

# Standard Coupling Unit SCF-0360-6G

- Manual -



# Manual

## Standard Coupling Unit 500 MHz - 6000 MHz SCF-0360-6G

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## Alteration Chart

Release no.	Version	Unit state	Description of changes	Date	Editor
1	1.0	00	first edition	2024-06-11	D. Sonner
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## **1 General**

### **1.1 General description**

This manual describes the Standard Coupling Unit named "SCF-0360-6G" unit state 00 and higher.

The unit is designed for the development, production and verification of electronic components and devices in industrial and laboratory environments. Use the unit only for its designated purpose. Note all information at the datasheet.

The Standard Coupling Unit consists of a display with keyboard, UP/DOWN-keys, a power supply, a LAN-switch with 4 ports, a control card as well as hybrid couplers, variable semiconductor attenuators and combiners and LEDs for input power level indication.

The control card BK-517 interprets the commands from the manual control, the RS-232-interface and the LAN-interface and controls the attenuators.

### **1.2 Delivered parts**

- Standard Coupling Unit
- Power cable
- Operating manual on CD

### **1.3 Safety precautions**

During operation of the unit the general safety precautions according to VDE 0100, VDE 0800 and VDE 0805 are to be obeyed.

**Attention:** Before starting make sure the unit is standing safely or is build-in safely. Note the installation instructions for mounting the unit in a 19" Rack.

The power switch S1 has to be easily operable at any situation!

The operating temperature of the unit has to be between 0 °C and +50 °C.

In order to avoid touching the voltage loaded parts,  
**do not open** the unit!

Repairs of the device are permitted to authorized personnel only.  
It is absolutely forbidden to use defective units!

The device must be grounded at all times!

### 1.4 Components of the front panel

- 1 RF-connections (OUT BTS1/2, OUT BTS3/4, OUT BTS5/6)
- 2 UP/DOWN-keys for the variable attenuators
- 3 Power level indicators (look at chapter 2.2)
- 4 Display
- 5 Keypad
- 6 Power switch S1 for 230V AC-supply with integrated control lamp
- 7 RF-connections of the combiners

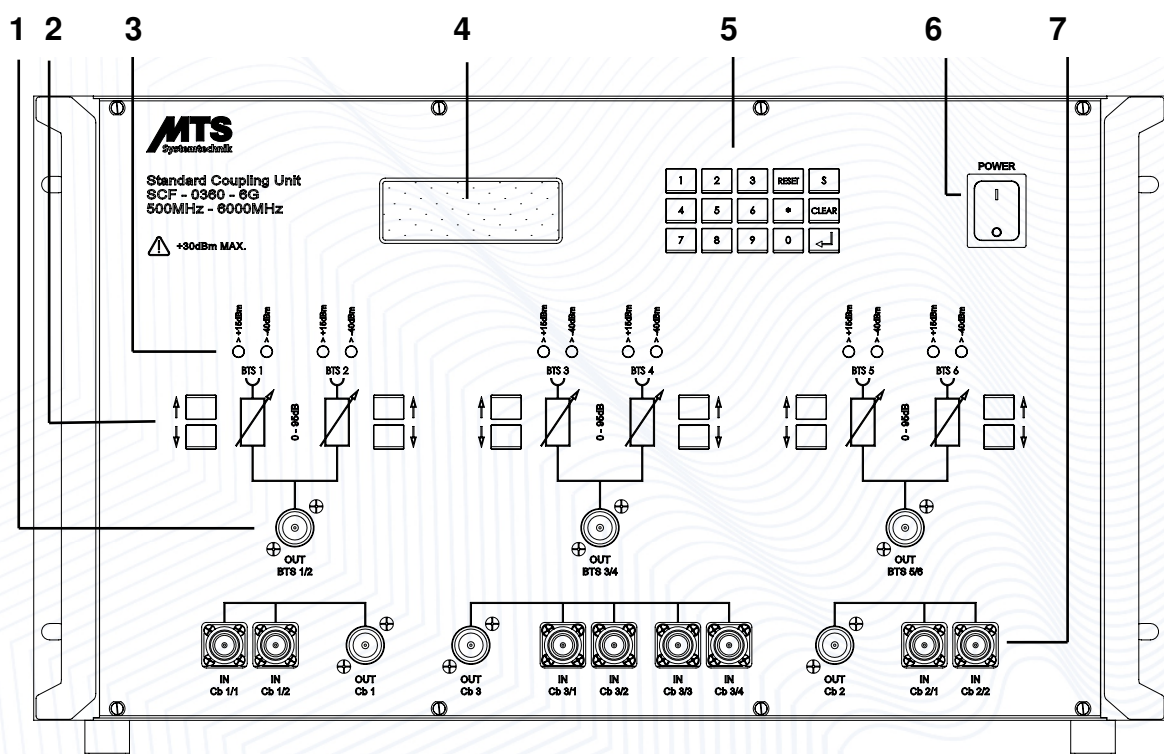


Illustration 1: Front view SCF-0360-6G



### 1.5 Components of the rear panel

- 1 Appliance plug with integrated fuses F1 and F2
- 2 Ground connector
- 3 RF-connections of BTS1 – BTS6
- 4 Control card BK-517 with RS-232-interface
- 5 LAN-interface with integrated LAN-switch

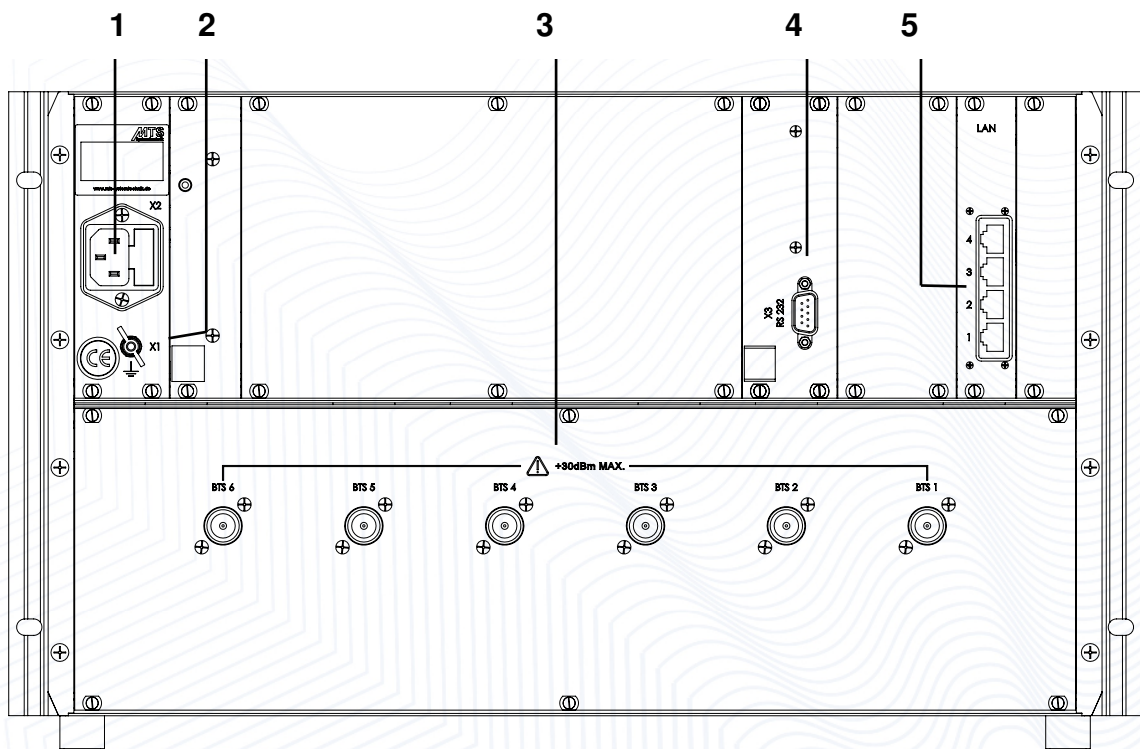


Illustration 2: Rear view SCF-0360-6G

## 1.6 Starting up and operating / connections

Before using the unit following connections have to be done:

### Ground-connection

The unit has to be grounded expertly at the ground connector (look at illustration 2, position 2). A cable with a conductor cross-section of minimum 1.5 mm<sup>2</sup> has to be used.

### Power supply

The power supply voltage range of the unit is 100 V - 240 V at 50 Hz / 60 Hz at connector X2 (look at illustration 2, position 1).

### RF-connections

Cables and RF-connectors N male with an impedance of 50  $\Omega$  are required. Cables can be connected without RF-power during the operation.

### Interface connection

In order to operate the device by remote control, a data cable has to be connected.

**Attention:** Before connecting the data cable, the device has to be shut off at power switch S1.

Check all connections for correct hook up, before turning the power on.



## 1.7 Starting up and operating / turning off and turning on

You can do a reset of the unit by switching off the power switch S1 at the front panel. After waiting at least 30 seconds and turning on the unit it will boot again and then it will work normally.

On starting the unit or returning of power (if the power switch is on) all variable attenuators will switch to 95 dB.

**Attention:** Before starting make sure the unit is standing safely or is build-in safely. Note the installation instructions for mounting the unit in a 19" Rack.

The power switch S1 has to be easily operable at any situation!

The operating temperature of the unit has to be between 0 °C and +50 °C.

## 2 Controlling of the unit

After switching power on the display shows the manufacturer for a short time. Then the device automatically starts the operating mode. Now it is possible to control the unit by the keypad, the UP/DOWN-keys, the RS-232-interface or the Ethernet-interface.

### 2.1 Changing LOCAL to REMOTE

The unit starts at LOCAL mode. It changes into REMOTE mode automatically when receiving the first REMOTE set command. All REMOTE-interfaces have equal rights. Its commands are executed in the same order as received.

During the REMOTE mode the overview page is shown on the display and it is updated continuously.

The unit can be operated manually again at any time.

### 2.2 Power level indication for 700 MHz – 6000 MHz

The RF-input-power for BTS1 – BTS6 at the backplane is measured by detectors.

The measured level is shown at LEDs at the frontpanel above the symbols for the attenuators. Not used connectors of the BTS inputs and BTS outputs have to be terminated by 50 Ω.

#### Levels and indication

for 700 MHz - 4250 MHz:

	below	-40 ±5 dBm	LED is not illuminated
-40 ±5 dBm	to	+15 ±5 dBm	LED is illuminated green
	over	+15 ±5 dBm	LED is illuminated red

for 4250 MHz - 6000 MHz:

	below	-33 ±7 dBm	LED is not illuminated
-33 ±7 dBm	to	+22 ±7 dBm	LED is illuminated green
	over	+22 ±7 dBm	LED is illuminated red

**Attention:** If the LED of a path is illuminated red, it is necessary to prove that the input power of this path is lower than +30 dBm resp. will not exceed this level.

## 2.3 Manual operation

The manual operation is realized by the keypad. The functions of the keys and the semiconductor attenuators with their momentary states are shown on the display.

The following functions are carried out by the keypad:

ENTER (↵)	acknowledgement of the input
SET (S)	sets the attenuation value (0 - 95 dB) for the selected attenuator S + BTS-Nr. + Value + ↵
RESET	sets the attenuation value for the selected attenuator to 95 dB RESET + BTS-No. + ↵
CLEAR	sets all attenuators to maximum attenuation (95 dB) CLEAR + ↵
INFO(*)	shows the manufacturer address, firmware and device name

The attenuators are assigned to BTS inputs at the rear panel,  
e. g. attenuator 1 to BTS1.

The following functions are carried out by the UP/DOWN-keys:

↑	increases attenuation in 1 dB steps.
↓	reduces attenuation in 1 dB steps.

The keys are assigned to related attenuators.

**Attention:** If the LED of a path is illuminated red, it is necessary to prove that the input power of this path is lower than +30 dBm resp. will not exceed this level.



## **2.4 The RS-232-interface**

The integrated RS-232-interface is laid out as a 9-pole SUB-D plug. The pins are connected according to RS-232-standard.

A zero modem cable (RX/TX crossed) is required for the connection. The recommended length of the interface cable is 15 m max..

## **2.5 Interface protocol RS-232**

The transmission of data is carried out in ASCII format.  
Start command and end command are hex signs.

Start command: STX = 0x02<sub>H</sub> (written as \02 or [0x02] usually)

End command: ETX = 0x03<sub>H</sub> (written as \03 or [0x03] usually)

Following parameters of the RS-232-interface are fix and can not be changed:

- 57600 Baud
- 8 Databits
- 1 Startbit
- 1 Stopbit
- No parity
- No handshake

## 2.6 The Ethernet-interface

The LAN-interface is laid out as an 8-pole RJ45-female-plug. The integrated LAN-switch offers four of these plugs with same priority and same IP-address.

## 2.7 Interface protocol Ethernet

The transmission of data is carried out in ASCII format.  
Start command and end command are hex signs.

Start command: STX = 0x02<sub>H</sub> (written as \02 or [0x02] usually)

End command: ETX = 0x03<sub>H</sub> (written as \03 or [0x03] usually)

The Ethernet-interface is internally connected by RS-232. Following internal parameters are fix and can not be changed:

- 57600 Baud
- 8 Databits
- 1 Startbit
- 1 Stopbit
- No parity
- No handshake

## 2.8 Configuration of the Ethernet-interface

Interface set-up (IP-address, port) can be done by using a webbrowser (e. g. internet explorer) via putting in the IP-address.

Basic setting is TCP-protocol, IP-address "192.168.83.50" and port 4001.

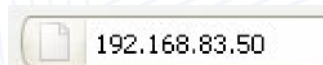


Illustration 3: Insertion of IP-address at browser-window

**Attention:** The areas of the IP-address must not begin with leading zeros (wrong: 192.168.083.050, right: 192.168.83.50)!

If you can not find your IP-address anymore, look at the DeviceInstaller from Lantronix and search it (search button). By opening the folders, the current IP-address will be shown (self-explanatory).

### Calling the IP-address through a browser:

After calling the IP-address you can acknowledge the keyword-window without any entries (OK). The configuration window opens automatically as follows.



Illustration 4: Keyword-window of the LAN-module

### Adjusting the IP-address through a browser:

You can adjust the IP-address in the following window. Alternatively, you can select "Obtain IP address automatically" to work with DHCP-mode.

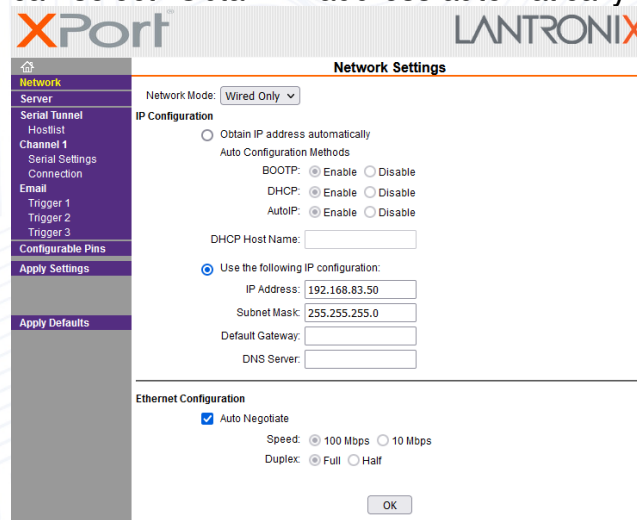


Illustration 5: Adjustment of IP-address of the LAN-module

**Attention:** After changes you have to press OK and then you have to execute Apply Settings!

### Executing further operations:

To do extended operations use the document Extended\_Configuration\_XPort\_Module on the CD of the unit.



## **2.9 Control commands of the unit**

All REMOTE-interfaces have equal rights. Its commands are executed in the same order as received.

### **2.9.1 Set command**

Receive string: "**RxPy**"

e. g. receive string: "R1P1R2P2"

"**RxPy**": **x** is the number of the variable attenuator  
(1 – number of variable attenuators in ASCII format).  
**y** is the switched position of the variable attenuator  
(0 – 95 in ASCII format).

It is possible to control several attenuators with one receive string.

### **2.9.2 Clear command**

Receive string: "**C**"

With the clear command all variable attenuators are set to 95 dB.

### 2.9.3 Status check

After one of the following commands was received, the unit sends a string with the state of its components.

Receive string: "ST"

Send string: "R1P $y_1$ R2P $y_2$  ... A6P $y_6$ "

$y$  is the switched position of the variable attenuator  
(0 – 95 in ASCII format).

This string begins with the start command and ends with the end command.

### 2.9.4 Ident command

Receive string: "\*IDN?"

After sending the ident command the device answers with the device-identifier.

The device-identifier begins with the start command and ends with the end command.

### 3 Service

#### 3.1 Changing fuse of 230 V AC supply

Inside of the appliance plug there are the fuses F1 and F2. Defective fuses have to be changed by fuses of the same type. Pull out the fuse holder at zero-current-unit (power cable removed) to get access to the fuses.

**Attention:** To change fuses, first switch off power at power switch S1 **and** remove the power cable!

Defective fuses have to be replaced by new fuses of the following type!  
F1, F2 = T3.15/250 (3.15 A, 250 V AC, slow blow)

#### 3.2 Cleaning

Maintenance work essentially only includes the cleaning of the unit. Inform competent authorized personnel if damages are determined.

**Attention:** To clean the unit, first switch off power at power switch S1 **and** remove the power cable!  
Depending on the degree of contamination, the unit has to be cleaned with a lint-free, soft and dry cloth or brush. Do not use cleaning liquids except for mild detergents (moisten cloth) for cleaning!

#### 3.3 Maintenance and repair

Regular maintenance or inspection of the unit is required every two years and should be carried out by MTS Systemtechnik GmbH.

This service can be ordered from MTS Systemtechnik GmbH for a fee.

During the warranty period only the manufacturer is authorized to repair the unit.

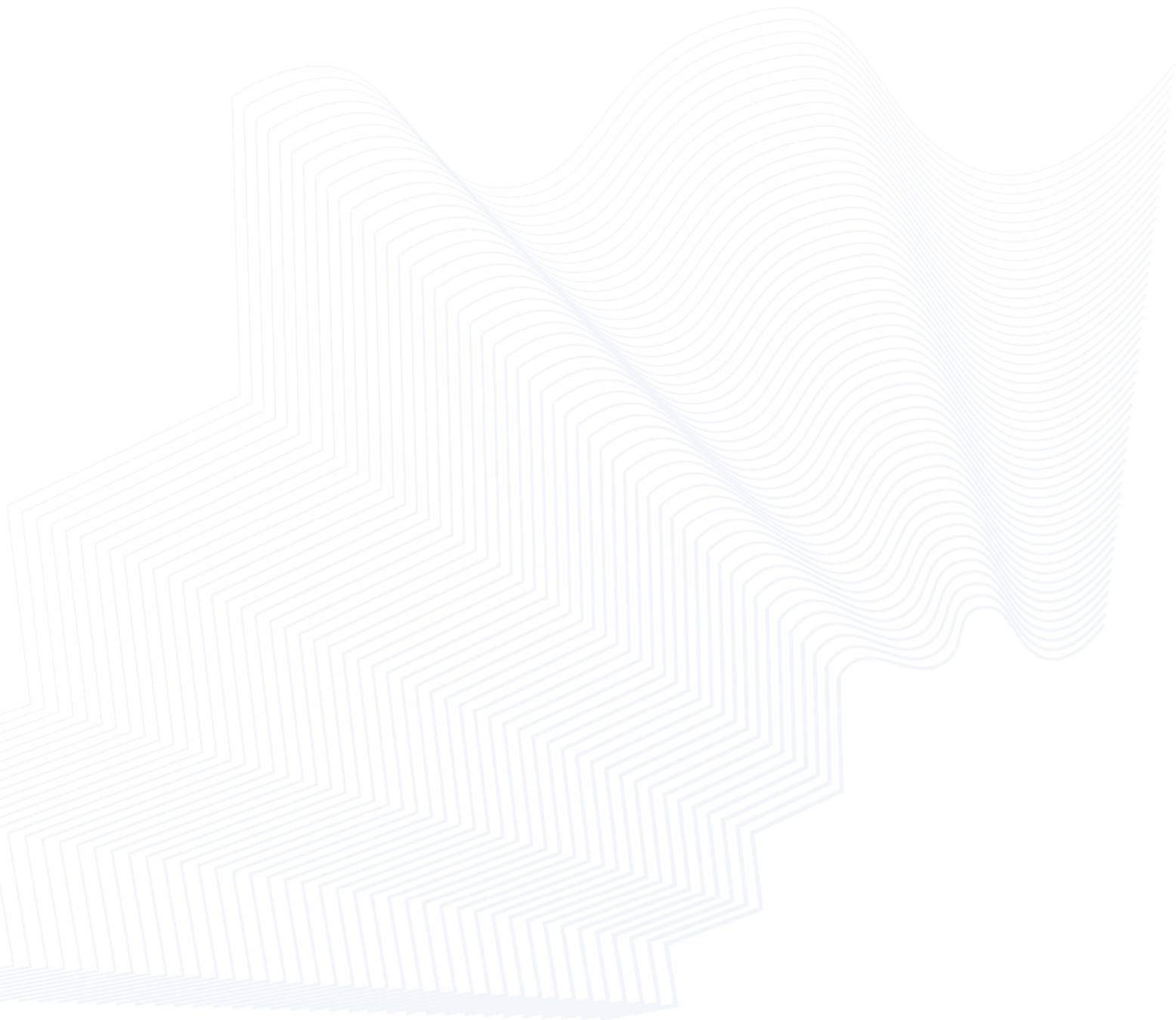


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#### **4 Technical Data**

Technical data are shown on the specification sheet in the appendix.



## **5 Warranty**

The "General Terms and Conditions for Delivery and Payment of MTS Systemtechnik GmbH" or agreed warranty terms are applicable.

There will be no warranty for damages caused by improper handling, improper operation, technical changes, maintenance or physical damages, if these damages were not caused by MTS Systemtechnik GmbH.

## **6 Appendix**

Is the manual delivered as CD, you can find the separate files of appendix as pdf on the CD.

Annex 1 Install instruction for the Standard Coupling Unit SCF-0360-6G

Annex 2 Block diagram for the Standard Coupling Unit SCF-0360-6G

Annex 3 Specification for the Standard Coupling Unit SCF-0360-6G

Annex 4 Test certificate for the Standard Coupling Unit SCF-0360-6G

Annex 5 CE-Declaration of conformity for the Standard Coupling Unit SCF-0360-6G

Annex 6 Driver and installation manual of the USB-interface

Annex 7 Update and configuration of the LAN-interface of type XPort