

TSX 303

TRAX Automatic Switch Box



- **Shorter test time by reducing time to connect transformer terminals**
- **Increases safety by reducing “ladder time”**
- **Minimizes the risk of measurement errors due to incorrect connections**

DESCRIPTION

TSX 303 is an accessory to TRAX that enables automatic testing of all phases and taps of a transformer with only one single connection of test leads. This eliminates the need for reconnections between tests and greatly reduces the time needed for the full measurement procedure. Safety is also improved as the number of trips up and down the ladder to transformer is reduced to only connection and disconnection of the bushing cables.


Typically the TSX 303 automatic switchbox is put on top of the transformer and connected to the TRAX, which stays on the ground, with three 10 m long cables. Connection to the transformer is done with a set of eight color coded bushing cables, 9 m in length. The bushing cables are fitted with Kelvin clamps and XLR connectors for further ease of connection. All necessary cables are supplied with the switchbox in a soft compartmentalized case that can be carried either as a backpack or as a shoulder bag. For a customer who already own a set of bushing cables, the TSX 303 can be used also with banana connector leads, something that is also useful in the event of a damaged cable; any bushing cable can be used as a replacement.

APPLICATIONS

The TSX 303 is intended to be used with transformers up to three windings and 8 terminals. Supported TRAX applications include winding resistance measurement (WRM) with OLTC continuity up to 16 A, transformer turns ratio (TTR) up to 250V with simultaneous excitation current measurement and demagnetization. Control of the switchbox as well as the tap changer is integrated in the TRAX apps in an automated test flow, minimizing the user interaction with the TRAX software.

FEATURES AND BENEFITS



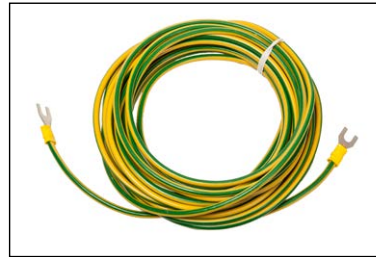
- 1. **MEASURE**
Measurement terminal for connecting to TRAX
- 2. 
Ground terminal, for connecting an additional safety ground
- 3. **POWER**
Input power from TRAX
- 4. **CONTROL**
Ethernet port for connection to TRAX
- 5. **CONTROL lamp**
Indicator for communication with TRAX
- 6. **AUX POWER**
Input for external power, max 250 V
- 7. **H1/1U...**
Connections for high voltage windings
- 8. **ACTIVE DO NOT DISCONNECT CABLES**
Warning, lights when the discharge is in progress
- 9. **X1/2U...**
Connectors for the low voltage windings

INCLUDED ACCESSORIES

Cables

These are used for connecting TSX303 to TRAX. You also need any of the TSX bushing cables for connecting TSX303 to the transformer bushings.

Note: The TSX bushing cable set XLR – Kelvin is included in the TSX 303 Order No. AJ-69490.



Ground cable, 10 m, GC-30090



TSX Measuring cable, 10 m, GC-32440



TSX Power cable, 10 m, GC-31210



XLR j45 Com cable, 10 m, GA-00730

INCLUDED ACCESSORIES

TSX bushing cable set XLR – Kelvin

Included with the TSX303 is a set of 8 color coded bushing cables 9 m long fitted with Kelvin clamps and XLR connectors.

The bushing cables and the other included cables come in a compartmentalized soft case that can be carried either as a backpack or as a shoulder bag.



TSX bushing cable set, Kelvin/XLR, 9 m (30 ft), GC-32740



Compartmentalized soft case for all included cables, GD-31055.

OPTIONAL ACCESSORIES

TSX bushing cable set w. banana connectors – Kelvin



The cables are delivered one each as shown above, along with a hard case. Cable lengths 10 m (33 ft), GC-32730.

Color marking for the TSX bushing cables

HV – with Red Kelvin clamps

Description	Label
Red Kelvin clamp, red sleeve/markings at both ends	H1/1U/A
Red Kelvin clamp, yellow sleeve/markings at both ends	H2/1V/B
Red Kelvin clamp, blue sleeve/markings at both ends	H3/1W/C
Red Kelvin clamp, white sleeve/markings at both ends	H0/1N/N

LV – with Black Kelvin clamps

Description	Label
Black Kelvin clamp, red sleeve/markings at both ends	X1/2U/a
Black Kelvin clamp, yellow sleeve/markings at both ends	X2/2V/b
Black Kelvin clamp, blue sleeve/markings at both ends	X3/2W/c
Black Kelvin clamp, white sleeve/markings at both ends	X0/2N/n

SPECIFICATIONS

Specifications are subject to change without notice.

Environment

<i>Application field</i>	For use in high-voltage substations and industrial environments
<i>Temperature</i>	
<i>Operating</i>	-20°C to +55°C (-4°F to +131°F)
<i>Storage</i>	-40°C to +70°C (-40°F to +158°F)
<i>Humidity</i>	0-90% non-condensing
<i>Altitude</i>	2000 m (max)

CE- marking

<i>LVD</i>	2006/95/EC
<i>Vibration</i>	IEC 60 068-2-6
<i>Shock</i>	IEC 60 068-2-27
<i>Transport</i>	ISTA 2A

General



Protective ground (earth) conductor terminal

Dimensions

<i>Instrument (excl. handle)</i>	310 x 145 x 210 mm (12.2" x 5.7" x 8.3")
<i>Cable case, GD-31055</i>	750 x 420 x 300 mm (30" x 17" x 12")
<i>Weight</i>	
<i>Instrument</i>	5.8kg (12.8 lbs)
<i>Cable case, GD-31055</i>	15.2 kg (33.5 lbs) including cables

TRAX Interface

Inputs

250 V AC	Max 250 V (Max 10 A)
16 A DC	Max 16 A (Max 50 V)

Outputs

R1	Max 60 V DC
R2	Max 60 V DC
CH1	Max 250 V AC
CH2	Max 250 V AC

All voltage (MEAS) measurements are interfaced to TRAX (R1, R2, Ch1 and/or Ch2)

All currents, DC or AC are measured internally by TRAX generator

Specimen interface

GEN <i>(Generator)</i>	8 bushing terminals output (4 LOW and 4 HIGH) TRAX 250V AC or TRAX 16A DC generator
MEAS <i>(Measurement)</i>	8 bushing terminals (4 LOW and 4 HIGH) for measurement of AC or DC voltage levels

ORDERING INFORMATION

Item	Order No.
TSX 303, incl. bushing cable set XLR	AJ-69490

Included accessories:

TSX Power cable, 10 m (33 ft)	GC-31210
Ground cable, 10 m (33 ft)	GC-30090
XLR j45 Com, 10 m (33 ft)	GA-00730
TSX measuring cable, 10 m (33 ft)	GC-32440
TSX bushing cable set, XLR – Kelvin, 9 m (30 ft)	GC-32740
TSX cable case	GD-31055
TSX case	GD-30230

TSX 303, excl. bushing cables	AJ-69492
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Included accessories:

TSX Power cable, 10 m (33 ft)	GC-31210
Ground cable, 10 m (33 ft)	GC-30090
XLR j45 Com, 10 m (33 ft)	GA-00730
TSX measuring cable, 10 m (33 ft)	GC-32440
Carry bag	2000-091
TSX case	GD-30230

Optional accessories

TSX bushing cable set, banana connectors – Kelvin
Incl. hard case, GD-30240
10 m (33 ft)

GC-32730

Postal address

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