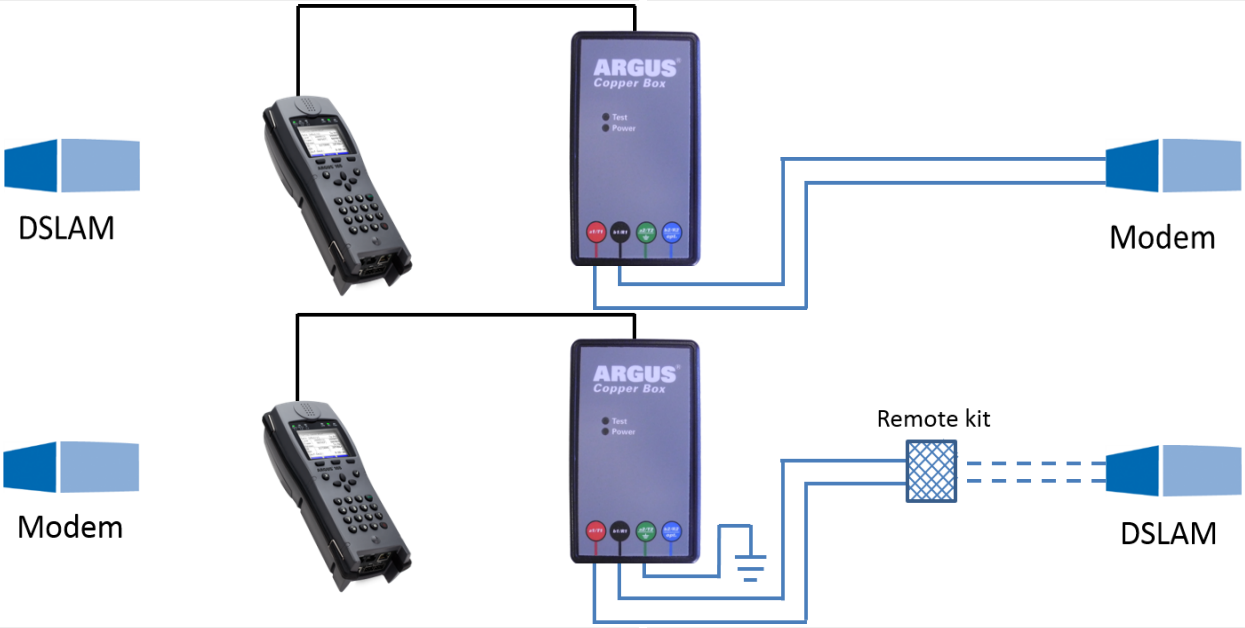
ARGUS® COPPER box

ARGUS® COPPER BOX

U=
U~
C Sym
C
Iso
R Sym
R
I=
LCL
NEXT
USB
opt.
LED

intec
GESELLSCHAFT FÜR
INFORMATIONSTECHNIK mbH



ARGUS Copper Box v4

The ARGUS Copper Box is intec's expansion for the ARGUS 15x and ARGUS 16x xDSL combi testers. With this USB Box, it is possible to, on the one hand, detect dangerous voltages and currents before they can cause harm and, on the other hand, safely determine the physical characteristics of the line. This latter feature is of particular advantage when it is not possible to synchronize a DSL line or when the data rate achieved on a line is so low that there is reason to suspect that asymmetry (an unbalance), interference or mechanical issues are causing problems on it.

The compact Copper Box is attached to an ARGUS tester using its USB host interface. Using the ARGUS's graphical user interface, the user can select the Copper Box and quickly and easily perform all the supported measurements.

The ARGUS Copper Box has four standard banana jacks, which are colour-matched to the respective cables. To ensure safety in both the lab and the field, the standard jacks are equipped to accept 4 mm shrouded banana plugs.

Other technical characteristics of the Copper Box:

- Using the **autotest** enables you to test automatically with various predefined measurement profiles.
- Using the **DC voltage measurement**, it is possible to determine the type of access (e.g. ISDN or POTS), supply voltage and any interference voltage.
- With the **AC voltage measurement**, it possible to detect dangerous interference voltages.
- With the aid of the **capacitive symmetry**, it is possible to detect anomalies in cabling. These anamolies can lead to signal distortion or transmission errors.
- **Capacitance measurements** will indicate any interruptions in the line and can determine the typical input capacitance of the connected equipment. Furthermore, these measurements can be used to assess whether the wire pair is unbalanced.
- **Isolation resistance measurements** can be used to detect damaged cable isolation, moisture in the cables or oxidized contacts.
- With the aid of the **resistive symmetry**, it is possible to detect anomalies in cabling. These anamolies can lead to signal distortion or tranmission errors.
- **Loop resistance measurements** can be used to detect short-circuits as well as to estimate the line length.
- **DC current measurements** can be used to detect emergency, external or normal supply as well as to determine whether the line is too long or interrupted.
- **Symmetry measurement (LCL):** This measurement at a frequency of 1 MHz can be used to assess whether the wire pair is unbalanced.
- **NEXT measurement:** Measures the Near-End Crosstalk at a frequency of 1 MHz.
- Use of the **signature detection** to evaluate the signature or PPA from the subscribers line.
- Use the **remote kit** to control the far end of the line and change it to the desired state.

All of the measurements can be performed as automatic TRG measurements (Tip (a), Ring (b), and Ground) with a high degree of accuracy.

The compact ARGUS Copper Box weighs just 160 grams and thanks to its high-quality plastic case it can shrug off being dropped as well as most impacts and other mechanical abuse. In spite of its performance and the high voltages that it applies for some measurements, the Copper Box still exhibits an exceptional operating time since it draws its power from the ARGUS tester's high-powered lithium-ion battery pack.

The Copper Box was designed with an eye to compatibility so it can be used with a number of testers. As a result, an installation team using a variety of ARGUS testers can each extend their tester's capabilities using these boxes and all their features. Consequently, the testers need not be sent in to have these additional features added. The USB Box can be tied together with the tester using a specific shock absorbing rubber jacket.

You can also use your PC to get free updates for the Copper Box quickly and easily.

The standard equipment includes three highquality connection cables and is delivered together with a manual.

ARGUS Copper Box v4 to assess the physical quality of the local loop

All of the measurements can be performed as automatic TRG measurements (Tip (a), Ring (b), and Ground) with a high degree of accuracy.

Copper Box test functions:

- **DC voltage; U_{DC} (U⎓):**
  - Measuring range: 0.01 V to 200 V
  - Resolution: range 1: 0.01 V to 9.99 V; 0.01 V
    range 2: 10.0 V to 200.0 V; 0.1 V
  - Accuracy: ± (0.5 % + 2 digits)
- **AC voltage; U_{AC} (U~):**
  - Measuring range: 0.01 V to 200 V (RMS, at sinus 50 Hz)
  - Resolution: range 1: 0.01 V to 9.99 V; 0.01 V
    range 2: 10.0 V to 200 V; 0.1 V
  - Accuracy: range 1: ± (2 % + 2 digits)
    range 2: ± (1.5 % + 2 digits)

*Frequency: 10 Hz to 200 Hz, 0.2 Hz; ± (1.5 % + 2 digits), sinus

- **Capacitive symmetry (balance); (C_{Sym}):**
  - Measuring range: 10 nF to 4 µF
  - Resolution: 10 nF to 4 µF; 0.01 nF
  - Accuracy: relative capacity ± 0.1 %

*Dielectric strength for external voltage up to 17 V DC or 17 V AC (with a load 200 kΩ)

- **Capacitance; (C):**
  - Measuring range: 0.01 nF to 8000 nF (measuring frequency 8 Hz)
  - Resolution: range 1: 0.01 nF to 9.99 nF; 0.01 nF
    range 2: 10.0 nF to 99.99 nF; 0.01 nF
    range 3: 100.0 nF to 999.9 nF; 0.1 nF
    range 4: 1000 nF to 8000 nF; 1 nF
  - Accuracy: range 1 - 2: ± (4 % + 4 digits)
    range 3 - 4: ± (3 % + 1 digit)

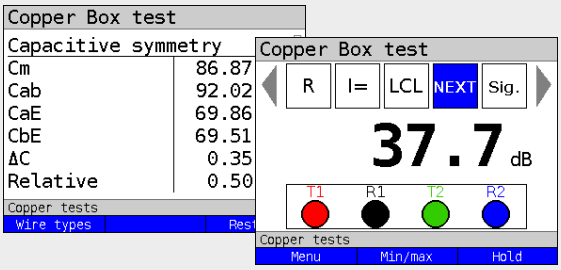
*Dielectric strength for external voltage up to 17 V DC or 17 V AC (with a load 200 kΩ)
*Measured by film capacitors

- **Isolation resistance; (Iso.):**
  - Measuring range: 0.1 kΩ to 999.9 MΩ (105 V, max. measuring current 2 mA)
  - Resolution: range 1: 0.1 kΩ to 99.9 kΩ; 0.1 kΩ
    range 2: 100.0 kΩ to 999.0 kΩ; 1 kΩ
    range 3: 1.0 MΩ to 9.99 MΩ; 10 kΩ
    range 4: 10 MΩ to 99.9 MΩ; 100 kΩ
    range 5: 100 MΩ to 999.9 MΩ; 100 kΩ
  - Accuracy: range 1 - 3: ± (2 % + 1 digit)
    range 4 - 5: ± (5 % + 1 digit)

*Dielectric strength for external voltage up to 5 V DC or 30 V AC (with a load 200 kΩ)

- **Isolation resistance; (Iso.):**
  - Measuring range: 0.1 kΩ to 40 MΩ (mit 8 V. max. measuring current 9 mA)
  - Resolution: range 1: 0.1 kΩ to 99.9 kΩ; 0.1 kΩ
    range 2: 100.0 kΩ to 999.0 kΩ; 1 kΩ
    range 3: 1.0 MΩ to 9.99 MΩ; 10 kΩ
    range 4: 10.0 MΩ to 40.0 MΩ; 100 kΩ
  - Accuracy: range 1 - 3: ± (2 % + 1 digit)
    range 4: ± (5 % + 1 digit)

*Dielectric strength for external voltage up to 5 V DC or 30 V AC (with a load 200 kΩ)



- **Resistive symmetry balance; (R_{Sym}):**
  - Measuring range: 10 Ω to 5 kΩ
  - Resolution: 10 Ω to 5 kΩ; 0.1 Ω
  - Accuracy: ± 0.2 % des R_{Loop} ± 0.2 Ω

*Dielectric strength for external voltage up to 30 V DC or 30 V AC (with a load 200 kΩ)

- **Loop resistance; (R):**
  - Measuring range: 0.1 Ω to 40 MΩ (13 V, max. measuring current 15 mA)
  - Resolution: range 1: 0.1 Ω to 999.9 Ω; 0.1 Ω
    range 2: 1.000 kΩ to 9.999 kΩ; 1 Ω
    range 3: 10.00 kΩ to 99.99 kΩ; 10 Ω
    range 4: 100.0 kΩ to 999.9 kΩ; 100 Ω
    range 5: 1.000 MΩ to 9.999 MΩ; 1 kΩ
    range 6: 10.0 MΩ to 40.0 MΩ; 10 kΩ
  - Accuracy: range 1: ± (1 % + 3 digits)
    range 2 - 4: ± (1 % + 1 digit)
    range 5: ± (2 % + 1 digit)
    range 6: ± (5 % + 1 digit)

*Dielectric strength for external voltage up to 3.5 V DC or 30 V AC (with a load 200 kΩ)

- **DC current; I_{DC} (I⎓):**
  - Measuring range: 0.1 mA to 499.9 mA
  - Resolution: 0.1 mA to 499.9 mA; 0.1 mA
  - Accuracy: ± (2.5 % + 3 digits)
- **Unbalance at 1 MHz; (LCL):**
  - Measuring range: 0.1 dB to 65.0 dB
  - Resolution: range 1: 0.1 dB to 55.0 dB; 0.1 dB
    range 2: 55.1 dB to 65.0 dB; 0.1 dB
  - Accuracy:*: range 1: ± 1.5 dB
    range 2: ± 3 dB

*The length of the test leads can influence the accuracy of the measurement. Therefore, this information applies to a measurement without test leads (short measurement adapter).
*Dielectric strength for external voltage up to 3 V DC or 3 V AC. At an internal resistance of the source of 1 MΩ it will be measured up to 3.5 V DC / AC.

- **Near-End crosstalk at 1 MHz; (NEXT):**
  - Measuring range: 0,1 dB to 65.0 dB
  - Resolution: 0.1 dB to 65.0 dB; 0,1 dB
  - Accuracy: ± 1 dB

*Dielectric strength for external voltage up to 3 V DC or 3 V AC. At an internal resistance of the source of 1 MΩ it will be measured up to 3.5 V DC / AC.

- ***Reference conditions (calibration):**
  - Temperature: 23 °C ± 5 °C
  - Relative humidity: 50 % ± 20 % relative humidity, non-condensing
  - Frequency of measuremen type: 50 Hz ± 5 Hz, sinus

Technical Features:

- **Power supply** via USB host of the ARGUS
- **Keypad** via 4 cursor keys and 3 softkeys of the ARGUS
- **2 LEDs** indicating status
- **CE marking:** complies with CE directives
- **User safety:** fullfils EN 62368-2
- **RoHS** conformance accoring to WEEE directive

Interfaces:

- **4 x 4 mm banana jacks** (for all-included test leads)
- **USB-Host** interface (Type A)

Environmental conditions:

- **Operating temperature:** 0 °C to +50 °C (32 °F to 122 °F)
- **Storing temperature:** -20 °C to +50 °C (-4 °F to 122 °F)
- **Relative humidty:** up to 95 %, non-condensing

Dimensions:

- **Size:** H 125 mm, W 74 mm, D 22 mm (4.92 x 2.91 x 0.87 in)
- **Weight:** ca. 160 g (0.35 lbs)

Standard package:
ARGUS Copper Box incl. three all-insulated banana jacks (red, black, green) and english Manual

ARGUS Copper Box (incl. rubber jacket)
Order number: 015098 (for ARGUS 153, ARGUS 156)
ARGUS Copper Box (incl. rubber jacket)
Order number: 015099 (for ARGUS 163, ARGUS 165)

ARGUS Copper Box is available with the following basic packages:

ARGUS 153 VDSL (incl. Vectoring)
Order number: 115702

ARGUS 156 VDSL2 (incl. Super-Vectoring)
Order number: 115402
ARGUS 156 SHDSL-2-w
Order number: 115422
ARGUS 156 ISDN PRI/E1
Order number: 115662

ARGUS 163 VDSL2 (incl. Super-Vectoring)
Order number: 116312

ARGUS 166 VDSL2 (incl. Super-Vectoring)
Order number: 116622
ARGUS 166 SHDSL 2-w
Order number: 116602

Accessories ARGUS Copper Box:
NEXT cable (green / blue, twisted)
Order number: 015296

* We would be glad to provide further details and information about additional accessories on request.

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