

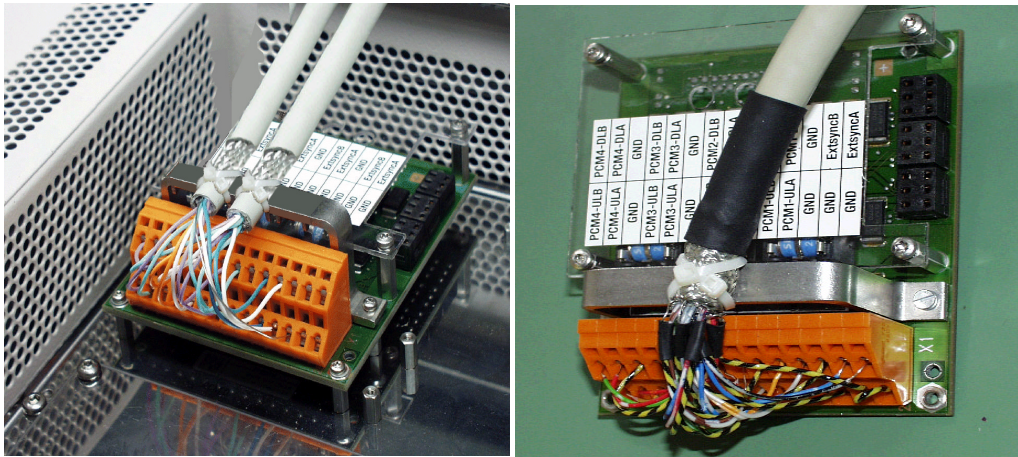


Fig. 2.36 Fixing of PCM cables at OVPT

- Attach the cable at the stress-relieving bracket with straps or screw down the screen clamps (not part of the OVPT, WAGO part-no. 790-108 for outer diameter up to 8 mm or 790-116 for outer diameter up to 16 mm).
- Insert the wires into the OVPT terminals.
- Insert the additional wire (shielding potential) into one of the ground terminals (e.g. no. 24).
- Lead the additional wire and the uplink and downlink wires on the shortest route (that means without sleeves) between the stress relieving and the screw terminals.
- Connect all unconnected PCM lines (4 wires per line) to one of the ground terminals.

Down Link = RX												EXT SYNC B	EXT SYNC A
B A			B A			B A			B A				
1	3	5 ⏏	7	9	11 ⏏	13	15	17 ⏏	19	21	23 ⏏	25	27
2	4	6 ⏏	8	10	12 ⏏	14	16	18 ⏏	20	22	24 ⏏	26 ⏏	28 ⏏
B A			B A			B A			B A				
PCM 4			PCM 3			PCM 2			PCM 1				
Up Link = TX													

Fig. 2.37 Abis interface PCM0 Pinning

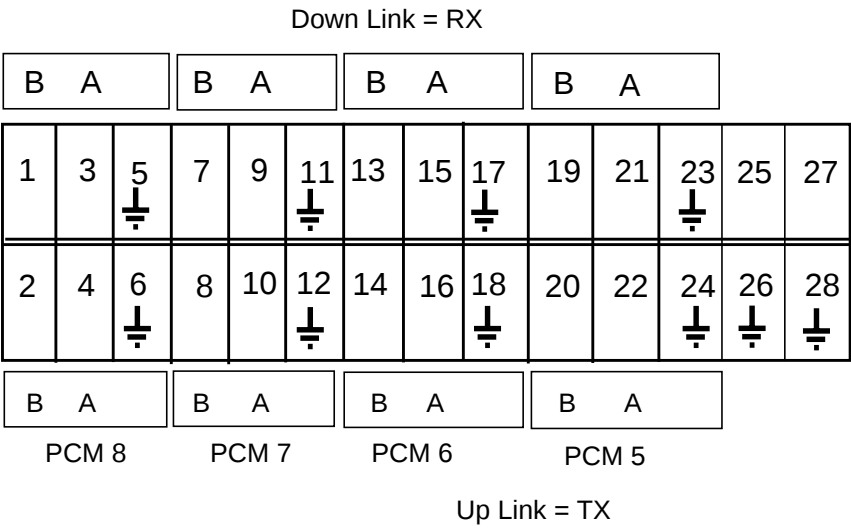


Fig. 2.38 Abis interface PCM1 Pinning

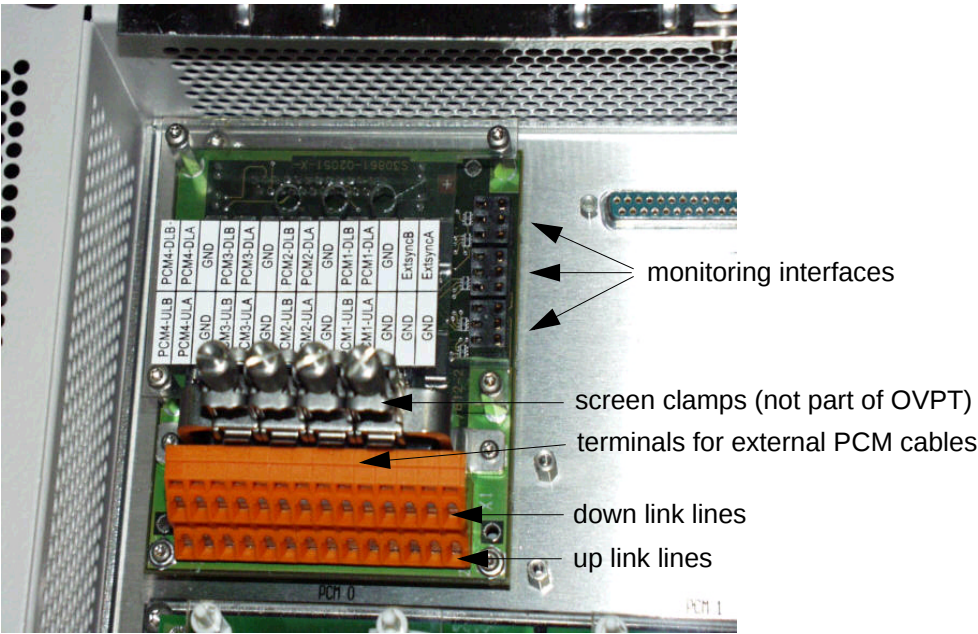


Fig. 2.39 OVPT with terminal block

2.6.4.1 Abis-Interface without OVPT

Without the (optional) OVPT, if this function is not needed, a SUB-D25 female connector is the direct interface for the PCM links.



Without OVPT no monitoring possibility is provided.

Pin no. SubD 25	Signal name	Function
1	PCM 1 - ULA	PCM Line 1 Up Link A
14	PCM 1 - ULB	PCM Line 1 Up Link B
3	GND/G	shield pair 1
2	PCM 1 - DLA	PCM Line 1 Down Link A
15	PCM 1 - DLB	PCM Line 1 Down Link B
3	GND/G	shield pair 2
4	PCM 2 - ULA	PCM Line 2 Up Link A
16	PCM 2 - ULB	PCM Line 2 Up Link B
18	GND/G	shield pair 3
5	PCM 2 - DLA	PCM Line 2 Down Link A
17	PCM 2 - DLB	PCM Line 2 Down Link B
18	GND/G	shield pair 4
6	PCM 3 - ULA	PCM Line 3 Up Link A
19	PCM 3 - ULB	PCM Line 3 Up Link B
8	GND/G	shield pair 5
7	PCM 3 - DLA	PCM Line 3 Down Link A
20	PCM 3 - DLB	PCM Line 3 Down Link B
8	GND/G	shield pair 6
9	PCM 4 - ULA	PCM Line 4 Up Link A
21	PCM 4 - ULB	PCM Line 4 Up Link B
11	GND/G	shield pair 7
10	PCM 4 - DLA	PCM Line 4 Down Link A
22	PCM 4 - DLB	PCM Line 4 Down Link B
23	GND/G	shield pair 8
12	EXTSYNCA	
24	EXTSYNCB	
25	GND/G	
13	GND/G	main cable shield

Tab. 2.12 Pinning of the PCM0 interface without OVPT (SubD 25 connector)

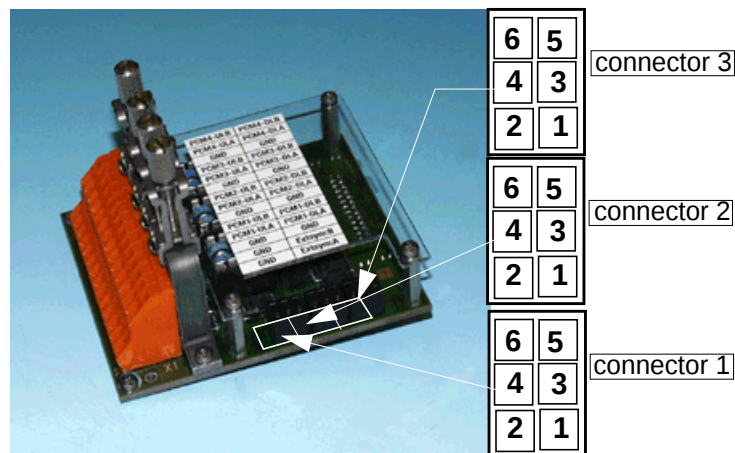
Pin no. SubD 25	Signal name	Function
1	PCM 5 - ULA	PCM Line 5 Up Link A
14	PCM 5- ULB	PCM Line 5 Up Link B
3	GND/G	shield pair 1
2	PCM 5 - DLA	PCM Line 5 Down Link A
15	PCM 5 - DLB	PCM Line 5Down Link B
3	GND/G	shield pair 2
4	PCM 6 - ULA	PCM Line 6 Up Link A
16	PCM 6 - ULB	PCM Line 6 Up Link B
18	GND/G	shield pair 3
5	PCM 6 - DLA	PCM Line 6 Down Link A
17	PCM 6 - DLB	PCM Line 6 Down Link B
18	GND/G	shield pair 4
6	PCM 7 - ULA	PCM Line 7 Up Link A
19	PCM 7 - ULB	PCM Line 7 Up Link B
8	GND/G	shield pair 5
7	PCM 7 - DLA	PCM Line 7 Down Link A
20	PCM 7 - DLB	PCM Line 7 Down Link B
8	GND/G	shield pair 6
9	PCM 8 - ULA	PCM Line 8 Up Link A
21	PCM 8 - ULB	PCM Line 8 Up Link B
11	GND/G	shield pair 7
10	PCM 8 - DLA	PCM Line 8 Down Link A
22	PCM 8 - DLB	PCM Line 8 Down Link B
23	GND/G	shield pair 8
12	---	
24	---	
25	GND/G	
13	GND/G	main cable shield

Tab. 2.13 Pinning of the PCM1 interface without OVPT (SubD 25 connector)

2.6.4.2 Monitoring Interfaces on OVPT

The Overvoltage Protection uses three 6 pin DIN41616 test connectors to monitor the PCM lines.

The following tables show the pinning of the monitoring interfaces. The pin arrangement is illustrated in [Fig. 2.40](#).

**Fig. 2.40** Monitoring interfaces for PCM lines of OVPT

Connector / pin	Signal name	Connector / pin	Signal name
1- 1	PCM 1 - ULA	2- 4	PCM 3 - ULB
1- 2	PCM 1 - ULB	2- 5	PCM 3 - DLA
1- 3	PCM 1 - DLA	2- 6	PCM 3 - DLB
1- 4	PCM 1 - DLB	3- 1	PCM 4 - ULA
1- 5	PCM 2 - ULA	3- 2	PCM 4 - ULB
1- 6	PCM 2 - ULB	3- 3	PCM 4- DLA
2- 1	PCM 2 - DLA	3- 4	PCM 4- DLB
2- 2	PCM 2 - DLB	3- 5	EXTSYNCA
2- 3	PCM 3 - ULA	3- 6	EXTSYNCB

Tab. 2.14 Monitoring interfaces PCM0 Pinning

Connector / pin	Signal name	Connector / pin	Signal name
1- 1	PCM 5 - ULA	2- 4	PCM 7 - ULB
1- 2	PCM 5 - ULB	2- 5	PCM 7 - DLA
1- 3	PCM 5 - DLA	2- 6	PCM 7 - DLB
1- 4	PCM 5 - DLB	3- 1	PCM 8 - ULA
1- 5	PCM 6 - ULA	3- 2	PCM 8 - ULB
1- 6	PCM 6 - ULB	3- 3	PCM 8 - DLA
2- 1	PCM 6 - DLA	3- 4	PCM 8 - DLB
2- 2	PCM 6 - DLB	3- 5	EXTSYNCA
2- 3	PCM 7 - ULA	3- 6	EXTSYNCB

Tab. 2.15 Monitoring interfaces PCM1 Pinning

2.6.5 Alarm Collection Terminal (ACT) - External Signal Sensors

The access for cabling from external signal sensors on site (site inputs) is the Alarm Collection Terminal for Base Rack (ACTM).

The ACTM provides 8 WAGO terminal blocks with 12 pins each to connect 48 site inputs.

The WAGO terminals are labelled X1 ... X10, the terminal blocks X1...X8 are used to connect site inputs. The cables are fixed as shown in the [Fig. 2.41](#) or by screen clamps (not part of the ACTM, WAGO part-no. 790-108 for outer diameter up to 8 mm or 790-116 for outer diameter up to 16 mm).

The following tables provide information on the terminal pinning.

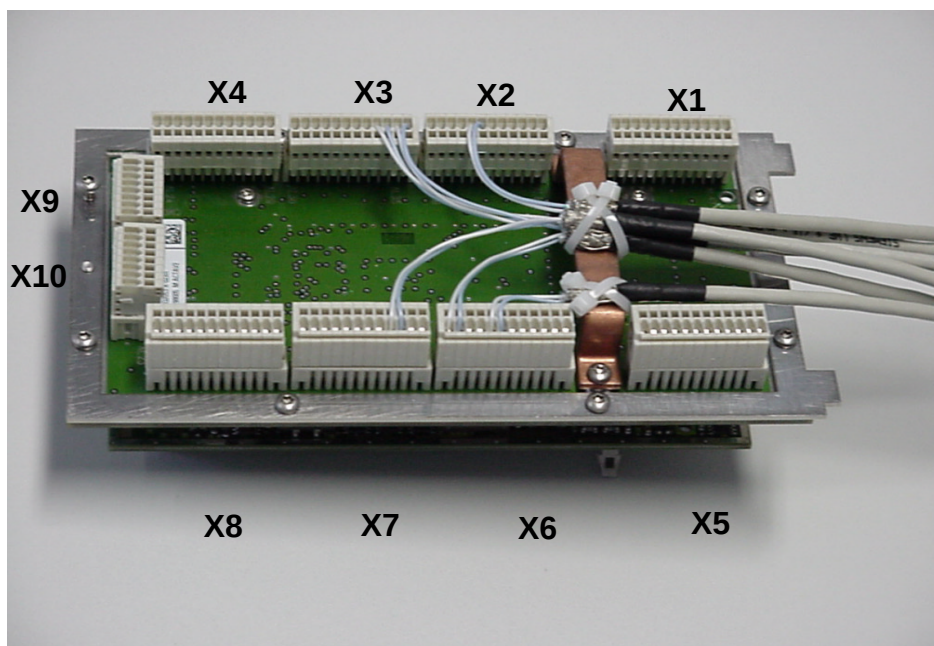


Fig. 2.41 ACTM terminal numbering

Pin no. X5	Signal name	Pin no. X5	Signal name
1	AL0P	7	AL3P
2	AL0M (GND)	8	AL3M (GND)
3	AL1P	9	AL4P
4	AL1M (GND)	10	AL4M (GND)
5	AL2P	11	AL5P)
6	AL2M (GND)	12	AL5M (GND)

Tab. 2.16 Pinning ACTM Connector X5 Site Inputs

Pin no. X6	Signal name	Pin no. X7	Signal name
1	AL6P	1	AL12P
2	AL6M (GND)	2	AL12M (GND)
3	AL7P	3	AL13P
4	AL7M (GND)	4	AL13M (GND)
5	AL8P	5	AL14P
6	AL8M (GND)	6	AL14M (GND)
7	AL9P	7	AL15P
8	AL9M (GND)	8	AL15M (GND)
9	AL10P	9	AL16P
10	AL10M	10	AL16M (GND)
11	AL11P	11	AL17P
12	AL11M	12	AL17M (GND)

Tab. 2.17 Pinning ACTM Connector X6, X7 Site Inputs

Pin no. X8	Signal name	Pin no. X4	Signal name
1	AL18P	1	AL24P
2	AL18M (GND)	2	AL24M (GND)
3	AL19P	3	AL25P
4	AL19M (GND)	4	AL25M (GND)
5	AL20P	5	AL26P
6	AL20M (GND)	6	AL26M (GND)
7	AL21P	7	AL27P
8	AL21M (GND)	8	AL27M (GND)
9	AL22P	9	AL28P
10	AL22M (GND)	10	AL28M (GND)
11	AL23P	11	AL29P
12	AL23M (GND)	12	AL29M (GND)

Tab. 2.18 Pinning ACTM Connector X8, X4 Site Inputs

Pin no. X3	Signal name	Pin no. X2	Signal name
1	AL30P	1	AL36P
2	AL30M (GND)	2	AL36M (GND)
3	AL31P	3	AL37P
4	AL31M (GND)	4	AL37M (GND)
5	AL32P	5	AL38P
6	AL32M (GND)	6	AL38M (GND)
7	AL33P	7	AL39P
8	AL33M (GND)	8	AL39M (GND)
9	AL34P	9	AL40P
10	AL34M (GND)	10	AL40M (GND)
11	AL35P	11	AL41P
12	AL35M (GND)	12	AL41M (GND)

Tab. 2.19 Pinning ACTA Connector X3, X2 Site Inputs

Pin no. X1	Signal name	Pin no. X1	Signal name
1	AL42P	7	AL45P
2	AL42M (GND)	8	AL45M (GND)
3	AL43P	9	AL46P
4	AL43M (GND)	10	AL46M (GND)
5	AL44P	11	AL47P
6	AL44M (GND)	12	AL47M (GND)

Tab. 2.20 Pinning ACTA Connector X1 Site Inputs

In addition to the site inputs at ACTM, there is an ACTC board, that is used as a connection board to support single connectors for the internal alarms (FAN, heat exchanger, temperatur sensor, rack in service...) and DC supply for the FANs, heatexchangers, microwave equipment, smoke sensor, and ACT. The ACTC is located in the DC panel of each rack (see [Fig. 2.42](#))

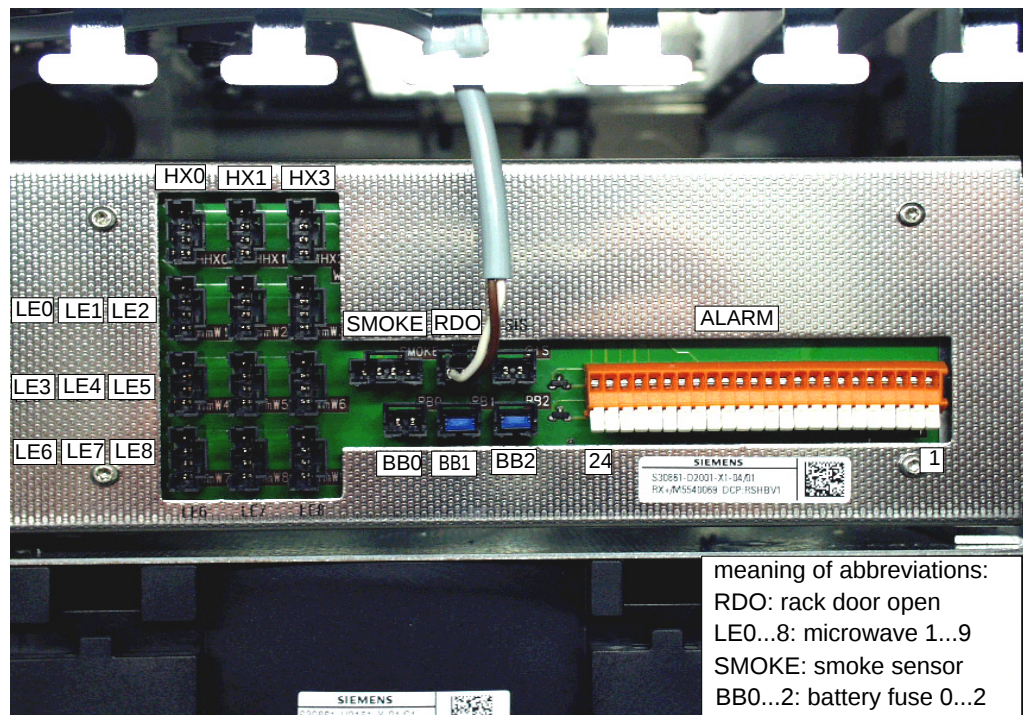


Fig. 2.42 Connector arrangement at the ACTC

The following table provide information to connect enviromental alarms (ENVAs) at ACTM and ACTC.

ENVA	Alarms at WAGO- block PIN	LMT Indication	Alarm	Alarm-Board	Connector	PIN
0	11, 12	Heatexchanger - 0		ACTC	HX0	
1	9, 10	Heatexchanger - 1		ACTC	HX1	
2	7, 8	Heatexchanger - 2		ACTC	HX2	
3		Rack / rack in Service		ACTC	SIS	
4	5, 6	Smoke		ACTC	SMOKE	
5		Battery Fuse 0, 1, 2		ACTC	BBO0-2	
6		Over Voltage Protection		ACTC		
7	3, 4			ACTC		
8	1, 2	Microwave		ACTC	MW1-9	
9			AL-0	ACTM	X5	1,2
10			AL-1	ACTM	X5	3,4
11			AL-2	ACTM	X5	5,6
12			AL-3	ACTM	X5	7,8

Tab. 2.21 Environmental Alarms at the ACTM and ACTC

ENVA	Alarms at WAGO- block PIN	LMT Indication	Alarm	Alarm-Board	Connector	PIN
13			AL-4	ACTM	X5	9,10
14			AL-5	ACTM	X5	11,12
15			AL-6	ACTM	X6	1,2
16			AL-7	ACTM	X6	3,4
17			AL-8	ACTM	X6	5,6
18			AL-9	ACTM	X6	7,8
19			AL-10	ACTM	X6	9,10
20			AL-11	ACTM	X6	11,12
21			AL-12	ACTM	X7	1,2
22			AL-13	ACTM	X7	3,4
23			AL-14	ACTM	X7	5,6
24			AL-15	ACTM	X7	7,8
25			AL-16	ACTM	X7	9,10
26			AL-17	ACTM	X7	11,12
27			AL-18	ACTM	X8	1,2
28			AL-19	ACTM	X8	3,4
29			AL-20	ACTM	X8	5,6
30			AL-21	ACTM	X8	7,8
31			AL-22	ACTM	X8	9,10
32			AL-23	ACTM	X8	11,12
33			AL-24	ACTM	X4	1,2
34			AL-25	ACTM	X4	3,4
35			AL-26	ACTM	X4	5,6
36			AL-27	ACTM	X4	7,8
37			AL-28	ACTM	X4	9,10
38			AL-29	ACTM	X4	11,12
39			AL-30	ACTM	X3	1,2
40			AL-31	ACTM	X3	3,4
41			AL-32	ACTM	X3	5,6
42			AL-33	ACTM	X3	7,8
43			AL-34	ACTM	X3	9,10
44			AL-35	ACTM	X3	11,12
45			AL-36	ACTM	X2	1,2

Tab. 2.21 Environmental Alarms at the ACTM and ACTC

ENVA	Alarms at WAGO- block PIN	LMT Indication	Alarm	Alarm-Board	Connector	PIN
46			AL-37	ACTM	X2	3,4
47			AL-38	ACTM	X2	5,6
48			AL-39	ACTM	X2	7,8
49			AL-40	ACTM	X2	9,10
50			AL-41	ACTM	X2	11,12
51			AL-42	ACTM	X1	1,2
52			AL-43	ACTM	X1	3,4
53			AL-44	ACTM	X1	5,6
54			AL-45	ACTM	X1	7,8
55			AL-46	ACTM	X1	9,10
56			AL-47	ACTM	X1	11,12
Note:	1) The Indication at the LMT must be defined by the customer. It is recommended to use the proposed indication. 2) Connector X9 and X10 are not used.					

Tab. 2.21 Environmental Alarms at the ACTM and ACTC

2.6.6 Local Maintenance Terminal (LMT) Interface

A SubD 15 female connector, located at the DC panel of the base rack, is the interface to connect a Local Maintenance Terminal (LMT) for commissioning and maintenance purposes.

Pin No.	Signal Name	Pin No.	Signal name	Pin No.	Signal name
1	---	6	LMT_SA	11	LMT_RB
2	LMT_TA	7	---	12	LMT_IB
3	LMT_CA	8	GND	13	LMT_SB
4	LMT_RA	9	GND	14	---
5	LMT_IA	10	LMT_TB	15	---

Tab. 2.22 LMT interface Pinning

RJ45 Pin No.	Signal Name	RJ45 Pin No.	Signal name
1	10BT_TD+	2	10BT_TD-
3	10BT_RD+	4	---
5	---	6	10BT_RD-
7	---	8	---

Tab. 2.23 LMT RJ45 interface Pinning

2.6.7 Antenna Connections

The BTSE must be connected to the transmit and receive antennas. The antenna configuration and the required cabling are dependent on the site and the type of combining. For detailed information refer to the site-specific documentation or use the corresponding customer documents.

For installation and service purposes, it is useful to know which hardware is connected to which cell. The numbering, seen from the top of the antenna pole, starts at an azimuth angle of 0° (north) and rotates clockwise.

The first existing cell whose beam center line lies at 0° or more is defined as cell 0 or sector 0. The next one following in the same direction cell is cell 1 etc. In case of omni cell the cell number is 0.

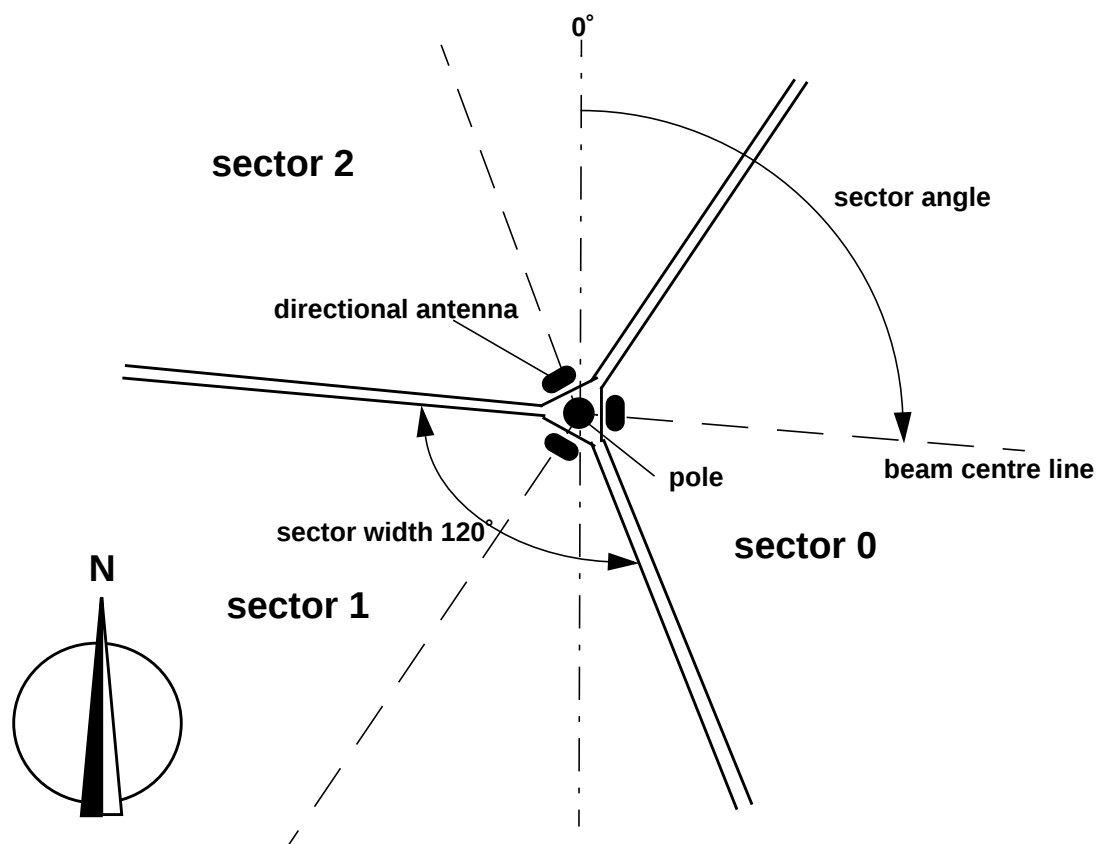


Fig. 2.43 Cell numbering (top view from the antenna pole)

For detailed antenna configuration refer to the site-specific documentation.

2.6.7.1 Preparation of Antenna Jumper Cables

Short jumper cables with a max. diameter $1/2''$ must be used for connections between the antenna cables and the front connectors of the combining modules, because the thick cables from the antenna are not able to enter the racks.

It is recommended to ground the outer conductor of antenna feeder cables where they are connected with the jumper cables outside the BS-240U to prevent overvoltage.

These jumper cables must be fabricated of 1/2" highly flexible coaxial cable on-site, if no pre-fabricated cables should be used.

Fabricate the jumper cables in steps as shown in the following figures.



Fig. 2.44 Tools for jumper fabrication

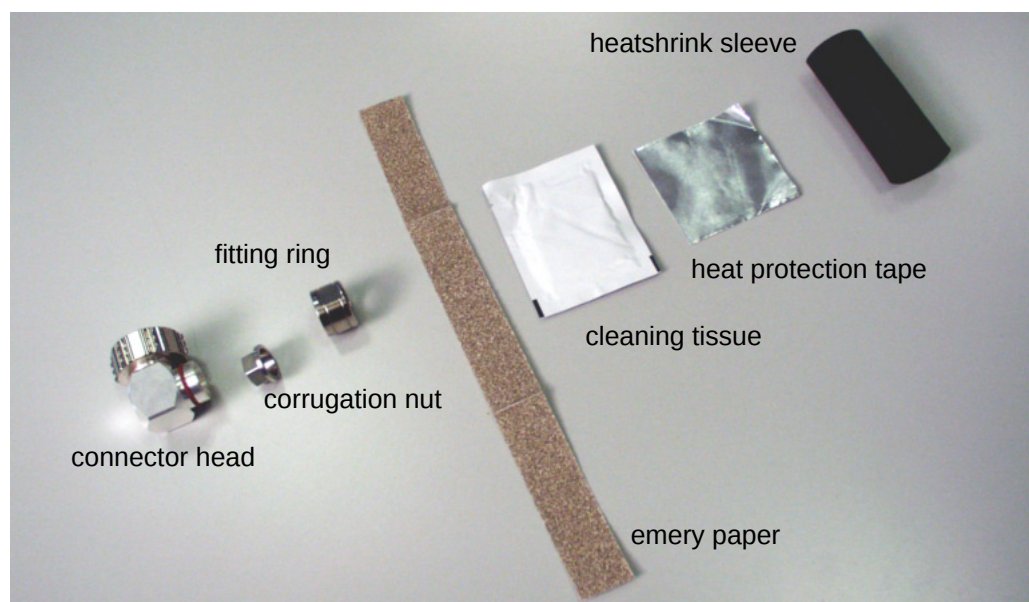


Fig. 2.45 Parts of the connector unit kit (example)

- Measure the distance between the end of the antenna feeder cable and the front connectors of the combining modules.
- Saw the cable to the required length. Do not deform cable outer conductor, when using too much pressure for sawing !

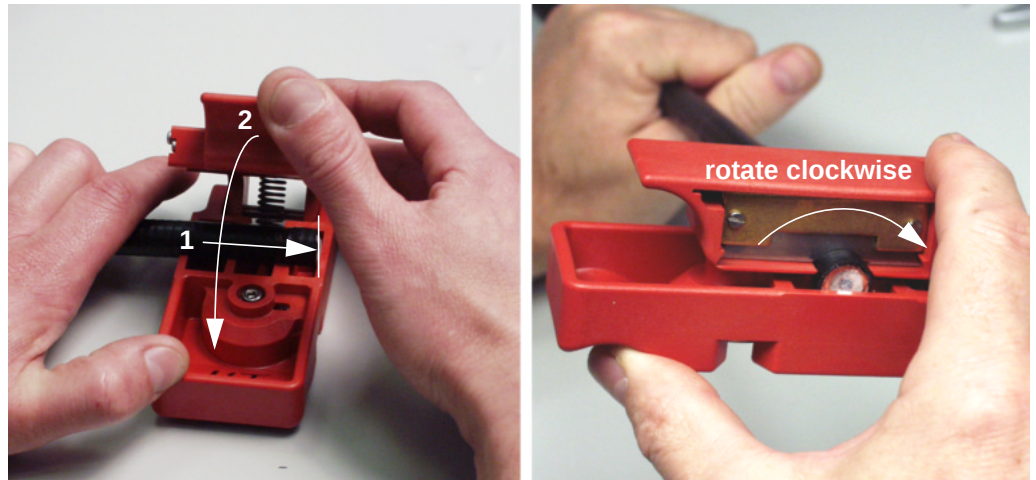


Fig. 2.46 Using the trimming tool

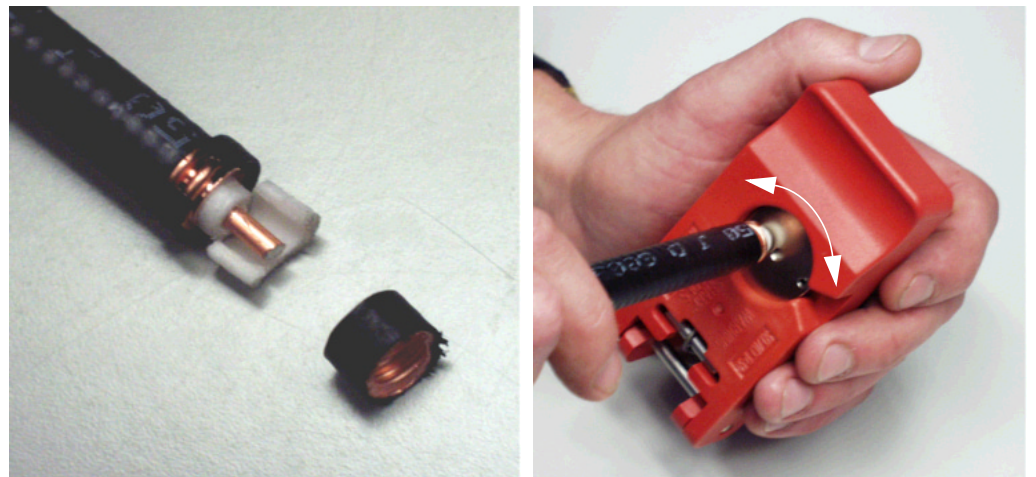


Fig. 2.47 Removal of isolation and deburring of inner conductor

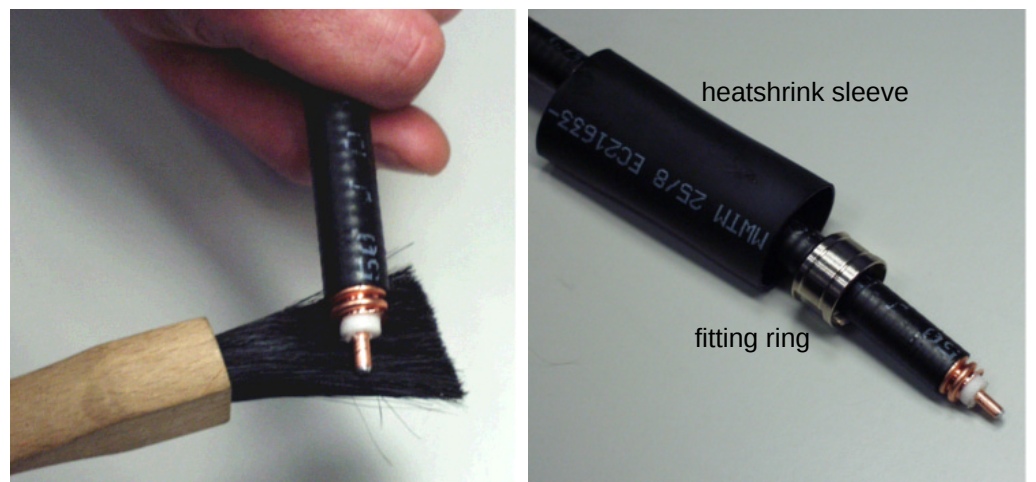


Fig. 2.48 Removal of metal particles

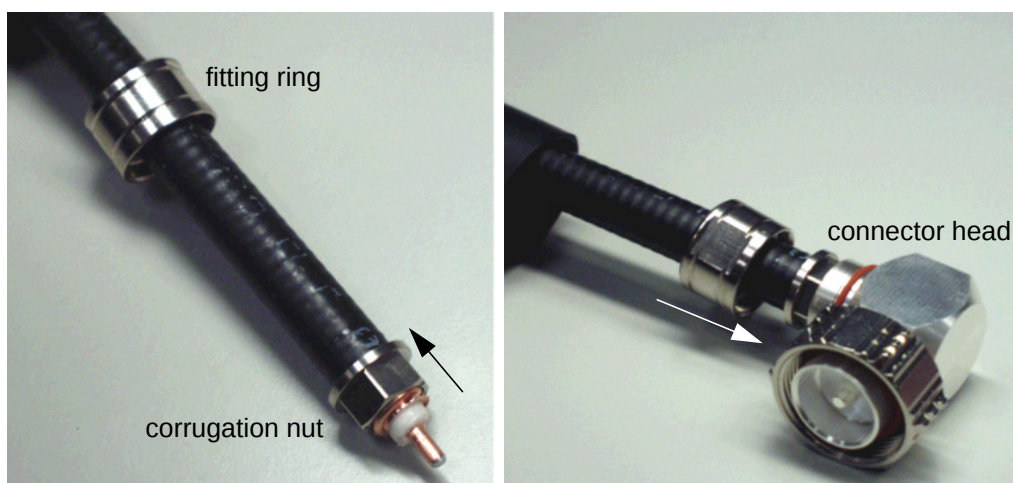


Fig. 2.49 Assembly of the connector unit

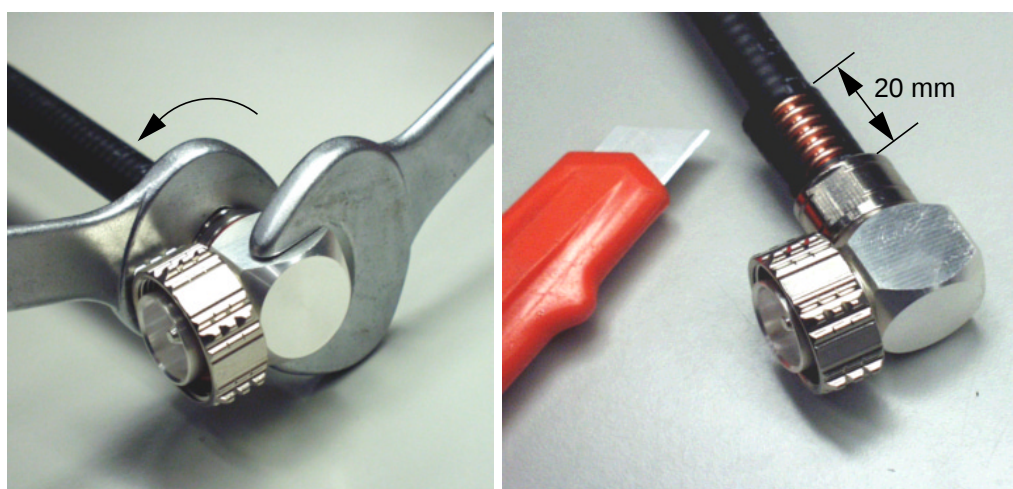


Fig. 2.50 Fixing of connector unit , removal of outer insulation



Fig. 2.51 Handling of heat protection tape and shrink sleeve