

Multielectrode SwitchBox

Repair Instructions

Version 1.3



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1 Introduction

If the *4point light hp* earth resistivity meter displays unstable, not reasonable or even no values, this may be caused by the following:

- Defective cable (torn or loose contact)
- Defective SwitchBox resp. electronics



Before opening any SwitchBoxes in order to exchange a cable or the box itself, make sure, that the resistivity meter is switched off / the power supply is cut off!!



When replacing a SwitchBox or a defective cable, please ensure the correct orientation of the cable and the connector.

2 Material



- 1 Screw driver
- 2 Scissors
- 3 IDC crimping pliers
- 4 10 pin colorful ribbon cable (at least 5 m)*
- 5 2*5 IDC connectors*
- 6 Exchange unit (SwitchBox)**

*available from specialist shops or from *Lippmann Geophysikalische Messgeräte*

**available from *Lippmann Geophysikalische Messgeräte*

3 Damage Analysis and Repair

3.1 Defective Electronics

3.1.1 Analysis

Cables are intact, but the SwitchBox does not switch on and/or off the electrode (this can be seen for example in the fact, that the instrument displays no reasonable measurement values).

3.1.2 Repair

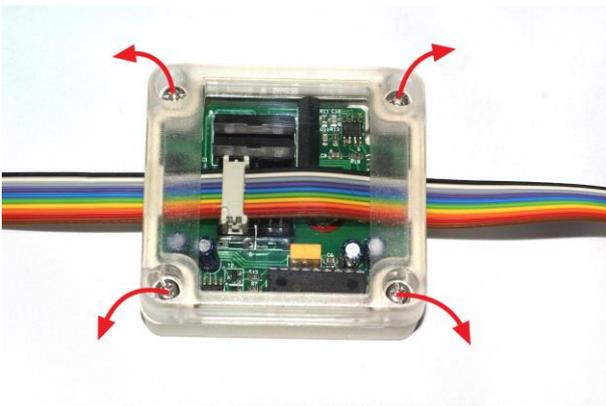
Replacement of the SwitchBox

If a SwitchBox is defective, it has to be replaced.

! After replacement of a SwitchBox, the exchange unit has to be programmed with the address of the former box. Use the program GEOTEST for this purpose!!

Material: screw driver, scissors, exchange unit

Proceed as follows:



- Switch off the instrument.
- Unscrew the damaged box and remove the lid.



- Plug out the connector



- Unscrew the exchange unit and remove the lid.



- Plug the connector into one of the two socket boards (both of them are equivalent), observing the correct orientation.



- Press down the connector



- Put on the lid

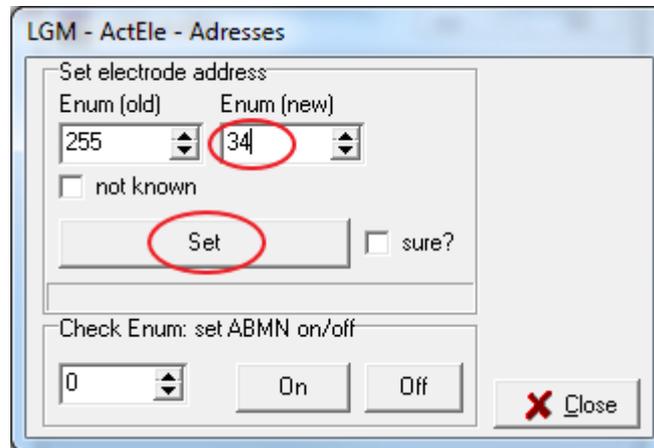
After changing attach the new SwitchBox to the electrode and restore the power supply by connecting the box to the *4point light hp*.

3.1.3 Set address

In the last step the address of the former (defective) box is to be programmed to the exchange unit.

Use the software GEOTEST for this purpose.

- Select <Device> <ABMN> <Electrode Ident> and you will see:



By default the electrode address of new boxes is 255.

- Set the new electrode address by filling in the number of the defective box under <Enum (new)>. In the example above this number was 34.
- Click <Set> and close the window.

3.2 Defective Cable or Loose Contact

3.2.1 Analysis

Localization of the cable defect or the loose contact by

- An optical check of the cable (broken or torn)
- A check of the measured values (because after the defective electrode, the following electrodes does not work anymore)

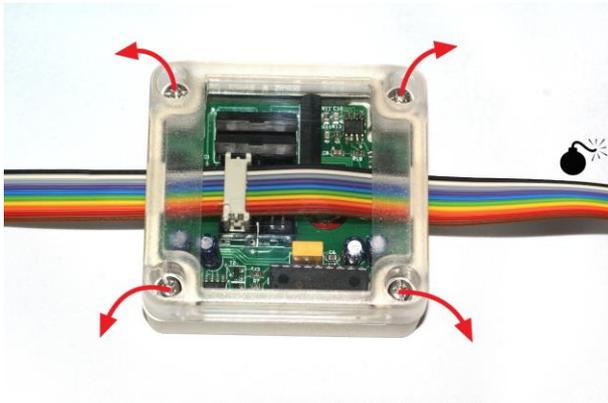
3.2.2 Repair

Replacement of a defective cable

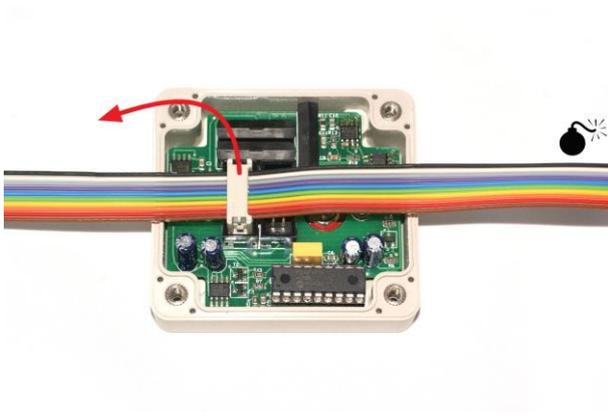
Material: Screw driver, Scissors, 10-pin colorful ribbon cable with two IDC-connectors

The defective cable between two SwitchBoxes is cut, removed and replaced by a new one.

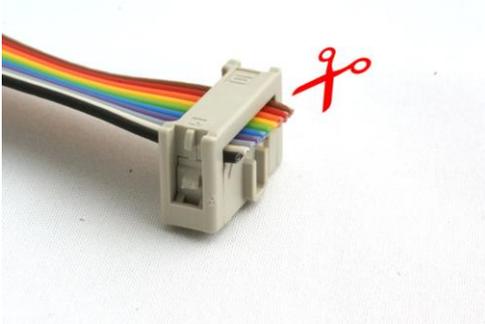
Proceed as follows (in the example the original cable is defective to the right 



- Switch off the instrument.
- Unscrew the damaged box and remove the lid.



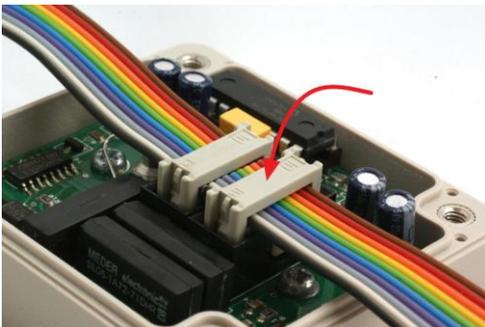
- Plug out the connector



- Cut off the defective cable flush with the connector



- Plug the connector into the socket board, observing the correct orientation.



- Plug the replacement cable (instructions see below) into the socket board



- Put on the lid and screw tight
- Proceed in the same way with the second box (observing the orientation of the connector)

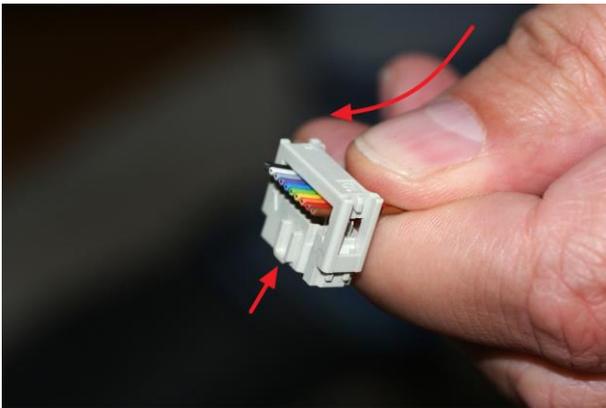
After repair, attach the new SwitchBoxes to the electrodes and restore the power supply.

How to mount a replacement cable

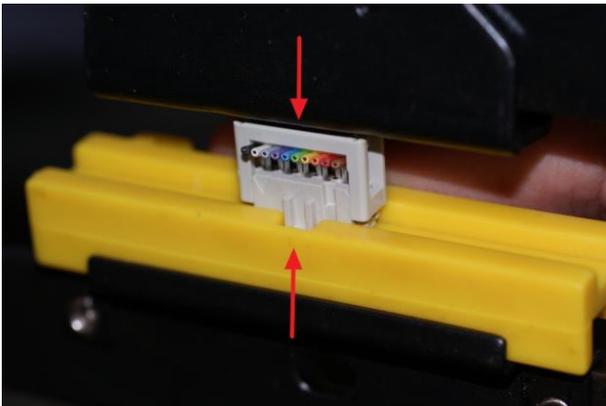
Material: Scissors, IDC crimping pliers, 10-pin colorful ribbon cable (5 m), two IDC-connectors

A replacement cable with two IDC-connectors for immediate use is available from *Lippmann Geophysikalische Messgeräte*. The cable can also easily be mounted by yourself: two IDC-connectors are to be fixed to the ribbon cable observing the color coding of the cable and the orientation of the connector (also refer to chapter 4 Appendix).

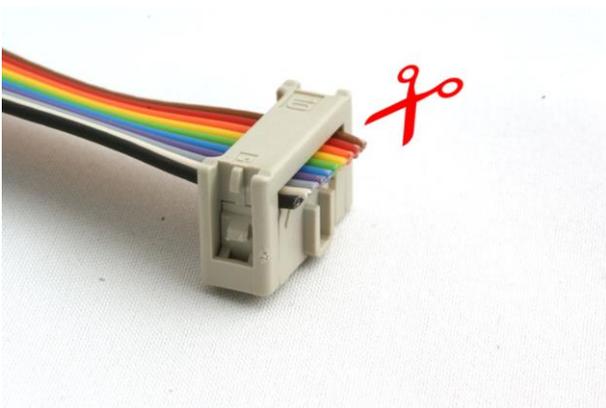
To mount the cable, **proceed** as follows:



- Push the cable into the connector as shown in the picture. Please ensure the correct orientation of the connector lug and the correct color coding of the cable!



- Mount the IDC-connector onto the cable using the crimping pliers



- Cut off the cable flush with the connector



- Proceed in the same way with the other side of the cable

TIP

If the cable is broken right next to the box, there is no need to exchange the whole cable. Simply shorten the cable on that site:

- Cut out the defective section of the cable right next to the connector
- Mount a connector onto the new head of the cable
- Switch the original connector to the adjacent socket board if necessary
- Plug in the new connector

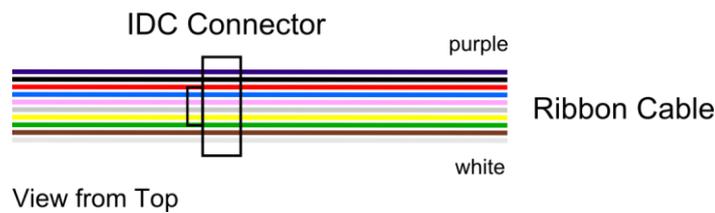
4 Appendix

4.1 Ribbon Cable and Assignment

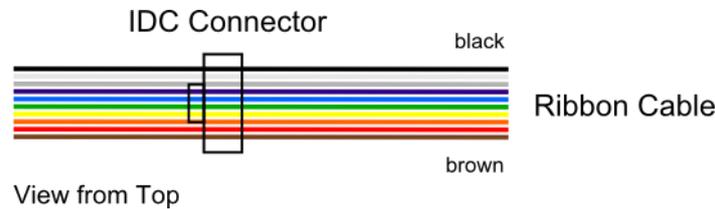
The SwitchBoxes resp. electrodes are connected via a 10-pole colourful ribbon cable and the appropriate IDC-connectors

In case of mounting the cable and in case of any repair, please ensure that the **orientation of the connector lug and the color coding of the cable matches the following illustrations:**

Type 1



Type 2



	10-pole ribbon cable type 1	10-pole ribbon cable type 2
Function	Color	Color
ground	violet	black
ground	black	white
M	red	grey
N	blue	violet
ground	pink	blue
A	gray	green
B	yellow	yellow
TxD	green	orange
+5V	brown	red
+5V	white	brown

4.2 ActEle PIN Assignment

Gray 10-pole connector		10-pole ribbon cable type 1	10-pole ribbon cable type 2	Round PU-cable*	Round 8-pole connector*
Number	Function	Color	Color		PIN
1	ground	violet	black		6
2	ground	black	white	green	6
3	M	red	grey	red	4
4	N	blue	violet	blue	5
5	ground	pink	blue	pink	3
6	A	gray	green	gray	1
7	B	yellow	yellow	yellow	2
8	TxD	green	orange	white	8
9	+5V	brown	red	brown	7
10	+5V	white	brown		7

*Connections for the round PU cable only apply to the 8-pole connector!

5-pole interface plug	9-pole RS232
PIN	PIN
1	5
2	3
3	2