GTEC UPS MODEL:

SIRIUS – SATURN 10 – 40 kVA

AC Capacitors Thermal Protection

SERVICE DOCUMENT

Contents

1 Introduction

Starting from May 2017 all UPS ST/SR series from 10 to 40KVA are equipped with new Thermal Sensor Protection cables mounted on inverter output card. This document is also a guide in case you need to add the new Protection in a UPS manufactured before May 2017 (Retrofit).

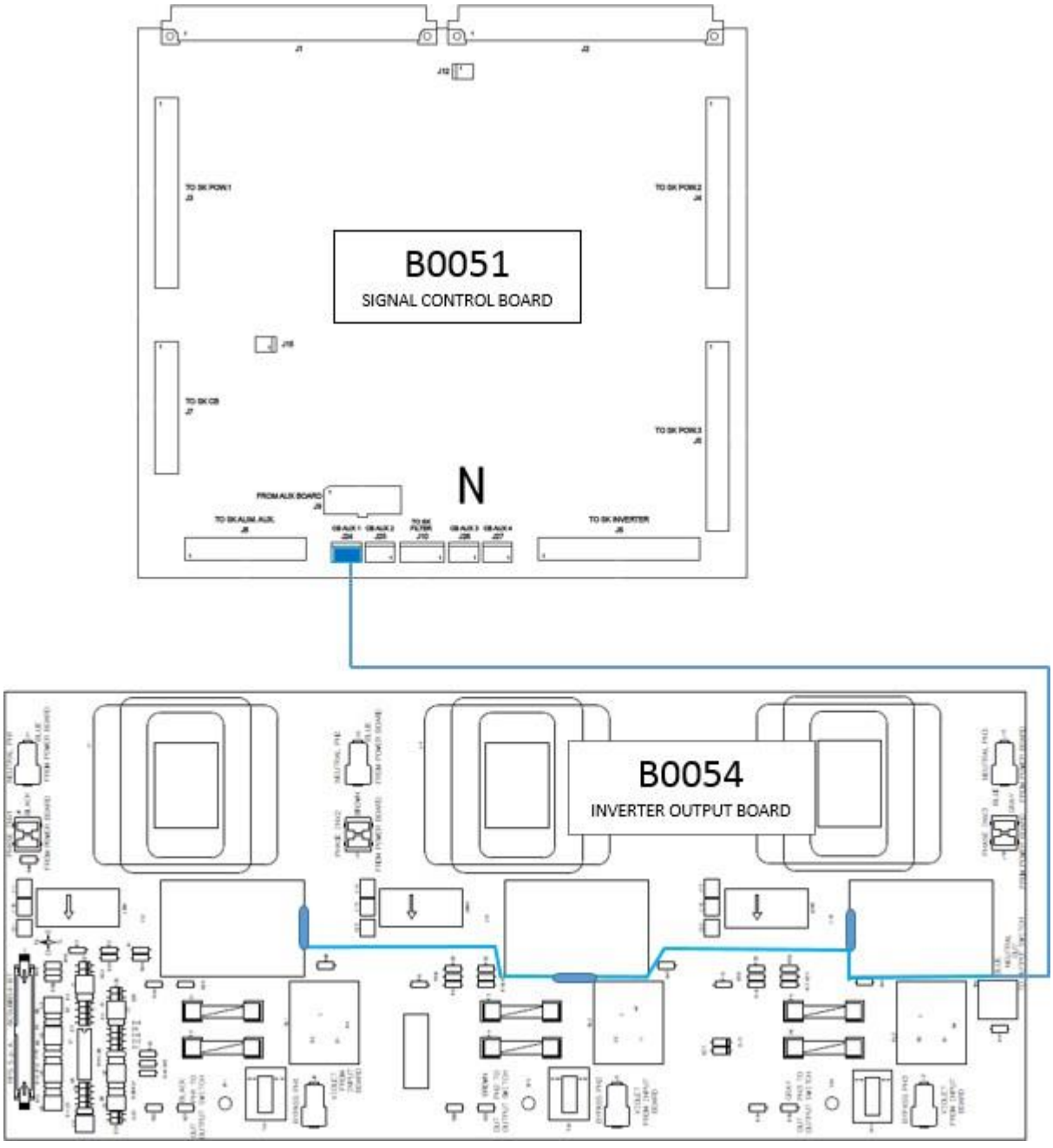


Fig. 1 Thermal sensor connection 10-12kVA (15-20kVA)

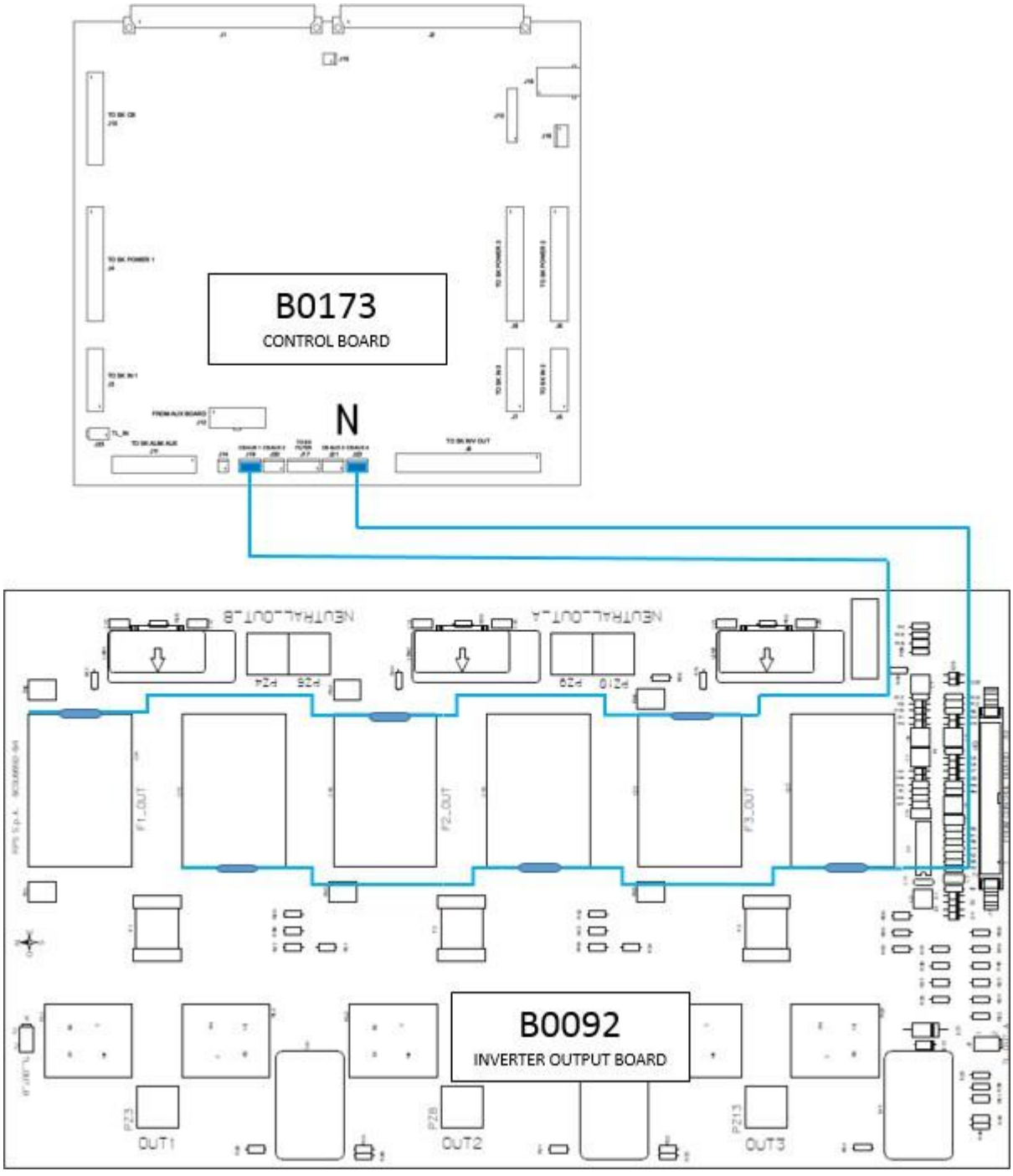


Fig. 2 Thermal sensor connection 30 -40kVA

This manual must be used in addition to the Service Manuals:

RM101 (Service Manual Saturn & Sirius 10-20 kVA)

and

RM102 (Service Manual Saturn & Sirius 30-40kVA)

This manual should be used together with the following documents:

UPS 10-40kVA Wiring Diagram

Below is a list of new boards equipped with sensors (on Output inverter card) and set from factory (Signal control card) to work with the AC Thermal capacitors Protection feature:

B0054-05B Output Inverter Card 10-12
B0054-06B Output Inverter Card 15-20 (3/1)
B0054-07B Output Inverter Card 15-20 (3/3)
B0092-01D Output Inverter Card 30
B0092-02E Output Inverter Card 40

B0051-01D Signal Control Card 10-20
B0173-01D Signal Control Card PLD 30
B0173-02D Signal Control Card PLD 40

The firmware version necessary to enable/disable the AC Thermal Capacitors Protection feature is:

FW022_0233 for FW_MC (and following versions…)

The following instructions show:

- **Chapter 2-3** How to disable the Thermal Protection alarm [L49] OUT CAPACITORS OVERTEMP in case of temporary need

- **Chapter 4-5** How to replace the inverter output board with a new board equipped with Thermal Protection

- **Chapter 6** How to add the Retrofit cable kit (code 6R_MST20TS0-A) if the UPS:

  10-20kVA is equipped with boards:

  B0054-05A Output Inverter Card 10-12
  B0054-06A Output Inverter Card 15-20 (3/1)
  B0054-07A Output Inverter Card 15-20 (3/3)

- **Chapter 7** How to add the Retrofit cable kit (code 6R_MST40TS0-A) if the UPS:

  30-40kVA is equipped with boards:

  B0092-01C Output Inverter Card 30
  B0092-02D Output Inverter Card 40

All the operations listed below must be carried out while the UPS is completely disconnected from the mains and batteries and with all disconnectors and fuse holders open.

Read this manual carefully before carrying out any operation.

CAUTION

ALL OPERATIONS DESCRIBED IN THIS MANUAL MUST ONLY BE CARRIED OUT BY PERSONNEL WHO ARE QUALIFIED AND PROPERLY TRAINED.

2 How to temporary disable the Alarm [L49] (OUT CAPACITORS OVERTEMP) on 10 -20 kVA

If it should be temporary necessary to disable the alarm L49 (due to a malfunction of Thermal Protection cable) it can be done in two different ways:

2.1 HARDWARE

Remove the cable from J24 on Signal control card B0051 and put a jumper across pin 1-2:

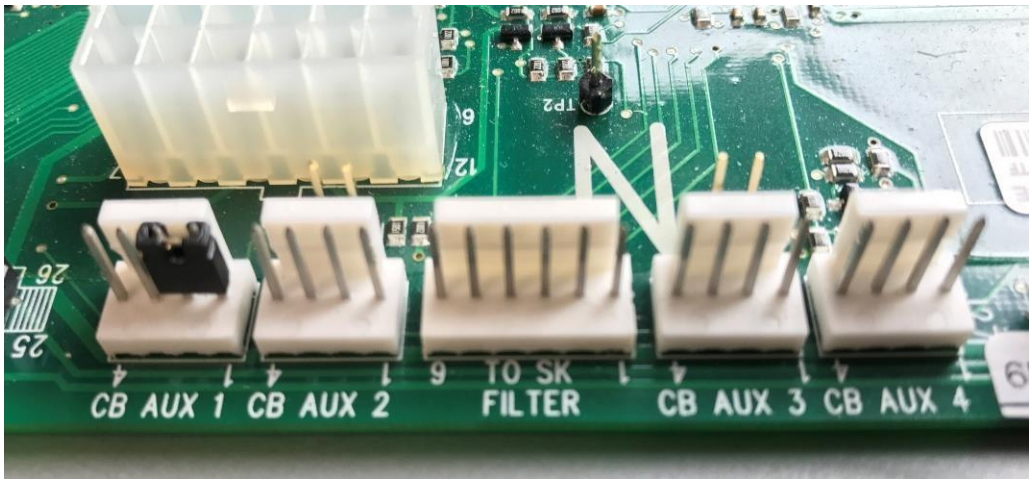


Fig. 3

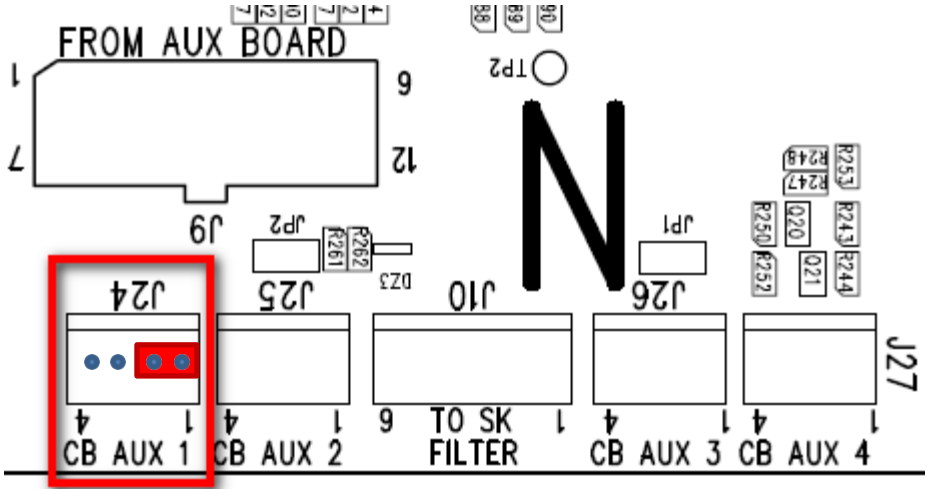


Fig. 4

In this way the Thermal Protection circuit is always closed (sensors control is disabled).

⚠The UPS is temporary not protected in case of over temperature event on output AC capacitors⚠

2.2 SOFTWARE

Disable the Thermal Protection function using software UCOM GP (GPConfigurator).

Read the instruction written at page 26 (**disabling** the function as per picture below):

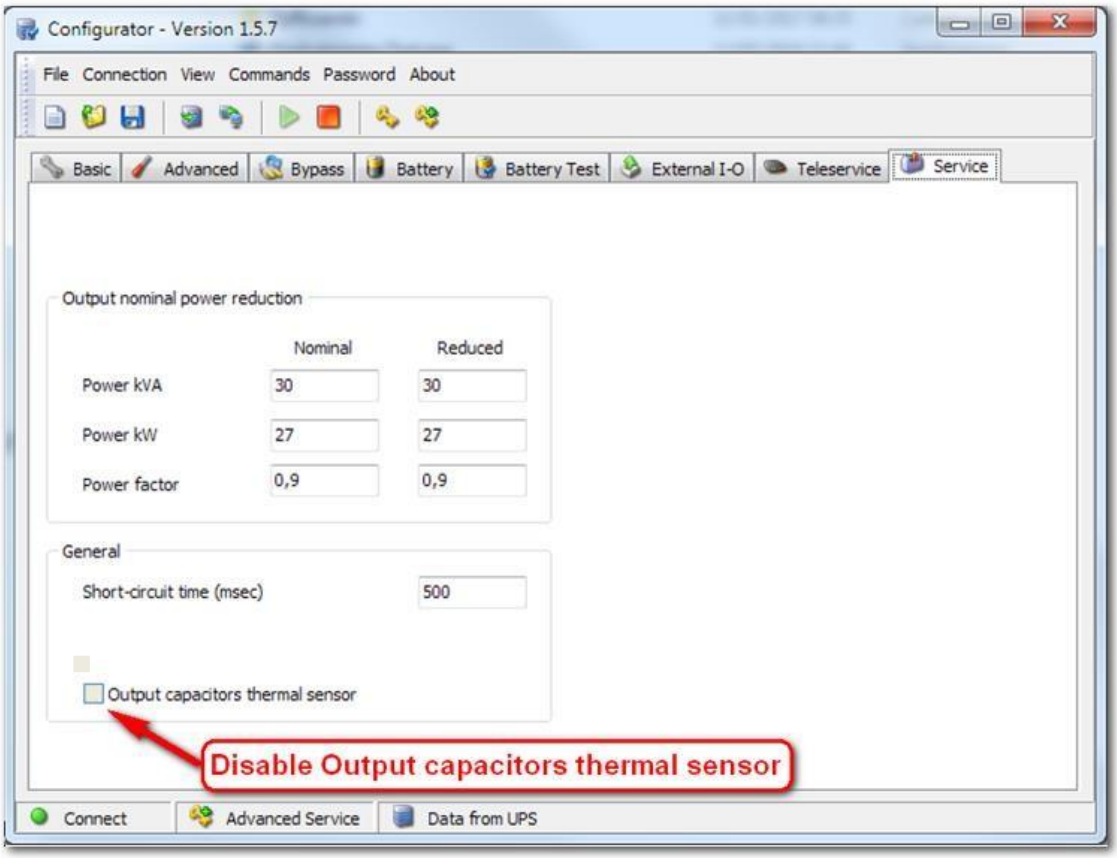


Fig. 5

⚠ The UPS is temporary not protected in case of over temperature event on output AC capacitors ⚠

3 How to temporary disable the Alarm [L49] (OUT CAPACITORS OVERTEMP) on 30 -40 kVA

If it should be temporary necessary to disable the alarm L49 (due to a malfunction of Thermal Protection cable) it can be done in two different ways:

3.1 HARDWARE

1. Remove the cables from J19 and J22 on Signal control card B0173 and put a jumper across pin 1-2 on both connectors (or across the one connected to the damaged cable, maybe only one of the two):

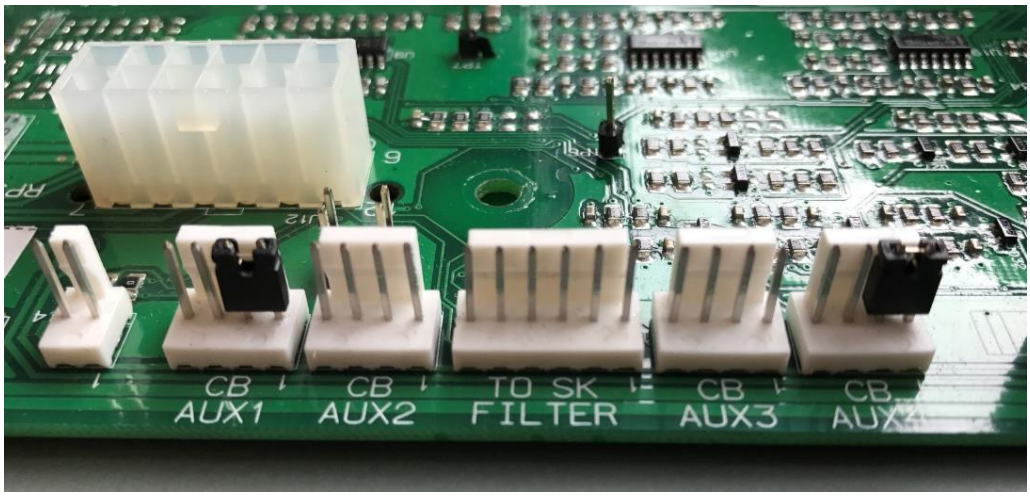


Fig. 6

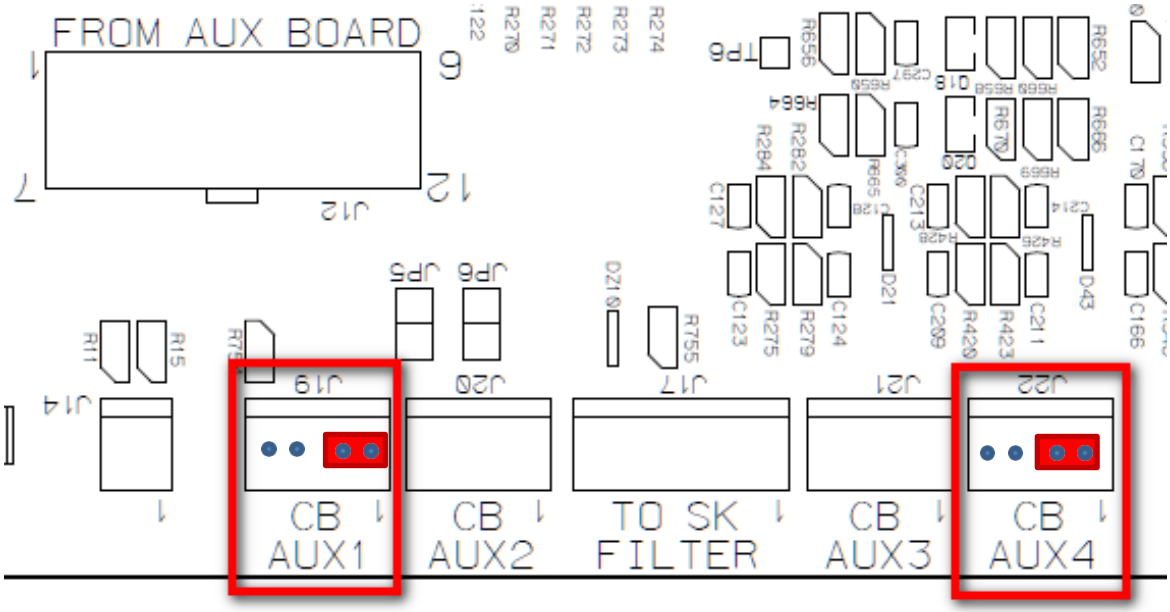


Fig. 7

In this way the Thermal Protection circuit is always closed (sensors control is disabled).

⚠ The UPS is temporary not protected in case of over temperature event on output AC capacitors ⚠

3.2 SOFTWARE

Disable the Thermal Protection function using software UCOM GP (GPConfigurator).

Read the instruction written at page 26 (**disabling** the function as per picture below):

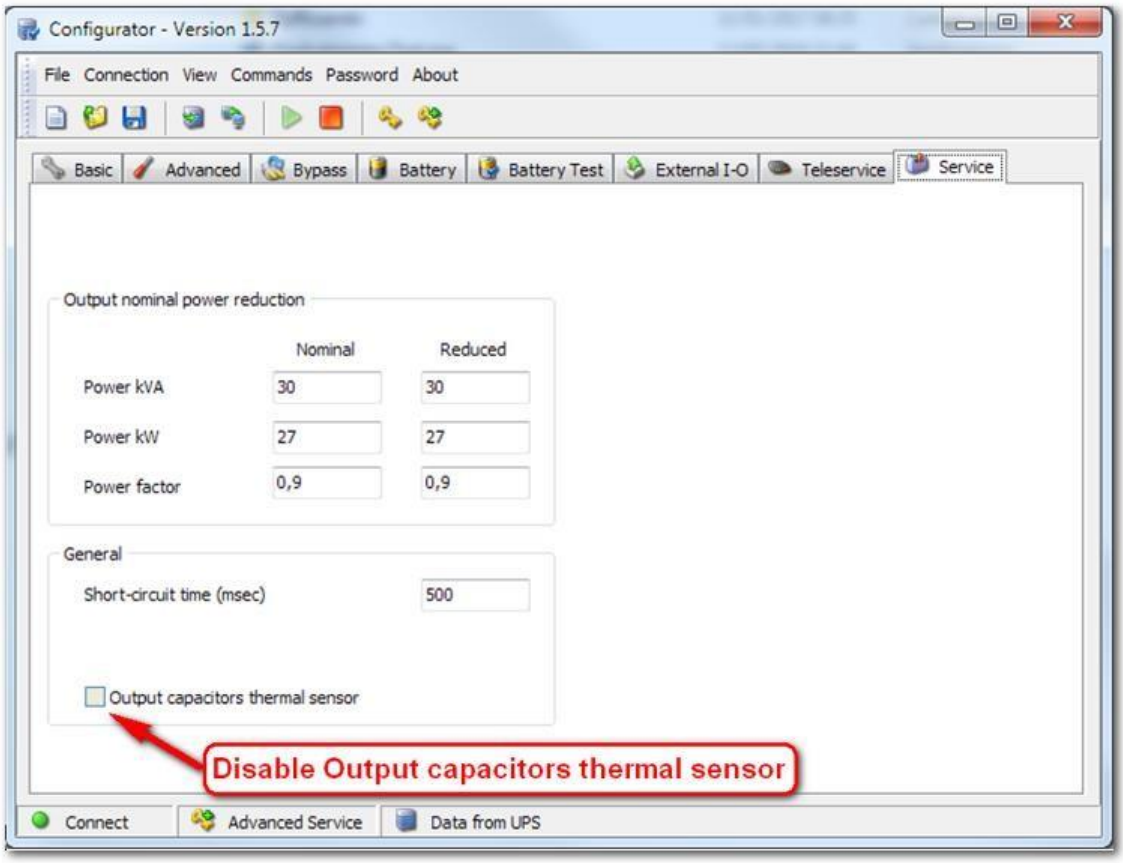


Fig. 8

⚠ The UPS is temporary not protected in case of over temperature event on output AC capacitors ⚠

4 Replacement of the board B0054 (10-20 kVA)

If you need to replace an Inverter Output card with a new board equipped with Thermal Protection Sensors (enabling the Thermal Protection feature) you can replace the board B0054 with a new one:

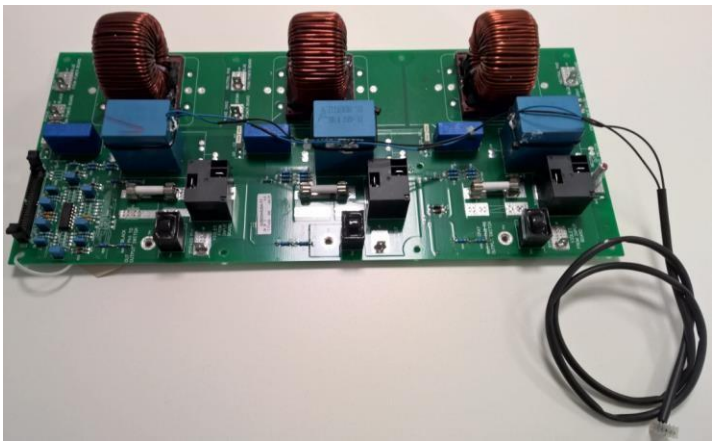


Fig. 9 10-12 kVA

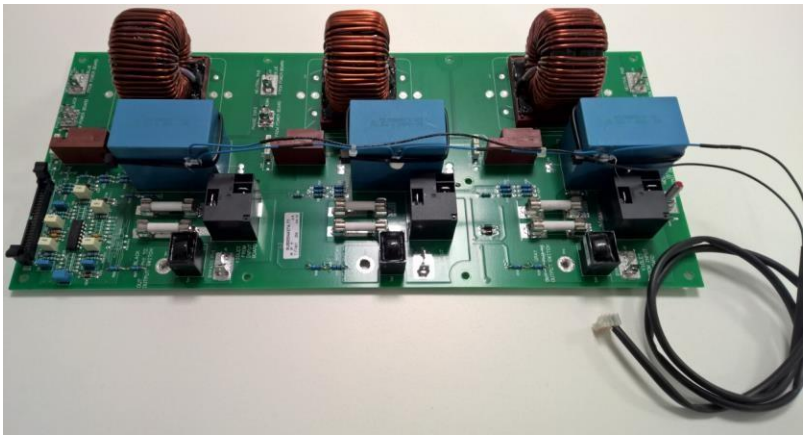


Fig. 10 15-20 kVA

Connect the Thermal cable to J24 on Signal Control card B0051 (10-20kVA) as per drawing Fig. 1 at page 3:

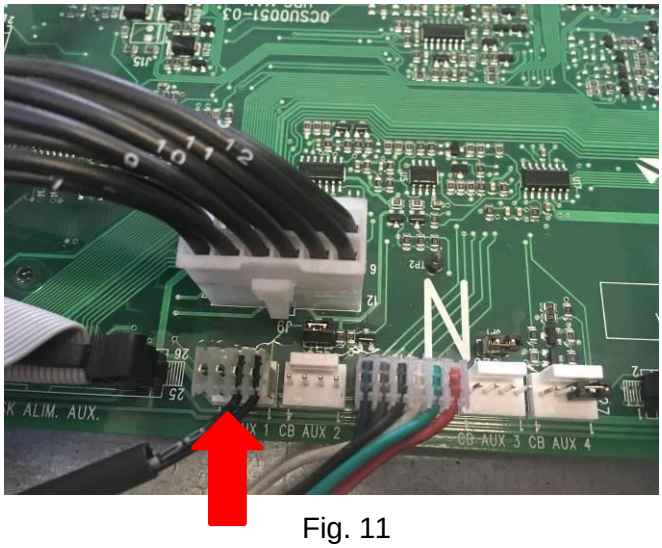


Fig. 11

Put a jumper on JP1, JP2 and between pins 1-2 (connector J27) on Signal Control card B0051 (10-20kVA)

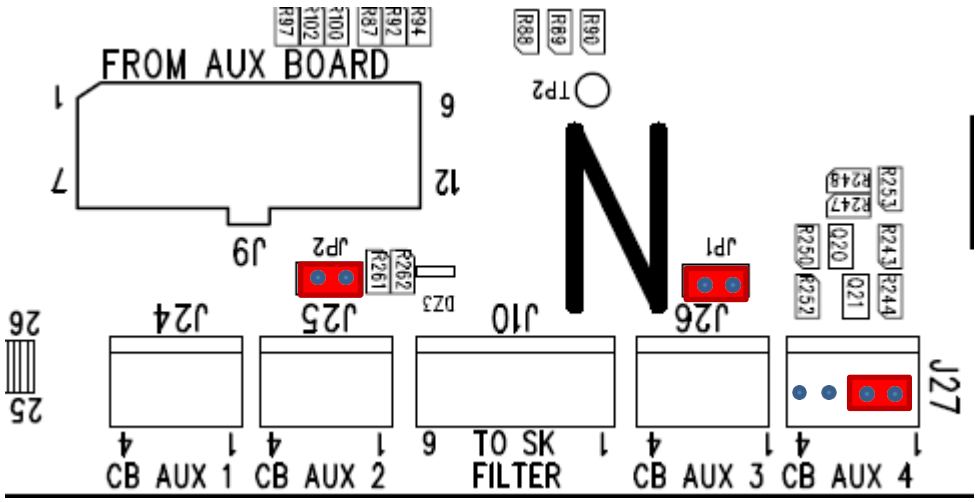


Fig. 12

The firmware version necessary to enable/disable the AC Thermal Capacitors Protection feature is:

FW022_0233_for MC (and following versions…)

Should the upgrade of the firmware be necessary please refer to 0MNSWKPRG2L.. (MAN PROGRAMMING KIT 2L)

Using the software GpConfigurator (included in UCOM GP tools) enable the **Output capacitors thermal sensor** option.

Read the instruction Ucom Gp Configurator - SOFTWARE SETTINGS at page 26

At the end of the software settings the UPS will be equipped and protected by over temperature on output AC capacitors.

5 Replacement of the board B0092 (30-40 kVA)

If you need to replace an Inverter Output card with a new board equipped with Thermal Protection Sensors (enabling the Thermal Protection feature) you can replace the board B0092 with a new one:

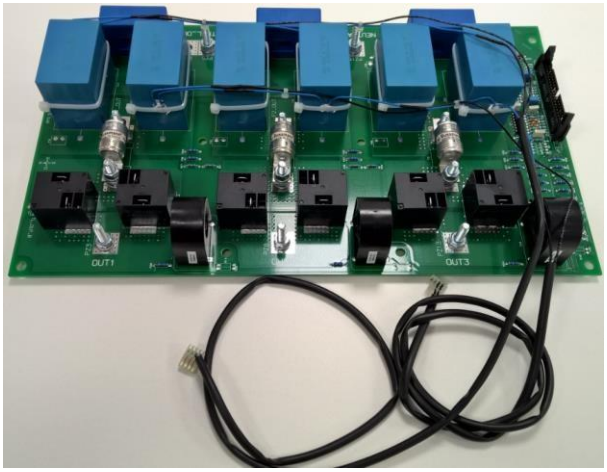


Fig. 13 30-40 kVA

Connect the Thermal sensors cables to J19 and J22 on Signal Control card B0173 (30-40kVA) as per drawing Fig. 2 at page 4 (you can connect the cables equally on both connectors) .

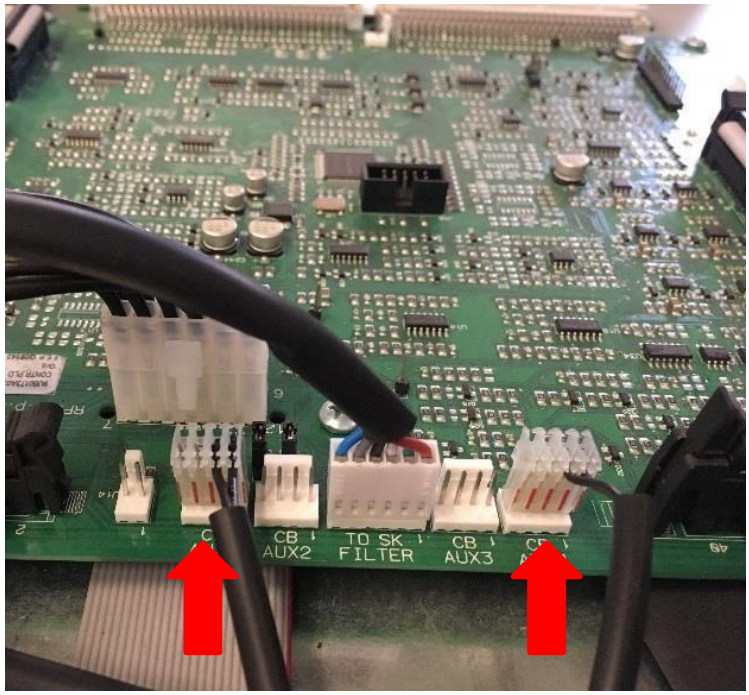


Fig. 14

Put a jumper on JP5 and JP6 on Signal Control card B0173 (30-40kVA)

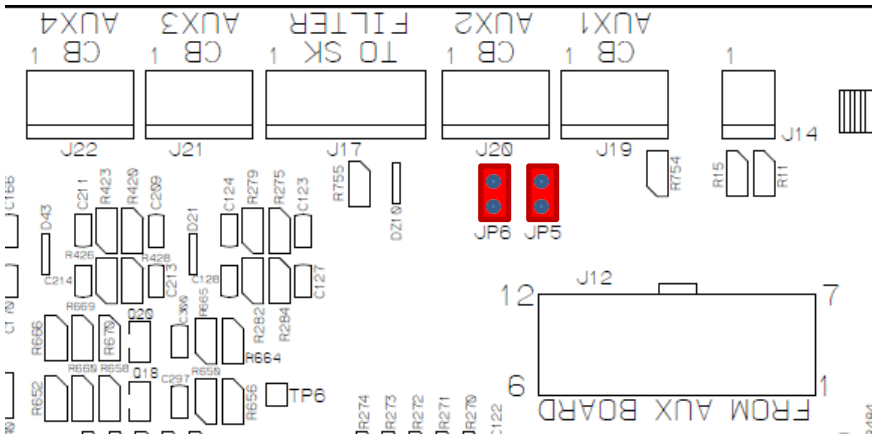


Fig. 15

The firmware version necessary to enable/disable the AC Thermal Capacitors Protection feature is:

FW022_0233_for FW MC (and following versions…)

Should the upgrade of the firmware be necessary please refer to 0MNSWKPRG2L.. (MAN PROGRAMMING KIT 2L)

Using software GpConfigurator (included in UCOM GP tools) enable the **Output capacitors thermal sensor** option.

Read the instruction Ucom Gp Configurator - SOFTWARE SETTINGS at page 26

At the end of the software settings the UPS will be equipped and protected by over temperature on output AC capacitors.

6 Replacement / RETROFIT with the use of Thermal Protection Sensor kit (code 6R_MST20TS0-A) for 10-20kVA

Use the kit provided by the manufacturer only: any use not conforming to specifications may cause malfunctioning or break the equipment

The cable kit must be used only on Inverter Output card B0054:

B0054-05A Output Inverter Card 10-12

B0054-06A Output Inverter Card 15-20 (3/1)

B0054-07A Output Inverter Card 15-20 (3/3)

equipped with AC capacitor box (not axial capacitors).

The kit can be used also to repair the board B0054 (equipped with thermal protection) in case of damage on thermal sensors.

6.1 KIT COMPONENTS LIST

Verify the contents of the kit:

- 1 cable 0CBSU0372;
- 3 Cable clamps (295*3,6 mm);
- 3 Jumper;

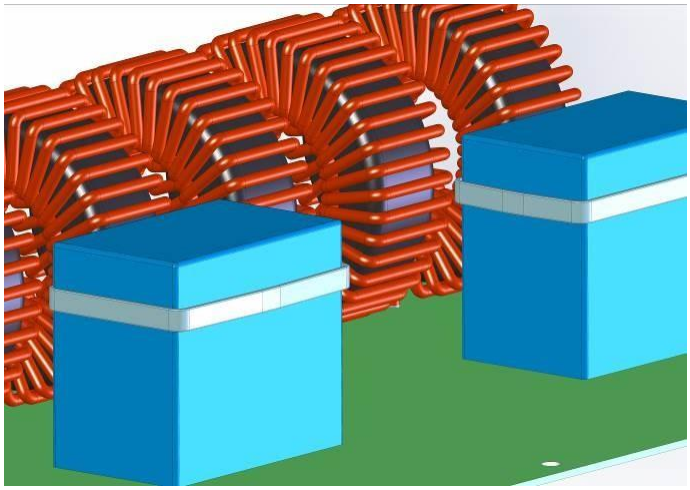
If all parts are included inside the box it's possible start to remove the Inverter Output board B0054 from the UPS and modify the board positioning the thermal sensors upon the capacitors (C12, C15, C18).

Note: the use of Dow Corning 744RTV WHITE SILICON ADHESIVE glue **(not included)** is highly suggested

6.2 Instruction for 10-12kVA

STEP 1

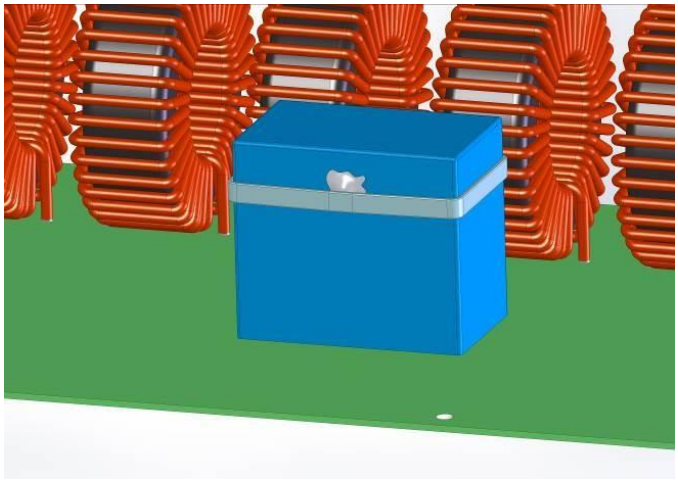
Fix the cable clamps around the capacitors C12, C15 and C18 mounted on inverter output card B0054. Tighten lightly the cable clamps.



STEP 2

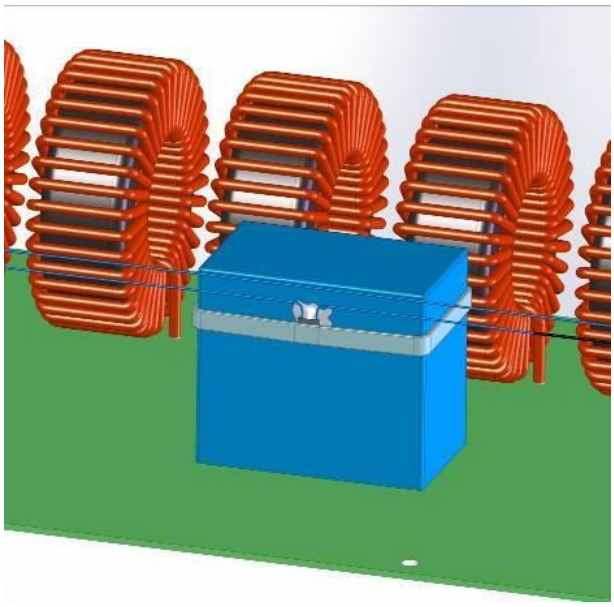
Note: the connector must come off the board on opposite side of the flat cable connection J1
(see Fig. 9 10-12 kVA pag.11)

The thermal sensor in the middle of the cable (1 of 3) must be located upon capacitor C15 on the opposite side of the output filter inductors. Put a drop of Dow Corning glue in the middle of the capacitor (see the drawing below):



STEP 3

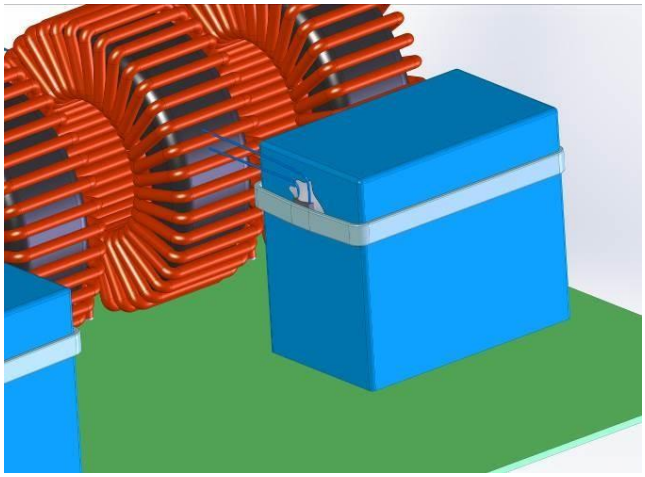
Put the sensor upon the glue and, keeping the wires under the top line of the capacitor, check if it's necessary to tighten further the cable clamps:



⚠ **Warning:** Check carefully if the sensor is properly adhered to the capacitor. ⚠

STEP 4

Proceed with the positioning of the other two thermal sensors on the **short** surface of the capacitors C12 and C18 (see picture below). Check if it's necessary to further tighten the cable clamps. After positioning the cable wait until the glue on the capacitors has hardened. Do not stress the cable until the sensors are properly stuck on the capacitors.



STEP 5

CABLE CONNECTION

Put the modified board in its original position inside the UPS.
Connect the Thermal sensor cable to J24 on signal control card B0051 as shown on picture below:

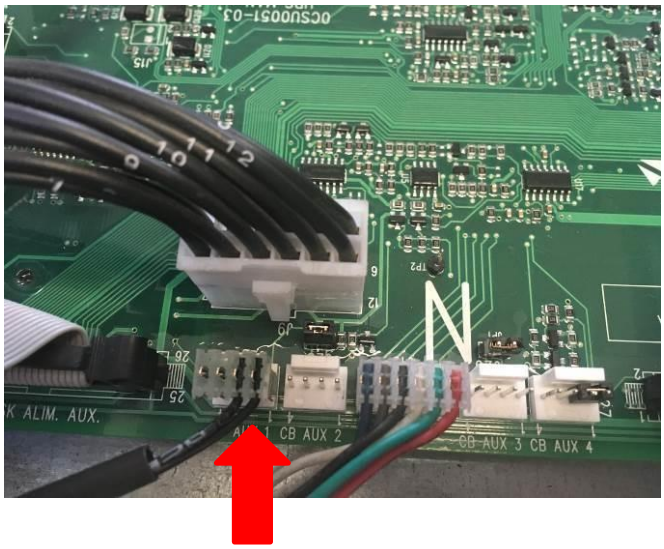


Fig. 16

STEP 6

JUMPER POSITIONING

Proceed with the positioning of the JUMPERs on the signal control card B0051:

- Put a JUMPER on JP1;
- Put a JUMPER on JP2;
- Put a JUMPER across pin 1 and 2 on connector J27.

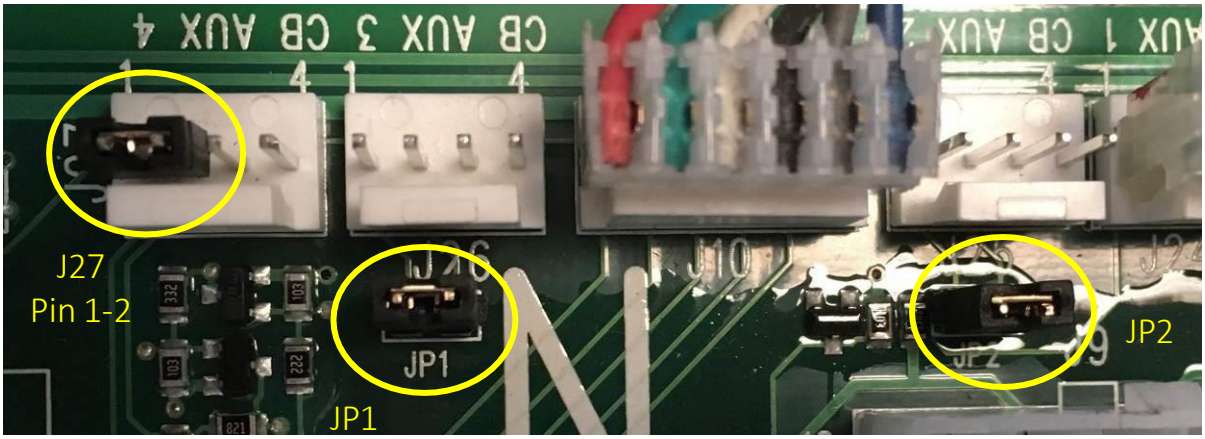


Fig. 17

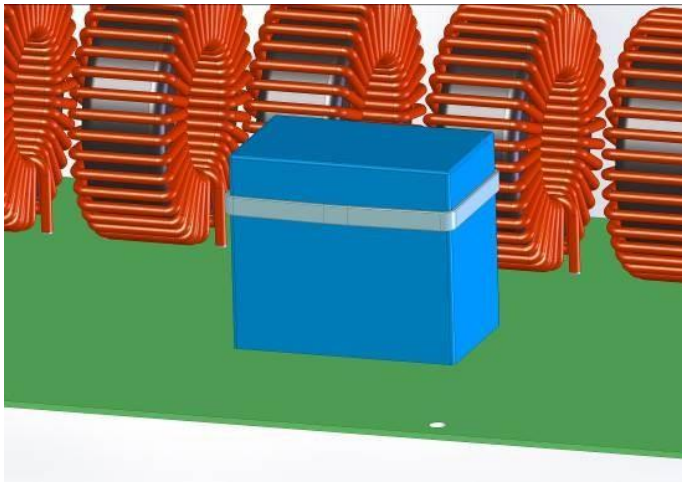
STEP 7

Enable the Thermal Protection function by software following the instruction at page 26.

6.3 Instruction for 15 -20kVA

STEP 1

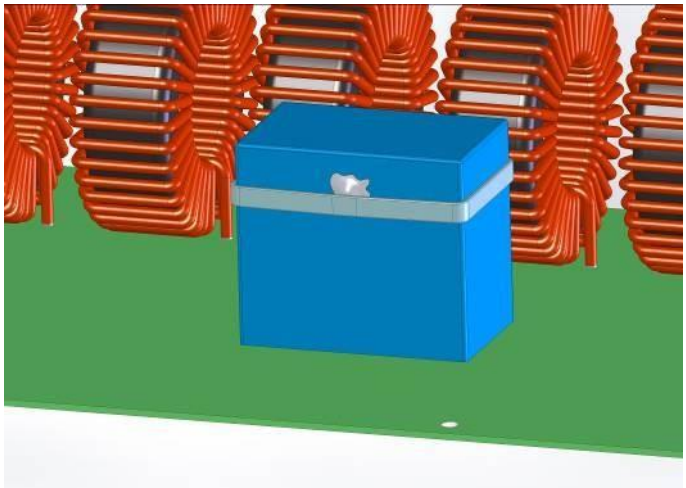
Fix the cable clamps around the capacitors C12, C15 and C18 mounted on inverter output card B0054. Tighten lightly the cable clamps. See picture below:



STEP 2

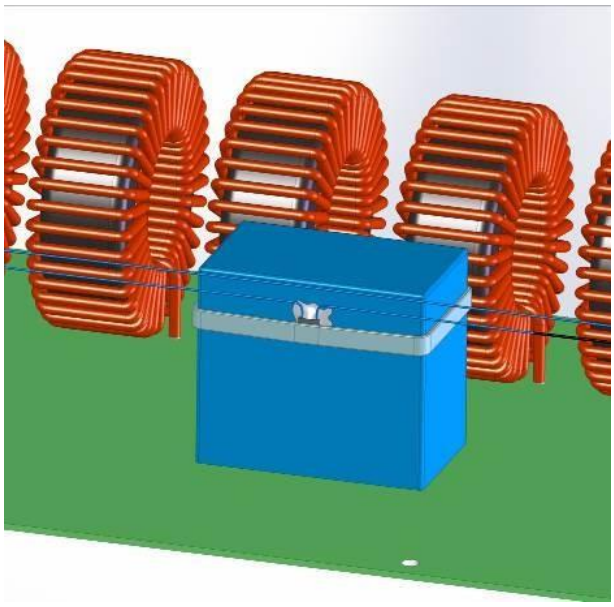
Note: the connector must come out from the board in the opposite side of the flat cable connection J1 (see Fig. 10 15 -20 kVA pag.11)

The thermal sensor in the middle of the cable (1 of 3) must be located upon capacitor C15 on the opposite side of the output filter inductors. Put a drop of Dow Corning glue in the middle of the capacitor (see the drawing below):



STEP 3

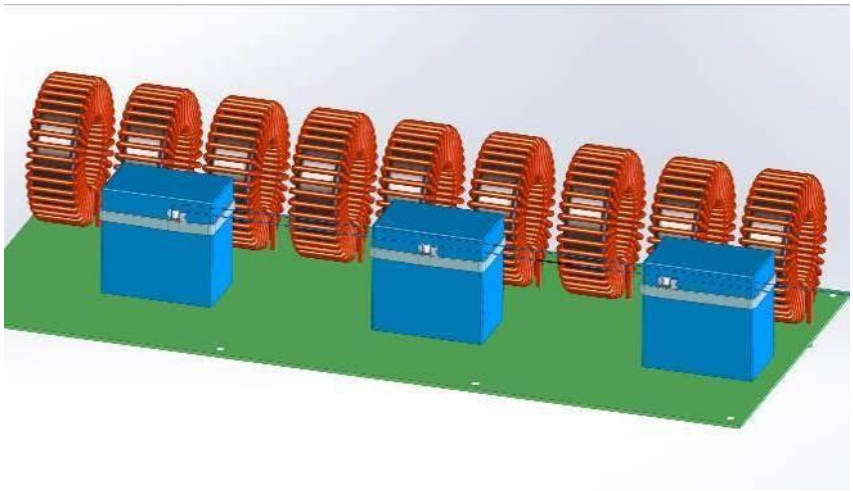
Put the sensor upon the glue and, keeping the wires under the top line of the capacitor, check if it's necessary to further tighten the cable clamps:



⚠ **Warning:** Check carefully if the sensor is properly adhered to the capacitor. ⚠

STEP 4

Proceed with the positioning of other two thermal sensors on the surface of the capacitors C12 and C18. All sensors must be stuck in the same side of the capacitors (see picture below). Check if it's necessary to further tighten the cable clamps. After positioning the cable wait until the glue on the capacitors has hardened. Do not stress the Thermal sensor cable till the sensors will be not properly stuck on capacitors.



STEP 5

CABLE CONNECTION

Put the modified board in its original position inside the UPS.
Connect the Thermal sensor cable to J24 on signal control card B0051 as shown on picture below:

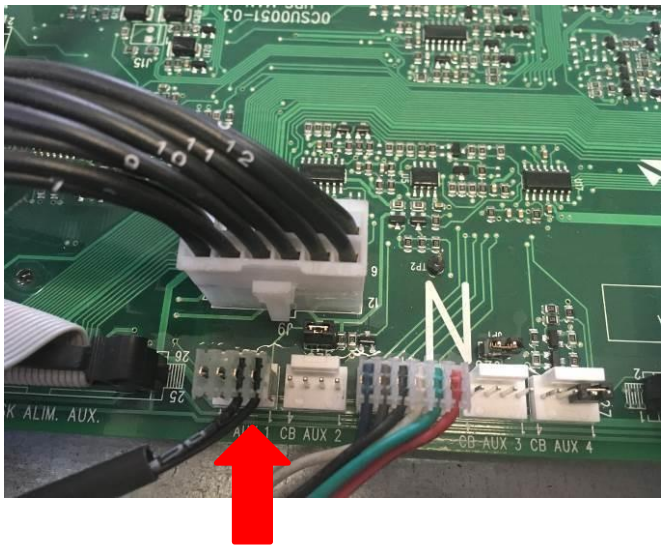


Fig. 18

STEP 6

JUMPER POSITIONING

Proceed with the positioning of the JUMPER on signal control card B0051:

- Put a JUMPER on JP1;
- Put a JUMPER on JP2;
- Put a JUMPER across pin 1 and 2 on connector J27.

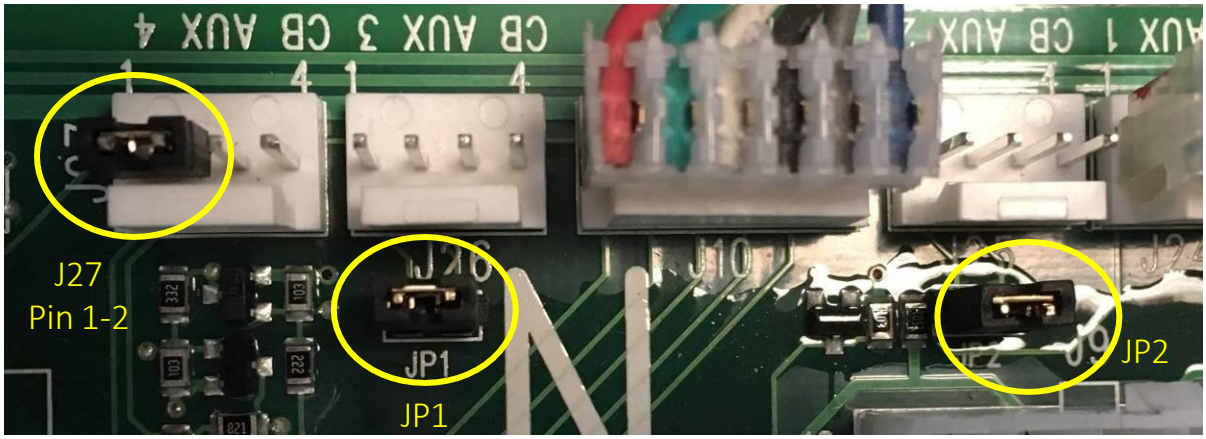


Fig. 19

STEP 7

Enable the Thermal Protection function by software following the instruction at page 26.

7 Replacement / RETROFIT with the use of Thermal Protection Sensor kit (code 6R_MST40TS0-A) for 30-40kVA

Use the kit provided by the manufacturer only: any use not conforming to specifications may cause malfunctioning or break the equipment

The cable kit must be used on Inverter Output card B0092:

B0092-01C Output Inverter Card 30
B0092-02D Output Inverter Card 40

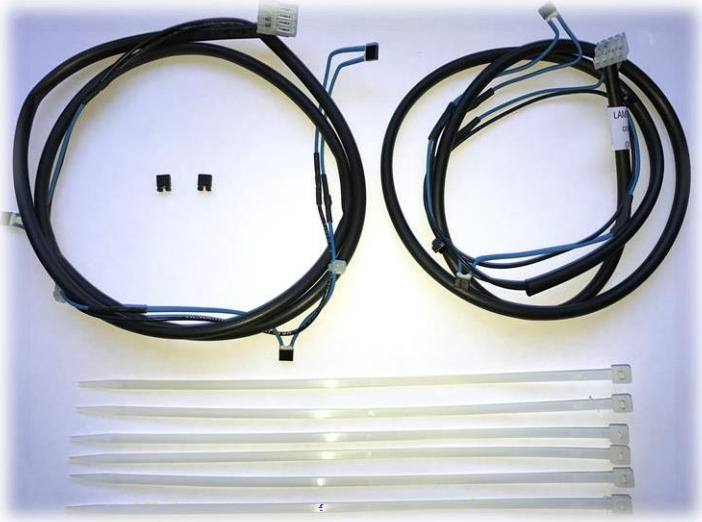
equipped with AC capacitor box (not axial capacitors).

The kit can be used also to repair the board B0092 (equipped with thermal protection) in case of damage on thermal sensors.

7.1 KIT COMPONENTS LIST

Verify the contents of the kit:

- 2 cables 0CBSU0372;
- 6 Cable clamps (295*3,6 mm);
- 2 Jumper;



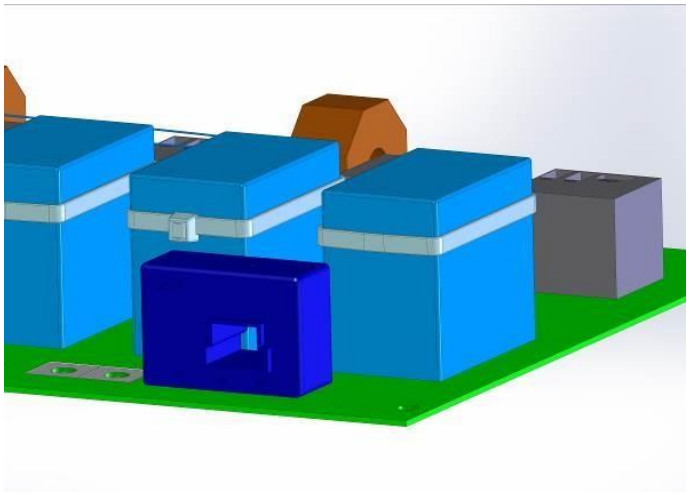
If all parts are included inside the box you can start to remove the Inverter Output board B0092 from the UPS and modify the board with the positioning of the thermal sensors upon the capacitors (C14, C15, C18, C19, C22, C23).

Note: the use of Dow Corning 744RTV WHITE ADHESIVE glue **(not included)** is highly suggested

7.2 Instruction for 30-40kVA

STEP 1

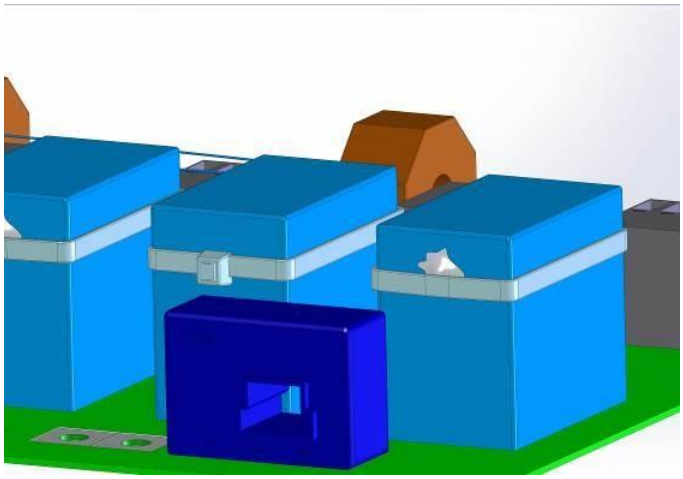
Fix the Cable clamps around the capacitors C14, C15, C18, C19, C22 and C23 mounted on inverter output card B0092. Tighten lightly the cable clamps. See picture below:



STEP 2

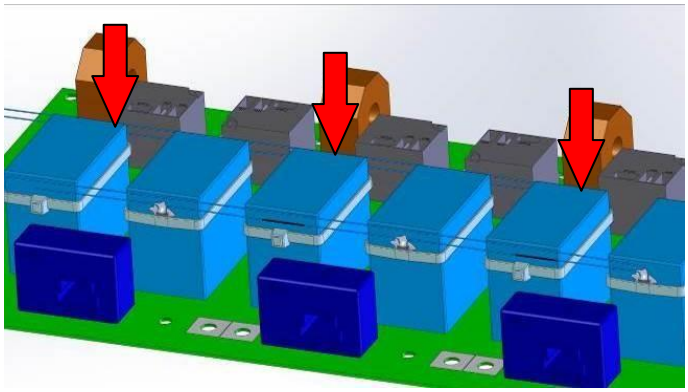
Note: the connectors must come out from the board on the same side of flat cable connection J1
(see Fig. 13 30-40 kVA pag.13)

Take one of the two cables. The thermal sensor in the middle of the cables must be located upon capacitor C18 (long side) on the opposite side of the output filter inductors. Put a drop of Dow Corning glue in the middle of the capacitor (see the drawing below):



STEP 3

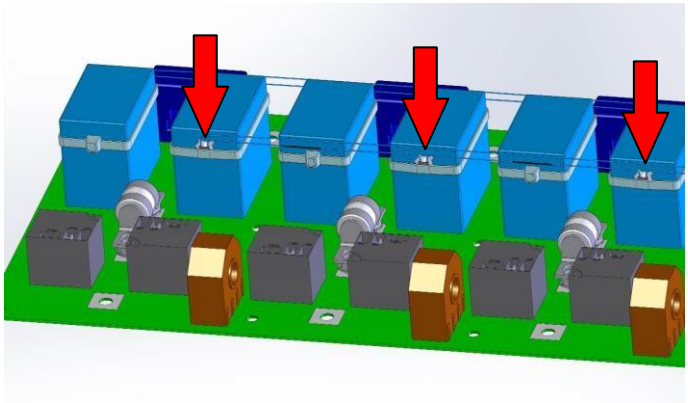
Put the middle sensor upon the glue and, keeping the wires under the top line of the capacitor, check if it's necessary to further tighten the cable clamps. Repeat the procedure to fix the sensors on capacitors C14 and C22:



⚠ **Warning:** Check carefully if the sensors are properly adhered to the capacitors. ⚠

STEP 4

Take the second cable and repeat the procedure described at STEP 3 to fix the sensors upon capacitors C15, C19 and C23 in the opposite side of C14, C18 and C22 capacitors.



Note: the connectors must come out from the board on the same side of flat cable connection J1 (see Fig. 13 30-40 kVA pag.13).

After positioning the cable wait until the glue on the capacitors has hardened. Do not stress the Thermal sensor cable till the sensors will be not properly stuck on capacitors.

STEP 5

CABLE CONNECTION

Put the modified board in its original position inside the UPS.
Connect the Thermal sensor cable to J19 and J22 on signal control card B0173 (you can connect the cables equally on both connectors) as shown on picture below:

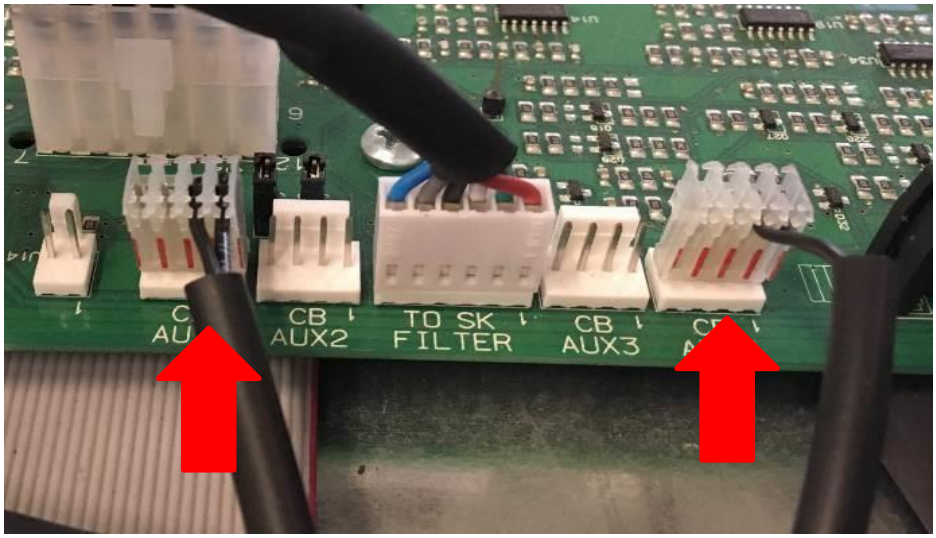


Fig. 20

STEP 6

JUMPER POSITIONING

Proceed with the positioning of the JUMPERs on signal control card B0173:

- Put a JUMPER on JP5;
- Put a JUMPER on JP6;

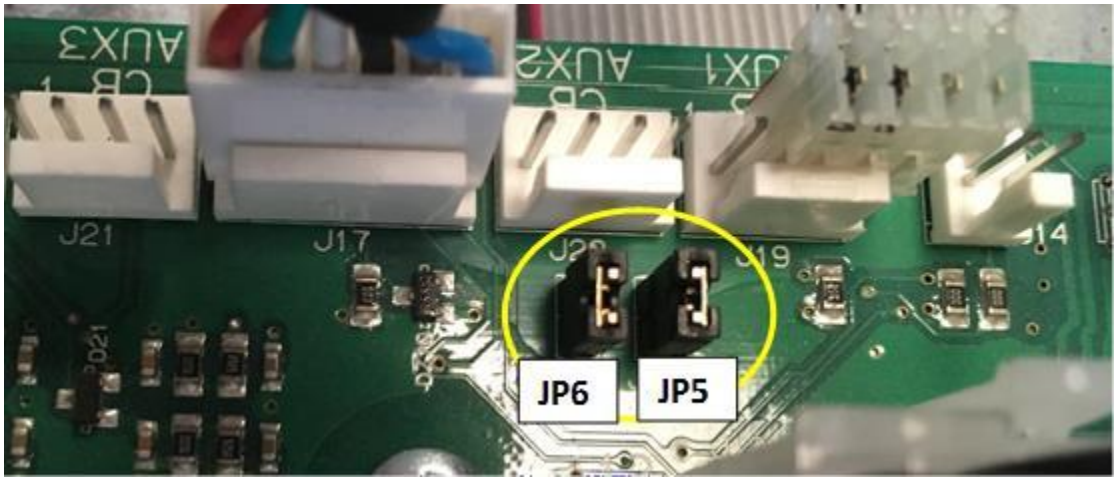


Fig. 21

STEP 7

Enable the Thermal Protection function by software following the instruction at page 26.

8 Ucom Gp Configurator - SOFTWARE SETTINGS

In order to activate the Thermal Sensor Protection by software it will be necessary to use full license UCOM GP software (GP Configurator 1.5.7 or following releases).

1) Select Configurator.
2) Connect the pc to UPS using USB cable
3) Once connected enable Service folder (password for Advanced Service Level is required)
4) Enable **Output capacitors thermal sensor** function in Service folder
5) Upload the UPS with new configuration just created.