

Connection box 1-Phase A 1626 Connection box 3-Phase A 1627 Universal Connection box A 1688 Instruction manual Version 2.1.1, Code No. 20 753 084



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# 1 General description

The A 1626 Connection box 1-Phase, the A 1627 Connection box 3-Phase and A 1688 Universal Connection box are units intended for connection of various tested appliances to the A 1600 CE Switch 5kV in test setups with the MI 3394 XS. Each one of the A 1626, the A 1627, and A 1688 has unique code identifier. This unique code determines predefined characteristics for the applied connection box, like its configuration and some limiting values rated to the connection box; for example, maximum withstanding test voltage, maximum current for earth bond / continuity measurement, etc.

## 1.1 Warnings and notes



### 1.1.1 General safety warnings

In order to reach high level of operator safety while carrying out various measurements using the A 1626, A 1627, and A 1688 Connection box, as well as to keep the test equipment undamaged, it is necessary to consider the following general warnings:

- Read this Instruction manual carefully, otherwise use of the Connection box may be dangerous for the operator, for the Connection box itself or for the equipment under test!
- Consider warning markings on the instrument and adapters!
- If the test equipment is used in manner not specified in this Instruction manual the protection provided by the equipment may be impaired!
- Do not use the Connection box and accessories if any damage is noticed!
- Consider all generally known precautions in order to avoid risk of electric shock while dealing with hazardous voltages!

### 1.1.2 Safety warnings related to operation of A 1626, A 1627, and A 1688

- Test setups containing Connection box A 1626, A 1627 or A 1688 must strictly follow the requirements of EN 50191!
- A 1626 and A 1627: For withstanding tests, the input test voltage shall not be higher than 4 kV a.c. and/or 4 kV d.c.
- A 1688: For withstanding tests, the input test voltage shall not be higher than 5.1 kV a.c. and/or 6 kV d.c.
- Maximum measuring current for continuity functions is 25 A.
- No part of test setup must be accessible during testing!
- Never touch exposed probe tip, connections, Connection box, equipment under test or any other energized part during the measurements with hazardous live voltages.
   Make sure that NOBODY can contact them either!

### **1.1.3 Markings on the instrument**

• CE Mark on your equipment certifies that this equipment meets requirements of all subjected EU regulations.

X

This equipment should be recycled as electronic waste.

## **1.2 Standards applied**

The A 1626, A 1627, and A 1688 Connection boxes are manufactured and tested according to the following regulations, listed below.

#### **Electromagnetic compatibility (EMC)**

void No active parts inside

#### Safety (LVD)

EN 61010-1	Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements
EN 61010-2-030	Safety requirements for electrical equipment for measurement, control and laboratory use – Part 2-030: Particular requirements for testing and measuring circuits
EN 61010-031	Safety requirements for electrical equipment for measurement, control and laboratory use – Part 031: Safety requirements for hand-held probe assemblies for electrical measurement and test

## **2** Connection box sets and accessories

### 2.1 Standard set for the A 1626 Connection box 1-Phase

- A 1626 Connection box 1-Phase
- Shorting plug (3 pieces)
- Instruction manual

## 2.2 Standard set for the A 1627 Connection box 3-Phase

- A 1627 Connection box 3-Phase
- Shorting plug (3 pieces)
- Instruction manual

## 2.3 Standard set for the A 1688 Universal Connection box

- A 1688 Universal Connection box
- Shorting plug (3 pieces)
- Instruction manual

## 2.4 Optional accessory

See attached list for available optional accessory.

# **3** Connection boxes description



Figure 3.1 Universal Connection box (A 1688)









1	Connection interface to A 1600 CE Switch 5kV
2	3-phase test socket (A 1627 only)
	Note: L1, L2 and L3 are connected together to L of test socket 3.
3	1-phase test socket (A 1626, A 1627)
	Note: parallel connected test socket 2 and 3 are wired to left side of L, N, PE test
	connections 8.
4	Connector for tip commander A 1511
5	P1, C1 sockets for protective bonding continuity measurements with tip commander A 1511
	Sockets for protective bonding continuity measurements.
	▸ C1, P1 (A 1626, A1627)
	<ul> <li>CHANNEL 1: C1, C2, P1, P2 (A 1688)</li> </ul>
	→ CHANNEL 2: C3, C4, P3, P4 (A 1688)
6	S/P probe for accessible conductive parts
7	Separate HV probe extensions:
	<ul> <li>Single channel (A 1627)</li> </ul>
	<ul> <li>4 channels (A 1688)</li> </ul>
8	L, N, PE test connections with shorting jumpers
9	Wiring connections to tested unit.
	Note:
	• Test sockets (2) and (3) are connected in parallel to wiring connections (9) in case the
	shorting jumpers (8) are inserted. (A 1626, A 1627)
	<ul> <li>In case the shorting jumpers (8) are inserted, next connections are enabled:</li> </ul>

L connected to  $HV(\sim,+)$  / channel 1, N connected to  $HV(\sim,+)$  / channel 2, PE connected to  $HV(\sim,-)$  / channel 1. (A 1688)

# **4** Installing the Connection box

Connection box (A 1626, A 1627, or A 1688) can be no-fixed as desktop unit or can be fixed in proper place inside the test chamber. Consider prohibition zone and other requirements of EN 50191. Use included screws (M4 x 12 DIN 912 ZN-KM) or equivalent for mounting of Connection box. The following figure shows mounting dimensions.



Figure 4.1 Mounting holes positions

# **5** Operation of the Connection boxes

## **5.1 Wiring principle in the Connection boxes**

The A 1626, A 1627, and A 1688 Connection boxes are passive devices used as a wiring interface for tested equipment connection set-up.



Figure 5.1 Wiring principle in A 1626, A 1627

Wiring principle is the same for both the A 1626 and the A1627 Connection boxes with omitted items in the A 1626.



Figure 5.2 Wiring principle in A 1688

### **5.1.1 Application examples for the Connection boxes**

The following figures show typical test setups for application of the A 1626, the A 1627, and the A 1688 Connection boxes. Optional tip commander A 1511 can only be used in setups, with light barrier protection, but only for measurements without risk of electric shock.



Figure 5.3 Application example for the A 1627 with the tip commander A 1511 in the test environment protected by the light barrier



Figure 5.4 Application example for the A 1626 in the test chamber



Figure 5.5 Application example for the A 1688 with the tip commander A 1511 in the test environment protected by the light barrier



Figure 5.6 Application example for the A 1688 in the test chamber

#### Notes:

- Light barrier prevents access during testing with hazardous live voltage, e.g. withstanding voltage test, measurements with applied mains supply to tested equipment.
- Test chamber contain cover that is locked during testing and for this reason tip commander A 1511 cannot be used.

### 5.1.2 Tip commander interface

The tip commander A 1511 is intended for optional application with the A 1626, the A 1627, and A 1688 Connection boxes. Connections are as follows.



#### Figure 5.7: Commander - pin layout and test connections

Commander connector pin	Description	Hardware	Function in regard to flow commands
1	+ 5 V supply for commander	Imax: 100 mA	
5	Tip commander Test key input	Input low: < 1 V d.c. against earth Input high: > 4.5 V d.c. against earth Umax: 24 V a.c, d.c. against earth	EXTERNAL OK KEY mode
2,3,7	Outputs for illumination LEDs on commander	Current sinks 10 mA	
4	GND supply for commander		
Test	Description	Hardware	
connections			
P1	Potential measuring probe for continuity functions	Umax: 24 V a.c, d.c against ea	arth
C1	Current output probe for continuity functions	Imax: 25 A	

# 6 Maintenance

## 6.1 Warranty & Repair

For repairs under or out of warranty please contact your distributor for further information.

Unauthorized person is not allowed to open the Connection box. There are no user replaceable parts inside the adapter.

## 6.2 Cleaning

Use a soft, slightly moistened cloth with soap water or alcohol to clean the surface of the A 1626, A 1627, or A 1688 Connection boxes. Leave the Connection box to dry totally before using it.

### Notes:

- Do not use liquids based on petrol or hydrocarbons!
- Do not spill cleaning liquid over the adapter!

# 7 Technical specifications

Parameter	A 1626	A 1627	A 1688
Maximum a.c.	4 kV	4 kV	5.1 kV
withstanding voltage			
Maximum d.c.	4 kV	4 kV	6 kV
withstanding voltage			
Maximum continuity	25 A	25 A	25 A
resistance measuring			
current			
Maximum Riso	1000 V	1000 V	1000 V
measuring voltage			
Supported	Continuity	Continuity	Continuity
measurements	Riso	Riso	Riso
	Power	Power*	Power
	SUB_Leakage_All	SUB_Leakage_All	SUB_Leakage_All
	Differential Leakage	Differential Leakage*	Differential Leakage
	IPE Leakage	IPE Leakage*	IPE Leakage
	Touch_Leakage	Touch_Leakage*	Touch_Leakage
	Leaks & Power	Leaks & Power*	Leaks & Power
	Discharging time	Discharging time*	Discharging time
	HV-AC	HV-AC	HV-AC
	HV-DC	HV-DC	HV-DC
	HV-AC programmable	HV-AC programmable	HV-AC programmable
	HV-DC programmable	HV-DC programmable	HV-DC programmable

#### Parameters defined with built-in identification

\* Optional only for the single-phase tested equipment.

#### **Protection classifications**

Altitude	≤ 2000 m
Pollution degree	2
Degree of protection	IP 40
	IP 20 (Test socket)
	· /

Dimensions (w×h×d):	24 cm × 9 cm × 16 cm
HV cables length	1.8 m
Connector cable length	1.8 m
Weight	< 3 kg

### **Operation conditions**

Operation	Indoor use
Working temperature range:	5 °C +40 °C
Maximum relative humidity:	85 % RH (0 °C 40 °C), non-condensing

#### Storage conditions

Temperature range:	
Maximum relative humidity:	
	80 % RH (40 °C 60 °C)