

# SYSTEM 4000 GMDSS CONSOLE

## INSTALLATION MANUAL

**Please note:**

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This agreement is governed by the laws of Denmark.

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## 1 GENERAL INFORMATION

With the System 4000 GMDSS console, all the communication equipment of the ship can be combined in one small, compact console.

One of the main purposes of the console is to make the best possible use of the limited space on board a ship. Furthermore, the fact that all the equipment is kept in the same place makes installation easy and fast. Finally, the modular structure of the system means that it can easily be altered if for example a need to have it extended should arise.

The standard console includes the following: Emergency light, battery panel, loudspeaker, and connection board. Furthermore, the console is designed with removable front plates for easy service and maintenance.

The console can be configured to match any maritime communication need. On the following pages, some typical configurations are shown.





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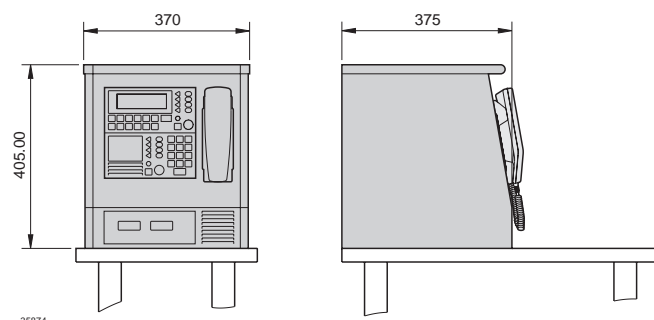
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## 2 INSTALLATION

### 2.1 DIMENSIONS AND DRILLING PLAN

#### CO4690

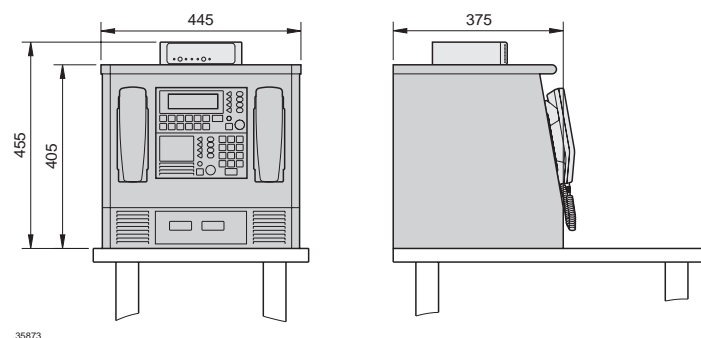


Console without units

CO4690

Weight 16 kg

#### CO4691

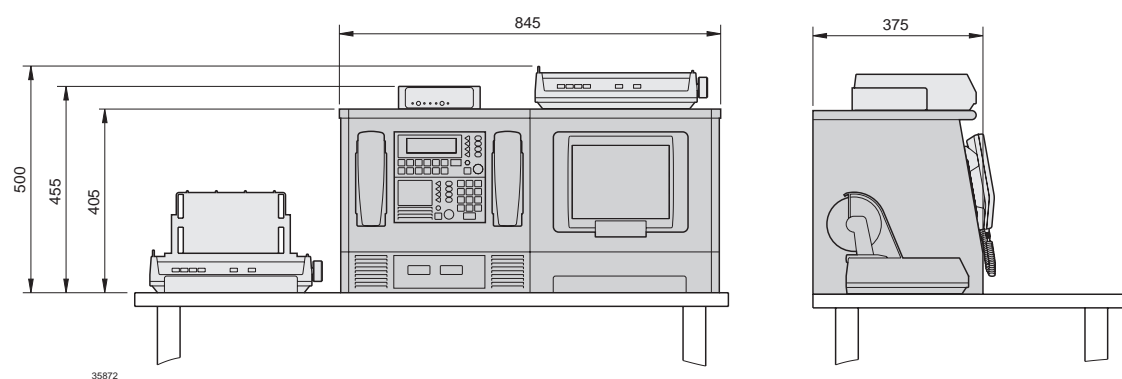


Console without units

CO4691

Weight 16 kg

#### CO4692

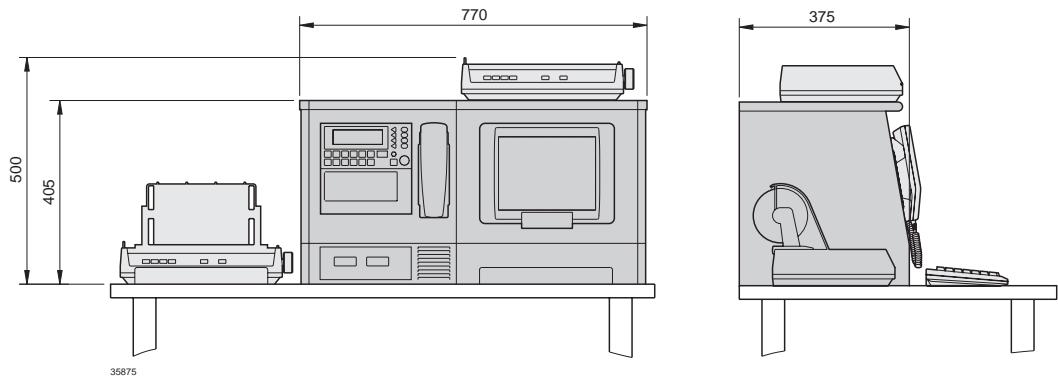


Console without units

CO4692

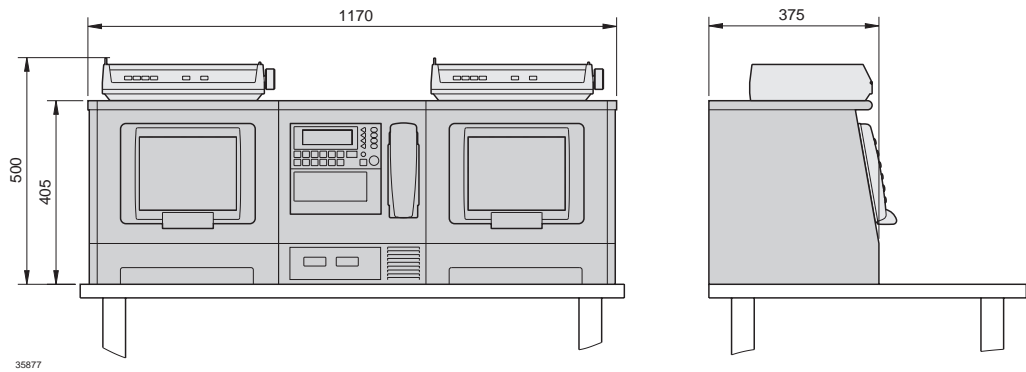
Weight 28 kg

CO4692A



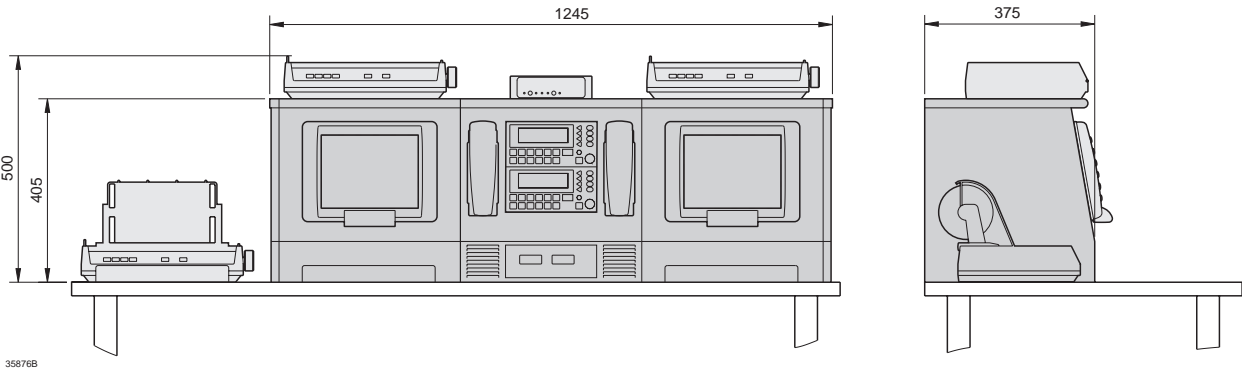
Console without units  
CO4692A  
Weight 28 kg

CO4693A/CO4693B

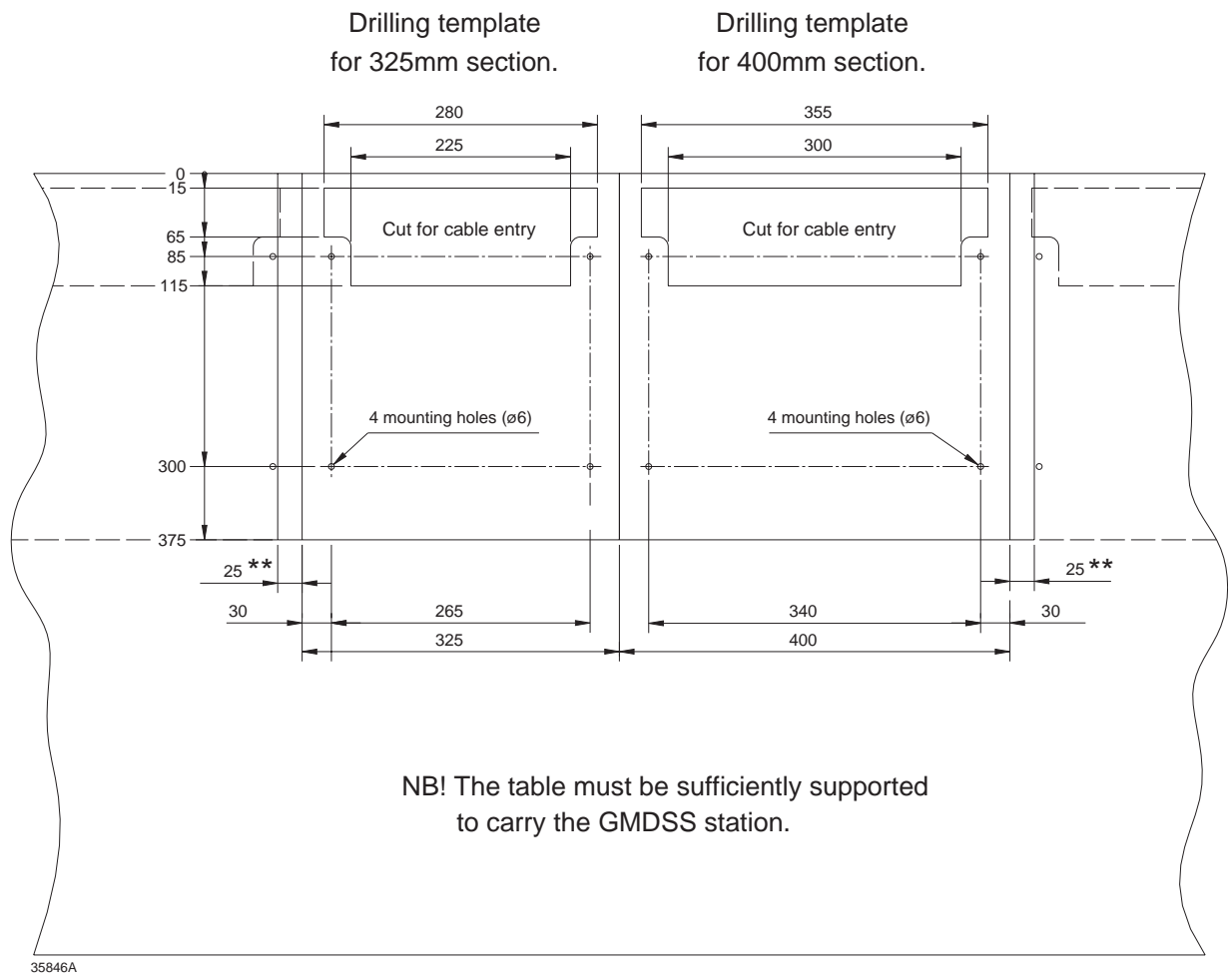


Console without units  
CO4693A/CO4693B  
Weight 40 kg

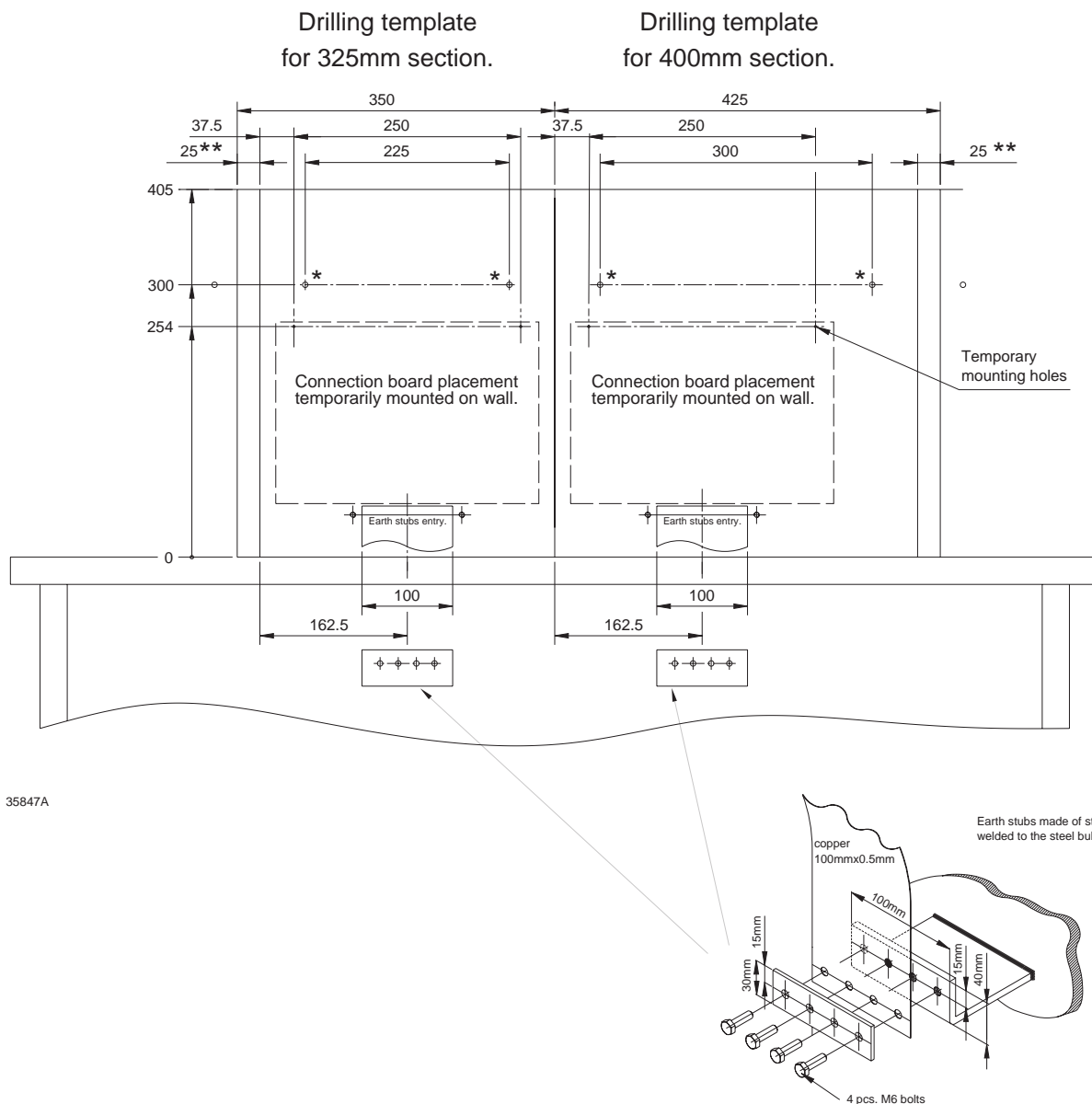
CO4694C



Console without units  
CO4694C  
Weight 40 kg

**TABLETOP MOUNTING**

\*\* Space from last left- and righthand section to wall.  
(22.5 + space = 2.5)

**BULKHEAD MOUNTING**

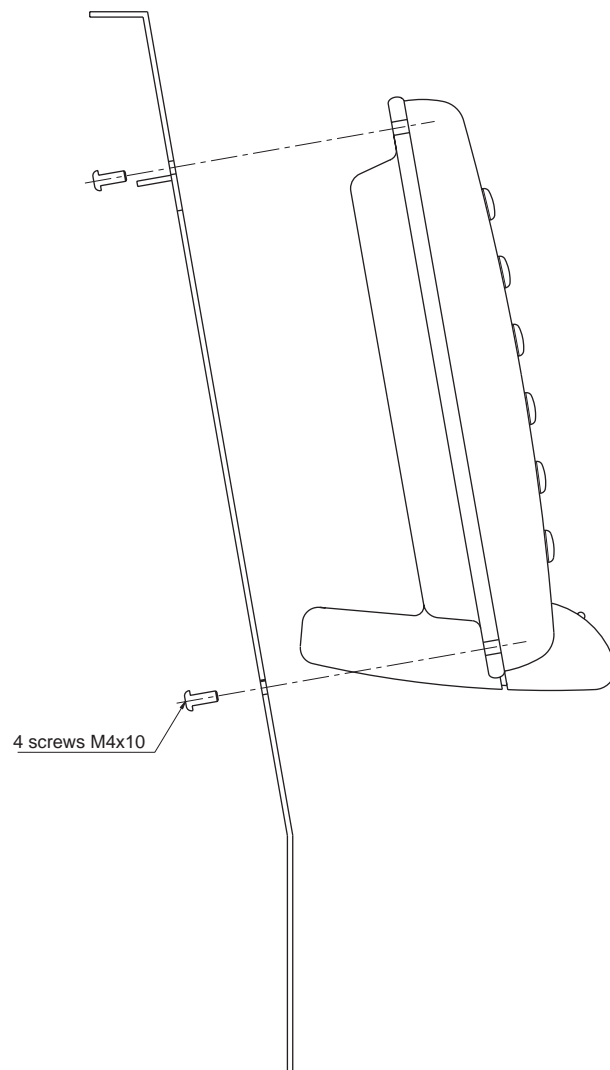
35847A

\* To avoid vibration noise, the console should be fastened with screws on the wall.

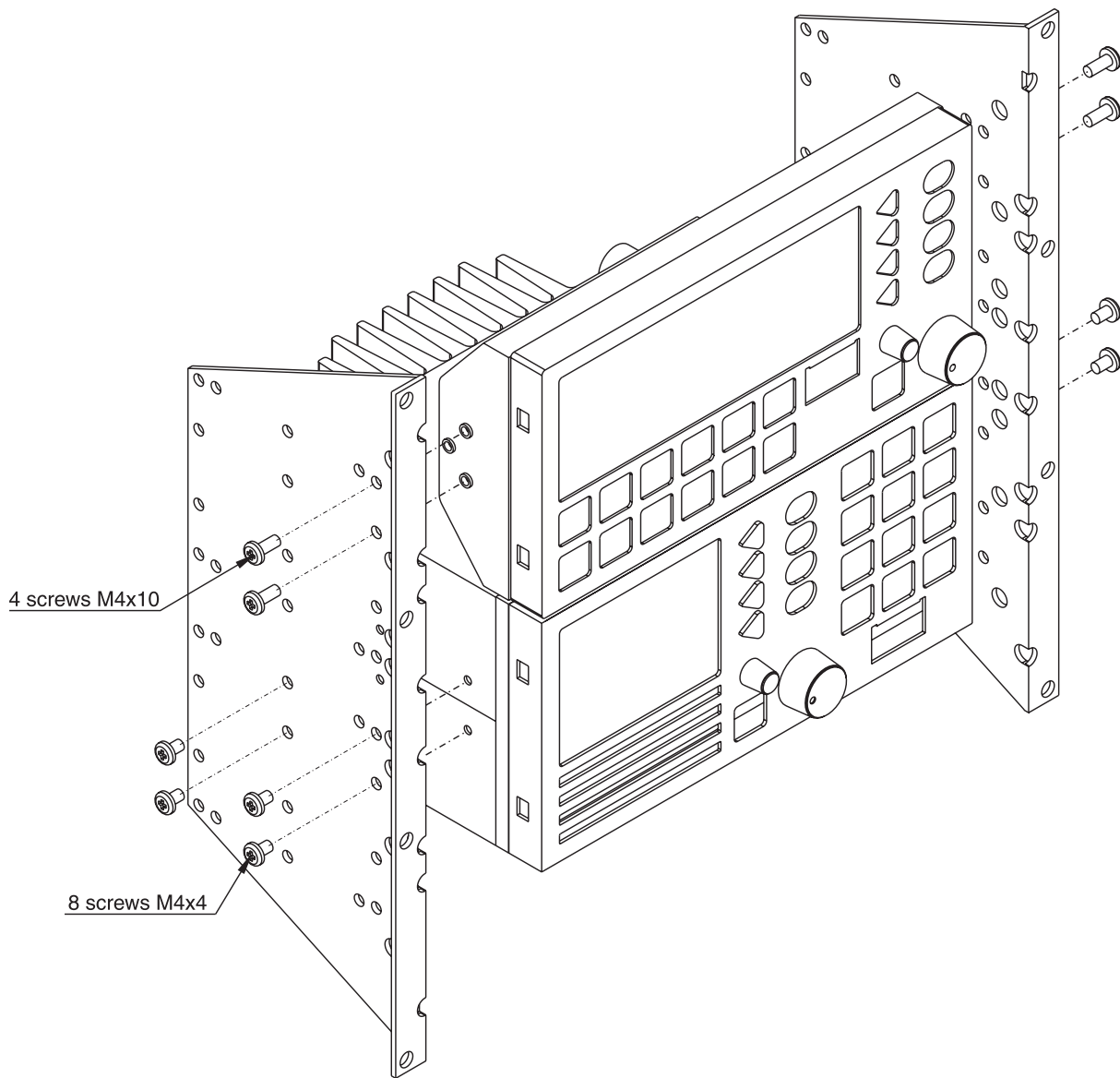
\*\* Space from last left- and righthand section to wall.  
(22.5 + space = 2.5)

## 2.2 MECHANICAL INSTALLATION

### DATA TERMINAL



37209A

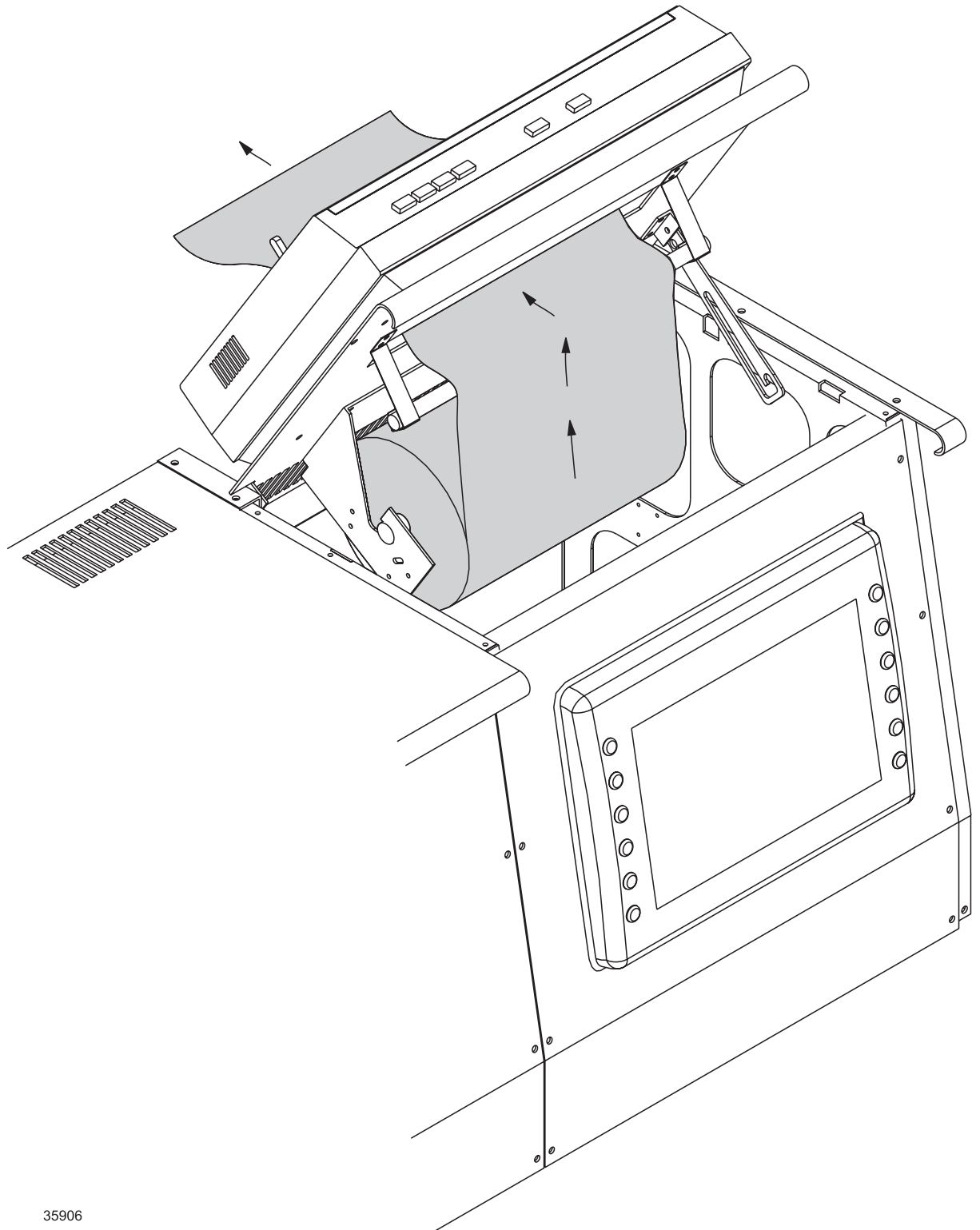
**CONTROL UNITS**

Mounting of VHF use 8 screws M4x4.  
When mounting other units use M4x10.

35880A

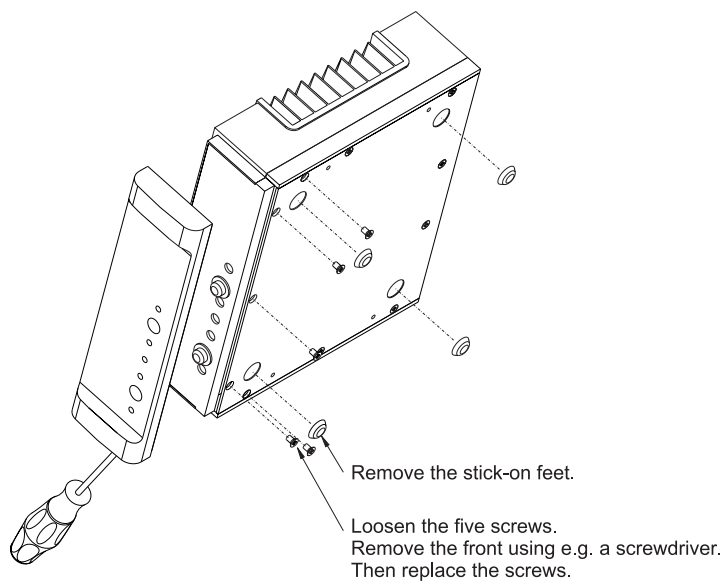


**PAPER ROLL**

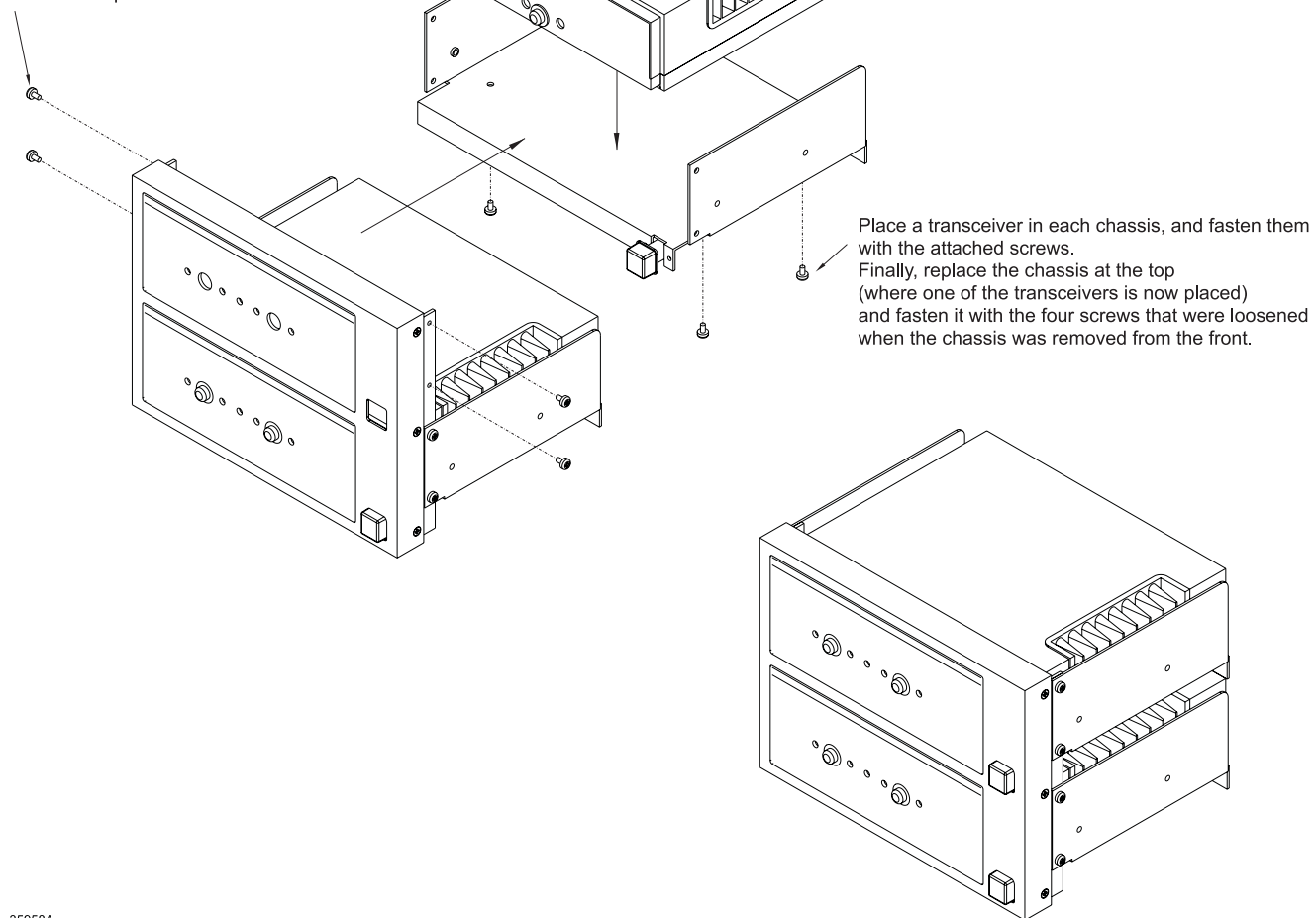


35906

## INM-C



Loosen the four screws and remove the chassis placed at the top.  
It is not necessary to remove the chassis placed at the bottom.



35958A

## 2.3 ELECTRICAL INSTALLATION

### 2.3.1 JUMPER SETTINGS

#### NMEA:

The NMEA signal can be supplied from three different sources:

If the jumpers are placed on S4 and S5, the NMEA signal is supplied to the connected units from an external unit. The NMEA signal is connected to X36, and then distributed to the units.

If the jumpers are placed on S6 and S7, and the primary Inmarsat C unit is fitted with the GPS option, the NMEA signal is supplied from the primary Inmarsat C equipment.

If the jumpers are placed on S8 and S9, and the Inmarsat C unit for duplication is fitted with the GPS option, the NMEA signal is supplied from this unit.

#### Buffer (option):

If necessary, the NMEA signal can be fed into a buffer.

A buffer OFF jumper is placed in position [1 and 2] on S2 and S3.

A buffer ON jumper is placed in position [2 and 3] on S2 and S3.

To connect the NMEA Buffer Unit to the console: First fasten the NMEA Buffer Unit with four screws right above the connection board on the right side. Then, by means of the enclosed flat cable, connect the NMEA Buffer Unit ('Console') to the connection board ('Buffer').

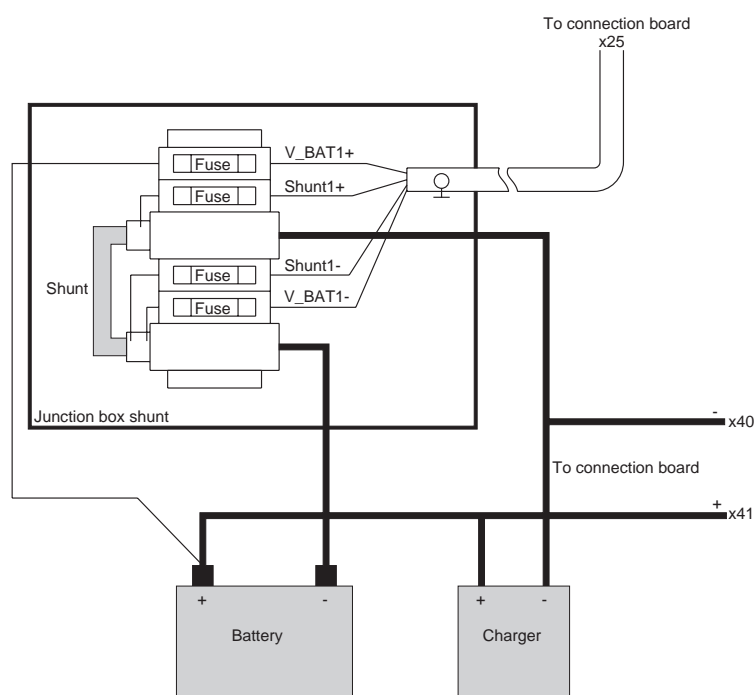
#### Shunt:

The shunt for the primary equipment can be mounted either internally on the connection board, or externally in a junction box (part no. 10751370).

When the console is delivered from the factory, the shunt is placed internally, and the jumper S11 should be placed in position [1 and 2].

If, however, the shunt is placed externally, the jumper should be placed in position [2 and 3]. The 24V supply for the primary equipment should then be connected to X40 and X41C (charger - and +).

Junction Box	X25
Shunt1+	1
Shunt1-	2
V_Bat1-	3
V_Bat1+	4



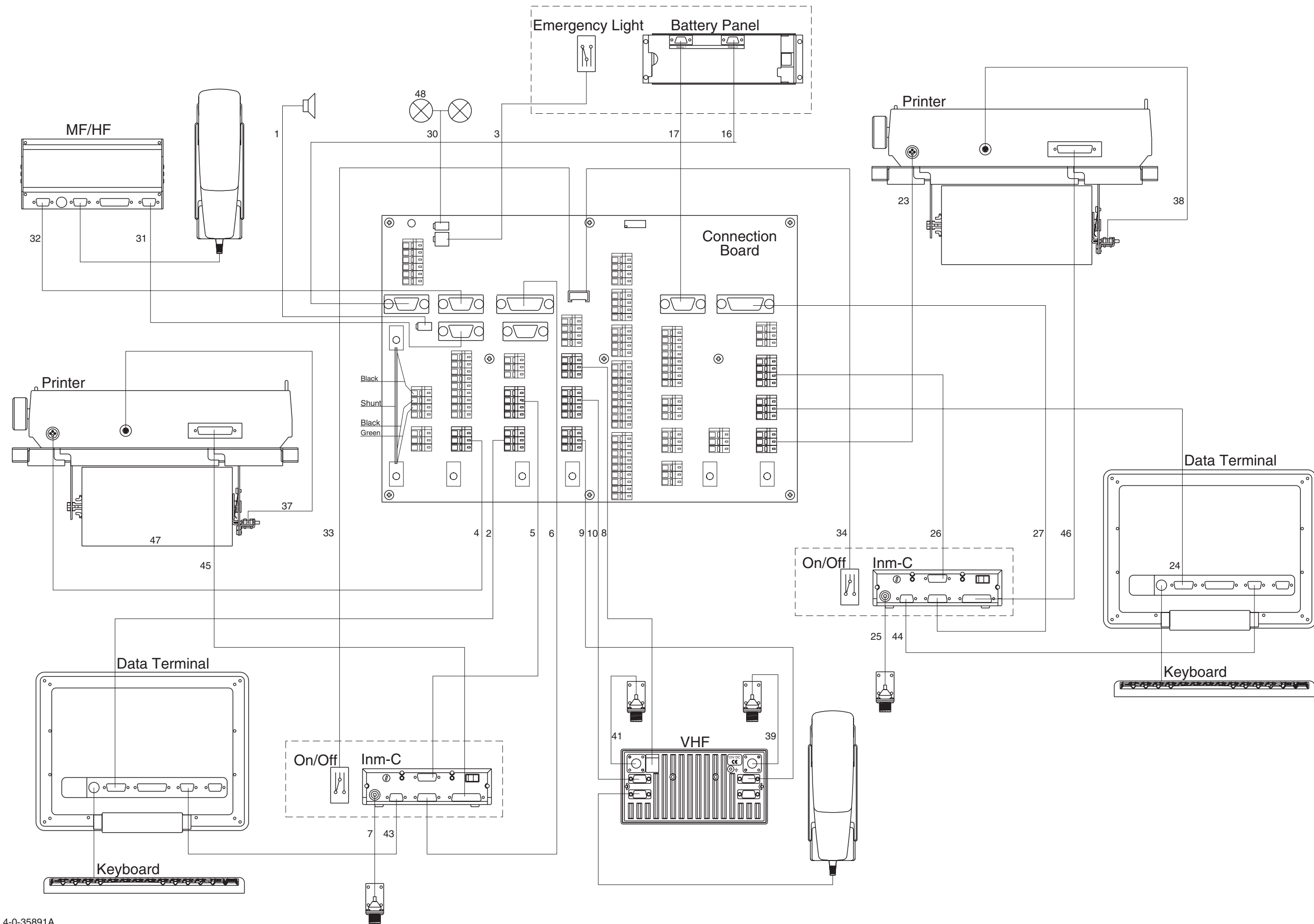
35901

## 2.3.2 INSTALLATION INTERNAL 250W/500W

### INTERNAL CABLES

Cable Description		Lenght (cm)	Connection between	Part no.	Remarks
1	Multicable	120	Speaker - connection board	56.119	Mounted on chassis
2	Power cable		Data terminal - connection board		Supplied with data terminal
3	Power cable	120	Light switch - connection board	56.120	Mounted on battery panel
4	Power cable		Printer - connection board		Supplied with printer
5	Power cable		Inmarsat C - connection board		Supplied with Inmarsat C
6	15 - 15 pole Sub D	120	Inmarsat C - connection board	56.124	100 W mounted in Sub D male
7	TNC female - N male	120	Inmarsat C - aerial	56.116	Mounted on chassis
8	Power cable		VHF - connection board		Supplied with VHF
9	Multicable	120	VHF option - connection board	56.114	15 pole Sub D HD
10	Multicable	120	VHF SPARC-bus - connection board	56.114	15 pole Sub D HD
16	9 - 9 pole Sub D	120	Battery panel - connection board	56.123	Battery 1
17	9 - 9 pole Sub D	120	Battery panel - connection board	56.123	Battery 2
23	Power cable		Printer - connection board		Supplied with printer
24	Power cable		Data terminal - connection board		Supplied with data terminal
25	TNC female - N male	120	Inmarsat C - aerial	56.116	Mounted on chassis
26	Power cable		Inmarsat C - connection board		Supplied with Inmarsat C
27	15 - 15 pole Sub D	120	Inmarsat C - connection board	56.124	100 W mounted in Sub D male
30	Power cable	120	Emergency light - connection board	56.118	Mounted on chassis
31	9 - 9 pole Sub D	120	MF/HF - connection board	56.123	Scan-bus
32	9 - 9 pole Sub D	120	MF/HF - connection board	56.123	L.S./NMEA
33	Multicable	120	Inmarsat C - connection board	56.121	Inmarsat C on/off
34	Multicable	120	Inmarsat C - connection board	56.121	Inmarsat C on/off
36	9 - 9 pole Sub D	120	Data terminal - connection board	56.123	RS232
37	8 Pole mini Din		Printer - paper switch	56.122	Mounted on chassis
38	8 Pole mini Din		Printer - paper switch	56.122	Mounted on chassis
39	PL - PL	120	VHF aerial (RX/TX)	527830	Mounted on chassis
41	PL - PL	120	VHF aerial (DSC)	527830	Mounted on chassis
43	9 - 9 pole Sub D		Data terminal - Inmarsat C		Supplied with data terminal
44	9 - 9 pole Sub D		Data terminal - Inmarsat C		Supplied with data terminal
45	Centronics - 25 pole Sub D		Printer - Inmarsat C / MF/HF		Supplied with Printer
46	Centronics - 25 pole Sub D		Printer - Inmarsat C		Supplied with Printer
47	Telex paper roll			47.830	Supplied with Printer
48	Halogen lamp G4 12V 5W			45.065	Mounted on chassis

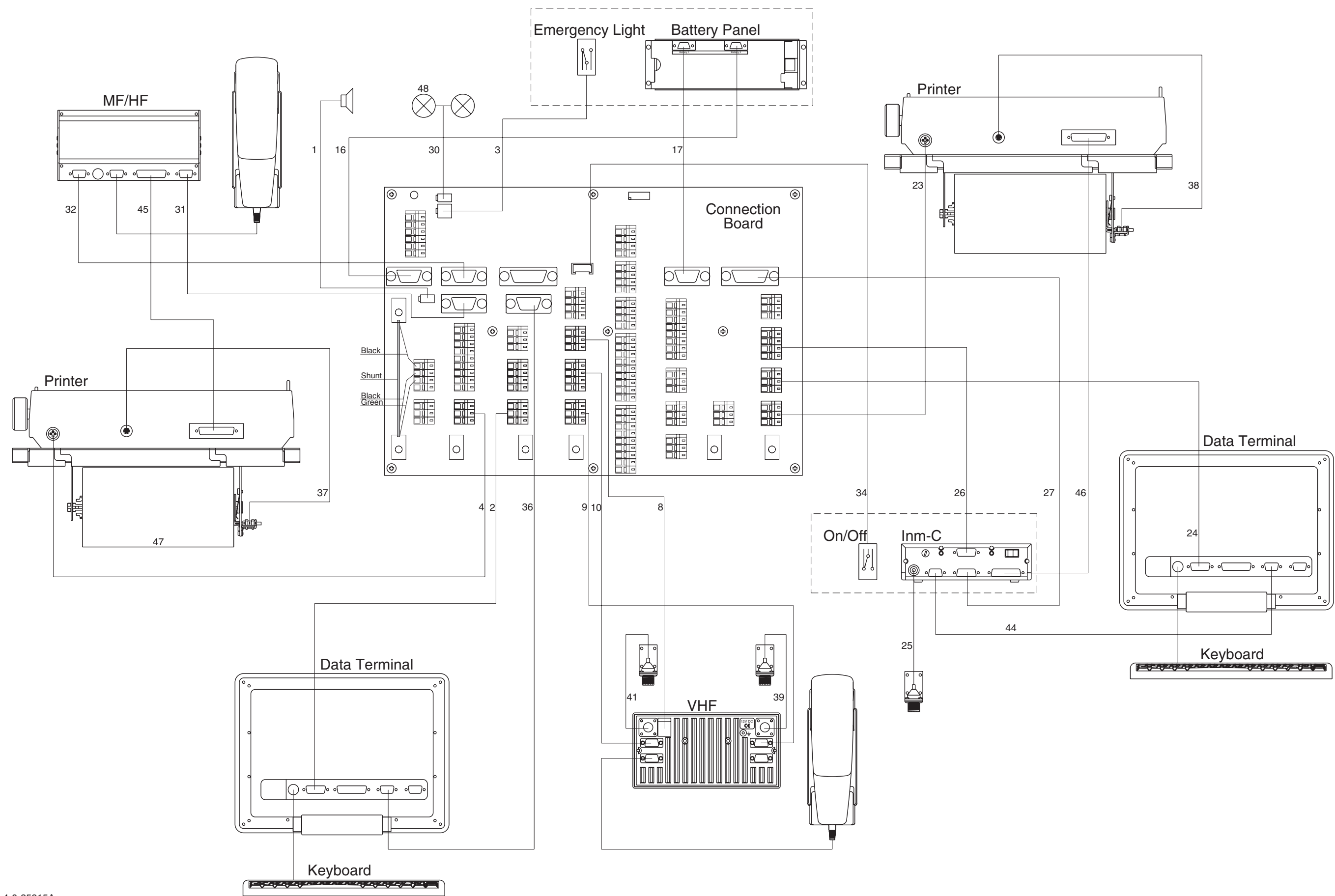
INTERNAL CABLE OVERVIEW WITH 2 x SAT-C, 250W/500W



INTERNAL CABLES

Cable Description		Lenght (cm)	Connection between	Part no.	Remarks
1	Multicable	120	Speaker - connection board	56.119	Mounted on chassis
2	Power cable		Data terminal - connection board		Supplied with data terminal
3	Power cable	120	Light switch - connection board	56.120	Mounted on battery panel
4	Power cable		Printer - connection board		Supplied with printer
5	Power cable		Inmarsat C - connection board		Supplied with Inmarsat C
6	15 - 15 pole Sub D	120	Inmarsat C - connection board	56.124	100 W mounted in Sub D male
7	TNC female - N male	120	Inmarsat C - aerial	56.116	Mounted on chassis
8	Power cable		VHF - connection board		Supplied with VHF
9	Multicable	120	VHF option - connection board	56.114	15 pole Sub D HD
10	Multicable	120	VHF SPARC-bus - connection board	56.114	15 pole Sub D HD
16	9 - 9 pole Sub D	120	Battery panel - connection board	56.123	Battery 1
17	9 - 9 pole Sub D	120	Battery panel - connection board	56.123	Battery 2
23	Power cable		Printer - connection board		Supplied with printer
24	Power cable		Data terminal - connection board		Supplied with data terminal
25	TNC female - N male	120	Inmarsat C - aerial	56.116	Mounted on chassis
26	Power cable		Inmarsat C - connection board		Supplied with Inmarsat C
27	15 - 15 pole Sub D	120	Inmarsat C - connection board	56.124	100 W mounted in Sub D male
30	Power cable	120	Emergency light - connection board	56.118	Mounted on chassis
31	9 - 9 pole Sub D	120	MF/HF - connection board	56.123	Scan-bus
32	9 - 9 pole Sub D	120	MF/HF - connection board	56.123	L.S./NMEA
33	Multicable	120	Inmarsat C - connection board	56.121	Inmarsat C on/off
34	Multicable	120	Inmarsat C - connection board	56.121	Inmarsat C on/off
36	9 - 9 pole Sub D	120	Data terminal - connection board	56.123	RS232
37	8 Pole mini Din		Printer - paper switch	56.122	Mounted on chassis
38	8 Pole mini Din		Printer - paper switch	56.122	Mounted on chassis
39	PL - PL	120	VHF aerial (RX/TX)	527830	Mounted on chassis
41	PL - PL	120	VHF aerial (DSC)	527830	Mounted on chassis
43	9 - 9 pole Sub D		Data terminal - Inmarsat C		Supplied with data terminal
44	9 - 9 pole Sub D		Data terminal - Inmarsat C		Supplied with data terminal
45	Centronics - 25 pole Sub D		Printer - Inmarsat C / MF/HF		Supplied with Printer
46	Centronics - 25 pole Sub D		Printer - Inmarsat C		Supplied with Printer
47	Telex paper roll			47.830	Supplied with Printer
48	Halogen lamp G4 12V 5W			45.065	Mounted on chassis

INTERNAL CABLE OVERVIEW WITH RADIOTELEX + SAT-C, 250W/500W



2.3.3 INSTALLATION 250W  
EXTERNAL CALLING

**Cable 1**  
**Connection between:**  
**MF/HF DSC aerial - MF/HF transceiver DSC/RX**  
Cable dimensions:   RG 213/U maximum length 100 m  
Part no.:           77.508

**Cable 2**  
**Connection between:**  
**MF/HF aerial coupler - MF/HF transceiver RX/TX**  
Cable dimensions:   RG 213/U maximum length 100 m  
Part no.:           77.508

**Cable 4**  
**Connection between:**  
**MF/HF transceiver(TS10) - connection board (X23)**  
Cable dimensions:   5x2x0.5 mm<sup>2</sup> screened, maximum  
length 100 m  
Connections:

Signal	Transceiver	Connection board	
	TS10	X23	
Supply on	1	1	
Data+	2	2	Twisted pairs
Data-	3	3	
AF+	4	4	Twisted pairs
AF-	5	5	
0V	6	6	Twisted pairs
+24V	7	7	
RXAF+	8	8	Twisted pairs
RXAF-	9	9	

**Cable 7**  
**Connection between:**  
**Connection board (X36) - NMEA IN**  
Cable dimensions:   2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Connection board
	X36
NMEA RX+	1
NMEA RX-	2
GND	3

**Cable 8**  
**AC supply to MF/HF transceiver**  
Cable dimensions:   3x1.5 mm<sup>2</sup> screened

Signal	Transceiver
	TS3
LINE	1
NEUTRAL	2
GND	3

**Cable 29**  
**Connection between:**  
**Connection board (X18) - alarm panel (VHF)**  
Connectors:           NC - SUB-D 9-pole male  
Cable dimensions:   2x2x0.5 mm<sup>2</sup> screened  
Connections:

	Alarm panel	Connection board	
Signal	SUB-D 9-pole male	X18	
+12V	9	1	Twisted pairs
0V	2	2	
SPARC+	3	3	Twisted pairs
SPARC-	5	4	

**Cable 30**  
**Connection between:**  
**Connection board (X5) - alarm panel (DC supply)**  
Cable dimensions:   4x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Alarm panel	Connection board
	SUB-D 9-pole female	X5
+24V	7	1
0V	6	2
+24V	9	3
0V	8	4

**Cable 31**  
**Connection between:**  
**Alarm panel (MF/HF) - connection board (X10)**  
Connectors:           SUB-D 9-pole male - X10  
Cable dimensions:   2x2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Alarm panel	Connection board	
	SUB-D 9-pole male	X10	
+24V	9	1	Twisted pairs
0V	2	2	
SPARC+	3	3	Twisted pairs
SPARC-	5	4	

**Cable 33**  
**Connection between:**  
**24/12V converter - VHF**  
Cable dimensions:   2x2.5+ 1x0.5 mm<sup>2</sup>  
Cable length:       1.5 m factory supplied  
Connections:

Signal	N420	VHF
	13.2V DC out	
On/off	On/off	1
+13.2V	+	2
0V	-	3

**Cable 34**  
**Connection between:**  
**Connection board (X22) - 24/12V converter**  
Cable dimensions:   2x1.5 mm<sup>2</sup> min.,screened  
Max cable length:

Max cable length	Cable dimensions
Metres	mm2
15	2X1.5
20	2X2.0
30	2X3.0

Connections:

Signal	Connection board	N420
	X22	24V DC IN
+24V	1	+
0V	2	-
GND	3	

**Cable 36**  
**Connection between:**  
**VHF DSC aerial - VHF DSC/RX**  
Cable dimensions:   RG 214 maximum length 25 m

**Cable 37**  
**Connection between:**  
**VHF aerial - VHF Rx/Tx**  
Cable dimensions:   RG 214 maximum length 25 m

**Cable 44**  
**Connection between: Tranceiver - Aerial coupler**

Connectors:           TS4 - TS4  
Cable dimensions:   4x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Transceiver	Aerial coupler
	TS4	TS4
+24V	1	1
RX/TX Protec	2	2
TU-ATU Data	3	3
GND	4	4

**Cable 45**  
**Connection between:**  
**Connection board (X38 and X39) - battery**  
Cable dimensions:   2x16 mm<sup>2</sup> min.,screened  
Maximum cable length:

Max cable length	Cable dimensions
Metres	mm2
11	2X16
17	2X25

**Cable 50**

**Connection between:**  
**MF/HF transceiver (TS 3) - connection board (X34)**  
Cable dimensions:   2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Transceiver	Connection board
	TS3	X34
Nmea RX+	1	1
NMEA RX-	2	2
GND	3	3

**Cable 51**  
**Connection between:   MF/HF transceiver (24V bat-  
tery) - connection board (X40 and X41)**  
Cable dimensions:   2x16 mm<sup>2</sup> min.,screened  
Maximum cable length:

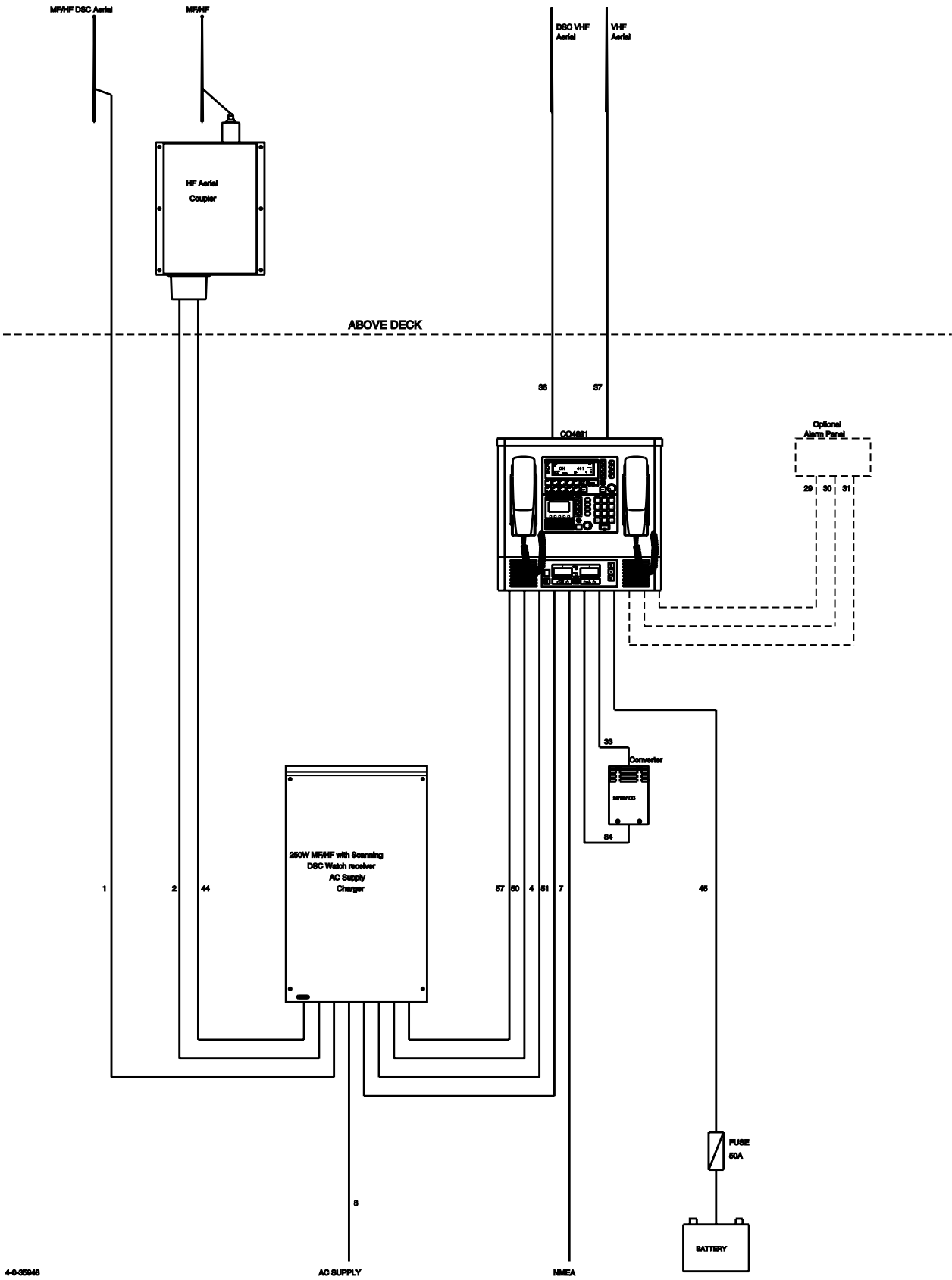
Max cable length	Cable dimensions
Metres	mm2
11	2X16
17	2X25

**Cable 57**  
**Connection between:**  
**MF/HF transceiver (TS2) - connection board (X31)**  
Cable dimensions:   2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Transceiver	Connection board
	TS9	X31
AC alarm C	5	1
AC alarm C	6	2
GND		3



EXTERNAL CABLE OVERVIEW, A2, FLOATING CHARGE AND AC/DC, 250W



**Cable 1**  
**Connection between:**  
**MF/HF DSC aerial - MF/HF transceiver DSC/RX**  
Cable dimensions:     RG 213/U maximum length 100 m  
Part no.:               77.508

**Cable 2**  
**Connection between:**  
**MF/HF aerial coupler - MF/HF transceiver RX/TX**  
Cable dimensions:     RG 213/U maximum length 100 m  
Part no.:               77.508

**Cable 4**  
**Connection between:**  
**MF/HF transceiver(TS10) - connection board (X23)**  
Cable dimensions:     5x2x0.5 mm<sup>2</sup> screened, maximum length 100 m  
Connections:

Signal	Transceiver	Connection board	
	TS10	X23	
Supply on	1	1	
Data+	2	2	Twisted pairs
Data-	3	3	
AF+	4	4	Twisted pairs
AF-	5	5	
0V	6	6	Twisted pairs
+24V	7	7	
RXAF+	8	8	Twisted pairs
RXAF-	9	9	

**Cable 7**  
**Connection between:**  
**Connection board (X36) - NMEA IN**  
Cable dimensions:     2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Connection board
	X36
NMEA RX+	1
NMEA RX-	2
GND	3

**Cable 8**  
**AC supply to MF/HF transceiver**  
Cable dimensions:     3x1.5 mm<sup>2</sup> screened

Signal	Transceiver
	TS3
LINE	1
NEUTRAL	2
GND	3

**Cable 16**  
**Connection between:**  
**Connection board (X35) - EGC printer (X1)**  
Cable dimensions:     2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Connection board	EGC printer
	X35	X1
+24V	1	1
0V	2	2
GND	3	3
Remote on		2

**Cable 20**  
The handset is connected to the Handsetplug at the VHF.

**Cable 28**  
**Connection between:**  
**Alarm panel (SAT-C) - connection board (X28)**  
Connectors:           SUB-D 9-pole male - X28  
Cable dimensions:     3x2x0.5 mm<sup>2</sup> screened  
Connections:

	Alarm panel	Connection board	
Signal	SUB-D 9-pole male	X28	
0V	2	2	Twisted pairs
+9V	9	9	
I/O	3	3	Twisted pairs
I/O	6	6	
I/O	4	4	Twisted pairs
INPUT	7	7	

**Cable 29**  
**Connection between:**  
**Connection board (X18) - alarm panel (VHF)**  
Connectors:           X18 - SUB-D 9-pole male  
Cable dimensions:     2x2x0.5 mm<sup>2</sup> screened  
Connections:

	Alarm panel	Connection board	
Signal	SUB-D 9-pole male	X18	
+12V	9	1	Twisted pairs
0V	2	2	
SPARC+	3	3	Twisted pairs
SPARC-	5	4	

**Cable 30**  
**Connection between:**  
**Connection board (X5) - alarm panel (DC supply)**  
Cable dimensions:     4x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Alarm panel	Connection board
	SUB-D 9-pole female	X5
+24V	7	1
0V	6	2
+24V	9	3
0V	8	4

**Cable 31**  
**Connection between:**  
**Alarm panel (MF/HF) - connection board (X10)**  
Connectors:           SUB-D 9-pole male - X10  
Cable dimensions:     2x2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Alarm panel	Connection board	
	SUB-D 9-pole male	X10	
+24V	9	1	Twisted pairs
0V	2	2	
SPARC+	3	3	Twisted pairs
SPARC-	5	4	

**Cable 32**  
**Connection between:**  
**Connection board (X27) - VHF (SPARC)**  
Connectors:           X27 - SUB-D 15-pole HD male  
Cable dimensions:     3x2x0.5 mm<sup>2</sup> twisted pair, screened  
Connections:

Signal	VHF	Connection board	
	SUB-D 15-pole HD	X27	
SPARC+	2 (yellow)	3	Twisted pairs
SPARC-	3 (yellow/black)	4	
GND	6 (orange)	2	Twisted pairs
+12V	7 (orange/white)	1	
GND	6 (red)	2	Twisted pairs
+12V	10 (black/white)	1	

**Cable 33**  
**Connection between:**  
**24/12V converter - VHF**  
Cable dimensions:     2x2.5+ 1x0.5 mm<sup>2</sup>  
Cable length:           1.5 m factory supplied  
Connections:

Signal	N420	VHF
	13.2V DC out	
On/off	On/off	1
+13.2V	+	2
0V	-	3

**Cable 34**  
**Connection between:**  
**Connection board (X22) - 24/12V converter**  
Cable dimensions:     2x1.5 mm<sup>2</sup> min.,screened  
Max. cable length:

Max cable length	Cable dimensions
Metres	mm2
15	2X1.5
20	2X2.0
30	2X3.0

Connections:

Signal	Connection board	N420
	X22	24V DC IN
+24V	1	+
0V	2	-
GND	3	

**Cable 35**  
**Connection between:**  
**Connection board (X34) - VHF (option)**  
Connectors:           X34 - SUB-D 15-pole HD male  
Cable dimensions:     2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Connection board	VHF
	X34	OPTION
NMEA+	1	4
NMEA-	2	5
GND	3	

**Cable 36**  
**Connection between:**  
**VHF DSC aerial - VHF DSC/RX**  
Cable dimensions:     RG 214, maximum length 25 m  
Part no.:               77.508

**Cable 37**  
**Connection between:**  
**VHF aerial - VHF Rx/Tx**  
Cable dimensions:     RG 214, maximum length 25 m

**Cable 41**  
**Connection between:**  
**Inmarsat C aerial - Inmarsat C transceiver**  
Cable dimensions:     RG 214, max. length 40 m

**Cable 43**  
**Connection between:**  
**Connection board (X19,21) - EGC printer (X2)**  
Cable dimensions:     2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Connection board	EGC printer
	X21, X19	X2
ArcNet A	1	7
ArcNet B	2	8
GND	3	6 or 9

**Cable 44**  
**Connection between:**  
**Tranceiver - aerial**  
Connectors:           TS4 - TS4  
Cable dimensions:     4x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Transceiver	Aerial coupler
	TS4	TS4
+24V	1	1
RX/TX Protec	2	2
TU-ATU Data	3	3
GND	4	4

**Cable 45**  
**Connection between:**  
**Connection board (X38 and X39) - battery**  
Cable dimensions:     2x16 mm<sup>2</sup> min.,screened  
Maximum cable length:

Max cable length	Cable dimensions
Metres	mm2
11	2X16
17	2X25

**Cable 50**  
**Connection between:**  
**MF/HF transceiver (TS 3) - connection board (X34)**  
Cable dimensions:     2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Transceiver	Connection board
	TS3	X34
Nmea RX+	1	1
NMEA RX-	2	2
GND	3	3

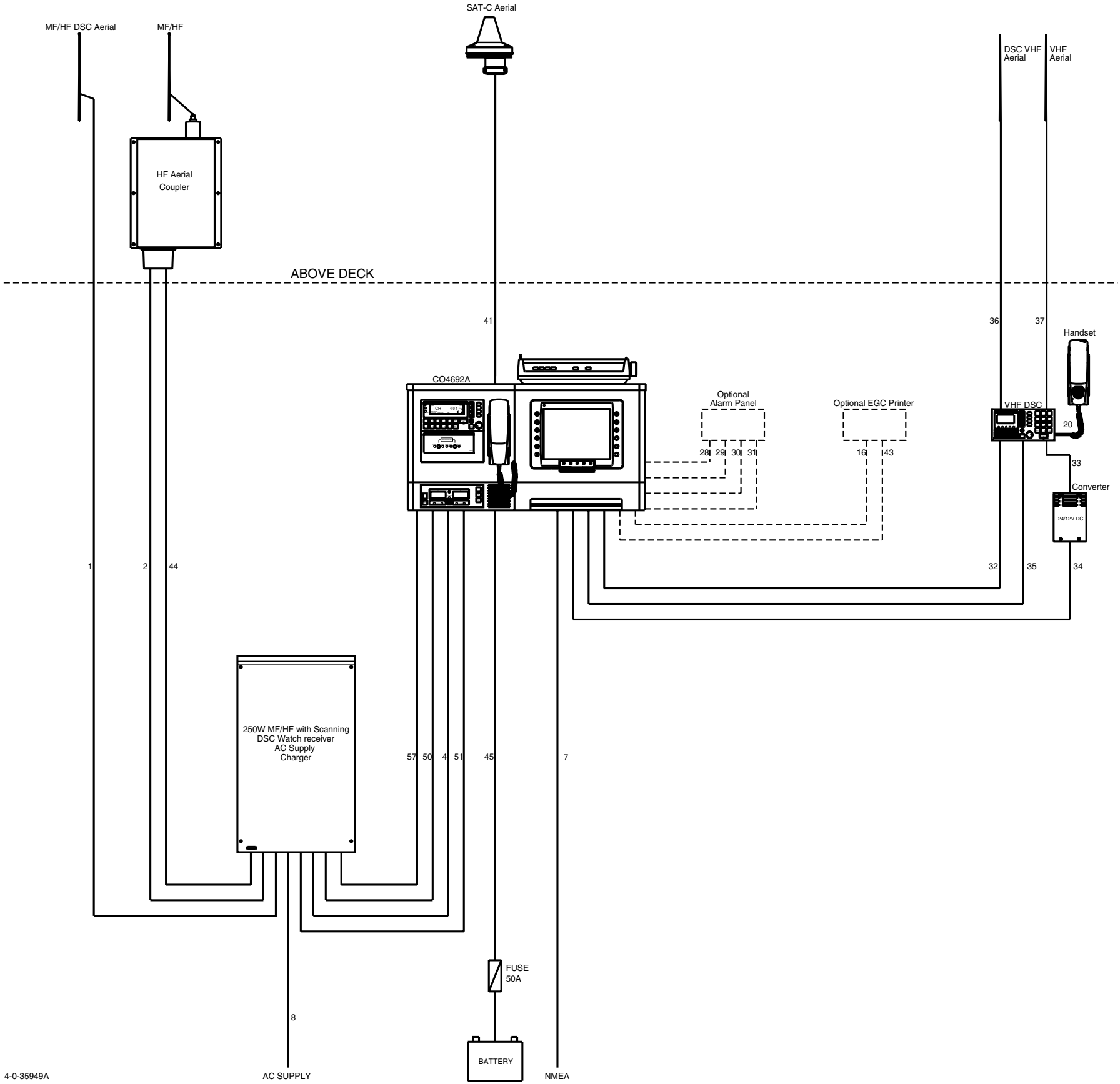
**Cable 51**  
**Connection between:   MF/HF transceiver (24V bat-tery) - connection board (X40 and X41)**  
Cable dimensions:     2x16 mm<sup>2</sup> min.,screened  
Maximum cable length:

Max cable length	Cable dimensions
Metres	mm2
11	2X16
17	2X25

**Cable 57**  
**Connection between:**  
**MF/HF transceiver (TS2) - connection board (X31)**  
Cable dimensions:     2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Transceiver	Connection board
	TS9	X31
AC alarm C	5	1
AC alarm C	6	2
GND		3

EXTERNAL CABLE OVERVIEW, A2, FLOATING CHARGE AND AC/DC, 250W, 1 x SAT-C



**Cable 1**  
**Connection between:**  
**MF/HF DSC aerial - MF/HF transceiver DSC/RX**  
Cable dimensions:   RG 213/U maximum length 100 m  
Part no.:           77.508

**Cable 2**  
**Connection between:**  
**MF/HF aerial coupler - MF/HF transceiver RX/TX**  
Cable dimensions:   RG 213/U maximum length 100 m  
Part no.:           77.508

**Cable 4**  
**Connection between:**  
**MF/HF transceiver(TS10) - connection board (X23)**  
Cable dimensions:   5x2x0.5 mm<sup>2</sup> screened, maximum length 100 m  
Connections:

Signal	Transceiver	Connection board	
	TS10	X23	
Supply on	1	1	
Data+	2	2	Twisted pairs
Data-	3	3	
AF+	4	4	Twisted pairs
AF-	5	5	
0V	6	6	Twisted pairs
+24V	7	7	
RXAF+	8	8	Twisted pairs
RXAF-	9	9	

**Cable 7**  
**Connection between:**  
**Connection board (X36) - NMEA IN**  
Cable dimensions:   2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Connection board
	X36
NMEA RX+	1
NMEA RX-	2
GND	3

**Cable 8**  
**AC supply to MF/HF transceiver**  
Cable dimensions:   3x1.5 mm<sup>2</sup> screened

Signal	Transceiver
	TS3
LINE	1
NEUTRAL	2
GND	3

**Cable 11**  
**Connection between:   Battery charger (OUT MF/HF) - connection board (X44 and X45)**  
Cable dimensions:   2x16 mm<sup>2</sup> min.,screened  
Maximum cable length:

Max cable length	Cable dimensions
Metres	MM <sup>2</sup>
11	2X16
17	2X25

**Cable 14**  
**Connection between:**  
**Connection board (X20) - battery charger (X3)**  
Cable dimensions:   6x0.5 mm<sup>2</sup> screened, maximum length 100 m  
Connections:

Signal	Connection board	Power supply/battery charger
	X20	X3
V BAT+	1	6
V BAT-	2	4
+ SHUNT	3	3
- SHUNT	4	5
AC ALARM	5	7
	6	
AC ALARM	7	8
	8	

**Cable 15**  
**AC supply to battery charger**  
Cable dimensions:   3x1.5 mm<sup>2</sup> screened

Signal	Battery charger
LINE	1
NEUTRAL	2
GND	3

**Cable 16**  
**Connection between:**  
**Connection board (X35) - EGC printer (X1)**  
Cable dimensions:   2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Connection board	EGC printer
	X35	X1
+24V	1	1
0V	2	2
GND	3	3
Remote on		2

**Cable 20**  
The handset is connected to the Handset plug at the VHF.

**Cable 23**  
The keyboard is connected to the MF/HF control unit (X4).

**Cable 24**  
**Connection between:**  
**Printer (Data in), MF/HF control unit (X1)**  
Cable type:           Printer cable (Centronic - SUB-D).  
Cable length:       2.0 m factory supplied.  
Part no.:           56.013

**Cable 25**  
**Connection between:**  
**Printer (24V DC) - connection board (X32)**  
Cable dimensions:   2x1.5 mm<sup>2</sup>  
Cable length:       1.5 m factory supplied.  
Part no.:           56.066

**Cable 28**  
**Connection between:**  
**Alarm panel (SAT-C) - connection board (X28)**  
Connectors:           SUB-D 9-pole male - X28  
Cable dimensions:   3x2x0.5 mm<sup>2</sup> screened  
Connections:

	Alarm panel	Connection board	
Signal	SUB-D 9-pole male	X28	
0V	2	2	Twisted pairs
+9V	9	9	
I/O	3	3	Twisted pairs
I/O	6	6	
I/O	4	4	Twisted pairs
INPUT	7	7	

**Cable 29**  
**Connection between:**  
**Connection board (X18) - alarm panel (VHF)**  
Connectors:           X18 - SUB-D 9-pole male  
Cable dimensions:   2x2x0.5 mm<sup>2</sup> screened  
Connections:

	Alarm panel	Connection board	
Signal	SUB-D 9-pole male	X18	
+12V	9	1	Twisted pairs
0V	2	2	
SPARC+	3	3	Twisted pairs
SPARC-	5	4	

**Cable 30**  
**Connection between:**  
**Connection board (X5) - alarm panel (DC supply)**  
Cable dimensions:   4x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Alarm panel	Connection board
	SUB-D 9-pole female	X5
+24V	7	1
0V	6	2
+24V	9	3
0V	8	4

**Cable 31**  
**Connection between:**  
**Alarm panel (MF/HF) - connection board (X10)**  
Connectors:           SUB-D 9-pole male - X10  
Cable dimensions:   2x2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Alarm panel	Connection board	
	SUB-D 9-pole male	X10	
+24V	9	1	Twisted pairs
0V	2	2	
SPARC+	3	3	Twisted pairs
SPARC-	5	4	

**Cable 32**  
**Connection between:**  
**Connection board (X27) - VHF (SPARC)**  
Connectors:           X27 - SUB-D 15-pole HD male  
Cable dimensions:   3x2x0.5 mm<sup>2</sup> twisted pair, screened  
Connections:

Signal	VHF	Connection board	
	SUB-D 15-pole HD	X27	
SPARC+	2 (yellow)	3	Twisted pairs
SPARC-	3 (yellow/black)	4	
GND	6 (orange)	2	Twisted pairs
+12V	7 (orange/white)	1	
GND	6 (red)	2	Twisted pairs
+12V	10 (black/white)	1	

**Cable 33**  
**Connection between:**  
**24/12V converter - VHF**  
Cable dimensions:   2x2.5+ 1x0.5 mm<sup>2</sup>  
Cable length:       1.5 m factory supplied  
Connections:

Signal	N420	VHF
	13.2V DC out	
On/off	On/off	1
+13.2V	+	2
0V	-	3

**Cable 34**  
**Connection between:**  
**Connection board (X22) - 24/12V converter**  
Cable dimensions:   2x1.5 mm<sup>2</sup> min., screened  
Connections:

Max cable length	Cable dimensions
Metres	mm2
15	2X1.5
20	2X2.0
30	2X3.0

Signal	Connection board	N420
	X22	24V DC IN
+24V	1	+
0V	2	-
GND	3	

**Cable 35**  
**Connection between:**  
**Connection board (X34) - VHF (option)**  
Connectors:           X34 - SUB-D 15-pole HD male  
Cable dimensions:   2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Connection board	VHF
	X34	OPTION
NMEA+	1	4
NMEA-	2	5
GND	3	

**Cable 36****Connection between:** Cable 50**Connection between:** HF transceiver (TS 3) - con**VHF DSC aerial - VHF DSC/RX**Cable dimensions: RG 214 maximum length  
25 m**Cable 37****Connection between:****VHF aerial - VHF Rx/Tx**Cable dimensions: RG 214 maximum length  
25 m**Cable 41****Connection between:****Inmarsat C 3005M aerial - Inmarsat C transceiver**Cable dimensions: RG 214 maximum length  
40 m**Cable 43****Connection between:****Connection board (X19,21) - EGC printer (X2)**Cable dimensions: 2x0.5 mm<sup>2</sup> screened**Connections:**

Signal	Connection board	EGC printer
	X21, X19	X2
ArcNet A	1	7
ArcNet B	2	8
GND	3	6.9

**Cable 44****Connection between:****Tranceiver - ATU**

Connectors: TS4 - TS4

Cable dimensions: 4x0.5 mm<sup>2</sup> screened**Connections:**

Signal	Transceiver	HF aerial
	TS4	TS4
+24V	1	1
RX/TX Protec	2	2
TU-ATU Data	3	3
GND	4	4

**Cable 45****Connection between:****Connection board (X38 and X39) - battery**Cable dimensions: 2x16 mm<sup>2</sup> min., screened**Maximum cable length:**

Max cable length	Cable dimensions
Metres	mm2
11	2X16
17	2X25

**Cable 50****Connection between:****HF transceiver (TS 3) - connection board (X34)**Cable dimensions: 2x0.5 mm<sup>2</sup> screened**Connections:**

Signal	Transceiver	Connection board
	TS3	X34
Nmea RX+	1	1
NMEA RX-	2	2
GND	3	3

**Cable 51****Connection between:** MF/HF transceiver (24V battery) - connection board (X40 and X41)Cable dimensions: 2x16 mm<sup>2</sup> min., screened**Maximum cable length:**

Max cable length	Cable dimensions
Metres	mm2
11	2X16
17	2X25

**Cable 52****Connection between:****Connection board (X43) - VHF (option)**

Connectors: X43-SUB-D 15-pole HD male

Cable dimensions: 2x0.5 mm<sup>2</sup> screened**Connections:****Cable 53****Connection between:****Connection board (X29) - 24/12V converter**Cable dimensions: 2x1.5 mm<sup>2</sup> min., screened

Max cable length	Cable dimensions
Metres	mm2
15	2X1.5
20	2X2.0
30	2X3.0

**Connections:**

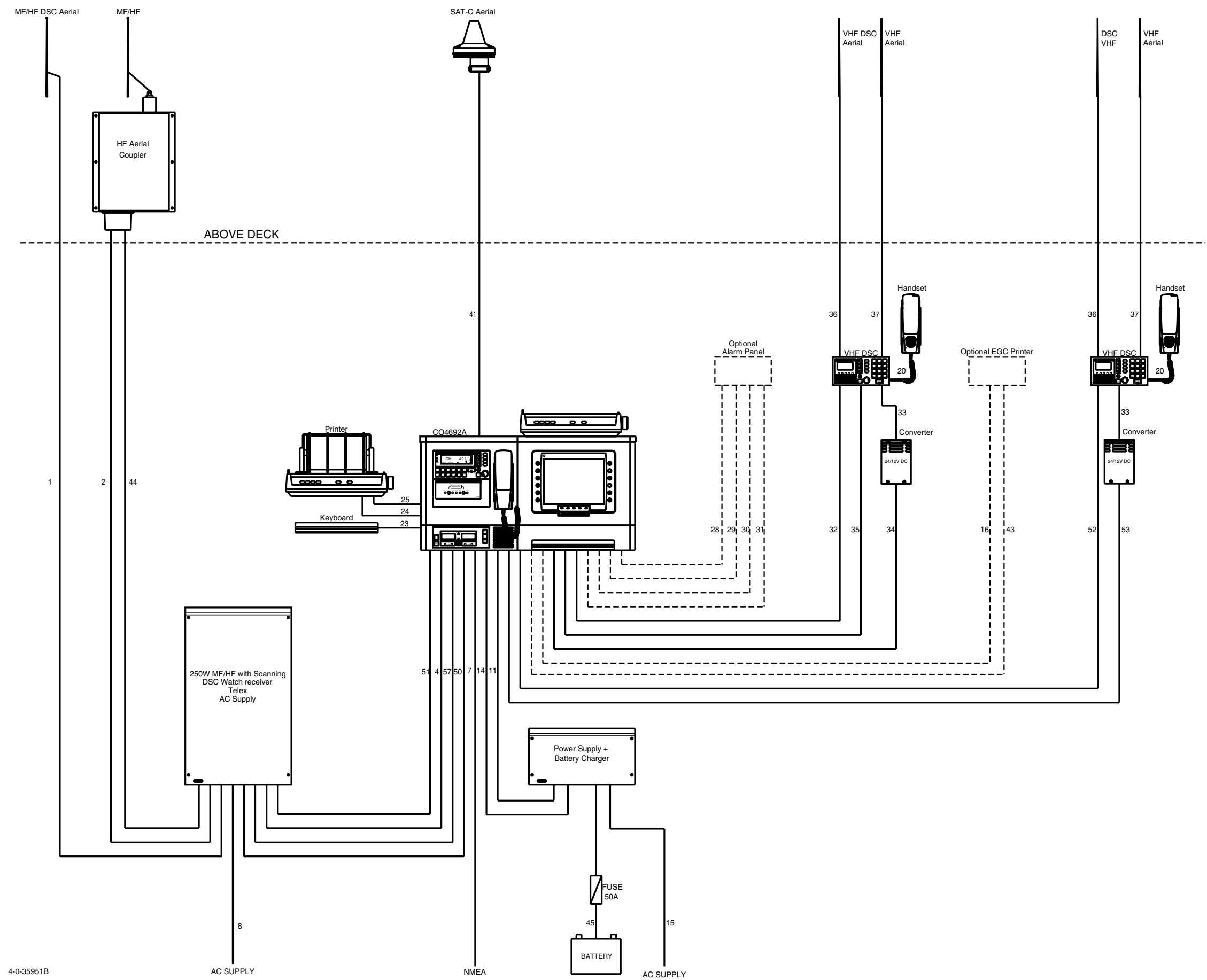
Signal	Connection board	N420
	X22	24V DC IN
+24V	1	+
0V	2	-
GND	3	

**Cable 57****Connection between:****MF/HF transceiver (TS2) - connection board (X31)**Cable dimensions: 2x0.5 mm<sup>2</sup> screened**Connections:**

Signal	Transceiver	Connection board
	TS2	X31
AC alarm C	5	1
AC alarm C	6	2
GND		3



EXTERNAL CABLE OVERVIEW, A3, FLOATING CHARGE AND AC/DC, 250W, GMDSS RADIOTELEX + SAT-C





**Cable 1**  
**Connection between:**  
**MF/HF DSC aerial - MF/HF transceiver DSC/RX**  
Cable dimensions: RG 213/U maximum length 100 m  
Part no.: 77.508

**Cable 2**  
**Connection between:**  
**MF/HF aerial coupler - MF/HF transceiver RX/TX**  
Cable dimensions: RG 213/U maximum length 100 m  
Part no.: 77.508

**Cable 4**  
**Connection between:**  
**MF/HF transceiver(TS10) - connection board (X23)**  
Cable dimensions: 5x2x0.5 mm<sup>2</sup> screened, maximum length 100 m  
Connections:

Signal	Transceiver	Connection board	
	TS10	X23	
Supply on	1	1	
Data+	2	2	Twisted pairs
Data-	3	3	
AF+	4	4	Twisted pairs
AF-	5	5	
0V	6	6	Twisted pairs
+24V	7	7	
RXAF+	8	8	Twisted pairs
RXAF-	9	9	

**Cable 7**  
**Connection between:**  
**Connection board (X36) - NMEA IN**  
Cable dimensions: 2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Connection board
	X36
NMEA RX+	1
NMEA RX-	2
GND	3

**Cable 8**  
**AC supply to MF/HF transceiver**  
Cable dimensions: 3x1.5 mm<sup>2</sup> screened

Signal	Transceiver
	TS3
LINE	1
NEUTRAL	2
GND	3

**Cable 11**  
**Connection between: Battery charger (OUT MF/HF) - connection board (X44 and X45)**  
Cable dimensions: 2x16 mm<sup>2</sup> min., screened  
Maximum cable length:

Max cable length	Cable dimensions
Metres	MM <sup>2</sup>
11	2X16
17	2X25

**Cable 14**  
**Connection between:**  
**Connection board (X20) - battery charger (X3)**  
Cable dimensions: 6x0.5 mm<sup>2</sup> screened, maximum length 100 m  
Connections:

Signal	Connection board	Power supply/battery charger
	X20	X3
V BAT+	1	6
V BAT-	2	4
+ SHUNT	3	3
- SHUNT	4	5
AC ALARM	5	7
	6	
AC ALARM	7	8
	8	

**Cable 15**  
**AC supply to battery charger**  
Cable dimensions: 3x1.5 mm<sup>2</sup> screened

Signal	Battery charger
LINE	1
NEUTRAL	2
GND	3

**Cable 16**  
**Connection between:**  
**Connection board (X35) - EGC printer (X1)**  
Cable dimensions: 2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Connection board	EGC printer
	X35	X1
+24V	1	1
0V	2	2
GND	3	3
Remote on		2

**Cable 20**  
The handset is connected to the Handsetplug at the VHF.

**Cable 28**  
**Connection between:**  
**Alarm panel (SAT-C) - connection board (X28)**  
Connectors: SUB-D 9-pole male - X28  
Cable dimensions: 3x2x0.5 mm<sup>2</sup> screened  
Connections:

	Alarm panel	Connection board	
Signal	SUB-D 9-pole male	X28	
0V	2	2	Twisted pairs
+9V	9	9	
I/O	3	3	Twisted pairs
I/O	6	6	
I/O	4	4	Twisted pairs
INPUT	7	7	

**Cable 29**  
**Connection between:**  
**Connection board (X18) - alarm panel (VHF)**  
Connectors: NC - SUB-D 9-pole male  
Cable dimensions: 2x2x0.5 mm<sup>2</sup> screened  
Connections:

	Alarm panel	Connection board	
Signal	SUB-D 9-pole male	X18	
+12V	9	1	Twisted pairs
0V	2	2	
SPARC+	3	3	Twisted pairs
SPARC-	5	4	

**Cable 30**  
**Connection between:**  
**Connection board (X5) - alarm panel (DC supply)**  
Cable dimensions: 4x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Alarm panel	Connection board
	SUB-D 9-pole female	X5
+24V	7	1
0V	6	2
+24V	9	3
0V	8	4

**Cable 31**  
**Connection between:**  
**Alarm panel (MF/HF) - connection board (X10)**  
Connectors: SUB-D 9-pole male - NC  
Cable dimensions: 2x2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Alarm panel	Connection board	
	SUB-D 9-pole male	X10	
+24V	9	1	Twisted pairs
0V	2	2	
SPARC+	3	3	Twisted pairs
SPARC-	5	4	

**Cable 32**  
**Connection between:**  
**Connection board (X27) - VHF (SPARC)**  
Connectors: X27 - SUB-D 15-pole HD male  
Cable dimensions: 3x2x0.5 mm<sup>2</sup> twisted pair, screened  
Connections:

Signal	VHF	Connection board	
	SUB-D 15-pole HD	X27	
SPARC+	2 (yellow)	3	Twisted pairs
SPARC-	3 (yellow/black)	4	
GND	6 (orange)	2	Twisted pairs
+12V	7 (orange/white)	1	
GND	6 (red)	2	Twisted pairs
+12V	10 (black/white)	1	

**Cable 33**  
**Connection between:**  
**24/12V converter - VHF**  
Cable dimensions: 2x2.5+ 1x0.5 mm<sup>2</sup>  
Cable length: 1.5 m factory supplied  
Connections:

Signal	N420	VHF
	13.2V DC out	
On/off	On/off	1
+13.2V	+	2
0V	-	3

**Cable 34**  
**Connection between:**  
**Connection board (X22) - 24/12V converter**  
Cable dimensions: 2x1.5 mm<sup>2</sup> min., screened  
Connections:

Max cable length	Cable dimensions
Metres	mm <sup>2</sup>
15	2X1.5
20	2X2.0
30	2X3.0

Connections:

Signal	Connection board	N420
	X22	24V DC IN
+24V	1	+
0V	2	-
GND	3	

**Cable 35**  
**Connection between:**  
**Connection board (X34) - VHF (option)**  
Connectors: X34 - SUB-D 15-pole HD male  
Cable dimensions: 2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Connection board	VHF
	X34	OPTION
NMEA+	1	4
NMEA-	2	5
GND	3	

**Cable 36**  
**Connection between:**  
**VHF DSC aerial - VHF DSC/RX**  
Cable dimensions: RG 214 maximum length 25 m

**Cable 37**  
**Connection between:**  
**VHF aerial - VHF Rx/Tx**  
Cable dimensions: RG 214 maximum length 25 m

**Cable 41**  
**Connection between:**  
**Inmarsat C 3005M aerial - Inmarsat C transceiver**  
Cable dimensions: RG 214 maximum length 40 m

**Cable 43**  
**Connection between:**  
**Connection board (X19,21) - EGC printer (X2)**  
Cable dimensions: 2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Connection board	EGC printer
	X21, X19	X2
ArcNet A	1	7
ArcNet B	2	8
GND	3	6.9



**Cable 44****Connection between:****Transceiver - ATU**

Connectors: TS4 - TS4

Cable dimensions: 4x0.5 mm<sup>2</sup> screened

Connections:

Signal	Transceiver	HF aerial
	TS4	TS4
+24V	1	1
RX/TX Protec	2	2
TU-ATU Data	3	3
GND	4	4

**Cable 45****Connection between:****Connection board (X38 and X39) - battery**Cable dimensions: 2x16 mm<sup>2</sup> min., screened

Maximum cable length:

Max cable length	Cable dimensions
Metres	mm <sup>2</sup>
11	2X16
17	2X25

**Cable 50****Connection between:****MF/HF transceiver (TS 3) - connection board (X34)**Cable dimensions: 2x0.5 mm<sup>2</sup> screened

Connections:

Signal	Transceiver	Connection board
	TS3	X34
Nmea RX+	1	1
NMEA RX-	2	2
GND	3	3

**Cable 51****Connection between: MF/HF transceiver (24V battery) - connection board (X40 and X41)**Cable dimensions: 2x16 mm<sup>2</sup> min., screened

Maximum cable length:

Max cable length	Cable dimensions
Metres	mm <sup>2</sup>
11	2X16
17	2X25

**Cable 52****Connection between:****Connection board (X43) - VHF (option)**

Connectors: X43-SUB-D 15-pole HD male

Cable dimensions: 2x0.5 mm<sup>2</sup> screened

Connections:

**Cable 53****Connection between:****Connection board (X29) - 24/12V converter**Cable dimensions: 2x1.5 mm<sup>2</sup> min., screened

Max cable length	Cable dimensions
Metres	mm <sup>2</sup>
15	2X1.5
20	2X2.0
30	2X3.0

Connections:

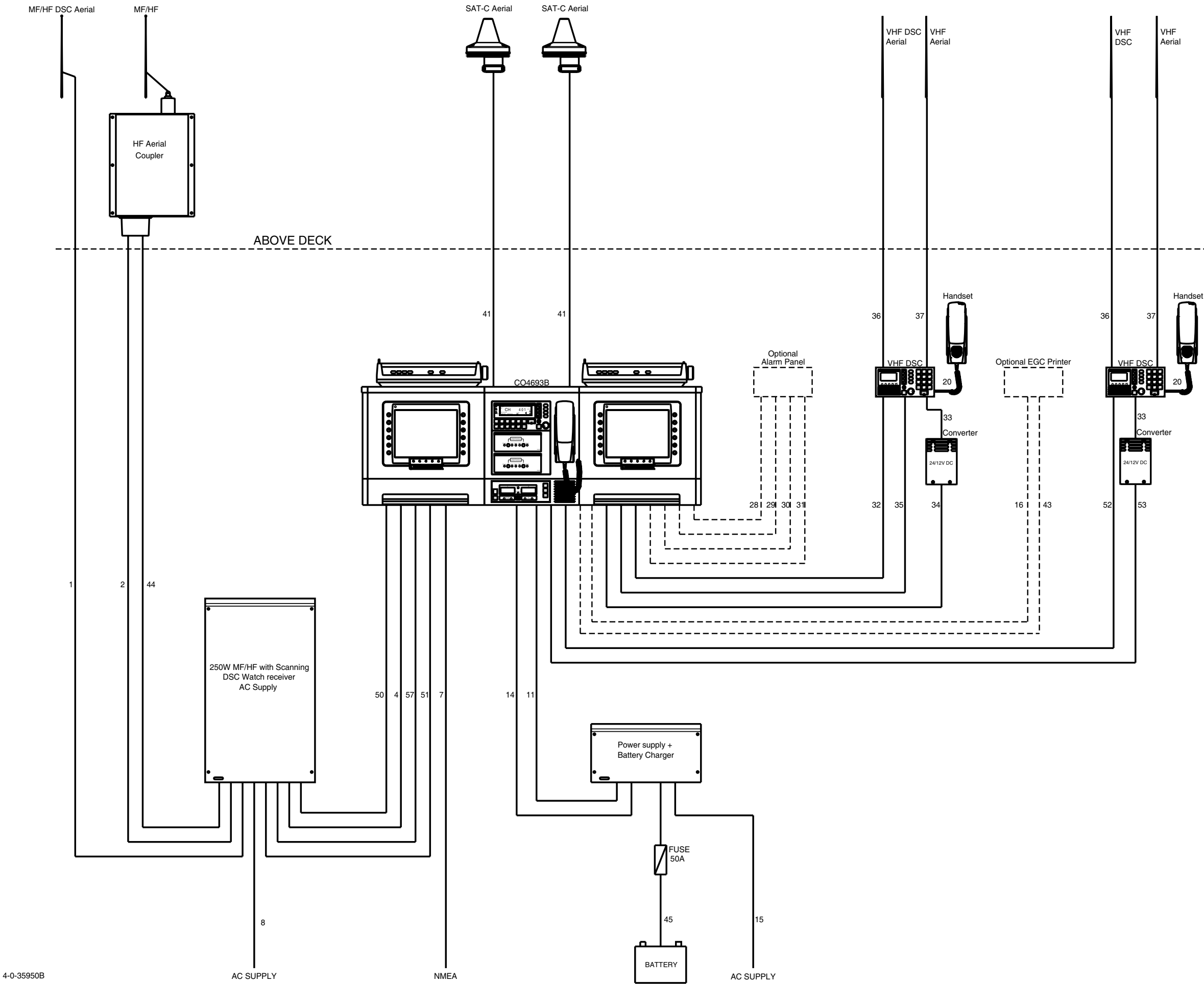
Signal	Connection board	N420
	X22	24V DC IN
+24V	1	+
0V	2	-
GND	3	

**Cable 57****Connection between:****MF/HF transceiver (TS9) - connection board (X31)**Cable dimensions: 2x0.5 mm<sup>2</sup> screened

Connections:

Signal	Transceiver	Connection board
	TS9	X31
AC alarm C	5	1
AC alarm C	6	2
GND		3





4-0-35950B

AC SUPPLY

NMEA

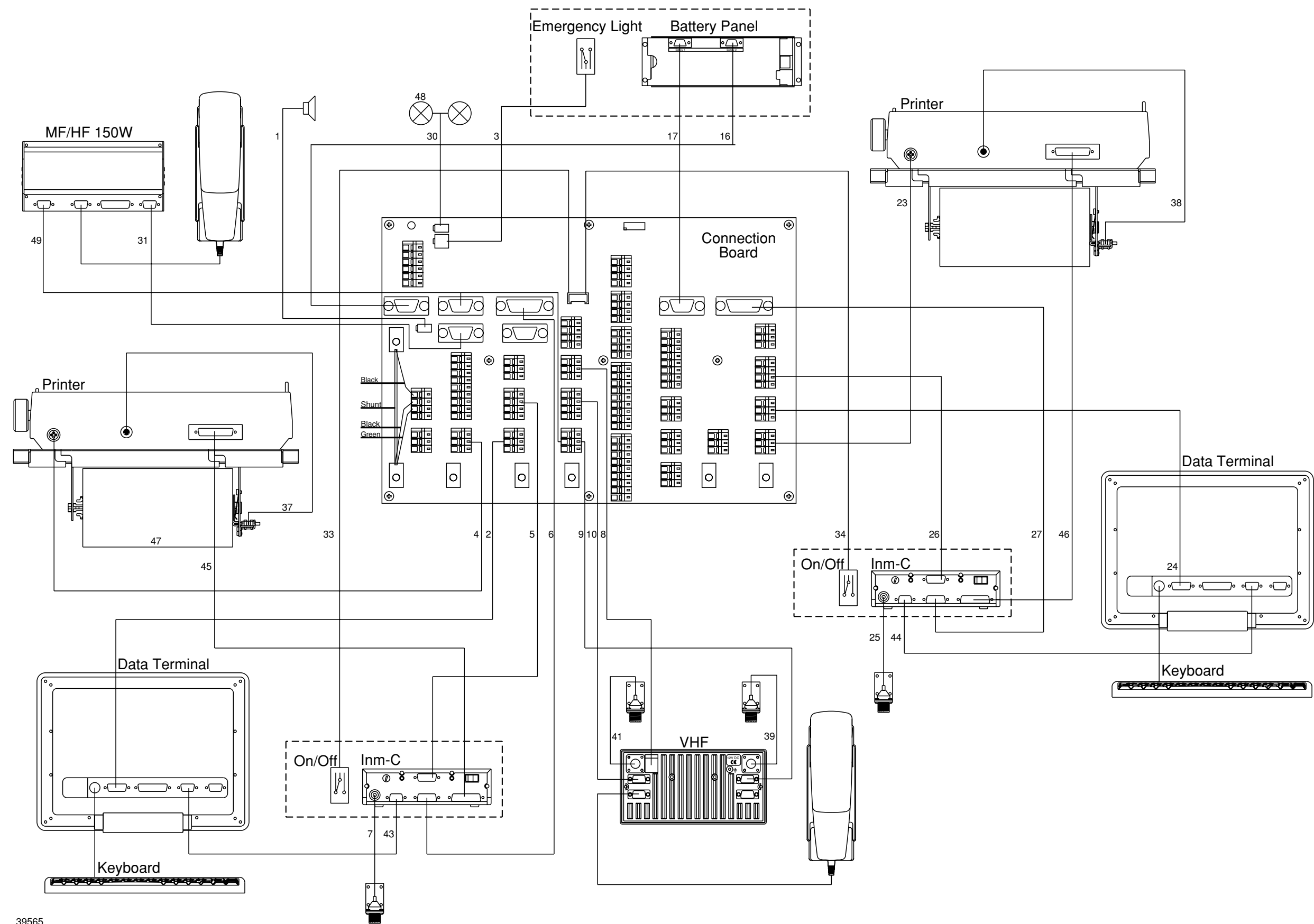
AC SUPPLY

2.3.4 INSTALLATION INTERNAL 150W

INTERNAL CABLES

Cable Description		Lenght (cm)	Connection between	Part no.	Remarks
1	Multicable	120	Speaker - connection board	56.119	Mounted on chassis
2	Power cable		Data terminal - connection board		Supplied with data terminal
3	Power cable	120	Light switch - connection board	56.120	Mounted on battery panel
4	Power cable		Printer - connection board		Supplied with printer
5	Power cable		Inmarsat C - connection board		Supplied with Inmarsat C
6	15 - 15 pole Sub D	120	Inmarsat C - connection board	56.124	100 W mounted in Sub D male
7	TNC female - N male	120	Inmarsat C - aerial	56.116	Mounted on chassis
8	Power cable		VHF - connection board		Supplied with VHF
9	Multicable	120	VHF option - connection board	56.114	15 pole Sub D HD
10	Multicable	120	VHF SPARC-bus - connection board	56.114	15 pole Sub D HD
16	9 - 9 pole Sub D	120	Battery panel - connection board	56.123	Battery 1
17	9 - 9 pole Sub D	120	Battery panel - connection board	56.123	Battery 2
23	Power cable		Printer - connection board		Supplied with printer
24	Power cable		Data terminal - connection board		Supplied with data terminal
25	TNC female - N male	120	Inmarsat C - aerial	56.116	Mounted on chassis
26	Power cable		Inmarsat C - connection board		Supplied with Inmarsat C
27	15 - 15 pole Sub D	120	Inmarsat C - connection board	56.124	100 W mounted in Sub D male
30	Power cable	120	Emergency light - connection board	56.118	Mounted on chassis
31	9 - 9 pole Sub D	120	MF/HF - connection board	56.123	Scan-bus
33	Multicable	120	Inmarsat C - connection board	56.121	Inmarsat C on/off
34	Multicable	120	Inmarsat C - connection board	56.121	Inmarsat C on/off
36	9 - 9 pole Sub D	120	Data terminal - connection board	56.123	RS232
37	8 Pole mini Din		Printer - paper switch	56.122	Mounted on chassis
38	8 Pole mini Din		Printer - paper switch	56.122	Mounted on chassis
39	PL - PL	120	VHF aerial (RX/TX)	527830	Mounted on chassis
41	PL - PL	120	VHF aerial (DSC)	527830	Mounted on chassis
43	9 - 9 pole Sub D		Data terminal - Inmarsat C		Supplied with data terminal
44	9 - 9 pole Sub D		Data terminal - Inmarsat C		Supplied with data terminal
45	Centronics - 25 pole Sub D		Printer - Inmarsat C / MF/HF		Supplied with Printer
46	Centronics - 25 pole Sub D		Printer - Inmarsat C		Supplied with Printer
47	Telex paper roll			47.830	Supplied with Printer
48	Halogen lamp G4 12V 5W			45.065	Mounted on chassis
49	9 - 9 Pole Sub D	120	MF/HF - connection board	56.184	L.S./NMEA

INTERNAL CABLE OVERVIEW, WITH 2 x SAT-C, MF/HF 150W



39565

2.3.4 INSTALLATION EXTERNAL 150W

**Cable 1**  
**Connection between:**  
**MF/HF DSC aerial - MF/HF transceiver DSC/RX**  
Cable dimensions: RG 213/U maximum length 100 m  
Part no.: 77.508

**Cable 2**  
**Connection between:**  
**MF/HF aerial coupler - MF/HF transceiver RX/TX**  
Cable dimensions: RG 213/U maximum length 100 m  
Part no.: 77.508

**Cable 4**  
**Connection between:**  
**MF/HF transceiver(TS10) - connection board (X23)**  
Cable dimensions: 5x2x0.5 mm<sup>2</sup> screened, maximum length 100 m  
Connections:

Signal	Transceiver	Connection board	
	TS10	X23	
Supply on	1	1	
Data+	2	2	Twisted pairs
Data-	3	3	
AF+	4	4	Twisted pairs
AF-	5	5	
0V	6	6	Twisted pairs
+24V	7	7	
RXAF+	8	8	Twisted pairs
RXAF-	9	9	

**Cable 7**  
**Connection between:**  
**Connection board (X36) - NMEA IN**  
Cable dimensions: 2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Connection board
	X36
NMEA RX+	1
NMEA RX-	2
GND	3

**Cable 8**  
**AC supply to MF/HF transceiver**  
Cable dimensions: 3x1.5 mm<sup>2</sup> screened

Signal	Transceiver
	TS3
LINE	1
NEUTRAL	2
GND	3

**Cable 11**  
**Connection between: Battery charger (OUT MF/HF) - connection board (X44 and X45)**  
Cable dimensions: 2x16 mm<sup>2</sup> min., screened  
Maximum cable length:

Max cable length	Cable dimensions
Metres	MM <sup>2</sup>
11	2X16
17	2X25

**Cable 15**  
**AC supply to battery charger**  
Cable dimensions: 3x1.5 mm<sup>2</sup> screened

Signal	Battery charger
LINE	1
NEUTRAL	2
GND	3

**Cable 16**  
**Connection between:**  
**Connection board (X35) - EGC printer (X1)**  
Cable dimensions: 2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Connection board	EGC printer
	X35	X1
+24V	1	1
0V	2	2
GND	3	3
Remote on		2

**Cable 20**  
The handset is connected to the Handsetplug at the VHF.

**Cable 23**  
The keyboard is connected to the MF/HF control unit (X4).

**Cable 24**  
**Connection between:**  
**Printer (Data in), MF/HF control unit (X1)**  
Cable type: Printer cable (Centronic - SUB-D).  
Cable length: 2.0 m factory supplied.  
Part no.: 56.013

**Cable 25**  
**Connection between:**  
**Printer (24V DC) - connection board (X32)**  
Cable dimensions: 2x1.5 mm<sup>2</sup>  
Cable length: 1.5 m factory supplied.  
Part no.: 56.066

**Cable 28**  
**Connection between:**  
**Alarm panel (SAT-C) - connection board (X28)**  
Connectors: SUB-D 9-pole male - NC  
Cable dimensions: 3x2x0.5 mm<sup>2</sup> screened  
Connections:

	Alarm panel	Connection board	
Signal	SUB-D 9-pole male	X28	
0V	2	2	Twisted pairs
+9V	9	9	
I/O	3	3	Twisted pairs
I/O	6	6	
I/O	4	4	Twisted pairs
INPUT	7	7	

**Cable 29**  
**Connection between:**  
**Connection board (X18) - alarm panel (VHF)**  
Connectors: NC - SUB-D 9-pole male  
Cable dimensions: 2x2x0.5 mm<sup>2</sup> screened  
Connections:

	Alarm panel	Connection board	
Signal	SUB-D 9-pole male	X18	
+12V	9	1	Twisted pairs
0V	2	2	
SPARC+	3	3	Twisted pairs
SPARC-	5	4	

**Cable 30**  
**Connection between:**  
**Connection board (X5) - alarm panel (DC supply)**  
Cable dimensions: 4x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Alarm panel	Connection board
	SUB-D 9-pole female	X5
+24V	7	1
0V	6	2
+24V	9	3
0V	8	4

**Cable 31**  
**Connection between:**  
**Alarm panel (MF/HF) - connection board (X10)**  
Connectors: SUB-D 9-pole male - NC  
Cable dimensions: 2x2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Alarm panel	Connection board	
	SUB-D 9-pole male	X10	
+24V	9	1	Twisted pairs
0V	2	2	
SPARC+	3	3	Twisted pairs
SPARC-	5	4	

**Cable 32**  
**Connection between:**  
**Connection board (X27) - VHF (SPARC)**  
Connectors: X27 - SUB-D 15-pole HD male  
Cable dimensions: 3x2x0.5 mm<sup>2</sup> twisted pair, screened  
Connections:

Signal	VHF	Connection board	
	SUB-D 15-pole HD	X27	
SPARC+	2 (yellow)	3	Twisted pairs
SPARC-	3 (yellow/black)	4	
GND	6 (orange)	2	Twisted pairs
+12V	7 (orange/white)	1	
GND	6 (red)	2	Twisted pairs
+12V	10 (black/white)	1	

**Cable 33**  
**Connection between:**  
**24/12V converter - VHF**  
Cable dimensions: 2x2.5+ 1x0.5 mm<sup>2</sup>  
Cable length: 1.5 m factory supplied  
Connections:

Signal	N420	VHF
	13.2V DC out	
On/off	On/off	1
+13.2V	+	2
0V	-	3

**Cable 34**  
**Connection between:**  
**Connection board (X22) - 24/12V converter**  
Cable dimensions: 2x1.5 mm<sup>2</sup> min., screened  
Connections:

Max cable length	Cable dimensions
Metres	mm2
15	2X1.5
20	2X2.0
30	2X3.0

Connections:

Signal	Connection board	N420
	X22	24V DC IN
+24V	1	+
0V	2	-
GND	3	

**Cable 35**  
**Connection between:**  
**Connection board (X34) - VHF (option)**  
Connectors: X34 - SUB-D 15-pole HD male  
Cable dimensions: 2x0.5 mm<sup>2</sup> screened  
Connections:

Signal	Connection board	VHF
	X34	OPTION
NMEA+	1	4
NMEA-	2	5
GND	3	

**Cable 36**  
**Connection between:**  
**VHF DSC aerial - VHF DSC/RX**  
Cable dimensions: RG 214 maximum length 25 m

**Cable 37**  
**Connection between:**  
**VHF aerial - VHF Rx/Tx**  
Cable dimensions: RG 214 maximum length 25 m  
Part no.: 77.508

**Cable 41**  
**Connection between:**  
**Inmarsat C 3005M aerial - Inmarsat C transceiver**  
Cable dimensions: RG 214 maximum length 40 m

**Cable 43****Connection between:****Connection board (X19,21) - EGC printer (X2)**Cable dimensions: 2x0.5 mm<sup>2</sup> screened

Connections:

Signal	Connection board	EGC printer
	X21, X19	X2
ArcNet A	1	7
ArcNet B	2	8
GND	3	6.9

**Cable 44****Connection between:****Tranceiver - ATU**

Connectors: TS4 - TS4

Cable dimensions: 4x0.5 mm<sup>2</sup> screened

Connections:

Signal	Transceiver	HF aerial
	TS4	TS4
+24V	1	1
RX/TX Protec	2	2
TU-ATU Data	3	3
GND	4	4

**Cable 45****Connection between:****Connection board (X38 and X39) - battery**Cable dimensions: 2x16 mm<sup>2</sup> min., screened

Maximum cable length:

Max cable length	Cable dimensions
Metres	mm <sup>2</sup>
11	2X16
17	2X25

**Cable 50****Connection between:****MF/HF transceiver (TS 3) - connection board (X34)**Cable dimensions: 2x0.5 mm<sup>2</sup> screened

Connections:

Signal	Transceiver	Connection board
	TS3	X34
Nmea RX+	1	1
NMEA RX-	2	2
GND	3	3

**Cable 51****Connection between: MF/HF transceiver (24V battery) - connection board (X40 and X41)**Cable dimensions: 2x16 mm<sup>2</sup> min., screened

Maximum cable length:

Max cable length	Cable dimensions
Metres	mm <sup>2</sup>
11	2X16
17	2X25

**Cable 52****Connection between:****Connection board (X43) - VHF (option)**

Connectors: NC-SUB-D 15-pole HD male

Cable dimensions: 2x0.5 mm<sup>2</sup> screened

Connections:

**Cable 53****Connection between:****Connection board (X29) - 24/12V converter**Cable dimensions: 2x1.5 mm<sup>2</sup> min., screened

Max cable length	Cable dimensions
Metres	mm <sup>2</sup>
15	2X1.5
20	2X2.0
30	2X3.0

Connections:

Signal	Connection board	N420
	X22	24V DC IN
+24V	1	+
0V	2	-
GND	3	

**Cable 57****Connection between:****MF/HF transceiver (TS2) - connection board (X31)**Cable dimensions: 2x0.5 mm<sup>2</sup> screened

Connections:

Signal	Transceiver	Connection board
	TS2	X31
AC alarm C	5	1
AC alarm C	6	2
GND		3

**Cable 59****Connection between:****Connection board (X20) - shunt box**Cable dimensions: 4x0.5 mm<sup>2</sup> screened, maximum length 100 m

Connections:

Signal	Connection board	Shunt box
	X20	
V BAT+	1	6
V BAT-	2	5
+ SHUNT	3	2
V MES-	4	4

**Cable 60****Connection between:****Connection board (X20) - charger**Cable dimensions: 2x0.5 mm<sup>2</sup> screened, maximum length 100 m

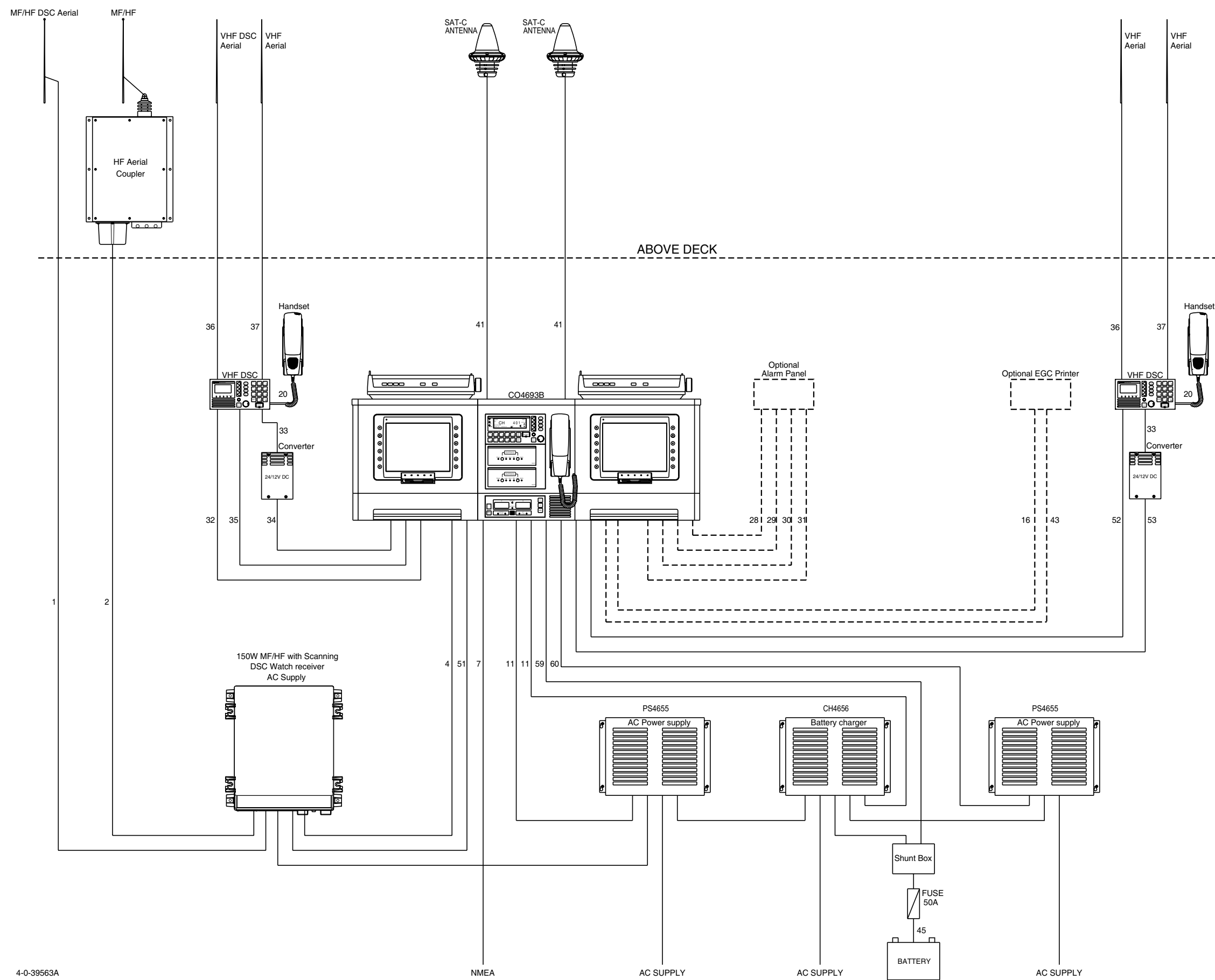
Connections:

Signal	Connection board	Charger
	X20	X4
AC ALARM	5	3
AC ALARM	7	4





EXTERNAL CABLE OVERVIEW, A3, FLOATING CHARGE AND AC/DC, 150W, 2 x SAT-C



4-0-39563A

NMEA

AC SUPPLY

AC SUPPLY

AC SUPPLY



**CONTENTS**

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3.2	OPERATION	3-2
3.3	INSTALLATION	3-3



### 3 BATTERY PANEL DESCRIPTION

#### 3.1 INTRODUCTION

##### GENERAL DESCRIPTION

The Battery Panel is used for monitoring the accumulator battery of the reserve supply arrangement for the radio installations. Battery voltage and current are displayed on digital panel meters, and visual and audible alarms are incorporated for warning of high/low battery voltage and failure of AC supply.

The Battery Panel is intended for installations with one or two batteries (determined by internal jumper setting) and one or two battery chargers. It contains separate alarm lamps for indication of high/low battery voltage for each battery, and separate alarm lamps for indication of AC supply failure for each battery charger. With a push button switch it is possible to switch the panel meters between monitoring battery 1 and battery 2 in two battery installations.

All units include dimmer, mute and test functions. The displays and keyboard are backlight illuminated.

The Battery Panel must be connected to a DC supply voltage of 21.6V to 31.2V, normally the + 24V DC from the AC Power Supply/Charger. In installations with two AC Power Supply/Chargers, the Battery Panel contains an automatic switch which secures supply voltage as long as just one of the AC Power Supply/Chargers are operating.

For current measurements the Battery Panel should be connected to the AC Power Supply/Charger or Junction Box Shunt containing fuses and a shunt resistor.

The voltage and current meters are supplied from the battery itself and will operate down to a battery voltage of 10 V. The audible alarm and visual indicators are supplied from the + 24 V DC of the AC Power Supply/Charger allowing low voltage alarm in case of battery failure.

##### TECHNICAL DATA

###### High voltage alarm

Threshold voltage: Adjustable from 24V to 33V

Factory preset to 29,5V  $\pm 2\%$

###### Low voltage alarm

Threshold voltage: Adjustable from 20.5V to 24.0V

Factory preset to 23.5V  $\pm 2\%$

###### AC-alarm

Input type selectable between relay contact or voltage input.

Relay contact:

"No Alarm" ~ open circuit

"Alarm" ~ short circuit

(Open circuit voltage: 1.2V, Short circuit current: 6mA)

Voltage input:

No Alarm" 24V DC nom.

"Alarm" 0V DC

(Input current at 24 V DC: 6mA)

The selection between Relay contact or Voltage input is determined by jumper setting. See 'Installation'.  
Factory preset: Relay contact

###### Alarm sound mute time

10 min. or infinite is selected by internal jumper setting. See 'Installation'.

Factory preset: infinite

**Voltmeter**

3 ½ digit

Resolution: 0.1V

Accuracy: ±4% typically

Measuring range: +10 to +40V

Sensitivity: 1V/V

**Current Meter**

3 ½ digit

Resolution: 0.1Amp

Accuracy: < ± 10% of meter reading

Measuring range: ±200 Amp

Sensitivity: 100mV/Amp

**Compass safe distance**

Standard: 0.9 m. Steering: 0.6 m.

## 3.2 OPERATION

**Mute the alarm sound**

The alarm sound is muted by pressing 'MUTE/TEST'.

A new event will reactivate the alarm sound.

**Switch between batteries**

To switch between Battery 1 and Battery 2, press 'BATT 1-2' briefly. Applicable for 2 battery installations.

**Test the Charger Panel**

Press 'MUTE/TEST' for 2 seconds to initiate a self test.

All lamps, backlight and alarm sound are activated.

**Adjust the light intensity**

Press 'DIM' to adjust the light intensity.

The dimmer button controls the intensity of the lamps and backlight in four levels. The light in the alarm lamps can not be turned fully off.

### 3.3 INSTALLATION

#### ADJUSTMENTS

Figure is not available at this stage.  
Refer to figure at page 3-4

Adjustment of High voltage alarm threshold for Battery 1:

1. Apply an input voltage set to the wanted threshold value to the terminals '+ VBAT' and '- VBAT'.
2. Adjust R84 (see figure pos. 1) until high battery alarm is indicated.
3. Decrease the input voltage by 0.5V and check that the alarm stops. If not repeat the adjustment.

Adjustment of Low voltage alarm threshold for Battery 1:

1. Apply an input voltage set to the wanted threshold value to the terminals '+ VBAT' and '- VBAT'.
2. Adjust R83 (see figure pos. 2) until low battery alarm is indicated.
3. Increase the input voltage by 0.5V and check that the alarm stops. If not repeat the adjustment.

Adjustment of High voltage alarm threshold for Battery 2:

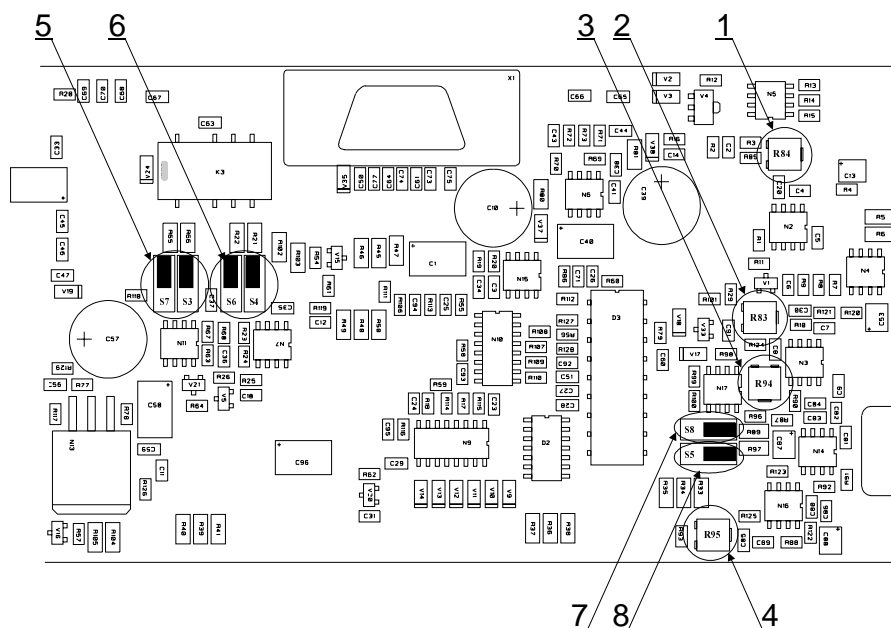
1. Apply an input voltage set to the wanted threshold value to the terminals '+ VBAT' and '- VBAT'.
2. Adjust R94 (see figure pos. 3) until high battery alarm is indicated.
3. Decrease the input voltage by 0.5V and check that the alarm stops. If not repeat the adjustment.

Adjustment of Low voltage alarm threshold for Battery 2:

1. Apply an input voltage set to the wanted threshold value to the terminals '+ VBAT' and '- VBAT'.
2. Adjust R95 (see figure pos. 4) until low battery alarm is indicated.
3. Increase the input voltage by 0.5V and check that the alarm stops. If not repeat the adjustment.

## JUMPER SETTINGS

Dismantling instructions are not available at this stage.



Setting of AC alarm 1 input type:

On the figure jumpers S3 and S7 ( pos. 5) are shown in the relay contact position.

1. To change to the voltage input both S3 and S7 must be set to the opposite position
2. Apply an input voltage to the X1 terminals 'AC Alarm V' and 'AC Alarm C'.
3. Check that no voltage gives alarm and that the alarm stops when 24V DC is applied.

Setting of AC alarm 2 input type:

On the figure jumpers S4 and S6 ( pos. 6) are shown in the relay contact position.

1. To change to the voltage input both S4 and S6 must be set to the opposite position
2. Apply an input voltage to the X2 terminals 'AC Alarm V' and 'AC Alarm C'.
3. Check that no voltage gives alarm and that the alarm stops when 24V DC is applied.

Setting of single or dual battery:

On the figure jumper S8 ( pos. 7) is shown in dual battery position.

1. To change to single battery the jumper S8 must be set to the opposite position.
2. Check that the battery shift function is inhibited.

Setting the mute time:

On the figure jumper S5 ( pos. 8) is shown in infinite mute time position.

1. To change mute time to 10 minutes the jumper S5 must be set to the opposite position.



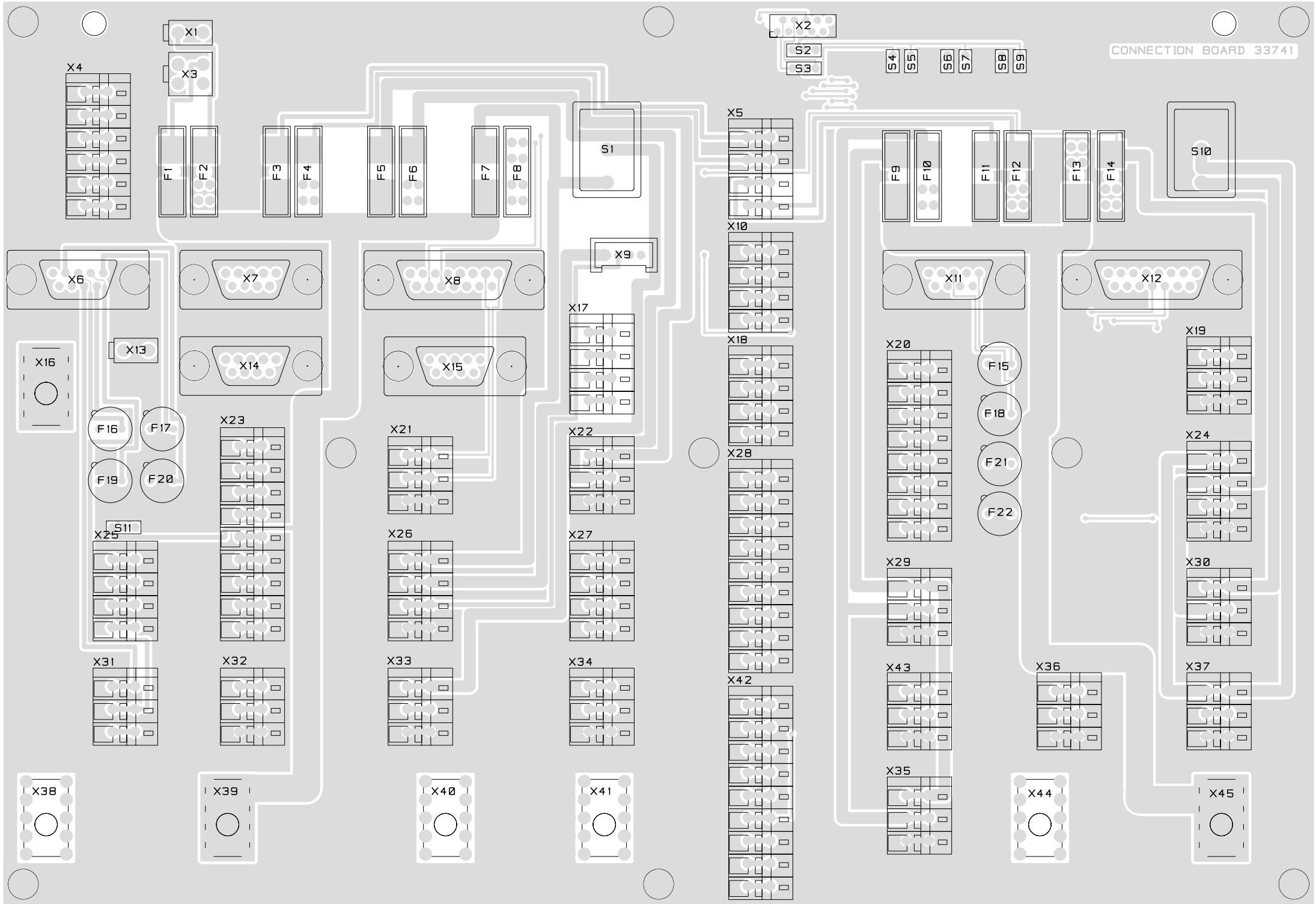
**CONTENTS**

<b>4</b>	<b>CIRCUIT DESCRIPTION AND SCHEMATIC DIAGRAMS</b>	<b>4-1</b>
4.1	COMPONENT LOCATION CONNECTION BOARD	4-1



4   CIRCUIT DESCRIPTION AND SCHEMATIC DIAGRAMS

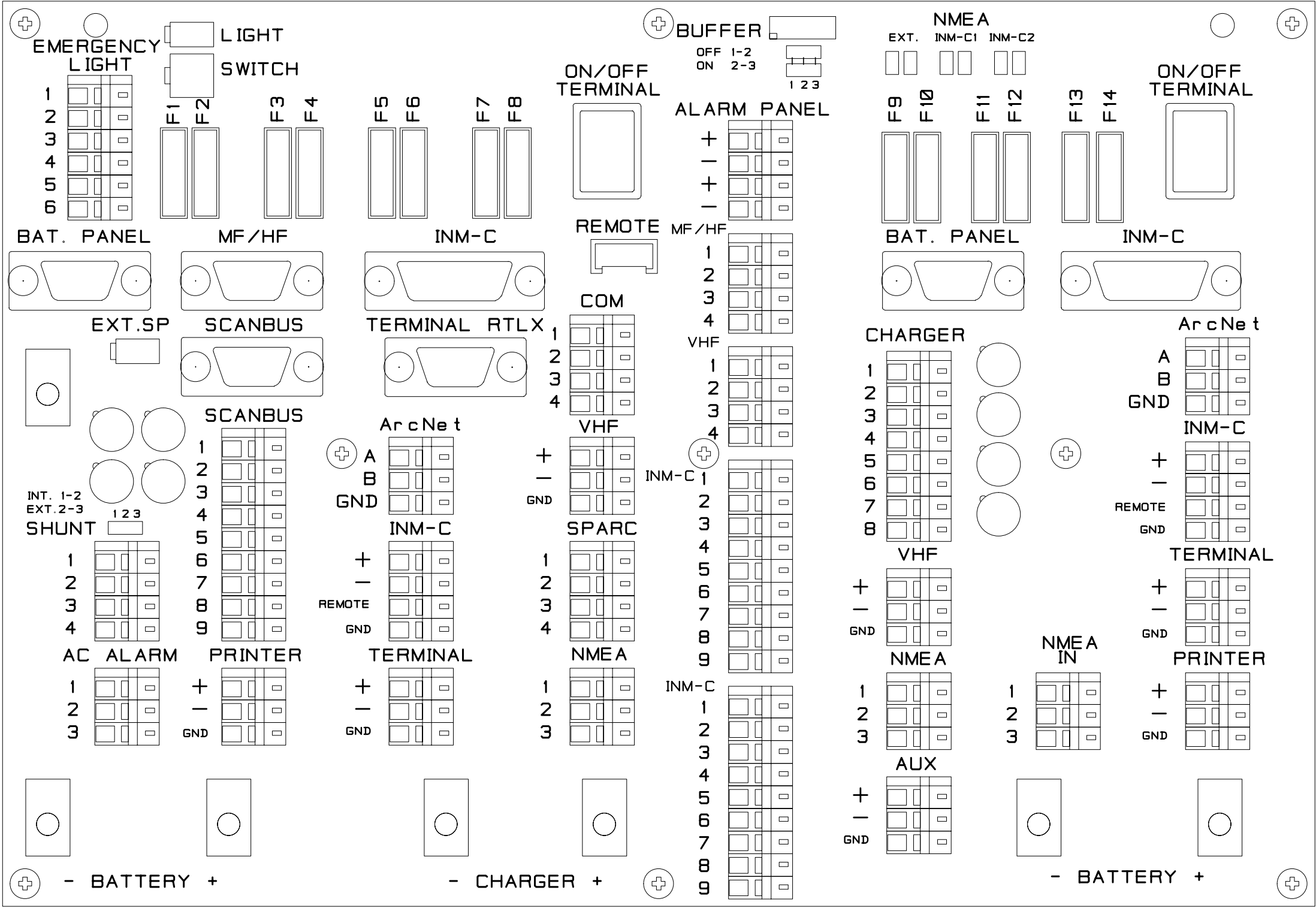
4.1   COMPONENT LOCATION CONNECTION BOARD



Seen from component side with upper side tracks.

PCB rev. 33741D

COMPONENT LOCATION CONNECTION BOARD

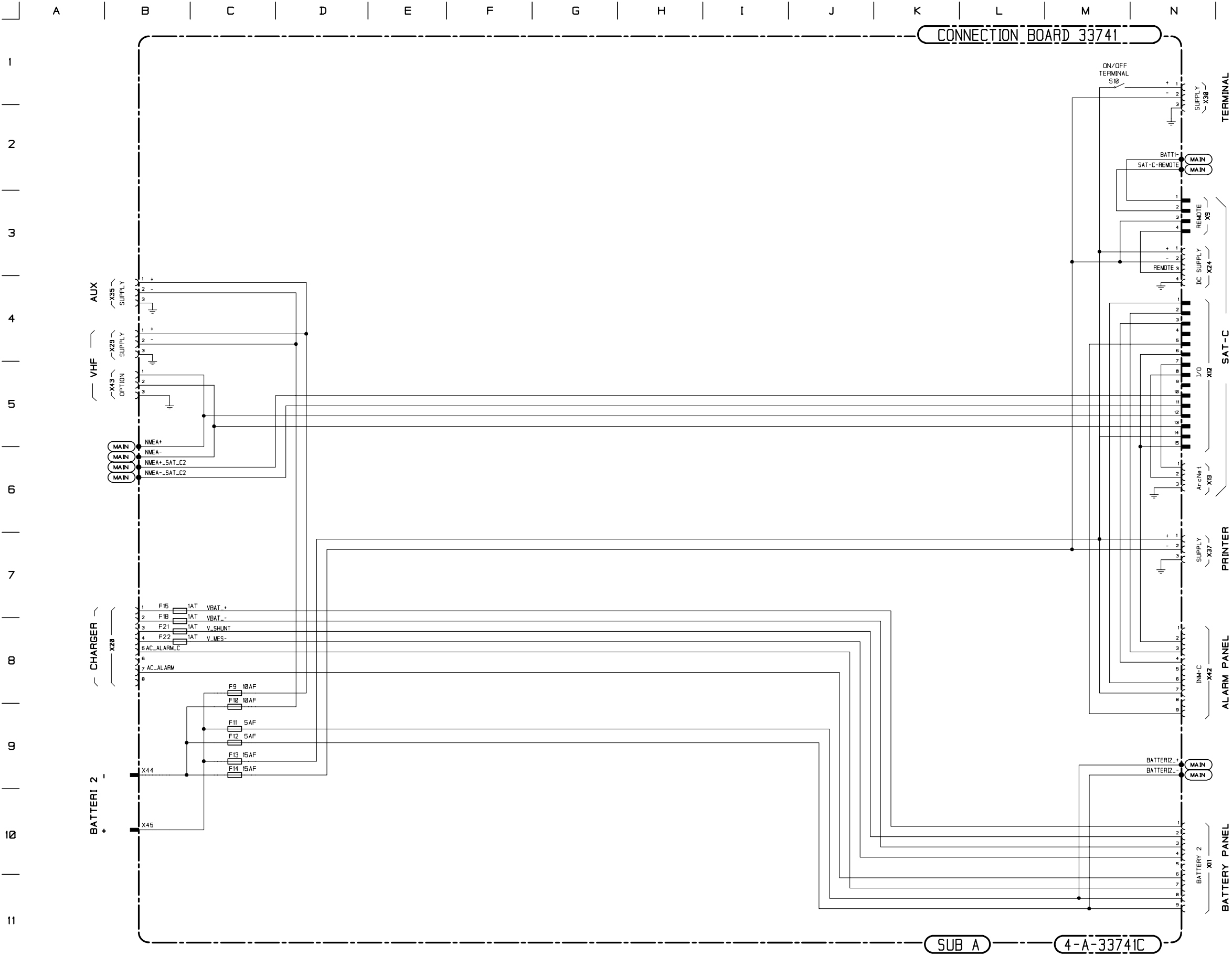


Seen from component side with silkscreen.

PCB rev. 33741D

9844

CONNECTION BOARD



This diagram is valid for PCB rev. 33741D

**CONTENTS**

<b>5</b>	<b>PARTS LISTS</b>	<b>5-1</b>
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## 5 PARTS LISTS

CONNECTION BOARD 33741			T & T	5-6-33741D / 4-0-33741C	633741
POSITION	DESCRIPTION		MANUFACTURER	TYPE	PART NO.
F1	ATO BLADE FUSE 10AF RED	COLOURED RED	LITTELFUSE	257010	45.663
F2	ATO BLADE FUSE 10AF RED	COLOURED RED	LITTELFUSE	257010	45.663
F3	ATO BLADE FUSE 5AF	COLOURED TAN	LITTELFUSE	257005	45.661
F4	ATO BLADE FUSE 5AF	COLOURED TAN	LITTELFUSE	257005	45.661
F5	ATO BLADE FUSE 10AF RED	COLOURED RED	LITTELFUSE	257010	45.663
F6	ATO BLADE FUSE 10AF RED	COLOURED RED	LITTELFUSE	257010	45.663
F7	ATO BLADE FUSE 15AF	COLOURED BLUE	LITTELFUSE	257015	45.664
F8	ATO BLADE FUSE 15AF	COLOURED BLUE	LITTELFUSE	257015	45.664
F9	ATO BLADE FUSE 10AF RED	COLOURED RED	LITTELFUSE	257010	45.663
F10	ATO BLADE FUSE 10AF RED	COLOURED RED	LITTELFUSE	257010	45.663
F11	ATO BLADE FUSE 5AF	COLOURED TAN	LITTELFUSE	257005	45.661
F12	ATO BLADE FUSE 5AF	COLOURED TAN	LITTELFUSE	257005	45.661
F13	ATO BLADE FUSE 15AF	COLOURED BLUE	LITTELFUSE	257015	45.664
F14	ATO BLADE FUSE 15AF	COLOURED BLUE	LITTELFUSE	257015	45.664
F15	FUSE TIME LAG 1A	PCB VERSION TYPE TR5	ELU	166 050 1AT	45.722
F16	FUSE TIME LAG 1A	PCB VERSION TYPE TR5	ELU	166 050 1AT	45.722
F17	FUSE TIME LAG 1A	PCB VERSION TYPE TR5	ELU	166 050 1AT	45.722
F18	FUSE TIME LAG 1A	PCB VERSION TYPE TR5	ELU	166 050 1AT	45.722
F19	FUSE TIME LAG 1A	PCB VERSION TYPE TR5	ELU	166 050 1AT	45.722
F20	FUSE TIME LAG 1A	PCB VERSION TYPE TR5	ELU	166 050 1AT	45.722
F21	FUSE TIME LAG 1A	PCB VERSION TYPE TR5	ELU	166 050 1AT	45.722
F22	FUSE TIME LAG 1A	PCB VERSION TYPE TR5	ELU	166 050 1AT	45.722
X1	PLUG 2POLES		MOLEX	39-28-1023	78.215
X2	SOCKET PCB VERSION	2x5 POLES u-MATCH	AMP	1-215079-0	78.194
X3	PLUG 4 POLES		MOLEX	39-28-1043	78.216
X4	TERMINAL BLOCK PCB VERS.	6 POLES 1.5mm2	WAGO	236-406	81.136
X5	TERMINAL BLOCK PCB VERS.	4 POLES 1.5mm2	WAGO	236-404	81.134
X6	SOCKET	9 POLES SUB-D	IB OBEL PEDERS.	NS-DMS-09SBTS-S1	78.176
X7	PLUG SUB D 9 POLES	PCB VERSION	ASSMANN	A-DS 09 PP	78.137
X8	PLUG SUB-D 15POL	PCB VERSION	CONEC	CDS 15 PFSN	78.694
X9	PLUG MT	4 POLES	AMP	0-826375-4	78.104
X10	TERMINAL BLOCK PCB VERS.	4 POLES 1.5mm2	WAGO	236-404	81.134
X11	SOCKET	9 POLES SUB-D	IB OBEL PEDERS.	NS-DMS-09SBTS-S1	78.176
X12	PLUG SUB-D 15POL	PCB VERSION	CONEC	CDS 15 PFSN	78.694
X13	PLUG 2POLES		MOLEX	39-28-1023	78.215
X14	PLUG SUB D 9 POLES	PCB VERSION	ASSMANN	A-DS 09 PP	78.137
X15	SOCKET	9 POLES SUB-D	IB OBEL PEDERS.	NS-DMS-09SBTS-S1	78.176
X16	CONNECTION ELEMENT	FOR M5 SCREW	T & T	1-0-25860	225860
X17	TERMINAL BLOCK PCB VERS.	4 POLES 1.5mm2	WAGO	236-404	81.134
X18	TERMINAL BLOCK PCB VERS.	4 POLES 1.5mm2	WAGO	236-404	81.134
X19	TERMINAL BLOCK PCB VERS.	3 POLES 1.5mm2	WAGO	236-403	81.133
X20	TERMINAL BLOCK PCB VERS.	8 POLES 1.5mm2	WAGO	236-408	81.138
X21	TERMINAL BLOCK PCB VERS.	3 POLES 1.5mm2	WAGO	236-403	81.133
X22	TERMINAL BLOCK PCB VERS.	3 POLES 1.5mm2	WAGO	236-403	81.133
X23	TERMINAL BLOCK PCB VERS.	9 POLES 1.5mm2	WAGO	236-409	81.139
X24	TERMINAL BLOCK PCB VERS.	4 POLES 1.5mm2	WAGO	236-404	81.134
X25	TERMINAL BLOCK PCB VERS.	4 POLES 1.5mm2	WAGO	236-404	81.134
X26	TERMINAL BLOCK PCB VERS.	4 POLES 1.5mm2	WAGO	236-404	81.134
X27	TERMINAL BLOCK PCB VERS.	4 POLES 1.5mm2	WAGO	236-404	81.134
X28	TERMINAL BLOCK PCB VERS.	9 POLES 1.5mm2	WAGO	236-409	81.139
X29	TERMINAL BLOCK PCB VERS.	3 POLES 1.5mm2	WAGO	236-403	81.133
X30	TERMINAL BLOCK PCB VERS.	3 POLES 1.5mm2	WAGO	236-403	81.133
X31	TERMINAL BLOCK PCB VERS.	3 POLES 1.5mm2	WAGO	236-403	81.133
X32	TERMINAL BLOCK PCB VERS.	3 POLES 1.5mm2	WAGO	236-403	81.133
X33	TERMINAL BLOCK PCB VERS.	3 POLES 1.5mm2	WAGO	236-403	81.133
X34	TERMINAL BLOCK PCB VERS.	3 POLES 1.5mm2	WAGO	236-403	81.133
X35	TERMINAL BLOCK PCB VERS.	3 POLES 1.5mm2	WAGO	236-403	81.133
X36	TERMINAL BLOCK PCB VERS.	3 POLES 1.5mm2	WAGO	236-403	81.133
X37	TERMINAL BLOCK PCB VERS.	3 POLES 1.5mm2	WAGO	236-403	81.133
X38	CONNECTION ELEMENT	FOR M5 SCREW	T & T	1-0-25860	225860
X39	CONNECTION ELEMENT	FOR M5 SCREW	T & T	1-0-25860	225860
X40	CONNECTION ELEMENT	FOR M5 SCREW	T & T	1-0-25860	225860
X41	CONNECTION ELEMENT	FOR M5 SCREW	T & T	1-0-25860	225860
X42	TERMINAL BLOCK PCB VERS.	9 POLES 1.5mm2	WAGO	236-409	81.139
X43	TERMINAL BLOCK PCB VERS.	3 POLES 1.5mm2	WAGO	236-403	81.133
X44	CONNECTION ELEMENT	FOR M5 SCREW	T & T	1-0-25860	225860
X45	CONNECTION ELEMENT	FOR M5 SCREW	T & T	1-0-25860	225860

POSITION	DESCRIPTION		MANUFACTURER	TYPE	PART NO.
S1	ROCKER SWITCH SPST ON-OFF	PCB VERSION, BLACK	MARQUARDT	1801.2102	43.005
S2	SIL SQUARE PINS	3 POLES CC=1/10"	AMP	0-826629-3 (0-826647-3)	78.323
S3	SIL SQUARE PINS	3 POLES CC=1/10"	AMP	0-826629-3 (0-826647-3)	78.323
S4	SIL SQUARE PINS	2 POLES CC=1/10"	AMP	0-826629-2 (0-826647-2)	78.322
S5	SIL SQUARE PINS	2 POLES CC=1/10"	AMP	0-826629-2 (0-826647-2)	78.322
S6	SIL SQUARE PINS	2 POLES CC=1/10"	AMP	0-826629-2 (0-826647-2)	78.322
S7	SIL SQUARE PINS	2 POLES CC=1/10"	AMP	0-826629-2 (0-826647-2)	78.322
S8	SIL SQUARE PINS	2 POLES CC=1/10"	AMP	0-826629-2 (0-826647-2)	78.322
S9	SIL SQUARE PINS	2 POLES CC=1/10"	AMP	0-826629-2 (0-826647-2)	78.322
S10	ROCKER SWITCH SPST ON-OFF	PCB VERSION, BLACK	MARQUARDT	1801.2102	43.005
S11	SIL SQUARE PINS	3 POLES CC=1/10"	AMP	0-826629-3 (0-826647-3)	78.323



