Nurse call systems for hospitals, care homes and similar establishments



Technical Manual, Module:

Installation
& Commissioning

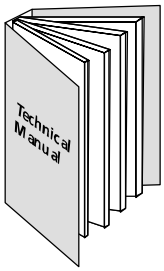
Ecco*Line* **with speech**

Ecco*Line* **L200**

All the reassurance you need **Tunstall**

The technical manual EccoLine - Modules

We are pleased to present the new technical manual EccoLine with comprehensive technical information for nurse call systems EccoLine with speech and EccoLine L200.



This technical manual stands for a new concept providing a modular arrangement of the complete scope. Not everybody needs all the information. Too much information, in many cases, may have a confusing effect rather than simplifying a subject. Therefore, we have devised individual modules which are provided as separate manuals. Thus, you can arrange your very personal technical manual:

	Module:	**Contents:**
	**System description** EccoLine with speech *Order No.: 00 8812 11*	Basic information on EccoLine with speech: Functions, system structure, product overview. Prerequisites for working with the manuals: Planning, Installation & Commissioning.
	**System description** EccoLine L200 *Order No.: 00 8812 12*	Basic information on EccoLine L200: Functions, system structure, product overview. Prerequisites for working with the manuals: Planning, Installation & Commissioning.
	**Planning** EccoLine with speech EccoLine L200 *Order No.: 00 8812 13*	Room type plans, text for tenders, tables for space / and mass assessment plus other information required for the effective planning of a call system EccoLine with speech or EccoLine L200.
	**Installation & Commissioning** EccoLine with speech EccoLine L200 *Order No.: 00 8812 14*	Detailed information for the installing technicians of a call system EccoLine with speech or EccoLine L200.

The manual was prepared with due care, and all details were checked for their correctness. However, we cannot assume any responsibility form possible discrepancies or incomplete information.

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We reserve the right for implementing technical changes.
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For your safety

Before starting with the installation you should study this chapter with due care.

About this manual

This manual describes the installation of two different types of call systems:

- **EccoLine with speech**:
  The multi–functional call system with speech function for decentralised and/or centralised organisations.
- **EccoLine L200:**
  The dependable light call system without speech function.

Basically speaking, the installation of the two call systems is the same. However, there are certain differences. For that matter, information which refers to one or the other of the two systems is marked accordingly.

Before applying the information from this manual, the call system should be planned in total, i.e. all system components have been defined. If additional rooms or system components shall be planned or if additional system components shall be ordered, you should refer to the following manuals:

- Technical manual, module: System Description,
  EccoLine with speech (Order No. 00 8802 11)
- Technical manual, module: System Description,
  EccoLine L200 (Order No. 00 8802 12)
- Technical manual, module: Planning,
  EccoLine with speech and EccoLine L200 (Order No. 00 8802 13)



Danger! Many products may be used in either the system EccoLine L200 or in the system EccoLine with speech, only. Otherwise the installed system may not function correctly.

About this chapter

The **Ecco***Line* products are developed according to the state–of–the–art. Nevertheless, there still remains the risk of danger situation when personnel is not adequately informed or if pertinent safety directives are not complied with. As a result, technicians involved and third persons as well may be subject to personal injuries or even fatal accidents

may occur to technicians or third persons, and damage may occur to the system products and other hardware or infrastructure.

The information presented in this chapter is of a general nature. Specific safety instructions are provided wherever a potentially dangerous action or situation is described.

Organisational measures

Electric equipment may be installed, modified and serviced by experts of the electrical trades only. This personnel comprises specialist from the electric supply companies and electricians who are registered with these utility companies. Prior to the commissioning of an installation, the responsible electrical engineer shall request permission from the local electric supply company. As such, the electrical engineer will also be responsible for the system's operational and functional safety.

The commercial user of the electrical installation and equipment is responsible for routine service and maintenance. The scope of his responsibility also covers statutory aspects. Relevant service and maintenance work and routine or mandatory inspections shall be executed by trained electrical technicians.

This manual addresses electrical installation personnel.

Before starting the installation the personnel shall study this manual with due care and with particular emphasis on the chapter "For your safety". During the actual work phase, this may be too late!

Nevertheless, keep this manual and any additional documents readily available for reference if there should be any doubt.

Further to this installation manual, personnel shall also comply with general and specific statutory regulation on accident prevention and environmental protection.

All parts to be installed must comply with the technical standards defined by Tunstall GmbH: This is always complied with when using original parts.

Symbols used in this manual

The following symbols for important information are used throughout this installation manual:



Danger! This symbol indicates an action or situation which may involve a risk to persons (risk of injury or even fatal injury).



Attention! This symbol indicates an action or situation which may involve damage to equipment from electrical voltage or electrical current.



Danger of life! This symbol indicates an action or situation which may involve injury to persons from electrical voltage or electrical current,



This symbol indicates components at risk form electrostatic energy. Avoid touching these parts to prevent irreparable damage to these parts.



Note! This symbol indicates further useful information and tips.

Other symbols used in the describing text:

- □ A square before a text passage means:
  “This is part of a listing / enumeration”
- ● A dot before a text passage means:
  “This item must be executed.”
- ✓ A check mark before a text passage means:
  “This is the result of an action.”

Designated use of the equipment

All **Ecco***Line* products are designed solely for implementation into the call system and only in the manner described in this manual. Any use or application other than those described in this manual is not authorised, and Tunstall GmbH shall not accept any liability for damage or claims resulting from such usage.

General safety rules

- ☐ Safety instructions presented in this manual, current national directives for accident prevention and any internal company rules and directives for safety at work, operation and safety measures must be complied with.
- ☐ Do not perform any work which may jeopardise the safety of personnel, system or related installation.
- ☐ Before starting any work, personnel shall familiarise themselves with the working environment. This also includes any obstacles at or near the work location of at the access areas.
- ☐ Use original replacement fuses of the prescribed fuse rating only.
- ☐ Before starting any work at the electric system, the relevant installation shall be separated from the electric power supply.
- ☐ Where work needs to be carried out at installed components, these parts or circuits must be shut off from the power supplies and personnel shall check for any residiual voltage or current.
- ☐ Where work must be executed at electrically live components, a second person shall be called upon to disconnect the main power switch in case of any emergency situation.
- ☐ In case of any fault, disconnect the main power supply. Do not continue the work until the fault has been corrected.
- ☐ Protect all components against any direct contact with water or moisture.
- ☐ A number of modules and assemblies of the **Ecco***Line* system are furnished with components sensitive to electrostatic energy. Such static electricity may induce damage to these components. Therefore, these components should not be touched under any circumstances.
- ☐ For further information on general arrangement and functional tests, please refer to DIN VDE 0834.

Standards

The following standards shall be complied with when installing, servicing or operating the light call system:

- ☐ **DIN VDE 0834**: Light call technology: Installation and operation in hospitals, care homes and prisons
- ☐ **DIN EN 793**: Special demand for the safety of medical equipment
- ☐ **DIN EN 60601–1**: Medical equipment, Part 1: General safety directives
- ☐ **DIN EN 60601–1–1**: Medical electric equipment, Part 1: General safety safety directives for medical electric systems
- ☐ **EN 50081–1**: Electromagnetic compatibility (EMC): Basic standards, interference sources
- ☐ **EN 50082–1**: Electromagnetic compatibility (EMC): Basic standards ; Electromagnetic stability
- ☐ **DIN VDE 0100**: Directives for the installation of electric power systems for voltages of up to 1000 V
- ☐ **DIN VDE 0107**: Electric power systems in hospitals and in medical facilities outside of hospitals
- ☐ **EN60950**: Safety of equipment for information technology; Preventive measures for safety health and life

All relevant national directives applicable to such installations shall also be complied with.

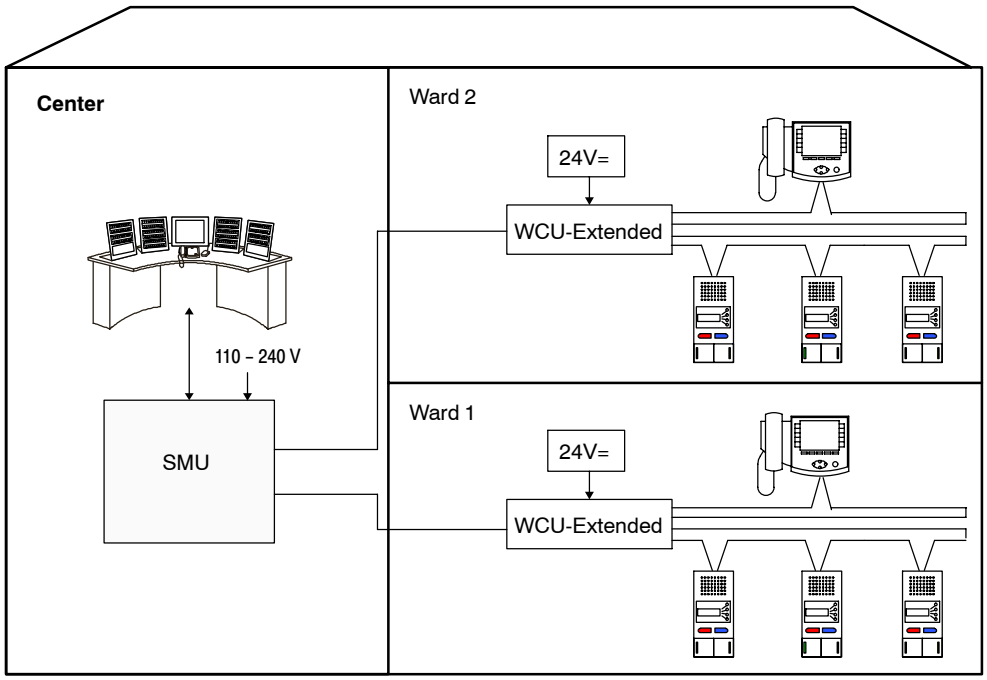
Advanced knowledge required

Before installing the EccoLine call system, personnel should be familiar with the general arrangement and function of the system. For this, refer to the following documents:

- ☐ Technical Manual, Module: System description, EccoLine with speech (Order No. 00 8812 11)
- ☐ Technical Manual, Module: System description, EccoLine L200 (Order No. 00 8812 12)

The following chapters will provide useful information which will be important for installation personnel.

EccoLine with speech



Control of the nurse call system

The control of EccoLine with speech features a hierarchical organisation which provides for a maximum operational safety.

Each ward has its own ward control unit, the **WCU-Extended** (WCU = Ward Control Unit). The WCU-Extended processes all information at the ward. Further to this, it provides for control indications and an interface for system diagnosis.

Higher system functions of several WCU–Extended are co–ordinated by a System Management Unit **SMU**. This unit also provides for the implementation of central elements, such as an EccoLine ComCenter, plus interfaces for other types of systems.

The **EccoLine ComTerminal** controls a room and relays signals from the room to the ward's CCS bus. In the rooms themselves, the Room Area Network RAN handles the communication between the various devices.

Data circuits in the call system

Data forwarding

A great number of data must be forwarded within the nurse call system:

- ☐ Calls triggered by patients.
- ☐ Medical personnel registering their presence.
- ☐ Functions of all modules are tested at regular intervals.
- ☐ etc.

The data volume and its variety call for a reliable technology which is adapted to the current demands. Therefore, EccoLine has been furnished with different data transmitting circuits, each of them employing different operating principles.

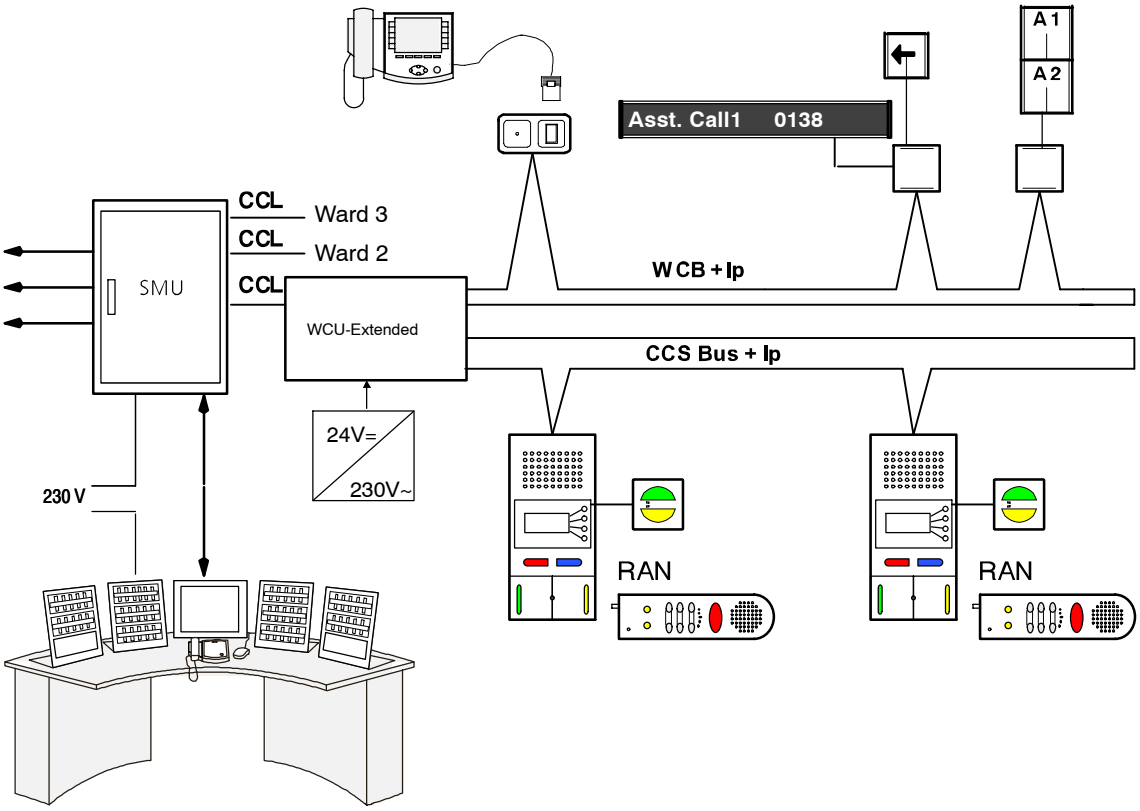


Fig. 1: EccoLine with speech: Data forwarding

CCS-Bus

The CCS-Bus has a ring layout in the ward. It connects all the rooms in a ward and it is connected to the WCU–Extended. It terminates at the ComTerminal at the door in every room.

Data transfer on the CCS–bus is effected using the time multiplex principle. Following a specific time patter, the WCU–Extended enquires for data on the CCS bus and transfers them as needed.

Room Area Network – RAN

RAN = Room Area Network or room bus connects all devices in a room. It terminates at the room's ComTerminal, and from here, the data room are transferred to the CCS bus.

Ward Control Bus – WCB

The WCB = Ward Control Bus has a ring layout in the ward. Modules, like EccoLine ComStation, EccoLine ward enquiry / B and the universal interface, are connected to the WCB. The universal interfaces serve for the connection of group signal lamps, directional signal lamps, corridor displays and external call terminals. Data transfer to the WCP is effected using a specific digital protocol which has been designed for the unique demands of the EccoLine system.

Central Communication Link – CCL

The CCL = Central Communication Link is placed between the WCU– Extended and the System Management Unit – SMU. Data transfer is effected using a specific digital protocol which has been designed for EccoLine with speech.

Lines for power supply and speech communication

An electric power supply line (lp) must be placed parallel to the data lines (WCB, CCS bus). At least one power supply unit is required for each ward.

The nurse call system which you are about to install will also transfer speech communication. The line for this speech communication will be in addition to the other lines.

System limits

Up to 64 wards can be connected to an SMU-64.

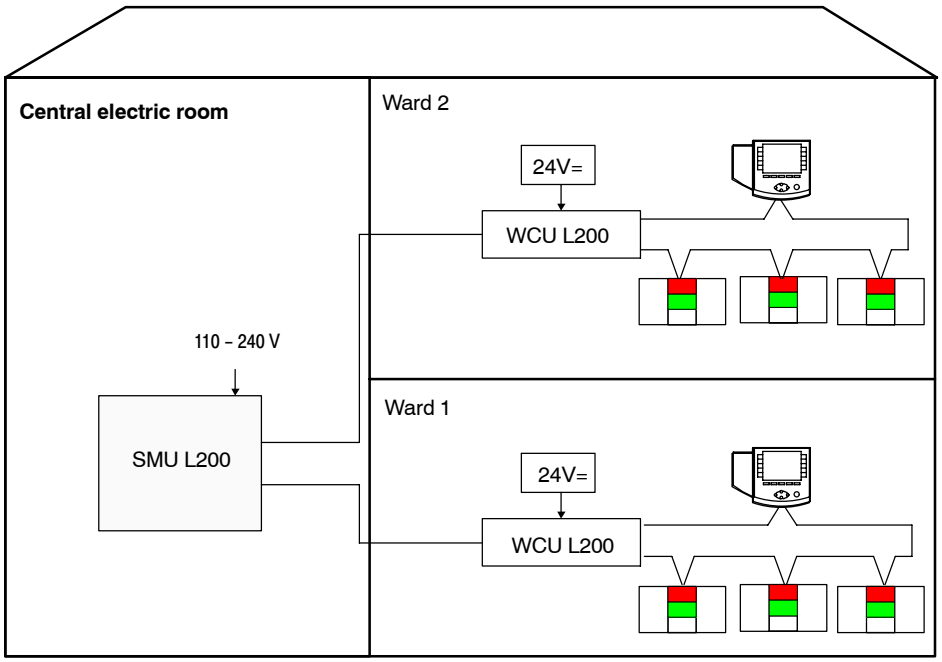
Group signal lamps can signal the presences of calls / calling states of up to 8 wards.

Each ward

- □ Max. 8 EccoLine ComStation or EccoLine ward enquiries/B
- □ Max. 63 EccoLine ComTerminal
- □ Max. 8 corridor displays Alpha 20 or corridor displays Alpha 11
- □ Group signal lamps for calls from up to 8 wards (max. 4 universal interfaces for controlling of group signal lamps; call indications for max. 2 wards per universal interface)

- ☐ Directional signal lamps for up to 16 directions (max. 8 universal interfaces for controlling of signal lamps; max. 2 directions per universal interface)
- ☐ One external nurse call connection

EccoLine L200



Control of nurse call system

The EccoLine L200 nurse call system features a hierarchical organisation which provides for a maximum operational safety.

The terminal (**nurse call terminal L200 or Terminal L200**) controls the room's light call function and transfers the signals to the ward bus WCB0.

Each ward is controlled via a ward control unit **WCU L200**. The WCU L200 processes all information at/for the ward.

Higher system functions of several WCU L200 are co−ordinated by a system management unit, **SMU L200**.

Data circuits in the call system

Data transfer lines WCB0, CCL0

A great number of data must be forwarded within the nurse call system:

- ☐ Calls triggered by patients.
- ☐ Medical personnel registering their presence.
- ☐ Functions of all modules are tested at regular intervals.
- ☐ etc.

Data transfer within the ward is effected via the ward control bus WCB0. The central communication link CCL0 is placed between the WCU L200 and the system management unit SMU L200. Data transfer for these two lines is effected using a specially adapted protocol which has been designed for the unique demands of the EccoLine L200.

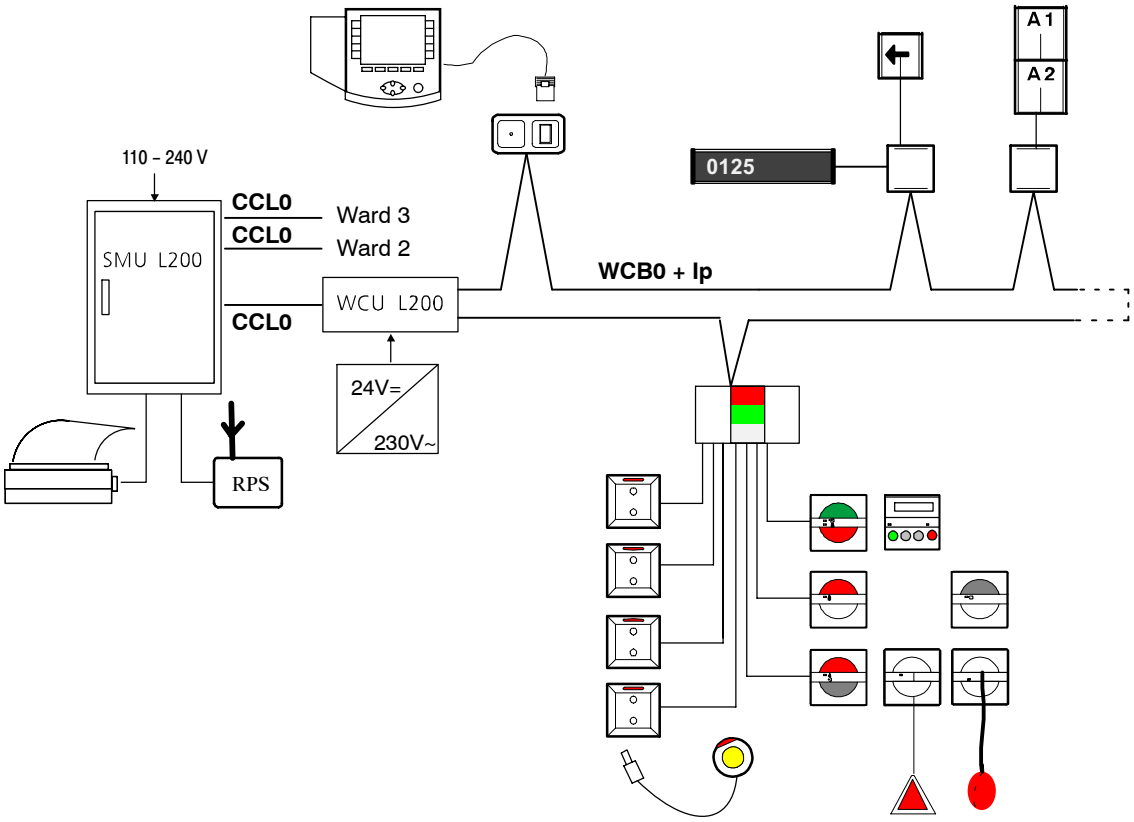


Fig. 2: EccoLine L200: Data transfer

Electric power supply lines

An electric power supply line (Ip) is placed parallel to the data (WCB0). Each ward requires at least one power supply module.

System limits

Up to 32 wards can be connected to a SMU-32 L200. (The optional SMU-64 L200 serves up to 64 wards.)

Group signal lamps can indicate calls/calling states of up to 8 wards.

Each ward

- ☐ Max. 8 ComStations L200
- ☐ Max. 63 Nurse call Terminals L200 or Terminals L200
- ☐ Max. 8 Corridor displays Alpha 11

- Group signal lamps for nurse call from max. 8 wards (max.4 universal interfaces for controlling of group signal lamps; call indication for max. 2 wards per universal interface)
- Directional signal lamps for max. 16 directions (max. 8 universal interfaces for controlling of signal lamps; max. 2 directions per universal interface)
- One external nurse call connection

Installation sequence

You have been provided with clearly defined installation plans. The following chapters contain details on how to install the equipment and devices.

An overview of the installation sequence is shown on the next page. During your installation work, you should refer to this sequence.



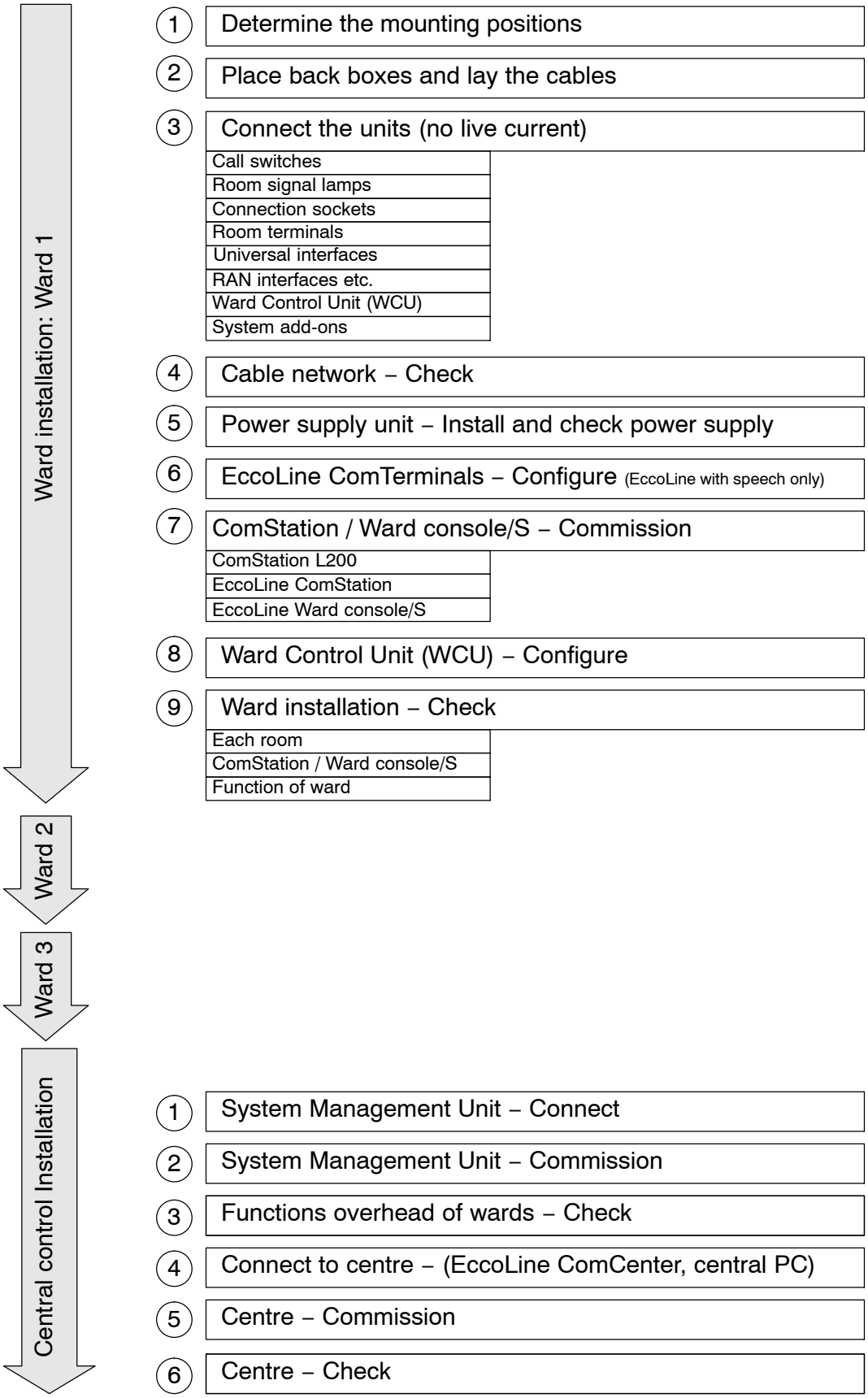
Note! Along with other information, the information will also deal with equipment and devices which are not intended for your house. **Search through the presentation and select the information for those devices which are to be installed at your facilities.**

Install the equipment in the house **one ward after the other**, i.e. install a single ward, commission this installation and then proceed to the next location. The work steps are always the same.

After the wards are installed, proceed to install the central assemblies. The **System Management Unit SMU** is the most important item. The SMU co−ordinates functions throughout and overhead the wards.

Hospitals with only one ward do not require the installation of central assemblies.

Installation sequence



Configuration sheets

The nurse call system will be adapted to every project. To this effect, data of the relevant building must be programmed into the system. For this data acquisition, you should fill out the configuration sheets:

Display configuration for EccoLine L200

Complete this sheet for every ward in the system EccoLine L200. With the entered data, you determine for each room how it is presented on the system's displays. After completing the installation enter the data at the ComStation L200 , refer to page 129.

Display configuration for EccoLine with speech

Complete this sheet for every ward in the system EccoLine with speech. With the entered data, you determine for each room how it is presented on the system's displays. After completing the installation enter the data at the EccoLine ComStation or EccoLine Ward enquiry/B, refer to the chapter on "Ward 'Control Unit (WCU) – Configure", page 129.

Configuration table for group signal lamps

Complete this sheet for every ward where group signal lamps shall be installed. For each group of signal lamps you determine which ward's call shall be indicated on this group signal lamp. For further information refer to page 80.

Send these filled–out form sheets by fax to Tunstall GmbH as soon as possible as the data are required for programming into the ward control units (WCU).

Configuration table for direction signal lamps

Complete this sheet for every ward where direction signal lamps shall be installed. For each direction signal lamp you determine which room's calls shall be indicated on these direction signal lamps. For further information refer to page 82.

Send these filled–out form sheets by fax to Tunstall GmbH as soon as possible as the data are required for programming into the ward control units (WCU).

Configuration table for SMC

On this sheet you define the ward combination programmes which shall be provided for the nursing staff.

Send these filled–out form sheets by fax to Tunstall GmbH as soon as possible as the data are required for programming into the interface board SMC.

EccoLine L200 only

Display configuration: EccoLine L200

Tunstall
FAX: 02504/701–499

Room address	Enter room number 1	2	3	4	5	6
01						
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						

Room address	Enter room number 1	2	3	4	5	6
37						
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						
48						
49						
50						
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
62						
63						
65/1						
66/2						
67/3						
68/4						
69/5						
70/6						
71/7						
72/8						
Call ext. 80/1						

ComStation L200 1 - 8

All 6 entered figures for the room numbers are displayed in alpha-numeric on the following displays:

- ComStation L200
- Display combination L200
- Corridor display Alpha 11

Universal interfaces = addresses 80 to 92

81/2		Group sig. lamp 1, 2
82/3		Group sig. lamp 3, 4
83/4		Group sig. lamp 5, 6
84/5		Group sig. lamp 7, 8
85/6		Direction sig. l. 1, 2
86/7		Direction sig. l. 3, 4
87/8		Direction sig. l. 5, 6
88/9		Direction sig. l. 7, 8
89/10		Direction sig. l. 9, 10
90/11		Direction sig. l.11, 12
91/12		Direc. sig. l. 13, 14
92/13		Direc. sig. l. 15, 16
	A	= Activated

Object No.:	Ward designation:	Port No.:

Project name:	Project engineer:	Date: Signature:

Display configuration: EccoLine with speech

Tunstall
FAX: 02504/701–499

Room address	Enter room number 1	2	3	4	5	6		Room address	Enter room number 1	2	3	4	5	6
01								37						
02								38						
03								39						
04								40						
05								41						
06								42						
07								43						
08								44						
09								45						
10								46						
11								47						
12								48						
13								49						
14								50						
15								51						
16								52						
17								53						
18								54						
19								55						
20								56						
21								57						
22								58						
23								59						
24								60						
25								61						
26								62						
27								63						
28							**EccoLine ComStation 1 – 8**	65/1						
29								66/2						
30								67/3						
31								68/4						
32								69/5						
33								70/6						
34								71/7						
35								72/8						
36							Call ext. 80/1							

All 6 entered figures for the room numbers are displayed in alphanumeric on the following displays:

– EccoLine ComStation
– Corridor display Alpha 11
– Corridor display Alpha 20

On EccoLine ComTerminal only the first 4 digits are displayed.
Available figures: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, H, E, L, P, – plus free space symbol.
One way of entering is e.g. 204BAD or 205BWC. A call will be displayed in the EccoLine ComTerminal as 204 or 205.
The EccoLine ComStation and corridor displays will show 204BAD or 205BWC.

Universal interfaces
= addresses 80 to 92

81/2		Group sig. lamp 1, 2
82/3		Group sig. lamp 3, 4
83/4		Group sig. lamp 5, 6
84/5		Group sig. lamp 7, 8
85/6		Direction sig. l. 1, 2
86/7		Direction sig. l. 3, 4
87/8		Direction sig. l. 5, 6
88/9		Direction sig. l. 7, 8
89/10		Direction sig. l. 9, 10
90/11		Direction sig. l.11, 12
91/12		Direction sig. l 13, 14
92/13		Direction sig. l.15, 16
	A	= Activated

Object No.:	Ward designation:	Port No.:

Project name:	Project engineer:	Date: Signature:

EccoLine with speech only

Configuration table for group signal lamps

Tunstall

FAX: 02504/701–499

Universal interface			Group signal lamp	Port No. at SMU *)
Number	Address	Outputs		
2	81	1 and 2	Group signal lamp 1	
2	81	3 and 4	Group signal lamp 2	
3	82	1 and 2	Group signal lamp 3	
3	82	3 and 4	Group signal lamp 4	
4	83	1 and 2	Group signal lamp 5	
4	83	3 and 4	Group signal lamp 6	
5	84	1 and 2	Group signal lamp 7	
5	84	3 and 4	Group signal lamp 8	

*) Enter the port for the ward that shall be presented at this group signal lamp.

Object number	Ward designation	Port number

Project name	Project engineer	Date, Signature

Configuration table for direction signal lamps

Tunstall

FAX: 02504/701–499

Universal interface			Direction signal lamp	Room address	
Number	Address	Outputs		from	to
6	85	1 and 2	Direction signal lamp 1		
6	85	3 and 4	Direction signal lamp 2		
7	86	1 and 2	Direction signal lamp 3		
7	86	3 and 4	Direction signal lamp 4		
8	87	1 and 2	Direction signal lamp 5		
8	87	3 and 4	Direction signal lamp 6		
9	88	1 and 2	Direction signal lamp 7		
9	88	3 and 4	Direction signal lamp 8		
10	89	1 and 2	Direction signal lamp 9		
10	89	3 and 4	Direction signal lamp 10		
11	90	1 and 2	Direction signal lamp 11		
11	90	3 and 4	Direction signal lamp 12		
12	91	1 and 2	Direction signal lamp 13		
12	91	3 and 4	Direction signal lamp 14		
13	92	1 and 2	Direction signal lamp 15		
13	92	3 and 4	Direction signal lamp 16		

Object number	Ward designation	Port number

Project name	Project engineer	Date, Signature

Configuration table for SMC

Tunstall

☐ EccoLine with speech (SMC 74 0920 00)
☐ EccoLine L200 (SMC 74 0920 50)

FAX: 02504/701–499

Ward designation		Port	Number of Ward Coupling Programme (WIC-programme) 01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18
	Port 01																			
	Port 02																			
	Port 03																			
	Port 04																			
	Port 05																			
	Port 06																			
	Port 07																			
	Port 08																			
	Port 09																			
	Port 10																			
	Port 11																			
	Port 12																			
	Port 13																			
	Port 14																			
	Port 15																			
	Port 16																			

SIC Com1	
SIC Com2	

How to fill out the table:

	Port active	WIC-Programme 03	
Port 01	X	O	C
		N	A

X = Port ist active
O = This port belongs to this WIC-programme
A = This programme is automatically activated for an EMERGENCY CALL at this port.
N = This programme is automatically activated for an ASSIST CALL at this port.
C = This programme is activated when is is switched on from the ComStation at this port
Z = This programme is automatically activated after TIME at this port:
Time ON: OFF:

Project name	Object no.	Project enginneer	Date, Signature

Determining the mounting positions

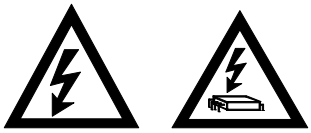
Mounting heights

Prescribed mounting heights for compliance with DIN VDE 0834:

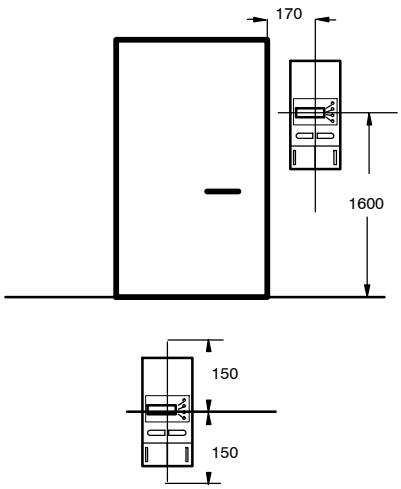
	Mounting height above floor level:
Operating devices (with and w/o display lamps)	700 – 1500 mm
Operating devices with text displays	1500 – 1700 mm
Devices in installation units	1600 – 1800 mm
Signal lamps and large–format text displays	1500 – 2200 mm
Distribution boxes	700 – 2200 mm

General information

All devices of the nurse call system	– All devices shall be mounted such that unmistakable use and handling are ensured also with frequently changing staff, and that there is no chance for a mix–up with other systems. – Devices should be mounted such that damage or destruction by external effects which may be encountered during normal jobs of personnel (e.g. moving of beds) is virtually impossible.
Devices with displays	– These items must be placed to ensure unobstructed visual contact (EccoLine with speech: ComTerminal, EccoLine L200: Display combination L200)
Call switches, call devices	– These items must be placed within easy reach.
Presence buttons	– Location near the entrance door.
Optical signalling devices	– Clarity of the optical devices must not be impaired by external or stray light sources.
Signal lamps, corridor displays	– These devices shall be placed such that requested personnel is directed to the call location via the shortest route.
Room signal lamps and nurse call terminals	– These devices shall be placed such that they are unmistakably allocated to the relevant rooms.

Signal lamps 	– **Fire risk!** Signal lamps generate heat. Easily flammable material therefore should be kept at a sufficient distance to these heat sources. – **Attention!** If excessive heat is generated, the life of the lamp elements is greatly reduced, and the electronic components may be destroyed. Make sure that the ventilation slits at the top and bottom are not covered (e.g. by a paint coat). Where more than one signal lamp are mounted one on top of the other, there should be a minimum distance of 30 mm between individual lamp units.
In WC and sanitary rooms	– Comply with specific recommendations of DIN VDE 0100!
Ward Control Unit – WCU	– The unit shall be installed in dry areas, preferably in switch cabinets (not inside of patients' rooms). – The unit must be easily accessible at all times (Access space at least 60 cm wide). – Heat transfer/dissipation must not be obstructed. – Where the unit is installed in a switch cabinet or similar arrangements, forced–air ventilation may be required.
Power supply units 	– Use in dry areas only, preferably in switch cabinets (not inside of patients' rooms). – The unit must be easily accissible at all times (Access space at least 60 cm wide). – Heat transfer/dissipation must not be obstructed. – Where the unit is installed in a switch cabinet or similar arrangements, forced–air ventilation may be required. – To prevent an excessive voltage drop, the power supply shall be placed close to the user device. – **Fire risk!** In case of a short circuit, the power supply unit will produce excessive heat. Sufficient ventilation must be ensured.
Distributing frames used for both nurse call system and electric power supply	– When removing the outside cover, the electric power supply lines and components must remain covered up. – Terminal posts for the call system and for the power supply must be clearly differentiated, e.g. by shape and/or colour code. Inscriptions alone are not a sufficiently safe means for distinguishing between the two types of terminal posts.

Room terminals

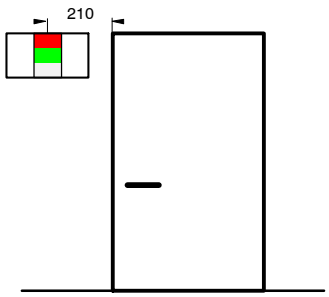


EccoLine ComTerminal

Order No.: 74 0510 00

Double back box required

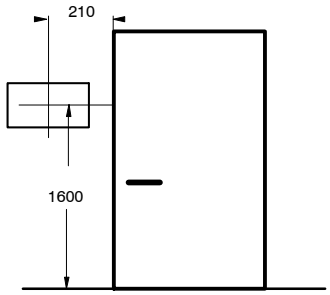
Note:
When using 2–piece boxes, keep a spacing of at least 150 mm above and below for the ComTerminals.



Nurse call terminal L200, Nurse call terminal L200/D

Order No.: 73 0500 00, 73 0505 00

Double back box recommended.

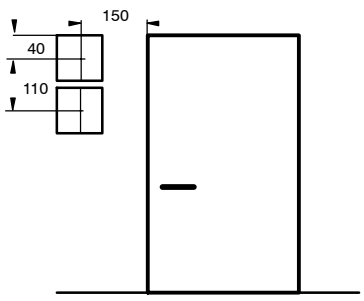


Terminal L200, Terminal L200/D

Order No.: 73 0550 00, 73 0555 00

Double back box recommended.
When using as a door sign: mounting at eye level.

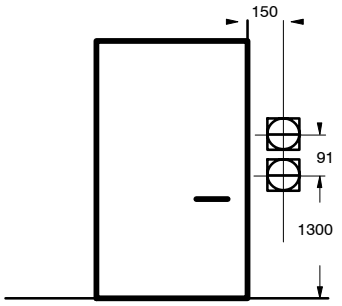
Room signal lamps



Room signal lamps

Single back box required for each room.

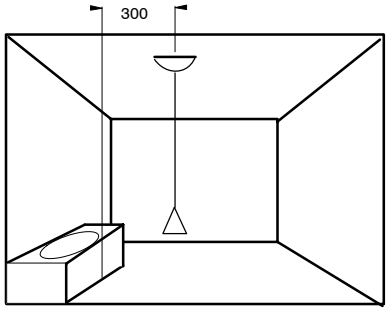
Switches



Switches adjacent to door

Single back box required for each switch.

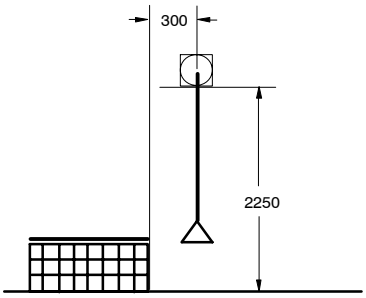
Raster spacing 91 mm must be maintained!



Pull cord call switch in bathroom/WC (Ceiling mounting)

Order No.: 70 0115 00, 70 0115 01, 73 0105 00

Single back box required.

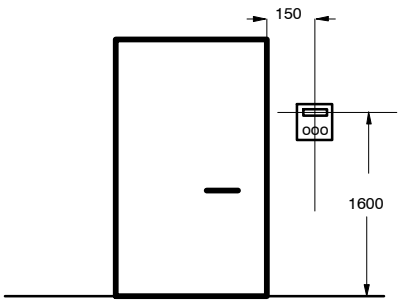


Pull cord call switch in bathroom/WC (Wall mounting)

Order No.: 70 0115 00, 70 0115 01, 73 0105 00

Single back box required.

Pull cord call switch in shower cabins must be at least 200 mm above the highest position of the shower head.

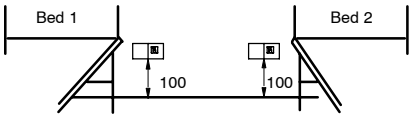


Display combination L200

Order No.: 73 0180 00

Single back box required.

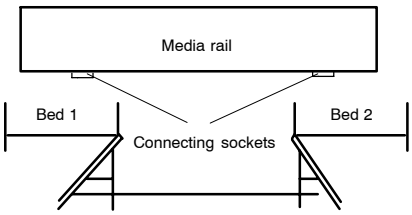
Connection sockets



Connecting socket combi 2 (Wall mounting)

Order No.: 70 0424 00

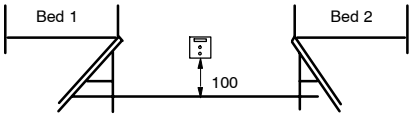
100 mm minimum spacing above floor level.



Connecting socket bedhead unit 2 (Mounting in medical supply unit)

Order No.: 70 0434 00

Normally, the connecting sockets are installed by the supplier of this medical equipment.



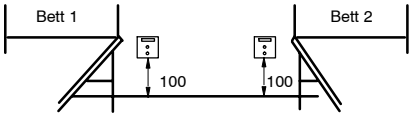
Connection socket, with or w/o call switch (1 connection socket for 2 beds)

Order No.: 70 0171, 70 0400 00, 73 0400 00

For minimised installation, one socket between the beds for two pear push switches.

Check for the range of bed movement!

100 mm minimum spacing above floor level.



Connection socket, with or w/o call switch (1 connection socket per bed)

Order No.: 70 0171 00, 70 0171 03, 70 0400 00, 73 0400 00

100 mm minimum spacing above floor level.

Placing of back boxes

Refer to the table of accessories on the following pages to select the correct type of back box. Note: There are different back boxes for use in solid walls and in partition walls.

EccoLine ComTerminal

For mounting the EccoLine ComTerminals a double back bock is required. Align the box such that there will be a free space of 150 mm above and below after installing the connecting socket.

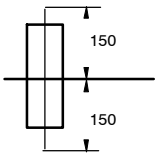


Table of accessories

	Order No.	Back boxes				Connector	
		Solid wall		Partition wall		3-pole	4-pole
		17 0100 00	17 0410 00	17 5100 00	17 5400 00	70 0807 00	70 0807 01
	00 0280 39	●		●			
	00 0280 40	●		●			
	00 0441 14	18 5610 00				14 1202 10	
	00 3910 00						
Entertainment	08 5130 00		●		●		
	10 1201 00	●		●			
	10 1301 00	●		●			
Tel.	11 5300 00	17 0200 00					
	70 0011 01	●		●		●	
		+ LED-Module: 13 5200 00 (red), 13 5201 00 (yellow), 13 5202 00 (green)					
	70 0021 00	●		●		●	
		+ LED-Module: 13 5203 00 (white), 13 5204 00 (blue)					
	70 0106 00	17 0200 00		17 5100 00 (centre offset)		●	
	70 0106 01						
	70 0111 00	●		●		●	
	70 0111 01	●		●		●	
	70 0112 00	●		●		●	
	70 0113 00	●		●		●	
	70 0114 00	●		●		●	
	70 0115 00	●		●		●	
	70 0115 01	●		●		●	
	70 0117 00	●		●		●	
	70 0118 00	●		●		●	
	70 0171 00	●		●			●
	70 0171 03	●		●			●

	Order No.	Back boxes				Connector	
		Solid wall		Partition wall		3-pole	4-pole
		17 0100 00	17 0410 00	17 5100 00	17 5400 00	70 0807 00	70 0807 01
	70 0183 00	●		●		●	
	70 0400 00	●		●			●
	70 0424 00		●		●		
	70 0434 00	Mounting in media rail					
	70 0491 00		●		●		
	73 0101 00	●		●			
	73 0103 00	●		●			
	73 0104 00	●		●			
	73 0105 00	●		●			
	73 0106 00	Centre offset		Centre offset			
	73 0107 00	●		●			
	73 0172 00	●		●			
	73 0108 00	●		●			
	73 0400 00	●		●			
	73 0500 00	optional	●	optional	●		
	73 0505 00	optional	●	optional	●		
	73 0550 00	optional	●	optional	●		
	73 0555 00	optional	●	optional	●		
	73 1102 00	●		●			
	73 1202 00	●		●			
	73 1302 00	●		●			
	73 1402 00	●		●			
	73 1502 00	●		●			
	73 1602 00	●		●			
	74 0452 50		●		●		
	74 0452 60		●		●		
	74 0452 70		●		●		

Laying the cables

Once the back boxes are installed, lay all the cables for the ward.

If a system management unit SMU or SMU L200 has been planned for the hospital, cables shall also be laid to this system management unit. Utilise the existing local situation (distribution frames, cable conduits).

Cables for the call system which exit the building should be fitted with overvoltage protection devices in compliance with DIN VDE 0845. This overvoltage protection device is not required if there is a galvanic separation point which safely prevents the crossover of dangerous voltages.



Comply with pertinent VDE directives or national equivalents when laying the cables.

In addition, closely observe the information on the following pages.

Line/cable key / legend

To facilitate the use of the installation plans, Tunstall GmbH has introduced an expanded cable key / legend for the EccoLine system.

The individual lines are allocated to their respective application spectrum. Each type of application has its corresponding type of line. These are minimum requirements.

You will find the cable/line legend on the last page of this manual.

Electromagnetic compatibility (EMC)

The characteristics of all components of the call system are well below the prescribed limits as to their electromagnetic compatibility (EMC). Nevertheless there may be situations where an interference occurs, e.g. due to insufficient suppression at fluorescent lamps, in particular in hospital installations (electro−medical supply units).

Customers should make provisions which prevent such interference from external sources. In many cases, this type of external interference can be avoided by installing suppressor elements (varistor circuits). These varistor circuits are commercially available from electric/ electronic suppliers. Tunstall offers a proven overvoltage filter 230 V (70 0890 97).

The EMC properties of the various electro−medical supply units may differ to a great extent. Even two supply units of the same type may act and react with considerable difference if they are wired in different ways.

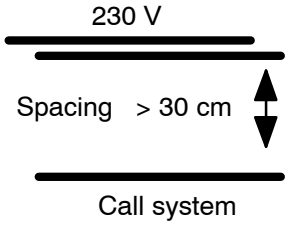
Normally, call systems are widely distributed over the building, and their EMC behaviour is affected by the specific design and layout of the network.

This situation should also be considered when effecting changes or amendments to existing electro−medical supply units.

Cables for high power systems or other systems with high−risk voltage

Cables for the call systems' power supply circuits must not be laid along with high power lines or with other high−risk voltage lines in common cables, conduits or cable trays.

Cables for the call system shall be laid with a minimum spacing of 30 cm. For shorter distances of less than 10 m a spacing of 10 cm is considered to be sufficient.



For medical supply lines, the definitions of DIN EN 793 (European standard EN 793) will apply for the installation of lines in call systems.

Use of ferrites

In order to ensure the required EMC, ferrites shall be fitted to the installation cables at the ward control unit (EccoLine with speech, EccoLine L200, WCU L200). The physical position of these ferrites shall be as close a possible to the connection points. With reference to the wiring plan, the ferrites shall be clipped directly onto the cables. Where the cable diameter is too big, the cable shall be stripped accordingly to fit the ferrite.

Electric power supply lines (lp)

The call system is operated with 24 V DC. This power is supplied through a regulated, short–circuit proof power supply module. To avoid unnecessary voltage drops, the power supply modules shall be connected with short cable lengths only.

Maximum voltage differential from the power supply module to the most remote room must not exceed 4 V under full load.

In case of greater voltage drops, an additional tap line from the power supply module or a cross connection within the ring line shall be installed.

Where the above measures do not solve the problem, the ward shall be wired for two power supply modules. Parallel connection of the power supply modules is not permitted.

The required cross section for the cables is 2.5 mm^2. Depending on the method of cable laying, single core leads (NYA 2.5 mm^2 for +24V and 0V) or a common cable (NYM 2x2.5 $mm^{2)}$ may be used.

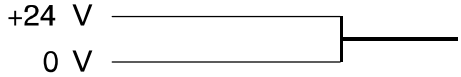


Fig. 3: NYM 2x2.5 mm^2

Note! Always choose the shortest routing when laying a cable. This will keep the voltage drop as low as possible.

Using suitable colour codes and/or specific methods for laying the low power cables shall preclude any mix−up with cables of standard mains supply lines. Where such standard cables are used similar to those in mains power circuits, the cable ends shall be clearly and permanently marked.

Observe the relevant directives and guidelines!

Maximum allowable cable lengths

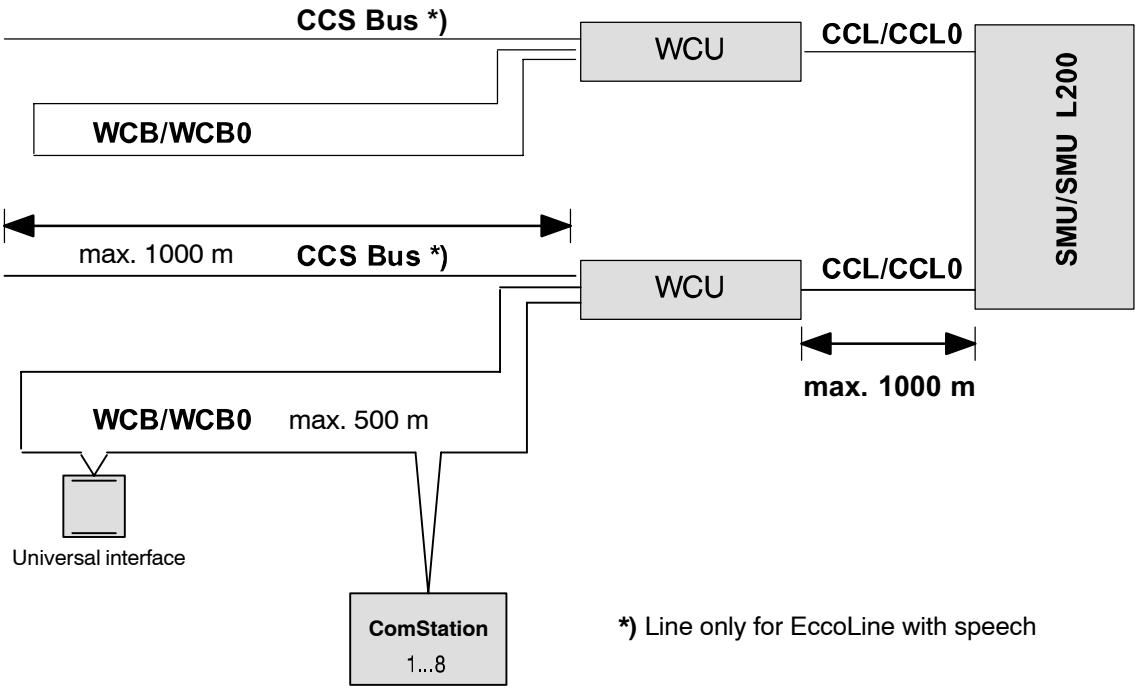


Fig. 4: Cable lengths

Danger! Information as shown on page 3 also apply for the power supply.

EccoLine with speech

Types of cables

CCS 32 cable – an alternative for the CCS bus

As a general rule, two separate communication lines (one line for data transfer and one for speech) for the CCS bus line can be substituted by a CCS 32 cable. The connection is effected acc. to the following graph.

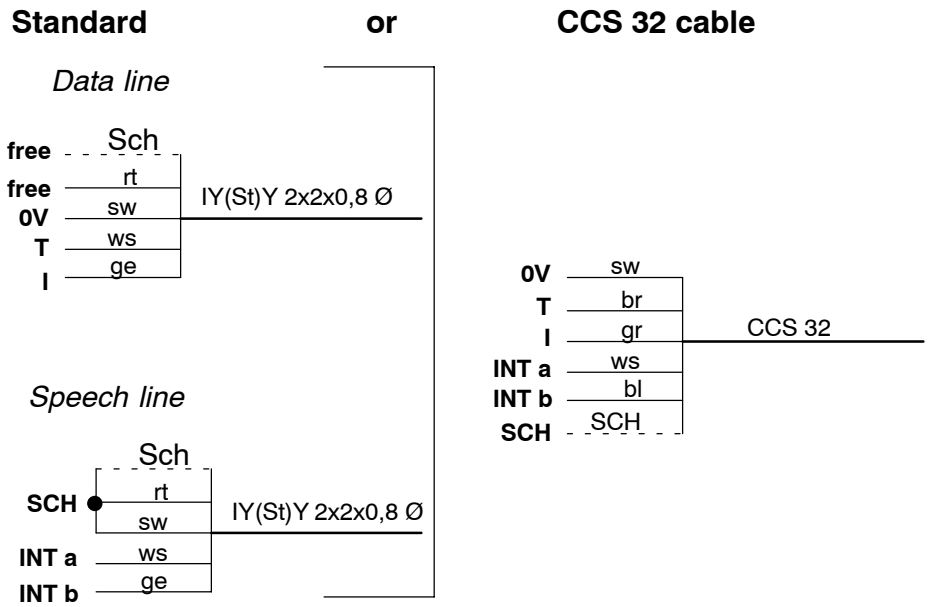


Fig. 5: CCS bus

Cable colours:

bl	blue	rt	red
br	brown	sw	black
ge	yellow	vio	violet
gn	green	ws	white
gr	grey		
or	orange	SCH	sreeen

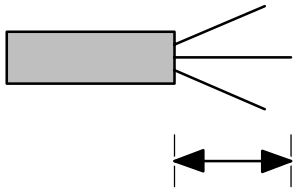
Where the number of terminal posts is not sufficient, indivual strands may be combined. We recommend the use of the double connector (cup connector 00 0222 88).

Shielded cables



Attention! Insulate the shielding or the blank wire right to the connecting terminal. Otherwise a short circuit situation or inductive disturbance may occur.

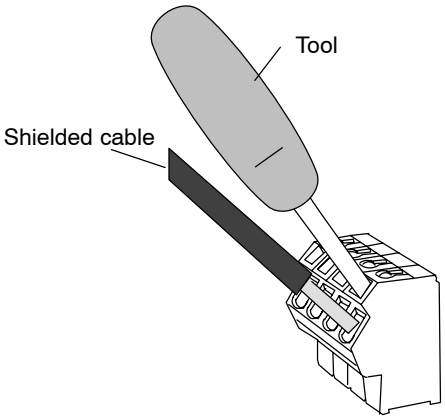
All cables for music or speech transmission (shielded cables) shall be stripped to a maximum of 30 mm to maintain the shielding function.



max. 30 mm

You need a tool for connecting the shielded cable. A screw driver with a tip of 2.5 x 0.4 mm or 3.5 x 0.5 mm will do the job. Proceed as follows:

1. Use the tool to hold the spring contact open.
2. Insert the cable.
3. Remove the tool.
4. Check for a firm wire contact by pulling at the cable.



Ward control bus WCB

The ward control bus (WCB) has a ring layout in the ward. The following devices (and others) are connected to the WCB:

- ☐ Connection socket 74 0452 50
  for connection of an EccoLine ComStation
- ☐ Connection socket 74 0452 50
  for connection of a telephone interface
- ☐ Connection socket 74 0452 60
  for connection of a ward console/S

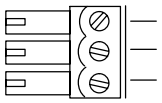
□ Universal interface 73 3500 00 for connection of group signal lamps, direction signal lamps, corridor displays, Alpha, external call devices, general displays.

Cable for the data line: IY(St)Y 2x2x0.8
Cable for speech communication: IY(St)Y 2x2x0.8

Attention! No stub line shall be used for the data line. All devices must be connected to the ring line.

Room Area Network (RAN)

The RAN – (line type In) connects all components within a room. Data communication requires three wires IY(ST)Y 2x2x0.8 (Line = In).



R (ed) = +24 V
Y(ellow) = RAN
B(lack) = 0V

Maximum permissible cable length for RAN is 50 m.

Devices for speech communication require an additional connection to a speech communication cable (line Is).

The devices with a RAN connection can be wired in any way (star, bus, or mesh). Expansions of the installation at any later date can be effected from any device and independent of the relevant function. However, additional devices with speech capability will require an additional speech communication line.

For the installation, you should try to split the RAN connections into function groups. This arrangement is service-friendly (refer to Fig. 6, page 40).

The type of installation does not affect the RAN function.

The voltage drop in every stub line connection which is caused by a max. current of 55 mA (1 LED module) or 200 mA (1 lamp element) must not anywhere exceed 0.3 V in reference to the voltage at the ComTerminal. Normally, this value is reached when a room signal lamp is connected to a 20 m long cable of type In. For the 0V line two wires should be laid as a minimum up to the room signal lamp.

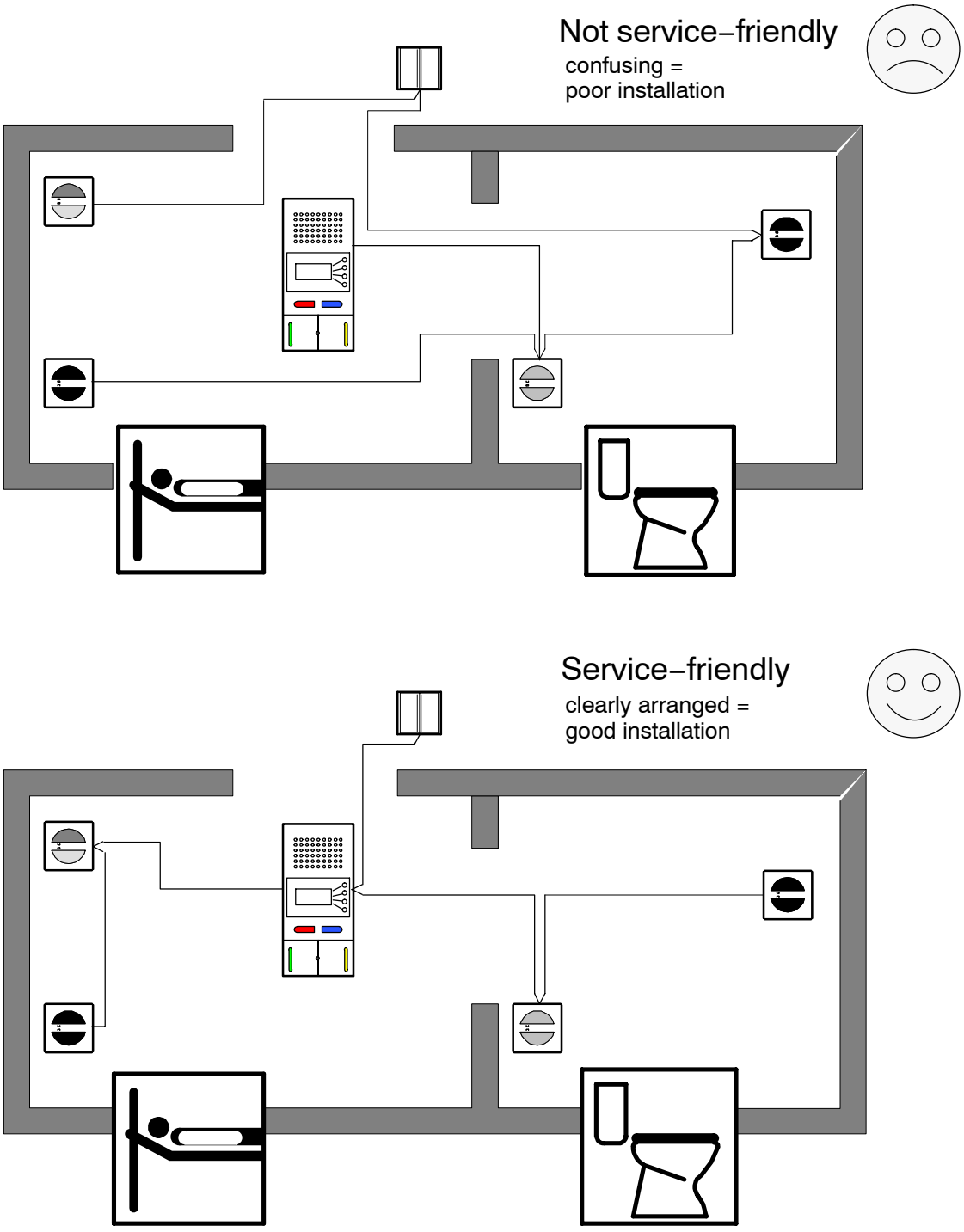


Fig. 6: RAN: Sample installation

Nurse station with EccoLine ComStation or ward console/S

No RAN is required for nurse stations which are to be equipped with an EccoLine ComStation or an EccoLine ward console/S. Always connect the devices acc. to the wiring plans and using a star wiring principle.

Entertainment lines

If your hospital plans to connect devices of call system with an entertainment system, you must also lay the appropriate entertainment cables.

The installation plans will indicate whether and where you shall install entertainment cables or line transformers.

EccoLine L200

Cable types

Ward control bus (WCB0 + Ip)

All rooms within a ward are connected via a bus line. For the installation you will need to separate cables:

- ☐ Data line: Communication cable IY(St)Y 2x2x0.8.
- ☐ Power supply: Cable NYM 2x2.5 mm^2. (also refer to cable legend page 34 + inside rear cover).

Data lines and power supply lines are always designed as ring lines.

Attention! No stub line shall be used for the data line. All devices must be connected to the ring line.

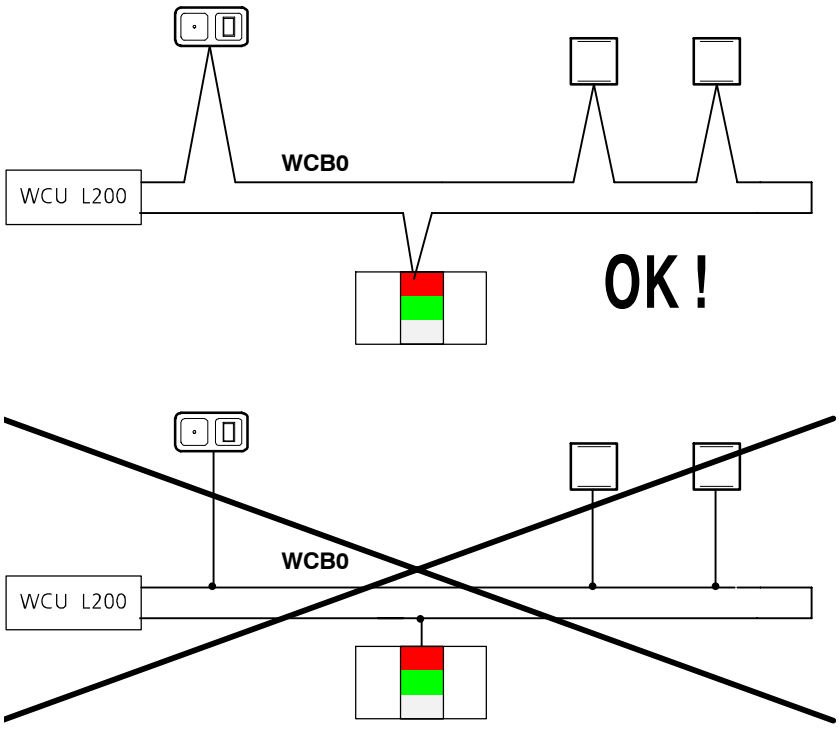


Fig. 7: WCB0: Data line designed as ring line

Room installation

The various room devices (switches, connectors L200) are connected to the terminal (nurse call terminal L200 or terminal L200) in a star formation. Switches of the same type are connected in series.

Nurse station with ComStation L200

The ComStation L200 is plugged into the connection socket ComStation, which is directly connected to the ward control bus. If required, a room signal light and an acoustic alarm device can connected to the connector for the ComStation L200 (cable Ia2).

Connecting the units (not the power supply)

Documentation enclosed with each device describes the installation process for the individual unit. Install the device as shown and connect them as described in the previous chapters. (Do not connect the electric power.):

- ☐ Switches
- ☐ Room signal lamps
- ☐ Connection sockets
- ☐ Room terminals
- ☐ Universal interfaces, etc.
- ☐ RAN interfaces, etc.
- ☐ Ward control unit (WCU)
- ☐ System add-ons



Danger of life! Do not yet install the power supply module. Perform the installation work with no current / voltage in the system, otherwise a short circuit may occur!



Attention! The electronic boards of the devices contain components which are at risk from electrostatic energy. Direct contact – including skin contact– should be avoided.



Note! Check that the order numbers on the products match the order numbers shown on the installation plans.



Note! The descriptions also cover devices which are not intended for installation in your building. **Select the installation instruction for the devices and equipment to be installed in your building / hospital.**

Switches

EccoLine with speech: Switches

70 0106 00	Pneumatic call switch
70 0106 01	Pneumatic call switch WC
70 0111 00	Call switch wp
70 0111 01	Call switch WC wp
70 0114 00	Emergency switch wp
70 0112 00	Presence switch wp
70 0113 00	Cancel switch WC wp
70 0115 00	Pull cord call switch wp
70 0115 01	Pull cord call switch WC wp
70 0117 00	Call switch WC with cancel switch wp
70 0118 00	Call switch with privacy switch wp
70 0183 00	Cancel switch WC with call tone wp

Installation instructions are enclosed with all products.

Note! Check that the order numbers on the products match the order numbers shown on the installation plans. Switches for WC call look similar to the switches for normal call, however the are programmed in a different way.

The mentioned switches are connected to the room area network RAN without speech using plug–in screw connectors. For this, use a 3–pole connecting element (70 0807 00).

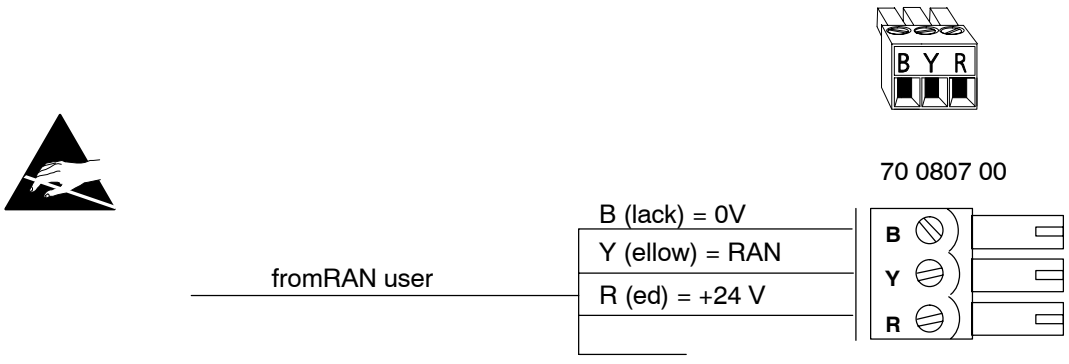


Fig. 8: EccoLine with speech switch: Connection

Setting of channel numbers

The switches can be allocated to several channels. This makes sense e.g. in WCs with several cubicles. For information on the available channels refer to the Technical Manual – Module: Planning (00 8812 13).

Where your installation plans show switches with their allocated channel numbers, you must set these numbers before installing the switch.

For the channel setting procedure follow the instructions shown in the product's package list.

Example: Channel number at call switch wp

For this procedure, the board in the switch housing must be accessed.

5. Release the catch of the plastic cover for acces to the printed circuit board.
6. The channel numbers are set at the marked position on the board (P1, P2, P3) by separating (knife) or by connecting (soldering). Factory setting is always channel 0.
   For the correct channel number, refer to the installation plan.



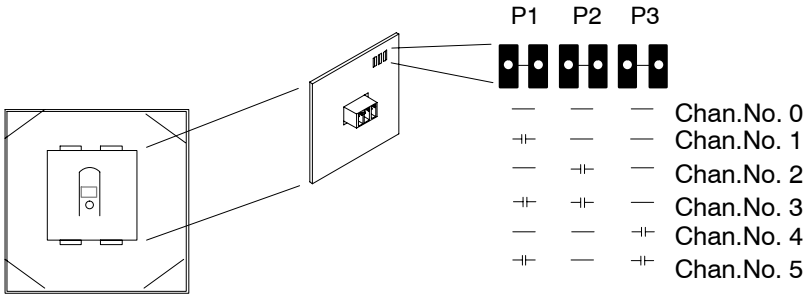


Fig. 9: Example: Setting of channel number at call switch wp

EccoLine L200: Switches

73 0101 00	Call switch L200
73 0103 00	Cancel switch L200/WC
73 0104 00	Emergency switch L200
73 0105 00	Pull cord switch L200
73 0106 00	Pneumatic call switch L200
73 0107 00	Call switch with cancel switch L200/WC
73 0172 00	Staff presence combination L200
73 0180 00	Display combination L200

Installation instructions are enclosed with all products.

1. Connect the cables acc. to terminal connecting plan.
2. More than one call switches (max. 3) per call input may be connected in series only.
   The output of the last switch must be fitted with a terminal resistor. 4K7 (order no. 00 0041 13) to 0V. Where only 1 switch is connected, this switch must also be fitted with a 4K7 terminal resistor.
   Attention! The 4K7 resistor must not contact the board, otherwise the board may be damaged beyond repair.
3. Connecting posts which are not designated have no functions and they can be used as distributing posts.

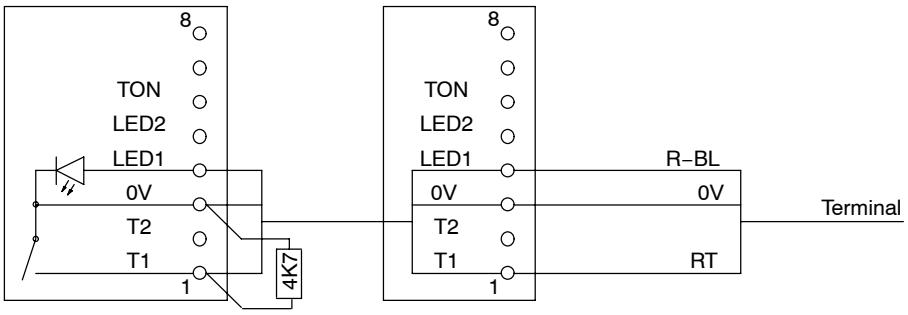


Fig. 10: Call switch L200 (73 0101 00) not for WC call

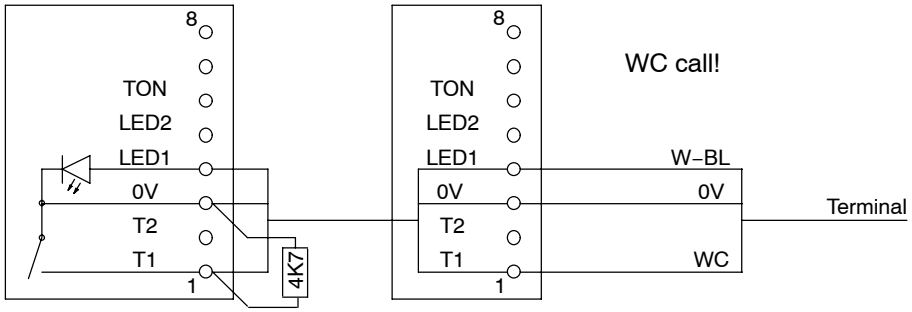


Fig. 11: Call switch L200 (73 0101 00) for WC call

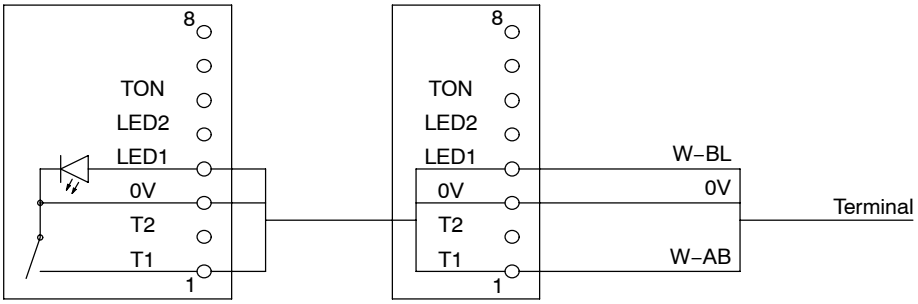


Fig. 12: Cancel switch L200/WC (73 0103 00)

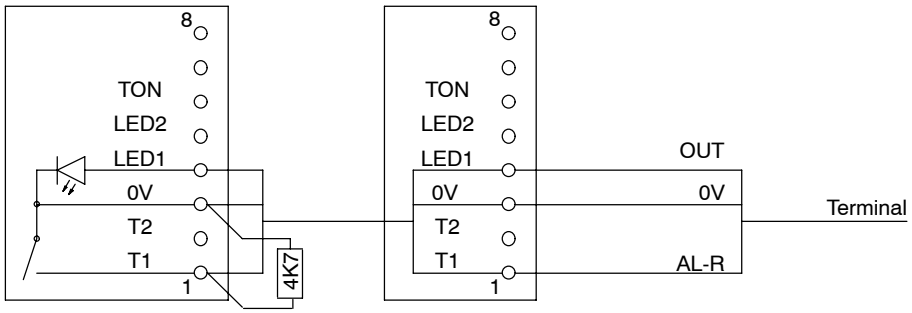


Fig. 13: Emergency switch L200 (73 0104 00)

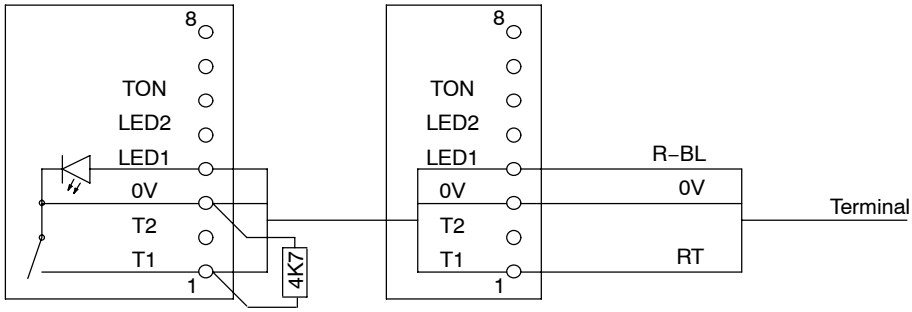


Fig. 14: Pull cord switch L200 (73 0105 00) not for WC call

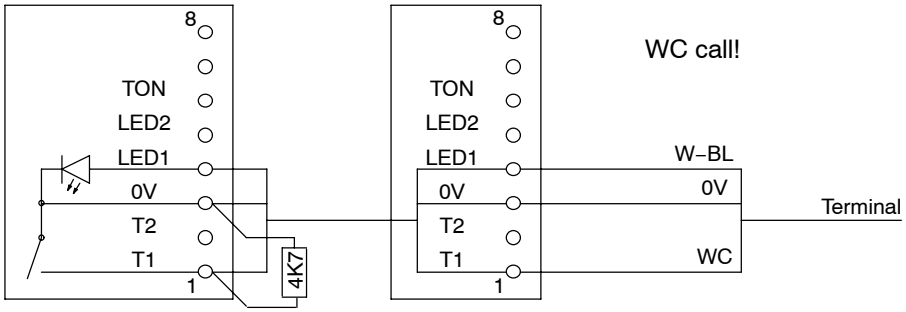


Fig. 15: Pull cord call switch L200 (73 0105 00) for WC call

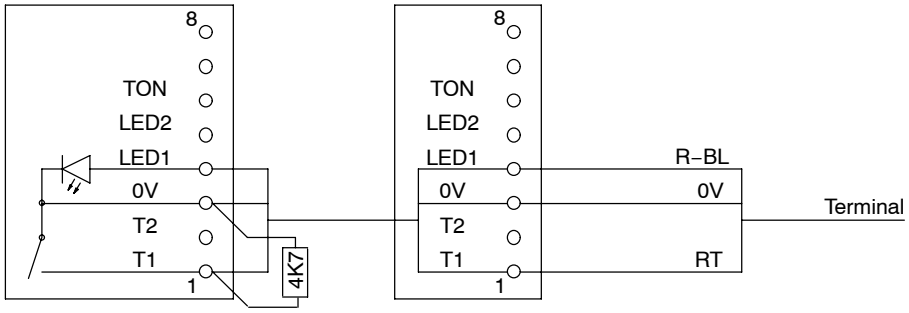


Fig. 16: Pneumatic call switch L200 (73 0106 00) not for WC call

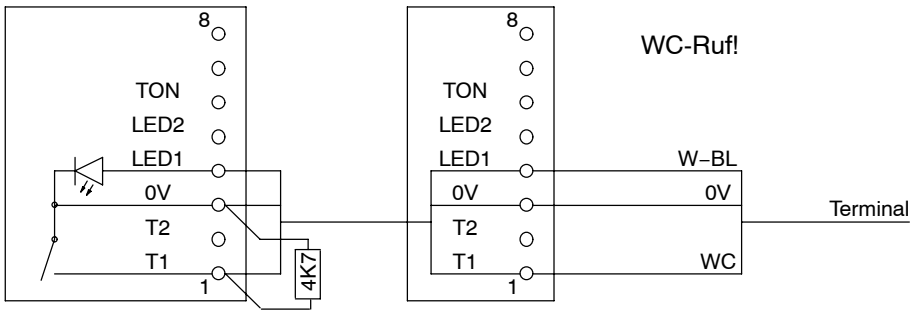


Fig. 17: Pneumatic call switch L200 (73 0106 00) for WC call

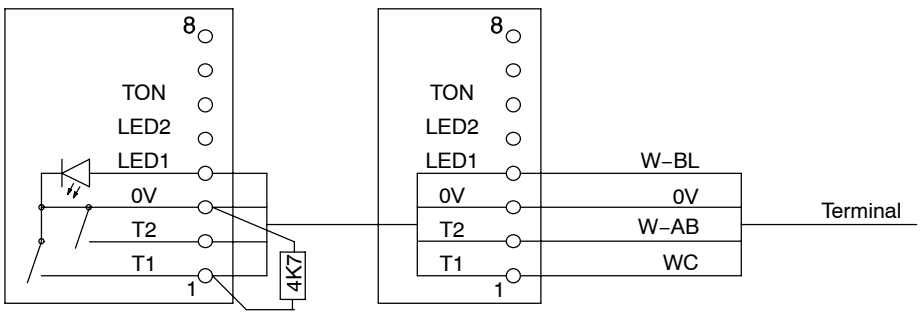


Fig. 18: Call switch with cancel switch L200/WC (73 0107 00)

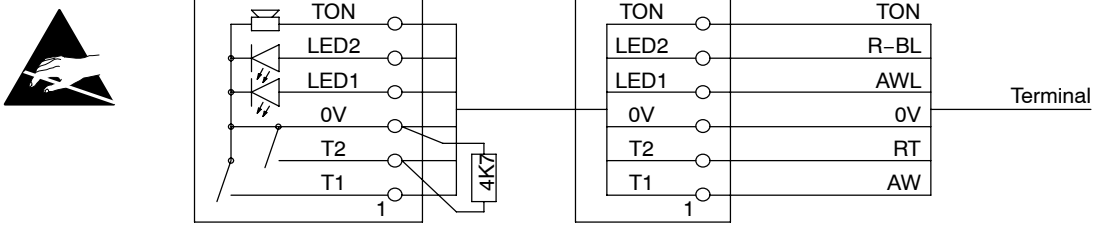


Fig. 19: Staff presence combination L200 (73 0172 00)



Fig. 20: Display combination L200 (73 0180 00)

Note! The display combination L200 can be connected to a nurse call terminal L200/D (73 0505 00) or Terminal L200/D (73 0555 00) only. **Also note**, that the coding contacts of the 7–pin coding switch at the (light) call terminal must be set to ON if a a display combination L200 is connected.

Room signal lamps

70 0011 01	Room signal lamp call, + emergency/code blue, presence 1+ 2
70 0021 00	Room signal lamp emergency/code blue, WC

Installation instructions are enclosed with the products.

Note! Check that the order numbers on the products match the order numbers shown on the installation plans.

The mentioned room signal lamps are connected to the room area network RAN without speech using plug–in screw connectors. For this, use a 3–pole connector (70 0807 00).

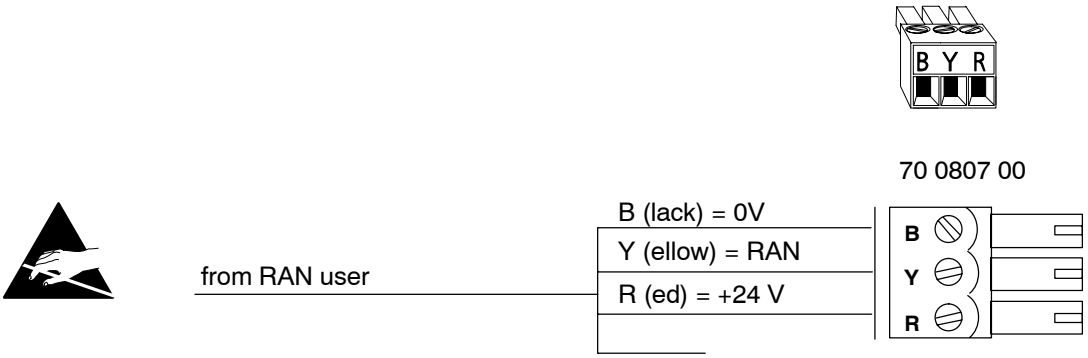


Fig. 21: Room signal lamps 70 00X1 0X: Connection

Setting the channel numbers

Room signal lamps can be allocated to several channels. This makes sense, e.g. in WC with several cubicles. For information on channels, refer to the Technical manual, Module: Planning.

Where the installation plans show the allocation of specific channel numbers to the room signal lamps, these channel numbers must be set before connecting the signal lamp.

The channel numbers are set at the designated location on the printed circuit board (P1, P2, P3) by separating (knife) or connecting (solder). Factory setting: Channel number 0.

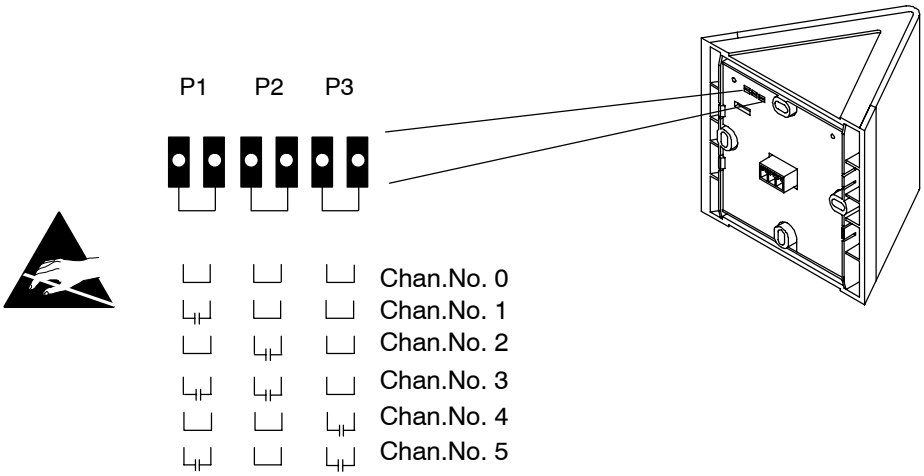


Fig. 22: Room signal lamps 70 00X1 0X: Setting of channel numbers

Example: Setting of channel number 6: Separate/cut P2 and P3

= Channel number 6

= factory setting

= separated

= Solder point for reconnecting a broken link

Connection sockets

Connection sockets 70 0XXX 0X

70 0171 00	Call switch with connection socket
70 0171 03	Call switch with connection socket and external call input
70 0400 00	Connection socket call devices

Installation instructions are enclosed with the products.

The listed connection sockets are connected to the room area network RAN without speech using a plug–in screw clamp element. For this, use a 4–pole connector (70 0807 01).

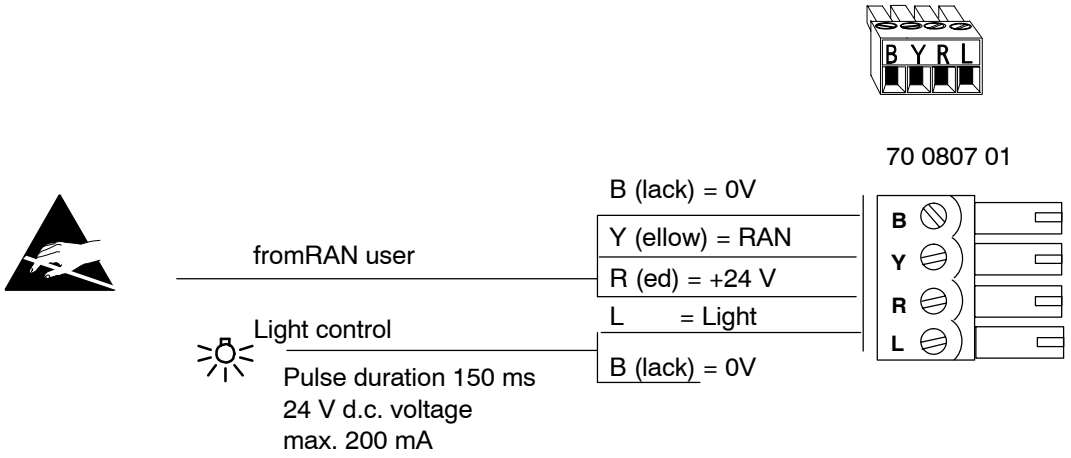


Fig. 23: Connection sockets 70 0XXX 0X: Connection

Allocating of bed numbers

Using the programming switches **1**, **2, 3** on the printed circuit board, you can set the bed number. For the correct bed number refer to the project–related installation plan.

Factory setting:
PG = do not change
NC = not used

Note! For bed number 6 there is no possibility to use a diagnostic call.

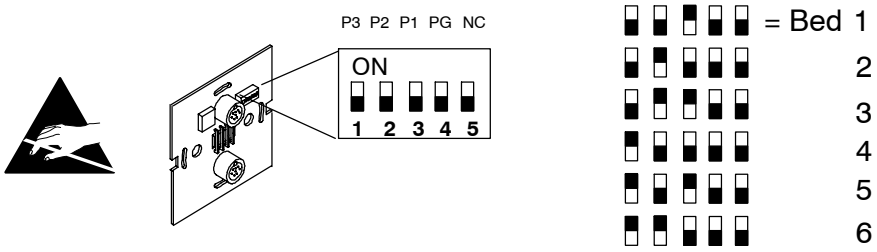


Fig. 24: Connection sockets 70 0XXX 0X: Setting of bed numbers

External call device at call switch with connection socket and external call input (70 0171 03)

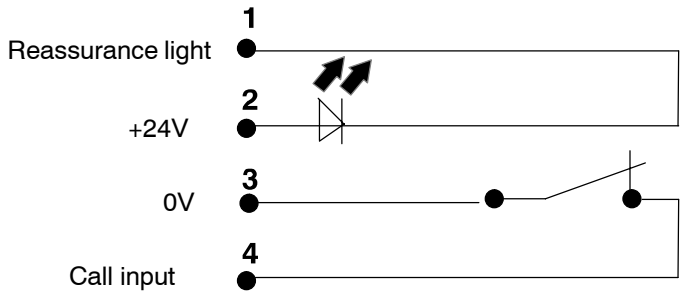


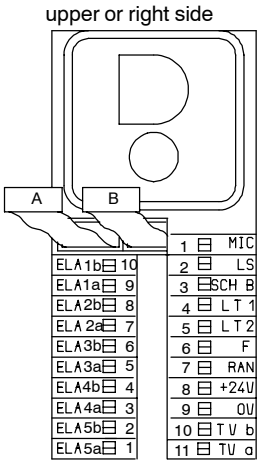
Fig. 25: Connecting an external call device to connection socket 70 0171 03

Use only normally–closed contacts.

Maximum permissible cable length for external call connection: 2.5 m.

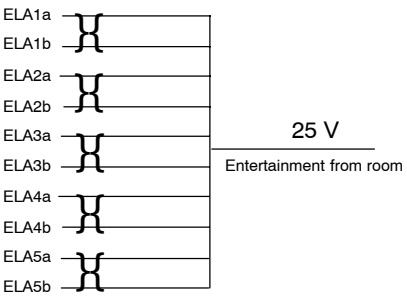
70 0424 00 Connection socket combi 2

Installation instructions are enclosed with the products.

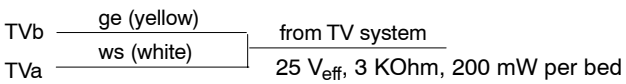


- Useable cable gauges: 0.55 – 1 mm Ø
- Shielded cables for LS, MIC: Strip to max. 30 mm!
- Insulate the guide wire (SCH) to prevent short circuiting.
- Insert only one switching wire per clamp.

Entertainment:



TV sound to the bed:



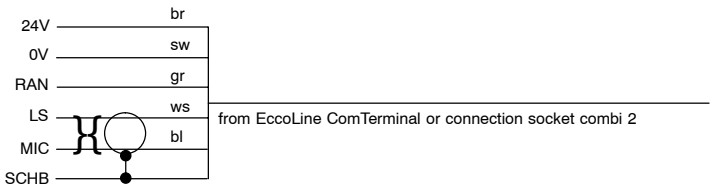
The available TV functions depend on the TV set in use.

Before the final installation, technicians shall check with the ordering party for the project to clarify the details regarding the connection and the functions.

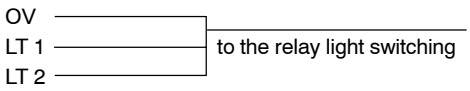
Room area network (RAN):

Maximum of 2 connections

br = brown
sw = black
gr = grey
ws = white
bl = blue



Connection of light relay:



Pulse length 150 ms
24 V DC
max. 200 mA

LT1: Reading light
LT2: Room light

Setting of Bed number and TV option

	P3	P2	P1
1	OFF	OFF	ON
2	OFF	ON	OFF
3	OFF	ON	ON
4	ON	OFF	OFF
5	ON	OFF	ON
6	ON	ON	OFF

*1

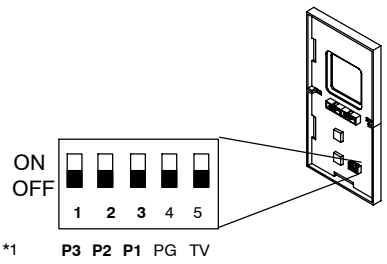


Fig. 26: Connection socket combi 2: Setting of bed number

***1** For bed number 6 there is no possibility to use a diagnostic call!

Setting of bed numbers 1 to 6: Use switches P3, P2, P1 as shown in the table.
Example: Bed number 1 = P3 OFF, P2 OFF, P1 on

TV to ON: Radio via tuner in TV system.

TV to OFF: Radio via ELA.

PG switches: Do not change.

70 0434 00 Connection socket combi bedhead unit 2

Normally, connection sockets combi bedhead unit 2 are installed by the manufacturers of the medical supply units. The bed numbers should also have been installed. Connect the connection socket as shown in the respective documents for the medical supply units. A sample terminal plan is shown below.

The connection sockets in the medical supply units are readily wired. The connection is effected at the connecting terminals of the medical supply unit.

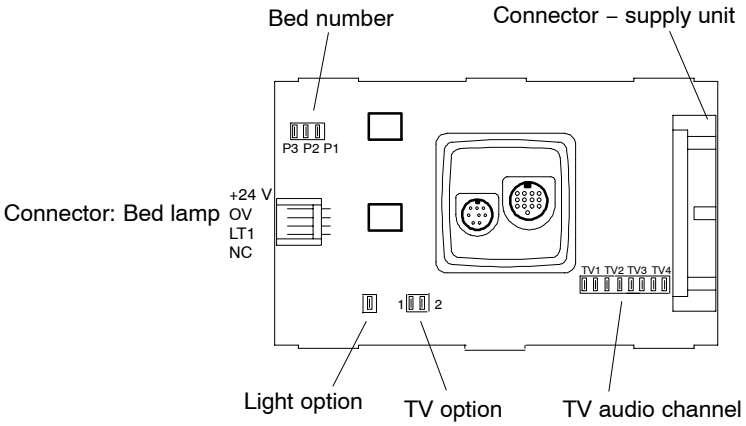


Fig. 27: Connection socket combi bedhead unit 2 in supply unit

Setting of bed numbers

Bed No.	Jumper placed:
Bed 1	P1
Bed 2	P2
Bed 3	P1, P2 (factory setting)
Bed 4	P3
Bed 5	P1, P3
Bed 6*)	P2, P3

*) For bed number 6 there is no possibility to use a diagnostic call.

Light option

Jumper open:	Separate outputs LT1 and LT2 for light relays (Light control buttons separate).
Jumper placed:	Outputs LT1 and LT2 are connected (Light buttons parallel). In this case, connect only one relay.

TV option

Jumper 1 placed:	Radio via entertainment system (factory setting).
Jumper 2 placed:	Radio via tuner in TV system.

TV audio channels TV1 – TV4

For this setting, always place 2 jumpers.

Where star–type distribution of TV audio is provided, the audio channel is set in reference to the bed number.

Bed No.	Jumper placed:
Bed 1	TV1
Bed 2	TV2
Bed 3	TV3
Bed 4	TV4

Where TV audio is parallel, select audio channel 1.

TV audio

The available TV functions depend on the TV set in use.

Before the final installation, technicians shall check with the ordering party for the project to clarify the details regarding the connection and the functions.

Connection field of a supply unit (example)



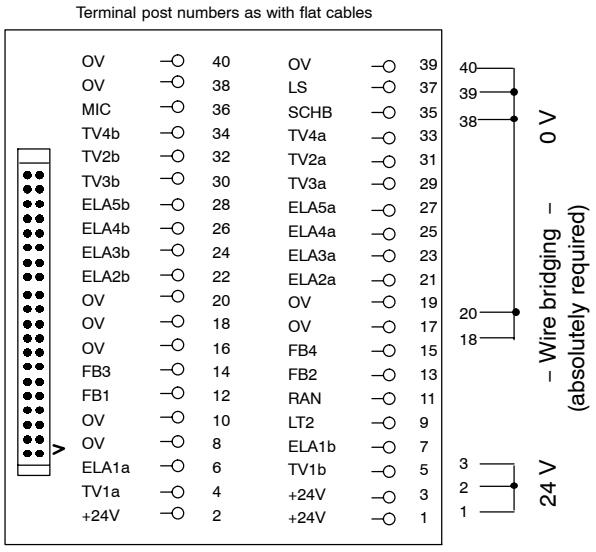
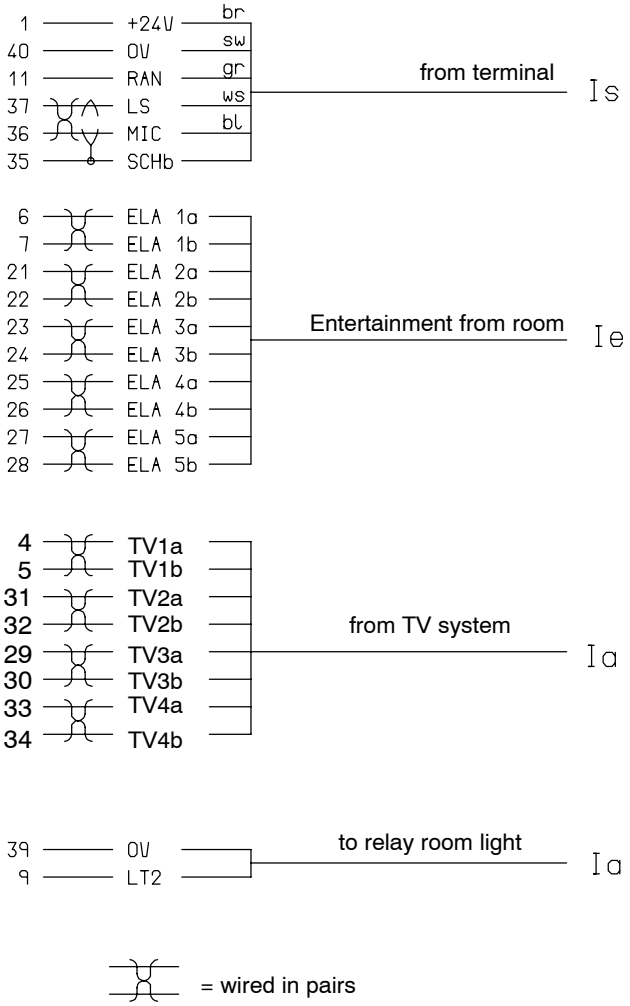


Fig. 28: Connection field (example)

br = brown
sw = black
gr = grey
ws = white
bl = blue



Shielded lines for LS, MIC; strip for max. 30 mm!

Fig. 29: Connection socket combi bedhead unit 2 (70 0434 00): Connection

70 0491 00 Connection socket ComTerminal

Installation instructions enclosed with products.



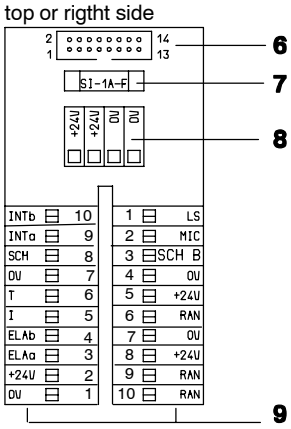


Fig. 30: Connection socket ComTerminal: Connection field

6 Connection ComTerminal

7 Fuse 1 A/F

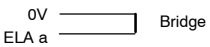
8 Connection for power supply
Suitable cable: Power supply line 25 mm^2

9 Connecting clamps for RAN, CCS bus line, Entertainment (radio, TV)
Suitable cable: Multi–purpose line 0.55 – 1 mm Ø

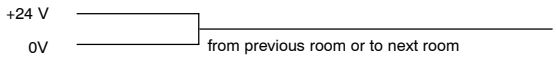
- Shielded line for LS, MIC, INT: Strip for max. 30 mm!
- Insulate the guide wire (SCH) to prevent short circuiting.
- Insert only one wire per clamp.



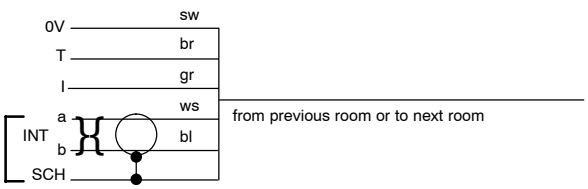
Note! Where entertainment is not connected, ELA a must be bridged with 0V.



Electric power supply:



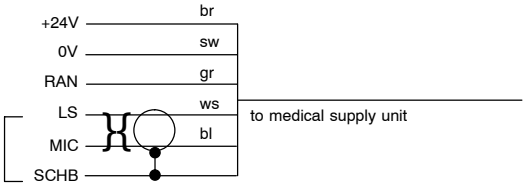
CCS bus line:



Room area network (RAN) with speech:

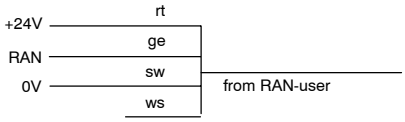
Maximum of 2 connections.

br = brown
sw = black
gr = grey
ws = white
bl = blue



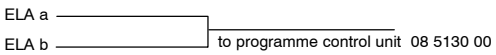
Room area network (RAN) without speech:

Maximum of 4 connections.



Entertainment, selected channel:

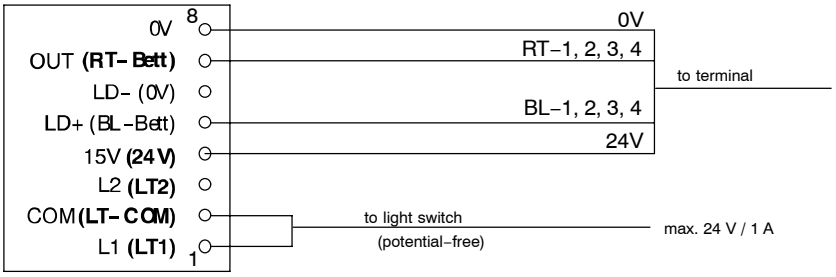
Entertainment, selected channel



73 0400 00 Connection socket L200

Installation instructions enclosed with products.





Designation in brackets for terminal clamps.

Bed 1 = RT-1/BL-1

Bed 2 = RT-2/BL-2

Bed 3 = RT-3/BL-3

Bed 4 = RT-4/BL-4

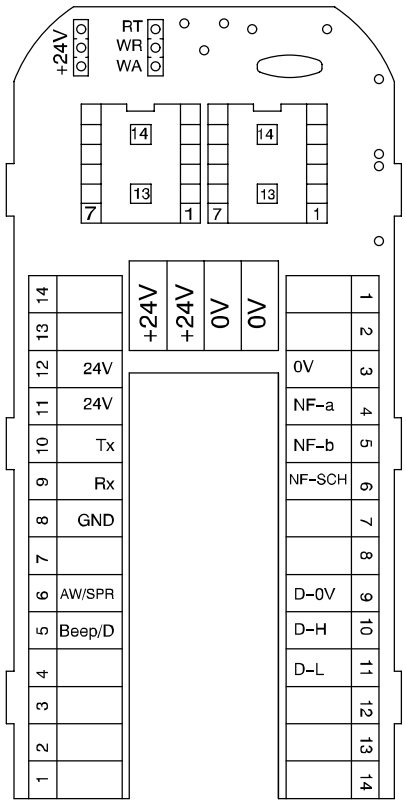
For each bed only one connection socket L200 may be connected.

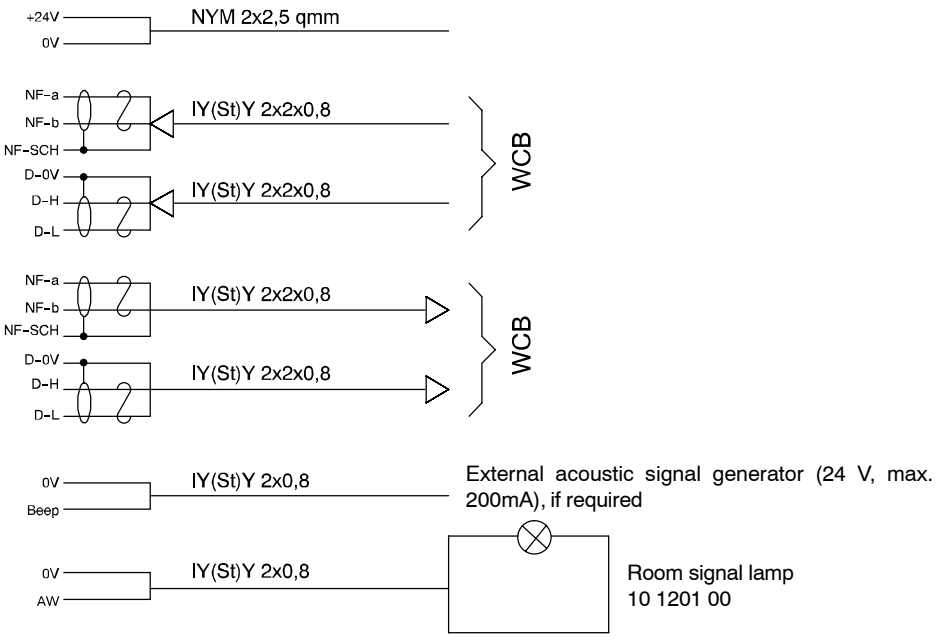
Only one light can be controlled via a connection socket L200.

74 0452 50 Connection socket ComStation

For connecting an EccoLine ComStation







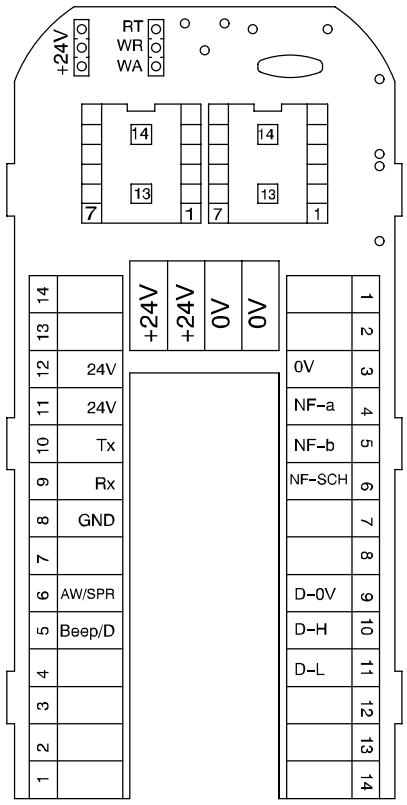
EccoLine with speech only

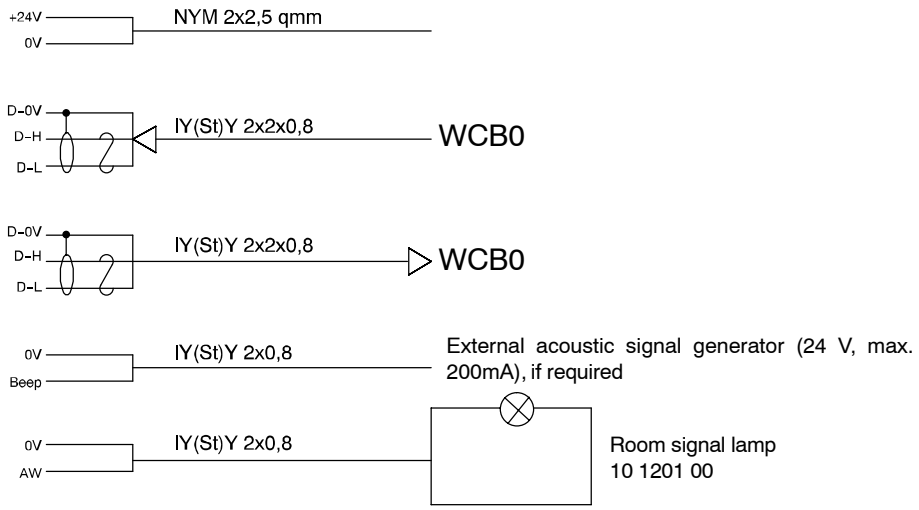
EccoLine L200 only

74 0452 50 Connection socket ComStation

For connecting a ComStation L200







Room terminals

EccoLine L200: Terminals

Order No. Terminal	Name Terminal	Used as Room signal lamp	Display combination L200 can be connected	Spare part Order No. PCB
73 0500 00	Nurse call terminal L200	yes	no	SA73091599
73 0505 00	Nurse call terminal L200/D	yes	yes	SA73091505
73 0550 00	Terminal L200	no	no	SA73091550
73 0555 00	Terminal L200/D	no	yes	SA73091555



Attention! The printed circuit board (PCB) may be replaced only when there is no residual current. Loose contacts could cause severe damage to the component.



Note! If the printed circuit boards show order numbers SA73090599, SA73090505, SA73090550 or SA73090555, these boards are not described in this manual. The installation of these terminals is described in the NewLine L200 installation manual. This manual is also available through Tunstall GmbH.

Instructions for the installation are enclosed with the products.

EccoLine L200 only

Components ’on–board’

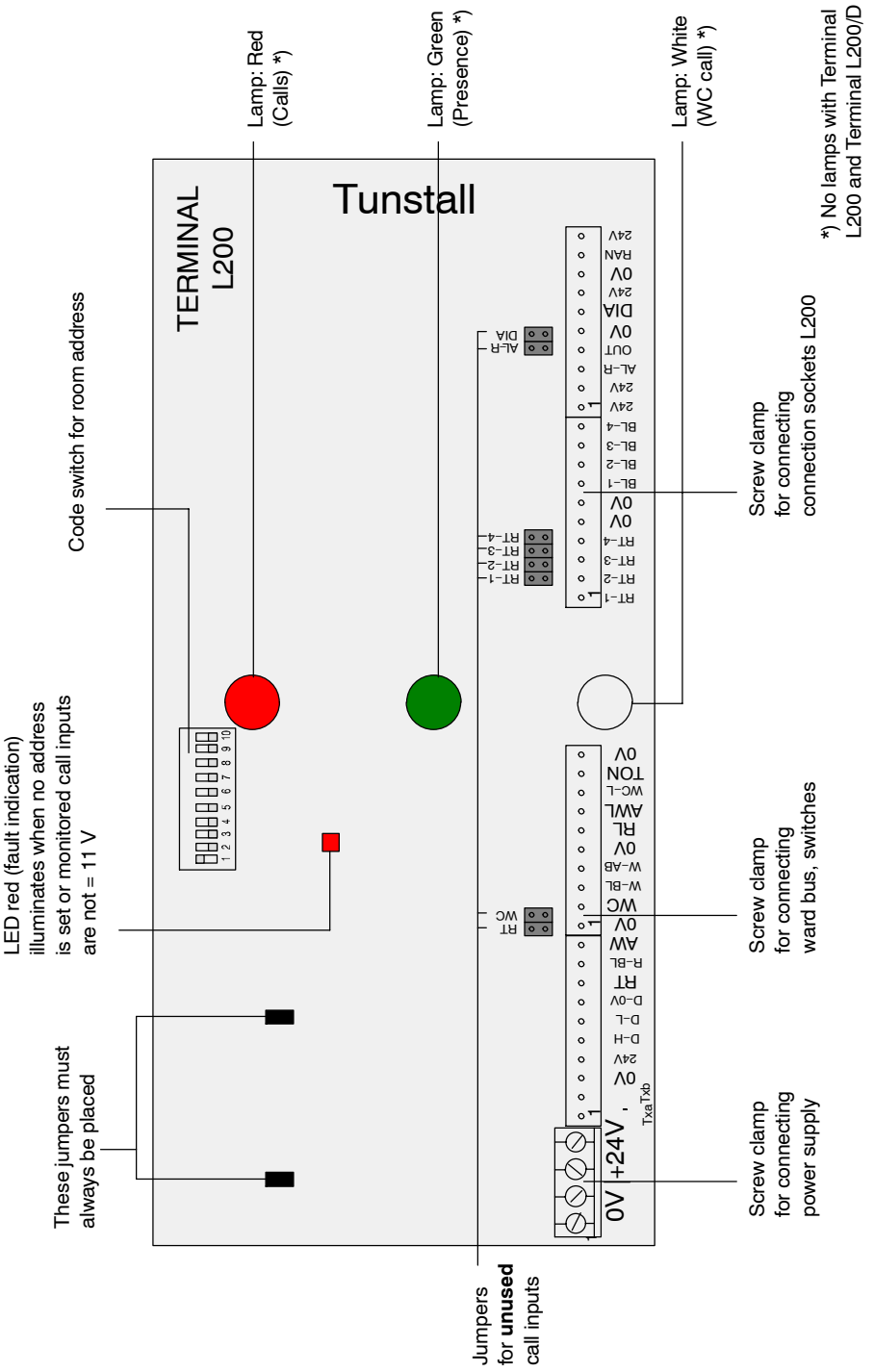
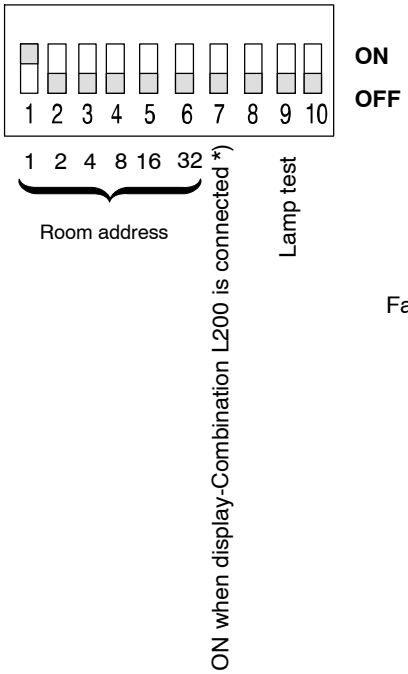


Fig. 31: EccoLine L200 Terminals: Printed circuit boards

10-pole coding switch



Factory setting: Address 1

*) only for Nurse call terminal L200/D or Terminal L200/D
Do not change code switch 7 for Nurse call terminal L200 and Terminal L200!
ATTENTION: Do not change code switches 8 and 10! Factory setting.

Attention! Whenever a code setting is changed, a voltage reset is required. Otherwise, the new settings are not stored.

Setting of room address: Code switches: 1 – 6

For the room address refer to the filled–out configuration sheet “Display configuration for EccoLine L200”, refer to page 20.

Use the code switches 1 – 6 with the values 1, 2, 4, 8, 16, 32 to set the-room address. Place the appropriate switches to ON.

Example: Address 1 is set by placing the code switch 1 to ON. Address 4 is set by placing the code switch 3 to ON. Address 24, on the other-hand, is created by mathematical addition, i.e. switches 4 and 5 are placed to ON (8 + 16 = 24).

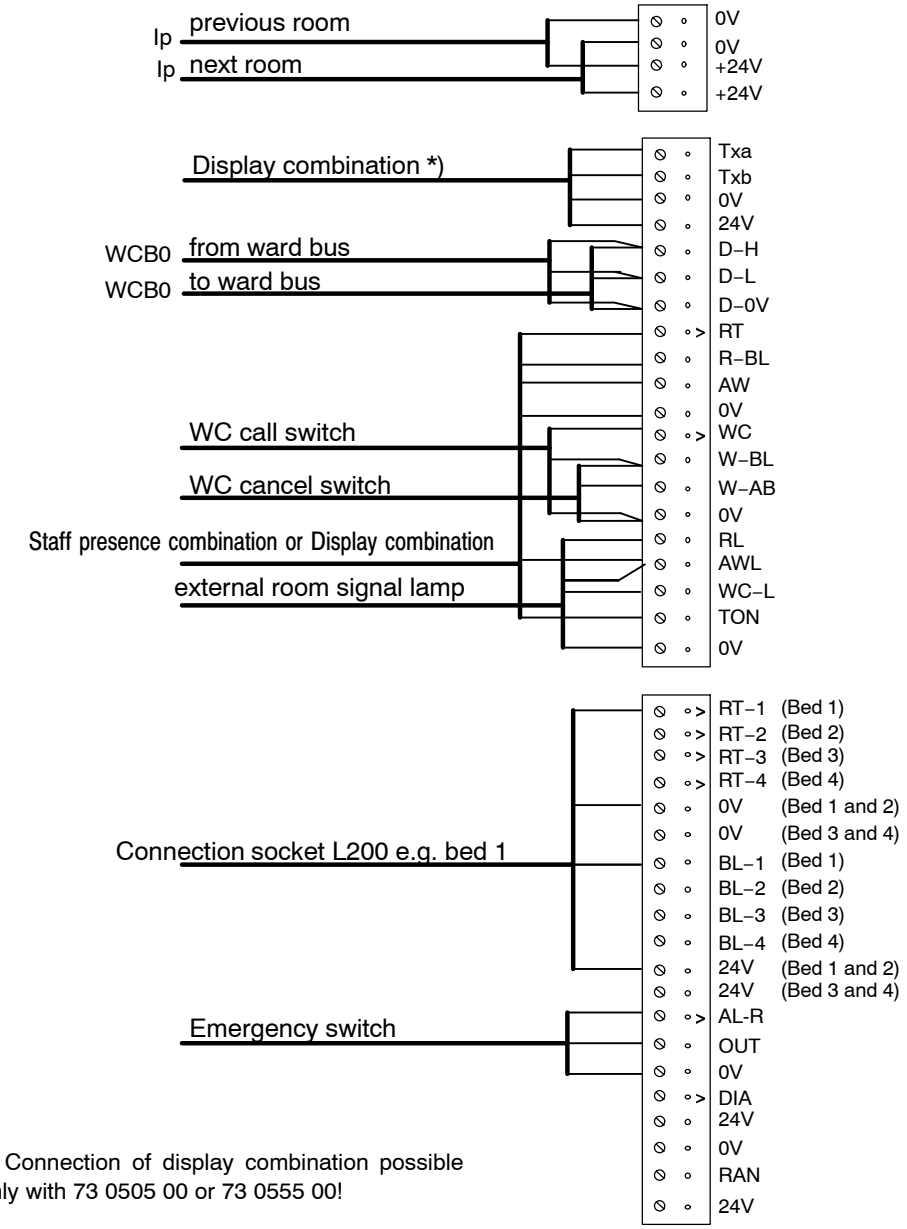
Note! Address 1 is pre–set. When address 0 is set, the system will not recognise this room. The control LED will come on to indicate this fault.

Display combination L200: Code switch: 7

For Nurse call Terminal L200/D (73 0505 00) and Terminal L200/D (73 0555 00) the code switch 7 must be placed to ON if a display combination L00 (73 0180 00) is connected.

EccoLine L200 only

EccoLine L200–Terminals: Connecting plan



*) Connection of display combination possible only with 73 0505 00 or 73 0555 00!

Danger! All incoming calls (marked by **>**) are checked for short circuits and interruptions. A jumper must be placed for every unused input port to prevent false alarms. For the jumper position refer to Fig. 31 on page 70.

Jumper:



74 0510 00 EccoLine ComTerminal

Instructions for the installation are enclosed with the products.

Refer to page 64 for information on the connection of the connection socket ComTerminal (70 0491 00). Place the flat cable plug into the slot of the installed connection socket ComTerminal.

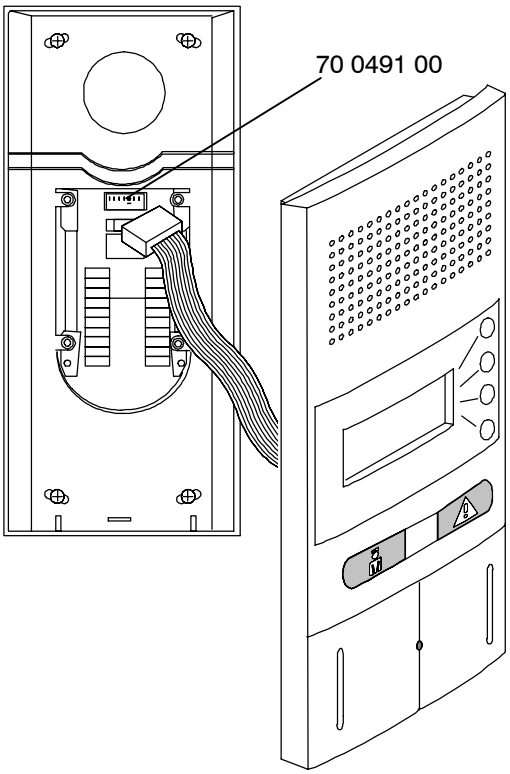


Fig. 32: EccoLine ComTerminal: Connection of the flat cable

Universal interface etc.

This chapter describes how to connect the universal interface and the devices which are connected to the universal interface:

- ☐ Universal interface
- ☐ External call devices and collective displays
- ☐ Group signal lamps
- ☐ Direction signal lamps
- ☐ Corridor display Alpha

73 3500 00 Universal interface



Attention! The printed circuit board may be replaced only when there is no residual current. Loose contacts could cause severe damage to the component.

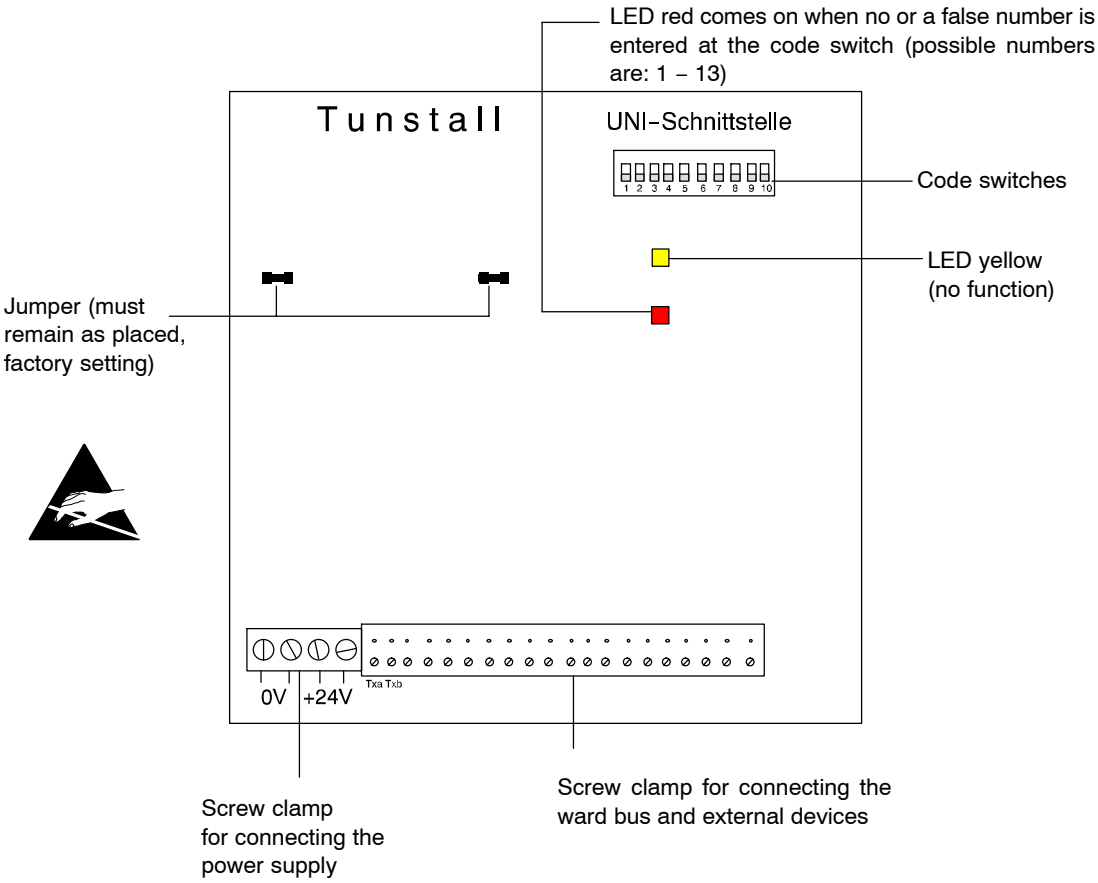


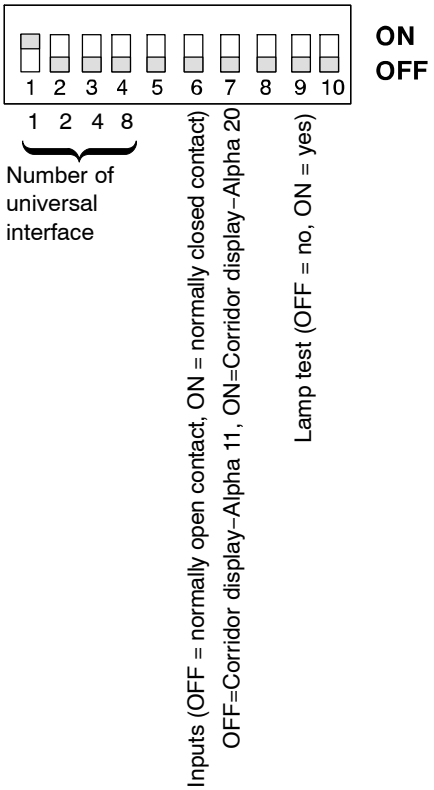
Fig. 33: Universal interface: Printed circuit board

Instructions for the installation are enclosed with the products.

Setting the code switches

Universal interfaces can be used for the connection of group signal lamps, direction signal lamps, corridor displays or external call devices. There is a different setting number for each type of the connected devices.

The number will set both the address for the universal interface and the type of the connected device.



ATTENTION: Do not change setting of 5, 8, 10! – Factory setting!

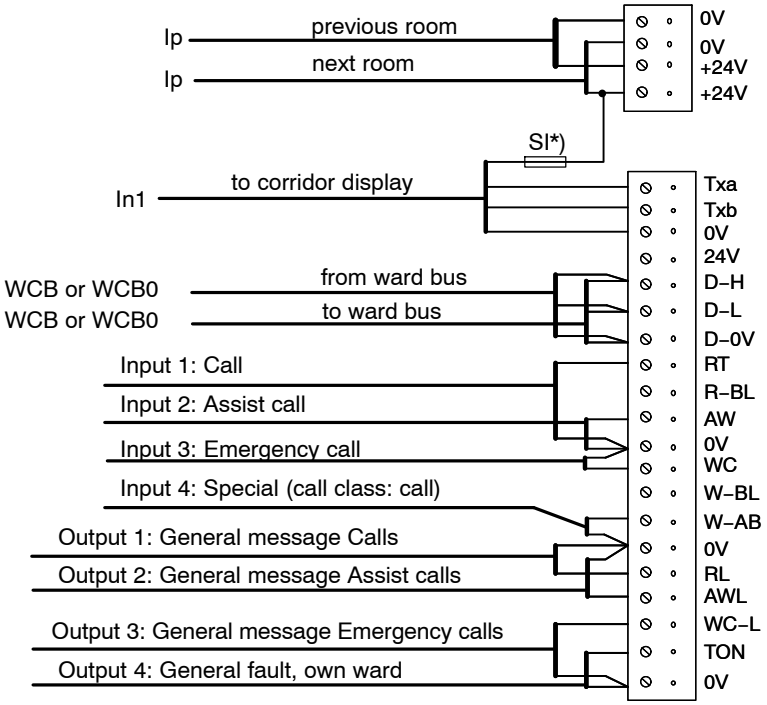
Fig. 34: Universal interface: Code switches

Attention! Whenever a code setting is changed, a voltage reset is required. Otherwise, the new settings are not stored.

	Universal interface		
	Number	Address	Connected devices
	1	80	External call devices, collective display, corrid.display
	2	81	Group signal lamp 1 group signal lamp 2 corridor display
	3	82	Group signal lamp 3 group signal lamp 4 corridor display
	4	83	Group signal lamp 5 group signal lamp 6 corridor display
	5	84	Group signal lamp 7 group signal lamp 8 corridor display
	6	85	Direction signal lamp 1 direction signal lamp 2 corridor display
	7	86	Direction signal lamp 3 direction signal lamp 4 corridor display
	8	87	Direction signal lamp 5 direction signal lamp 6 corridor display
	9	88	Direction signal lamp 7 direction signal lamp 8 corridor display
	10	89	Direction signal lamp 9 direction signal lamp 10 corridor display
	11	90	Direction signal lamp 11 direction signal lamp 12 corridor display
	12	91	Direction signal lamp 13 direction signal lamp 14 corridor display
	13	92	Direction signal lamp 15 direction signal lamp 16 corridor display
Factory setting: Universal interface number 1 (1 = ON) Inputs: Normally open contact (6 = OFF) Corrid. display Alpha 11 (7 = OFF) Lamp test OFF (9 = OFF) Do not change code switches 5, 8, 10 ; factory setting !			

External call devices and collective display at universal interface

	Universal interface		
	Number	Address	Connected devices
ON / OFF 1 2 3 4 5 6	1	80	External call devices (normally closed contact), collective displays, corridor display
ON / OFF 1 2 3 4 5 6	1	80	External call devices (normally open contact), collective displays, corridor display



SI*) Plug–in screw clamp with safety bracket (00 0224 81)
Fuse 3,15 AT (00 0130 23)

Fig. 35: Universal interface: Connections for external call devices, general / collective displays, corridor display Alpha

General announcement : Address 1 – 63 + 80

Outputs indicate continuous signal.

Inputs 1 – 4 can be used for normally open or normally closed contacts (Code switch 6).

Group signal lamps

73 1202 00	Group signal lamp, 2 groups
73 1302 00	Group signal lamp, 3 groups
73 1402 00	Group signal lamp, 4 groups
73 1502 00	Group signal lamp, 5 groups
73 1602 00	Group signal lamp, 6 groups

To cater for different organisational schemes (e.g. night shifts or low activity periods) up to 8 wards can be connected.

The System Management Unit (SMU or SMU L200) stores a maximum of 32 WIC–programmes (WIC = ward coupling). Each programme stands for the coupling of specific wards. Individual WIC-programmes can be activated at the ComStation (EccoLine ComStation or ComStation L200) or at the EccoLine ward console/S.



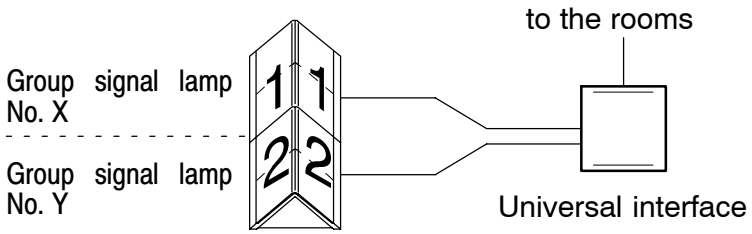
Note! For defining the 32 WIC-programmes, the configuration table for SMC must be filled out, refer to page 24.

Where wards are connected, group signal lamps are used to indicate calls from other wards. They function only with an operational SMU.

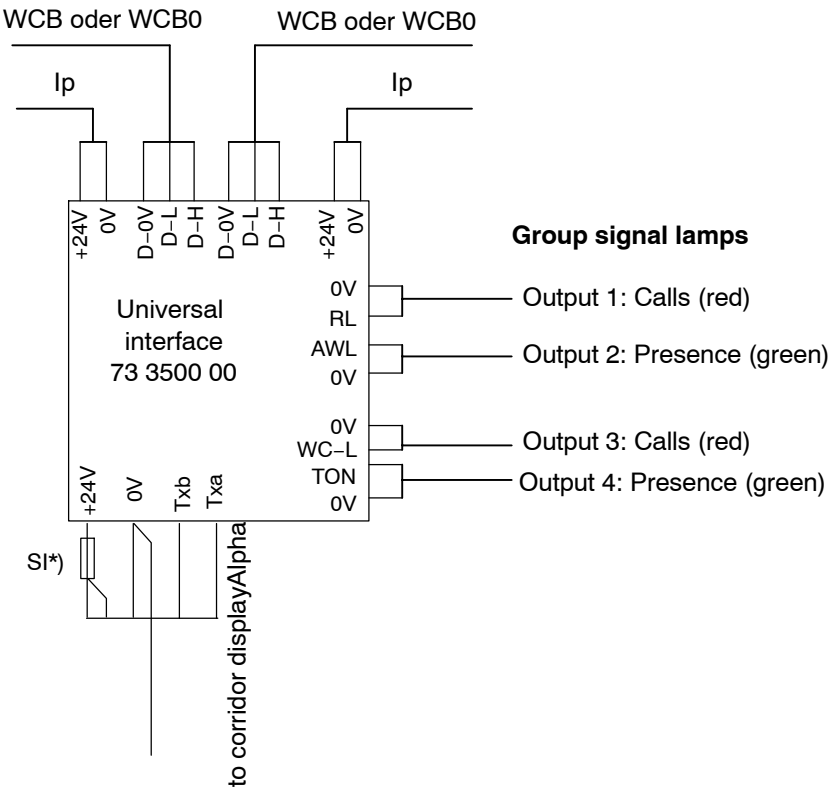
The group signal lamps are connected to ward bus WCB or WCB0 via the universal interface. Two group signal lamps may be connected to a single universal interface. Further to this, the universal interface also has an output for corridor displays.



Note! The addresses for the connected group signal lamps must be activated at the ComStation or EccoLine ward console/S (refer to “Operating manual for the ward”).



Code switches	Universal interface Number	Aderess	Connected devices	Connected to output
	2	81	Group signal lamp 1 group signal lamp 2 corridor display	1 and 2 3 and 4
	3	82	Group signal lamp 3 group signal lamp 4 corridor display	1 and 2 3 and 4
	4	83	Group signal lamp 5 group signal lamp 6 corridor display	1 and 2 3 and 4
	5	84	Group signal lamp 7 group signal lamp 8 corridor display	1 and 2 3 and 4



SI*) Plug–in screw clamp with safety bracket (00 0224 81)
Fuse 3,15 AT (00 0130 23)

Fig. 36: Group signal lamps at universal interface

Note! Fill out the configuration table for group signal lamps for allocating of wards and group signal lamps, refer to page 22.

Allocation of wards to the group signal lamps is effected at the ComStation (EccoLine ComStation or ComStation L200).

73 1102 00 Direction signal lamp

Direction signal lamps display the route to the call location by an illuminated arrow. These lamps are installed in the corridor at diverging routes or unclear areas.

The direction signal lamps are connected to the ward bus WCB or WCB0 via the universal interface. Two direction signal lamps can be connected per universal interface. Further to this, a corridor display can be connected to the same universal interface.

	Universal interface			Connected to
Code switches	Number	Address	Connected devices	Output
	6	85	Direction signal lamp 1 direction signal lamp 2 corridor display	1 and 2 3 and 4
	7	86	Direction signal lamp 3 direction signal lamp 4 corridor display	1 and 2 3 and 4
	8	87	Direction signal lamp 5 direction signal lamp 6 corridor display	1 and 2 3 and 4
	9	88	Direction signal lamp 7 direction signal lamp 8 corridor display	1 and 2 3 and 4
	10	89	Direction signal lamp 9 direction signal lamp 10 corridor display	1 and 2 3 and 4
	11	90	Direction signal lamp 11 direction signal lamp 12 corridor display	1 and 2 3 and 4
	12	91	Direction signal lamp 13 direction signal lamp 14 corridor display	1 and 2 3 and 4
	13	92	Direction signal lamp 15 direction signal lamp 16 corridor display	1 and 2 3 and 4



Note! For allocating the rooms (room address) to the direction signal lamps you must fill out the configuration table for direction signal lamps, refer to page 23.

The allocation of the rooms (room address) to the direction signal lamps into the WCU (WCU-Extended or WCU L200) can be effected only with a suitable programming tool, and this can be effected only by a Tunstall technician.

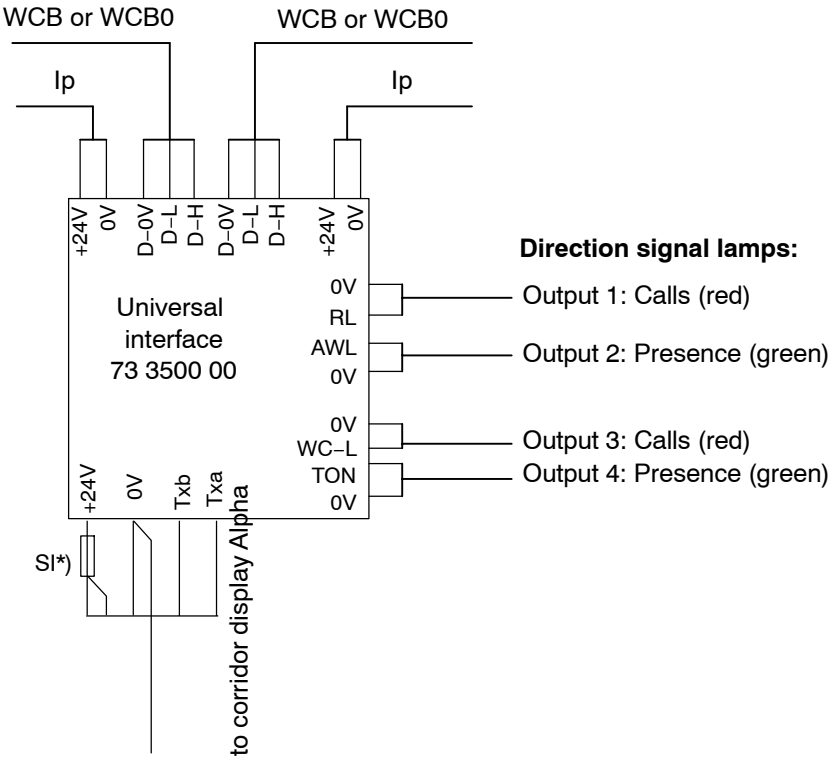


Fig. 37: Direction signal lamps at a universal interface

Corridor displays Alpha

70 0075 00	Corridor display Alpha 20
70 0076 00	Corridor display Alpha 11

Legend to the connecting plan for corridor displays Alpha on the following page

* Bridge1 to 3
Clearing of acoustic message for a call

or

** clearing of acoustic message for a call, controlled by an external switch. In this case, an additional resistor 4K7 (00 0041 13) is required from 3 to 2. (Interference suppression)

***The terminating resistor 100 Ohm (00 0040 73) is required for the last connector.

Si: Plug–in screw clamp with safety bracket (00 0224 81)
Fuse 2A/T (00 0130 30)

- ☐ Code switch 7 must be set:
  ON = Corridor display Alpha 20, OFF = Corridor display Alpha 11
- ☐ Where more than 2 dual displays are connected, **a separate power supply is needed!** In that case, max. length of data cable: (Txa, Txb) 200m.
- ☐ A universal interface will be required for each ward. Wiring between groups is not allowed!
- ☐ Max. 8 displays per one universal interface.
  Where the operating voltage at the last display drops below 20 V, an additional Ip line for +24V, 0V is required.
- ☐ Current consumption of corridor display Alpha 11: ca. 230 mA
- ☐ Current consumption of corridor display Alpha 20: ca. 370 mA
- ☐ Installation instructions are enclosed with the corridor display.

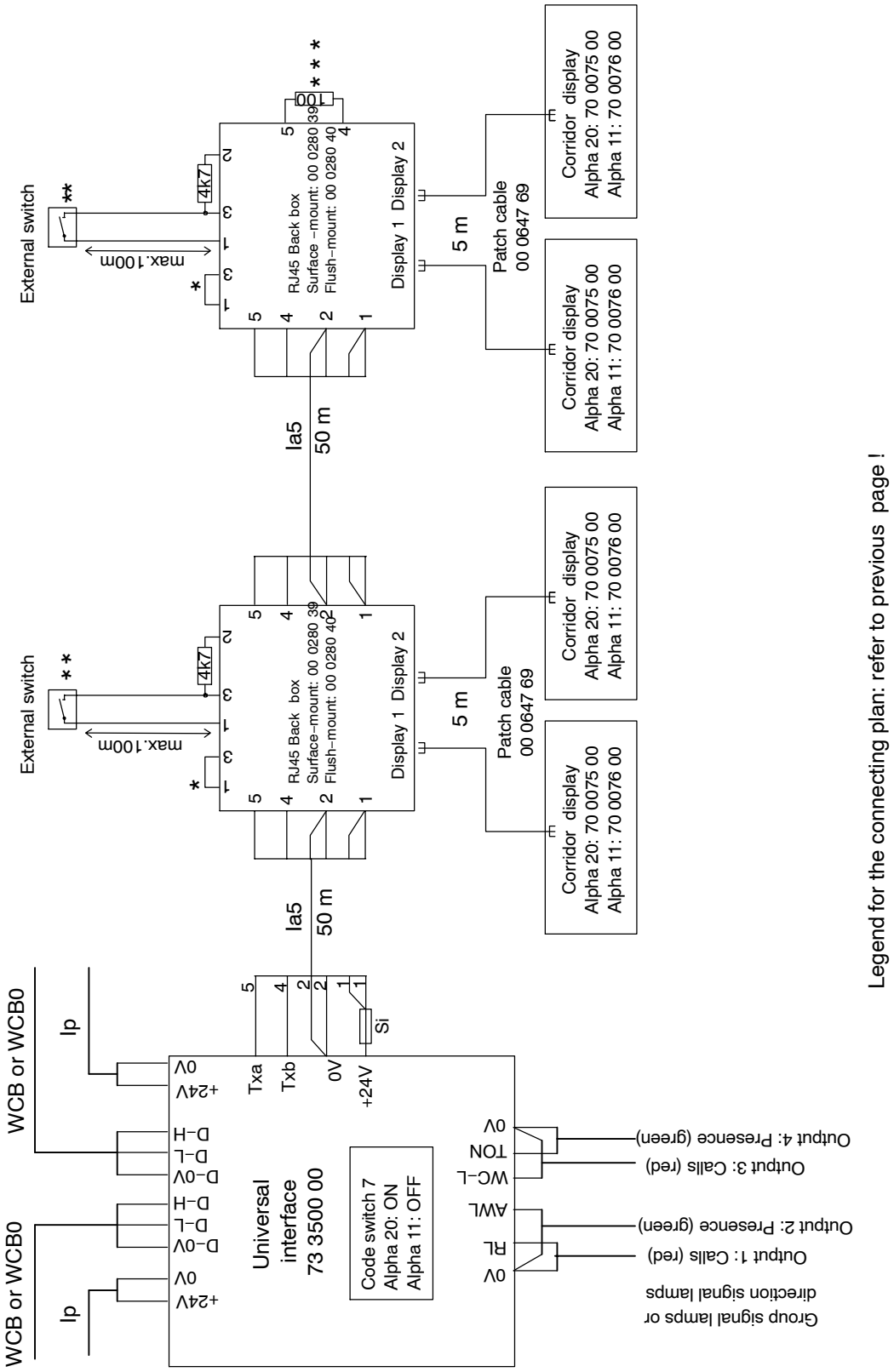


Fig. 38: Corridor display Alpha 20 (70 0075 00), Corridor display Alpha 11 (70 0076 00): Connections at the universal interface (73 3500 00)

RAN interfaces etc.

This chapter describes how to connect the RAN (Room Area Network) interfaces and the devices which are connected to the RAN interfaces.

70 0840 00 RAN interface, normal call
70 0841 00 RAN interface, emergency call

External call devices which are connected via a RAN interface normal call (70 0840 00) initiate a normal call.

External call devices which are connected via a RAN interface emergency call (70 0841 00) initiate an emergency call/code blue. However, initiating a call is possible only when the presence status in the particular room is activated (= preventing false alarms).

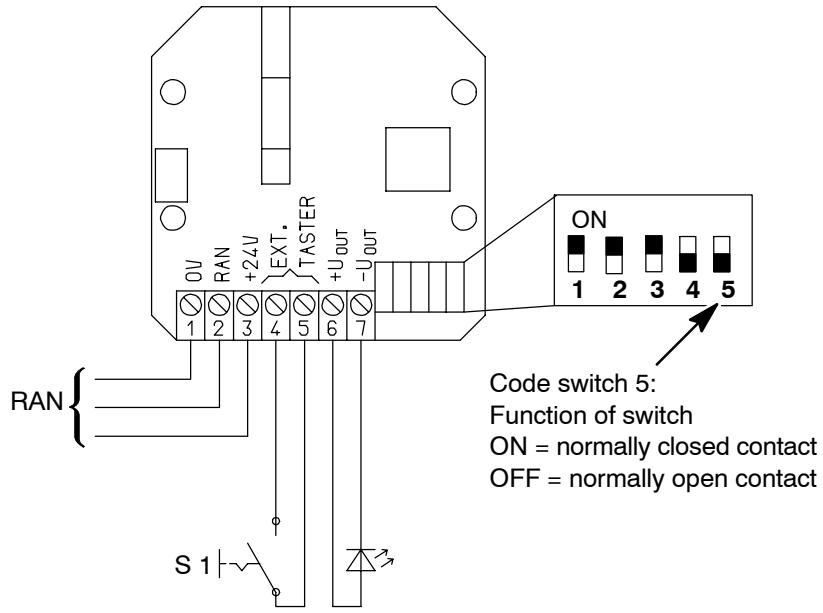


Fig. 39: RAN interface: Normal / emergency call: Connection

Switch output:

U_{out} = 24 V; $I_{out\ max.}$ = 10 mA

Locating light function:

$I_{FL\ max.}$ = 0,5 mA

External switch S 1:

min. switching current: 0,1 mA, 5 V DC

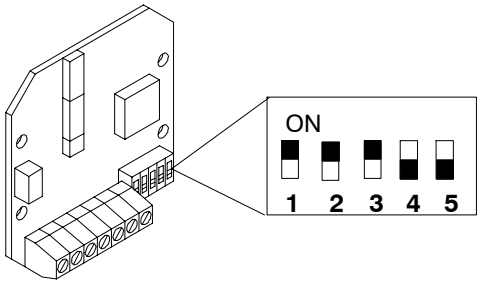
max. wiring length at point 4,5, 6, 7 = 5 m

Setting the bed number (only for 70 0840 00)

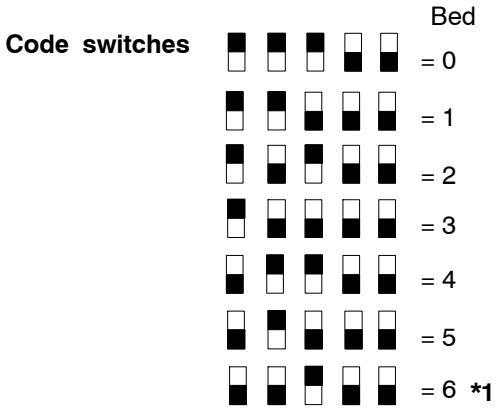
At the RAN interface normal call, the corresponding bed number can be set.

For this, use the code switches 1, 2 and 3.





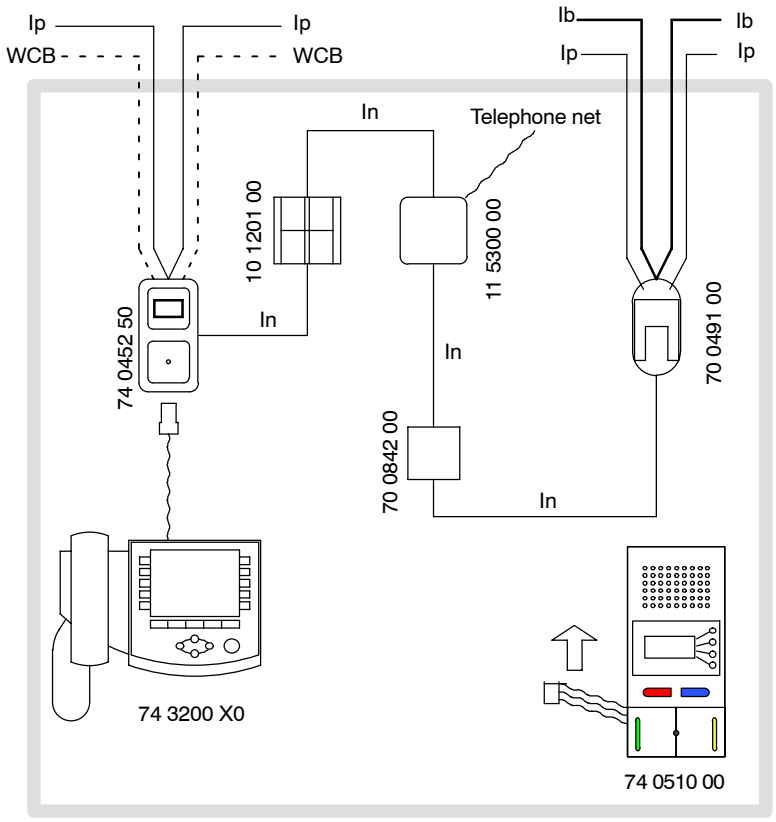
factory setting
(4 = OFF , do not change!)

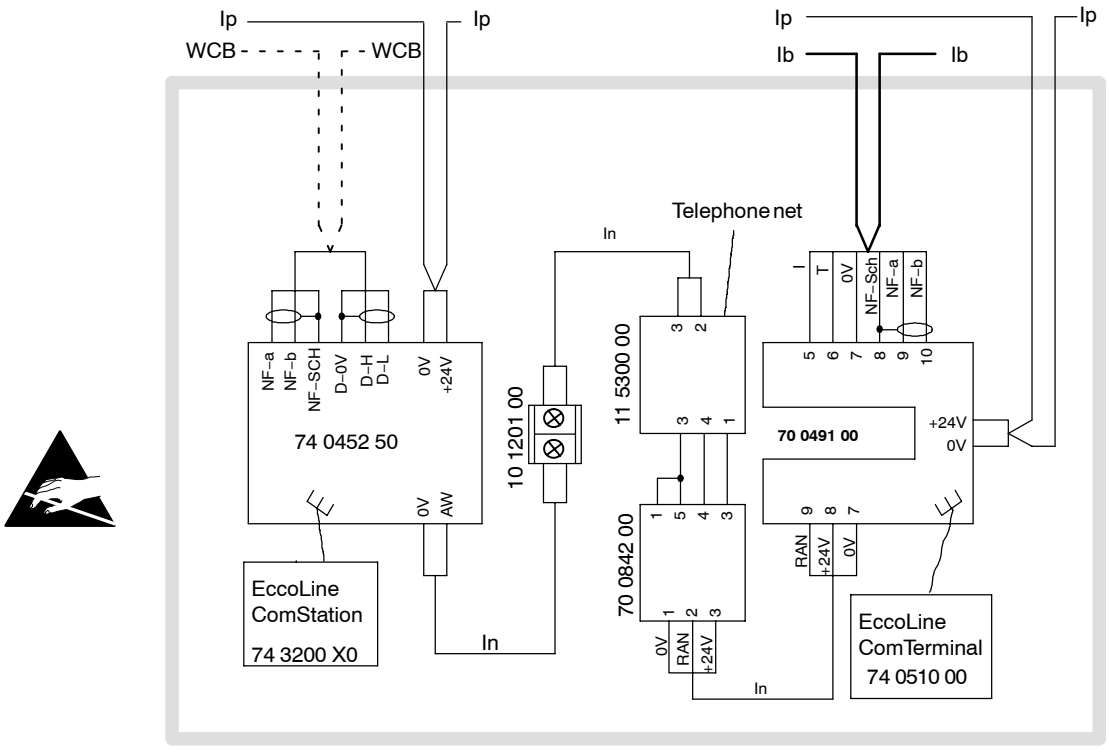


***1** Attention: Diagnostic call not possible with bed number 6.

Fig. 40: RAN interface normal call: Setting of bed numbers

70 0842 00 RAN interface, telephone call





70 0860 00 RAN interface, TV

The next page shows a sample wiring plan for a room with TV.

Products for each TV

1 x Control module for hospital TV (70 0360 01)

1 x RJ45 connection socket:
- RJ45 Connection socket surface mounted 2–gang (00 280 39)
- RJ45 Connection socket recessed mounted 2–gang (00 280 04)

1 x Hospital TV set (74 7000 00)

1 x TV support:
- TV mounting adapter, wall, pivoting (74 7000 03)
- TV mounting adapter, ceiling fix (74 7000 04)
- TV mounting adapter, ceiling, pivoting (74 7000 05)

Products per room

1 x RAN interface, TV (70 0860 00)

Products per hospital

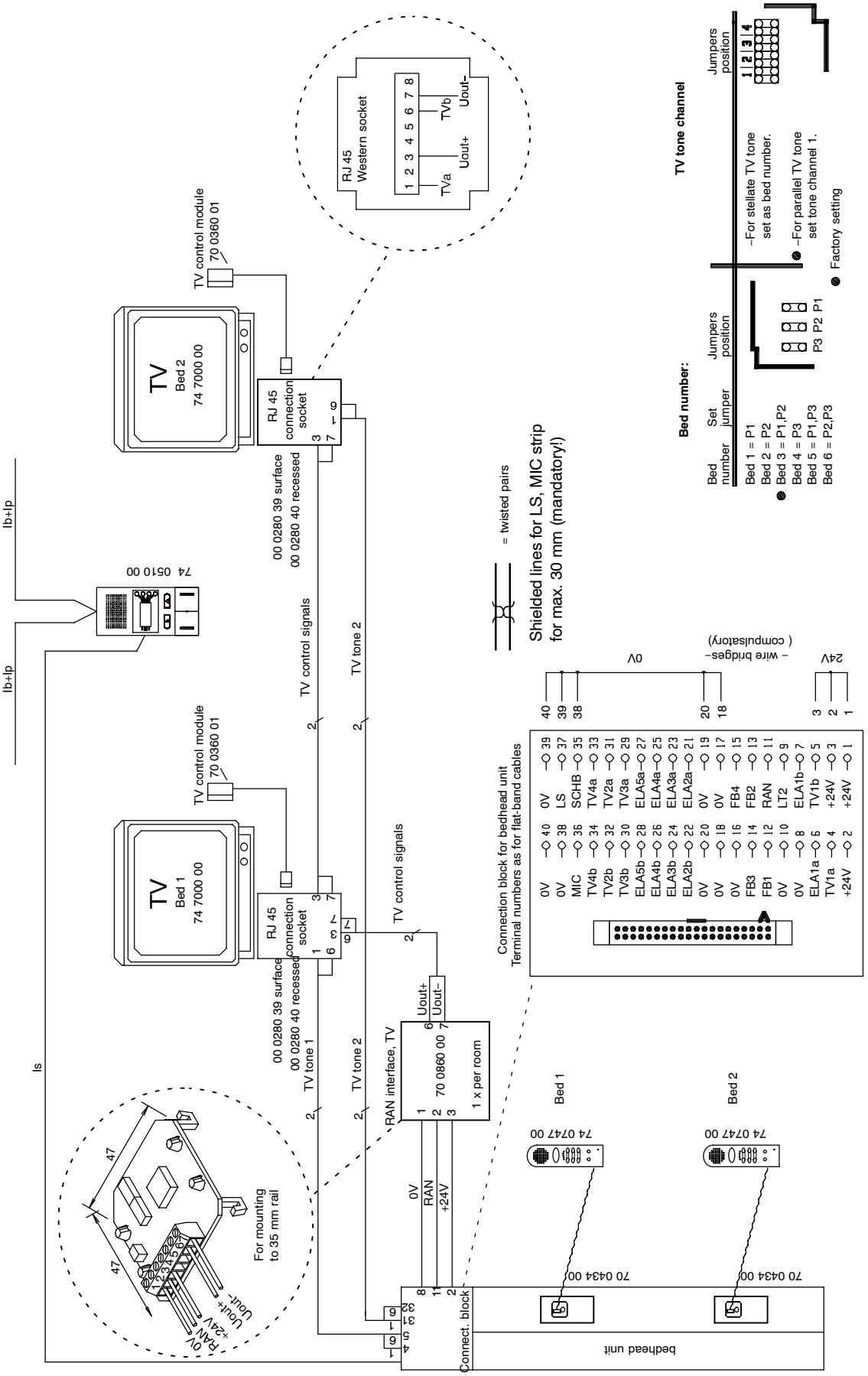
1 x Service remote control (74 7000 01)

1 x TV programming module (74 7000 02)

Notes

Setting of bed numbers and other options are effected by placing jumpers in the appropriate positions at connection socket (70 0434 00).

Diagnostic call not possible with bed number 6.


EccoLine with speech only
TV tone channel
Jumpers position
1 2 3 4
–For stellate TV tone set as bed number.
–For parallel TV tone set tone channel 1.
Factory setting
Bed number:
Bed number
Set jumper
Jumpers position
Bed 1 = P1
Bed 2 = P2
Bed 3 = P1,P2
Bed 4 = P3
Bed 5 = P1,P3
Bed 6 = P2,P3
P3 P2 P1
RJ 45 Western socket
1 2 3 4 5 6 7 8
TVa
Uout+
TVb
Uout–
TV control module 70 0360 01
TV Bed 2 74 7000 00
RJ 45 connection socket
00 0280 39 surface
00 0280 40 recessed
TV control signals
TV tone 2
= twisted pairs
Shielded lines for LS, MIC strip for max. 30 mm (mandatory!)
Ib+Ip
74 0510 00
Is
TV Bed 1 74 7000 00
TV tone 1
RAN interface, TV
70 0860 00
1 x per room
Uout+
Uout–
0V
RAN
+24V
For mounting to 35 mm rail
47
Connection block for bedhead unit
Terminal numbers as for flat-band cables
0V
24V
– wire bridges –
(compulsatory)
Bed 1
Bed 2
74 0747 00
70 0434 00
Connect. block
bedhead unit

70 0880 00 RAN interface with speech



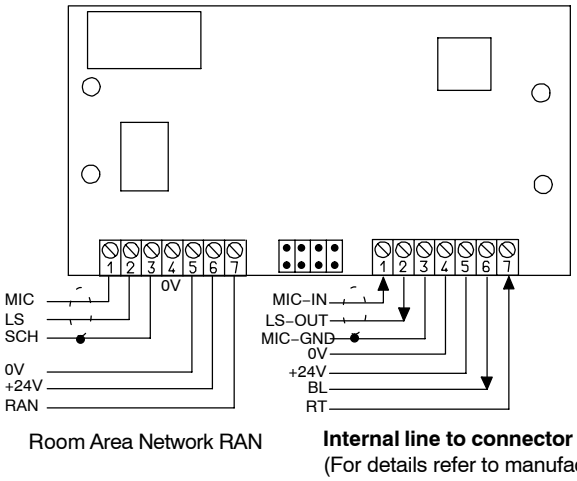
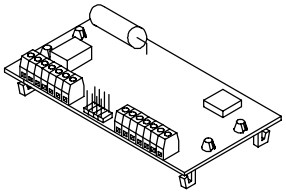


Fig. 41: RAN interface with speech: Connection

Setting the bed numbers

Use the jumpers on the board to set the appropriate bed number.

Use code switches 1, 2, 3.



 = Bed 1

 = Bed 2

 = Bed 3

 = Bed 4

 = Bed 5

 = Bed 6 ***1**

***1** Attention: Diagnostic call not possible with bed number 6.

Fig. 42: RAN interface with speech: Setting of bed numbers

Ward control unit (WCU)

WCU–Extended is the ward control unit for systems “EccoLine with speech”. WCU L200 is the ward control unit for systems “EccoLine L200”.

Fit the ward control unit so as to be easily accessible, e.g. in a distributing frame for the ward or in a special room for technical installations. The control shall not be installed in suspended ceilings as this will preclude easy access for servicing or set–up work.

The ward control unit is mounted on a standard 35 mm mounting rail.

A protective housing shall be used to protect the ward control unit from electromagnetic interference. Use the WCU EMC kit (50 0627 00).

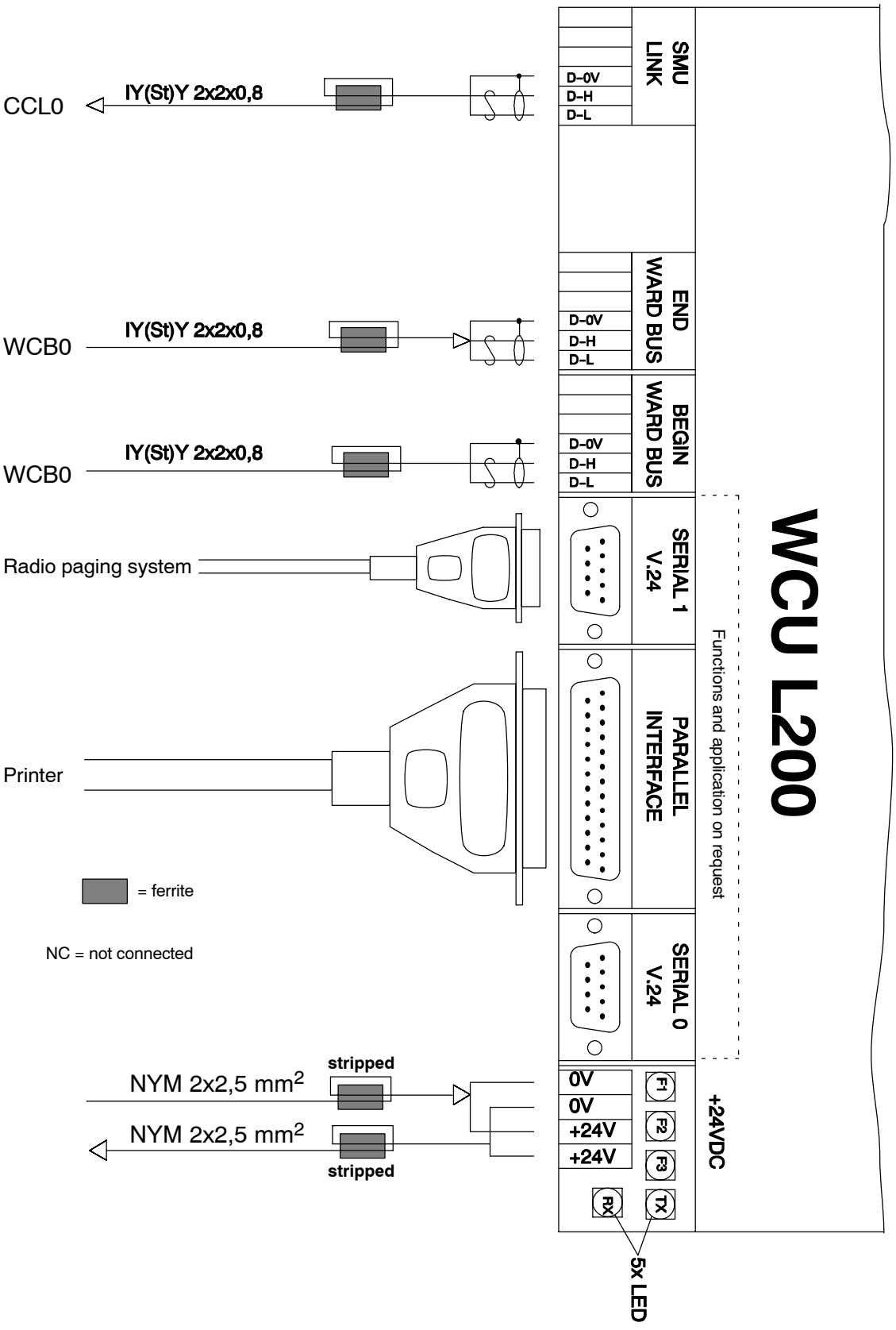
Proceed as follows:

- Fix the base unit of the housing to wall using the 4 screws and dowels which come with the package.
- Where a power supply unit is already connected: Switch off or disconnect the primary power supply to this unit.
- Fix the ward control unit onto the mounting rail by engaging the locking catches.
- Connect the cables for the ward control unit acc. to the wiring diagram (refer to the next page). Please remember to install the ferrites.
- Where a power supply unit is already connected: Switch off or disconnect the primary power supply to this unit.
- Check for the correct polarity of the 24 V supply voltage at the terminal strip for the ward control unit.
- Place the lid onto the lower part of the housing and screw it in place.
- Fit the two blank strips onto the housing.

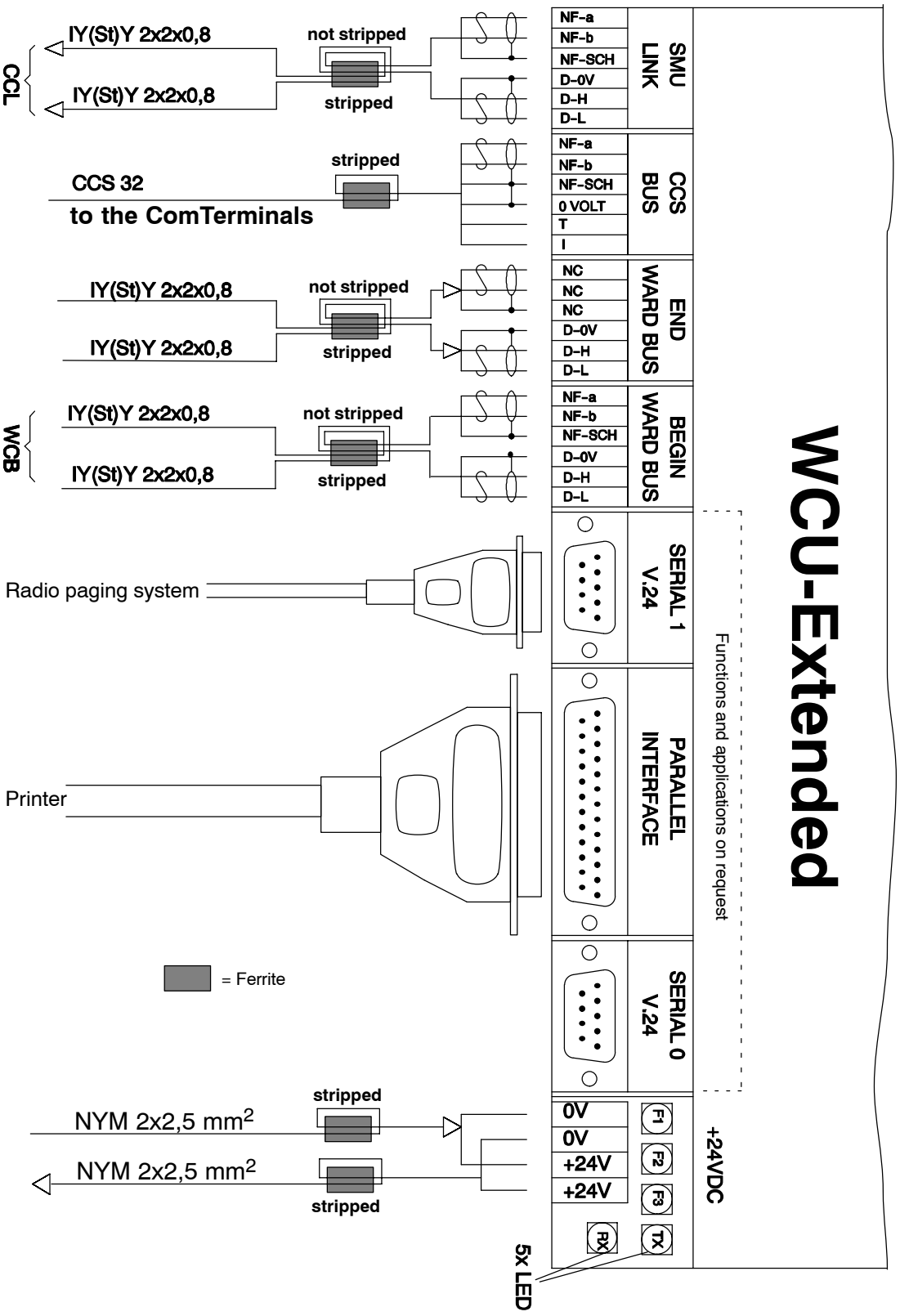
If the ward control unit is not pre–configured, standard factory settings are in effect. WCU–Extended can be configured using the EccoLine ComStation. For configuring the WCU L200 use the ComStation L200. For further information refer to the chapter “Configuring the ward control unit (WCU)”, page 129.

EccoLine L200 only

73 3101 XX WCU L200



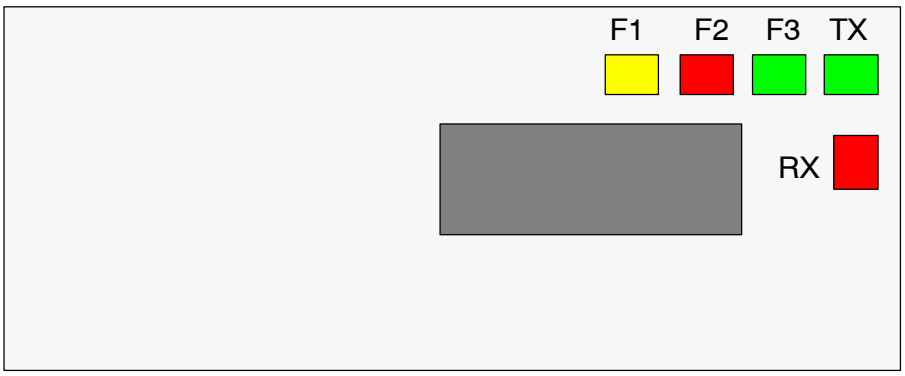
74 3101 X0 WCU-Extended
74 3101 X1 WCU-Extended (Zone nursing)



EccoLine with speech only

System displays on the WCU

The LEDs on the ward control unit (WCU-Extended or WCU L200) display the current system status.



F1 (yellow):	Flashing during a connection to the room (WCU-Extended: Speech activated)
F2 (red):	Illuminates if there is a fault in the ward.
F3 (green):	Functional display (flashes when WCU ok).
TX (green):	Serial interfaces 1, RPS / Universal potential–free interface: Green LED flashes when WCU transmits data.
RX (red):	Serial interfaces 1, RPS / Universal potential–free interface: Red LED flashes when WCU receives data.

Fig. 43: WCU: System displays

System add–ons

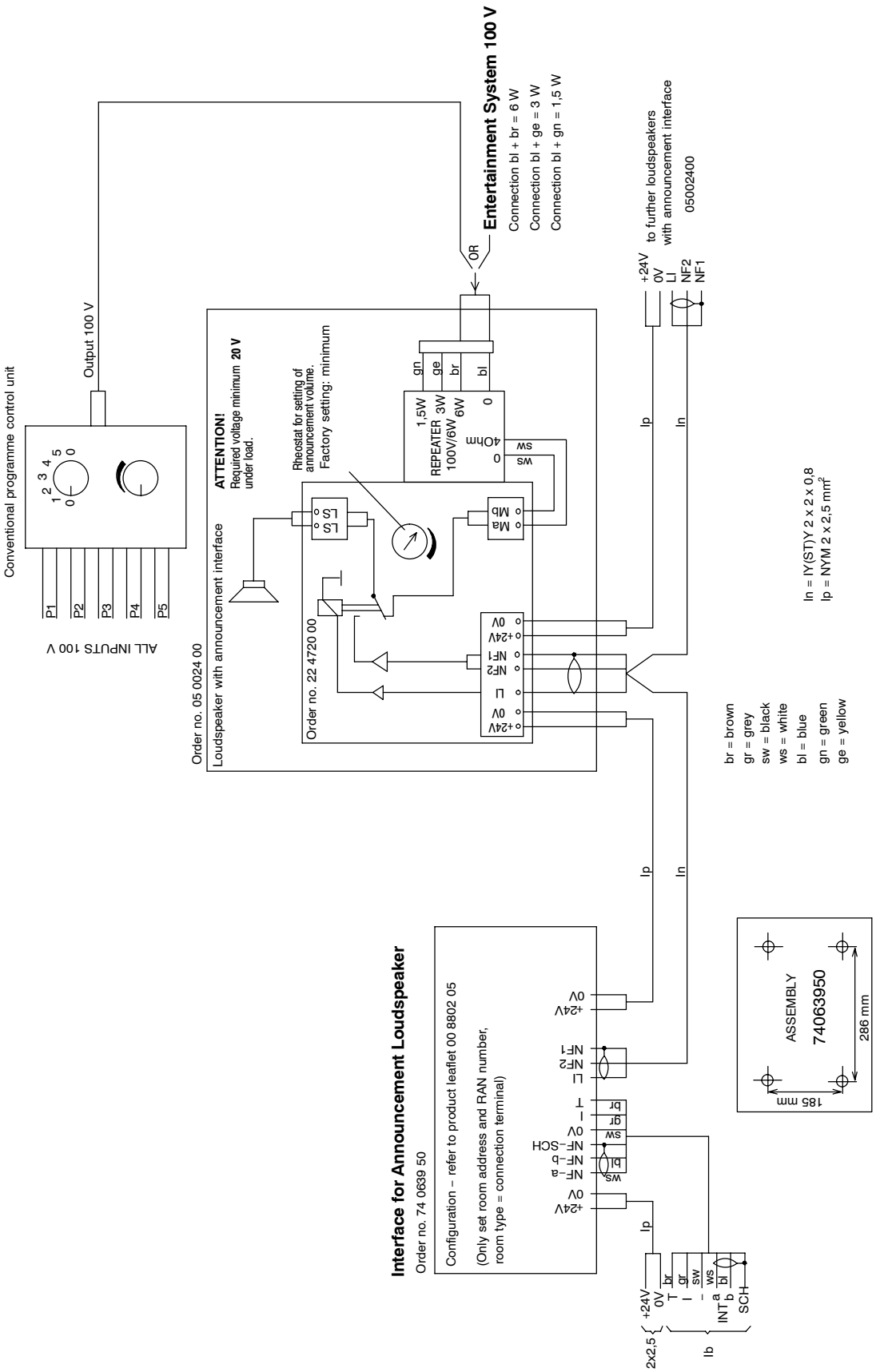
There is a range of optional devices to expand the performance spectrum of EccoLine call systems.

Commonly used peripheral units and devices are described on the following pages. For information on further, project–specific system add–ons please refer to the project–specific documents.

Announcement loudspeaker

05 0024 00	Loudspeaker with announcement interface
74 0639 50	Interface for announcement loudspeaker

Wiring plan for announcement loudspeaker

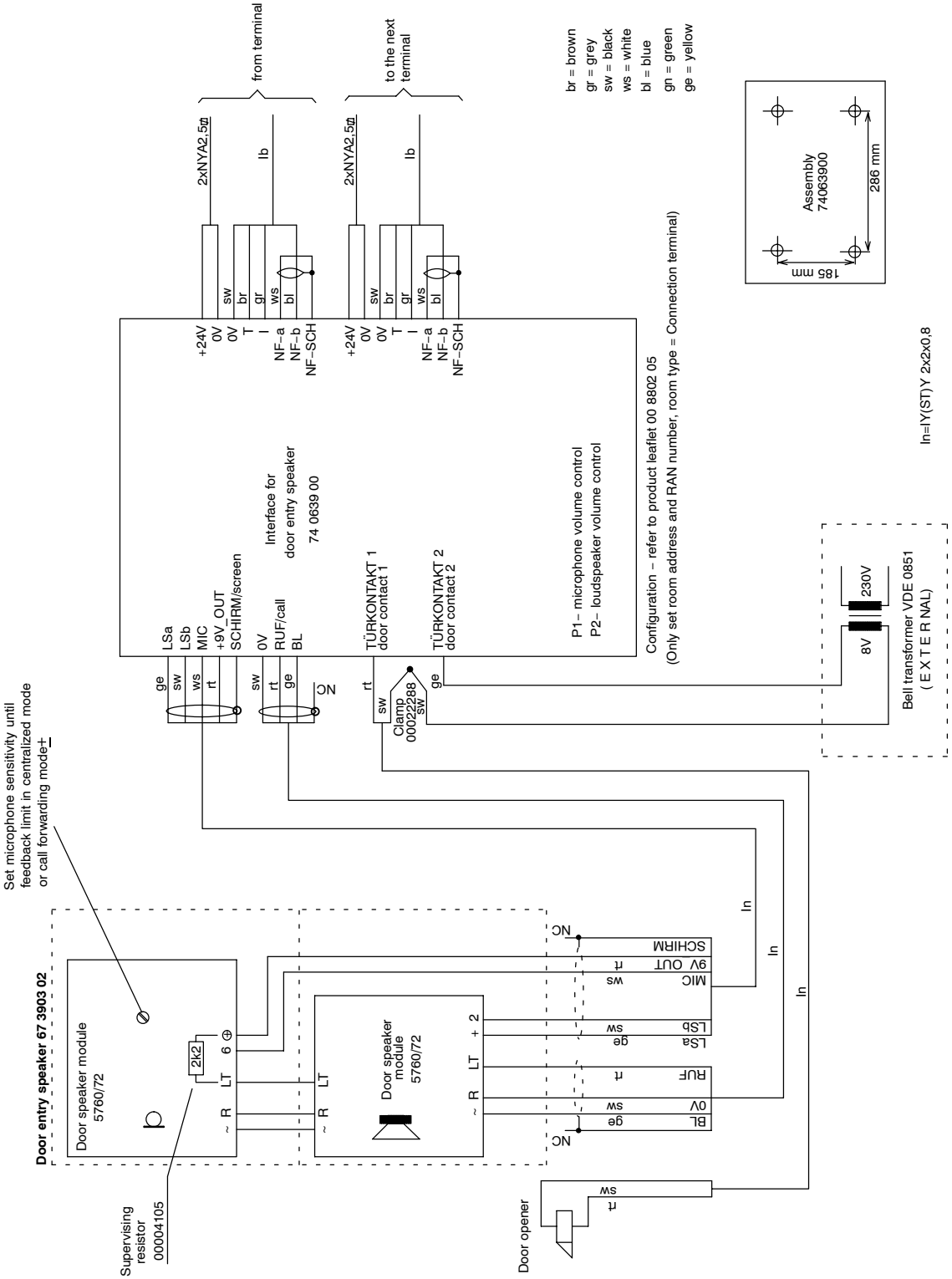


EccoLine with speech only

Door entry speaker

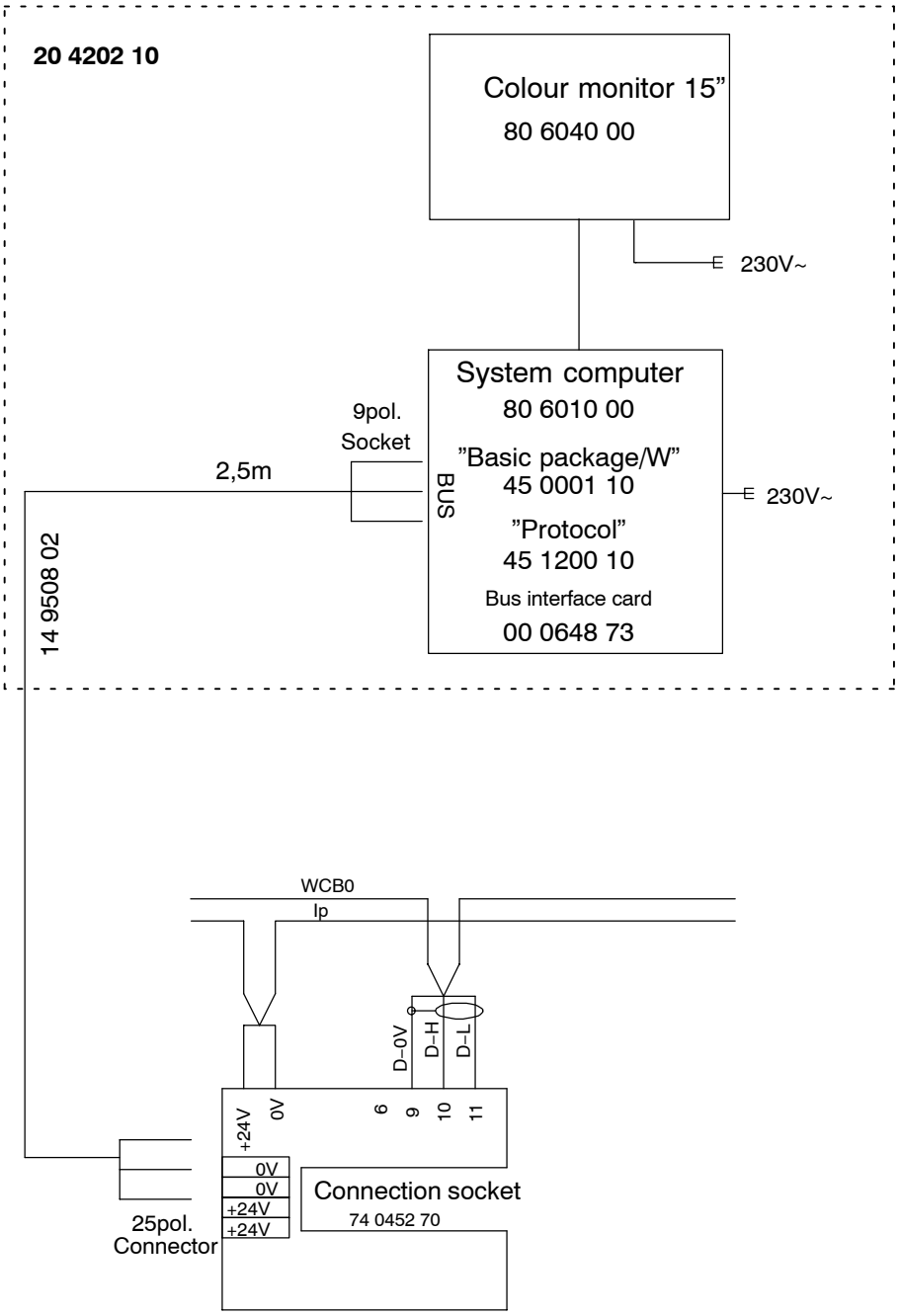
67 3903 02	Door entry speaker
74 0639 00	Interface for door entry speaker

Wiring plan for door entry speaker



EccoLine with speech only

20 4002 10 EccoLine Call recording WCU



Before using the call protocol function, the software PrimusGlobal must be configured to project specifications. On request, Tunstall GmbH shall provide this service:

- ☐ PrimusGlobal configuration “Basic system” (48 000 00)
- ☐ PrimusGlobal configuration “1 Ward, Standard” (48 1000 00)

74 4600 00 Telephone interface

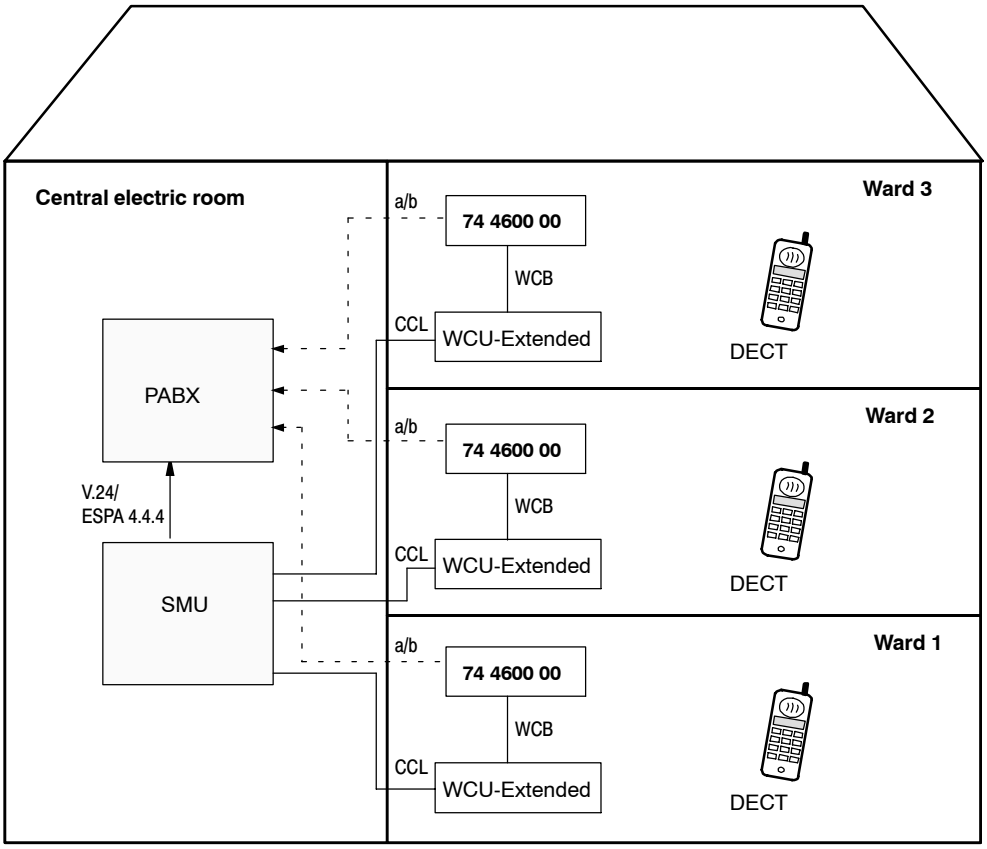


Fig. 44: Communication system with telephone interfaces

- ☐ 1 Telephone interface 74 4600 00 for each physical ward (a/b-analogue). Installation in ward's electric room.
- ☐ PABX / Interface ESPA 4.4.4 / DECT system: Design, model and performance data acc. to system supplier.

Data transfer: Connection of PABX to data interface (ESPA 4.4.4 Protocol) for SMU.

Voice transmission: Connection of telephone extension for each telephone interface (74 4600 00) to the PABX.

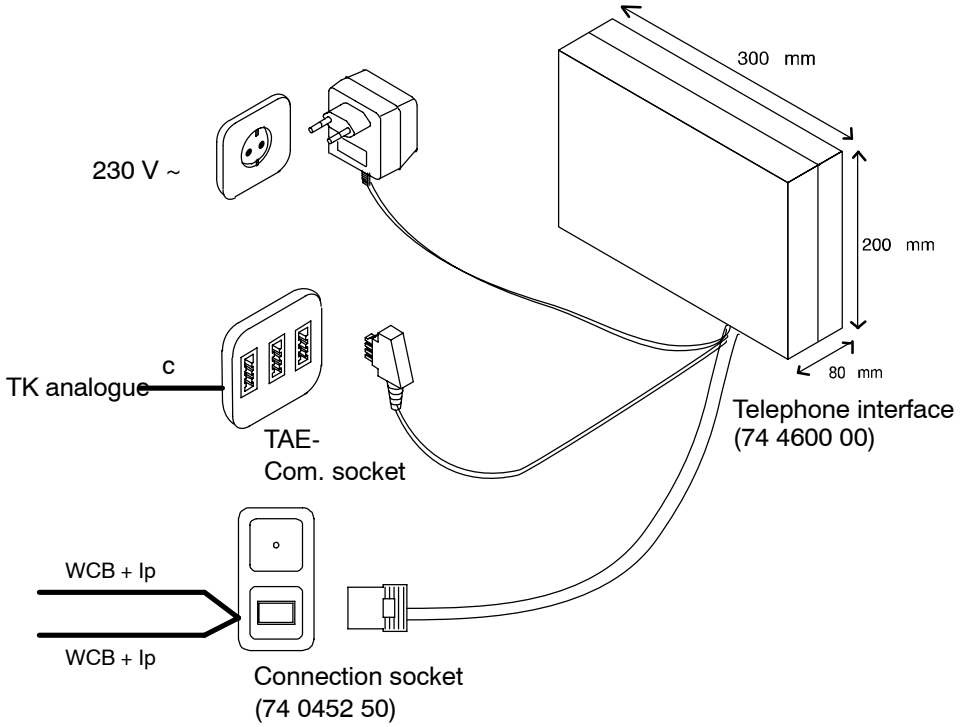


Fig. 45: Telephone interface (74 4600 00): Connection

Wireless calling

70 0831 00	1-Channel radio receiver
70 0831 01	1-Channel hand held transmitter
70 0831 02	1-Channel bracelet transmitter
70 0831 50	1-Channel radio receiver L200

The EccoLine system is suitable for initiating wireless calls. This is effected via the 1-channel hand held transmitter (70 0831 01) or the 1-channel bracelet transmitter (70 0831 02). Wireless signals are received via 1-channel radio receiver L200 (70 0831 50) in the EccoLine L200 system and 1-channel radio receiver (70 0831 00) in the system EccoLine with speech.

The 1-channel radio receiver L200 (70 0831 50) is plugged into the connection socket L200. The 1-channel radio receiver (70 0831 00) is plugged into the call switch with connection socket (70 017100, 70 0171 03), connection socket for call devices (70 0400 00), connection socket combi 2 (70 0424 00) or connection socket combi bedhead unit 2 (70 0434 00).



Note! Wireless transmissions are not monitored. Radio transmitters, therefore, may be used only as supplementary means for communication.

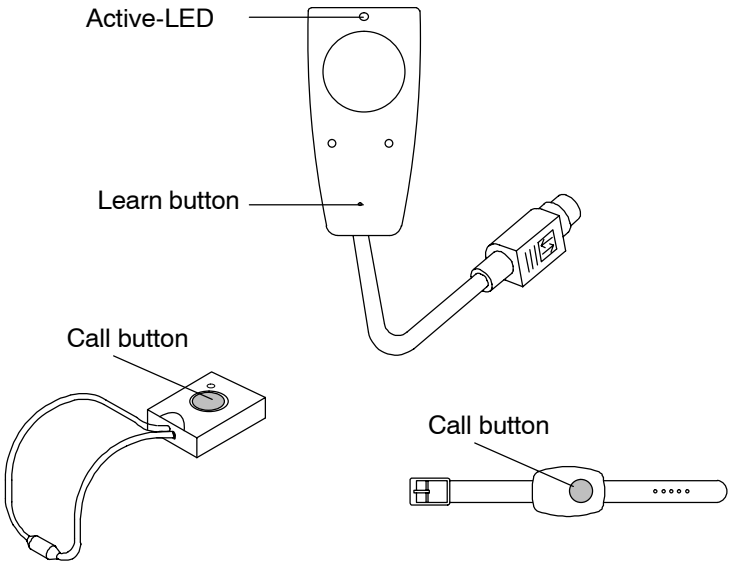


Fig. 46: Wireless receivers and transmitters

Before initiating a call from a wireless transmitter, the transmission code of this transmitter must be entered at the associated radio receiver:

1. Plug the radio receiver into a receptacle.

2. Press a needle / paper clip into the learn button for 5 seconds until the active LED Red is steady on.

↙ All stored transmitter codes in the wireless receiver are erased.

3. Briefly press a needle / paper clip into the learn button (1/2 Sek.) until the active LED Red flashes.
4. When the active LED Red is flashing (4 sec.), press the call button at the radio transmitter which is to be allocated to this receiver.

↙ Now, the transmitting code of the radio transmitter is entered and stored in the corresponding receiver.

5. Press the call switch at the transmitter to check whether the call is presented in the calling unit.



Note! Observe the more detailed information enclosed with the products.

75 0704 00 Smoke detector

Note! The EccoLine system is not a fire alarm system acc. to VDS (German association of insurers). However, a smoke detector may be connected to the system. These detectors will initiate a call when smoke has developed.

For the installation and commissioning of the smoke detector (Order No. 75 0704 00) follow the manufacturer's instructions which come with the product.

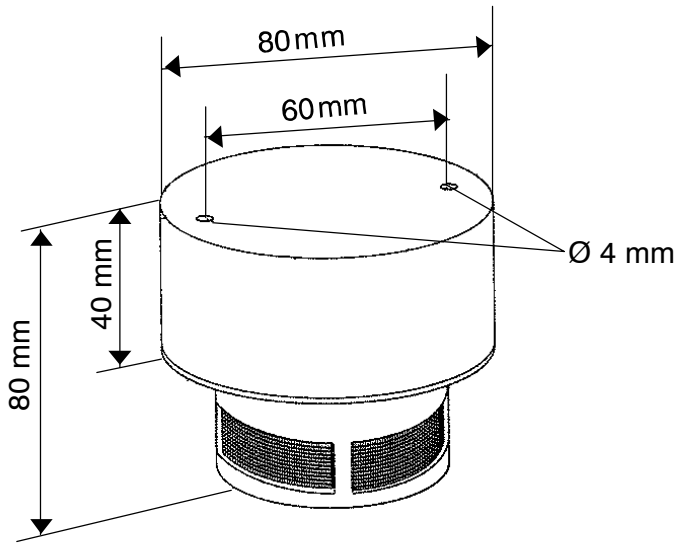


Fig. 47: Smoke detector (75 0704 00)

Connect the smoke detector to a potential–free contact at the nurse call terminal L200 (all variants), Terminal L200 (all variants), a universal interface or a RAN interface (Normal call: 70 0840 00, Emergency call: 70 0841 00).

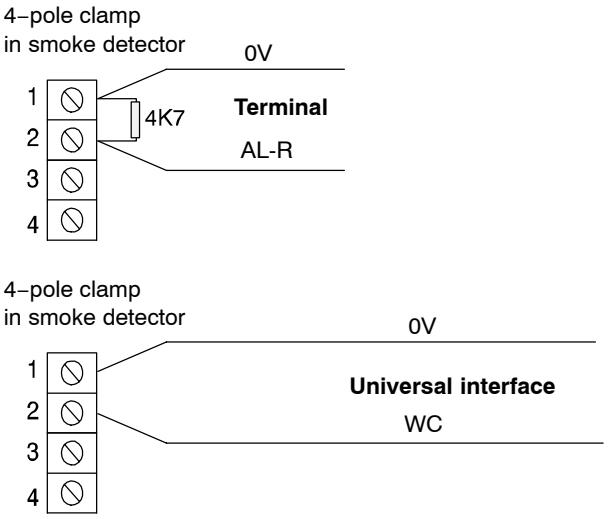


Fig. 48: Smoke detector (75 0704 00): Connection to EccoLine L200-Terminal (73 05XX 00) or universal interface (73 3500 00)



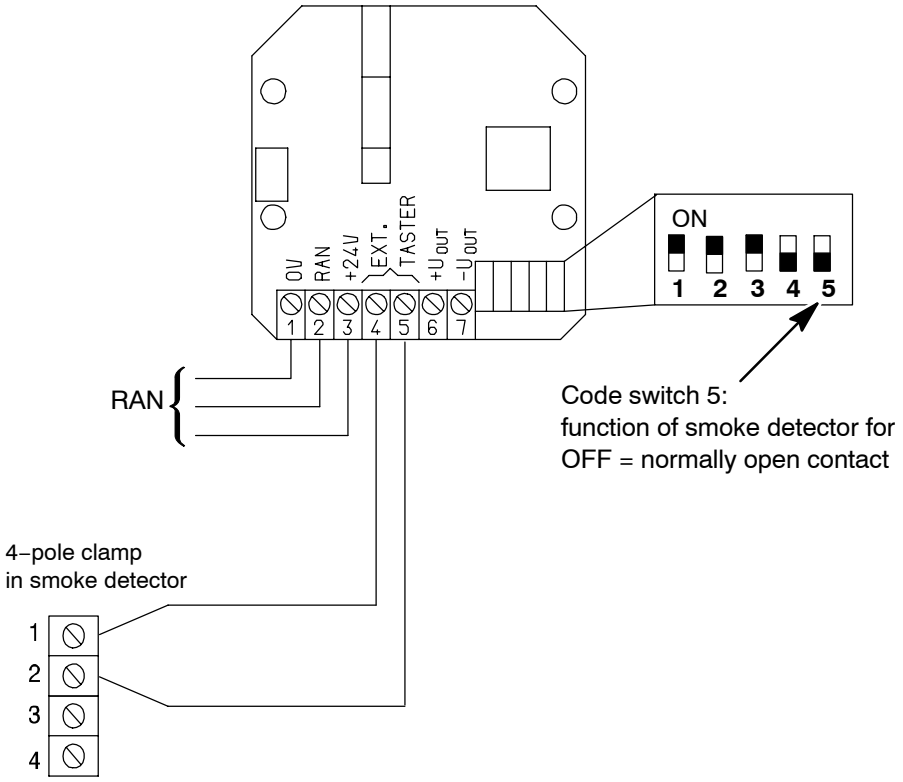


Fig. 49: Smoke detector (75 0704 00): Connection to RAN interface, Normal call / Emergency call

80 5015 01 24-Pin dot matrix printer

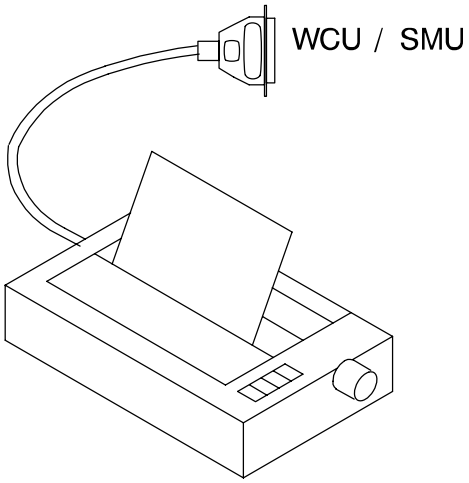


Fig. 50: 24-pin dot matrix printer: Connection

Where systems operate with only one WCU (WCU L200 or WCU-Extended) connect the printer at the WCU. Plug the printer cable into the connector for the WCU's "PARALLEL INTERFACE".

Where systems operate with several WCUs, connect the printer to the system management unit (SMU or SMU L200). Plug the printer cable into the corresponding socket on the SMU's interface board.

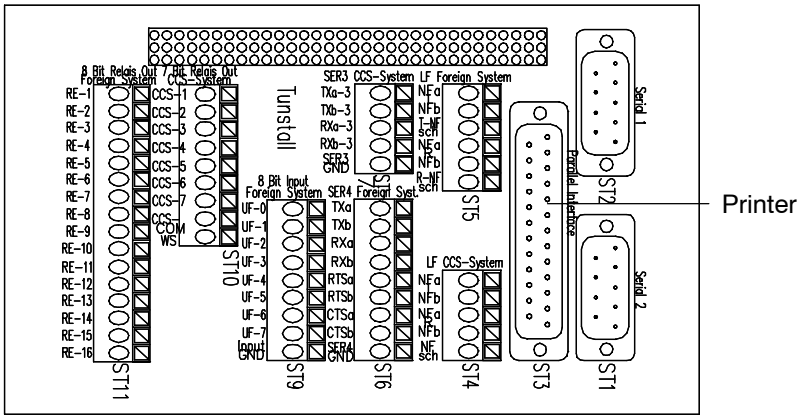


Fig. 51: 24-needle printer at system management unit SMU

Configuring the 24-pin dot matrix printer

Configure the printer for PARALLEL. For necessary information refer to the manufacturer's instructions enclosed with the printer.

RPS / DECT

A serial, potential-free interface V.24 for connecting a paging device (protocol based on ESPA 4.4.4) is available at the WCU [WCU-Extended (Zone nursing) or WCU L200] and at the System Management Unit (SMU) The paging device will be connected the SMU. Only when there is no SMU, the paging device may be connected to the WCU.

If necessary, the connection may be effected via a V.11 interface with interface repeater. This allows for a cable length of 1200 m.

Configuration of the radio paging system can be effected exclusively by Tunstall specialists. For configuring the radio paging system by the customer, the software PrimusGlobal, function module “Mobility” can be used. In this case, the paging device is connected to the system processor via PrimusGlobal.

Alternative: The paging device may also be connected to a DECT system.

Checking the cable network

Ward control bus WCB/WCB0

Before connecting and starting any unit it is essential to test all cables using an Ohmmeter for short circuits and for the absence of ground contacts.

Testing for short circuits

Speech wires

Speech wires of the WCB INT a, INT b and SCH must feature a common high resistance as long as no speech communication is activated.

other wires

The cores must feature the same level of high resistance as long as no units or devices are connected.

Testing for absence of ground faults

No resistance should be measured at any line against the ground potential (building ground, safety earth potential).

Ward bus CCS bus

The data and voice lines (bus lines) are laid out as a ring starting from the WCU-Extended.

Before connecting the EccoLine ComTerminal check all cables for conductivity and for the absence of short circuits and ground contact.

Check for short circuits

When there is no speech communication, the speech wires INT a, INT b and SCH must show high Ohm values.

Continuity check

At the WCU-Extended disconnect one end of the CCS bus ring line and use an Ohmmeter to confirm the conductivity of each lead.

Check for absence of ground faults

No resistance shall be present when checking any line against the ground potential (building ground, safety earth potential).

Installing and testing the power supply unit

21 6000 00	Power supply unit 24V/12A
21 6050 00	UPS module 15
21 6060 00	Lead battery pack 24V/7Ah

You have installed all cables, and all devices are connected – except for the power supply unit. Now, proceed to install the power supply unit and thereafter check the power supply in the ward.

Installing the power supply unit

Before connecting the power supply unit, test the cables to the power supply unit for short–circuits and for absence of ground faults.

Power supply to the system is provided using 24 V DC. A regulated power supply unit with short–circuit protection is used for this purpose. The power supply unit should be connected to the ward ring cable using a cable route as short as possible to avoid unnecessary voltage drops.

The max. voltage differential from the power supply unit to the room furthest away from the electric supply should not exceed 4 V.

Where larger voltage drops are observed, a tap line from the power supply unit or a cross connection can be laid within the ring cable.



If no solution can be found using the methods mentioned above, two power supply units should be used, each serving a section within the ward. Parallel connection of the power supply units is not permitted.

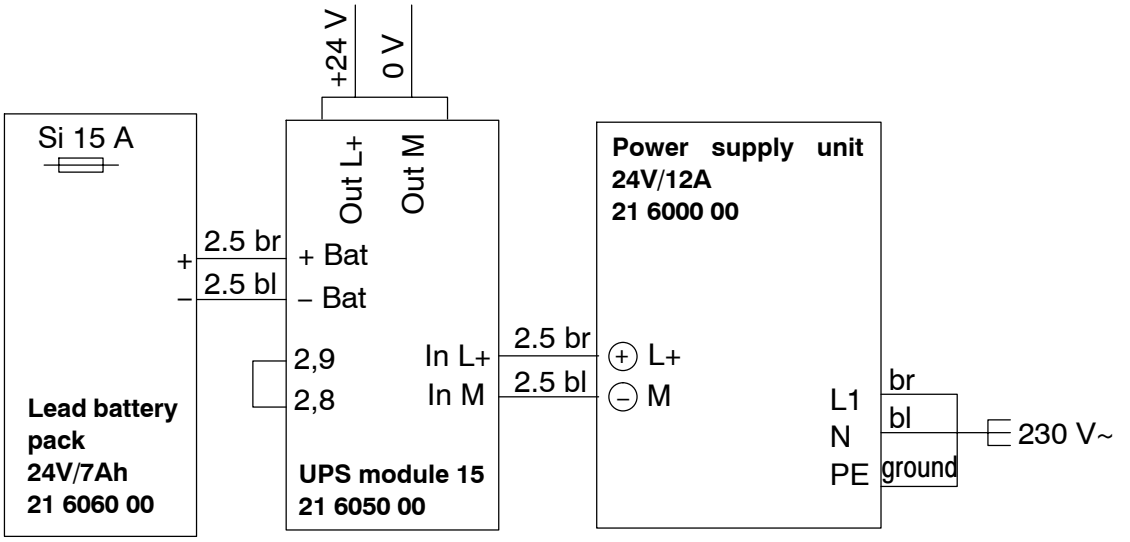


Fig. 52: Power supply unit 24V/12A (21 6000 00) with UPS module 15 (21 6050 00) and lead battery pack 24V/7Ah (21 6060 00): Terminal diagram

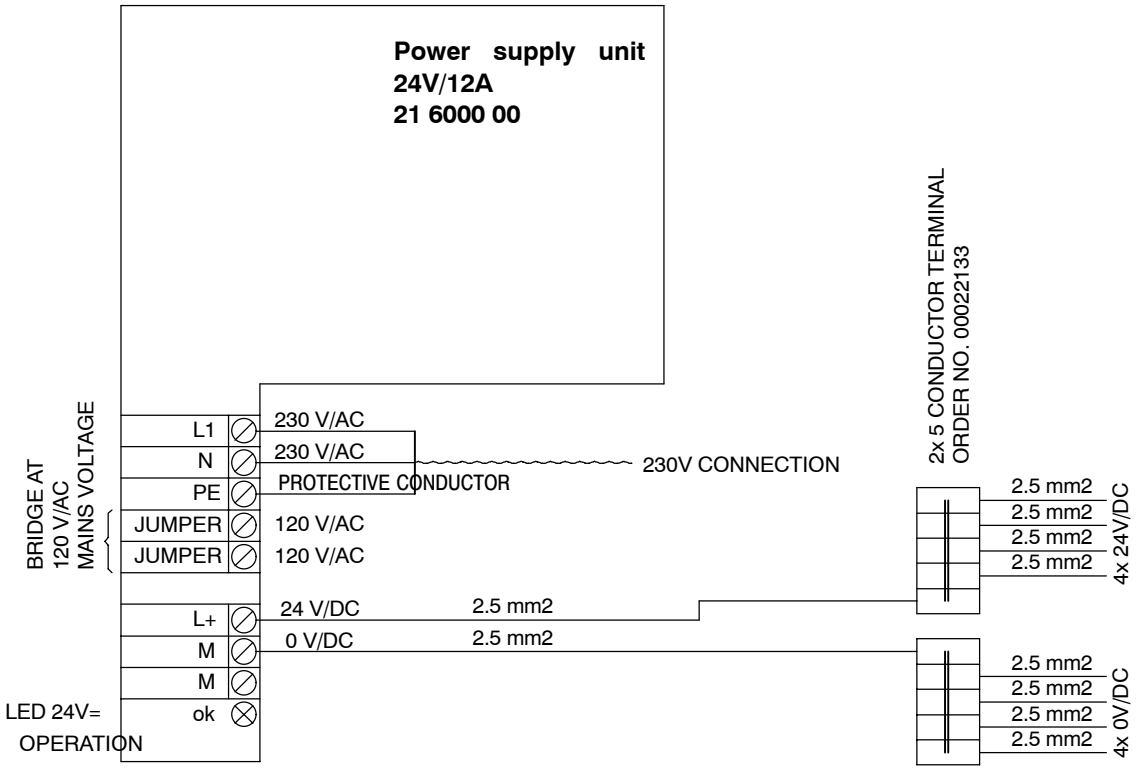


Fig. 53: Power supply unit 24V/12A (21 6000 00): Terminal diagram

Testing the power supply

The operating voltage for the complete system is 24 V DC.

The ward system components are supplied by ward power supply units.

The System-Management-Unit (SMU or SMU L200) as well as the EccoLine ComCenter have their own separate power supply units.

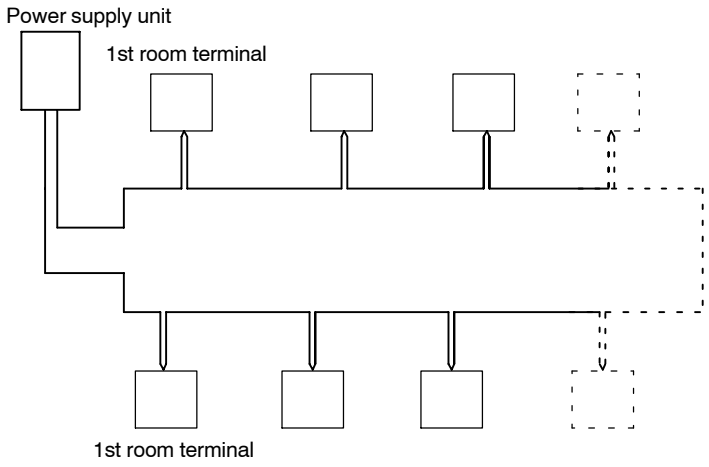
Carry out the following tests as described:

Test the output voltage at the power supply unit

Using a multi−function test instrument to test the output voltage at the power supply unit.

Test the 24V ring feeder for continuity

Disconnect one end of the ring feeder from the power supply unit. Switch the power supply unit on and measure the voltage at the free ends of the wire using a voltage meter. If there is no voltage, the ring is not closed or a wire (plus of minus) is interrupted.

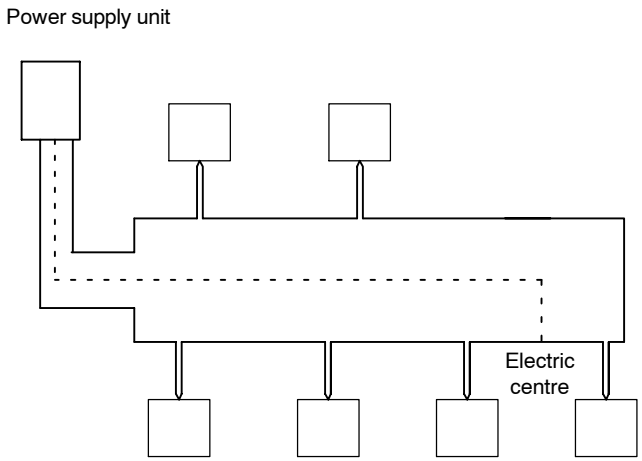


Supply voltage to the room terminals

Switch on 5 calls and 5 presences in the ward at the locations with the lowest voltage levels, i.e. farthest away from the power supply unit.

Measure the voltage to determine the terminal with the lowest voltage. This point is the electrical centre of the ring feeder. The voltage differential to the first terminal as seen from the power supply unit should not exceed 4 V at this point.

If you read a higher voltage drop reading, the voltage drop must be reduced by laying an additional cable from the power supply unit to that point – or double the 0 V line, if available.



EccoLine with speech

Ward bus CCS bus: Testing of cycling and pulse voltage

When switched on, you can measure the following voltages at the connection socket ComTerminal at the connection points of the WCU-Extended:

- ☐ between 0 V and T = 4.5 Volt to 5.5 Volt
- ☐ between 0 V and I = 0.8 Volt to 1.2 Volt

Testing the ward bus WCB voltage

If the ward bus WCB is correctly connected to the WCU−Extended and when it operates with the EccoLine ComStation or EccoLine ward console/S, the following values apply:
voltage between D−H and D−0V and
voltage between D−L and D−0V = 2.5 V.

Resistance between NF−a and NF−b :

- ☐ idle status = 30 Ohm.
- ☐ when speaking is activated = 15 Ohm.

Testing the RAN voltage

The RAN voltage, i.e. the voltage between B (0V) and Y (RAN), is o.k. when it is between 8.8 V and 9 V DC.

If the voltage is not within this range, the causes may be as follows:

If the voltage between B (0V) and Y (RAN) = 0 V
a) short−circuit between B and Y
b) wire Y (RAN) is not connected to the connection socket.

If the voltage between B and Y = 12 V
a) wire B (0V) is not connected to a device;
b) a device is defective.

Test of voltage drop in RAN line



Note! If the room signal lamp is fitted with LED modules, replace these LED with a lamp element for the purpose of this test.

Measure the supply voltage between the 24 V and 0 V terminal posts at the connection socket ComTerminal. Note the voltage value *Uct1.*
Example: Uct1 = 23.8 V

Measure the supply voltage at the terminal post of the RAN device farthest away from the EccoLine ComTerminal. If this dive is not a room signal lamp, connect the room signal lamp for this test only. Not the voltage value *Uzl1.*
Example: Uzl1 = 23.7 V

Switch on the presence. Only one lamp element should come on. If there is another room signal lamp, this must be removed for the purpose of the test.

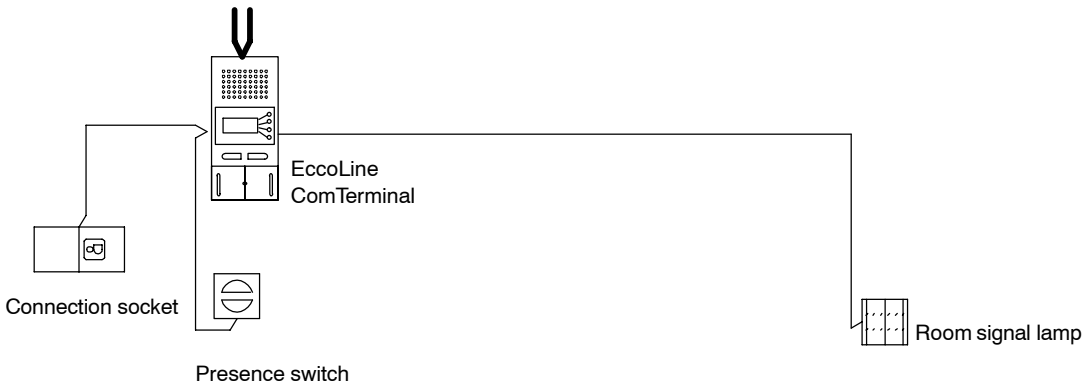
With the presence status activated, measure the supply voltage once again at the connection socket ComTerminal and note the voltage value *Uct2*.
Example: Uct2 = 23.6 V

Continue your measuring tasks with the presence status activated by measuring the supply voltage to the room signal lamp or at the temporary room signal lamp. Note the voltage value *Uzl2.*
Example: Uzl2 = 23.3V

Calculate the relative voltage drop:

(Uzl1 – Uzl2) – (Uct1 – Uct2) = relative voltage drop

The value must not be greater than 0.3 V. If required, reduce the voltage drop by increasing the wire gauge for the 0 V line (double wiring).
Example: (23.7 – 23.3) – (23.8 – 23.6) = 0.2 V.



EccoLine L200

Testing the ward bus voltage WCB0

If the ward bus (WCB0) is correctly connected to the WCU L200 and when it operates with the ComStation L200, the following values apply:
voltage between D–H and D–0V and
voltage between D–L and D–0V 2.5 V.

Terminal L200 monitoring
(all variants of the nurse call terminal L200, all variants of the terminal L200)

All call inputs are monitored for short circuits and interruptions.

The call buttons operate as normally open contacts with parallel resistors (4K7). Where several call buttons are connected in parallel, only the last button in the chain shall be fitted with a resistor.

Possible operating conditions at the input:

- ☐ idle status, 9.5 – 13.2 V (fault–free operation)
- ☐ call raised, 0 V (call button pressed or short–circuit)
- ☐ disconnection call, 18 – 24 V (disconnection call, line interrupted)

Unused call inputs must be bridged using a jumper; refer to 72.

Required current

The following table is provided for calculation purposes and for assessing the current consumption in the EccoLine system. Values given are average figures, and individual installations may produce slightly different data. Light bulbs, in particular, are subject to tolerance levels. The total consumption of a system may vary according to the number and frequency of functions used.

Idle current consumption

1.	EccoLine ComTerminal	65 mA	*1
2.	Switches	10 mA	
3.	Room signal lamps (70 XXXX XX)	15 mA	*2
4.	EccoLine Patient handset	20 mA	
5.	Connection socket Combi 2	30 mA	
6.	Connection socket Combi bedhead unit 2	30 mA	
7.	Connection socket call devices, connection socket with call switch	15 mA	
8.	WCU	150 mA	
9.	ComStation	100 mA	*3
10.	Corridor display Alpha 11	30 mA	*4
11.	Corridor display Alpha 20	30 mA	*5
12.	Nurse call terminal L200	50 mA	*6
13.	Radio receiver	35 mA	

Other current consumption

*1	illuminated display, switched on	150 mA
*2	per message (lamp elements / LED module)	200 / 60 mA
*3	illuminated display, switched on	250 mA
*4	indication: average number of digits	230 mA
*5	indication: average number of digits	370 mA
*6	during call, presence, WC call (each display)	125 mA
	per call / presence	200 mA
	Speech connection	50 mA

Standard basis for calculations

To ensure sufficient reserve power, at least 5 active calls and 5 active presence states should be considered in addition to the base load when calculating the power consumption for power supply units.

The power supply unit should only be utilised to a maximum of 80% of its nominal capacity.

Configuring EccoLine ComTerminals

Configure each EccoLine ComTerminal (74 0510 00) as follows:

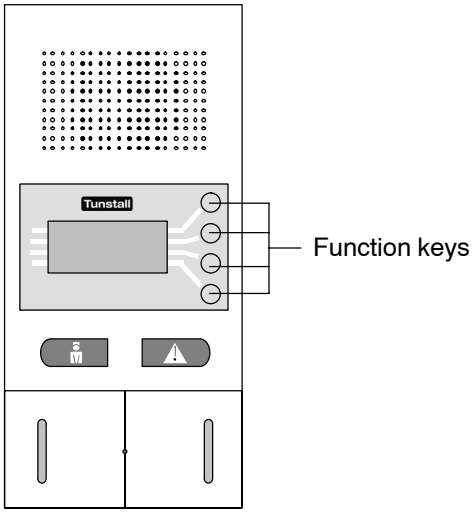


Fig. 54: EccoLine ComTerminal: Function keys

1. Starting the configuration menu

- Press and hold the upper and lower of the 4 function keys until (5 sec.) “Configuration” is presented on the display. Meaning of the symbols:
  ~ = select menu item
  + = set a greater value
  – = set a smaller value
  X = leave the configuration menu (and store all settings)

2. Settings

Setting of language

- Press ”~” repeatedly until “Language” is shown.
- Press ”+” or ”–” repeatedly until the desired language is shown: D = German, GB = English, E = Spanish, F = French, NL = Dutch, I = Italian

Setting of room type

- Press ”~” repeatedly until “Room type” is shown.
- Press ”+” or ”–” repeatedly until the desired room type is shown:
  – Patient room
  – Patient room with cancel key for WC call at ComTerminal

– Duty room (staff assist calls are always signalled as normal calls)
– Children's room (no "Private" key in ComTerminal, Privacy OFF)
– Connection terminal (Keys and display in ComTerminal not operational)

Setting of (room) address (01 – 63)

- Press "~" repeatedly until "Address" is shown.
- Press "+" or "–" repeatedly until the desired address is shown.

Setting of RAN number (00 – 30)

RAN number = number of room devices (switches, connection sockets, room signal lamps, etc.) which are connected via RAN to a ComTerminal.

- Press "~" repeatedly until "RAN number" is shown.
- Press "+" or "–" repeatedly until the desired RAN number is shown.

3. Function test

- Press "~" repeatedly until "Test CCS/Test RAN" is shown.

Test CCS

Test whether the ComTerminal is connected to the CCS bus and whether the CCS bus functions correctly.

- Test start: Press "+" in menu "Test CCS/Test RAN".
- Test result is shown in the display:
  [✳] Star jumps to and fro regularly: Test ok!
  Any other indication on the display: Test not ok: The ComTerminal is not connected to the CCS bus or the function of the CCS bus is not correct.
- End of tests: Press "+" once again.

Test RAN

Test whether room devices are functional and correctly connected to the RAN. Test for correct setting of RAN number.

- Test start: Press "–" in menu "Test CCS/Test RAN".
- All connected room devices should flash. (Devices which do not flash are either defective or not connected. Replace defective devices. Correct the connection at incorrectly connected devices.)
- Check the number of connected room devices at the RAN for matching the RAN number in the display [XX]. (If the RAN number in the display is wrong, set the number as shown in the test procedure above.)
- Test end: Press "–" once again.

4. Leaving the configuration menu

When no further settings are made and after completion of all tests, you have to leave the configuration menu. This step also stores all settings.

- Press ”X” (= bottom function key).

Note: When none of the function keys has been pressed for a period of three minutes, the configuration menu is closed automatically, and all settings are stored.

Commissioning the ComStation / ward console/S

ComStation

73 3200 X0	ComStation L200
74 3200 X0	EccoLine ComStation



Note! The ComStation functions only with an operational WCU.

- Place the plug of the ComStation into the connection socket ComStation.

✓ The ComStation is initialised. Thereafter, the ComStation display will show the window for logging in.

- Refer to the ward user manual for instruction on how to operate the ComStation.

✓ The commissioning process is completed.

If the WCU has already been pre−configured for the ward, the ComStation will show the room numbers for the ward. If the WCU has not been pre−programmed, the ComStation will show standard settings.

20 4300 00 EccoLine ward console/S

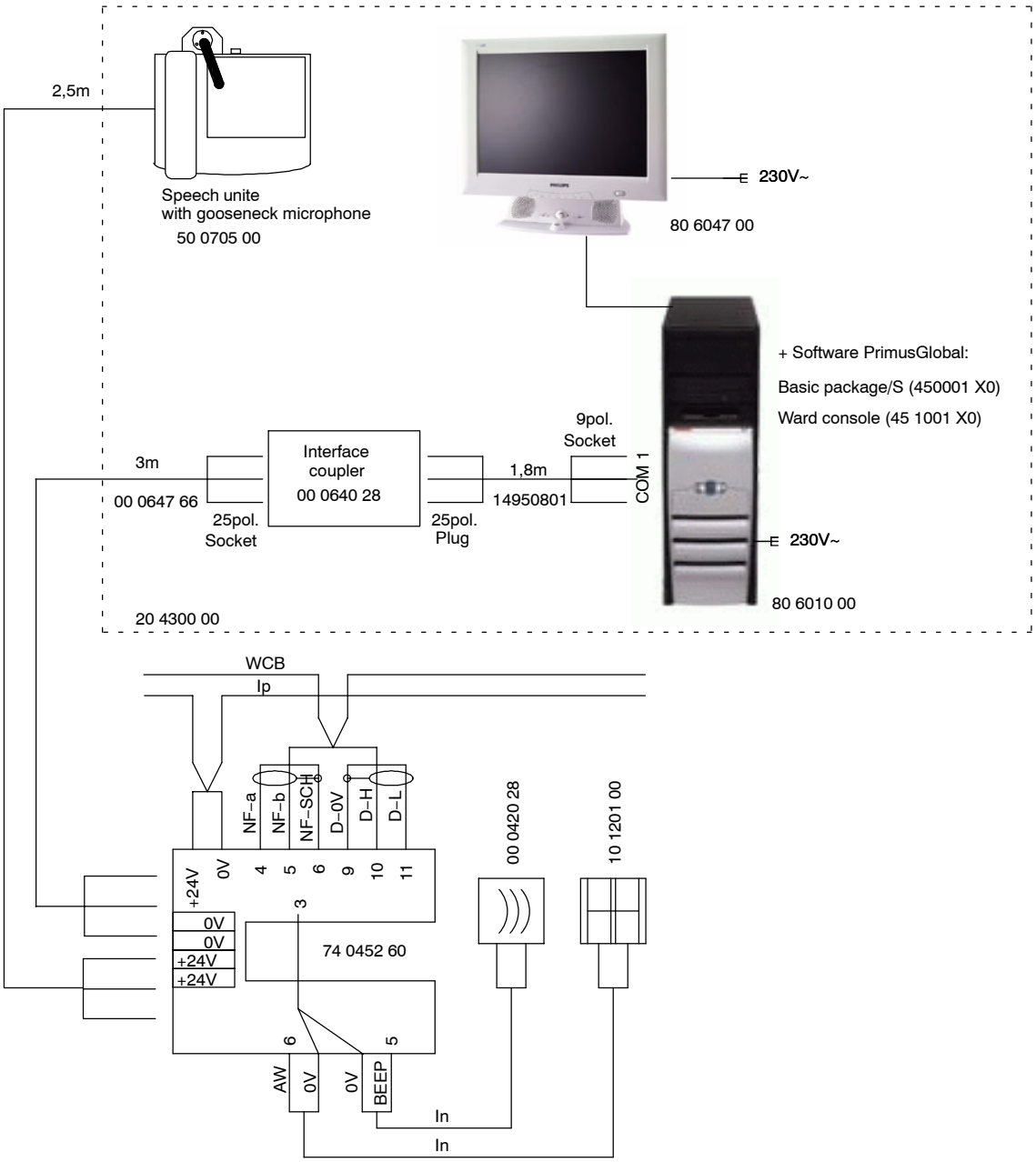


Fig. 55: Ward console/S: Connection

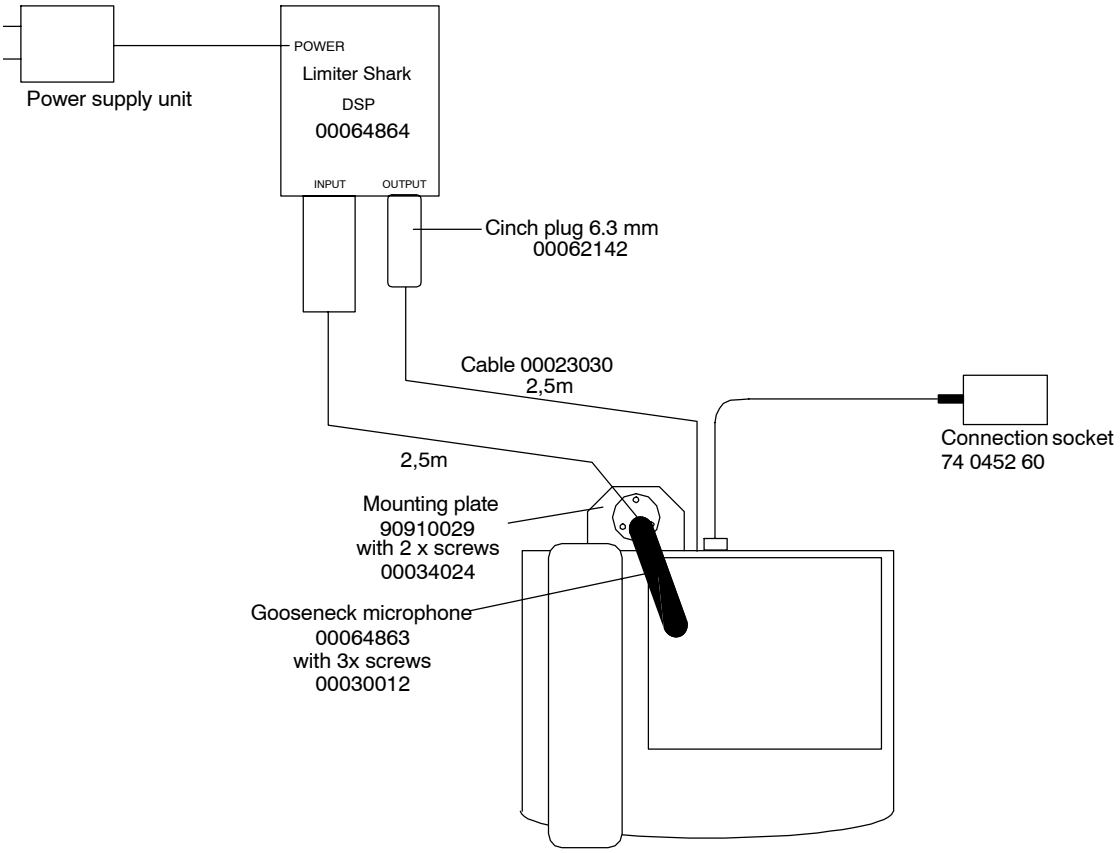


Fig. 56: Ward console/S: Connection: Gooseneck microphone

Before starting to use the EccoLine ward console/S, the software PrimusGlobal must be configured for the specific project. On request, Tunstall GmbH will provide this service:

- □ PrimusGlobal configuration “Basic system” (48 000 00)
- □ PrimusGlobal configuration “1 Ward, Standard” (48 1000 00) or PrimusGlobal configuration “1 Ward, Layout” (48 1001 00)

Further to this, the WCU-Extended must be pre−configured for the ward.

Note! EccoLine ward console/S will function only when the WCU−Extended is operational.

- Install the gooseneck microphone as shown in Fig. 2.
- Insert the 9−pole connector of cable 14 9508 01 into the computer’s COM1(IOIOA) port.
- Insert the 25−pole plug connector of cable 14 9508 01 into the Sub-D connector of the connecting socket 74 0452 60.
- Insert the connector from the EccoLine ward console/S into the corresponding connector of the connection socket 74 0452 60.
- Start the PC.

✓ The EccoLine ward console/S is initialised. Thereafter, the console software will start–up.

- Refer to the ward user manual for how to operate the EccoLine ward console/S.

Configuring the Ward Control Unit (WCU)

If the WCU has not yet been specifically configured for the ward or if modifications to the configuration are required, you will have to carry out the configuration. To do this, use the EccoLine ComStation or the EccoLine ward console/S for systems EccoLine with speech. For systems EccoLine L200 use the ComStation L200.

First, fill out the configuration sheet “Display configuration for EccoLine with speech” (Page 21) or “Display configuration for EccoLine L200” (Page 20) to enter the data later on.

For the configuration procedure refer to the ward user manual.

Depending on local requirements, you can enter the following configurations using EccoLine ComStation / ward console/S / ComStation L200:

- ☐ Activate existing addresses
- ☐ Set room numbers
- ☐ Remove addresses (only with EccoLine with speech)
- ☐ Allocate group signal lamps
- ☐ Allocating of work shifts (Zone nursing)*)
- ☐ Defining of WIC programmes: Possible after prior connection of a System-Management-Unit (SMU/SMU L200)
- ☐ If more than one EccoLine ComStation / EccoLine ward console/S / ComStation are installed in the ward, the ComStation number and the ComStation address must be set on each EccoLine ComStation or. EccoLine ward console/S.



Note! *) Check the order number for EccoLine with speech: The function “Zone nursing” is available only with WCU-Extended (Zone nursing), Order No. 74 3101 X1.



Danger! All addresses (1 – 63, 65 – 72, 80 – 92) may be issued only once per port.

Testing the ward installation

After the completion of installation work in the ward, you must execute a number of tests to confirm that the installation is free from faults.

- ☐ Check each room for possible faults
- ☐ Check light call function from each room
- ☐ Check ComStation or ward console/S
- ☐ Check functions in the ward

The following paragraphs will describe the procedures for testing the systems “EccoLine with speech” and thereafter the systems “EccoLine L200”



Note! The complete call system must be checked and tested in compliance with DIN VDE 0834. You should be aware that tests and checks acc. to DIN VDE 0834 may go beyond the tests and checks which are described in this manual.

EccoLine with speech

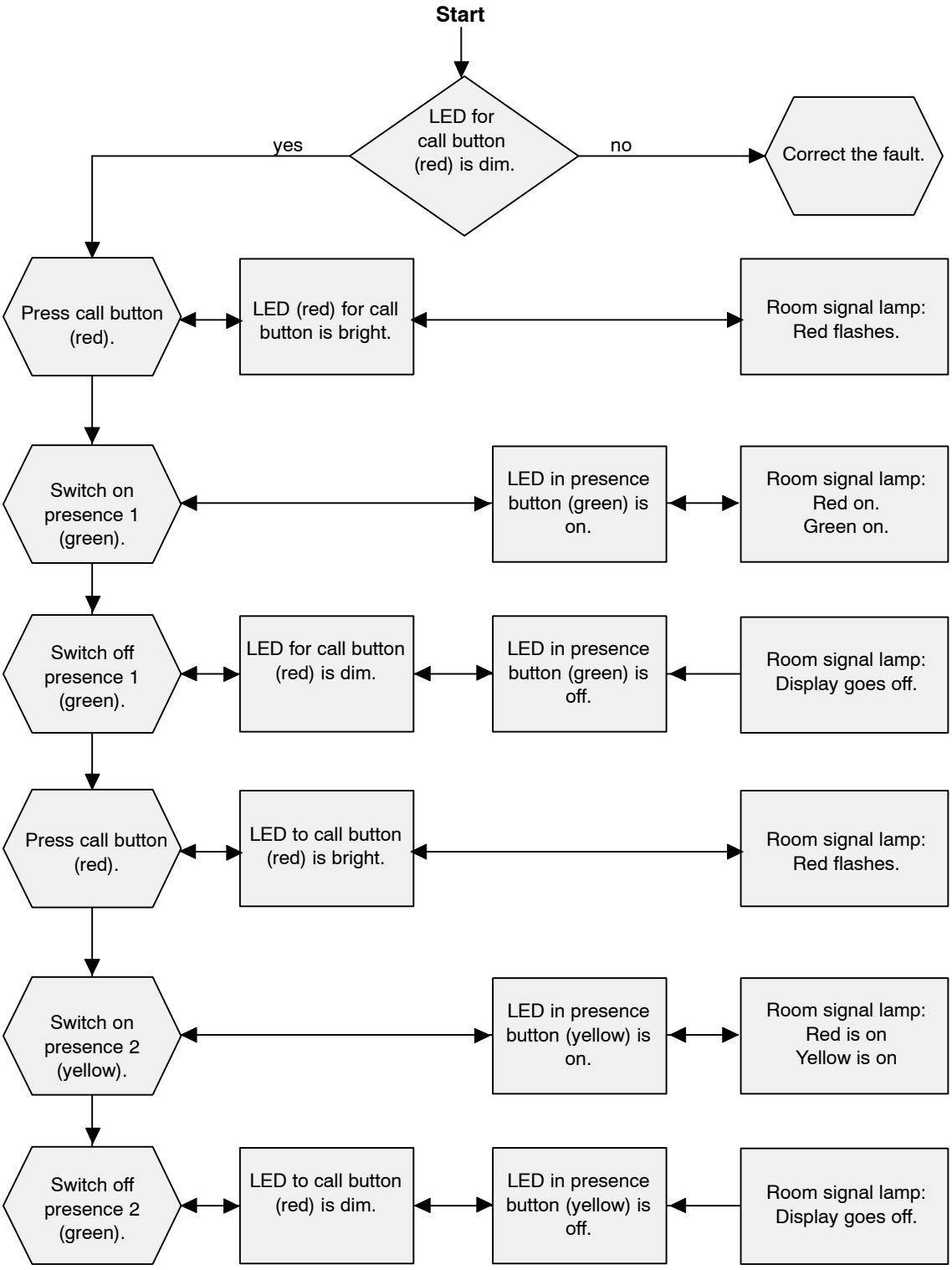
Check each room for possible faults

- ☐ Perform the test CCS and test RAN at the room's EccoLine ComTerminal as described in the chapter on "Configuring EccoLine ComTerminal" , refer to page 121ff.
- ☐ Is there a fault indication for this room at the EccoLine ComStation or at the ward console/S?
- ☐ Check the light switching – if installed – using the EccoLine patient handset or the pear push switch.
- ☐ Check radio (entertainment) reception and transmission of TV sound – if installed – at the EccoLine patient handset.

Testing the light call function in each room

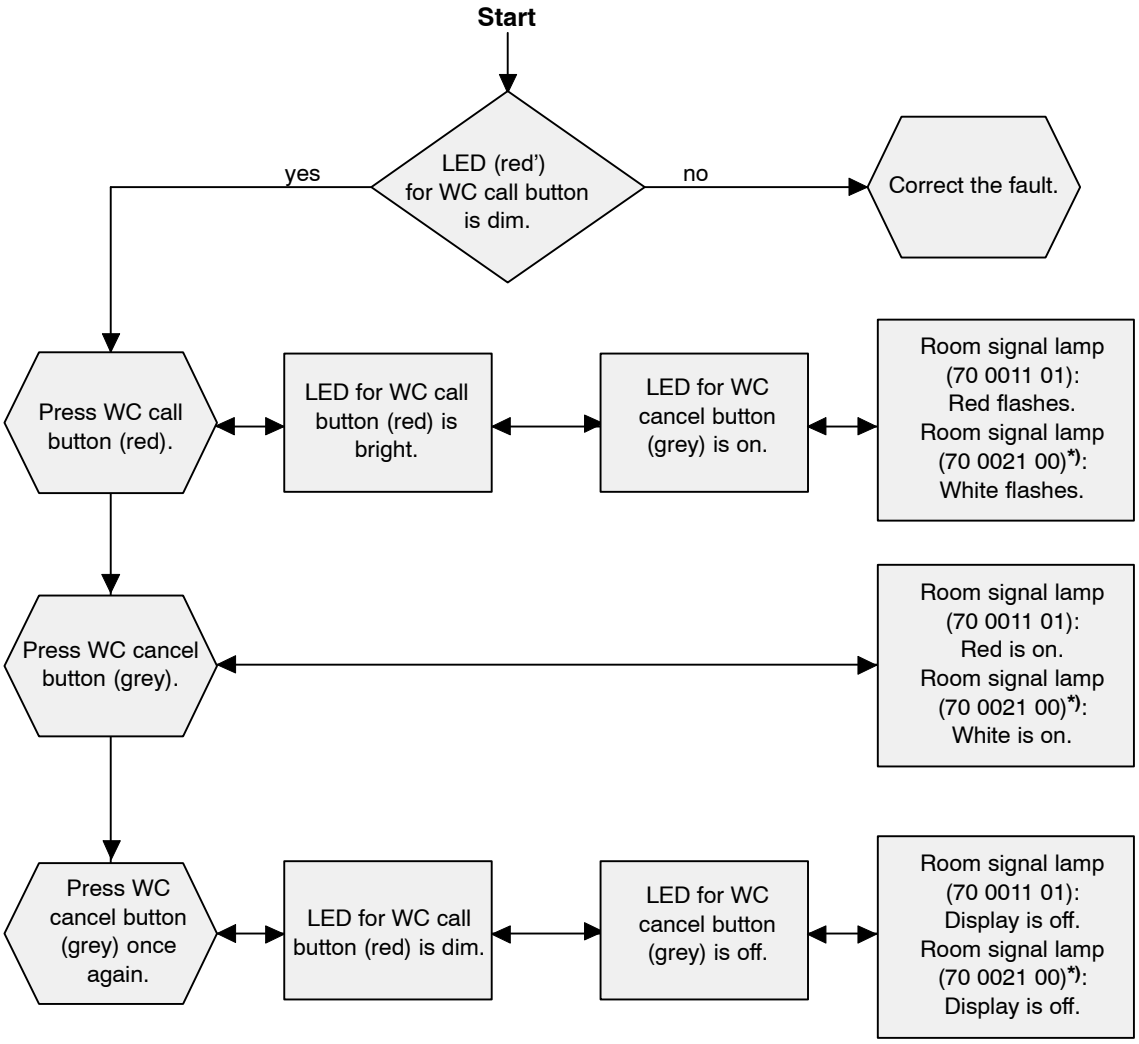
Room checks

Perform the following test for all call devices in the room:



WCs to the room

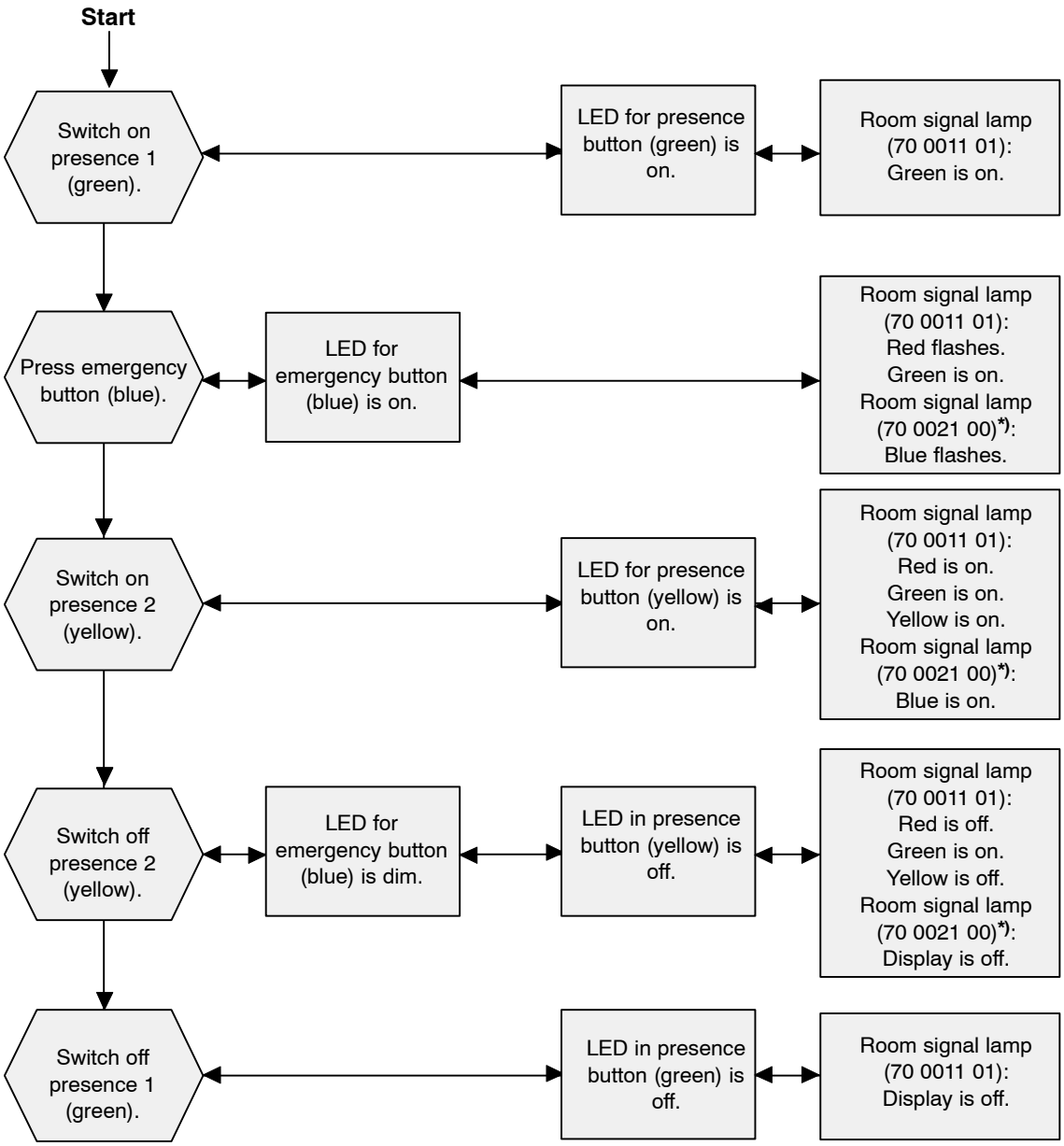
Perform the following tests for all call devices in the WC to the room:



*) Only where room signal lamp (70 0021 00) is installed.

Emergency call (code blue) checks

Perform the following tests at the EccoLine ComTerminal and for all separate emergency call switches:



*) 'Only where room signal lamp (70 0021 00) is installed.

Ward console checks

Refer to the ward user manual on how to operate the ward console (EccoLine ComStation or EccoLine ward console/S) and the devices in the rooms.

Checks:

- ☐ Are any faults displayed?
- ☐ Has the correct ComStation number been set?

The remainder of the tests should be conducted with two persons. One person is at the ward console, and the other person goes from one room to another.

For each room, test the following:

- ☐ Is the room number correctly displayed?
- ☐ Do all types of calls arrive at the ward console and are they signalled accordingly (e.g. patient call, WC call, diagnostic call, staff assist call 1, staff assist call 2, WC assist call, emergency call)?
- ☐ Are the bed numbers displayed correctly?
- ☐ Can the calls be answered at the ward console?
- ☐ Is voice communication possible with the ward console via the speech devices (EccoLine ComTerminal, EccoLine Patient handset)?
- ☐ Are staff presences correctly displayed on the ward console?
- ☐ Are general announcements possible from the ward console?
- ☐ If set: Does the workshift or zone scheduling function correctly?



Note! If you remark that a wrong bed number is set at a connection socket bedhead unit 2, the medical supply unit must be opened and the correct number must be set (refer to documents on the medical supply unit).

Testing the functions in the ward

Call forwarding

If a call is not answered within a pre–programmed time, it is forwarded to all rooms where the staff presence status is activated. Forwarded calls are presented in the display on the ComTerminal and an acoustic signal is issued.

Refer to the user instructions for the EccoLine ComTerminal on how to deal with forwarded calls.

Check each room:

☐ Is the call forwarding tone audible at the EccoLine ComTerminal?

☐ Does the display on the EccoLine ComTerminals show the correct room number?

☐ Can the call be answered? Is voice communication to the call location possible?

☐ Can patient calls be cancelled from a remote location?

Corridor display Alpha 11 / Corridor display Alpha 20

Check whether calls in the ward are presented on the corridor display.

Direction signal lamps

At each direction signal lamp check whether the allocated rooms are indicated correctly.

Call devices

Check whether the calls from additional call devices (e.g. wireless transmitters and pear push switches) are displayed as required.

Testing the lamps at universal interfaces

Use the lamp test to check the function of the lamps which are connected to the 4 outputs of the universal interface.

- For the lamp function test, set the code switch 9 to ON.

↙ All functional lamps will flash.

- To terminate the function test, set the code switch to OFF.

EccoLine L200 only

EccoLine L200

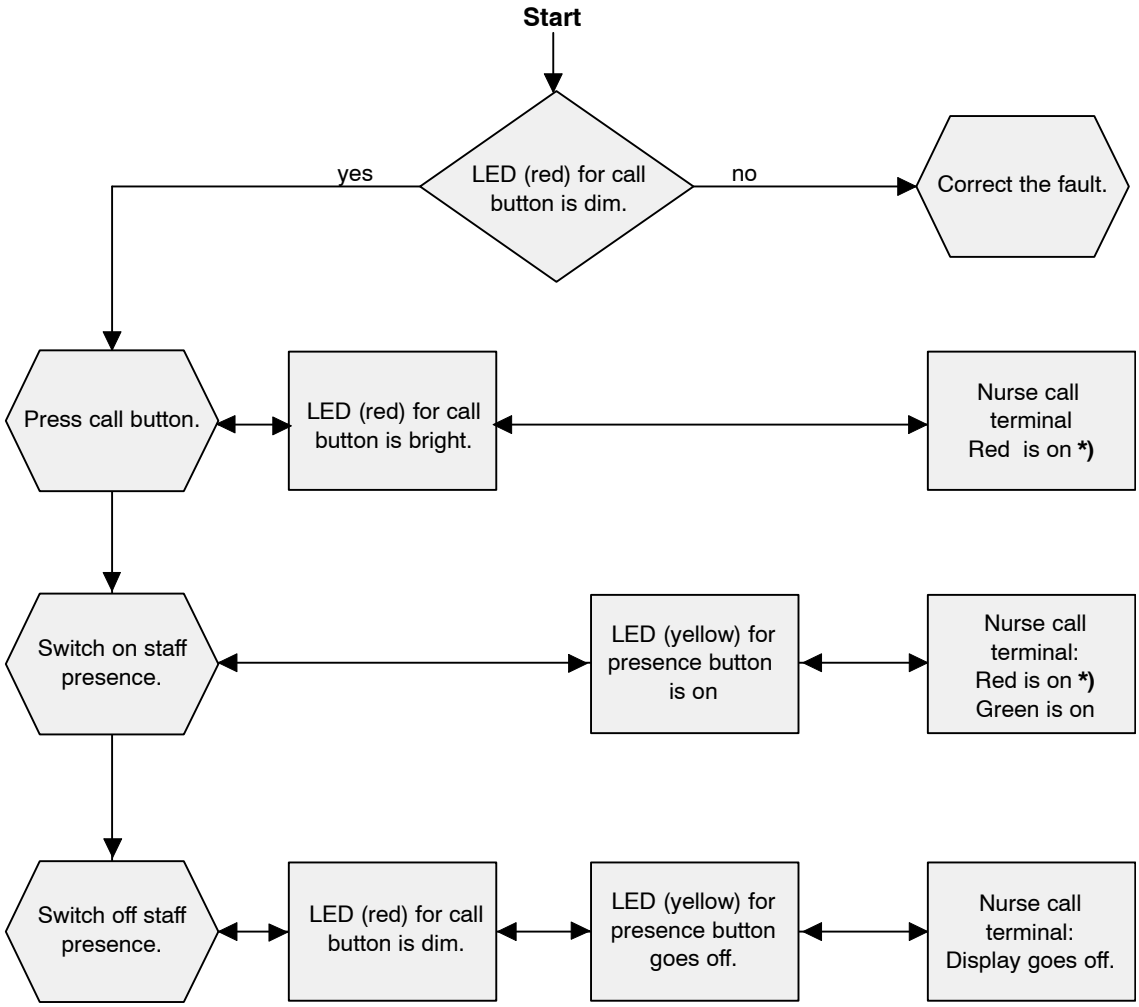
Testing each room for faults

- ☐ Is the red control LED in the nurse call terminal off (all versions of the nurse call terminal L200, all versions of the terminal L200)? If the LED is ON, there is a fault.
- ☐ Are there no faults displayed for this room at the ComStation L200?

Test the light call function from each room

Room

Perform the following test for all call devices in the room:



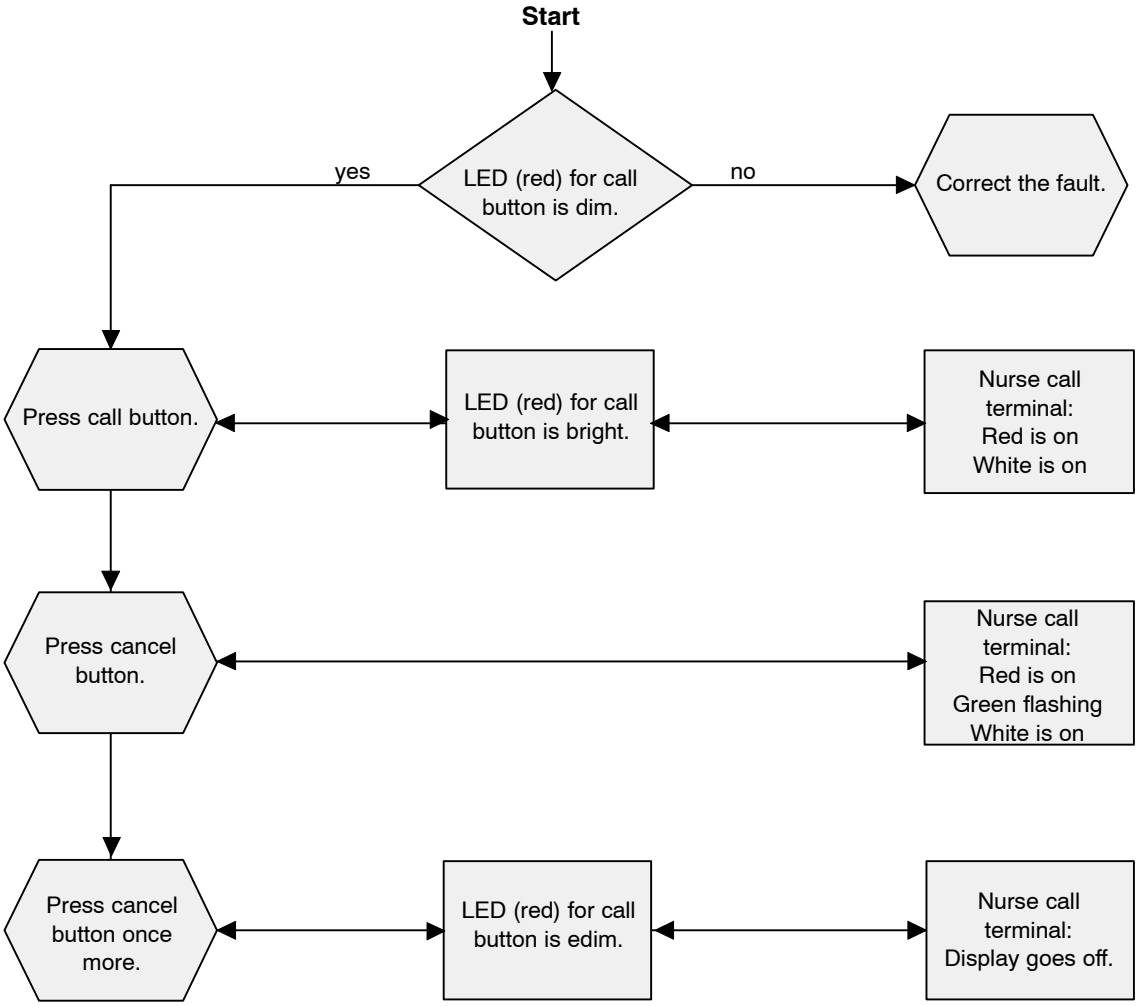
***)** Call devices connected to the emergency input on the nurse call terminal L200 (all versions) will trigger an emergency call (code blue). The red lamp section will flash quickly instead of being steady on.

- Check the light controls, if installed.

EccoLine L200 only

WCs to the room

Perform the following test for all call devices in the WC to the room:



Testing the ComStation L200

For information on how to operate the ComStation L200, refer to the “System EccoLine L200 – User manual for the ward”.

Check:

☐ Are there any faults displayed?

☐ Has the correct ComStation number been set?

The remainder of the tests should be conducted by two persons. One person stays at the ComStation L200, and the other person proceeds from room to room.

Test the following for each room:

☐ Is the room number displayed correctly?

☐ Do all types of call arrive at the ComStation L200 and are they displayed accordingly (patient call, WC call, staff assist call, WC assist call, emergency call (Option)?

☐ Are the bed numbers displayed correctly?

☐ Can the calls be acknowledged at the ComStation L200?

☐ Are staff presences correctly displayed at the ComStation L200?

☐ If set: Does the workshift or zone scheduling function correctly?

EccoLine L200 only

Testing the functions in the ward

Call forwarding

Raise a call in one and switch on the staff presence in another room. Test the following function in the room with the activated staff presence status:

☐ Does the call forwarding tone sound in the staff presence combination L200 / display combination L200?

☐ Is the call correctly displayed at the display combination L200?

Repeat this test for all rooms.

Corridor display Alpha 11 / Corridor display Alpha 20

Check whether the calls in the ward are correctly displayed in the corridor display Alpha.

Direction signal lamps

For each direction signal lamp check whether the calls of the allocated rooms are correctly displayed on the direction signal lamp.

Call devices

Check whether call from additional call devices (e.g. smoke detector, pear push switches) are displayed as required.

Testing the lamps at universal interfaces

Use the lamp test to check the function of the lamps which are connected to the 4 outputs of the universal interfaces.

- For the function test, place the code switch 9 to ON.

↙ AI functional lamps should blink.

- To terminate the function test, set the code switch to OFF.

System Management Unit

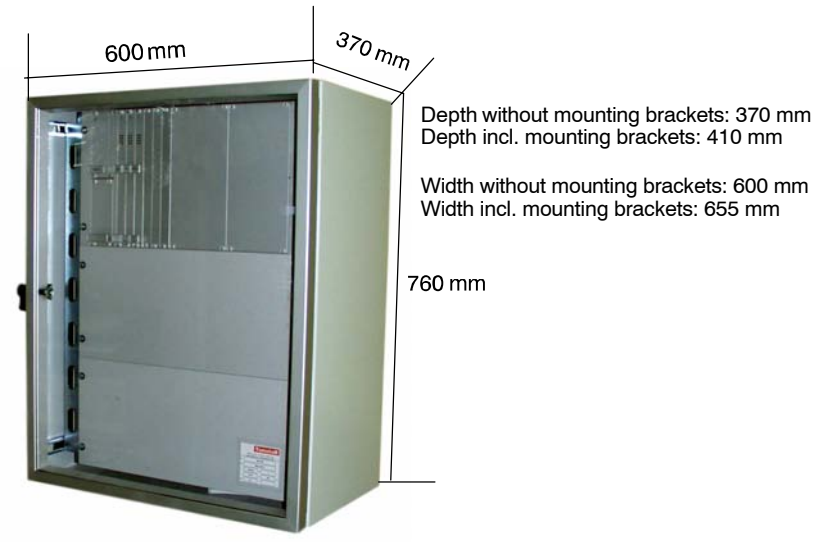
If there is more than one WCU in the building, a system management unit SMU (EccoLine with speech) or SMU L200 (EccoLine L200) must be installed to coordinate the functions between the wards.

The system management unit will be configured at the factory.

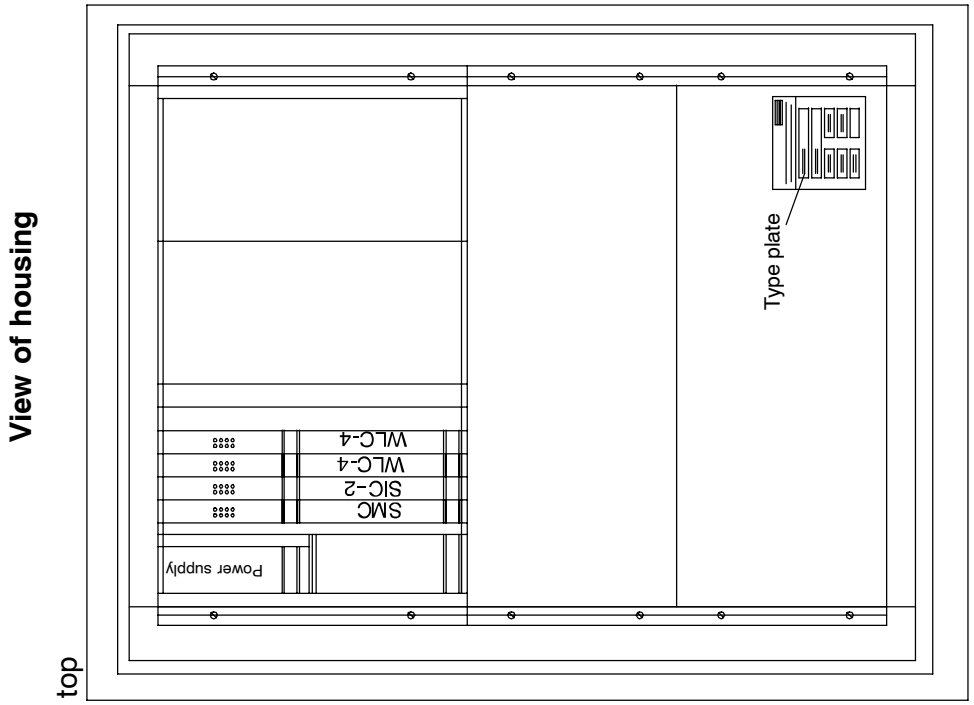
- ☐ The system management unit must be installed in “limited access locations”.
- ☐ The system management unit must be installed in “dry locations” only (max. relative humidity 75% at ca. 18ºC).
- ☐ The system management unit may be operated in locations with ambient temperatures between 0º and 40ºC. (Normal room conditions: 10º to 35ºC.)
- ☐ The system management shall be readily accessible (access aisle 60 cm wide).
- ☐ The heat transfer must not be blocked.
- ☐ When installing, consider sufficient free space for cable entries from below.

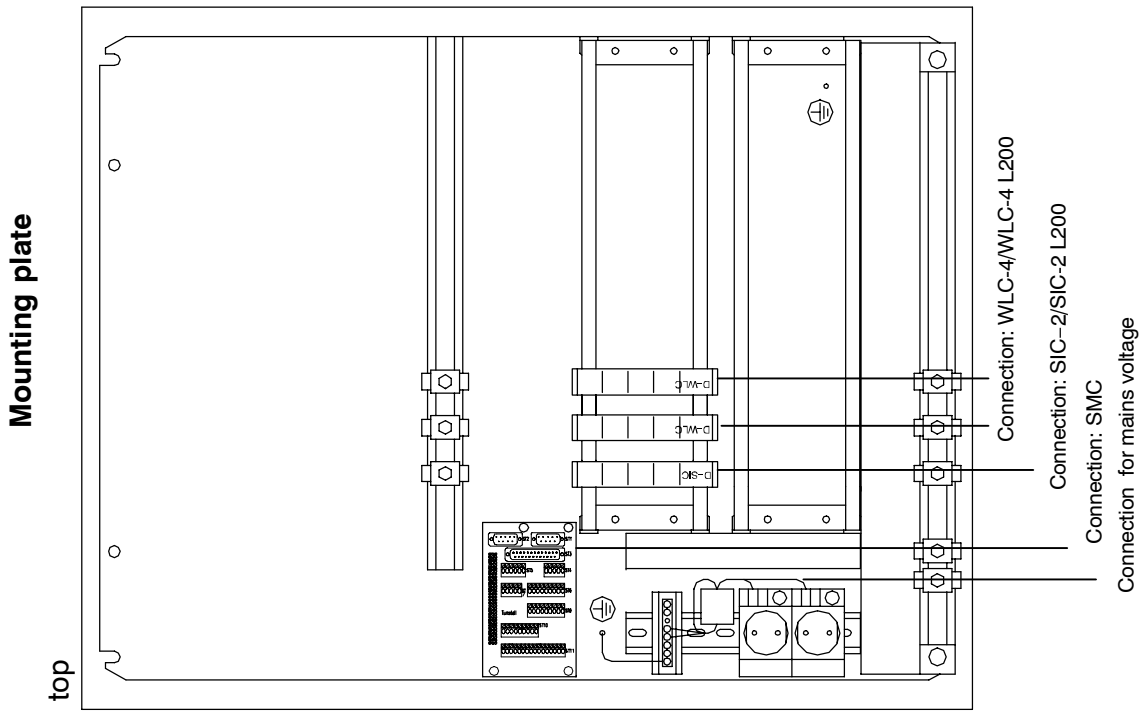
Ground bonding to be effected at the designated ground point of the component parts.

For functional reasons, ground bonding of the low voltage devices is required (functional ground bonding acc. to VDE 0800/5.89, Part 2,3.1.5.2.1). Thus, the system is provided with low voltage PELV with safe electric isolation acc. to VDE 0800/5.89, Part 1, 2.16.2.



System-Management-Unit: Overview





Connecting the System-Management-Unit

For connecting the cables, proceed as follows:

- Check all CCL cables (EccoLine with speech) or the CCL0 cables (EccoLine L200) for continuity, short circuits and ground faults.
- Connect the CCL cables (EccoLine with speech) or the CCL0 cables (EccoLine L200) using the plug−in connectors to the WLC-4 modules (EccoLine with speech) or WLC-4 L200 modules (EccoLine L200). The connections of the remaining slots are numbered in sequence.
- The connection for the power supply adapter must be performed by an authorised company. When the mains voltage is connected, the yellow LED in the double socket should be on.
- Plug−in the mains plug.

✓ The connecting procedure for the system management unit is completed.

Testing the central link voltage

When the **C**entral **C**ommunication **L**ink CCL (EccoLine with speech) or the CCL0 (EccoLine L200) is correctly connected to the system management unit and when it is functioning correctly with the WCU, the values are:
voltage between D−H and D−0V and
voltage between D−L and D−0V 2.5 V.

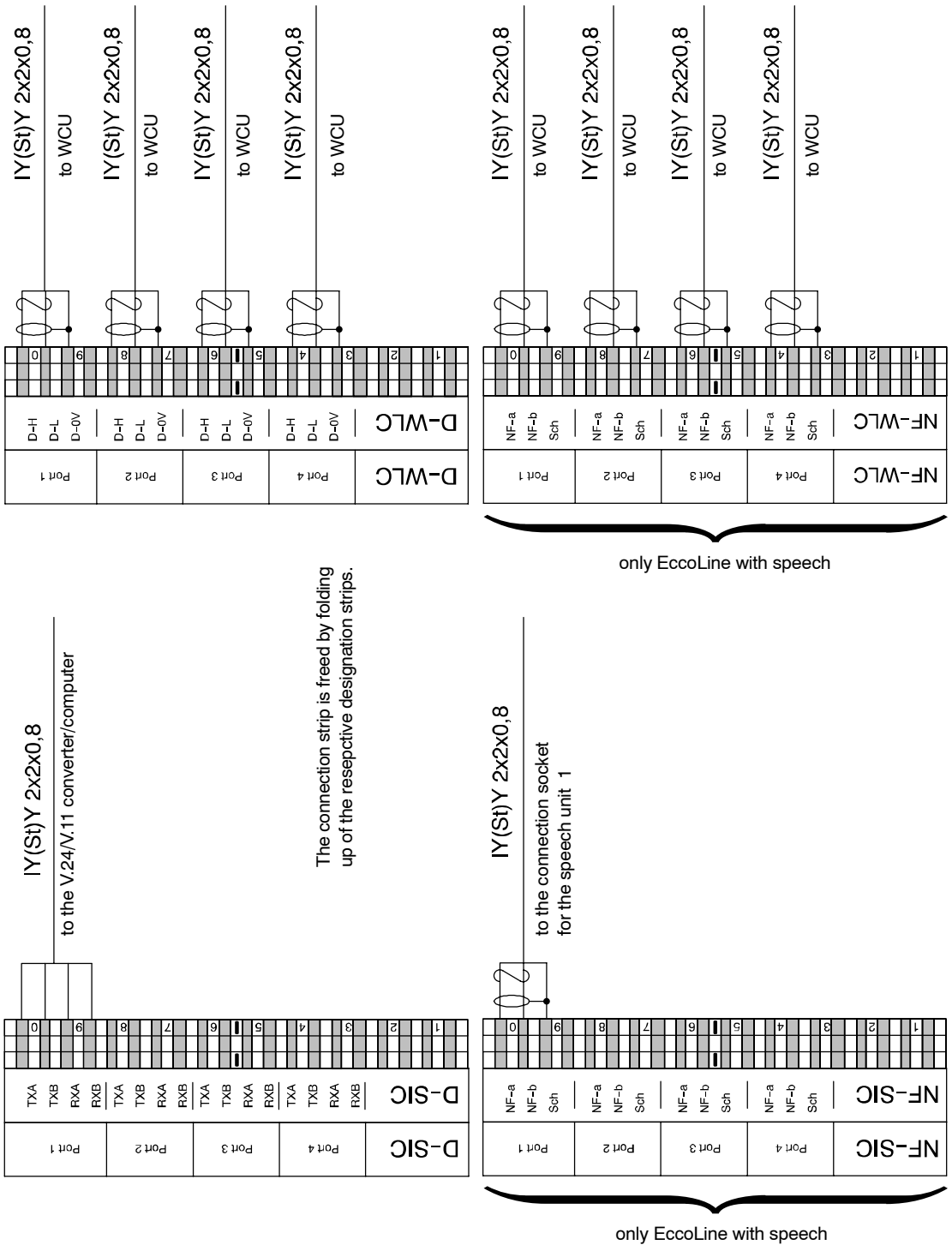
EccoLine with speech

The resistance between NF−a and NF−b is as follows:

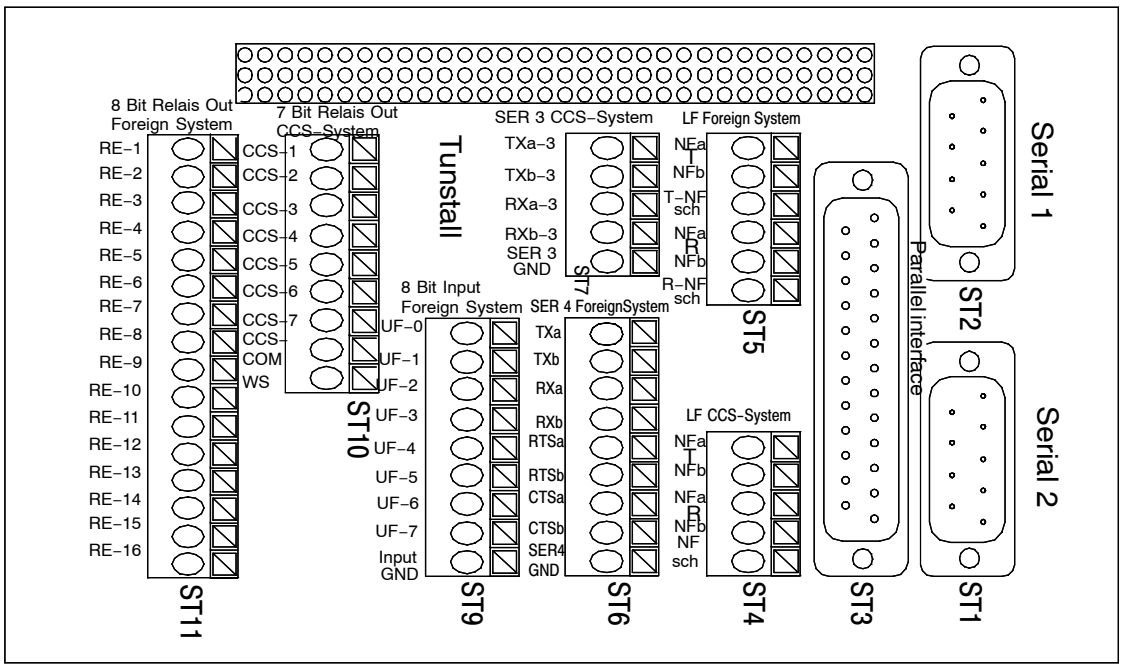
□ at idle state: 30 Ohm.

□ during an active voice communication beyond the ward: 15 Ohm.

Connections at WLC–4/WLC-4 L200 and SIC-2/SIC-2 L200



Connections to SMC

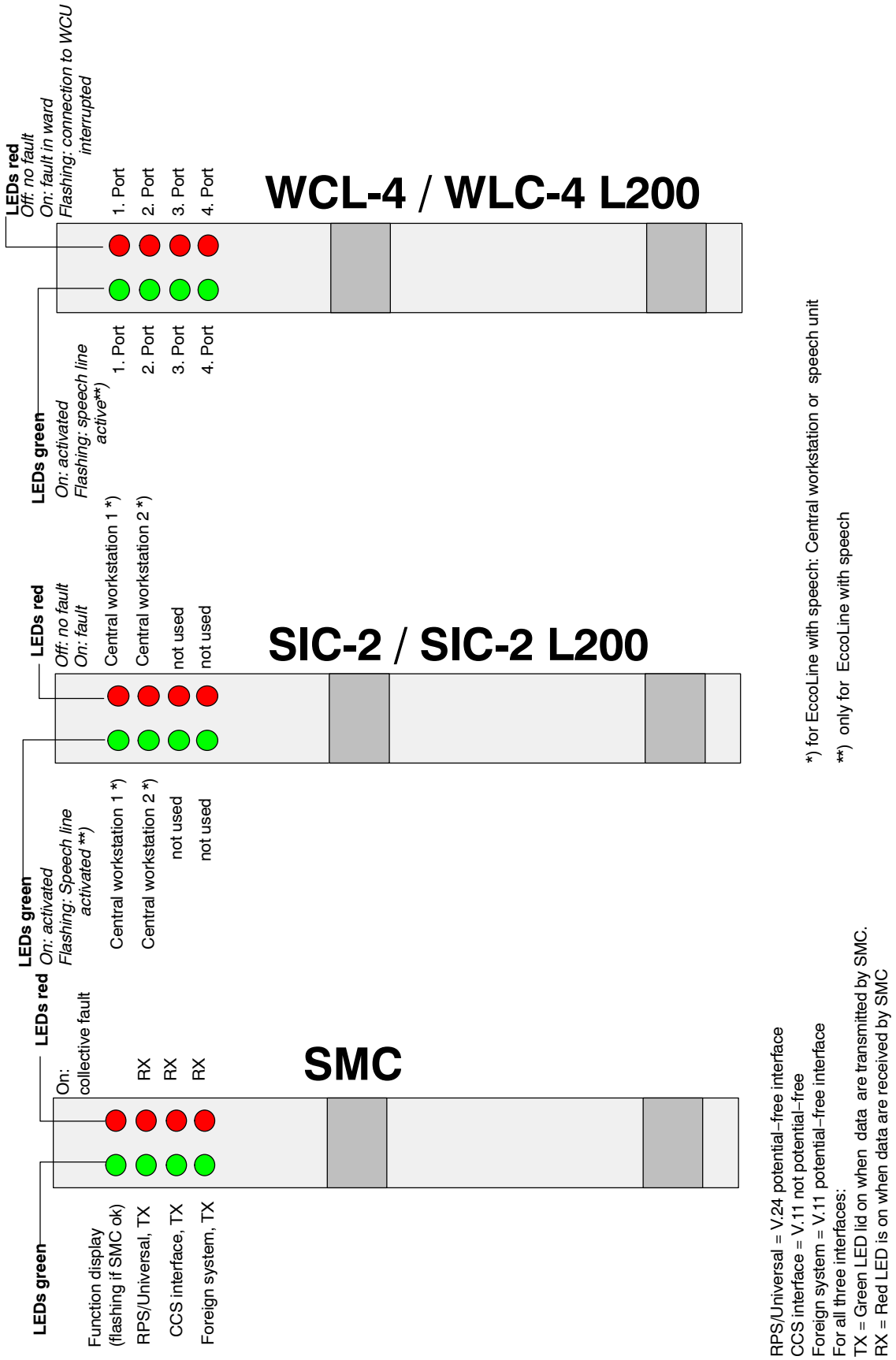


Collective output – Fault message (potential–free**) (** contact opens in case of a fault)	ST11 RE–15/16
Collective output – Calls (potential–free)	ST11 RE–1/2
Collective output – Assist calls (potential–free)	ST11 RE–3/4
Collective output – Emergencies (potential–free)	ST11 RE–5/6
Collective output – Presence (potential–free)	ST11 RE–13/14
Input– General announcement *)	ST5
Input– Staff announcement *)	ST9
Printer max. 2.5 m (Software: Vers. 3.xx and up)	ST3 parallel
RPS serial V24 max. 15m Protocol ESPA 4.4.4 (Software: Vers. 3.xx and up)	ST1 GND P.5/ TX P.3/RX P.2

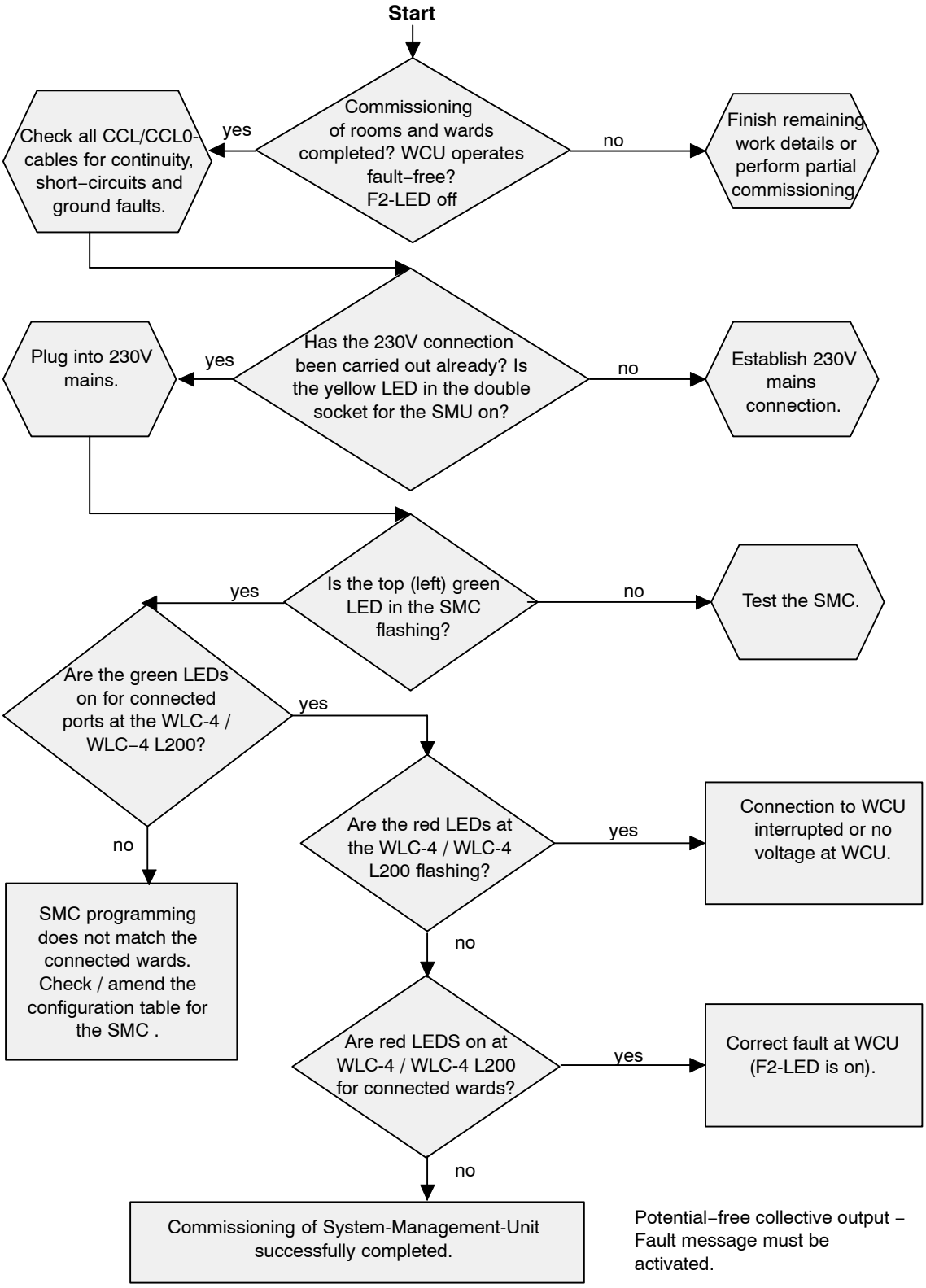
*) only EccoLine with speech

Potential–free contacts
= 24V max. 1A

System displays (LED)



Commissioning the System-Management-Unit



Start–up sequence

In order to ensure the fault–free operation of the EccoLine system, the following sequence of events for the start–up procedure must be complied with.

The system is switched–on completely.

1. Pull the SMC printed circuit board only. (All WLC-4/WLC-4 L200 boards will continue to be supplied with the required voltage.)
2. Actuate a reset at all WCUs. (Via the ComStation or ward console/S or initiate a voltage reset at the WCU.)
3. Put the SMC printed circuit board back in place to start the system.

Testing the functions between the wards

With the System-Management-Unit (SMU or SMU L200) operational, all the functions between the wards should be working correctly:

- ☐ Can ward couplings be realised at the ComStation (EccoLine ComStation or ComStation L200) or at the EccoLine ward console/S?
- ☐ Are the group signal lamps functioning correctly?

Centre (EccoLine ComCenter, central PC)

Following the installation of the System-Management-Unit, the centre can be installed, if a centre is planned for the particular project:

- ☐ EccoLine ComCenter, Push buttons
- ☐ EccoLine ComCenter, Screen based version
- ☐ EccoLine Call recording– SMU
- ☐ System computer with PrimusGlobal

EccoLine ComCenter, Push buttons

The following factors should be considered, when to choose the ideal location for the central console:

- ☐ Size
- ☐ Floor plan
- ☐ Lighting
- ☐ Ambient noise

The central console with push buttons can be placed freely or next to a wall.



Fig. 57: EccoLine ComCenter, Push buttons

1 Ward panels
2 Speech unit
3 Screen
4 Mouse
5 PC, connections, power supply unit

Connecting the central console with push buttons

When you connect the central console with push buttons, the address input procedure for the ward sections must have been completed.

- Connect the cables acc. to the project–specific connection plan.
- Install the gooseneck microphone, refer to Fig. 59.
- Connect the speech unit
- If the central console with push buttons has not been configured at the factory, you must perform the project–specific configuration at this time. All settings are effected via the software PrimusGlobal. For details, refer to the appropriate documents.

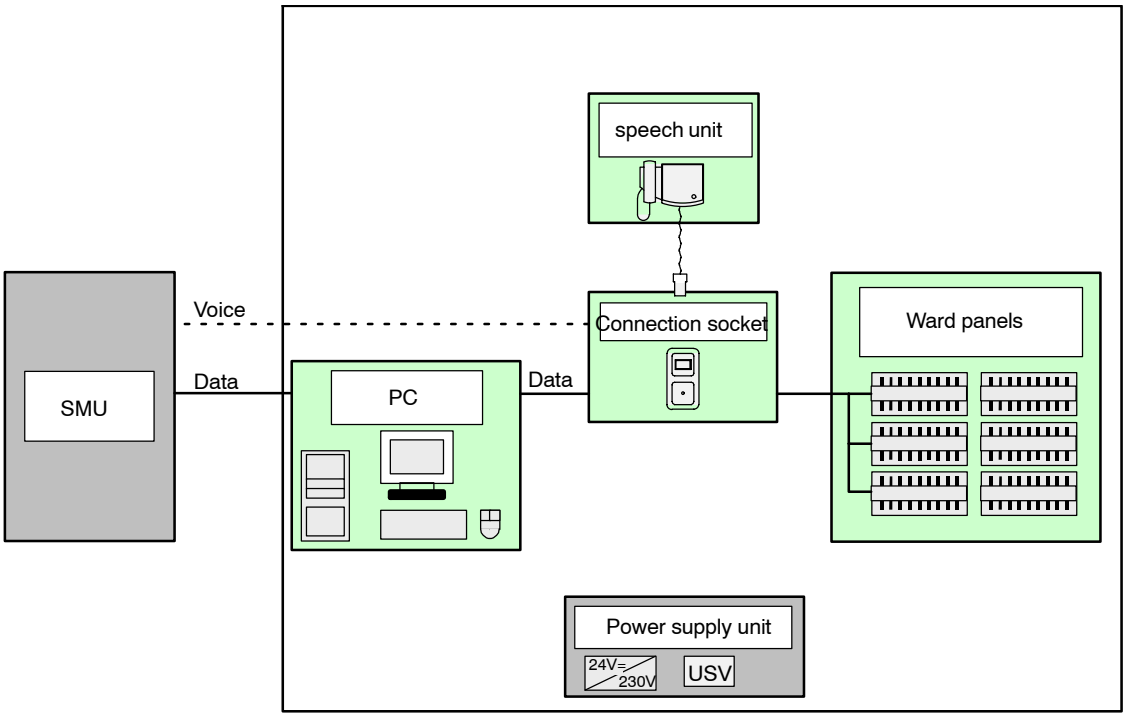


Fig. 58: Central console, push buttons: Overview

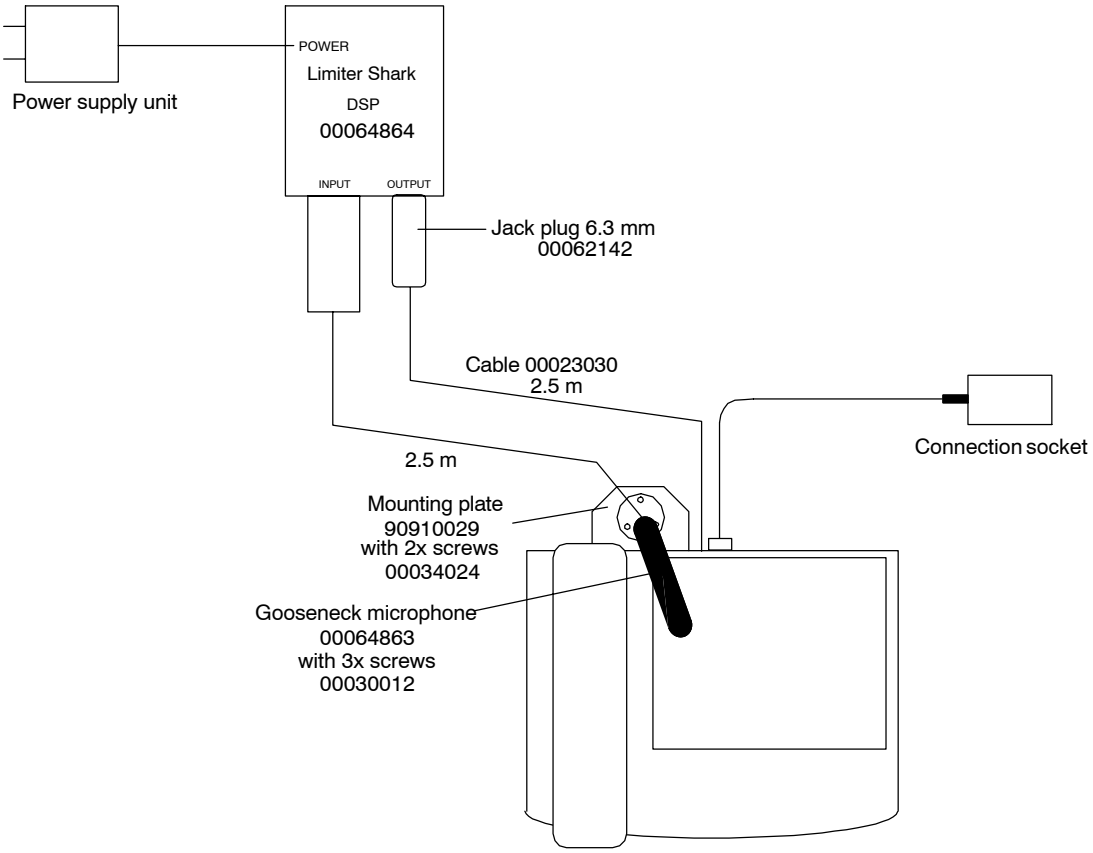


Fig. 59: EccoLine ComCenter: Connection: Gooseneck microphone

EccoLine ComCenter, Screen based version



Fig. 60: EccoLine ComCenter, Screen based version

1 Speech unit
2 Screen
3 Mouse

Connecting the central console, screen based version

- Connect the cables acc. to Fig. 61.
- Install the gooseneck microphone, refer to Fig. 59.
- Connect the speech unit.
- If the central console has not been configured at the factory, you must perform the project–specific configuration at this time. All settings are effected via the software PrimusGlobal. For details, refer to the appropriate documents.

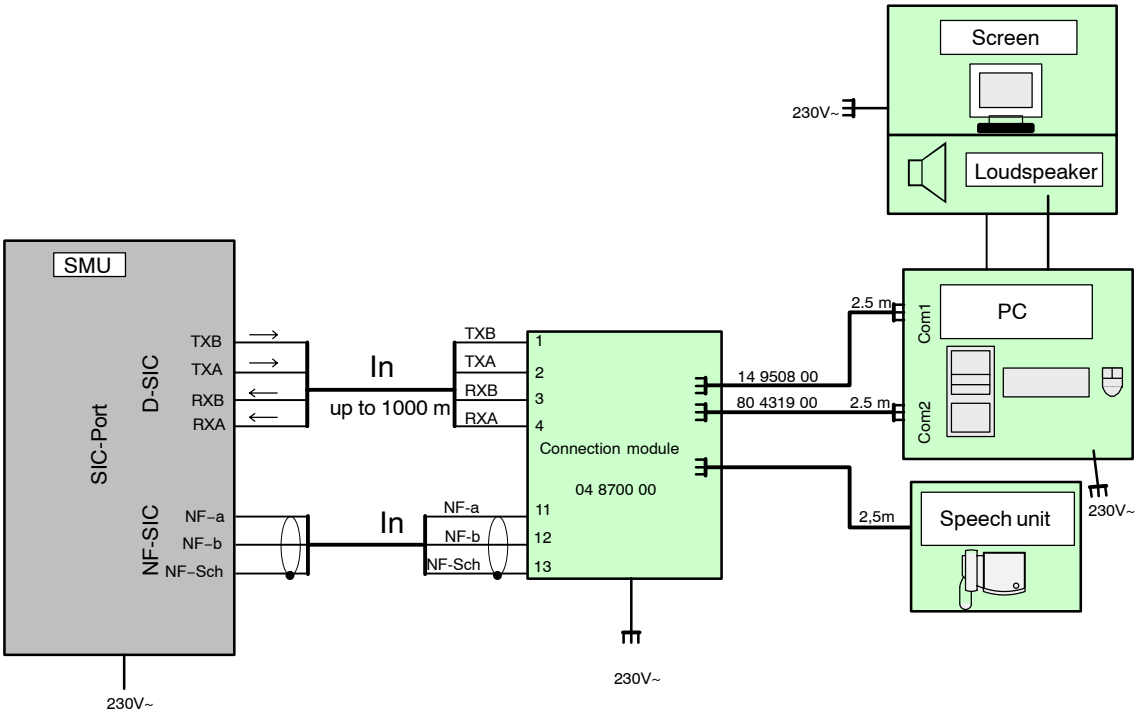


Fig. 61: Central console, screen based version: Connections

EccoLine ComCenter: Checking the functions

For the operating procedures for the EccoLine ComCenter, refer to the on−line help in the PrimusGlobal module “Console”. You can select this on−line help function directly from the programme (Function key F1). For information on how to operate the room devices, refer to the user manual for the ward.

The checks shall be performed by two persons. One person is at the EccoLine ComCenter, and the other person proceeds from one room to another.

Check the function for every room:

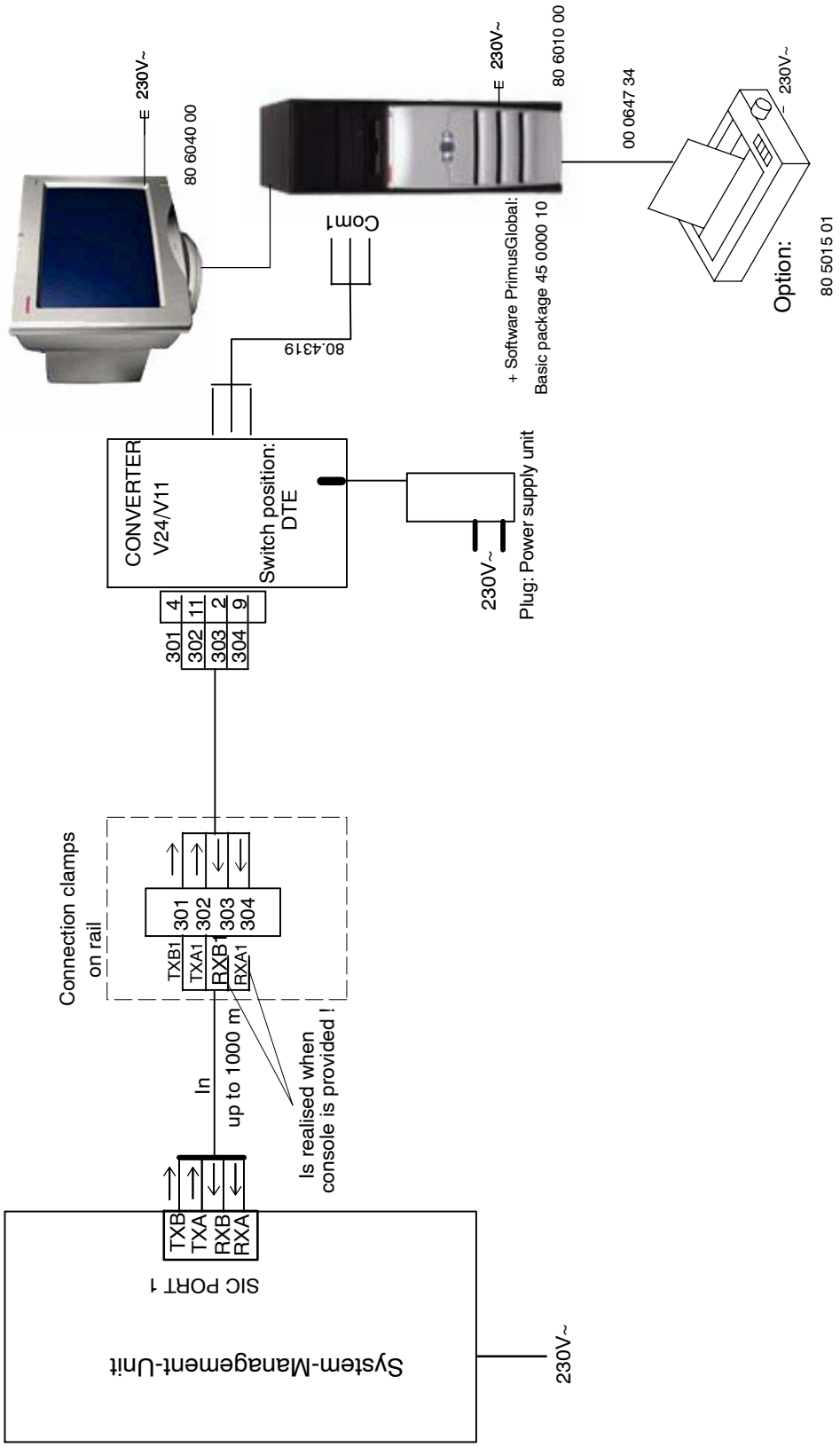
- ☐ Do all types of calls arrive at the EccoLine ComCenter and are they signalled accordingly (e.g. patient call, WC call, diagnostic call, staff assist call 1, staff assist call 2, WC assist call, emergency call)?
- ☐ Are the bed numbers (channel numbers) transmitted correctly?
- ☐ Can calls be processed / acknowledged at the EccoLine ComCenter?
- ☐ Is voice communication possible with the EccoLine ComCenter via the speech devices (EccoLine ComTerminal, EccoLine Patient handset)?
- ☐ Are staff presences correctly displayed at the EccoLine ComCenter?
- ☐ Are general announcements possible from the EccoLine ComCenter?



Note! If you remark that a wrong bed number is set at a connection socket bedhead unit 2, the medical supply unit must be opened and the correct number must be set (refer to documents on the medical supply unit).

Where other PrimusGlobal software modules are installed in addition to the module “Console”, the correct function of these modules shall also be checked.

20 4001 10 EccoLine call recording - SMU



Before starting to use the call recording function, the software Primus-Global on the PC must be configured project–specific. Tunstall GmbH will provide this service on request:

- ☐ PrimusGlobal configuration “Basic system” (48 000 00)
- ☐ PrimusGlobal configuration “1 ward, standard” (48 1000 00)

System computer with PrimusGlobal

The PrimusGlobal software family effectively complements the EccoLine call systems. The software comprises several independent function modules which can be compiled to best suit the specific requirements. The software allows for:

- □ Call answering at the screen
- □ Recording of all system results
- □ Remote system administration (Modem is part of the scope of delivery)
- □ Configuration of mobile receivers and forwarding of call to the receivers
- □ Input, storage, proccessing and display of person–related data
- □ Extraction and processing of personal care data from an administrative processor

For information on the applicable installation work refer to the project–specific documents.

EccoLine with speech: Examples for installation

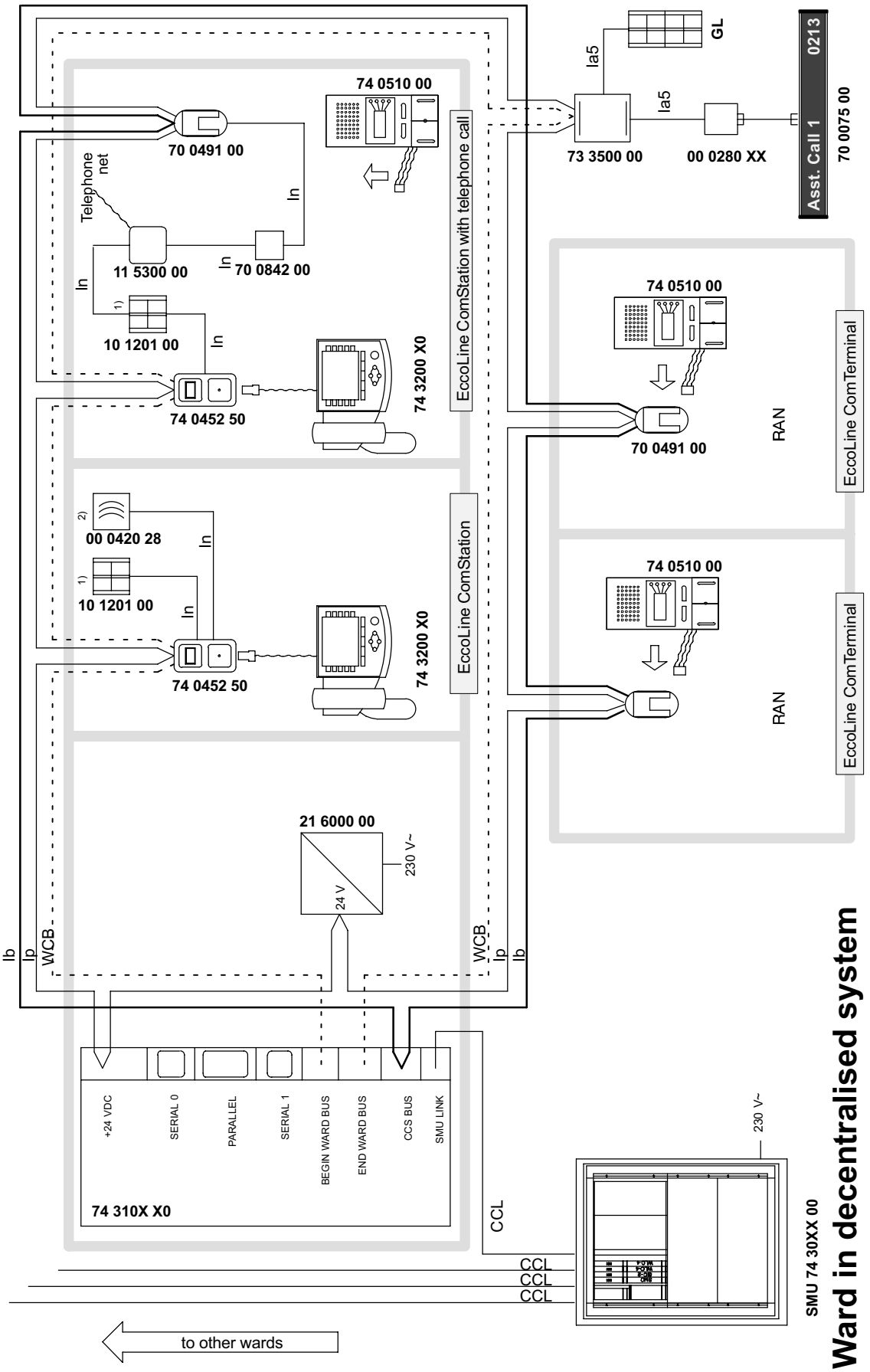
Legend to the following installation plans

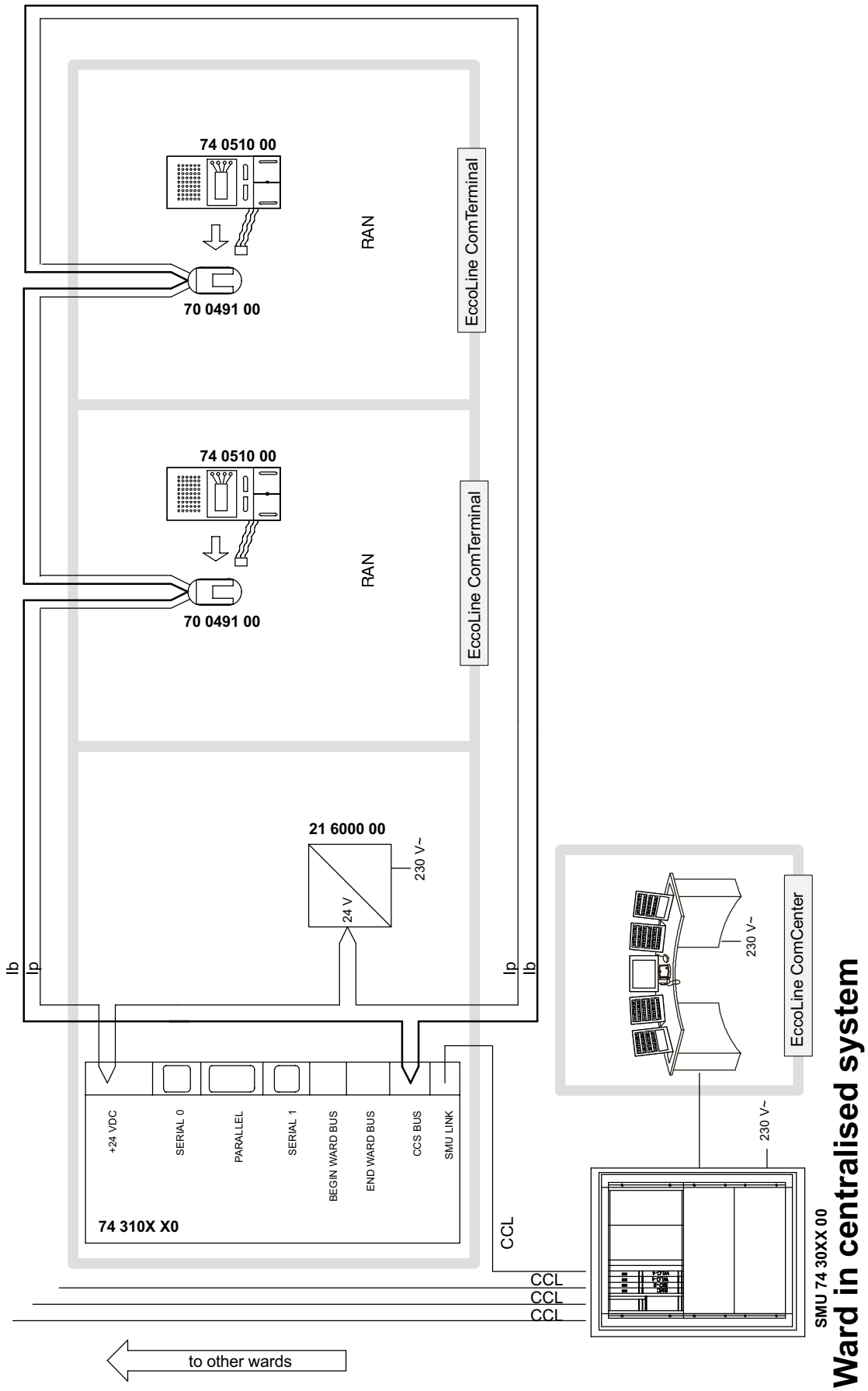
00 0280 39	RJ45 Connection socket surface mounted 2–gang
00 0280 40	RJ45 Connection socket recessed mounted 2–gang
00 0420 28	Acoustic signal transducer
10 1201 00	Room signal lamp, two sections
11 5300 00	Telephone interface relay
21 6000 00	Power supply unit 24V/12A
70 0075 00	Corridor display Alpha 20
70 0842 00	RAN interface, telephone call
73 3500 00	Universal interface
74 0452 50	Connection socket ComStation
74 0510 00	EccoLine ComTerminal
74 30XX XX	SMU
74 3101 XX	WCU-Extended
74 3200 X0	EccoLine ComStation

Abbreviations:

1)	Presence/telephone call
2)	Option – Parallel acoustic signalling
GL	Group signal lamp (Order No. depends on number of groups)
RAN	Room area network, room bus

EccoLine with speech only

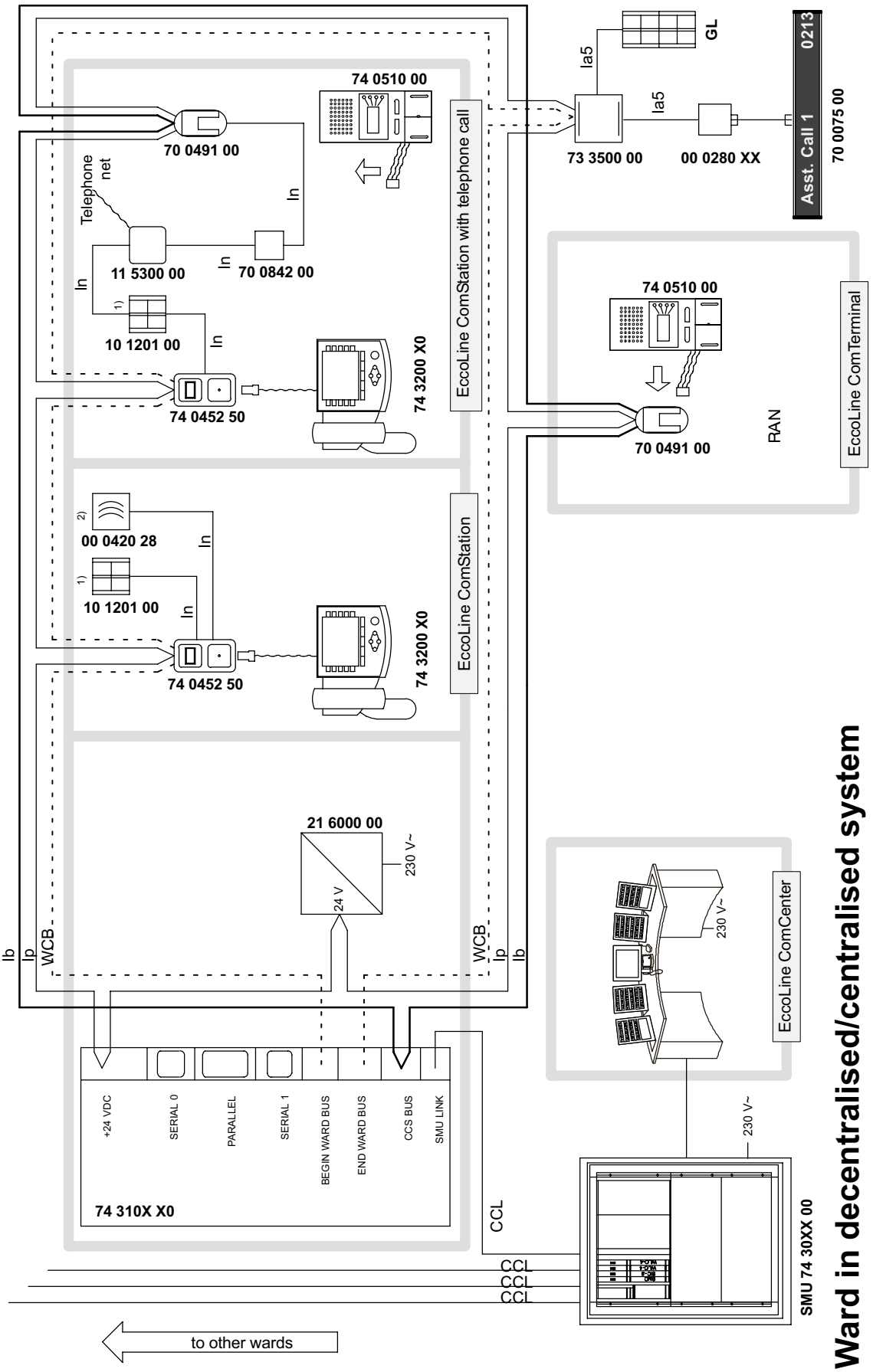


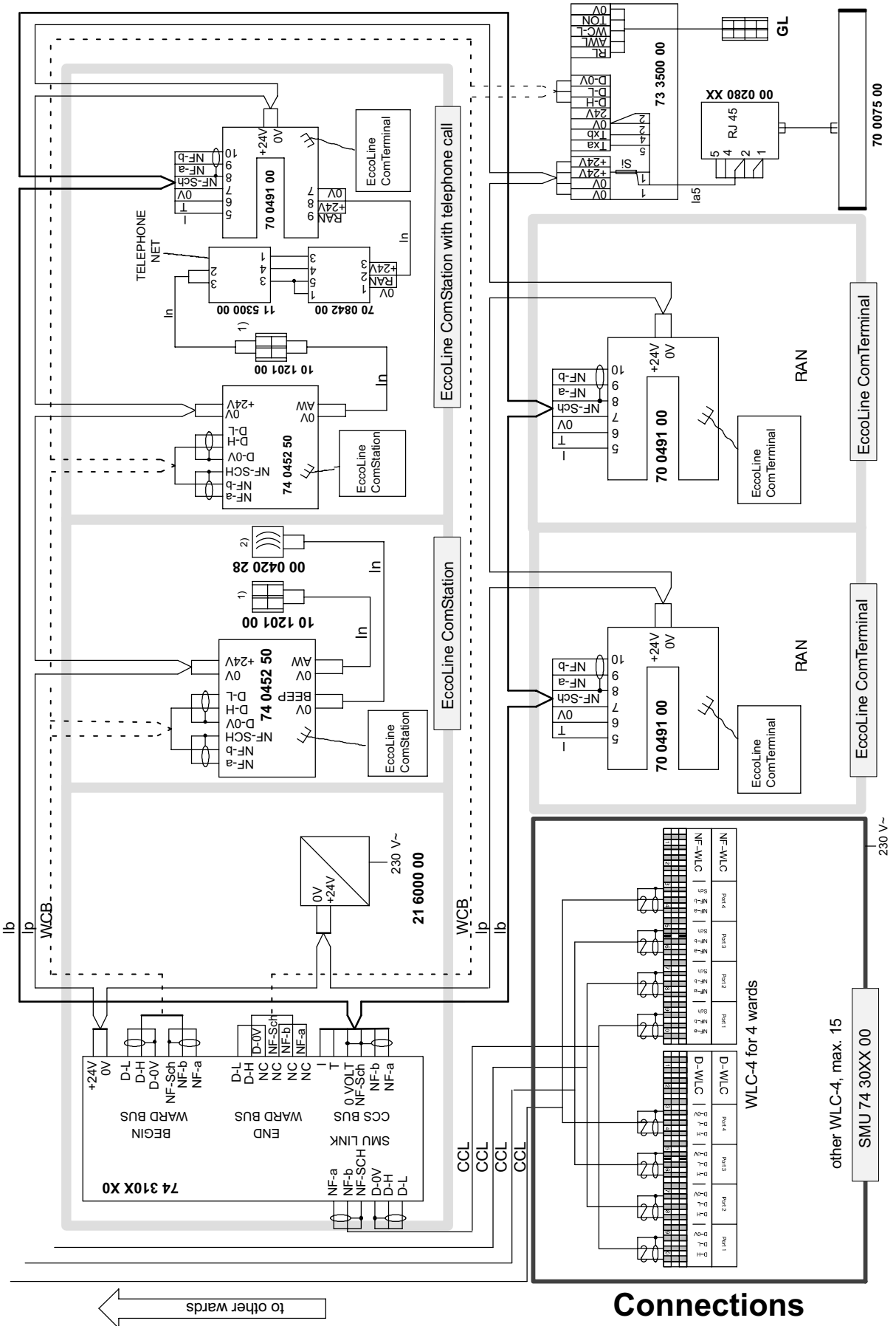


Ward in centralised system

EccoLine with speech only

EccoLine with speech only




Connections
to other wards
WCB
Ib
Ip
EccoLine ComStation with telephone call
EccoLine ComStation
EccoLine ComTerminal
RAN
74 310X X0
BEGIN WARD BUS
END WARD BUS
CCS BUS
SMU LINK
CCL
WLC-4 for 4 wards
other WLC-4, max. 15
SMU 74 30XX 00
21 6000 00
230 V~
70 0491 00
74 0452 50
70 0842 00
11 5300 00
10 1201 00
00 0420 28
73 3500 00
00 0280 XX
70 0075 00
GL
TELEPHONE NET

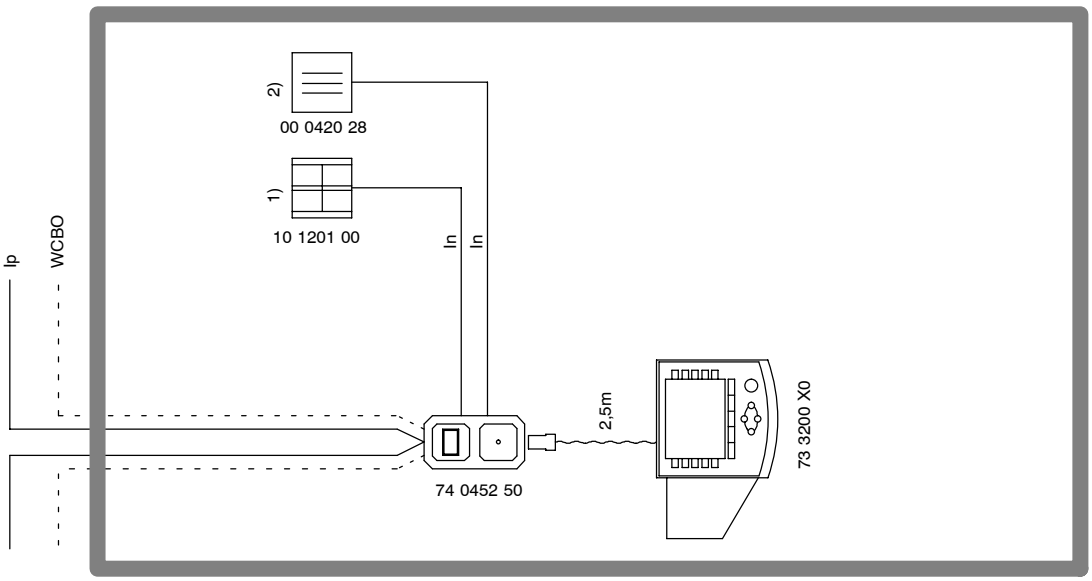
Help during installation problems

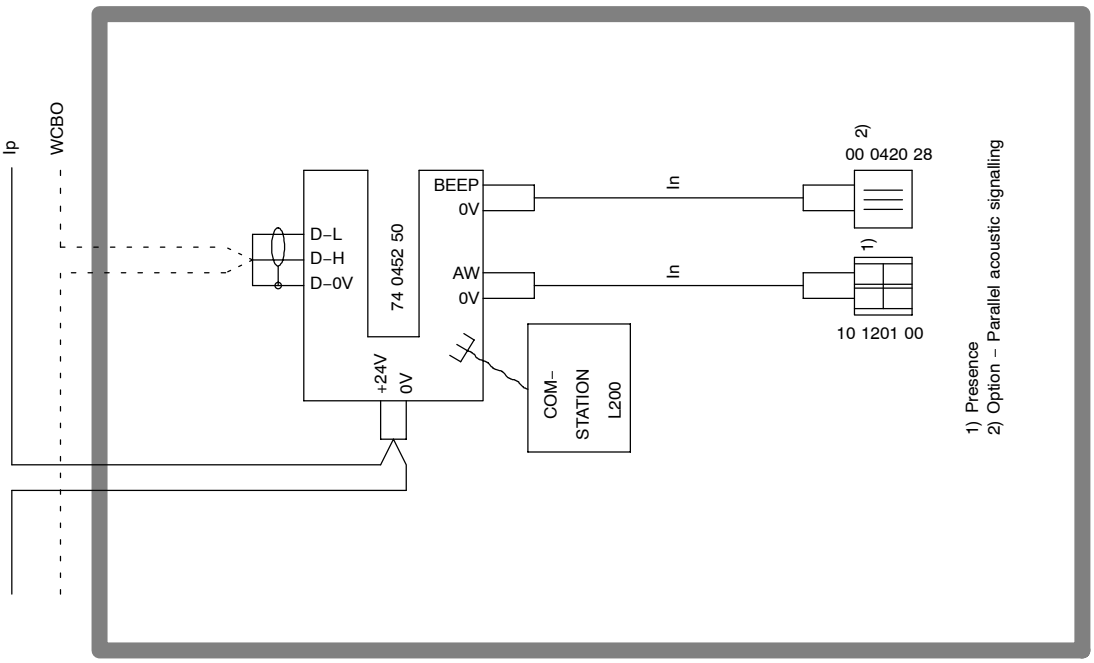
Fault area: Fault indications	Possible causes	Measures for fault detection	Measures for fault correction
Complete ward:			
Location lights do not come on. Function test not possible.	No 24V supply voltage.	Check 230V supply to power supply unit.	Repair 230V mains supply to power supply unit.
		Check Ip cable for interruption or short–circuit.	Repair interruption or short–circuit at Ip cable.
Complete ward:			
Only light call function is available.	CCS bus is not working.	Fault voltage in CCS bus cable. Check CCS bus cable for interruptions or short–circuits.	Repair interruption or short–circuit at CCS cable.
	WCU-Extended is not working.	Check WCU-Extended connections Ip and Ib.	Repair WCU-Extended connections Ip and Ib.
	WCU-Extended is defective.	Check WCU-Extended CCS- bus output voltage.	Replace WCU-Extended.
Complete room:			
Light call function is not available.	Fault in RAN (In cable).	Check In cable for short–circuits or interruptions.	Repair short–circuits or interruptions at In cable.
Location lights do not come on.	Faults in 24V supply in the RAN (In cable)	Check fuse in connection socket for ComTerminal. Check 24V supply in RAN.	Replace fuse in connection socket for ComTerminal. Re–instate 24V supply to RAN.
Room device:			
Room fault indication at the console.	Room address false or not yet entered.	Calls from this room are displayed at the console with a false address.	Set the correct room address.
Room device:			
Room fault indication at the console.	1 room device is defective.	Perform a “Test RAN” procedure at the ComTerminal to search the defective device (does not flash).	Replace the not–flashing device.

EccoLine L200: Installation examples

Note: If the printed circuit boards at your terminals bear the order numbers SA73090599, SA73090505, SA73090550 or SA73090555, these components are other that the models described in this manual. The installation of these terminals is described in the NewLine L200 Installation manual.

ComStation L200

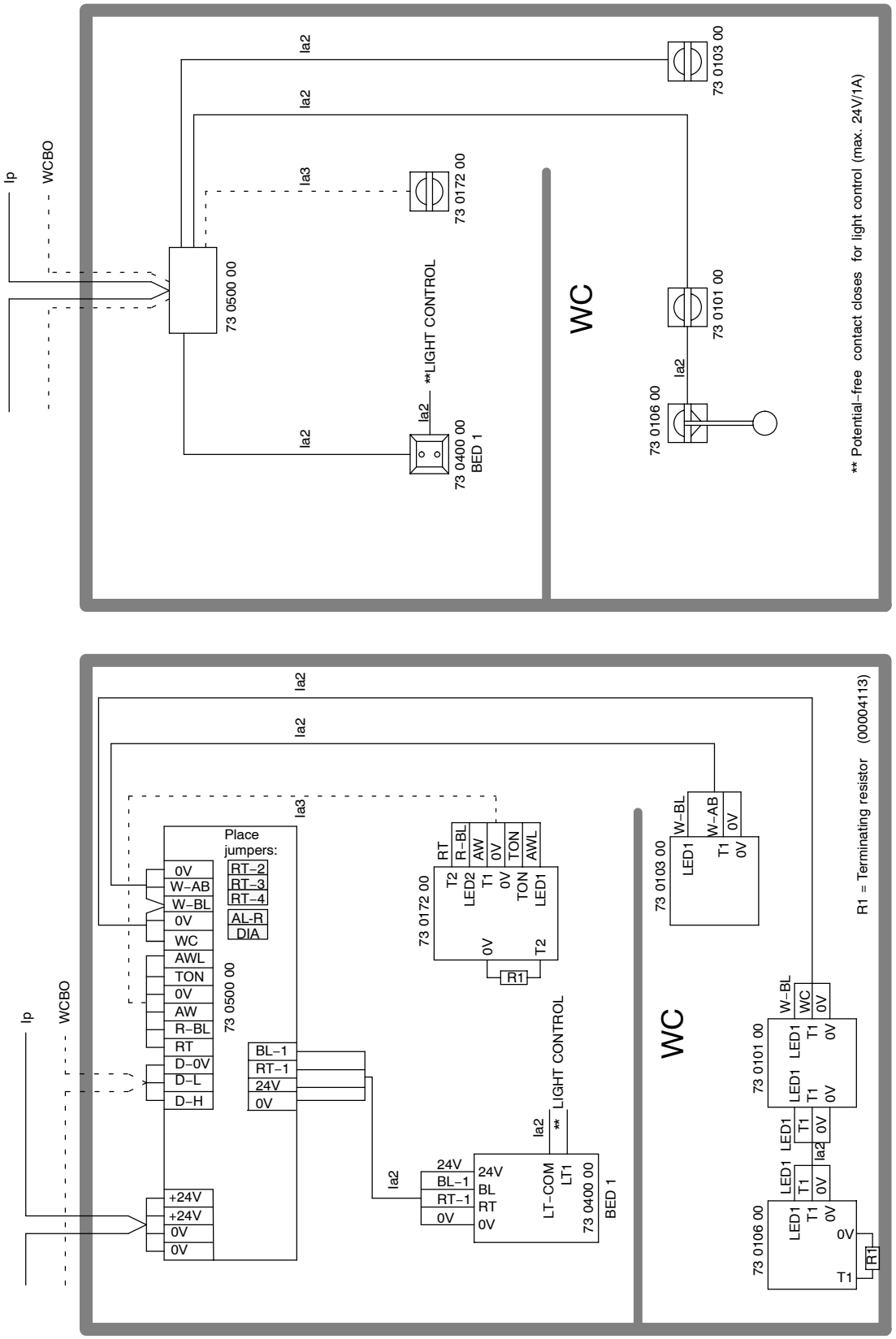




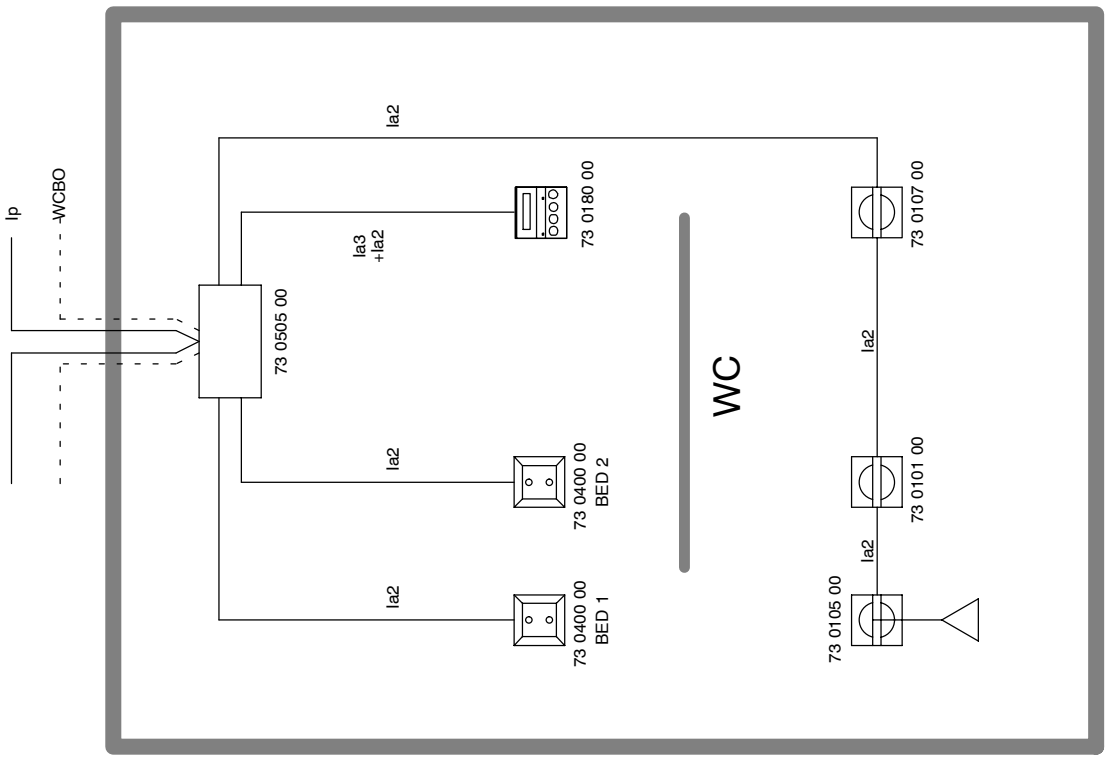
EccoLine L200 only

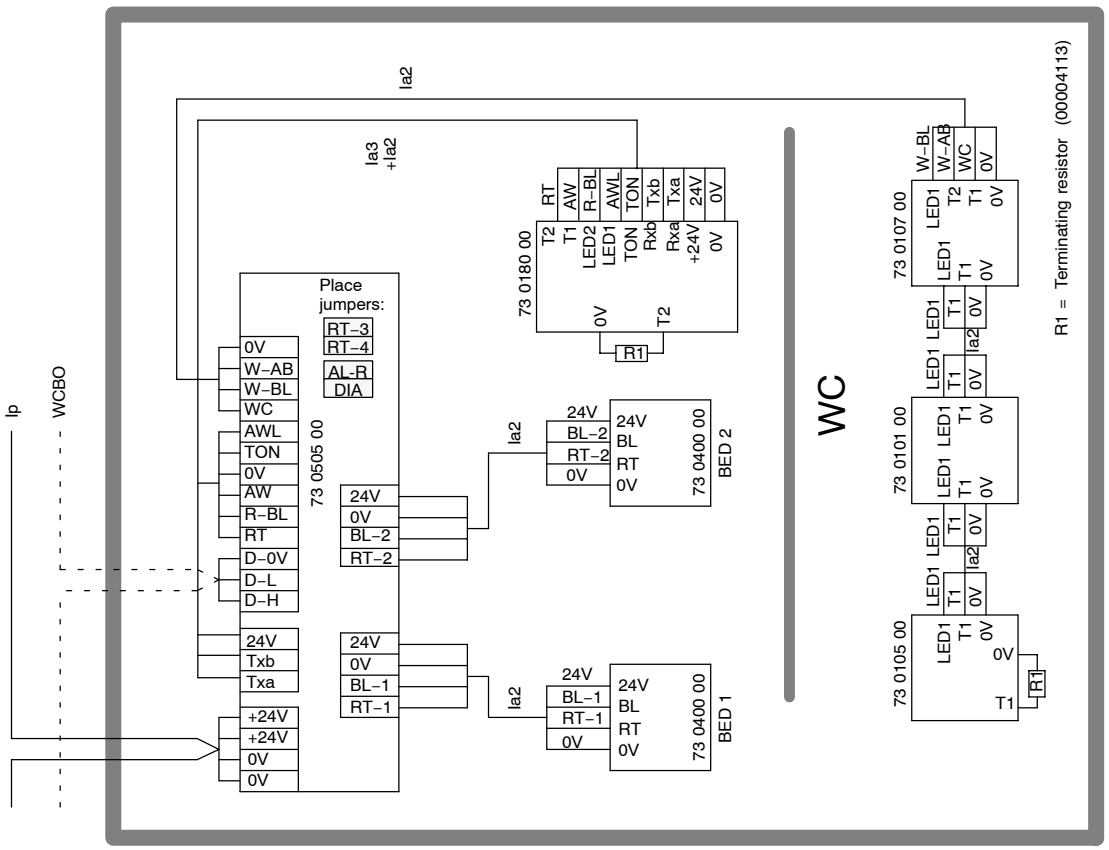
EccoLine L200 only

1-bed room with light control and WC



2-bed room with WC

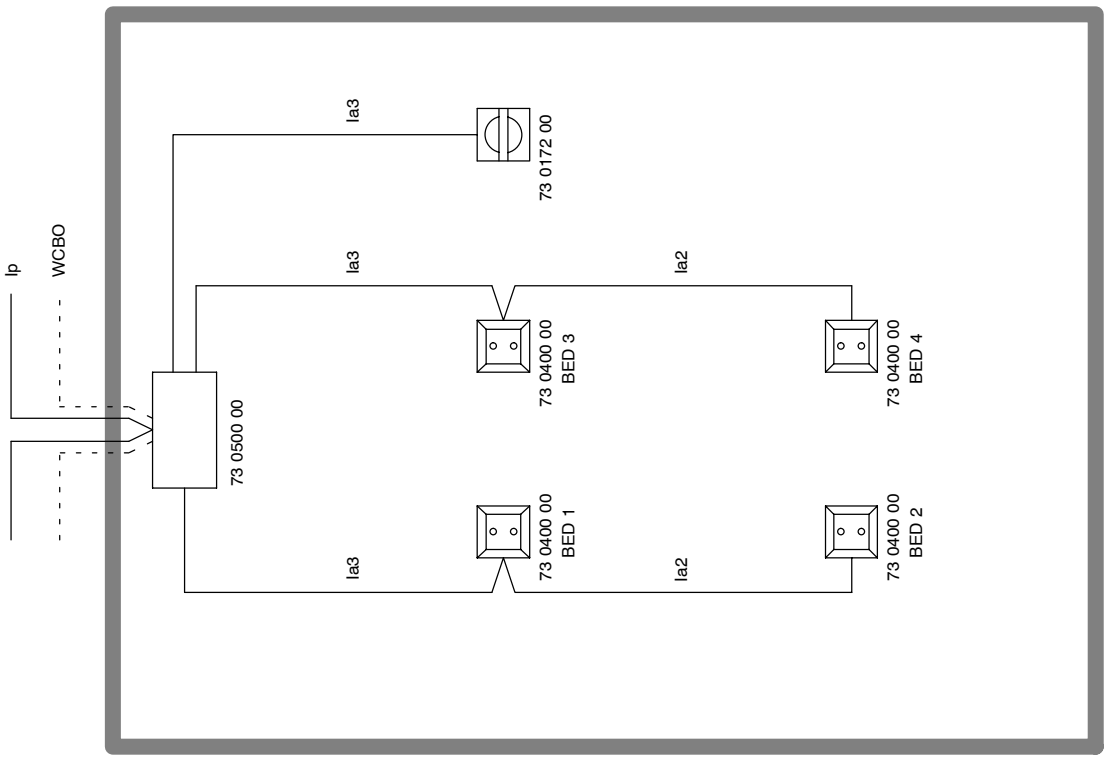


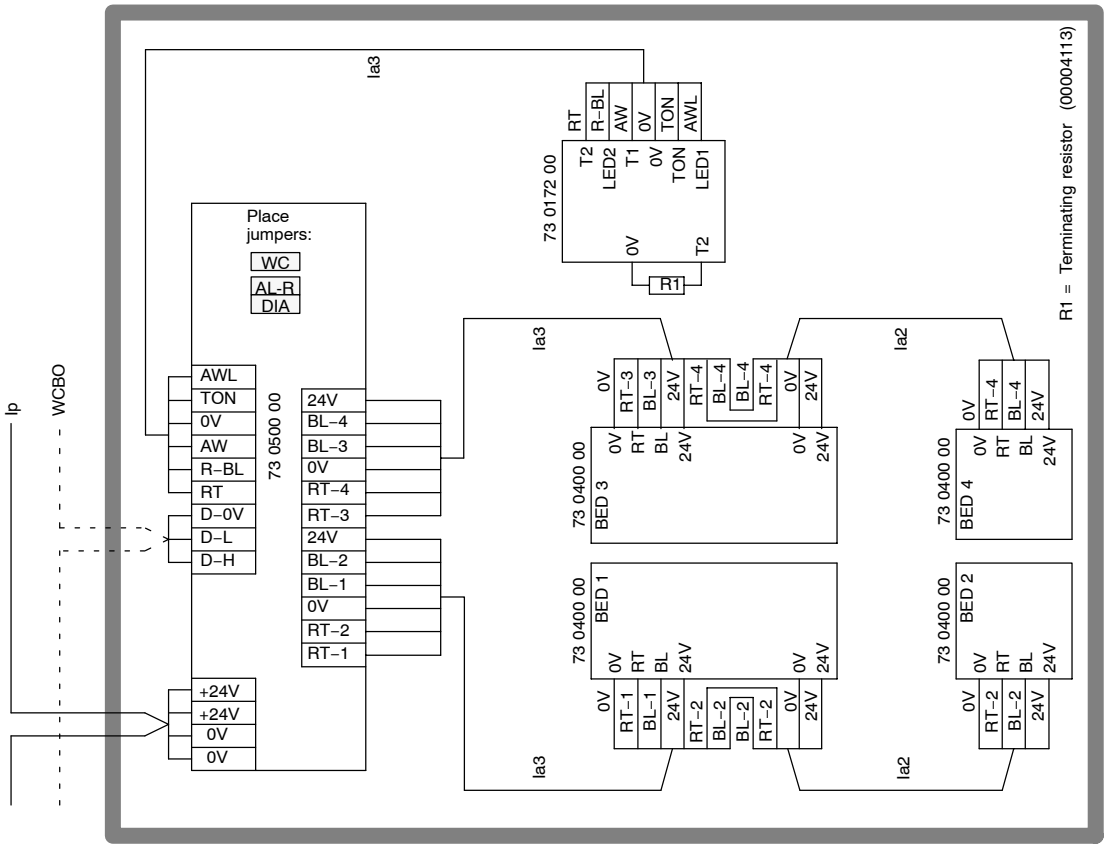


EccoLine L200 only

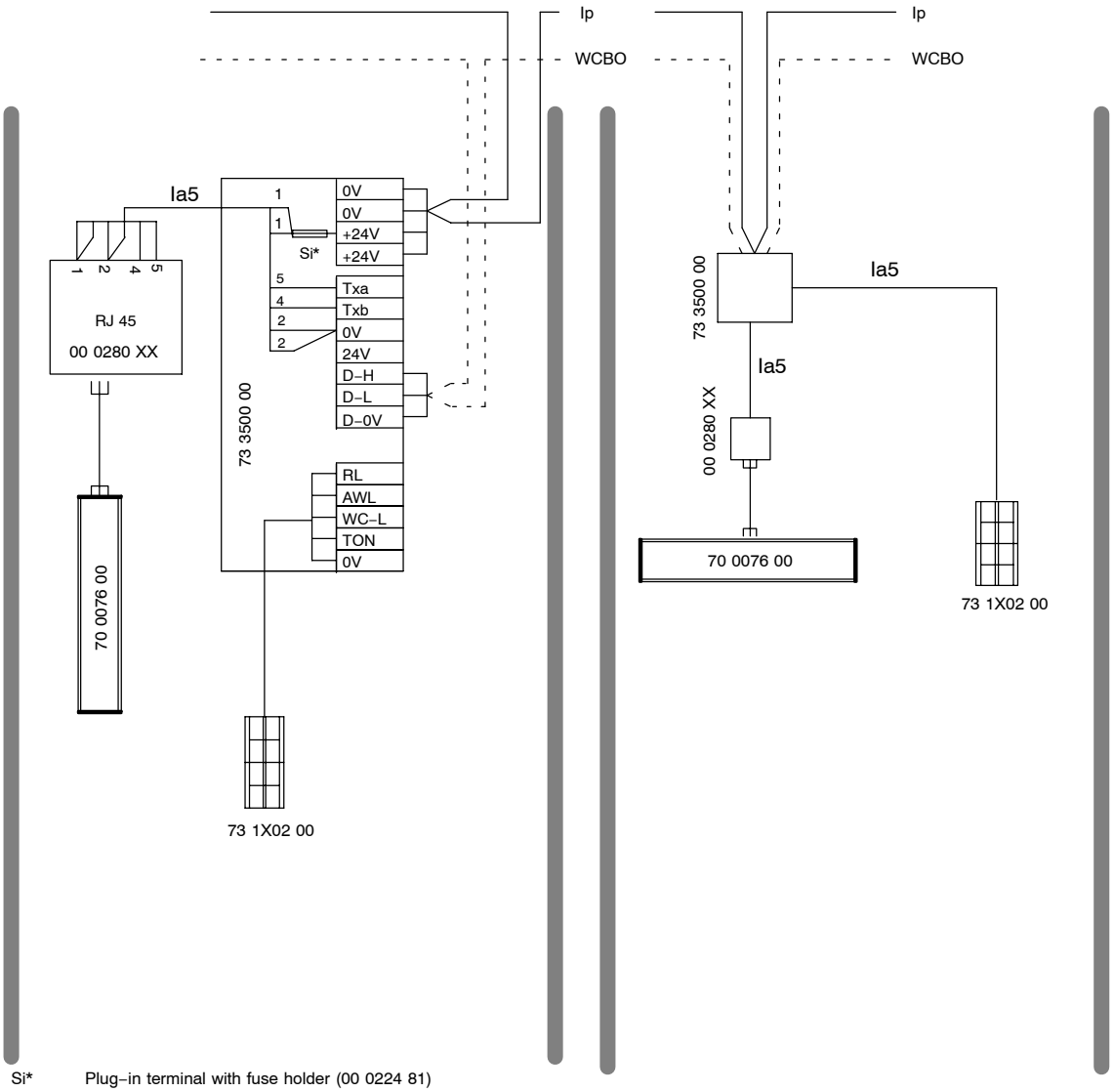
EccoLine L200 only

4-bed room





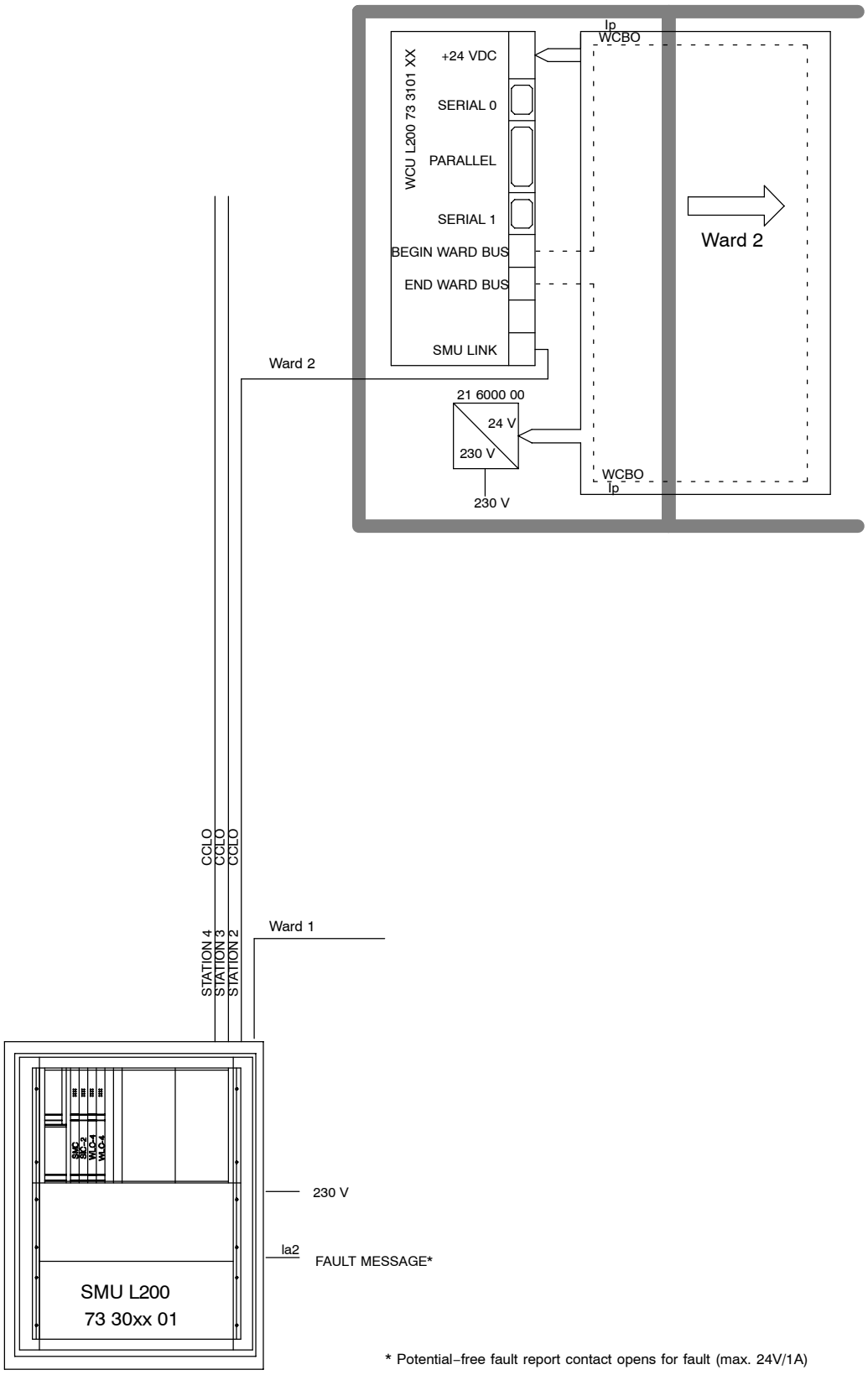
Group signal lamp and corridor display Alpha 11



Si* Plug–in terminal with fuse holder (00 0224 81)
Fuse 2 AT (00 0130 30)

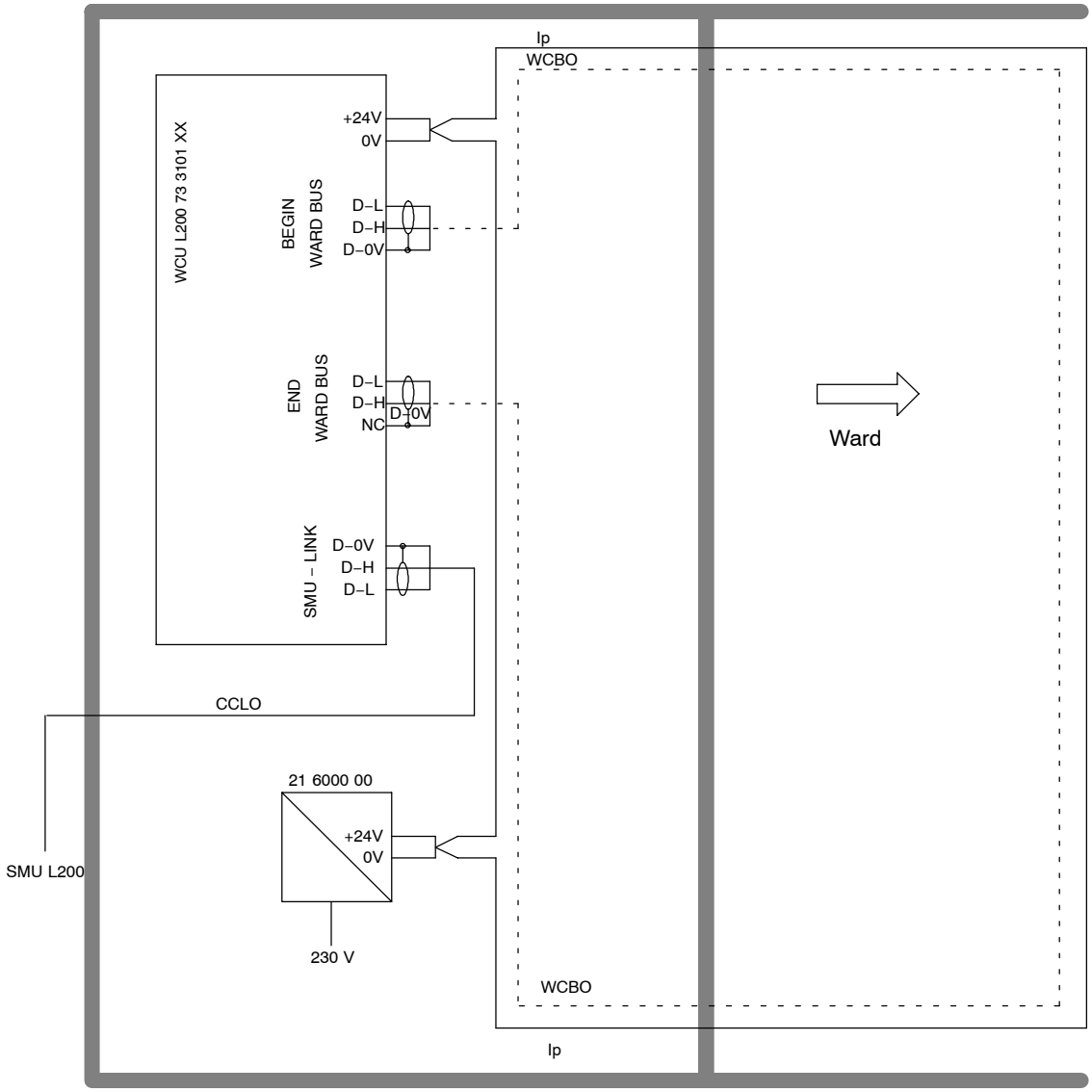
EccoLine L200 only

SMU L200 with WCU L200



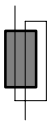
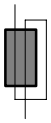
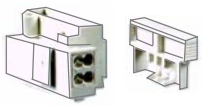
* Potential–free fault report contact opens for fault (max. 24V/1A)

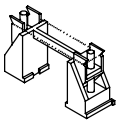
WCU L200


Ip
WCBO
WCU L200 73 3101 XX
+24V
0V
BEGIN
WARD BUS
D–L
D–H
D–0V
END
WARD BUS
D–L
D–H
D–0V
NC
SMU – LINK
D–0V
D–H
D–L
Ward
CCLO
21 6000 00
+24V
0V
SMU L200
230 V
WCBO
Ip

Spare parts

The following table presents a list of frequently used spare parts. Contact Tunstall GmbH any time to request the complete list of spare parts.

Functions	Order No.	
Resistor 100 Ohm	**00 0040 73**	
Terminating resistor 4K7 Only for EccoLine L200.	**00 0041 13**	
Ferrite Ferrite case with latch closure. *Dimensions (HxWxD): 31 x 20 x 22 mm*	**00 0080 64**	
Ferrite Ferrite case with latch closure. *Dimensions (HxWxD): 30 x 28 x 31 mm*	**00 0080 65**	
Fuse 3.15 AT	**00 0130 23**	
Fuse 1A quick–acting	**00 0130 24**	
Connector, 6-pin for WCU-Extended, WCU L200. For connecting of SMU Link, CCS bus, End Ward Bus und Begin Ward Bus.	**00 0211 32**	
Connector, 4-pin for WCU-Extended, WCU L200. For connecting to power supply.	**00 0211 33**	
Plug–in screw terminal with fuse holder	**00 0224 81**	
Mounting tool S LSA-Plus for fitting the strands at the SMU.	**00 0261 52**	

Functions	Order No.	
Overvoltage filter 230 V to protect EccoLine-nurse call components from peak voltages of foreign systems.	**70 0890 97**	
Fixing clamp for attaching the mounting frame for the switches if not screw connection is possible .	**70 0808 00**	
Screw clamp strip, 20-pin connecting strip for nurse call terminals L200 and terminals L200. *Dimensions (HxWxD): 10 x 70 x 9 mm*	**S2204298**	

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Cable key

Identification	Designation	Cable type
CCL	Central Communication Link (cable between SMU and WCU-Extended) *EccoLine with speech*	2x IY(ST)Y 2x2x0,8
CCL0	Central Communication Link (cable between SMU L200 and WCU L200) *EccoLine L200*	IY(ST)Y 2x2x0,8
Ia	General cables	IY(ST)Y 2x2x0,8 or IY(ST)Y 2x2x0,6
Ia2	General cables	IY(ST)Y 2x2x0,6
Ia3	General cables	IY(ST)Y 3x2x0,6
Ia4	General cables	IY(ST)Y 4x2x0,6
Ia5	General cables	IY(ST)Y 4x2x0,8
Ib	CCS bus cable *EccoLine with speech*	2x IY(ST)Y 2x2x0,8
Ie	Entertainment cables	2x IYY per channel or similar cables (for each program 1 two–core cable required)
In	Room Area Network RAN *EccoLine with speech*	IY(ST)Y 2x2x0,8
In1	Data cable *EccoLine L200*	2x IY(ST)Y 2x2x0,8
Ip	Power cable	NYM 2x2,5 mm^2
Is	Speech cable plus network RAN *EccoLine with speech*	2x IY(ST)Y 2x2x0,8
WCB	Ward Control Bus for connecting EccoLine ComStation and universal interfaces *EccoLine with speech*	2x IY(ST)Y 2x2x0,8
WCB0	Ward Control Bus *EccoLine L200*	IY(ST)Y 2x2x0,8

Cable colours:

bl	blue	**rt**	red
br	brown	**sw**	black
ge	yellow	**vio**	violet
gn	green	**ws**	white
gr	grey		
or	orange	**SCH**	sreeen

All the reassurance you need Tunstall

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Facsimile: +49 25 04 / 7 01-499, www.tunstall.de, e-mail: info@tunstall.de

QUALITY MANAGEMENT SYSTEM
DQS–certified according to DIN EN ISO 9001:2000 Reg.–No. 56386
Reg.–No. 56386

Technical Manual, Module: Installation & Commissioning, EccoLine with speech & EccoLine L200, 00 8812 14