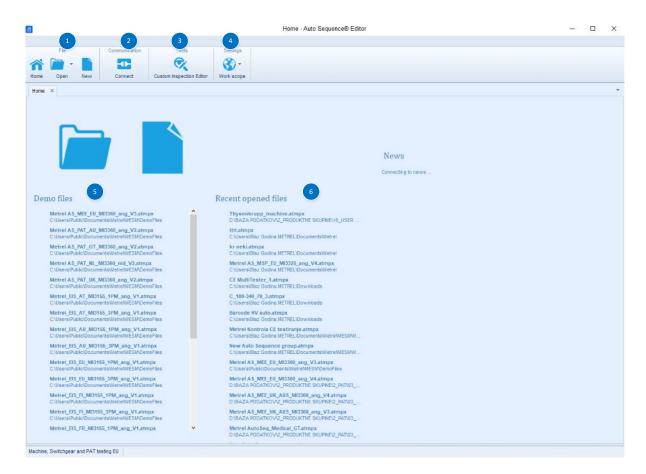
Auto Sequence® editor is available from Tools group of MESM Home tab menu.

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me	New	Open	Get Data	Connect	Get instrument info	Template Editor	Auto Sequence® Editor	Upcomming retests	Work scope			
						N	ews		V	videos		

3.1. Introduction of Auto Sequence® editor

3.1.1. Main window

After start-up, Auto Sequence ® editor Welcome screen appear with following tools () File, () Communication, () Tools, () Settings, () Demo files, () Recent opened files.



3.2. Creating new Auto Sequence

Before creating a new test sequence, it is necessary to select the correct Work scope. The Work scope selected, must be the same as the Work scope in which the instrument we intend to use operates.

The work scope <u>Safety of electrical equipment I</u> <u>Machine, Switchgear and PAT</u> <u>testing EU</u> will be used to present the demo test sequence.

This is the work scope dedicated to MultiServicerXD and PAT instruments.



- 1. Select correct Work Scope (same as used on target instrument)
- 2. Select New file

3.3. Description of Auto Sequence[®] group working area

Main screen of new Auto Sequence® consists of following modules, parts:

- 1. **List of available test sequences**; for better transparency and structuring, the test sequences can be organized in a tree structure including folders and subfolders,
- 2. **Picture dedicated to the selected test sequence**; each test sequence can be equipped with an image, the image is displayed in the PC SW only,
- 3. **Description of the selected test sequence**; a description can be added to the test sequence, this will be displayed in the PC SW and in the test sequence header on the measuring instrument,
- 4. **Test sequence, custom specified short code**; a test sequence code will be displayed in the test sequence header on the measuring instrument. Test sequence short code can be used for search of test sequence inside the Auto Sequences[®] menu of the measuring instrument,
- 5. **Tests and flow commands of selected test sequence**; the entire workflow of the test sequence including all associated flow commands is listed in this section,
- 6. Lists of available Measurements, Inspections and Custom Inspections; in this section measurements, inspections and custom inspections available for specific work scope are listed,
- 7. List of available flow commands; flow commands available for specific work scope are listed here.

	New TS for CE MultiTester.atmpx* - Auto Sequence® Editor	- 0
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Home New YS for CE MultiTostar atmox* X EB text Auto Sequence® group (a) Content of the search. 2 (a) Content of the search o	Investighter Investighter Image: State of the state	Singlet test Singlet test Vessurement Inspections Continuity Differential Leakage Discharging Time IntV AC Int

3.4. Elements of an Auto Sequence [®]

3.4.1. Auto Sequence[®] steps

There are three kinds of Auto Sequence[®] steps.

Header

The Header step is empty by default. Flow commands can be added to the Header step.

Measurement step

The Measurement step contains a Single test and the Operation after end of test flow command by default. Other Flow commands can also be added to the Measurement step.

Result

The Result step contains the Result screen flow command by default. Other Flow commands can also be added to the Result step.

3.4.2. Single tests

Single tests are the same as on MI 3325 MultiServicerXD Single tests menu. Limits and parameters of the measurements can be set. Results and sub-results can't be set.

Measurement menu is divided in 5 subgroups, each containing some specific and generic measurements for certain application.

Notes!

When creating custom AutoSequences[®], care must be taken to select the appropriate single test according to the test terminal through which the test will be performed on the instrument.

The test instrument supports various active adapters, certain measurements are only supported in combination with a specific active adapter and/or through measuring adapter test terminals. The information in the table below, given in blue, describes measurements that are supported using active adapters.

Supported active adapters:

- A 1143 Euro Z 290 A,
- MI 3143 Euro Z 440 V,
- MI 3144 Euro Z 800 V,
- A 1632 eMobility Analyser
- A 1322 Active 3-phase Adapter
- A 1422 Active 3-phase Adapter Plus
- A 1460 CE Adapter

Test terminals:

Test socket, Probe,	IEC	Continuity 4W
P / S Test socket / Prüfdose	IEC	CONTINUITY / SCHUTZLEITERWIDERSTAND
High voltge	TP1 (Test terminal)	Clamp current
HIGH VOLTAGE HOCHSPANNUNG	CAT III 300 V DISCHARGING / ENTLADEN INSULATION / ISOLATION Zine Zloop RCD	

INSTRUMENT area grou	ps	MESM area groups				
Select area group	18:04	Single test				
<u> </u>	SE .	Measurement Inspections Custom Inspections				
rtable appliances Electrical machines Swi	tchgears	Electrical machines				
₩ 🛞		▷ EVSE				
	All	Portable appliances				
Welding equipment EVSE		▷ Switchgears				
		Velding equipment				

Electrical machines	aingle teste	Single test				
Electrical machines (Available	single tests)	Single test				
		Measurement	Inspections Custom Inspections			
		Electrical ma	achines			
		▷ EVSE				
		Portable app				
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Electrical machines (Test inst Test socket / Test socket – IEC	rument only)	TP1 (test termi				
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• Riso (Riso, Riso-S),		,	CD I, RCD t, RCD Uc,			
Differential Leakage,		• R iso,				
Ipe Leakage,		• Varistor,				
• Sub-leakage,		 Discharging 	time			
• Touch Leakage,		 Voltage Drop 				
• Leak's & Power,		Voltage				
• Power.		•	e, Z loop, Zs rcd.			
4W-Continuity (test terminals)	HV (test termina		Current clamp			
Continuity 4wire	• HV AC,	,	Clamp current (optional			
- ,	• HV AC progra	mmable.	clamps)			
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results. Connections and measurements are made on the adapter.
 Continuity (P/S-PE), Socket 3ph - Socket 3ph (A 1322 / A 1422),
• Riso (Riso, Riso-S),
Differential Leakage,
• Sub-leakage,
Touch Leakage
• Power (P, Q, S, PF).
Electrical machines (Test instrument + A 1460 CE Adapter)
Test socket A 1460
• Continuity (P/S-PE),
Continuity 4wire,
• HV AC, (up to 1.5kV),
• HV AC programmable (up to 1.5kV),
• Riso (Riso, Riso-S),
Differential Leakage,
• Ipe Leakage,
• Sub-leakage,
• Touch Leakage,
• Leak's & Power,
Power.

EVSE

EVSE (Available single tests)	Single test						
	Measurement Inspections Custom Inspections						
	Electrical machines						
	▷ EVSE						
	Portable appliances						
	▷ Switchgears						
	Welding equipment						
EVSE (Test instrument only)							
TP1 (test terminal)							
• R iso,							
• Rpe,							
 RCD Auto, RCD I, RCD t, RCD Uc, 							
• R low,							
 Voltage Drop 							
Voltage							
 Z auto, Z line, Z loop, Zs rcd. 							
Current clamp Bluetotth (optional MD 9273) sup	ported from FW version xxxx						
Curren CLAMP							
Harmonics I CLAMP							
 Harmonics U CLAMP 							
Inrush CLAMP							
Power CLAMP							
Voltaeg CLAMP							
EVSE (Test instrument + A 1632)							
The test instrument is used only to control the adap							
connections and measurements are made on the ad	dapter.						
 Diagnostic Test (EVSE) 							

Portable appliances				
Portable appliances (Available	e single tests)	Single test		
		Measurement	Inspections	Custom Inspections
		▷ Electrical m	achines	
		▷ EVSE		
		Portable ap		
		▷ Switchgea		
		▷ Welding eq	uipment	
Portable appliances (Test inst	rument only)			
Test socket / Test socket - IEC		TP1 (test termi	,	
 Continuity (P/S-PE), Continuity (MS_PE-IEC_PE), \$ 	Socket IEC	• RCD (Not su	ipported b	y this instrument!!!)
• Riso (Riso, Riso-S),	Sockel - IEC,			
 Differential Leakage, 				
 Ipe Leakage, 				
• Sub-leakage,				
• Touch Leakage,				
• Leak's & Power,				
• Power,				
 Polarity, Socket – IEC, 				
• Active Polarity, Socket – IEC ,				
• PE_conductor (PRCD).				
4W-Continuity (test terminals)	HV (test termina	ils)	Current	
Continuity 4wire			 Clamp clamps 	o current (optional s)
Current clamp Bluetotth (option	nal MD 927 <mark>3) sup</mark>	ported from FW	/ version	XXXX
Curren CLAMP				
 Harmonics I CLAMP 				
Harmonics U CLAMP				
Inrush CLAMP				
Power CLAMP Voltage CLAMP				
Voltaeg CLAMP Portable appliances (Test inst	rumont $\pm \Lambda$ 1222	/ 1 1/22)		
The test instrument is used as a			adapter ar	nd to display the test
results. Connections and measu				
• Continuity (P/S-PE), Socket 3p			-	
• Riso (Riso, Riso-S),				
• Differential Leakage,				
• Polarity, Socket 3ph - Socket 3	3ph,			
• Active Polarity (Wiring map), S		and the second		
• PRCD (RCD-t, type: A, AC, B,	B+, F), Socket 3p	oh - Socket 3ph,		
• Sub-leakage,				
• Touch Leakage,				
• Power (P, Q, S, PF).				
Portable appliances (Test inst	rument + A 1460	CE Adapter)		
Test socket A 1460				
• Continuity (P/S-PE),				
Continuity 4wire, Pico (Pico, Pico, S)				
 Riso (Riso, Riso-S), Differential Leakage 				
Differential Leakage,				
 Ipe Leakage, Sub-leakage,				
Sub-leakage,Touch Leakage,				
 Touch Leakage, Leak's & Power, 				
Leak s & Power,Power.				

Switchgears				
Switchgears (Available single tests)		Single test	t	
		Measurement	Inspections Custom Inspections	
			nachines	
		▷ EVSE		
		▷ Portable a	ppliances	
		▷ Switchgea		
		▷ Welding ed	quipment	
Switchgears (Test instrument	only)			
Test socket / Test socket – IEC		TP1 (test termi	nal)	
 Continuity (P/S-PE), 		• Rpe,		
• Continuity (MS_PE-IEC_PE),	Socket – IEC,	● R low,		
• Riso (Riso, Riso-S),			RCD I, RCD t, RCD Uc,	
Differential Leakage,		• R iso,		
• Ipe Leakage,		• Varistor,		
• Sub-leakage,		Discharging		
• Touch Leakage,		Voltage Drop	0	
• Leak's & Power,		Voltage	Zloop Zorod	
Power. 4W-Continuity (test terminals)	HV (test termina		e, Z loop, Zs rcd. Current clamp	
Continuity 4wire	• HV AC,	13)	Clamp current (optional	
	 HV AC, HV AC program 	mmable	clamps)	
Current clamp Bluetotth (option				
Curren CLAMP	/ /			
Harmonics I CLAMP				
Harmonics U CLAMP				
Inrush CLAMP				
Power CLAMP				
Voltaeg CLAMP				
Switchgears (Test instrument				
The test instrument is used only			lay the test results. All	
connections and measurements	are made on the	adapter.		
• Z line mΩ				
• Z loop mΩ				
Switchgears (Test instrument				
The test instrument is used only			lay the test results. All	
connections and measurementsHigh Current		auapier.		
 Algh Current Z line mΩ 				
 Z loop mΩ U touch 				
Switchgears (Test instrument	+ MI 3144)			
The test instrument is used only		pter and to disp	lay the test results. All	
connections and measurements			•	
Current Clamp Meter		•		
• ELR Current Injection Test				
• ELR Combination Time Test				
• R line mΩ				
High Current				
• Z line mΩ				
• Z loop mΩ				
• U touch				
Switchgears (Test instrument				
The test instrument is used as a master instrument to control the adapter and to display the test				
 results. Connections and measurements are made on the Continuity (P/S-PE), Socket 3ph - Socket 3ph (A 1322) 				
 Continuity (P/S-PE), Socket 3 	on - Socket 3ph (A	a 1322 / A 1422	,	

• Riso (Riso, Riso-S),
Differential Leakage,
• Sub-leakage,
Touch Leakage
• Power (P, Q, S, PF).
Switchgears (Test instrument + A 1460 CE Adapter)
Test socket A 1460
• Continuity (P/S-PE),
Continuity 4wire,
• HV AC, (up to 1.5kV),
 HV AC programmable (up to 1.5kV),
• Riso (Riso, Riso-S),
Differential Leakage,
• Ipe Leakage,
• Sub-leakage,
• Touch Leakage,
• Leak's & Power,
Power.

Welding equipment

Welding equipment (Available	single tests)	Single test			
		Measurement	Inspections	Custom Inspections	
		▷ Electrical m	achines		
		▷ EVSE			
		Portable ap	pliances		
		▷ Switchgear	s		
		▷ Welding equ	uipment		
Welding equipment (Test instr	ument)				
Test socket / Test socket - IEC		TP1 (test termi	nal)		
 Continuity (P/S-PE), 					
• Continuity (MS_PE-IEC_PE),					
Touch Leakage,					
• Power,					
 Polarity, Socket – IEC, 					
• Active Polarity, Socket – IEC,					
4W-Continuity (test terminals)	HV (test termina	ils)	Current	clamp	
Continuity 4wire			 Clamp 	current (optional	
			clamps	s) A 1422 shall be	
			disable	d/disconnected dur	ring
measrement					
Current clamp Bluetotth (option	al MD 9273) <mark>sup</mark>	ported from FW	version	XXXX	
Curren CLAMP					
Harmonics I CLAMP					
 Harmonics U CLAMP 					
Inrush CLAMP					
Power CLAMP					
Voltaeg CLAMP					
Welding equipment (Test instr					
The test instrument is used as a				d to display the test	
results. Connections and measu					
 Continuity (P/S-PE), (Socket 3ph - Socket 3ph), 					
• Riso (LN-PE, LN-W, LN (ClassII) – P/S),					
Primary Leakage,					
• I leak (W-PE),					
• Polarity, (Socket 3ph - Socket 3ph),					
 Active Polarity (Wiring map), (\$ 	Socket 3ph - Sock	ket 3ph),			

Touch Leakage
• Power (P, Q, S, PF).
Welding equipment (Test instrument + A 1460 CE Adapter)
Test socket A 1460
• Continuity (P/S-PE),
Continuity 4wire,
• Touch Leakage,
Power.

3.4.3. Flow commands

Flow commands are used to control the flow of measurements. Refer to chapter 3.5 Description of flow commands.

3.4.4. Number of measurement steps

Often the same measurement step has to be performed on multiple points on the device under test. It is possible to set how many times a Measurement step will be repeated. All carried out individual Single test results are stored in the Auto Sequence[®] result as if they were programmed as independent measuring steps.

3.5. Description of flow commands

Depending on the specific work scope, different lists of flow commands are given. Flow commands are user selectable and can be added to test sequence using drag and drop.

Double click on inserted Flow Command opens menu window, where text or picture can be entered, external signalling and external commands can be activated and parameters can be set.

- Most Flow commands need to switch the state, from inactive to active, for operation.
- Flow command remains active until new (same) Flow command is inserted to Autosequence with the state set to inactive for operation.

Flow Commands	List of flow commands supported in,
PAUSE	Work scope: Machine, Switchgear and PAT testing
OUTPUT STATE	(EU, UK, French,)
WAIT INPUT mode	
LAMPS PassFail mode	
LAMPS HV mode	
BUZZER mode	
EXTERNAL OK KEY mode	
NO NOTIFICATION mode	
INSPECTION EXPERT mode	
APPLIANCE INFO	

3.5.1. Pause

A Pause command with text message or picture can be inserted anywhere in the measuring steps. Warning icon can be set alone or added to text message. Arbitrary text message can be entered in prepared field Text of menu window.

PAUSE	
Command properties Pause type Show Text and/or warning Duration Infinite For proceeding press START on A 1511 (Tip commander) Text Text OK Cancel	Command properties Pause type Show picture Uuration Infinite Image path Classipng OK Cancel
Show text and/or warning	Show picture
Test sequence 07:07 For proceeding press START on A 1511 (Tip commander) (1)	♪ Test sequence 07:00 Image: Constraint of the sequence Image: Constraint of the sequence

Pause type	Show text and/or warning (Scheck to show warning icon) Show picture (Showse for image path)
Duration	Number in seconds, infinite (no entry)

3.5.2. Output state

Sets outputs OUT_1, OUT_2, OUT_3, and OUT_4 on OUTPUT port. Following settings of this command are ignored:

- OUT_1 and OUT_2 while Lamps HV mode is enabled.

- OUT_3 and OUT_4 while Lamps Pass / Fail mode is enabled.

All outputs are single normally opened relay contacts if not checked in Menu Output pins window.

OUT_1	Set closed relay contact between OUTPUT pins 4 and 9
OUT_2	Set closed relay contact between OUTPUT pins 3 and 8
VUT_3	Set closed relay contact between OUTPUT pins 2 and 7
☑ OUT_4	Set closed relay contact between OUTPUT pins 1 and 6
☑ OUT 5	
OUT 6	
✓ OUT 7	Applicable only when using CE Adapter A 1460
Z OUT_7 ØUT_8	

	OUTPUT STATE		
Command pro	perties		
Output pins	 ✓ OUT_1 ✓ OUT_2 OUT_3 OUT_4 ✓ OUT_5 OUT_6 	*	
ОК		Cancel	

3.5.3. Wait input mode

Reads input condition on pins IN_2, IN_3, IN_4 and IN_5 on INPUTS port. Input must be high to proceed with the Auto test.

State	On – enables Wait input mode; set active INPUTS from Input pins menu
	Off – disables Wait input mode
☑ IN_2	IN 2 reading condition on INPUTS pin 6 is active
☑ IN_3	IN 3 reading condition on INPUTS pin 7 is active
☑ IN_4	IN 4 reading condition on INPUTS pin 8 is active
☑ IN_5	IN_5 reading condition on INPUTS pin 4 is active

3.5.4. Lamps Pass / Fail mode

Drives external lamps through OUT_3 and OUT_4 outputs. During measurement the lights reflect status icon in single test. After measurement

- Blue lamp (OUT_3) lights ON when test has passed. Lamp is lit until next step is started.
- Yellow lamp (OUT_4) lights ON when test has failed. Lamp is lit until next step is started.
- Lights turn off at the beginning of next step.

While Lamps Pass / Fail mode command is enabled the settings of Drive output command for OUT_3 and OUT_4 is ignored.

Parameters

State	On – enables Lamps Pass / Fail mode
	Off – disables Lamps Pass / Fail mode

	LAMPS PassFail mode
	Command properties State On OK Cancel
A 1497	

3.5.5. Lamps HV mode

Drives external lamps through OUT_1 and OUT_2 outputs. Works only in HV & HV programmable functions.

- Red lamp (OUT_1) ON means that the instrument is ready for HV test. Red lamp turns on before first flow command in step that contains HV test. Red lamp turns off after end of the HV test.
- Green lamp (OUT_2) blinking means that high voltage will be applied to WITHSTANDING (HV(~+) and HV(~-)) test terminals as soon as all input conditions will be fulfilled.
- Green lamp (OUT_2) ON means that dangerous voltage is present at WITHSTANDING (HV(~+) and HV(~-)) test terminals. Green lamp turns on before the measurement and turns off after the measurement.

While Lamps HV mode command is enabled the settings of Drive output command for OUT_1 and OUT_2 is ignored.

State	On – enables Lamps HV mode
	Off – disables Lamps HV mode

l		
	HV AC SINGLE TEST OPERATION AFTER END OF TEST	0
	HV AC programmable SINGLE TEST	0
	OPERATION AFTER END OF TEST Works only in HV & HV programmable functions.	
	Command properties State On	Cancel
A 1496		

3.5.6. Buzzer mode

Passed or failed measurement is indicated with beeps.

- Pass double beep after the test
- Fail long beep after the test

Beep happens right after single test measurement.

Parameters

State	On – enables Buzzer mode
	Off – disables Buzzer mode

BUZZER mode		
N	Command properties State On Cancel	
A 1496		

3.5.7. External TEST / OK key mode

Instrument enables external TEST / OK key (OK / ENTER / TEST / HV TEST) by activating INPUT pin 5 reading condition. Functionality of the EXTERNAL OK KEY mode is the same as of the OK / ENTER / TEST / HV TEST key.

\$	State	On – enables External TEST / OK key mode (INPUT pin 5 is active)	
----	-------	--	--

Off – disables External TEST / OK key mode

EXTERNAL OK KEY mode				
	Command properties State On OK Cancel			
A 1511				
	Command properties State On OK Cancel			
A 1495				

3.5.8. No notifications mode

Instrument skips pre-test warnings (for more information see User Manual of specific instrument, chapter "Symbols and messages").

State	On – enables No notifications mode
	Off – disables No notifications mode

	NO NOTIF	NO NOTIFICATION mode		
Warning!		Command properties		
Resistance L−N is too high(>30 k0hm). Check fuse / switch. Would you like to proceed?		State On		
YES	10	OK		
Warning!				
Resistance L−N is very low (<10 Ohm). Would you like to proceed?				
YES	NO	Few examples of warnings that will not be displayed on the instrument when using the NO NOTIFICATION mode flow		
Warning!		command!!!		
Leakage is high(>3.5 mA). Would you like to proceed?				
YES	NO			

3.5.1. Inspection Expert mode

If Inspection Expert mode flow command is set, the Visual inspection screen and Functional inspection screen within Auto Sequence[®] are displayed for 1 second and an overall PASS is automatically applied at the end of test. In between, the automatic procedure can be stopped and statuses can be applied manually. Inspection Expert mode is disabled by default.

Parameters

State	On – enables automatic settings of tickers in Visual and Functional
	tests.
	Off – disables automatic settings of tickers in Visual and Functional
	tests.

	INSPECTION EXPERT n	node
Inspection <u>Visual_VDE 0701-0702</u> no damage or contamination cables and connectors are appropriate condition of mains plug, mains connectors and conductors no defect of bending no defect of mains lead cleat	12:27 Image: Constraint of the second seco	Command properties State On K Cancel
Inspection Functional VDE 0701–0702 essential functions are working property safety related parts	12:28 ✓	

3.5.2. Appliance info

Instrument enables to automatically add the appliance name to the Auto Sequence[®].

	1		
Repeat Setting	Repeat:	The same Appliance ID will be offered each	
		time if the same Auto Sequence [®] is carried out	
		successively in a loop.	
	Increment:	A four digit number will be added to the	
		Appliance ID and incremented each time if the	
		same Auto Sequence [®] is carried out	
		successively in a loop.	
Appliance type	Selects the type of the appliance (Appliance, Appliance_FD,		
	Welding equ	uip., Welding equip_FD., Machine, Switchgear,	
	EVSE)		
Default Appliance ID	Enter default Appliance ID		
Appliance name	Enter Appliance name.		
	Options:		
	Editable – allows Appliance name to be modified while		
	running Auto Sequence [®] . Menu with a list of Appliance		

	names and possibility to enter custom Appliance name is offered within the test. Not editable – Default Appliance name is used. Appliance name cannot be modified while running Auto Sequence [®] .
Retest period	 Retest period in months. Options: ✓ Editable – allows Retest period to be modified while running Auto Sequence[®]. Numeric keypad for entering custom Retest period is offered within the test. □ Not editable – Default Retest period is used. Retest period cannot be modified while running Auto Sequence[®].

Note

 This flow command is active only if Auto Sequence[®] is started from the Auto Sequences[®] Main menu.

APPLI	ANCE INFO
Appliance info flow	Command properties
command enables following options on the	Repeat Setting Repeat 👻
instrument.	Appliance type Machine
	Appliance name Thyssenkrupp Editable Retest per. (M) 12
	OK Cancel
Entering Default appliance ID	12:14
	Appliance ID 000001
	1 2 3 4 5 6 7 8 9 0 ! @ # \$ % & * ? /
	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
Entering appliance name	10:18
	Name Thyssenkrupp
	1 2 3 4 5 6 7 8 9 0 Q W E R T Y U I 0 P I 0 B F G H J K L
	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$

Entering Retest period (in months)	 Retest period (in months) 12	12:08				
	1 2 3					
	4 5 6					
	7 8 9					
Automatic generation	📩 Memory Organizer	10:22				
of Selected Appliance	Sep 2020					
type in the structure	Workspace001					
	🖃 🚬 Sep 2020					
	= 📜 000001	_				
	New Auto Sequence® 10:22	1				

3.5.3. Operation after end of test This flow command controls the proceeding of the Auto Sequence[®] in regard to the measurement results.

Operation after end of test – pass – fail	The operation can be individually set for the case the measurement passed, failed or ended without a status.Manual:The test sequence stops and waits for appropriate command (TEST key, external command) to proceed.			
– no status				
	Auto:	The test sequence automatically proceeds.		

	HV AC O	
	OPERATION AFTER END OF TEST	
Commai	nd properties	
	ation after end of test - pass Auto	-
Opera	tion after end of test - no status Manual	•
ок		Cancel

3.5.4. Result screen

This flow command controls the proceeding after the Auto Sequence[®] has ended.

Parameters

Auto Save	Auto Sequence [®] results are stored in the momentary workspace. A new Node with the month and year will be created. Under
	the Node Auto Sequence [®] results or (if Appliance info flow command is set) a new appliance and Auto Sequence [®] results will be stored.
	Up to 100 Auto Sequence [®] results or appliances can be automatically stored under the same node. If more results / appliances are available, they are split to multiple nodes. Local Save Flow setting is disabled by default.
Auto Print	Auto Sequence [®] results are automatically printed.

Notes

 This flow command is active only if Auto Sequence[®] is started from the Auto Sequences[®] Main menu (not from Memory organizer).

Result RESULT SCREEN	
Command properties	
Print and save	
OK Cancel	

4. Manage sequence step by step

4.1. Editing test sequence parameters

Each test sequence can be custom named, equipped with description and image.

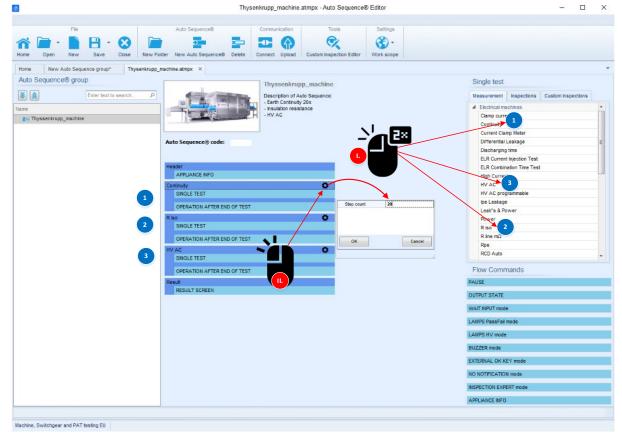
	File	Auto Sequence®	Communication	Tools	Settings	
* 🖻 -	B B · Ø	📄 🎫 😎		©:	3 -	
Home Open	New Save Close	New Folder New Auto Sequence® Dele		Custom Inspection Editor	Work scope	
Home New Aut	to Sequence group*	hysenkrupp_machine.atmpx ×				
Auto Sequence®	group		Thyssenkrup	p_machine		Single test
۱	Enter text to search.	P	Description of Aul	to Sequence:		Measurement Inspections Custom In
Name			- Insulation resista	ance		Æ Electrical machines
Thyssenkrupp_n	nachine	0.000	- HV AC			Clamp current
						Continuity
i Nev	w Folder					Current Clamp Meter
🔤 Nev	w Auto Sequence® 🧹	uto Sequence® code:				Differential Leakage
	2					Discharging time
🚺 📝 Edit	1					ELR Current Injection Test
-		Header				ELR Combination Time Test
Cot	<i>iy</i>	APPLIANCE INFO				High Current
E Cre	ate Shortcut	Result				HV AC
-		RESULT SCREEN				HV AC programmable
🔄 🔤	ete					lpe Leakage
	<					Leak's & Power
	\mathbf{X}					Power
						Riso
						R line mΩ
	Na Na	me Thyssenkrupp_machine				Rpe
	Descript	tion Description of Auto Sequence:	/			RCD Auto
	Descript	- Earth Continuity 20x				Flow Commands
		 Insulation resistance 				
		- HVAC				PAUSE
						OUTPUT STATE
				T		WAIT INPUT mode
	Ima	age MESM_8.png		×		LAMPS PassFail mode
			ок с	ancel		LAMPS HV mode
						BUZZER mode
						EXTERNAL OK KEY mode
						NO NOTIFICATION mode
						INSPECTION EXPERT mode
						APPLIANCE INFO

4.2. Adding and editing measurements

From the list of available single tests;

- measurements,
- inspections or,
- custom inspections can be added to the sequence structure.

Number of individual measurements is not limited, measurements order is not specified, these enables creation of arbitrary test sequence. Step count can be defined for each individual single test, limit of steps is set to **999 steps**.



Each individual single test has several editable parameters, depending on the specifics of the test:

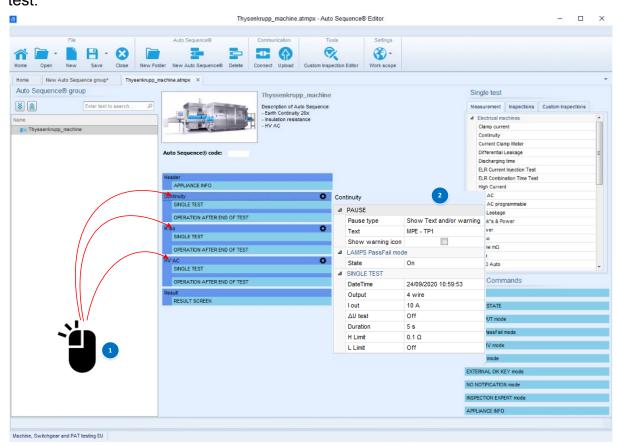
- Outputs,
- Types of measurement,
- Duration,
- Limits (High & Low),
- Comments, etc., can be set.

	Auto Sequence®	Communication	Tools Settings		
i 🖻 • 📄 🖻 • 🞯 🛛	🖻 🖢 🖻	• •	🔍 🛞-		
e Open New Save Close Ne	w Folder New Auto Sequence® Delete	Connect Upload Custom	Inspection Editor Work scope		
	upp_machine.atmpx* ×				
to Sequence® group	1	Thyssenkrupp_mach	line	Single tes	st
Enter text to search		Description of Auto Sequer	nce:	Measuremen	Inspections Custom Inspections
			Continuity	# Electrical	machinas 📷
Thyssenkrupp_machine	Same and the same and	8			
		Cancel			
	Auto Sequence® code:	Est Overal Status: Empty			
		Value	Status Paramote	15	
	APPLIANCE INFO	Results		Output 4 wire	
	Continuity	R Linda		1 tot 25 • A	
	SINGLE TEST	R H Lint 🖭		Sul test ross-sector	
	OPERATION AFTER END OF TES	L Lint 0.07 G		Duration 5 • #	
	Riso	010		Comment 2 proper sation Off	
	SINGLE TEST	0.3 0	. / / ~		
	OPERATION AFTER END OF TES	st			
	HV AC				
	SINGLE TEST				
	OPERATION AFTER END OF TES	ST			
	OPERATION AFTER END OF TE.				
	Result				
	Result				
	Result	CK Cancel			
	Result	CK Cancel		LANPS HV m	de
	Result			LAMPS HV m BUZZER mod	
	Result				
	Result			BUZZER mode	KEY mode
	Result			BUZZER mode EXTERNAL OF	KEY mode

In addition to editable test parameters each individual test has a built in flow command, used to control the flow of the measurement, after end of test. Operation after end of test can be set for different test status: Pass, Fail, or No status.

Fie	- 😣 盾	Auto Sequence®		Communi	ication	Tools	Settings				
e Open New Sa	Command pro	perties	ath Delate	Connect	Halead C	nton inconstant E di	Nort scape				
o Sequence® group									Single test		
	Operation aff	ter end of test - pass	Auto				-*				
Ente	Operation aff	ter end od test - fail	Manual							Inspections Custom ins	spections
-									 Electrical m Clamp current 		
Thyssenkrupp_machine	Operation an	ter end of test - no st	atus Mani	uai				$\langle \rangle$	Continuity		
						_			Current Cla		
	ОК						Cancel		Differential Discharging		
										t Injection Test	
		Header						- \ \		nation Time Test	
. 1	_	APPLIANCE INFO							High Curren	nt	
	28	Continuity SINGLE TEST				0			HV AC HV AC pro	orammable	
		CONTRACTOR CONTRACTOR							ipe Leakage		
		OPERATION AFTER	END OF TEST						Leak's & P	ower	
		R IBD SINGLE TEST				0			Power		
		and the second sec				_			R iso R line mΩ		
		OPERATION AFTER	END OF TEST						Rpe		
		HV AC SINGLE TEST				0			RCD Auto		
		and the second se				_		1/	-		
		OPERATION AFTER	END OF TEST					//	Flow Comr	nands	
		Result RESULT SCREEN							PAUSE		
		RESULT SUREEN				-		↓ <i>₩</i>	OUTPUT STATE		
									WAIT INPUT mod	e	
									LAMPS PassFail	mode	
							2		LAMPS HV mode	•	
								-	BUZZER mode		
									EXTERNAL OK K		
									NO NOTIFICATIO		
									INSPECTION EXP	EDT mode	
									APPLIANCE INFO		

A quick overview of set parameters is possible by clicking on the header of a specific test.



5. Examples of Auto Sequences

The Auto Sequence[®] consists of a sequence of individual tests. The progress of individual tests can be controlled using flow commands. The MultiServicerXD instrument enables the execution of individual tests via various test terminals. Performing test sequences via different test terminals is often not the most appropriate solution from an application point of view. Various active adapters are available to perform integrated test sequences via a common test terminal. One such is the CE Adapter A 1460.

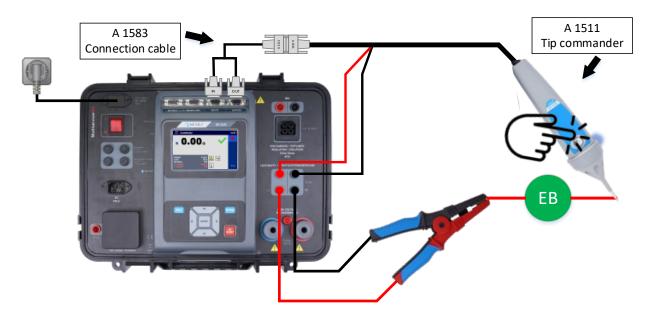
The following sections will show possible execution of test sequences with and without the use of active adapters. It will also be shown how optional accessories controlled by the flow commands can be connected and used.

5.1. How to enable remote start with optional A 1511 (Using Auto Sequences)

The instrument supports many different optional accessories, one of the more useful ones is certainly the A 1511 Tip commander. In following case Tip comander will be used for remote controlled execution of 4-wire Continuity test and indication of PASS / FAIL status of the measurement with commander's indication LED's.

In the following steps it will be shown:

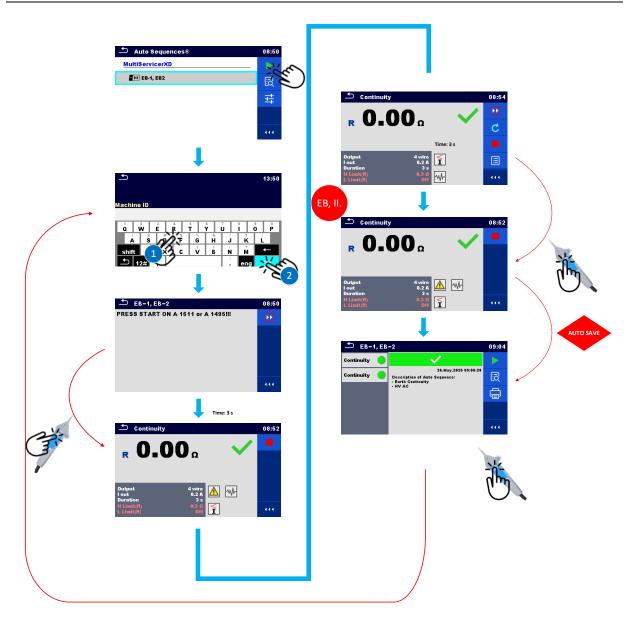
- How to enable remote control with A 1511, using flow commands:
 - >EXTERNAL OK KEY mode<
 - >LAMPS PassFail mode<
- Use of flow command >PAUSE<
- Use of flow command >APPLIANCE INFO<
- Execution of 4-wire Earth continuity (EB)
- How to enable Auto save



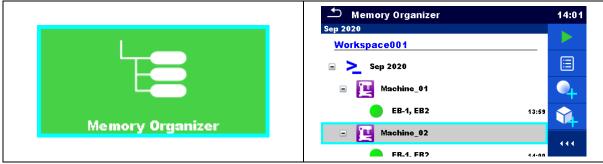
Header	Header APPLIANCE INFO EXTERNAL OK KEY mode EXTERNAL OK KEY mode LAMPS PassFail mode PAUSE Continuity SINGLE TEST OPERATION AFTER END OF TEST OPERATION AFTER END OF TEST Resut RESULT SCREEN	Command properties
APPLIANCE INFO EXTERNAL OK KEY mode LAMPS PassFail mode PAUSE		Repeat Setting Repeat Appliance type Machine Default Appliance D Appliance name Editable Retest per. (M) 0 Cancel
Header APPLIANCE INFO EXTERNAL OK KEY mode LAMPS PassFail mode PAUSE Header		Command properties State On OK Cancel Command properties
APPLIANCE INFO EXTERNAL OK KEY mode LAMPS PassFail mode PAUSE		State On Cancel
Header APPLIANCE INFO EXTERNAL OK KEY mode LAMPS PassFail mode PAUSE		Pause type Show Text and/or warning Uuration Infinite PRESS START ON A 1511 or A 1495!!! Text Show warning icon K Cancel
Continuity SINGLE TEST OPERATION AFTER END OF TEST	0	Constant for the second

Guide to MI 3325 MultiServicerXD

Continuity	Command properties
OPERATION AFTER END OF TEST	Command properties Operation after end of test - pass Manual Operation after end of test - fail Manual Operation after end of test - no status Manual OK Cancel
Continuity SINGLE TEST OPERATION AFTER END OF TEST	Controly Not Control of the second
Continuity SINGLE TEST OPERATION AFTER END OF TEST	Command properties Operation after end of test - pass Manual Operation after end of test - fail Manual Operation after end of test - no status Manual OK Cancel
Result RESULT SCREEN	Command properties Auto save Print and save OK Cancel



Structure in the memory organizer

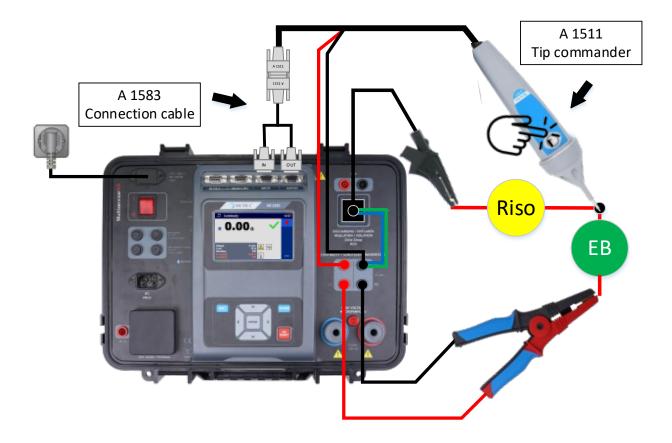


5.2. How to execute Earth continuity and Insulation resistance test using optional A 1511

The following example will show how to prepare a test sequence that will allow a specific test step to be repeated within a loop. If it is not necessary to set specific limits for each subsequent test step, this setting saves time when configuring the test sequence. In addition to setting the test sequence itself, it will also be shown how to set the connection of test accessories for the execution of the Earth continuity test and Insulation resistance using A 1511(an external Tip commander).

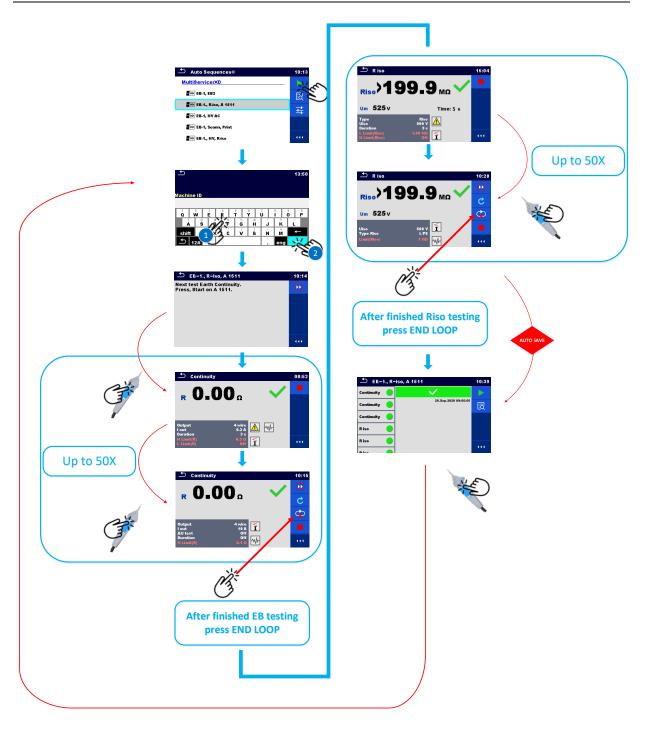
In the following steps it will be shown:

- How to connect test leads & A 1511 for remote control of (EB & Riso functions)
- Execution of 4-W Earth continuity test (EB), >sequence of 50-test steps<
- Execution of Insulation resistance test (Riso), >sequence of 50-test steps<
 - How to enable A 1511, using flow commands:
 - >EXTERNAL OK KEY mode
 - o >LAMPS PassFail mode
- Use of flow command >PAUSE<
- Use of flow command >APPLIANCE INFO<
- How to set test Loop within single test
- How to enable Auto save



	Header	
	APPLIANCE INFO	
	EXTERNAL OK KEY mode	
	LAMPS PassFail mode	
	PAUSE	
	Continuity	0
	SINGLE TEST	
	OPERATION AFTER END OF TEST	
	R iso	0
	SINGLE TEST	
	OPERATION AFTER END OF TEST	
	RESULT SCREEN	
Header	RESULT SCREEN	Command properties
APPLIANCE INFO		Command properties
EXTERNAL OK KEY mode		Repeat Setting Repeat
LAMPS PassFail mode		Appliance type Machine
		Default Appliance ID Appliance name Editable
PAUSE		Retest per. (M) 0 C
		OK Cancel
Header		Command properties
APPLIANCE INFO		State On T
EXTERNAL OK KEY mode		
LAMPS PassFail mode		OK
PAUSE		
Header		Command properties
APPLIANCE INFO		State On T
EXTERNAL OK KEY mode		OK
LAMPS PassFail mode		
PAUSE		
Header		Command properties
APPLIANCE INFO		Pause type Show Text and/or warning -
EXTERNAL OK KEY mode		Duration
LAMPS PassFail mode		Next test Earth Continuity. Press, Start on A 1511.
PAUSE		
TAULE .		
		Text
		Show warning icon
		OK
Continuity	0	Step count 50
SINGLE TEST	N.	
OPERATION AFTER END OF TEST		
		OK Cancel

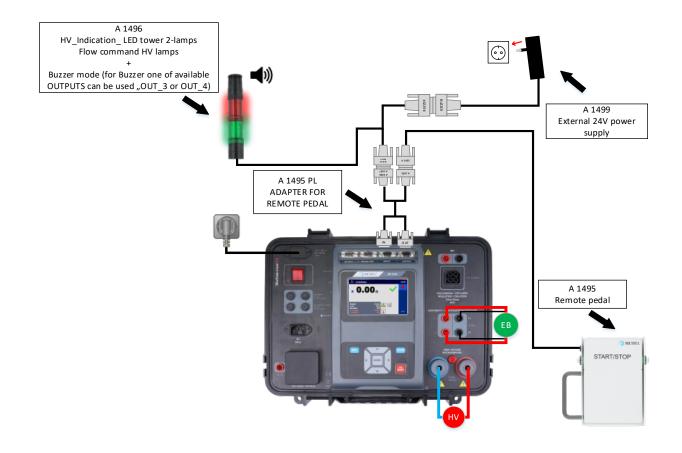
Continuity SINGLE TEST OPERATION AFTER END OF TEST	Connect Multi Connect
	Results Opper 4 area • N Fill N * A All Name 0 fill * A N Lister 0 fill * A All Name 0 fill * A Lister 0 fill * O fill *
Continuity O	Command properties
OPERATION AFTER END OF TEST	Operation after end of test - pass Manual Operation after end od test - fai Manual Operation after end of test - no status Manual
R iso	OK Cancel
PAUSE	Step count 50
OPERATION AFTER END OF TEST	
	OK Cancel
R iso SINGLE TEST OPERATION AFTER END OF TEST	R to
	VMa State Parameters Inc.0
	1.09 110
R iso Ö	
SINGLE TEST	Command properties Operation after end of test - pass Manual Operation after and of test - fail Manual
OPERATION AFTER END OF TEST	Operation after end od test - fall Manual Operation after end of test - no status Manual OK Cancel
Result RESULT SCREEN	Command properties
	Image: Image of the serve ■ Auto print Print and save
	ОК Сапсеі



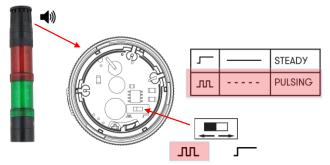
5.3. How to enable HV lamps & Buzzer

The MI 3325 instrument is intended, among other things, for performing high-voltage tests. With the correct configuration of the test sequence, and the correctly set / connected optional accessories, it is possible to enable the external signal lights required when performing the HV test. The following example will show how to prepare a test sequence that will enable HV lamps & remote start of a test sequence over the remote pedal.

- How to connect and enable HV lamps, using flow command
 - LAMPS HV mode
- How to connect and enable/disable buzzer, using flow command
 OUTPUT STATE
- How to connect and enable remot control with pedal, using flow command
 >EXTERNAL OK KEY mode
- Use of flow command >PAUSE<
- Execution of 4-W Earth cntinuity test (EB)
- Execution of High voltage test (HV)
- How t manually save results into Memory Organizer



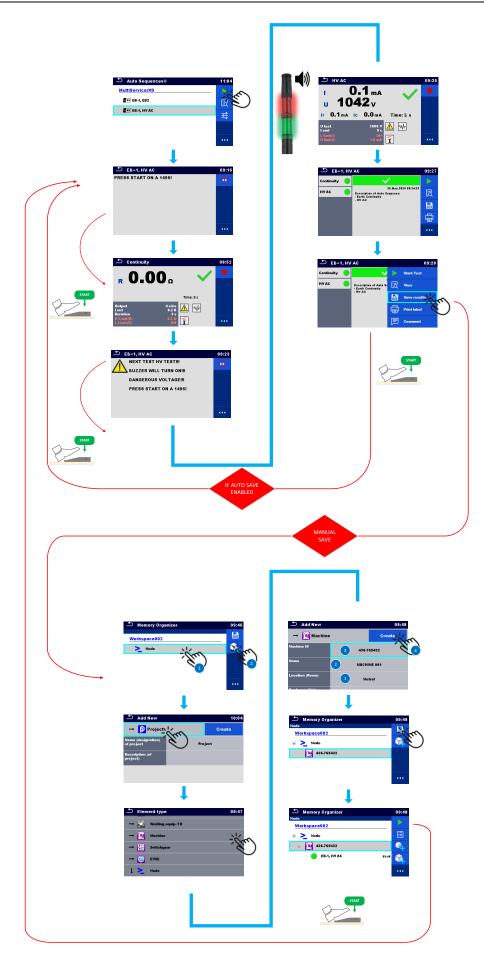
COMMON	Rs232 cable
Signal tower connetor	RS232 communication cable
Enat	oling HV lamps & buzzer on A 1496
LED TOWER (PIN CONNECTOR)	RS232 CABLE
GND (0)	Gray / Grau
/ (5)	/
/ (4)	/
Buzzer (3)	Brown / Braun (Output 3) or White / Weiß (Output 4)
Red LED (2)	Pink / Rosa
Green LED (1)	Yellow / Gelb



	He	ader EXTERNAL OK KEY mode			
	Co	ntinuity		0	
		PAUSE SINGLE TEST			
		OPERATION AFTER END OF TES	т		
	ΗV	AC LAMPS HV mode		0	
		PAUSE			
		OUTPUT STATE			
		SINGLE TEST			
		OUTPUT STATE OPERATION AFTER END OF TES	т		
	Re	sult RESULT SCREEN			
Header EXTERNAL OK KEY mode				Command properties	
EXTERIME ON NET HIDLE				State On	Cancel

Continuity	Command properties
PAUSE	Pause type Show Text and/or warning
SINGLE TEST	Duration Infinite
OPERATION AFTER END OF TEST	PRESS START ON A 1495!
OPERATION AFTER END OF TEST	
	Text
	· · · · · · · · · · · · · · · · · · ·
	Show warning icon
	ОК
Continuity O	
PAUSE	7rd Overal Educa: Enty
SINGLE TEST	Valor Status Parameters
OPERATION AFTER END OF TEST	R Column 4 with *
_	HLMI 0.02.0 Wire stress wattes LLmit OIT Duration 3 - x Connext 1 Connext 1 Connext 1 Connext 1
	Consert 7
Continuity Ö	Command properties
PAUSE	
SINGLE TEST	Operation after end of test - pass Auto
	Operation after end of test - no status Manual
OPERATION AFTER END OF TEST	
	OK
HV AC	Command properties
HV AC	
HV AC CLAMPS HV mode PAUSE	Command properties
HV AC	Command properties
HV AC C LAMPS HV mode PAUSE	Command properties
HV AC C	Command properties
HV AC C	Command properties
HV AC C	Command properties State On V OK Cancel
HV AC C LAMPS HV mode PAUSE OUTPUT STATE SINGLE TEST OUTPUT STATE OPERATION AFTER END OF TEST HV AC C C C C C C C C C C C C C C C C C C	Command properties
HV AC C	Command properties State On V OK Cancel
HV AC C	Command properties
HV AC C	Command properties Command properties Pause type Show Text and/or warning
HV AC C LAMPS HV mode PAUSE OUTPUT STATE SINGLE TEST OUTPUT STATE OPERATION AFTER END OF TEST HV AC LAMPS HV mode PAUSE OUTPUT STATE OUTPUT STATE OUTPUT STATE O	Command properties Command properties Pause type Show Text and/or warning Duration Infinite NEXT TEST HV TEST!!!
HV AC	Command properties Command properties Pause type Show Text and/or warning Duration Infinite
HV AC C	Command properties State On Cancel OK Cancel Cancel Command properties Pause type Show Text and/or warning Duration Infinite NEXT TEST HV TEST!!! BUZZER WILL TURN ON!!! DANGEROUS VOI TAGE!!!
HV AC	Command properties OK Cancel OK Cancel
HV AC C	Command properties State On Cancel OK Cancel Cancel Command properties Pause type Show Text and/or warning Duration Infinite NEXT TEST HV TEST!!! BUZZER WILL TURN ON!!! DANGEROUS VOI TAGE!!!
HV AC C	Command properties State On Carcel OK Carcel Command properties Pause type Show Text and/or warning Duration Infinite NEXT TEST HV TEST!!! BUZZER WILL TURN ON!!! DANGEROUS VOLTAGE!!!
HV AC C	Command properties State On Carcel OK Carcel
HV AC C	Command properties State On Carcel OK Carcel Command properties Pause type Show Text and/or warning Duration Infinite NEXT TEST HV TEST!!! BUZZER WILL TURN ON!!! BUZZER WILL TURN ON!!! PRESS START ON A 1495! VIENTIME
HV AC Image: Constraint of the second seco	Command properties State On Carcet OK Carcet
HV AC C LAMPS HV mode PAUSE OUTPUT STATE SINGLE TEST OUTPUT STATE OPERATION AFTER END OF TEST HV AC AMPS HV mode PAUSE OUTPUT STATE	Command properties State On Carcel OK Carcel Carcel Command properties Pause type Show Text and/or warning Duration Infinite NEXT TEST HV TEST!!! BUZZER WILL TURN ON!!! BUZZER WILL TURN ON!!! PRESS START ON A 1495!

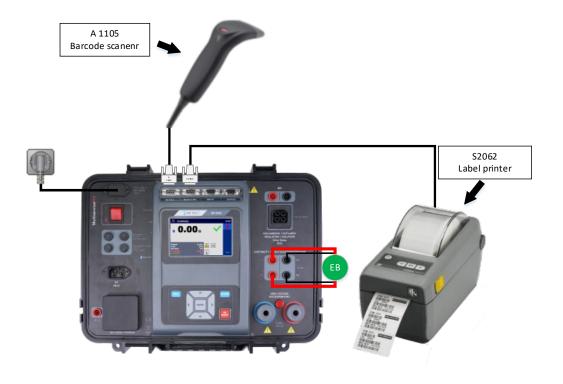
HV AC C LAMPS HV mode PAUSE OUTPUT STATE SINGLE TEST OUTPUT STATE OPERATION AFTER END OF TEST HV AC C LAMPS HV mode PAUSE O C	Command properties 00T_1 00T_2 00T_3 00T_4 00T_5 00T_5 00T_5 00T_6 Cancel Enabling buzzer!!! Cancel
SINGLE TEST OUTPUT STATE OPERATION AFTER END OF TEST	
HV AC C C C C C C C C C C C C C C C C C C	Command properties OUT_1 OUT_2 OUT_3 OUT_4 OUT_5 OU
HV AC	Command properties Operation after end of test - pass Auto Operation after end od test - fail Manual Operation after end of test - no status Manual OK Cancel
OPERATION AFTER END OF TEST Result RESULT SCREEN	Command properties Command properties Auto save Auto print Print and save Cancel Cancel

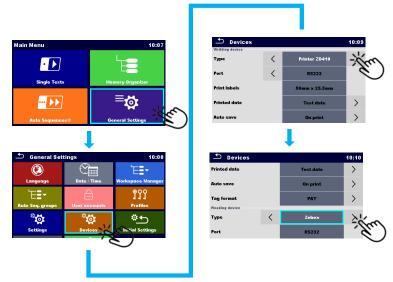


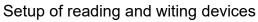
5.4. How to enable barcode reader and auto print

One of the instrument's strong features is the support of optional peripheral devices such as reading and writing devices. The following example will show how to prepare a test sequence that will enable HV lamps & remote start of a test sequence over the remote pedal.

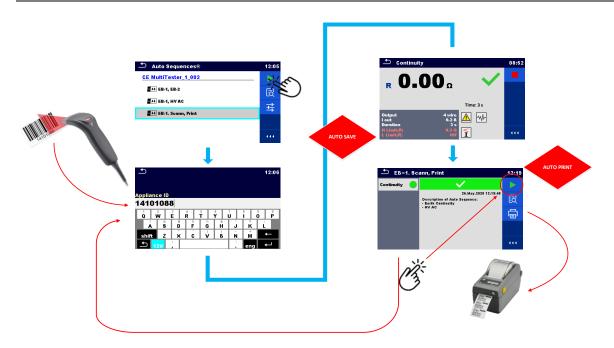
- How to Setup, barcode printer & Barcode scanner
- How to connect and enable Barcode scanner, using flow command
 O APPLIANCE INFO
- Execution of 4-W Earth continuity test (EB)
- How to enable auto save, using command
 - Auto save
- How to connect and enable barcode printer, using command
 - Auto print







	Header		
	APPLIANCE INFO		
	Continuity	0	
	SINGLE TEST		
	OPERATION AFTER END OF TEST		
	Result RESULT SCREEN		
	RESULT SCREEN		
Header		Command properties	
		Repeat Setting Repeat	-
		Appliance type Machine	-
		Default Appliance ID	<u> </u>
		Retest per. (M) 0 C	
		ОК	ncel
Continuity	0	Centinuty	
SINGLE TEST		Cone Tra	
		Overall Status: Entry	
OPERATION AFTER END OF TEST		Vale Status Parameters	
		Bit Output 4 With * Linek 1 text 02 * R Affiliation Affiliation	
		H Link Ο 03 Ω H Link Ο 01 University Link Ο 01 Compact 1	
		Connet 7	
Continuity	0	Command properties	
SINGLE TEST		Operation after end of test - pass Auto	-
OPERATION AFTER END OF TEST		Operation after end od test - fail Manual	-
		Operation after end of test - no status Manual	-
		ОК	Cancel
Result		Command properties	
RESULT SCREEN		V Auto save	
		Auto print	
		Print and save	
		ОК	Cancel



Structure in the memory organizer

Memory Organizer	
APPL. ID: 1 APPL. NAME: TEST STATUS PASS TEST DATE: USER: BLAZ	

5.5. How to enable PASS/FAIL status lamps, HV lamps and remote control

In certain cases, in addition to the indication of the high-voltage test, an indication of the status of the results (PASS / FAIL) is also desirable.

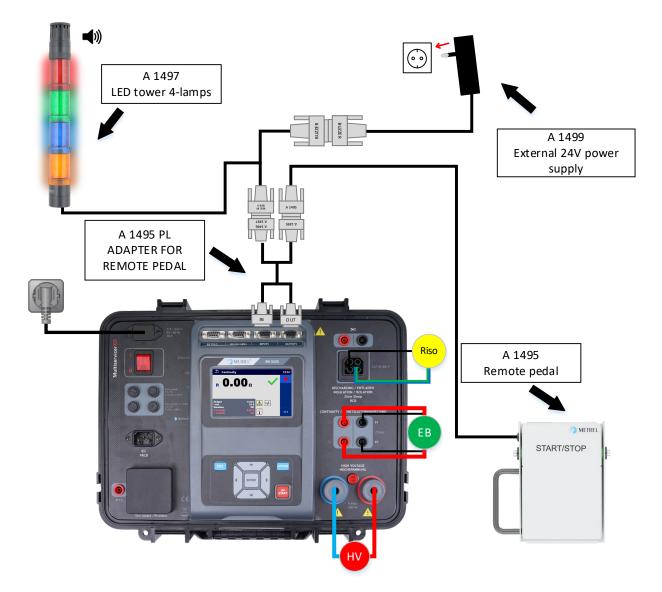
This is especially welcome in applications where tests are run using a remote control (test pedal, or tip commander), and where the user does not always have the option to look at the instrument's screen to evaluate test results.

The following example will show how to prepare a test sequence that will enable PASS/FAIL status lamps, HV lamps & remote start of a test sequence over the remote pedal.

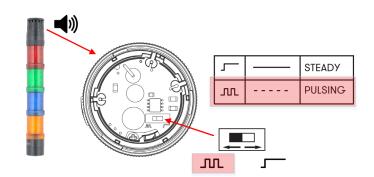
In the following steps it will be shown:

- How to connect and enable remote control with A 1495, using flow command

- o >EXTERNAL OK KEY mode
- How to connect and enable HV + PASS/FAIL lamps (A 1497), using flow commands
 - LAMPS HV mode
 - LAMPS passFail mode
- Use of flow command >PAUSE<
- Execution of Insulation resistance test (Riso)
- Execution of 4-W Earth cntinuity test (EB)
- Execution of High voltage test (HV)
- How to enable auto save, using command
 - o Auto save

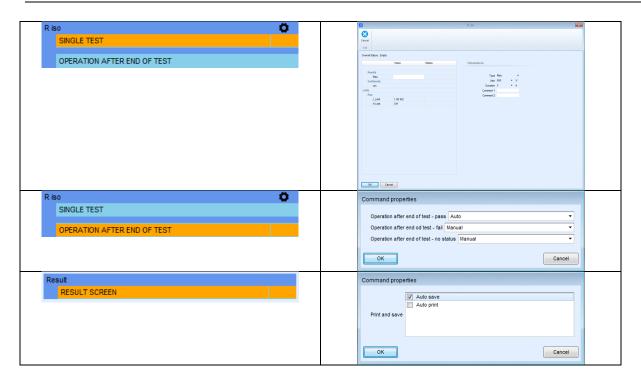


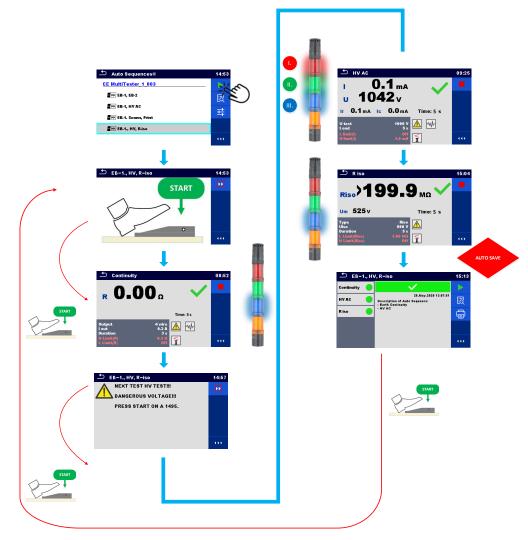
COMMON	Rs232 cable
Signal tower connetor	RS232 communication cable
Enabl	ing HV lamps & Status lamps A 1497
LED TOWER (PIN CONNECTOR)	RS232 CABLE
GND (0)	Gray / Grau
Buzzer (5)	Bridge between any of available status lights (PIN5 & PIN1 or 2, or 3, or 4)
Red LED (4)	Pink / Rosa
Green LED (3)	Yellow / Gelb
Blue LED (2)	Brown / Braun
Orange LED (1)	White / Weiß



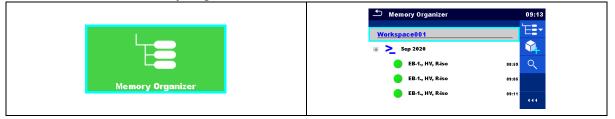
	Header			
	EXTERNAL OK KEY mode			
	LAMPS PassFail mode			
	Continuity PAUSE	Ö		
	SINGLE TEST			
	OPERATION AFTER END OF TEST			
	HV AC LAMPS HV mode	0		
	PAUSE			
	SINGLE TEST			
	OPERATION AFTER END OF TEST			
	R iso	0		
	SINGLE TEST			
	OPERATION AFTER END OF TEST			
	RESULT SCREEN			
Header		Command properties		
EXTERNAL OK KEY mode	Ō	State On	•	
LAMPS PassFail mode	0	ОК	Cancel	
Header EXTERNAL OK KEY mode		Command properties		
		State On	•	
LAMPS PassFail mode		ОК	Cancel	

Continuity 🗘	Command properties
PAUSE	Pause type Show picture -
SINGLE TEST	Duration Infinite
	Image path start pedal.png ···· 😒
OPERATION AFTER END OF TEST	
	Cancel
Continuity 🗘	Continuity
PAUSE	Server 1
SINGLE TEST	Overall Status: Ensty
	Valar Status Parameters Results Output 4 With *
OPERATION AFTER END OF TEST	Linds Inst 02 * A
	4.04 0302 00 00 00 00 00 00 00 00 00 00 00 00 0
	Consect 7
	Carol
Continuity	Command properties
PAUSE	
	Operation after end of test - pass Auto
SINGLE TEST	Operation after end od test - fail Manual Operation after end of test - no status Manual
OPERATION AFTER END OF TEST	
	Cancel
HV AC O	Command properties
LAMPS HV mode	
	State On 👻
PAUSE	OK
SINGLE TEST	
OPERATION AFTER END OF TEST	
HV AC O	Command properties
LAMPS HV mode	
PAUSE	Pause type Show Text and/or warning
	Duration Infinite
SINGLE TEST	NEXT TEST HV TEST!!!
OPERATION AFTER END OF TEST	
	DANGEROUS VOLTAGE!!!
	PRESS START ON A 1495.
	Text FRESS START ON A 1495.
	· · · · · · · · · · · · · · · · · · ·
	Show warning icon
	OK Cancel
HV AC O	
HV AC CLAMPS HV mode	
LAMPS HV mode	In AC.
LAMPS HV mode	
LAMPS HV mode PAUSE SINGLE TEST	
LAMPS HV mode PAUSE	
LAMPS HV mode PAUSE SINGLE TEST	
LAMPS HV mode PAUSE SINGLE TEST	
LAMPS HV mode PAUSE SINGLE TEST	
LAMPS HV mode PAUSE SINGLE TEST	
LAMPS HV mode PAUSE SINGLE TEST	If AC Image: Control of the state of the st
LAMPS HV mode PAUSE SINGLE TEST	
LAMPS HV mode PAUSE SINGLE TEST OPERATION AFTER END OF TEST	Image: second
LAMPS HV mode PAUSE SINGLE TEST OPERATION AFTER END OF TEST HV AC	If AC Image: Control of the state of the st
LAMPS HV mode PAUSE SINGLE TEST OPERATION AFTER END OF TEST	Image: second
LAMPS HV mode PAUSE SINGLE TEST OPERATION AFTER END OF TEST HV AC	Image: training t
LAMPS HV mode PAUSE SINGLE TEST OPERATION AFTER END OF TEST HV AC LAMPS HV mode PAUSE	Image: set of the set of
LAMPS HV mode PAUSE SINGLE TEST OPERATION AFTER END OF TEST HV AC LAMPS HV mode	Image: training t

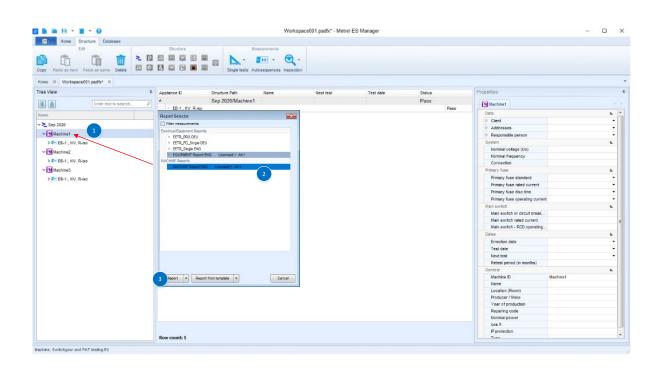




Structure in the memory organizer



For creation of professional test reports the measurements has to be moved under appropriate structure element: Appliance, Appliance FD, Welding equip., Welding equip. FD, Machine, Switchgear or EVSE. This can be done on the MESM SW.



5.6. How to enable test setup with CE Adapter A 1460

This section shows how to prepare a test sequence to be performed in combination with the MultiServicerXD instrument and the CE Adapter. A number of optional accessories will be used along with the instrument and adapter. The purpose is to show the entire solution of the test flow, from entering the ID number with barcode scanner, performing passive tests including multiple point testing. Continuing with high voltage testing, and active (Leaks&Power) testing at the end. A number of optional accessories will also be included in the test process:

- signal lights
- bar code reader
- printer
- tip commander/pedal

Note!

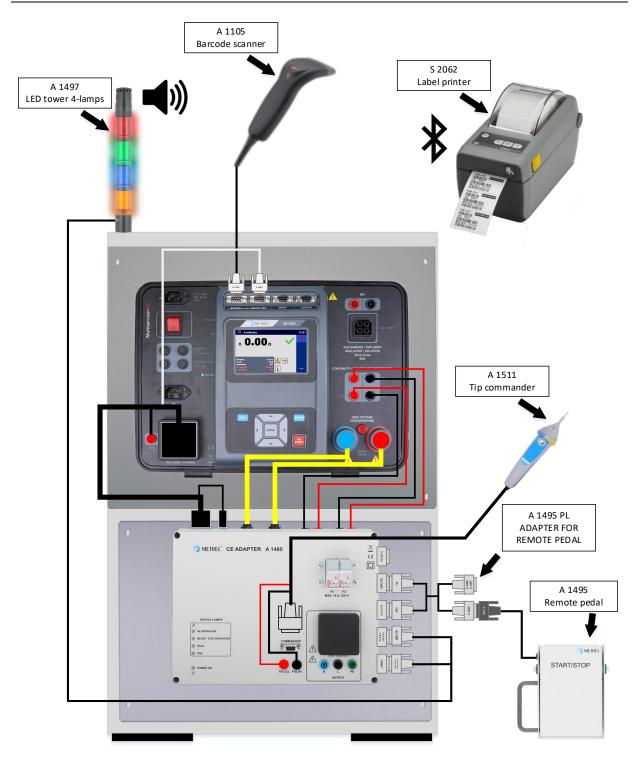
In certain tests, the measuring instrument checks "in the pre-test" whether the tested device connected to the instrument test terminals meets certain pre-set criteria. If the connected device does not meet the criteria set in the measuring instrument, a warning message appears on the instrument screen.

These warning messages can indicate the user different statuses:

- whether the tested device (ON / OFF) switch must be turned on,
- whether the device connected to the test socket is faulty, etc...

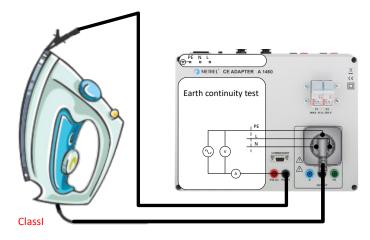
Using Flow command "NO NOTIFICATION mode" these warning messages can be automatically skipped.

- How to connect and enable Barcode scanner, using flow command o APPLIANCE INFO
- How to connect and enable remote cntrol with A 1511 or/and A 1495, using flow command
 - >EXTERNAL OK KEY mode<
- How to connect and enable HV + PASS/FAIL lamps + Buzezr (A 1497), using flow commands
 - o LAMPS HV mode
 - LAMPS passFail mode
 - BUZZER mode
- Execution of 4-W Earth cntinuity test (EB) >sequence of 3-test steps<
- How to disable notifications, using flow command
 - NO NOTIFICATION mode
- Execution of Insulation resistance test (Riso)
- Execution of High voltage test (HV)
- Execution of Leaks & Pwer test
- How to enable auto save, using command
 - o Auto save
- How to connect and enable barcode printer, using command
 - Auto print

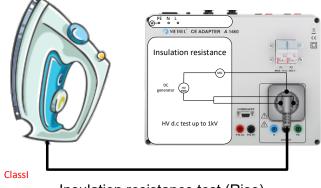


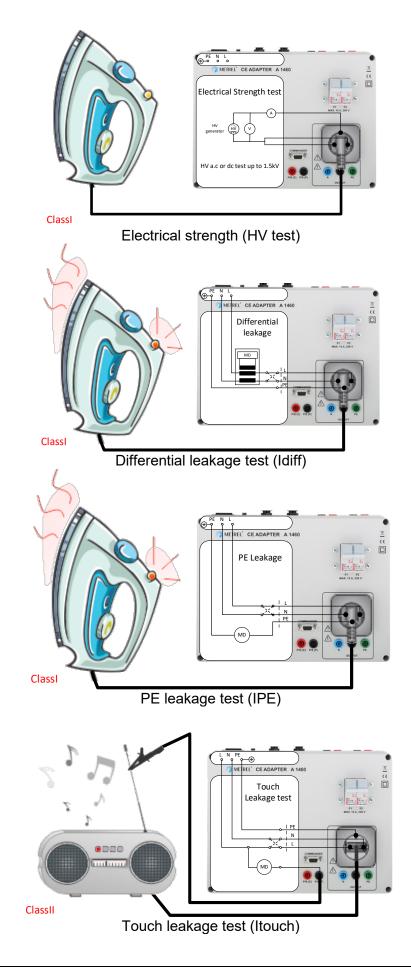
COMMON	Rs232 cable	₩ → »
Enabling HV lamps & Status lamps + Buzzer A 1497		
LED TOWER (PIN CONNECTOR)	RS232 CABLE	
GND (0)	Gray / Grau	
Buzzer (5)	Green / Grün	
Red LED (4)	Pink / Rosa	
Green LED (3)	Yellow / Gelb	
Blue LED (2)	Brown / Braun	
Orange LED (1)	White / Weiß	

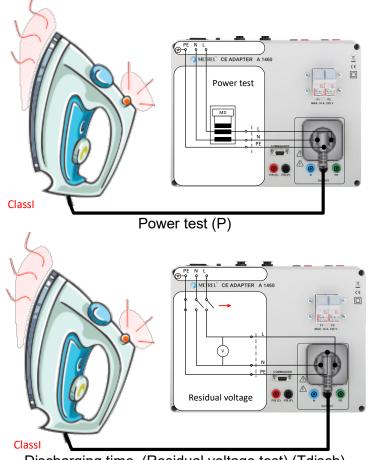
How testing is performed via CE ADAPTER



Earth continuity test (EB)





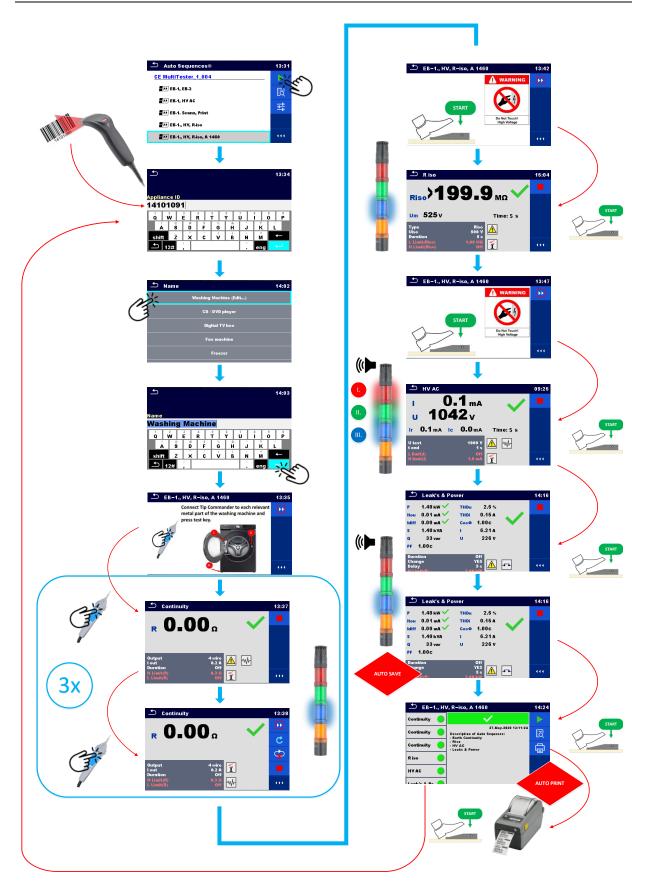


Discharging time (Residual voltage test) (Tdisch) leader EXTERNAL OK KEY mode LAMPS PassFail mode PAUSE Ö. Continuity SINGLE TEST OPERATION AFTER END OF TEST Ö R iso PAUSE NO NOTIFICATION mode SINGLE TEST OPERATION AFTER END OF TEST HV AC Ö BUZZER mode LAMPS HV mode PAUSE SINGLE TEST OPERATION AFTER END OF TEST Ö .eak"s & Power SINGLE TEST OPERATION AFTER END OF TEST Result RESULT SCREEN

Header	Command properties
APPLIANCE INFO	Repeat Setting Repeat
EXTERNAL OK KEY mode	Appliance type Appliance_FD
LAMPS PassFail mode	Default Appliance ID
PAUSE	Appliance name Washing Machine Value
	Retest per. (M) 12 C Editable
	OK
Header APPLIANCE INFO	Command properties
	State On -
EXTERNAL OK KEY mode	OK
LAMPS PassFail mode	
PAUSE	
Header APPLIANCE INFO	Command properties
	State On 🔹
EXTERNAL OK KEY mode	OK
LAMPS PassFail mode	
PAUSE	
Header	Command properties
APPLIANCE INFO	Pause type Show picture
EXTERNAL OK KEY mode	Duration Infinite Image path EB test.png ···· 💿
LAMPS PassFail mode	
PAUSE	Cancel
Continuity O	Connucy 🔛
SINGLE TEST	Construction of the second sec
OPERATION AFTER END OF TEST	Oversil Datus Entry Value Datus Parameters
	Results Codput 4 min - Units 1 aut 02 - A
	8 2010 00 200 00 200 00 200 00 200 00 200 00
	Comment 2 R compensation Off •
Continuity 👏	
SINGLE TEST	Step count 3
OPERATION AFTER END OF TEST	
	OK
Continuity	Command properties
SINGLE TEST	Operation after end of test - pass Manual
OPERATION AFTER END OF TEST	Operation after end od test - fail Manual
	Operation after end of test - no status Manual -
	Cancel
R iso	Command properties
PAUSE	
NO NOTIFICATION mode	Pause type Show picture Duration Infinite
SINGLE TEST	Image path HV test.png ···· 🕲
OPERATION AFTER END OF TEST	OK

R iso O	Warning! Possible cause: Resistance L-N is too high(>30 k0hm). Check fuse / switch. Would you like to proceed? Device under test is not switched on.
NO NOTIFICATION mode	
SINGLE TEST	YES NO Message will be skipped!
OPERATION AFTER END OF TEST	Command properties State On
	CK
R iso 🗘	El Carlo Carlo
	Coll Overal Status, Endy
NO NOTIFICATION mode	Vera Datus Parameters Results Res
SINGLE TEST	Spatialize Spatialize V 000 Docest 3 * 8 Uolis Cament 1 Spatialize Res Cament 2 Cament 2
OPERATION AFTER END OF TEST	LUM 1000
R iso O	Command properties Operation after end of test - pass Auto
NO NOTIFICATION mode	Operation after end od test - fail Manual
SINGLE TEST	Operation after end of test - no status Manual
OPERATION AFTER END OF TEST	OK
HV AC Ö	Command properties
BUZZER mode	State On ·
LAMPS HV mode	ОК
PAUSE	
SINGLE TEST	
OPERATION AFTER END OF TEST	
HV AC Ö	Command properties
BUZZER mode	State On 👻
LAMPS HV mode	OK
PAUSE	
SINGLE TEST	
OPERATION AFTER END OF TEST	
HV AC	Command properties
BUZZER mode	Pause type Show picture
LAMPS HV mode	Duration Infinite
PAUSE	Image path HV test.png ···· 😒
SINGLE TEST	Cancel
OPERATION AFTER END OF TEST	
HV AC	
BUZZER mode	Garati 50 Deventions: bey
LAMPS HV mode	Value Status Parameters
PAUSE	Analy Used 100 = V 0 - - 1 - - 1 - - 1 - - 1 - - 1 - - 1 - - 1 - - 1 - - 1 - - 1 - -
SINGLE TEST	Line OF
OPERATION AFTER END OF TEST	

HV AC Ö	Command properties
BUZZER mode	Operation after end of test - pass Auto
LAMPS HV mode	Operation after end od test - fail Manual
LAMPS ITV IIIUde	Operation after end of test - no status Manual
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	Operation after end of test - no status Manual
	OK
Result	Command properties
RESULT SCREEN	Auto save
	Auto save
	Print and save
	OK

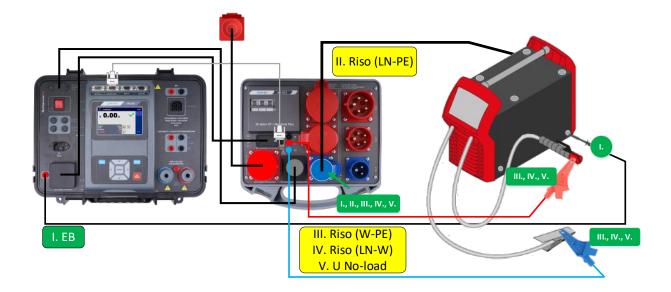


5.7. How to enable A 1422 Active 3-phase adapter for testing of, Arc / Welding equipment

MultiServicerXD in combination with A 1422 enables testing of single and three phase welding equipment. The following example describes the testing of a 1-phase, Class I. (d.c. output) welding device, the following tests will be performed:

- I. Earth continuity
- II. Insulation resistance (Supply circuit to protective circuit), "LN-PE"
- III. Insulation resistance (welding circuit to protective circuit), "W-PE"
- IV. Insulation resistance (supply circuit to welding circuit), "LN-W"
- V. No-load voltage

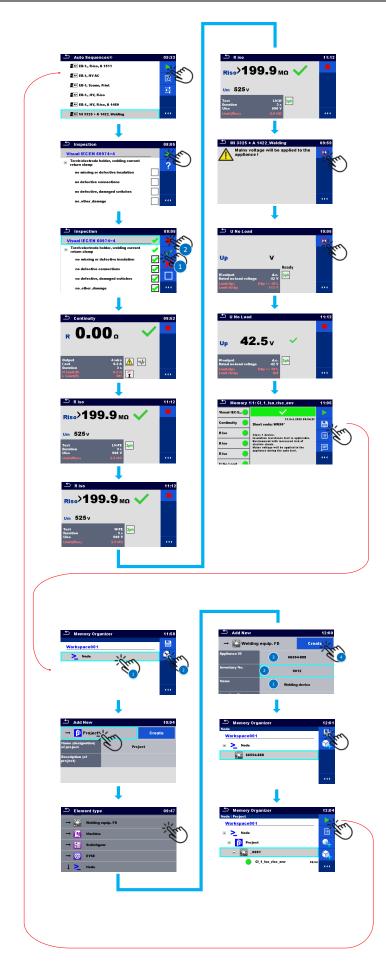
- How to establish connection between MI 3325 and A 1422 to enable Arc/Welding tests
- How to eable and execute Visual inpections
- Execution of Insulation resistance test (Riso "LN-PE")
- Execution of Insulation resistance test (Riso "W-PE")
- Execution of Insulation resistance test (Riso ""LN-W")
- Use of flow command >PAUSE<
- Execution of No-load volatege (U No-load)
- How t manually save results into Memory Organizer



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	OPERATION AFTER END OF TEST	
	Continuity	0
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	OPERATION AFTER END OF TEST	
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	OPERATION AFTER END OF TEST	
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	PAUSE	
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	SINGLE TEST	
	OPERATION AFTER END OF TEST	
	Result	
	RESULT SCREEN	
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	Operation after end of test - no status Manual
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	Operation after end of test - no status Manual
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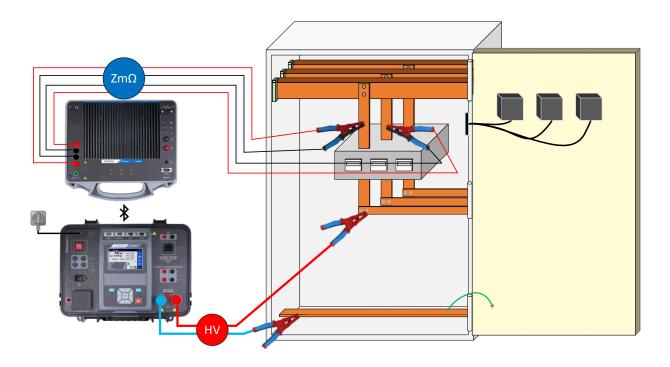
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5.8. How to measure low impedance $(m\Omega)$

Switchboards are typical devices where many safety measurements are performed, including high voltage (HV) measurement and impedance (Z) measurement in the m Ω range. High precision line and fault loop impedance measurements are performed using high current impulses to assure adequate voltage drop during the test. The following example will show how to execute high voltage measurement using MI 3325 and an impedance measurement in m Ω range using MI 3325 + MI 3144. Communication between test instruments will be established via Bluetooth.

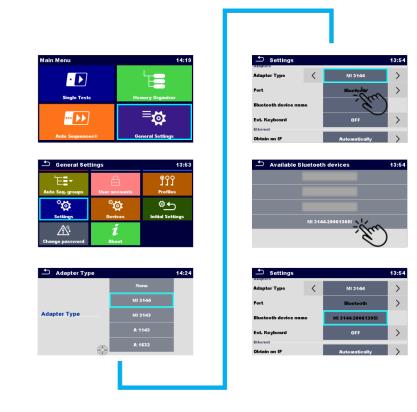
- How to establish bluetooth communication between MI 3325 and MI 3144
- How to eable and execute Visual inpections
- Use of flow command >PAUSE<
- Execution of High voltage test (HV)
- Execution of Line Impedance test in m Ω range (Z m Ω)
- How t manually save results into Memory Organizer

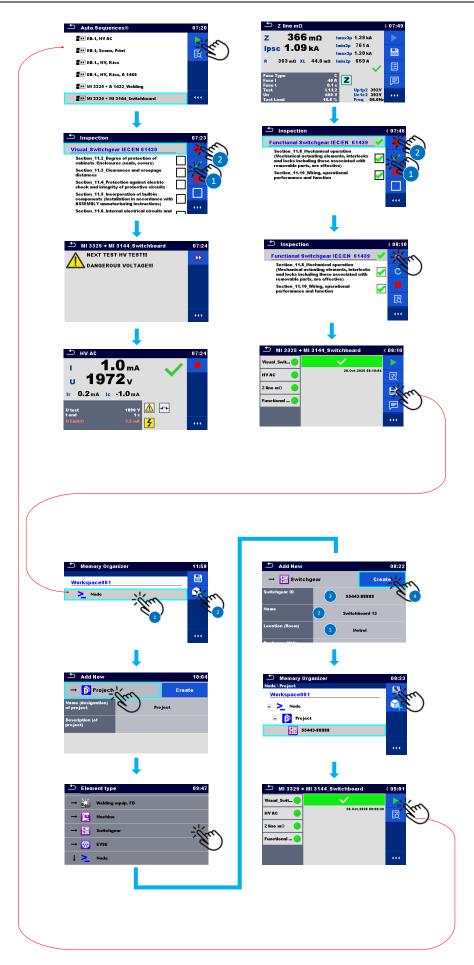


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RESULT SCREEN	
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	Operation after end of test - no status Manual -
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	Motion Aurage OF MOS Motion 1 weak Transect 0 Urbs Commit 1
	000 Connect 2 2
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OPERATION AFTER END OF TEST	Operation after end od test - fail Manual
	Operation after end of test - no status Manual
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	x . Cover
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Functional Switchgear IEC/EN 61439	Command properties
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Before performing the measurement, it is necessary to establish communication (wireless or wired) between MI 3325 MultiServicerXD and MI 3144 Euro Z 800V. This is done according to the following procedure.





5.9. How to do a diagnostic test on a (EVSE) charging station

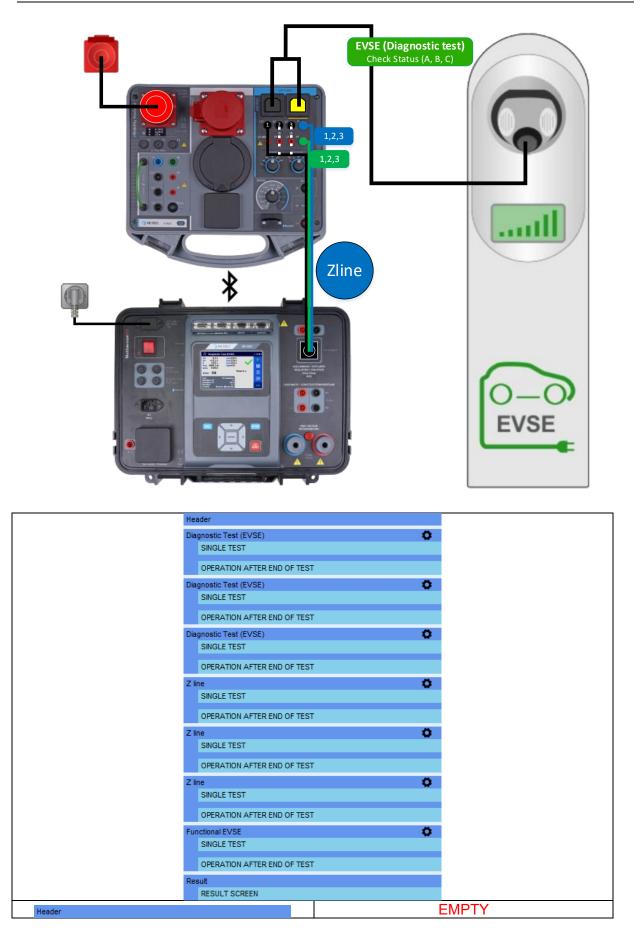
One other application covered by MultiServicerXD is the verification of (EVSE) charging stations. To perform the tests on the (EVSE) station, it is necessary to use the optional adapter (A 1632, eMobility Analyzer), which allows us to establish the appropriate states of the (EVSE) station, to enable execution of safety and diagnostic tests on the charging station.

In the following example, two measurements will be shown:

- (EVSE) station diagnostic test,

- line impedance measurement.

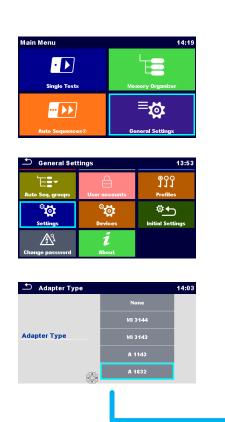
- How to establish bluetooth communication between MI 3325 and A 1632
- How to connect instrument and adapter for execution of impedance test
- Execution of Disagnostic test (Simulation of state A)
- Execution of Disagnostic test (Simulation of state B)
- Execution of Disagnostic test (Simulation of state C)
- Execution of Impedance test (Zline "L1-N")
- Execution of Impedance test (Zline "L2-N")
- Execution of Impedance test (Zline "L3-N")
- Execution of Functional inspection (Functional EVSE)
- How t manually save results into Memory Organizer



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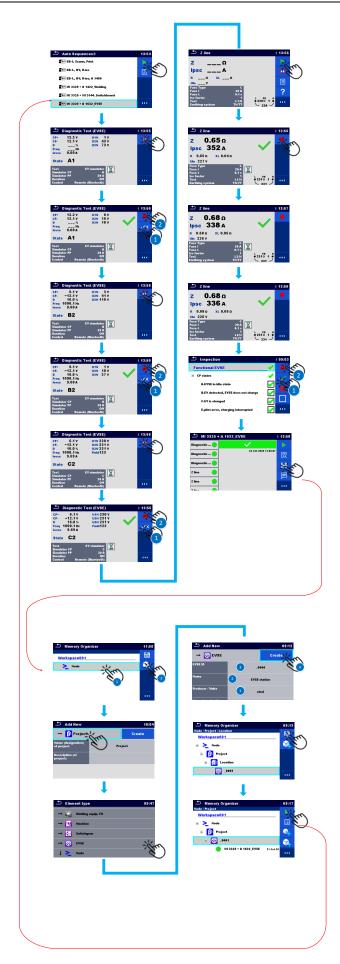
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	Operation after end of test - pass Auto
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Z line	Control Contro
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	600.75 Comment 2 8ct.15 Comment 2 Index
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	USB1 00 00 200 A
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Before performing the measurement, it is necessary to establish wireless communication between MI 3325 MultiServicerXD and A 1632 eMobility Analyser. This is done according to the following procedure.





Settings			14:06
Adapter Type	<	A 1632	
Port		Bluetooth	
Bluetooth device na	me	A 1632-193911991	
Ext. Keyboard		OFF	\rightarrow
Ethernet			



6. Special features

This chapter describes special features supported by the instrument. Some of the features are specially developed to help the user be more efficient, safe, and make the instrument easier to handle. Some of these are unique (implemented due to the specific needs of certain markets) therefore need further explanation for understanding how to handle the instrument.

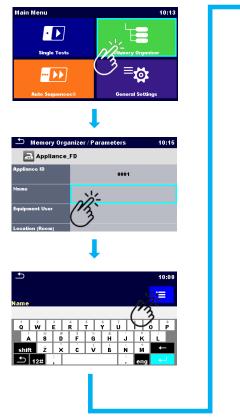
6.1. Working with user custom lists

MultiServicerXD supports many different structural elements where test results can be stored. These structural element parameters will be printed on professional reports. Due to the nature of work, many of these parameters are repeating, therefore Metrel has integrated custom lists, which can be filled on the fly, and re-used from the drop-down lists.

Custom lists are available for various parameters present in the memory organizer, such as:

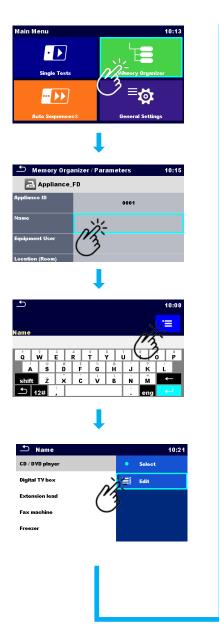
- Device ID,
- Device name,
- Location of the appliance,
- Producer,
- Etc.

For testing itself, this means a significant speedup, as the user can select items from the lists instead of manually entering item names during the testing procedure.





Custom lists can be filled on the fly, by choosing the drop-down list symbol and entering a new value.

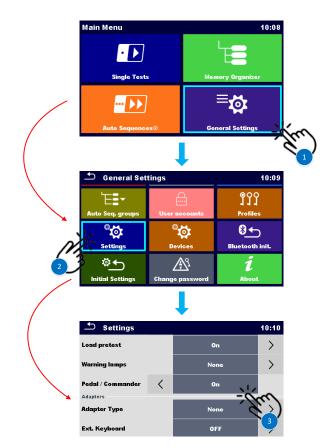




6.2. How to enable remote start with optional A 1511 / A 1495 (Single Tests)

In the General Settings of the instrument, the external commander/pedal can be set for remote control over single tests.

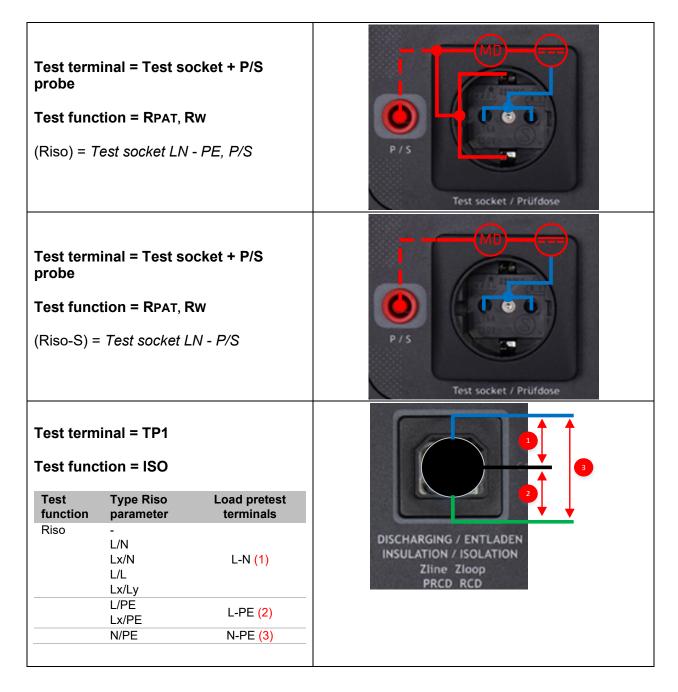
The Remote commander is in general intended to be used for the execution of Earth continuity measurement (4-wire test method), but it can also be used for the execution of Insulation resistance measurement when properly connected to corresponding instrument test terminals. Appropriate connection is described in chapter 5.2 (*How to execute Earth continuity and Insulation resistance test using optional A 1511*).

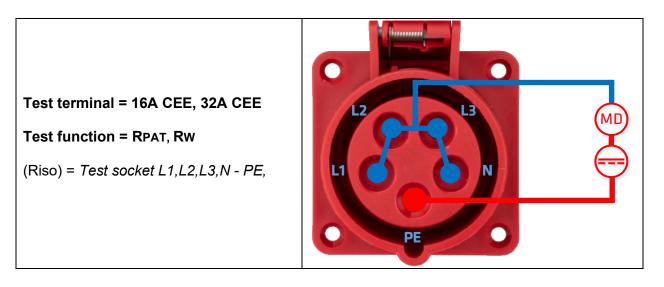


6.3. Disableing pre-tests for specific measuring functions

6.3.1. Load pre-test

MultiServicerXD enables the measurement of insulation resistance via various test terminals:





The main purpose of such functionality is that the instrument supports testing in various applications:

- Testing of Electrical Machines,
- Electrical Switchgears,
- Testing of Portable Devices,
- Testing of electrical equipment and,
- Testing of electrical installations.

ISO test function

This test function is primarily intended for testing fixed connected devices or testing electrical installations, as the user can apply the test voltage between different test terminals.

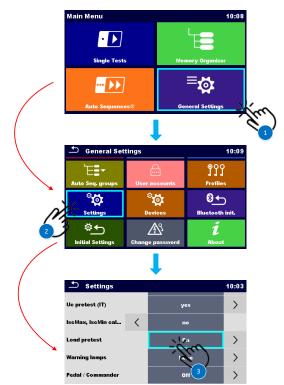
In some applications loads connected between phase and neutral conductor can be damaged if too high voltage is applied during test, this applies mainly to insulation resistance test which is executed through **TP1 test** terminal.

High Insulation voltage can potentially damage the connected appliances during the Insulation measurement. This misuse can be prevented by enabling Load pre-test functionality in Settings menu. Load pre-test measures the impedance on test terminals with low and safe a.c. voltage. If impedance lower than 50 k Ω is detected, warning message is displayed, allowing to disconnect the appliances before test voltage is applied.

🛨 R i	R iso		
Dies	Warr	ning!	_
Riso			
	Z < 50 kOhm. Loa Do you want to p		
Um	bo you want to p	loceeur	
Uiso	YES	NO	
Type Riso	L.		
Limit(Riso		0	444

Insulation measuring voltage is applied to the test terminals only after YES is selected. NO will abort the measurement.

If impedance higher than 50 k Ω is measured during the Load pre-test, Insulation test will follow automatically.



How to enable Load pre-test functionality is shown on bellow flow diagram.

RPAT, Rw test function

This test function is primarily intended for testing electrical equipment (PAT):

- Electrical equipment with a power cord (1-phase and 3-phase),
- IEC leads / Connection cables,
- Extension leads (1-phase and 3-phase).

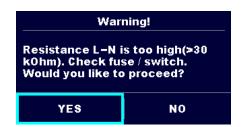
Electrical equipment with power cord

When testing Electrical equipment with power cord it is important that On/Off switches are closed.

If after the switches were closed all safety-relevant parts are not included the results will be impaired. This is often the case in electronic or relay-driven On/Off circuits. In this case leakage current, tests can be performed as an alternative.

In order to warn the user that the On/Off switch of the device under test is placed in the correct position, and that the input fuses of the device under test are not blown, the test instrument has a built-in load pre-test function, which is executed before the insulation resistance test.

If the resistance between the Phase and Neutral conductors measured in the pre-test is greater than 30 k Ω , we can assume that the tested device switch is not in the correct position or that it has blown input fuses.



This pre-test is active by default, in the settings menu it must be set to On.

IEC Connection cables, Extension leads (1-phase and 3-phase)

When testing the IEC leads or other Extension leads without installed protective devices the Load pre-test can be annoying, as the resistance measured in the pretest between Live and Neutral conductors will always be greater than 30 kOhm.

In such application the Load pre-test can be set to off.

Settings			13:16
Uc pretest (IT)		yes	>
lscMax, IscMin cal	<	no	
Load pretest	<	Off	
Warning lamps		None	>
Pedal / Commander		Off	>

Note!

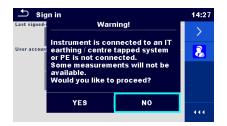
When testing electrical equipment, it is obligatory to perform complete sequence of tests. When using Metrel AutoSequences® the Load pre-test can be disabled using flow command No-notification mode, as explained in chapter 3.5.8 (*No notifications mode*), and chapter 5.6 (*How to enable test setup with CE Adapter A 1460*).

6.3.2. Disabling (IT) earthing system warning

The MultiServicerXD supports operation in different earthing systems (TN/TT and IT), by default, it is set for operation in TN/TT earthing system.

Laboratory rooms, medical facilities, construction sites, repair workshops, mobile electrical installations, and other environments where there is an increased risk of insulation faults, often use an IT earthing arrangement supplied from isolation transformers. The main purpose of such an arrangement is related to safety issues.

When the test instrument is connected to and IT system for the first time a warning message is displayed.



The operator of the MultiServicerXD can confirm that the instrument is connected to the IT earthing system, in such case the warning message will be disabled, and the test instrument will start operating in an IT earthing system mode. Some measurements will be disabled (for more information refer to user manual).

6.4. How to enable Warning lamps & Buzzer (Single tests)

Certain measuring functions, supported by MultiServicerXD, for safety reasons require that all personnel present, during the testing procedure, are notified that the measurement is being performed. This is especially important when performing a high voltage measurement, where it is required by standard EN 50191, that signal lights shall be installed to indicate the operational status inside the test area and that they must be clearly visible to people outside the test area.

The green light indicates status ready for operation, and the red light indicates status in operation.

In addition to HV lamps it is possible to set status lights indicating PASS/FAIL status of ongoing measurement plus enabling buzzer to indicate one of available statuses.

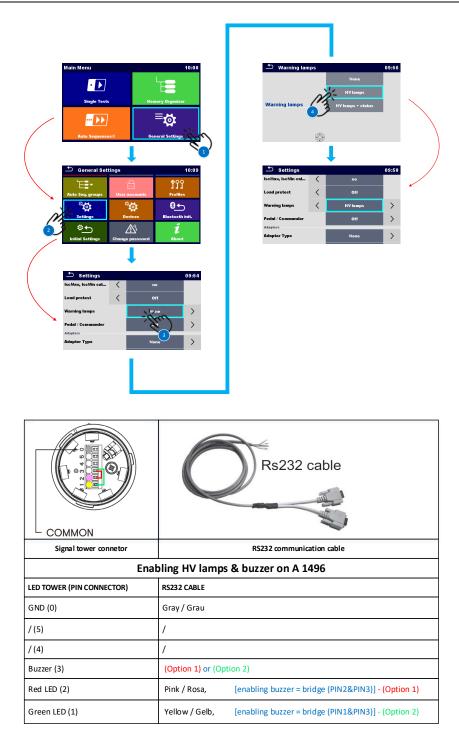
6.4.1. HV lamps (A 1496)

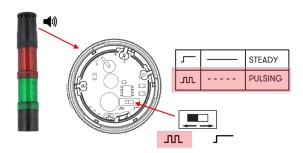
HV lamps are designed to be used in High Voltage measuring functions, but can also be used for indication of PASS/FAIL statuses. Alongside to light indication external buzzer can be set to indicate one of the states (ready for operation, or in operation).

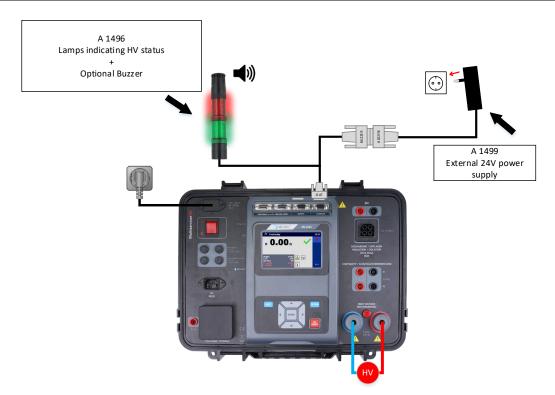
HV status indication:

Indication of Operating States for the MultiServicerXD:

- Green status light indicates that test instrument is ready for operation.
 Instrument is ON and HV function is selected, the test voltage supply circuit is still switched off and secured with a password.
- Red status light indicates that the (HV) dielectric strength test has been activated and the measurement is in process, voltage is applied to test terminals.

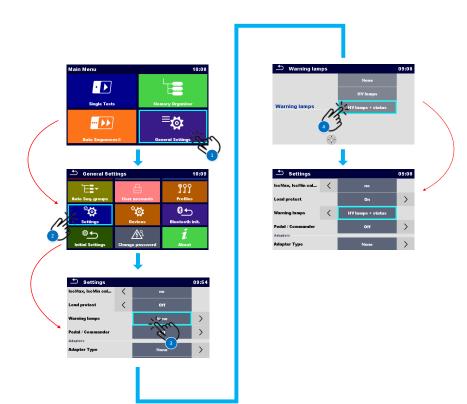




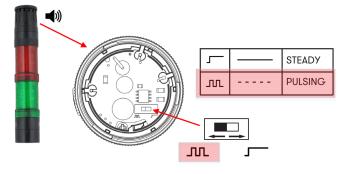


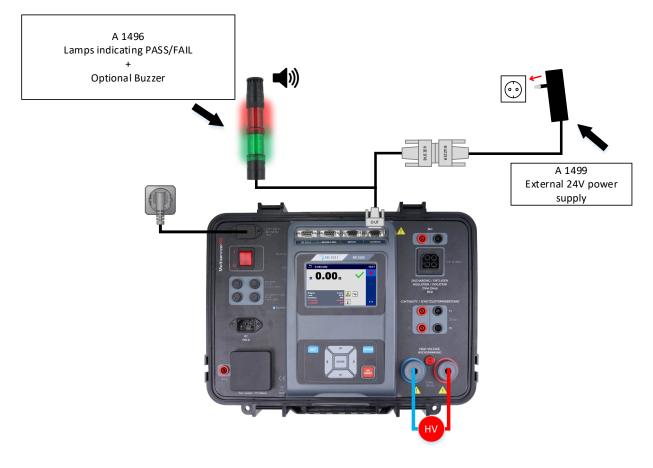
PASS/FAIL status indication

With correct wiring the A 1496 signal tower can be used for indication of PASS/FAIL statuses.



COMMON Signal tower connetor	Rs232 cable	
Enabling A 14	196 for PASS / FAIL status & (optional) buzzer	
LED TOWER (PIN CONNECTOR)	RS232 CABLE	
GND (0)	Gray / Grau	
/ (5)	1	
/ (4)	/	
Buzzer (3)	(Option 1) or (Option 2)	
Red LED (2)	White / Weiß (OUTPUT 4) [enabling buzzer = bridge (PIN2&PIN3)] - (Option 1)	
Green LED (1)	Brown / Braun (OUTPUT 3) [enabling buzzer = bridge (PIN1&PIN3)] - (Option 2)	



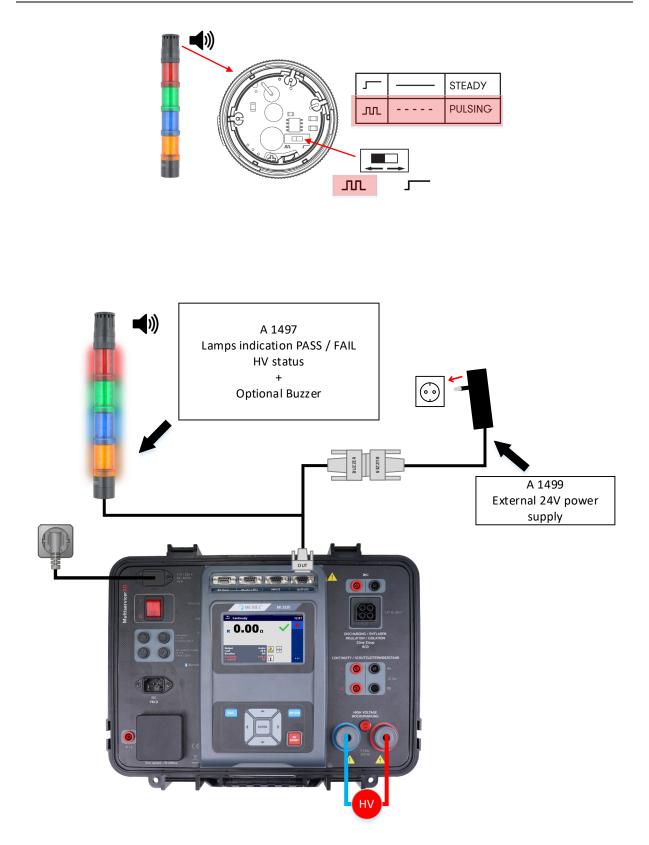


6.4.2. PASS/FAIL lamps, HV lamps (A 1497)

Signal tower with 4 LED lamps & buzzer, alongside to indication of HV warning status also enabling indication of PASS/FAIL status for every measurement where the limits are set.



COMMON	Rs232 cable	
Signal tower connetor	RS232 communication cable	
Enabl	ing HV lamps & Status lamps A 1497	
LED TOWER (PIN CONNECTOR)	RS232 CABLE	
GND (0)	Gray / Grau	
Buzzer (5)	Bridge between any of available status lights (PIN5 & PIN1 or 2, or 3, or 4)	
Red LED (4)	Pink / Rosa	
Green LED (3)	Yellow / Gelb	
Blue LED (2)	Brown / Braun	
Orange LED (1)	White / Weiß	



6.5. Upgraded Discharging time / Residual voltage, measuring function

Different application standards have different requirements regarding permissible residual voltages. Few examples are listed here bellow. Measuring technique is described in the IEC 61557-14.

6.5.1. Measurement of residual voltage

If the equipment has the ability to measure the residual voltage, the operating uncertainty to measure this voltage shall be within 0% to + 15% of the 60 V limit, and the operating uncertainty to set the measuring time limit shall be within 0% to - 15% of the 1 s limit or 5 s limit. Evaluated voltages in linear systems shall be calculated as if they were measured during the highest amplitude of the interrupted voltage. If the manufacturer specifies the test equipment to be used in non-linear systems, the measuring method shall be explained in the operating instructions.

The input impedance of the voltage measurement circuit shall be at least **20** $M\Omega$.



6.5.2. IEC 60335-1 Household and similar electrical appliances

Appliances intended to be connected to the supply mains by means of a plug shall be constructed so that in normal use there is no risk of electric shock from charged capacitors having a rated capacitance exceeding 0,1 μ F, when the pins of the plug are touched.

Compliance is checked by the following test.

The appliance is supplied at rated voltage. Any switch is then placed in the off position and the appliance is disconnected from the supply mains at the instant of voltage peak. 1 s, after disconnection, the voltage between the pins of the plug is measured with an instrument that does not appreciably affect the value to be measured.

The voltage shall not exceed 34 V.

6.5.3. IEC 60204-1 Safety of machinery - Electrical equipment of machines

Live parts having a residual voltage greater than 60 V after the supply has been disconnected shall be discharged to 60 V or less within a time period of 5 s after disconnection of the supply voltage provided that this rate of discharge does not interfere with the proper functioning of the equipment.

Exempted from this requirement are components having a stored charge of 60 μ C or less.

In the case of plugs or similar devices, the withdrawal of which results in the exposure of conductors (for example pins), the discharge time to 60 V shall not exceed 1 s.

6.5.4. IEC 61439 Low-voltage switchgear and controlgear assemblies

If the assembly contains items of equipment that may have charges after they have been switched off (capacitors, etc.), a warning plate is required.

Small capacitors such as those used for arc extinction, for delaying the response of relays, etc., shall not be considered dangerous.

Unintentional contact is not considered dangerous if the voltages resulting from static charges fall below a DC voltage of 60 V in less than 5 s after disconnection from the power supply.

Touch currents are limited by ensuring exposed-conductive-parts are effectively connected to the protective circuit.

6.6. 1-Phase, P-RCD testing

Many electrical tools are used on construction and assembly sites where they are connected to sockets whose functionality and reliability can't be checked in advance. In case electric tools are connected to the faulty socket can lead to a dangerous situation. To avoid such risk, craftsmen are using P-RCD devices for protection. These devices must also be regularly inspected and tested. One of the easiest ways to test them is to connect them directly to the test instrument. With such an approach tripping of other protective devices used on the construction site or assembly can be avoided.

Tests that can be executed on MI 3325 related to P-RCD testing are following:

- Trip out time,
- Trip out current (@PRCD-K set sensitivity to Ipe monitoring)



- PE conductor test,
 Polarity test (@PRCD-K, result=PE open)



7. Differences between supported types of labels

It is intended for tagging of individual appliance with Auto Sequence® test data. To start printing, Auto Sequence® should be finished and saved or reopened from memory structure. When required, printing of two labels of the same test can be set.

User has an option to choose between two tag formats, **PAT** and **GENERIC**.

Note!

PAT tag format can only be used for printing results which are a part of measurements from **PAT area group**.

Select area g	roup	09:35	Single	Fests – Portable	appliances	
2	<u> </u>	\$ 1	VISUAL	. ISO	LEAK	
Portable appliances	Electrical machines	Switchgears				
₩ Welding equipment	EVSE	All	CONT	POWER	OTHER	ŀ
			RCD	FUNCT.		
			NOD			

7.1. PAT tag format (size 50mm x 25.5mm)

Printers (S 2062, A 1488, A 1489) Label format PAT, label size 50mm x 25.5mm.

Available tag data presented in text area are:

Auto Sequence® short Test code Appliance ID Appliance name Test date Retest date Auto Sequence® test status User name (who currently performed test or who performed saved test, if printed from memory)

Label type	Form size W x H (mm)	Tag content arrangement	Data1 st label	Data 2 nd label
Classic		Barcode	Test code, appliance ID	Appliance ID
		Text	Test code, appliance ID,	Appliance ID, test or
			test or retest date, status,	retest date, status,
	50 x 25.5		user	user
QR	50 × 25.5	QR	Test code, appliance ID,	Appliance ID,
			appliance name, test	appliance name, test
			date, test period,	date, test period,
			location, user, status,	location, user, status

		measurement results.	
	Text	Test code, appliance ID, appliance name, test or retest date, status, user	Appliance ID, appliance name, test or retest date, status, user
Simple	Text	Appliance ID, appliance name, status, test or retest date, user	

Notes:

2nd label is intended to mark supply cords.

Data not available will not be printed on the label.

Test or Retest date: is set in the General Settings => Devices => Writing devices menu.

If Auto Sequence® was modified, its short code is marked with asterisk (*).

TEST DATE

Simple label_1tag	Classic label_1tag	QR label / NFC tag_1tag
APPL. ID: 0001 APPL. NAME: Kettle TEST STATUS PASS TEST DATE: 24.04.2018 USER: Blez G.	Code: PA01 APPL. ID: 0001 PA01\$0001 TEST DATE: 24.04.2018 USER: Blaz G.	Code: PA01 0001 Kettle 24.04.2018 Blaz G.
Simple label_1tag	Classic label_2tag	QR label / NFC tag_2tag
	Code: PA01 APPL. ID: 0001 PA01\$0001 TEST DATE: 24.04.2018 USER: Blaz G.	Code: PA01 0001 Kettle 24.04.2018 Blaz G.
	PWR. SUP. CORD \$0001 TEST DATE: 24.04.2018 USER: Blaz G. PASS	PWR. SUP. CORD 0001 Kettle 24.04.2018 Blaz G.

RE-TEST DATE

Simple label_1tag	Classic label_1tag	QR label / NFC tag_1tag
APPL. ID: 0001 APPL. NAME: Kettle TEST STATUS PASS RE-TEST DATE: 24.04.2019 USER: Blez G.	Code: PA01 APPL. ID: 0001 PA01\$0001 RE-TEST DATE: 24.04.2019 USER: Blaz G.	Code: PA01 0001 Kettle 24.04.2019 Blez G.
Simple label_1tag	Classic label_2tag	QR label / NFC tag_2tag
	Code: PA01 APPL. ID: 0001 PA01\$0001 RE-TEST DATE: 24.04.2019 USER: Blaz G. PASS	Code: PA01 0001 Kettle 24.04.2019 Blaz G.
	PWR. SUP. CORD \$0001 RE-TEST DATE: 24.04.2019 USER: Blaz G. PASS	PWR. SUP. CORD 0001 Kettle 24.04.2019 Blaz G.

7.2. PAT tag format (size 43mm x 99mm)

Printer, S 2062

Label format PAT, label size 43mm x 99mm.

Note!



Logo for PASS and FAIL must be uploaded to printer manually.

Label type	Form size W x H (mm)	Tag content arrangeme nt	Data1 st label	Data 2 nd label
Classic		Barcode	Test code, appliance ID	Appliance ID
L		Text	Test code, appliance ID,	Appliance ID, test and
			test and retest date,	retest date, status,
			status, user	user
QR L		QR	Test code, appliance ID,	Appliance ID,
	43 x 99		appliance name, test	appliance name, test
	40 X 00		date, test period, location,	date, test period,
			user, status,	location, user, status
			measurement results.	
		Text	Test code, appliance ID,	Appliance ID,
			appliance name, test and	appliance name, test
			retest date, status, user	and retest date, status,

		user
		4301

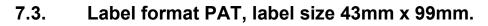
Notes:

2nd label is intended to mark supply cords.

Data not available will not be printed on the label.

Test or Retest date: is set in the General Settings => Devices => Writing devices menu.

If Auto Sequence® was modified, its short code is marked with asterisk (*).





7.4. PAT tag format (NFC tag)

RFID / NFC tag type	Data
NTAG216	Test code, appliance ID, appliance name, test date, test period, location, user, status, measurement results.

7.5. GENERIC tag format (size 50mm x 25.5mm)

Printers (S 2062, A 1488, A 1489) Label format PAT, label size 50mm x 25.5mm.

It is intended for tagging structure objects (element, appliance, equipment), which could be tested and their location under parent structure object is important. Label printing can be started from selected structure object (element, appliance, equipment), even if no Auto Sequence® is associated with it, or from finished Auto Sequence® saved under it.

Tag data presented in text area are:

Parent structure object ID (name) (← Object_name) Auto Sequence® short test code (if printing from Auto Sequence®; if printing from object field is omitted) Object ID (name) Test date (|→ DD.MM.YYYY) or Retest date (→| DD.MM.YYYY), which one is selected in General Settings => Devices => Writing devices menu Status (printing from object: overall status of all tests appended to the object or sub-structure objects; printing from Auto Sequence®: its status) User name (Printing from Auto Sequence: user who performed test; printing from object: current signed-in user)

Following table describes tag content arrangement and its data for supported label form size.

Form size W x H (mm)	Tag content arrangement	Data
	Text	Parent object name, Test code, Object ID, test or retest date, status, user
50 x 25.5	QR	Parent object name, Test code, Object ID, test date, test period, Auto Sequence® status, Object status, user.

Notes:

Data not available will not be printed on the label.

Object without appended Auto Sequence® test has no status! If Auto Sequence® was modified, its short code is marked with asterisk (*). Object status depends on all measurements (Auto Sequences® or Single tests) appended to the object or sub-structure objects, refer to user manual of MI 3360 for details.

GENERIC_TEST DATE

PASS	FAIL
← Room 102 0001 Code: PA01 Blaz G. I→ 24.04.2018	Comparison of the second se

GENERIC_RE-TEST DATE



7.6. GENERIC tag format (NFC tag)

Following table describes data content written on RFID / NFC tag.

RFID / NFC tag type	Data
NTAG216	Parent object name, Test code, Object ID, test date, test period, Auto Sequence® status, Object status, user.

8. Differences between basic and PRO MESM reports

The MESM SW, supports printing of the following test reports. **Basic:**

- Print Results
- Basic report

Professional (EETR Electrical_Equipment_Test_Report):

- EETR_PRO = (Multiple report)
- EETR = (Single report)
- EETR_FD = (Single report)
- MACHINE / SWITCHBOARD Report = (Single report)
- EQUIPMENT Report (Multiple report)
- EVSE = (Single report)

Notes!

Measuring results will be printed on reports, only when stored under the correct structure element.

Test reports are structure element dependent and are enabled only when an appropriate structure element containing measured results is selected.

Basic reports can be printed regardless of the selected structure element.

* EQUIPMENT REPORT enables printing of results stored under structure elements (Appliance, Appliance FD, Welding, Welding_FD, EVSE, MACHINE, SWITCHBOARD, EVSE), regardless of parent element used in the structure, as long as elements for printing are stored under the same node.

** EETR_PRO & EQUIPMENT REPORT enables printing of results stored under structure elements (Appliance, Appliance FD, Welding, Welding_FD, EVSE), regardless of parent element used in the structure, as long as elements for printing are stored under the same node.

***EETR & EETR_FD reports are single reports and can only be printed when appropriate structural elements are selected. For EETR reports these are Appliance & Welding devices. For EETR_FD reports these are Appliance_FD & Welding device_FD.

								F	EPORTS			
	ST	RUCTUR	REELEM	ENTS		Free			Licens	ed		
						Co	ontinuous report	s		Single	e reports	
Symbol	Level 1	Level 2	Level 3	Level 4	Default name	Print results Basic report	EQUIPMENT *	EETR_PRO **	Machine Switchgear	EETR ***	EETR_FD	EVSE
>_					Node	~			-			
					Project	~			N/A			
	Ø				Location	\checkmark			N/ A			
	8				Client	~						
					Element	Basic report only			\checkmark			
	A				Appliance	~	~	\checkmark		\checkmark		
	a				Appliance FD	~	~	\checkmark			~	
	*				Welding device	~	~	~		~		
	*				Welding device FD	~	~	\checkmark			~	
	ľ				Machine	~	~		~			
					Level1	~			~			
					Level 2	~			~			
					Level 3	~			~			
	\$				Switchgear	~	~		~			
					Level1	~			~			
					Level 2	~			~			
					Level 3	~			~			
	8				EVSE	~	~	~				~
					Level1	~						~
					Level 2	~						√
					Level 3	~						~
					Single test	~			NI / A			
					Auto sequence	~			N/A			

8.1. Print results (N...selected appliances will be printed on the report)

							Parameters		
Alle.	<u></u>	- 1.					DateTime	04/01/2022 08:00:36	
🦉 🖌	1etrel [®]	Roculta	•				Output	4 wire	
🤊 💽 IV	ILINEL	nesuits					l out	10 A	
							ΔU test	or	
							Duration	2 s	
tra d.d. Peter M	farolt, Velenjska cesta 102, 00 38	5 06 14 58 Edison, Janez N	lovak, Inspector, Celov	ska cesta 1254.	00 386 01		Comment 1	PE-P1	
δ, info@jmetra.	si, 0032541, SI-1853	55 57 222, jane	z.novak@edison.si, 11	23555, SI-1000			R compensation	or	
						R iso			Pass
							Results		
							Riso	>200 MΩ	Pass
							SubResults		
trument data:							Um	263 V	
	rvicerXD MI 3325	Serial Number: 18460253	Calibration date:	08/10/2021			Limits (Riso)	1 MQ	
User: BLAZ				-				1 MG	
0002_0000	Node/Project/Location/0	04/07/2022	04/01/2022	Pass	-		Parameters DateTime	04/01/2022 08:01:27	
Continuity					Pass			04/01/2022 08:01:27 250 V	
Results		0.02 0		Pass			Uiso Type Riso	250 V N/PE	
Limits		0.02 12		Pass		HV A		NPE	Pass
H Limi	a. (0)	0.1 Ω					Results		Pass
Parameter		0.11					U	1044 V	
DateT		04/01/2022 08:00:24					0	0.0 mA	Pass
Output		4 wire					SubResults	0.0 MA	Pass
Lout	·	10 A					Ic	0.0 mA	
ΔU tes	et	01					ir.	0.0 mA	
Duratie		2.8					inits	0.0104	
Comm		PE-P1					H limit (I)	1.0 mA	
	pensation	Off					arameters	1.0 101	
Continuity	ipensauon	01			Pass		DateTime	04/01/2022 08:02:29	
Results					Pass		U test	1000 V	
Results		0.02 Q		Pass			tend	5 8	
Limits		0.02.12		1 433		Z line	•		Pass
H Limi	it (R)	0.1 Ω		_			Results		
Parameter							lpsc	652 A	Pass
DateTi	īme	04/01/2022 08:00:30					z	0.35 Ω	
Output	t	4 wire					SubResults	'	
Lout		10 A				-	XL	0.01 Ω	
ΔU tes	st	off					R	0.35 Ω	
Duratio	on	2.8					Uin	226 V	
Comm	tent 1	PE-P1		_			imits		
B com	pensation	Off					la (lpsc)	160 A	
Continuity		1			Pass		Parameters		
Results							DateTime	04/01/2022 08:03:23	
R		0.02 Ω		Pass			Fuse Type	c	
Limits							Fuse I	16 A	
H Limi	it (R)	0.1 Ω					Fuse t	0.4 s	

8.2. Basic report (N...selected appliances will be printed on the report)

т	EST REPORT				
	t in accordance with:	EN 50699			
Ins	trument: MI 3325	User: BLAZ	Serial Nr.: 1846025	3 Cal. Date: 08/	10/2021
	trument: MI 3325	User: BLAZ	Serial Nr.: 17510019		
_	1				
<u> </u>	0.10 Ω, R: 0.37 Ω, Uln: 227 V, la(lp Ω, XL: 0.04 Ω, R: 0.38 Ω, Uln: 227	//Pass // <u>Z line</u> , Fuse Type: C, Fuse I: ssc): 160 A, P// <u>Z line</u> , Fuse Type: C, Fu V, Ia(lpsc): 160 A, P// <u>Z line</u> , Fuse Type	se I: 16 A, Fuse t: 0.4 s, Isc fa	ctor: 1, Test: -, Earthing sys	stem: TN/TT, Ipsc: 596 A, Z: 0.3
ini.	0.37 Ω, XL: 0.04 Ω, R: 0.37 Ω, Uln: Path:Node//Project//Location//			Serial:18460253	
	mA, P//Z line, Fuse Type: C, Fuse la(lpsc): 160 A, P// <u>Z line</u> , Fuse Typ 226 V, la(lpsc): 160 A, P// <u>Voltage</u> Freq: 50.0 Hz, Low limit(Uln): 207 P/ <u>Voltage</u> , System: 1-phase, Tes limit(Uln): 207 V, High limit(Uln):	 Um: 263 V, Limit [Riso]: 1 MO, P//JE, 16 A, Fuse t: 0.4 s, Isc factor: 1, Test per C, Fuse I: 16 A, Fuse t: 0.4 s, Isc factor: 1-phase, Test: L1, Limit type V, High limit[Ulip: 253 V, Low limit[Ulip: 253 V, Low limit[Ulip: 257 V, Low limit[Ulip: 257 V, Low limit[Ulip: 257 V, High limit[Ulip:	: -, Earthing system: TN/TT, I tor: 1, Test: -, Earthing syste : Voltage, Earthing system: T pe): 207 V, High limit(Ulpe): tem: TN/TT, Duration: Off, U htt(Ulpe): 253 V, Low limit(Ur	Ipsc: 652 A, Z: 0.35 Ω, XL: 0. m: TN/TT, Ipsc: 651 A, Z: 0. TN/TT, Duration: Off, Uln: 2 253 V, Low limit(Unpe): 0 V In: 226 V, Ulpe: 226 V, Unp npe): 0 V, High limit(Unpe):	01 Ω, R: 0.35 Ω, Uln: 226 V, 35 Ω, XL: 0.00 Ω, R: 0.35 Ω, Uln 25 V, Ulpe: 226 V, Unpe: 0.1 V, /, High limit[Unpe]: 10 V, ie: 0.1 V, Freq: 50.0 Hz, Low 10 V, P/ <u>Zs rcd</u> , Protection: TP
	Path:Node//Project//Location//		are, ipse, ooo ii, e, o.oi ii, o	Serial:17510019, 1	
	Earthing system: TN/TT, Duration 227 V, Ulpe: 227 V, Unpe: 0.2 V, F Path:Node//Project//Location//	/Element1//Element2	.2 V, Freq: 50.1 Hz, N// <u>Volta</u>	ge , System: -, Earthing syst Serial:18460253	tem: TN/TT, Duration: Off, Uln:
	Single tests//04.01.2022 07:58:13 609 A, Zref: 0.41 Ω, UIn: 227 V, Z:	//Pass // <u>Voltage Drop</u> , Fuse Type: C, 0.38 Ω, Limit(ΔU): 3.5 %, P//	Fuse I: 16 A, Fuse t: 0.4 s, Isi	c factor: 1, Test: -, Earthing	system: TN/TT, ΔU: 0.0 %, Ipsc
	Single tests//04.01.2022 07:58:46	/Element1//Element2//Machine1 //Pass // <u>Zs rcd</u> , Protection: TN, Fuse	Type: C, Fuse I: 16 A, Fuse t:	Serial:18460253 0.4 s, lsc factor: 1, Test: -, l	I test: Standard, Ipsc: 667 A, Z:
E.	0.34 Ω, Ulpe: 227 V, XL: 0.03 Ω, R: Path:Node//Project//Location//	: 0.34 Ω, la(lpsc): 160 A, P// /Element1//Element2//Appliance_FE	01	Serial:18460253	
	(Plug Class II//21.12.2021 08:25: Limit(Riso-S): 1.00 MΩ, H Limit(Ri mA, H Limit(Itou): 10.0 mA, L Limit	51 //Pass //Visual Machine IEC/EN 60 so-S): Off, P// <u>Touch Leakage</u> , Duratio t(Itou): Off, P//Discharging time, Limi limit(I): Off, H limit(I): 0.5 mA, P//Euth	204 , P// <u>R iso</u> , Type: Riso-S, n: 180 s, Change: YES, Itou: 0 t U: 60 V, t: 0.0 s, Up: 320 V,	Uiso: 500 V, Duration: 5 s, 0.002 mA, P: 0.00 W, Itou,a Limit(t): 1 s, P// <u>HV AC</u> , U t	.c.: 0.001 mA, Itou,d.c.: 0.001
	Path:Node//Project//Location//			Serial:18460253	
) //Pass // <u>HV AC</u> , U test: 1000 V, t enc 0 mA, Ic: 0.0 mA, Ir: 0.0 mA, H limit(I):		:: 0.0 mA, Ir: 0.0 mA, H limit	(I): 1.0 mA, P// <u>HV.AC</u> , U test:
21 P-1	SI; FAL, SAFFE VOTHIG - Complete means	Responsible person:	Naž Godina Sigr	nature	Page Nr.
2) P-I 3) Int Meat	SS, [JA, [JAPT, KOTIENG = Camplete means mperiate or 14 ala - Nemo Savo/Terd ala memory Static/Victoria	Responsible person:	Ilaž Godina Sigr reter Klepec	nature	Page Nr. Page 1 of 1

8.3. EETR_PRO report (N...selected appliances will be printed on the report)

Customer No.:	112-665	Inspect.	rec. No.: 5525-	5546	Order No.:	001/24	/04/18	1 🖄	AETREL	0
LECT	RICAL	. EQUIF	MENT .	TES	T REP	OR	ſ	S 1	TEIKEL	-
GENERAL DA	TA									
Customer add	tress:				Contractor					
Gorenje d.d. Partizanska 12 Velenje Slovenija					Metrel d.d. Horjul 1354 Ljubljanska o Slovenija	esta 77				
Description:	Pero	dic testing of app	ances							
Type of equip	ment:		ПM	edical		Reaso	n for the te	st:		
Portable ap	opliance	Machine Machine		/elding			ervice		Repair	
Switchgear		Other		E Marke	ting	Per Per	odic test		Other	
Test in accord					-					
DIN VDE 0		_	-			Start	of testing:	24/04	/2018	
							testing:	24/04	/2018	
Measuring In	etumorte		-				tearing:			
Model:	struments MI 3360	used:	Model:				Model:			
Serial No :	16410005		Serial No.:	-			Serial No.:			
perial NO.:										
			_	_	_					
Janez Novak		l s: Ist results	Descript	ion of fa	Test engin Jože Kuhar aulty equipmi		tact details		Ist 🔲 I	Other
Customer cor Janez Novak Attachments INSPECTION Statement	E TE	IST RESULTS			Jože Kuhar aulty equipmi Date of ne	ent		:	ist 🔲 i	Ither
Janez Novak Attachments INSPECTION Statement All electrical equipe mean standards. All and Herearth All	E TE AND TEST	IST RESULTS	the listed regulations to defaund asses is marked to be defaund asses is marked	and tach- appropri-	Jože Kuhar aulty equipme Date of ne 24/04/2019	ent a t insp	ection:	:	ist 🔲 (Jther
Janez Novak Attachments INSPECTION Statement At electrical equip recal standards. At any, Heroswith, It is any, Heroswith, It is the accepted eaching	E TE AND TEST roots was tosse equipment that sconfirmed that callules, The in	IST RESULTS	t the listed regulations ion and tests is marked to declared as safe act with an summark of in tes has also been recen	and sech- appropri- cording to the pages vmended.	Jože Kuhar aulty equipmi Date of ne	ent a t insp	ection:	:	ist 🔲 i	Other
Janez Novak Attachments INSPECTION Statement All electrical equipr recal standards. All appropriately, the appropriately, the appropriately that	E TE AND TEST Tents was teste equipment that sconfirmed that sconfirmed that is documents and led the inspect	IST RESULTS	the listed regulations on and uses is marked to declared as safe as dis an summation if in use has also been recor- safe to use and they as marked in the pages of	and tech- appropri- tording to the pages imended. e manked sclosed in	Jože Kuhar aulty equipme Date of ne 24/04/2019	ent at Insp 1 Jabelli	ection:	: Checki	ist 🔲 i rcoded tags	Dther
Janez Novak Attachments INSPECTION Statement All electrical equipr recal standards. All appropriately, the appropriately, the appropriately that	E TE AND TEST Tents was teste equipment that sconfirmed that sconfirmed that is documents and led the inspect	IST RESULTS	the Rood regulations ion and tests is marked to declared as safe as whis are summaried in use has also been recom- safe to use and they at	and tech- appropri- tording to the pages imended. e manked sclosed in	Jože Kuhar aulty equipme Date of ne 24/04/2019 Method of	ent oct insp f labeill all tags	ection:	: Checki		Other
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Janez Novat Attachments INSPECTION Statement Attachments Attachments Statement Attachment Statement Attachment Statement Attachment Statement Stat	Tee AND TEST Monorements And Tee And Test And Test And Test Tes	Ast results RESULTS In accordance with a construction of a construction of an accordance with a construction of a sustable results are use and accordance are use and according to according to according according to according to according to according according to	the head engelations on red areas is made to be determined the determined as used as an used as the head shares and the second as the second termined in the log and the second as the second as a second as the	and tach- appropri- coding to the pages wrended. e marked in wrended. in uport.	Jote Kuhar Jote Kuhar Date of ne 2404/2019 Method of Pass/Fi RFID ta Operator: regulat Faulty e	ent xt insp i tabelli all tags gs al equip ions and quipmer Gore	ection: ng ment was t d technical s	Ehecki Ba Checki	ercoded tags R code eccording to v ds.	alid

LOCATION:		TEST DATE:	24/04/2018		SERIAL:	
Room 102		RETEST DATE:	24/04/2019		16410005	
TYPE:	Kettle	COMMENT:			USER:	
APPLIANCE	0001	TEST SITE:	Room 405		Blaz G.	
Cl_1_Iso -	Visual Inspections					
Visual						Pass
cables covers, hi	mection points ousing as and markings					Pass Pass Pass Pass
Cl_1_Iso -	Single tests					
Results:		Limits:		Parameters:		Status:
Continuity						Pass
R: 0.13 Ω		R: 0.3Ω		DateTime: 24/04/2018 Output: P/S - PE I out: 0.2 A Duration: 5 s	08:13:15	
R iso						Pass
Riso: >199. Um: 525 V	9 MΩ	Riso: 1.00 MΩ		DateTime: 24/04/2018 Type: Riso Uiso: 500 V Duration: 5 s	08:13:24	
Sub-leakag	e					Pass
lsub: 0.02 n	nA	Isub: 3.50 mA		DateTime: 24/04/2018 Type: Isub Output: 110V/230 V Duration: 5 s	08:13:31	
Cl_1_Iso -	Visual Inspections					
Functional						Pass
electrical	al operation operation avant functions					Pass Pass Pass
LOCATION:		TEST DATE:	24/04/2018		SERIAL:	
Room 102		RETEST DATE:	24/04/2019		16410005	
TYPE:	Kettle	COMMENT:			USER:	
APPLIANCE		TEST SITE:	Room 102		Blaz G.	
Cl_1_Iso -	Visual Inspections					
Visual						Pass
cables	nection points					Pass Pass Pass

Results:	Limits:	Parameters:	Status:
Continuity			Pass
R: 0.14 Ω	R: 0.3 Ω	DateTime: 24/04/2018 12:47:18 Output: P/S - PE I out: 0.2 A Duration: 5 s	1
R iso			Pass
Riso: >199.9 MΩ Um: 525 V	Riso: 1.00 MΩ	DateTime: 24/04/2018 12:47:23 Type: Riso Uiso: 500 V Duration: 5 s	
Sub-leakage			Pass
Isub: 0.02 mA	Isub: 3.50 mA	DateTime: 24/04/2018 12:47:26 Type: Isub Output: 110V/230 V Duration: 5 s	
Cl_1_Iso - Visual Inspec	tions		
Functional			Pass
mechanical operation electrical operation safety relevant functions			Pass Pass Pass
electrical operation			Pass

8.4. EETR_Single report (Only one appliance is printed per report)

LEUTRI	LALEQUI	PMENT TES	I REP	URI	-	Customer No	STATE OF STATE	spect, rec. No.: 5525-5546	Order No.: 001/2	MET	IREL °
GENERAL DATA						ELEUI	RILAL EŲ	UIPMENT TES	SI REPUR		
Customer address	S :		Contractor			LOCATION	Room 102	EQUIP, USER:	81	TEST DATE:	24/04/201
Gorenje d.d. Partizanska 12			Metrel d.d. Horiul 1354			APPLIANCE ID		LOCATION:	Room 405	RETEST PER. (M):	
Velonjo Slovenija			Ljubljanska o Slovenija	esta 77		NAME:	Kettle	INVENTORY NO:	1912	NEXT TEST:	24/04/201
Description:	Periodic testing of ap					Cl_1_Iso -	Visual Inspections				
			_			Visual					Pass
Type of equipment		Medical		Reason for the te		wiring con cables	nection points				Pass
Portable applia		Welding		In service	Repair	covers, ho	using s and markings				Pass
Switchgear	Other	CE Mark	eting	Periodic test	Other	CL1_ISO -					- 499
Test in accordance		-					singer costs	Limite	Department	-	Chatura
DIN VDE 0701-				Start of testing:	24/04/2018	Results: Continuity		Limits:	Parameter	<u>N</u>	Status: Pass
				End of testing:	24/04/2018	R: 0.13 Q		R: 0.3 Q	DateTime	24/04/2018 08:13:15	rdss
Measuring instru				10000		R. 0.1312		15 W0 H	Output: 1 Jout: 0,2	VS-PE	
	1 3360	Model		Model					Duration:	5 s	
	\$410005	Serial No.:		Serial No,		R iso					Pass
			Test engin	eer contact details	1	P1	MO	Riso: 1,00 MD	DateTime: Type: Rit	24/04/2018 08:13:24	
Customer contact	t details:					Riso: >199,5					
Customer contact Janez Novak	t details:		Jože Kuhar			Helso: >199,1 Um: 525 V			Uiso: 50 Duration:	v	
	t details:		Jože Kuhar			Um: 525 V Sub-leakage			Uiso: 50	v	Pass
	Test results	Description of		ent 🗆	Checklist Dther	Um: 525 V	I.	Isub: 3,50 mA	Uiso: 50 Duration: DateTime:	24/04/2018 08:13:31	Pass
Janez Novak Attachments:	Test results	Description of		ent 🗆	Checklist Dther	Um: 525 V Sub-leakage	I.	Isub: 3,50 mA	DateTime: Type: lac Output:	24/04/2018 08:13:31	Pass
Janez Novak Attachments: INSPECTION ANI	Test results	Description of	faulty equipmi		Checklist Dther	Um: 525 V Sub-leakag Isub: 0,02 m	A	Isub: 3,50 mA	Uiso: 50 Duration: DateTime: Type: Iso	24/04/2018 08:13:31	Pass
Janez Novak Attachments: INSPECTION AND Statement Al electrical equement	Test results	n me lated resulations and term	faulty equipmi	ent	Checklist Dther	Um: 525 V Sub-leakage Isub: 0.02 m Cl_3_1so -	I.	Isub: 3,50 mA	DateTime: Type: lac Output:	24/04/2018 08:13:31	
Janez Novak Attachments: INSPECTION AND Statement Al district deparents and provide the is cont	Test results Test	th the Ested regulations and tach tion and tasts is maked appropri- in the declared as scale according to	Date of ne 24/04/2019	at inspection:	Checklist Dther	Um: 525 V Sub-leakage Isut: 0.02 m CLTso - Functional	A Visual Inspections	Isub: 3,50 mA	DateTime: Type: lac Output:	24/04/2018 08:13:31	Pass
Janne Novak Attachments: INSPECTION ANI Statement A detroid equipment indiversity. His source the properticulation is con- the excepted training of the edge of which this source	Test results D TEST RESULTS was fested in accordance will ment that parsed the insegurent of the The payment of the ment and a soluble restort of	In the Bated regulations and tech tion and fuscts is maked approvid- in the declined as safe according to suits are summarized in the page tate has also been recommended	Date of ne 24/04/2019 Method of	ext inspection:		Un: 525 V Sub-lookage Isub: 0.25 m CL_150 - Functional electrical	A Visual Inspections	Isub: 3,50 mA	DateTime: Type: lac Output:	24/04/2018 08:13:31	Pass Pass Pass
Attachments: Attachments: INSPECTION ANI Statement Attachesiste, ill registration of inselection approxement the acceptoration for the occur opportunity. The looper appropriate his focus	Test results Test results Test results test results test results test result in acceptance wit the parent fit in inpare the fit is acceptance wit the composite of the inpare the fit is acceptance with inparent the composite of the in	In the listed regulations and tech tion and hists is marked appropri- in the declared as safe according to walks are summarized in the asser-	Date of ne 24/04/2019 Method of Pass/Fa	ext inspection: [labelling all tags	Barcoded tags	Un: 525 V Sub-lookage Isub: 0.25 m CL_150 - Functional electrical	A Visual Inspections	Nub: 3,50 mA	DateTime: Type: lac Output:	24/04/2018 08:13:31	Pass
Attachments: Attachments: INSPECTION ANI Statement of electrical expenses individual expenses the accepted technical en- the accepted technical en- the accepted technical en- power technical en- codument that failed the promuticals, the isoper	Test results Test results Test results Test results Test results Test this pare the impact Time that this explorest to the this results are and the this results are the the the impact of the test are the impact of the test are the impact of the test are and the and test are and test are and the and test are and test are and test are and test	th the Boned regulations and tech tim and tests is marked appropri- hie declared as safe according to safes are summarized in the page date has also been recommended marke to use and they are marked market to use and they are marked.	Date of ne 24/04/2019 Method of	ext inspection: [labelling all tags		Un: 525 V Sub-lookage Isub: 0.25 m CL_150 - Functional electrical	A Visual Inspections	Isub: 3,50 mA	DateTime: Type: lac Output:	24/04/2018 08:13:31	Pass Pass Pass
Janez Novek Attachments: INSPECTION ANIO Statement At electrical expenses with a manufacture of the endoed with this does endoed with this does appropriately. The losper this decument, Furtherin	Test results Test results Test results Test results Test results Test this pare the impact Time that this explorest to the this results are and the this results are the the the impact of the test are the impact of the test are the impact of the test are and the and test are and test are and the and test are and test are and test are and test	In the June regulations and tech tion and tests is marked approxi- in the declared as safe accessing to safely and the safe accessing to safe to use and they are marked market to use and they are marked market to use and they are marked market on the safely and the safely accessing the safely accessing the market of the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the sa	Date of ne 24/04/2019 Method of Pass/Fa	ext inspection: [labelling all tags	Barcoded tags	Un: 525 V Sub-lookage Isub: 0.25 m CL_150 - Functional electrical	A Visual Inspections	leub: 3,50 mA	DateTime: Type: lac Output:	24/04/2018 08:13:31	Pass Pass Pass
Janez Novek Attachments: INSPECTION AND Statement All detricit degreenet in all detricit degreenet in the acceptation in the source for the acceptation of the acceptation by the source of the acceptation for the acceptation of the acceptation of the acceptation of the acceptation for the acceptation of the a	Test results or TEST RESULTS was lested in accordance with meet thin guarant for many has the index of the experiment the index of the descent of the index of the descent of the descent of the index of the descent of the descent of the index of the descent of the index of the descent of the descent of the index of the desce	In the June regulations and tech tion and tests is marked approxi- in the declared as safe accessing to safely and the safe accessing to safe to use and they are marked market to use and they are marked market to use and they are marked market on the safely and the safely accessing the safely accessing the market of the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the sa	Date of ne 24/04/2019 Method of Pass/Fa	ext inspection: [labelling all tags	Barcoded tags	Un: 525 V Sub-lookage Isub: 0.25 m CL_150 - Functional electrical	A Visual Inspections	1su0: 3.50 mA	DateTime: Type: lac Output:	24/04/2018 08:13:31	Pass Pass Pass
Janez Novek Attachments: INSPECTION AND Statement Attachment Attempts Results: Lessat	Test results or TEST RESULTS was lested in accordance with meet thin guarant for many has the index of the experiment the index of the descent of the index of the descent of the descent of the index of the descent of the descent of the index of the descent of the index of the descent of the descent of the index of the desce	In the June regulations and tech tion and tests is marked approxi- in the declared as safe accessing to safely and the safe accessing to safe to use and they are marked market to use and they are marked market to use and they are marked market on the safely and the safely accessing the safely accessing the market of the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the sa	Date of ne 24/04/2019 Method of Pass/Fa	ext inspection: [labelling all tags	Barcoded tags	Un: 525 V Sub-lookage Isub: 0.25 m CL_150 - Functional electrical	A Visual Inspections	Bub: 3.50 mA	DateTime: Type: lac Output:	24/04/2018 08:13:31	Pass Pass Pass
Janez Novik Attachments: INSPECTION AND Statement All electrical expenses and the exception of the second approximation of the second approximate. For their second with the second approximate. The hope the document, Forther	Test results or TEST RESULTS was lested in accordance with meet thin guarant for many has the index of the experiment the index of the descent of the index of the descent of the descent of the index of the descent of the descent of the index of the descent of the index of the descent of the descent of the index of the desce	In the June regulations and tech tion and tests is marked approxi- in the declared as safe accessing to safely and the safe accessing to safe to use and they are marked market to use and they are marked market to use and they are marked market on the safely and the safely accessing the safely accessing the market of the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the sa	Date of ne 24/04/2019 Method of Pass/Fa	ext inspection: [labelling all tags	Barcoded tags	Un: 525 V Sub-lookage Isub: 0.25 m CL_150 - Functional electrical	A Visual Inspections	Budr: 3.40 mA	DateTime: Type: lac Output:	24/04/2018 08:13:31	Pass Pass Pass
Janez Novek Attachments: INSPECTION AND Statement Attachment Attempts Results: Lessat	Test results Test	In the June regulations and tech tion and tests is marked approxi- in the declared as safe accessing to safely and the safe accessing to safe to use and they are marked market to use and they are marked market to use and they are marked market on the safely and the safely accessing the safely accessing the market of the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the sa	Date of ne 24/04/2019 Method of Pass/Fa	ext inspection: [labelling all tags	Barcoded tags	Un: 525 V Sub-lookage Isub: 0.25 m CL_150 - Functional electrical	A Visual Inspections	Nub: 3.50 mA	DateTime: Type: lac Output:	24/04/2018 08:13:31	Pass Pass Pass
Janes Novek Attachments: INSPECTION ANI Statement Attachments, director action accurate the field of the local action of the l	Test results Test	In the June regulations and tech tion and tests is marked approxi- in the declared as safe accessing to safely and the safe accessing to safe to use and they are marked market to use and they are marked market to use and they are marked market on the safely and the safely accessing the safely accessing the market of the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the safely accessing the sa	Date of ne 24/04/2019 Method of Pass/Fa	ext inspection: [labelling all tags	Barcoded tags	Un: 525 V Sub-lookage Isub: 0.25 m CL_150 - Functional electrical	A Visual Inspections	Bud: 3,40 mA	DateTime: Type: lac Output:	24/04/2018 08:13:31	Pass Pass Pass
Jame Novak Attachments: INSPECT ON ANT Statement A discondential of the second of the	Test results Test	in the lated replaces and term in the declared is underscending in which are associated in the second second second with an associated in the second	Date of ne 2404/2019 Method of Pass/Fill RFID ta	axt inspection: f labelling all tags gs	Barcoded tags	Un: 525 V Sub-lookage Isub: 0.25 m CL_150 - Functional electrical	A Visual Inspections	Bud: 3,40 mA	DateTime: Type: lac Output:	24/04/2018 08:13:31	Pass Pass Pass
Attachments: Attachments: HSPECTION ANITA Attachments: HSPECTION ANITA Attachments: HSPECTION ANITA Attachments: HSPECTION ANITA Attachment Att	Test results Test	n ne lost reductos en di torio ne de chere a sub accordo gi esta de contra esta sub accordo gi esta di esta di esta di esta di esta di esta di esta di esta di	Date of ne 2404/2019 Date of ne 2404/2019 Method of Pass/F-1 RFID ta Operator: Gletcric, regulati	at inspection: labelling il tags gs al equipment was ions and technical	Barcoded tags	Un: 525 V Sub-lookage Isub: 0.25 m CL_150 - Functional electrical	A Visual Inspections	Bud: 3,40 mA	DateTime: Type: lac Output:	24/04/2018 08:13:31	Pass Pass Pass
Anne Nevek Attachments: INSPECTION ANI Statement Inspection Ani Statement Inspection Ani Statement Inspection Ani Statement Inspection Inspection Inspection Inspection and	Test results Test	n ne lost reductos en di torio ne de chere a sub accordo gi esta de contra esta sub accordo gi esta di esta di esta di esta di esta di esta di esta di esta di	Date of ne 2404/2019 Date of ne 2404/2019 Method of Pass/F-1 RFID ta Operator: Gletcric, regulati	at inspection: labelling il tags gs al equipment was ions and technical	Barcadel tags Cottaeta c	Un: 525 V Sub-lookage Isub: 0.25 m CL_150 - Functional electrical	A Visual Inspections	Nu0: 3.50 mA	DateTime: Type: lac Output:	24/04/2018 08:13:31	Pass Pass Pass
Anne Nevek Attachmentes: INSPECTOR 4 and a segment Attachmentes: INSPECTOR 4 and a segment Attachmenter 4 and a segmenter 4 and a se	Test results Test	n ne lost reductos en di torio ne de chere a sub accordo gi esta de contra esta sub accordo gi esta di esta di esta di esta di esta di esta di esta di esta di	Bate of ne 2404/2019 Method of Pass/F4 RFID ta	at inspection: If labeling BS 85 Al equipment was soons and technical quipment and meas	Barcadel tags Cottaeta c	Un: 525 V Sub-lookage Isub: 0.25 m CL_150 - Functional electrical	A Visual Inspections	Radi: 3.50 mA	DateTime: Type: lac Output:	24/04/2018 08:13:31	Pass Pass Pass

8.5. EETR_FD_Single report (Only one appliance is printed per report)

Customer No.:	112-555 Inspec	t. re	C. NO.: 5525-5546	Order No.:	001/24	1/04/18	N 🖉	IETREI ®
IECTR	ICAL EQUI	PI	MENT TES	TRFP	UB.	г	≥ N	TETREL
LECTI	ICAL LOOI				011			
GENERAL DAT	A							
Customer add	ress:			Contractor				
Gorenje d.d. Partizanska 12 Velenje Slovenija				Metrel d.d. Horjul 1354 Ljubljanska o Slovenija	esta 77			
Description:	Perodic testing of a	ppia	nces	p				
Type of equip	ment:		Medical		Reaso	n for the tes	st:	
Portable ap	pliance 🛛 Machine		Welding			ervice		Repair
Switchgear	🗆 Other		CE Mark	eting	🗹 Per	lodic test		Other
Test in accord	ance with:							
	/01-0702				Start	of testing:	24/04	/2018
					End of	testing:	24/04	/2018
Measuring Ins	truments used:							
Model:	MI 3360		Model:			Model:		
Serial No.:	16410005		Serial No.:			Serial No.:		
Customer con	tact details:	_		Test engin	eer con	tact details:		
lanez Novak				Jože Kuhar				
	_	_	-	· · · · ·		-		-
Attachments:	Test results		Description of f	aulty equipm	ent		Checki	list 🗌 Other
INSPECTION	AND TEST RESULTS							
Statement				Date of no	ext Insp	ection:		
nical standards. All e	ient was tested in accordance w iquipment that passed the inspe	ction	and seven is marked appropri-	24/04/2019				
analy. Herewith, it is the accepted technic	confirmed that this equipment i al rules. The inspection and test	can be result	declared as safe according to s are summarized in the pages	Method of	f labelli	ng		
Equipment that fail	locument and a suitable re-test ed the inspection and tests are	unsat	e to use and they are marked	Pass/F	all tage			arcoded tags
this document. Furth	ispection and test results are su ter information for the prevention (af dan	ger is enclosed in this report.					R labels
	_	_		Chinota	5-			
Results:	No faults found	LI F	aults found					
Notes:								
SIGNATURE A	ND STAMP							
Cilent:				Operator:				
	ily accepted. Client is in and test results.	ntor	meo ábout			ment was te d technical si		according to valid rds.
Inspection :	ormed about status of	fair	TV equipment					e appropriately NOTED
			sy squipment.	- nauty e	daibiija	and medse	e co alt	- oppropriately noted
	onned about status of							
Client is inf	Sorenje			Location:	Gore	nje		
Client is inf				Location: Date:		nje 4/2018		

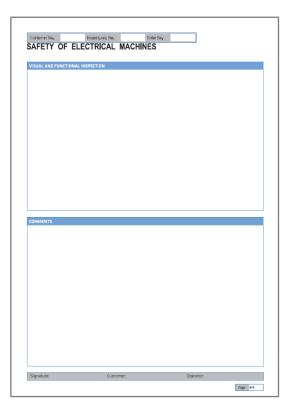
IPPLIANCE ID:	0002		EQUIP. USER:		Bill		TES	DATE:	24/0	4/2018
			LOCATION:		Room 1	02	RET	EST PER. (I	M): 12	
ROUP:	Kettle		INVENTORY N	0:	1979		NEX	T TEST:	24/0	4/2019
	white goods		PRODUCER:		Gorenje		YEA	R OF PROD	A. 201	в
IOM. VOLTAGE:	230		NOM. FREQ .:	50 H	z I	NOM. POWER:	2500 W	FUSE	RATING:	16 A
URRENT:	11A		COS-PHI:		0.9		NO.	OF PHASE	S: 1	
NSPECTOR:	Bob		TEST STANDAR	RD:	VDE 07	01-0702	MEA	NS OF PRO	or.: Clas	sl
EPAIRING CODE:	1102		COMMENT:							
Cl_1_Iso - Visua	al Inspections									
Visual									Pa	55
wiring connection cables covers, housing inscriptions and									Pat Pat Pat	15
Cl_1_Iso - Singl	e tests									
Results:		Limits:				Parameters:			Sta	tus:
Continuity									Pa	55
R: 0.14 Ω		R: 0.3	Ω			DateTime: 24 Output: P/S - Lout: 0.2 A Duration: 5 s		12:47:18		
R iso									Pa	ss
Riso: >199.9 MΩ Um: 525 V		Riso: 1	.00 MΩ			DateTime: 24 Type: Riso Uiso: 500 V Duration: 5 s	04/2018	12:47:23		
Sub-leakage									Pa	55
isub: 0.02 mA		Isub: 3	.50 mA			DateTime: 24 Type: Isub Output: 110V/ Duration: 5 s		12:47:28		
Cl_1_Iso - Visua	al Inspections									
Functional									Pa	ss
mechanical ope electrical operat safety relevant f	ion								Pat Pat Pat	5

8.6. MACHINE / SWITCHBOARD report (Only one Machine/Switchboard is printed per report)

		OTDIO	AL M	ACHIN	IES					
AFETY OF	ELE	CIRIC								
GENERAL DATA										
Client:					Contracto	r:				
Client's representat	ive				Inspector					
chent srepresentat					mapercon	•				
Machine:										
Group/model:	St	roj 123			ID			Machine1		
Producer:	Si	omons				ar:		2018		
Serial No.:					and a second sec	L of sor	kets:			
Report covers:					Te	st in ac	cordance w	rith:		
New installation	S S	ervice, repair		Periodic tes						
Measuring instrume	ents used									
Model:										
	C.A 6165		Model				Test dat	e:		
Serial No.: Attachments: C Results: C		ults	Serial No.	iption of fa	ulty equipm	ent		e:] Checklist	(0ther
Serial No.: Attachments: C Results: C	C.A 6165 17370720] Test res	ults	Serial No.	iption of fa	ulty equipm	ent			(Cther
Serial No.: Attachments: C Results: C Notes: SYSTEM	C.A 6165 17370720 D Test res D No fault	ults s found	Serial No.	iption of fa		ent				0ther
Serial No.: Attachments: C Results: C Notes: SYSTEM	C.A 6165 17370720] Test res	ults s found	Serial No.	iption of fa	TN-S			Checklist	οr	0ther
Serial No.: Attachments: Results: Notes: SYSTEM Earthing system:	C.A 6165 17370720 D Test res D No fault	ults s found	Serial No. Descr Fault TN-C-S	iption of fa	TN-S	ent n: 230		Checklist		0ther
Serial No.: Attachments: Results: SVSTEM Earthing system: Mains:	C.A 6165 17370720 D Test res D No fault	ults s found	Serial No. Descr Fault TN-C-S	iption of fa	TN-S	n: 230		Checklist	οr	0ther
Serial Ncc. Attachments: CResults: CResults: Conductor type:	C.A 6165 17370720] Test res] No fault	ults s found	Serial No. Descr Fault TN-C-S	iption of fa	TN-S Uror	n: 230		Checklist	οr	0ther
Serial No	C.A 6165 17370720] Test res] No fault	ults s found	Serial No. Descr Fault TN-C-S	iption of fa	UTN-S Urer Conductor	n: 230		Checklist	οr	0ther
Serial No	C.A 6165 17570720] Test res] No fault 	Public utilit	Serial No. Descr Fault TN-C-S	iption of fa	TN-S Urer Conductor	n: 230	C TT ection:	Checklist	IT intern: 50	Other
Serial No Attachments: Results: SYSTEM Earthing system: Mains: Deverument protection Uppe: RCD	C.A 6165 17370720 D Test res D No fault D TN-C	Public utilit	Serial No. Descr Fault TN-C-S	iption of fa s found ke	TN-S Urer Conductor	n: 230	C TT ection:	Checklist	IT intern: 50	C Other
Serial No Attachments: Results: SYSTEM Earthing system: Mains: Deverument protectle (Type: RCD Overvoiltage protect	C.A 6165 17370720 D Test res No fault DTN-C	Public utilit	Serial No. Descr Fault TN-C-S	iption of fa s found ke	TN-S Urer Conductor	n: 230	C TT ection:	Checklist	IT intern: 50	0ther
Serial No.: Attachments: Results: SYSTEM Earthing system: Mains: Overcurrent protectlo RCD Overvoltage protect sIGNATURE AND ST	C.A 6165 17370720 D Test res No fault DTN-C	Public utilit	Serial No. Descr Fault TN-C-S	iption of fa s found ke	TN-S Urer Conductor	n: 230	C TT ection:	Checklist	IT intern: 50	Other
Serial No	C.A 6165 17370720] Test res] No fault] TN-C on tion rAMP	Public utility Inem: RCD type: Type:	Serial No. Descr Fault TN-C-S Y	iption of fa s found ke	TN-S Urer Conductor Operator: Electric	n: 230 cross-s	C TT ection:	Checklist	IT Intern: 50 Icc:	
Seial No. Attachments: Results: SYSTEM SYSTEM Conductory system Conductory system Conductory puectod Conductory puectod Conductory conductory Conductory conductory Conductory	CA 6165 117370720 Test rest No fault No fault No fault Inn-C on tion TAMP epted, Cli	Public utilit Inem: RCD type: Type: Type:	Serial No. Descr Fault TN-C-S Y	iption of fa s found kee Lave	TN-S Uran Conductor Operator: Electric regulat	n: 230 cross-si	ection:	Checklist	IT Inter: 50 Icc:	əlid
Seila No. Attachments Results SristEM SristEM Canductor type Canductor type Conductor t	CA 6165 117370720 Test rest No fault No fault No fault Inn-C on tion TAMP epted, Cli	Public utilit Inem: RCD type: Type: Type:	Serial No. Descr Fault TN-C-S Y	iption of fa s found kee Lave	TN-5 Uror Conductor Operator: Electric regulat Faulty e	n: 230 cross-si	C TT ection: lpic gement was d technical	Checklist	IT Inter: 50 Icc:	əlid
Serial No	CA 6165 117370720 Test rest No fault No fault No fault Inn-C on tion TAMP epted, Cli	Public utilit Inem: RCD type: Type: Type:	Serial No. Descr Fault TN-C-S Y	iption of fa s found kee Lave	TN-S Uran Conductor Operator: Electric regulat	n: 230 cross-si	C TT ection: lpic gement was d technical	Checklist	IT Inter: 50 Icc:	əlid

Customer No.:	Inspect, ret, No,:	Order No.:	
SAFETY OF E	LECTRICAL MACHIN	NES	
Machine1			
#Lampes_Pass-Fail - Si	igle tests		
Results:	Limits:	Parameters:	Status:
Continuity Machine1			Fail
R: >999 Ω	R: 0,1 0 R: Off	DateTime: 29/10/2020 12:02:34 Output: 4 wire I out: 0.2A Duration: 5 s Comment 1: test de continuité Comment 2: du PE	
Continuity Machine1			Pass
R: 0.00 Ω	R: 0.1 D R: Off	DateTime: 29/10/2020 12:03:41 Output: 4 wire I out: 0.2 A Duration: 5 s Comment 1: test de continuité Comment 2: du PE	
Continuity Machine1			Pass
R: 0.00 Ω	R: 0.1 0 R: Off	DateTime: 29/10/2020 12:03:50 Output: 4 wire I out: 0.2 A Duration: 5 s Comment 1: test de continuité Comment 2: du PE	
Continuity Machine1			Fail
R: >999 Ω	R: 0.1 D R: Off	DateTime: 29/10/2020 12:04:25 Output: 4 wire I out: 0.2 A Duration: 5 s Comment 1: test de continuité Comment 2: du PE	
Continuity Machine1			Fail
R: >999 Ω	R: 0,1 Ω R: Off	Date Time: 29/10/2020 12:07:17 Output: 4 wire I out: 0.2A Duration: 5 s Comment 1: test de continuité Comment 2: du PE	
Continuity Machine1			Fail
R: >999 Ω	R: 0.1 Ω R: Off	DateTime: 29/10/2020 12:07:25 Output: 4 wire out: 0.2 A Duration: 5 s Comment 1: test de continuité Comment 2: du PE	
Continuity Machine1			Pass
R: 0.00 Ω	R: 0.1 Ω R: Off	DateTime: 29/10/2020 12:07:38 Output: 4 wire I out: 0.2A Duretion: 5 s Comment 1: test de continuité Comment 2: du PE	
Continuity Machine1			Pass
R: 0.00 Ω	R: 0.1 Ω R: Off	DateTime: 29/10/2020 12:08:46 Output: 4 wire I out: 0,2 A Duration: 5 s Comment 1: test de continuité Comment 2: du PE	
Continuity Machine1			Pass
Signature:	Eustomer:	Operator:	

Eustomer No.:	Inspect, rec, No.:	Order No.:		
	LECTRICAL MA			
R: 0,00 Ω	R: 0,1Ω R: Off	DateT Outpu Iout: Durati Comm	me: 29/10/2020 12:09:04 : 4 wire 0:2 A m: 5 s ent 1: test de continuité ent 2: du PE	
Continuity Machine1		Com	entz: du PE	Pass
R: 0,00 Ω	R: 0,1 Ω R: Off	DateT Outpu I out: Durati Comm Comm	me: 29/10/2020 12:12:21 t: 4 wire 0.2 A m: 5 s ent 1: test de continuité ent 2: du PE	
R iso Machine1				Empty
Riso: Riso: Riso-S: Riso-S:	Riso: 0.30 MΩ Riso: Off Riso-S: Off Riso-S: Off	Type: Uiso: Durati	Riso, Riso-S 500 V an: 5 s	
HV AC programmable				Empty
l: l:	E Off E 1.0 mA	U star U tost t sbart: t ramp t end:	: 1000 V 1500 V 2 s : 5 s 5 s ent 1: Test diélectrique	
		Coma	en 12 za-6-65	
		Com	ani 2 Zadada	



8.7. EQUIPMENT Report (N...selected appliances will be printed on the report)

Customer No.:	546546	Inspect. re	C. NO.:	89866788	Order N	o.: 0	6555666			
ELECRIC	AL EC	QUIPM	ENT	REPO	RT					
GENERAL DATA										
Client: Metrel d.d					Contra					
Anton Kovac					Dejan K	os				
Ljubljanska cesta 77 00 386 01 75 58 30					Litijska 00.386	cesta 55 05 55 21	544			
Client's represe			_		Inspec					
Metrel d.o.o	itative:				Peter Ki					
Janez Dolenc					Cesta b	nigad 55				
Ljubljanska cesta 77 00 386 01 75 58 30					00 386	01 25 66	601			
Machine:	-				-					
Group/model:		THYSSENKRUP	P			ID:		000002		
Producer:		CARVALOO				Year:		2021		
Serial No.:							sockets:			
Report covers:					_		n accordance	with		
New installa	tion 🗖	Service, rena	ir F	Periodic ter	st		/EN 60204	with:	1	
EN 50699					-			_		
Measuring Instr	_	sed:		-		-				
Model:	MI 33		Mode		_		Test d	ate:	_	
Serial No.:	18460	253	Serial	No :			_			
Attachments:	Tort	meulte				Inmont		Chackli	**	D Other
Attachments:	Test		D	escription of fa	aulty equ	ipment		Checkli	st	🗖 Other
Results:		results aults found	D		aulty equ	Ipment		Checkli	st	Other
			D	escription of fa	aulty equ	ipment		Checkli	st	C Other
Results:			D	escription of fa	aulty equ	Ipment		Checkii	st	Other
Results: Notes:			D	escription of fa	aulty equ	ipment		Checkli	st	Other
Results: Notes:	□ No fi	aults found	D	escription of fa	aulty equ		Οπ	Checkii	st	Other
Results: Notes: SYSTEM	No fi	aults found		escription of fa	TN-S			Checkii		
Results: Notes: SYSTEM Earthing system Mains:	No fi	aults found		escription of fa	TN-S	Unem:	TT 100/200 V	Checkii	Оп	
Results: Notes: SYSTEM Earthing system Mains: Conductor type:		aults found		escription of fa	TN-S	Unem:	Ωπ	Checkii	Оп	
Results: Notes: SYSTEM Earthing system Mains: Conductor type: Overcurrent prot		aults found I-C Public ut		escription of fa aults found :C+S	TN-S	Unem:	TT 100/200 V ss-section:	Checkii	T Fnam: 50 I	tz.
Results: Notes: SYSTEM Earthing system Mains: Conductor type: Overcurrent prot Type:		Aults found I-C Public ut Inom:		escription of fa aults found •C+S	Conduct	Unem:	TT 100/200 V	Checkii	Оп	tz.
Results: Notes: SYSTEM Earthing system Mains: Conductor type: Overcurrent prot Type:		aults found I-C Public ut		escription of fa aults found •C+S	TN-S	Unem:	TT 100/200 V ss-section:	Checkii	T Fnam: 50 I	tz.
Results: Notes: SYSTEM Earthing system Mains: Conductor type: Overcurrent prot Type: RCD	Ection	Aults found I-C Public ut Inom:		escription of fa aults found •C+S	Conduct	Unem:	TT 100/200 V ss-section:	Checkii	T Fnam: 50 I	tz.
Results: Notes: SYSTEM Earthing system Mains: Conductor type: Overcurrent prot Type: RCD	INO fi No fi	I-C Public ut Inom: RCD type:		escription of fa aults found •C+S	Conduct	Unem:	TT 100/200 V ss-section:	Checkii	T Fnam: 50 I	tz.
Results: Notes: SYSTEM Earthing system Mains: Conductor type: Overcurrent prot Type: RCD Overvoltage pr	INO fi No fi	I-C Public ut Inom: RCD type:		escription of fa aults found •C+S	Conduct	Unom: tor cro	TT 100/200 V ss-section:	Checkii	T Fnam: 50 I	tz.
Results: Notes: SYSTEM Earthing system Mains: Conductor type: Overcurrent prot Type: Conductor type: Overvoltage pr SIGNATURE AN Client:	ection D STA MP	Aults found	D D	escription of fá aults found -C-S los	Conduct Conduc	Unom: ttor:	TT 100/200 V ss-section: Ipa:		Fnom: 50 I	tz
Results: Notes: SYSTEM Earthing system Mains: Conductor type: Overcurrent prot Type: Conductor type: Overvoltage pr SIGNATURE AN Client:	Control of the section Control of the sectio	Aults found	D D	escription of fá aults found -C-S los	Conduct Conduct 10 mA	Unom: ttor cro	TT 100/200 V ss-section:	s tested a	Fnam: 50 I	tz
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Results: SYSTEM Earthing system Mains: Conductor type: Overcurrent prot Type: IRCD Overvoltage pr SIGNATURE AN Client: Inspection an	INO FR NO FR CONTRACTOR CONT	aults found I-C Public ut RCD type: Type: Client is inforuits.	D D F:	escription of fa aults found	Conduct Conduc	Unom: ctor croi tor: ctrical e ulation ity equi	UTT 100/200 V ss-section: Ips: quipment wa s and technic	is tested a	Finance 50 H	tz valid
Results: SYSTEM Earthing system Mains: Conductor type: Overcurrent prot "Type: BRCD Overvoltage pr SIGNATUREAN Client: Report is fully inspection an Client is inform	INO FR NO FR CONTRACTOR CONT	aults found I-C Public ut RCD type: Type: Client is inforuits.	D D F:	escription of fa aults found	Conduct Conduc	Unom: ctor croin tor: ctrical et ulation ity equi	UTT 100/200 V ss-section: Ips: quipment wa s and technic	is tested a	Finance 50 H	tz valid
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Customer No.: 546546	Inspect. rec	No.: 89866788	Order No.: 065556	66	
ELECRICAL EQU	JIPM	ENT REPO	RT		
LOCATION: Location MACHINE ID: 2 NAME: THYSSENKRUPP LOCATION (ROOM): METRI MEHANIKA PRODUCER / MAKE: CARVJ		NOMINAL POWER COS FI: IP PROTECTION: TYPE: REPAIRING CODE		TEST DATE: 04.01. RETEST PERIOD (NEXT TEST: 04.07. YEAR OF PRODUC	IN MONTHS): 6 2022
Z line User: BLAZ					Pass
Ιρεκι 596 Α Ζι 0.39 Ω Χίμ 0.10 Ω Κι 0.37 Ω Ulin: 227 V	Ipsci	160 A	DuteTime: 0 Fuse Type: Fuse I: 16 A Fuse I: 0.4 Isc factor: 1 Text: - Earthing syste		Pass
Z line User: BLAZ					Pass
Ipsc: 596 A 22: 0.39 Ω XL: 0.04 Ω R: 0.30 Ω Uln: 227 V	Ipsci	160 A	DuteTime O Fuse Type: Fuse I: 16 A Fuse I: 16 A Isc factor: 1 Teat: - Earthing syste		Puss
Z line User: BLAZ					Pass
Ipsc: 621 A 2: 0.37 Ω XL: 0.04 Ω R: 0.37 Ω Uln: 227 V	Ipsc:	160 A	DuteTime: 0 Fuse Type: Fuse I: 16 A Fuse I: 0.4 Isc factor: 1 Test: * Earthing syste	4. 5	Pass
LOCATION: Location MACHINE ID: 000002_0000 NAME: THYSSENKRUPP LOCATION (ROOM): PRODUCER / MAKE:		NOMINAL POWER COS FI: IP PROTECTION: TYPE: REPAIRING CODE		TEST DATE: 04.01. RETEST PERIOD (NEXT TEST: 04.07. YEAR OF PRODUC	IN MONTHS): 6 2022
Continuity User: BLAZ					Pass
R: 0.02 Ω	R (H Ur	et): 0.1Ω	DuteTime: 0 Output: 4 w I out: 10 A AU test: Off Duration: 2 Comment 1 R compensati	s p=-p1	Pass
Continuity User: BLAZ					Pass
Ri 0.02 Ω	R (H Lin	eR): 0.1Ω	DuteTime: 0 Output: 4 w I out: 10 A &U test: Off Duration: 2 Comment 1: R compensati	s PE-P1	Puss
Continuity User: BLAZ					Pass
R: 0.02 Ω	R (H Lin	eR): 0.1Ω	DuteTime: 0 Output: 4 w I out: 10 A AU test: 0ff Duration: 2 Comment 1: R compensati	5 DF-01	Puss
Signature:		Customer:		Operator:	

R iso User: BLAZ			Pass
Riso: >200 MΩ Um: 263 V	Riso: 1 MD	DataTime: 04/01/2022 08:01:27 Ulso: 250 V Type Riso: N/PE	Pess
HV AC User: BLAZ			Pass
U: 1044 V I: 0.0 mA Ic: 0.0 mA Ir: 0.0 mA	I (H limit): 1.0 mA	DateTime: 04/01/2022 00:02:29 U test: 1000 V t end: 5 s	Pass
Z line User: BLAZ			Pass
Insc: 652 A Z: 0.35 Ω 3L: 0.01 Ω R: 0.25 Ω Uln: 226 V	Ipucz 160 A	DataTime: 04/01/2022 08:03:23 Pose Type: C Pose 1: 16 A Pose 1: 06 A Sac Refor: 1 Teat: - Earting system: TN/TT	Pass
Z line User: BLAZ			Pass
Ipsc: 651 A Z: 0.35 Ω XL: 0.00 Ω R: 0.35 Ω Ult: 226 V	Ipse: 160 A	DataTime: 04/01/2022 08:03:28 Pose Type: C Pose 1: 16 A Pose 1: 06 A Sac Factor: 1 Text: - Earthing system: TN/TT	Piess
Voltage User: BLAZ			Pass
Uln: 225 V Ulpe: 226 V Unpe: 0.1 V Freq: 50.0 Hz	Un (Low limit): 207 V Un (high limit): 233 V Ulpe (high limit): 233 V Ulpe (high limit): 253 V Unpe (high limit): 0 V Unpe (high limit): 0 V	DataTime: 04/01/2022 08:04:12 System: 1-phase Test: L1 Limit type: Voluge Earthing system: TN/TT Daration: Off	
Voltage User: BLAZ			Pass
Uln: 226 V Ulpe: 226 V Unpe: 0.1 V Freq: 50.0 Hz	Un (Low limit): 207 V Un (High limit): 253 V Ulpe (High limit): 253 V Ulpe (High limit): 253 V Unpe (High limit): 0 V Unpe (High limit): 0 V	DataTime: 04/01/2022 08:04:18 System: 1-phase Test: L1 Limit type: Volkage Earthing system: TN/TT Daration: Off	
Zs rcd User: BLAZ			Pass
Tpsc: 600 A Zi 0.34 Ω Uper 226 V XL: 0.04 Ω R: 0.34 Ω	Ipsc: 160 A	DateTime: 04/01/2022 05:04:51 Protection: TN From Full FA From Full FA From Ft: 04 A Sac Factor: 1 Test:	Pass
		Test: - I test: Standard	

9. Differences between basic and PRO MESM license

The comparison table presents differences between basic and PRO license. All instruments are always equipped with at least basic license. The PRO license is usually optional.

License (basic or PRO) is always stored in the instrument, therefore each instrument, can be contented to any available installation of MESM SW and the user will have full functionality, depending on installed license.

Metrel Electrical	Safety Manager	
	ML	3325
	Basic license	PRO license
Data Download	*	*
Data Upload	*	*
AutoSequence [®] Editor	*	*
AutoSequence [®] Download	*	*
AutoSequece [®] Upload	*	*
Print out of test results	*	*
Print out of basic report	*	*
Export to Excel	*	*
Export to Xml	*	*
Upcoming retests (Scheduler)	*	*
Print out of professional reports		*
PRO Export to excel		*

10. Demo test sequence

Demo test sequences are available from the following link.

https://www.metrel.si/assets/Metrel/PS_SW_dokumentacija/Autosequence/Metrel AutoSeq_MI 3325.zip