# ACM Telephone System

## ACM-M-A-V2

# Table of Contents

# 1 INTRODUCTION

## 1.1 About this Document

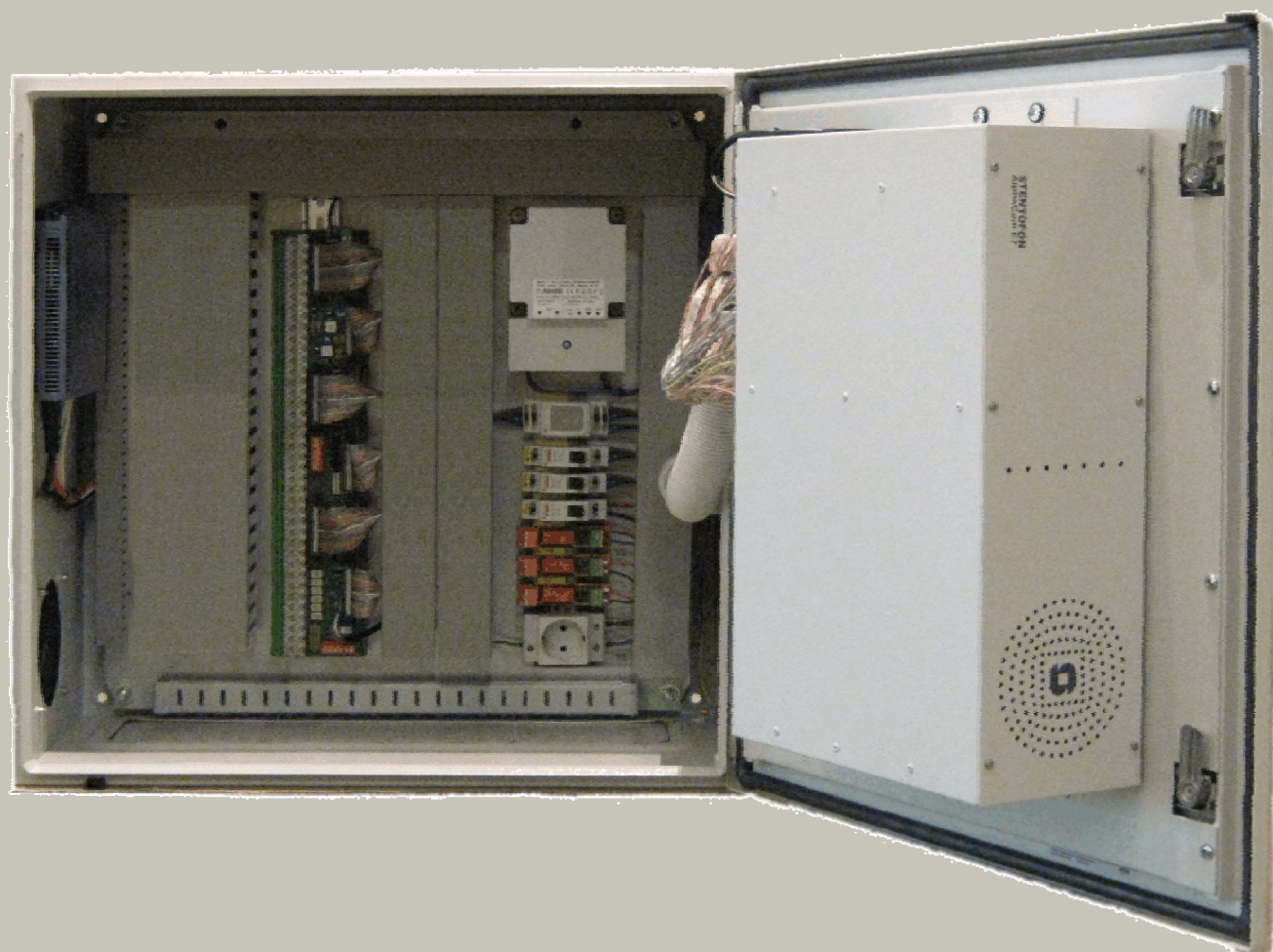The scope of this document is to provide system description for the VINGTOR ACM Telephone System (ACM-M-A-V2).

The document consists of the following main parts:

- System overview
- Installation guide
- Programming guide
- User guide
- Specification
- Programming and Cable Reference List

## 1.2 Revision Information

| Rev. | Date | Prepared | Description |
|------|------|----------|-------------|
| V1.0 | 2009-05-27 | TH/JF | Complete, up to date |
| | | | |
| | | | |

## 1.3 Other ACM Manuals

- A100K10338 – AlphaCom E System Management and Operation
- A100K 10390 - SIP GSM Gateway MV-370
- A100K 10333 - SIP Gateway AudioCodes MP-114/118

## 1.4 DNV Type Approval Regulations

DNV requirement for Internal Communication on ships,
Doc. "Rules for Ships. January 2006 Pt.3 Ch.3 Sec.11"

## 1.5 ACM Test Reports

- NEMKO Technical Report E06067.00 – AlphaCom E – June 2006
- Report no 2000-1366 Type Approval Testing AlphaCom M (ACM M/MP). Tested according to DNV Certification Notes 2.4 – May 1995. Additional test DNV Certification Notes 2.4 draft Dec. 1999

# 2   ACM SYSTEM OVERVEIW

## 2.1  VINGTOR ACM Solutions

The VINGTOR ACM Telephone System (ACM-M-A-V2) is part of the well known VINGTOR ACM solutions. The complete set of ACM system solutions are:

- VINGTOR ACM Analogue Telephone System (ACM-M-A-V2)
- VINGTOR ACM Standard Integrated System
- VINGTOR ACM Advanced Integrated System
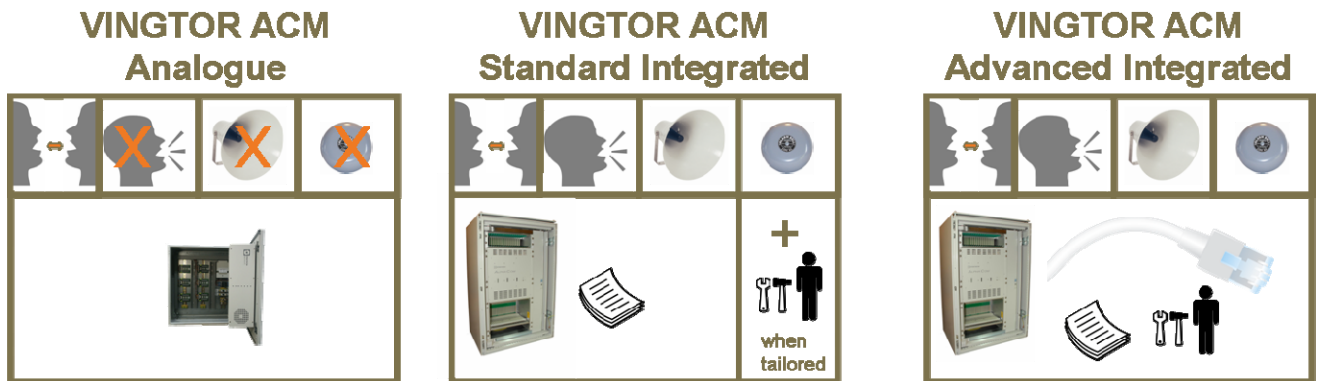


Figure 1   VINGTOR ACM Solutions

Launched ten years ago, the VINGTOR ACM systems provide reliable, robust and proven communication solutions. The ACM systems have continuously been developed and enhanced to take advantage of new technologies.

| | Analogue System | Standard System | Advanced System |
|---|:---:|:---:|:---:|
| **Emergency communication** | | | |
| Two way communication according to marine requirement | x | x | x |
| Talkback according to marine requirement | | x | x |
| VINGTOR integrated public address and general alarm | | x | x |
| Public address interface | x | x | x |
| **Stations** | | | |
| Analogue telephone | x | x | x |
| Traditional intercom | x | x | x |
| IP intercom (telephone + PA/GA units) | | x | x |
| IP DECT cordless telephones | x | x | x |
| IP telephones | x | x | x |
| **Supplementary functions** | | | |
| External communication via Satellite, V-Sat and GSM. | x | x | x |
| Billing administration | x | x | x |
| General PBXs functions | x | x | x |
| Paging system | | | x |
| Structured cabling system (CAT7) for high speed data | | | x |
| Data network (LAN) switches | x | x | x |
| Automatic switchover to emergency power | x | x | x |
| Remote system management over IP | x | x | x |

Table 1 Overview VINGTOR ACM Solutions

The different ACM systems are built around the STENTOFON AlphaCom E intercom exchange. The AlphaCom E is an advanced communication switch designed to meet the growing needs of internal and external communication onboard ships. The exchange features advanced functions such as 1-BIT audio technology (18.5 kHz audio), IP, Web services, and a wide range of integration options to mention a few.

The AlphaCom E is a modular platform, supporting IP- as well as analogue telephones and networking. This modularity and flexibility is used to package the product in different system packages. These system packages satisfy the needs for all kinds of vessels from small conventional vessels to large advanced ships.

## 2.2 ACM Telephone System

The VINGTOR ACM Telephone System (ACM-M-A-V2) is a PABX made for marine environment. The system has an extensive and programmable set of features supporting all key PABX functions. The main capabilities of the system are:

- Designed for two way emergency communication according to marine regulations

- Support remote management and maintenance using IP and Web technologies

- Support public address (PA) calls via interface to PA systems

- Support external communication

- Support VINGTOR Billing system

- Support redundant power input with auto switchover between AC and DC input
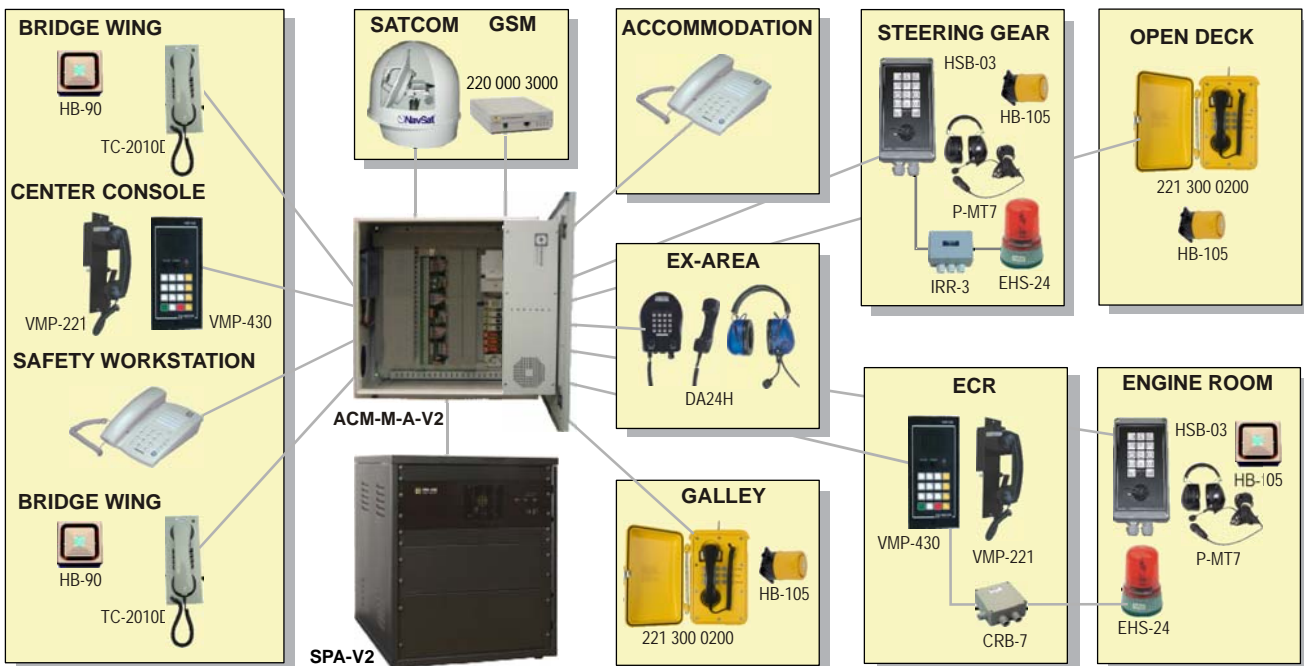


*Figure 2    ACM system example*

## 2.3 ACM System Architecture

### 2.3.1 System rack

The VINGTOR ACM Telephone system rack is built around the STENTOFON AlphaCom E7 Intercom exchange.

In addition to the intercom exchange the system rack consists of:

- Steel cabinet
- Distribution panel to connect field equipment
- Electrical power unit

The following options can be provided in the system rack:

- Analogue telephone gateway with 2-8 trunks
- VINGTOR Billing System

### *Steel cabinet*

All central equipment in the VINGTOR ACM Telephone system is mounted in a 600W x 600H x 350D (mm) steel cabinet.

The cabinet weights approximately 45 kg when the AlphaCom E7 and the other central equipment are mounted.

### *STENTOFON AlphaCom E7*

The STENTOFON AlphaCom E7 intercom exchange is the heart of the ACM-M-A-V2 rack. The exchange manages all telephones, intercoms and devices connected to the ACM-M-A-V2 rack and supports a wide range of PABX and emergency communication features.

The exchange has 7 slot positions for feature cards. In an ACM-M-A-V2 rack the AlphaCom E7 is equipped with one main processor board (AMC-IP), 1 ASLT line board for 5 intercom stations and PA interface, and up to 5 subscriber line boards (ATLB12) for analogue telephones. Each ATLB12 line board supports 12 analogue subscriber lines.

The power supply in an AlphaCom E7 provides inputs for 24 VAC working power and 24 VDC emergency power. It is an automatic switchover between the power supplies in case of power failure.

The 24 VAC input is connected to 230 VAC mains via a transformer built into the cabinet.

The software for managing the system and database for the specific installation is ready installed according to customer's specification. The parameters can easily be modified at any time if needed.

## 2.3.2 Field equipment

Zenitel provides the following analogue telephone sets for the ACM-M-A-V2

| TYPE | ORDER No. |
|---|---|
| DT-800M Desktop Analogue Telephone | 221 200 0100 |
| Console Telephone | TC-2010D |
| Heavy Duty Analogue Telephone | 221 300 0100 |
| Heavy Duty Analogue Telephone, Door | 221 300 0200 |
| Portable Telephone | P-290 |
| Telephone, EX-proof zone 1 | DA24 |
| Telephone with headset, EX-proof zone 1 | DA24H |

Any traditional STENTOFON intercom station may be connected to the 5 intercom line points.

In addition to intercom and telephone sets, signal and relay units can be connected to the system rack.

| TYPE | ORDER No. |
|---|---|
| Relay box for Signal Unit, Watertight | CRB-7 / CRB-7 (EX) |
| Relay box for Signal Unit, Watertight | IRR-3 |
| Telephone Tone Caller, indoor | HB-90 |
| Telephone Tone, Watertight | HB-105 |

Other optional equipment related to ACM-M-A-V2

| TYPE | ORDER No. |
|---|---|
| Billing, 2, 4, 8, 16 or 32 external trunks | 100 9647 902 - 932 |
| Analogue Media Gateway -4FXO | MP-114/A |
| Analogue Media Gateway -8FXO | MP-118/A |
| GSM Media Gateway | 220 0003 000 |
| Data Switch, 4 ports | 115 4002 100 |

# 3  HW INSTALLATION GUIDE
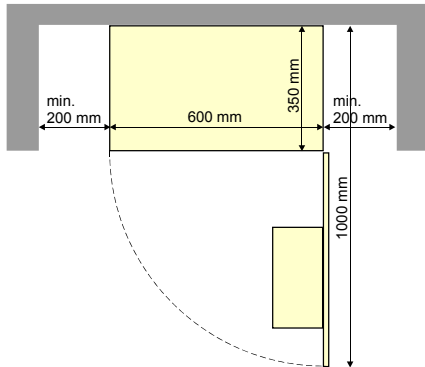
## 3.1  System Rack Mounting



*Figure 3   Mounting rack*

The ACM-M-A-V2 system rack is made for wall mounting. Mount the cabinet at a convenient height, bottom about 1.2 m above the floor.

Make sure there is enough space around the rack for connection and servicing.

- Rack Temperature:   Recommended:  +18°C to +25°C
                       Extreme:       0°C to +55°C

- Max. humidity:      >95% RH @ 25°C / 93% RH @ 55°C

- Compass safety:     Distance to ACM-rack:       325 cm
                       Distance to telephones:      95 cm

## 3.2  Insert Feature Boards



*Figure 4    Card positions in the AlphaCom E7 exchange*

Open the front cover of the AlphaCom E7 exchange using a Philips screwdriver.

The AMC-IP board is inserted in slot position 7. This is the rightmost slot position.

The ASLT intercom/PA audio board is inserted in slot pos 2.

The ATLB12 subscriber line boards are inserted in slot positions 1 and 3 for the smallest exchange. Slot pos. 4-6 are used for additional lines.

A fully equipped exchange can support up to 60 analogue telephones and 6 VMP intercom stations.

The exchange is ready equipped according to customer's order:

| | | | |
|---|---|---|---|
| ACM-M-A24 | 2 x ATLB12 | max 24 telephones | pos 1+3 |
| ACM-M-A36 | 3 x ATLB12 | max 36 telephones | pos 1+3-4 |
| ACM-M-A48 | 4 x ATLB12 | max 48 telephones | pos 1+3-5 |
| ACM-M-A60 | 5 x ATLB12 | max 60 telephones | pos 1+3-6 |

## 3.3  Connection terminals
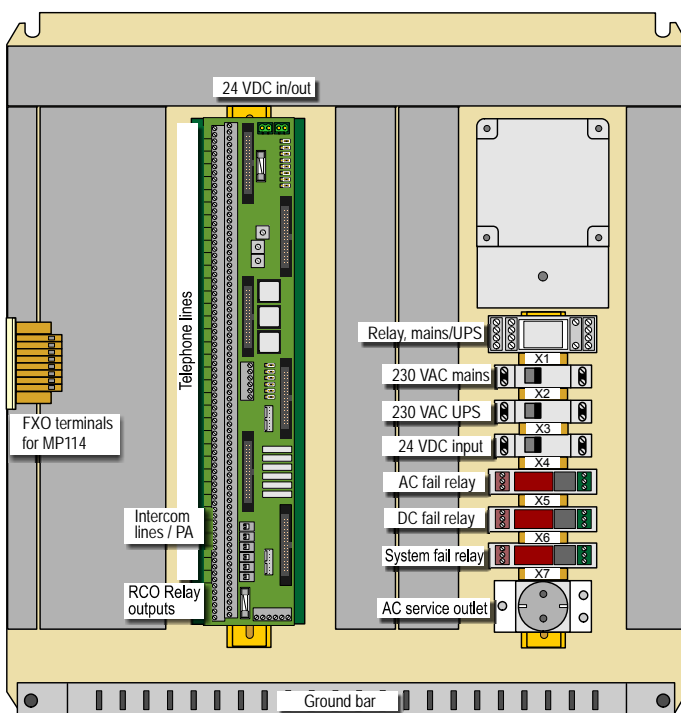


Connectors and terminals for power and external equipment are accessible in the rear of the ACM-M-A-V2 cabinet. To access the connectors, open the cabinet door and swing out the AlphaCom E7 exchange.

Cable inlets are in the bottom of the cabinet and there is a cable fastening bar in the lower part. All internal cabling is ready made from the factory and routed in cable conducts.

The ACM-M-A-V2 system is shipped with an ACM Programming and Cable Reference list. This list shows how the external wiring shall be connected to the different terminal blocks. See section 4 for example.

*Figure 5    External connectors and terminals*

## 3.4 Power Supply



*Figure 6    Power connection*
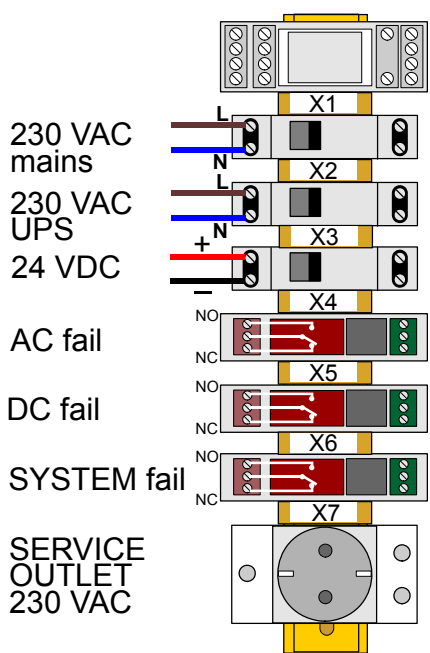
The ACM-M-A-V2 is powered from 230 VAC mains with automatic switchover to 230 VAC UPS or 24 VDC emergency power.

All internal power cabling is ready made from the factory and routed in cable conducts.

- Connect 230 VAC mains to L and N terminals on the X1 circuit breaker
- Connect mains earth to the ground bar
- Connect 230 VAC UPS power to L and N terminals on the X2 circuit breaker if this backup power is used
- Connect 24 VDC emergency power to the + and - terminals on the X3 circuit breaker if this backup power is used

The ACM-M-A-V2 rack will consume max. 150 Watts. The 230 V power cable must have a minimum dimension of 1.5 mm$^2$, and the 24 V cable should be 2.5 mm$^2$.

The 230 VAC mains outlet X7 is used for service purposes.

See section 9 for schematic on internal wiring.

### 3.4.1 Power failure

Three power fail relays are included to indicate type of failure. Each relay has a NO/NC switch-over contact to indicate Power good/fail. Note that the relays are activated when the actual power is OK, which means that the NO contact is closed and NC is open in normal condition.

- X4 is released if the 230 VAC power disappear (mains and UPS)
- X5 is released if the 24 VDC emergency power disappear
- X6 is released if the 24 VDC output power from AMC-E7 disappear

## 3.5 Line Connection Module (LCM)

All line connections are made to the Line Connection Module board. This board substitutes the former 6 x Line Termination boards.

This module also substitute the Power Distribution board, VA-502 Relay Unit board with 6 RCO relays and VA-503 Filter and Speech Adapter board with 2 audio outputs, 1 audio input and PTT relay if these functions are used.

The module has connectors for:

- *24 VDC Power*
  - Input
  - Output (not used)
  - 3 x 1 A fused output (not used)
  - 6 x relay controlled RCO outputs, 1 A common fuse
- *Linepoints*
  - Max. 60 analogue telephone lines with 5 x ATLB12 boards
  - Max. 5 4-wire intercom stations
- *RCO*
  - 1 x relay contact for PA control
  - 5 x relay contacts, potential free or +24 V (switch selection)
- *RCI (Needs APC board, not used in ACM-M-A-V2)*
  - 6 x inputs
- *PA/GA or radio input (Needs APC board, not used in ACM-M-A-V2)*
  - 6 x potential free 600 ohm, 0 dB lines
- *Radio/Walkie-Talkie interface (Needs APC board, not used in ACM-M-A-V2)*
  - Potential free adjustable audio in and out
  - RCO relay can be used for PTT control
- *PA audio output*
  - Audio output for PA with possibility for monitor intercom station in parallel



*Figure 7    Line Control Module*

## 3.5.1 Subscriber lines

The line board terminals are available at the E7 back plane. The line points are routed to the LCM through six 17-pair flat cables with six 4-pole plug-in screw terminals at the exchange end and a 34-pole connector at the LCM end.

The subscriber lines are connected to corresponding terminals on the Line Connection Module board.

All terminals are marked, starting at 1A, 1B, 1C and 1D. The telephone line pairs are connected to A/B and C/D up to 36C/D if all lines are used.

Each ATLB12 Subscriber Line Board serves 12 telephones

Pos. 1: Dir. no. 101 – 112    connect to 1A/B – 6C/D
Pos. 3: Dir. no. 119 – 130    connect to 13A/B – 18C/D
Pos. 4: Dir. no. 131 – 142    connect to 19A/B – 24C/D
Pos. 5: Dir. no. 143 – 154    connect to 25A/B – 30C/D
Pos. 6: Dir. no. 155 – 166    connect to 31A/B – 36C/D

ASLT board in pos. 2 serves PA audio + 5 intercom stations

Pos. 2: Dir. no. 113 – 118    connect to 7A/B/C/D – 12A/B/C/D
Pos. 2: Dir. no. 114          PA audio monitor, connect to 8A/B/C/D

The subscriber line cable must be an approved ship cable type with 0.5 mm² twisted pairs and an outer braided tinned copper screen. The screen must be interconnected in junction boxes and grounded to a common ground point in the ACM-M-A-V2 system rack only.
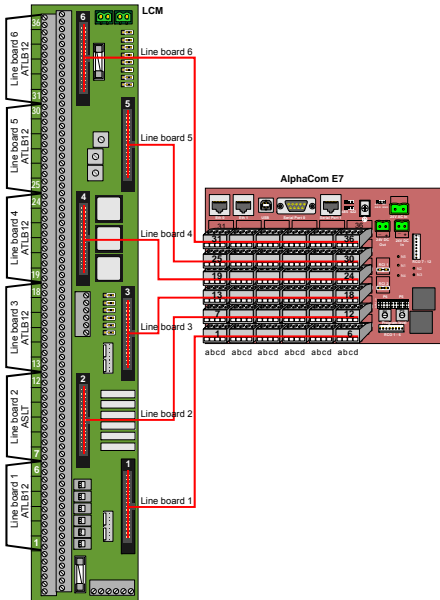


*Figure 8    Subscriber line interface*
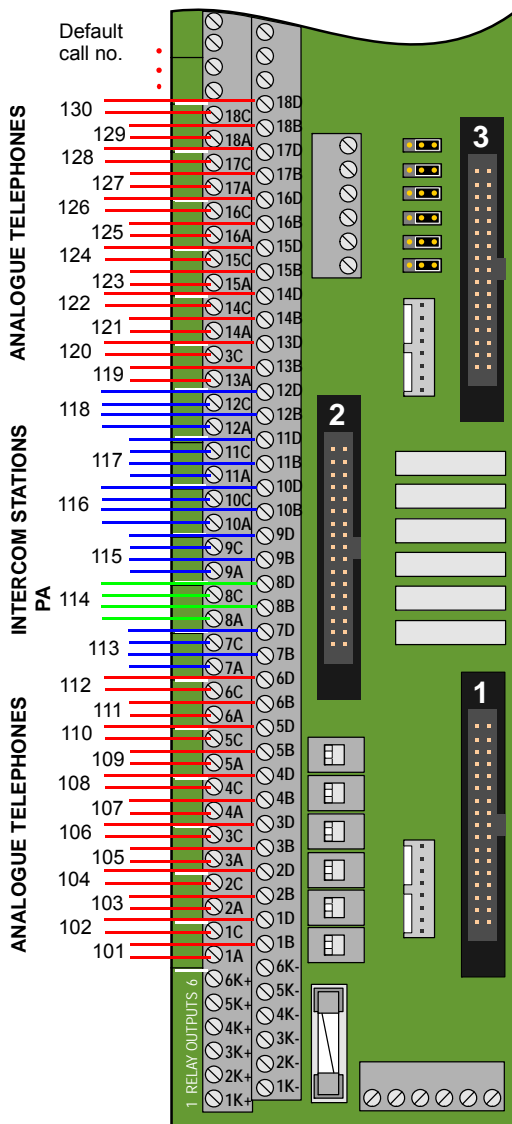


*Figure 9    Subscriber line connection*

### Physical numbers

| Line Board 1 Telephones | | | Line Board 2 Intercom | | | Line Board 3 Telephones | | |
|---|---|---|---|---|---|---|---|---|
| Term. No. | Dir. No. | Phys No. | Term. No. | Dir No. | Phys No. | Term. No. | Dir. No. | Phys No. |
| 1A/B | 101 | 1 | 7A/B/C/D | 113 | 7 | 13A/B | 119 | 13 |
| 1C/D | 102 | 2 | | | | 13C/D | 120 | 14 |
| 2A/B | 103 | 3 | 8A/B/C/D | 114 | 8 | 14A/B | 121 | 15 |
| 2C/D | 104 | 4 | | | | 14C/D | 122 | 16 |
| 3A/B | 105 | 5 | 9A/B/C/D | 115 | 9 | 15A/B | 123 | 17 |
| 3C/D | 106 | 6 | | | | 15C/D | 124 | 18 |
| 4A/B | 107 | 277 | 10A/B/C/D | 116 | 10 | 16A/B | 125 | 289 |
| 4C/D | 108 | 278 | | | | 16C/D | 126 | 290 |
| 5A/B | 109 | 279 | 11A/B/C/D | 117 | 11 | 17A/B | 127 | 291 |
| 5C/D | 110 | 280 | | | | 17C/D | 128 | 292 |
| 6A/B | 111 | 281 | 12A/B/C/D | 118 | 12 | 18A/B | 129 | 293 |
| 6C/D | 112 | 282 | | | | 18C/D | 130 | 294 |
| Line Board 4 Telephones | | | Line Board 5 Telephones | | | Line Board 6 Telephones | | |
| Term. No. | Dir. No. | Phys No. | Term. No. | Dir. No. | Phys No. | Term. No. | Dir. No. | Phys No. |
| 19A/B | 131 | 19 | 25A/B | 143 | 25 | 31A/B | 155 | 31 |
| 19C/D | 132 | 20 | 25C/D | 144 | 26 | 31C/D | 156 | 32 |
| 20A/B | 133 | 21 | 26A/B | 145 | 27 | 32A/B | 157 | 33 |
| 20C/D | 134 | 22 | 26C/D | 146 | 28 | 32C/D | 158 | 34 |
| 21A/B | 135 | 23 | 27A/B | 147 | 29 | 33A/B | 159 | 35 |
| 21C/D | 136 | 24 | 27C/D | 148 | 30 | 33C/D | 160 | 36 |
| 22A/B | 137 | 295 | 28A/B | 149 | 301 | 34A/B | 161 | 307 |
| 22C/D | 138 | 296 | 28C/D | 150 | 302 | 34C/D | 162 | 308 |
| 23A/B | 139 | 297 | 29A/B | 151 | 303 | 35A/B | 163 | 309 |
| 23C/D | 140 | 298 | 29C/D | 152 | 304 | 35C/D | 164 | 310 |
| 24A/B | 141 | 299 | 30A/B | 153 | 304 | 36A/B | 165 | 311 |
| 24C/D | 142 | 300 | 30C/D | 154 | 306 | 36C/D | 166 | 312 |

*Table 2    Physical numbers*

## 3.6 RCO

There are outputs from 6 RCO relays which can be programmed to operate external features like extra signal devices in noisy areas.

The RCO signals are taken from Line Board 1. There is a separate 8 wire cable between the '*RCO1-6*' connector on the E7 exchange backplane and the '*RCO – Line Card 1*' connector J10 on the LCM.

The outputs are individually selected to be a potential free relay dry contact or +24 V. The selection is made by the switches S1 – S6. S1 is related to RCO1 and so on.

The devices are connected to the RELAY OUTPUT terminals marked 1K+/1K- to 6K+/6K-.

RCO 1 on 1K is reserved for PA activation. Switch S1 must be in *Poten.Free* position.

The relay contacts are rated to max. 5 A / 30 VDC or 250 VAC res. load. The internal +24 V is protected by a 1 A slow fuse F2.

It is possible to use six additional RCOs by connecting a MRBD relay board to the RIO 7-12 connector on the ACM-E7 board. (The *RCO Line Card 2* connector on the LCM board can not be used!)

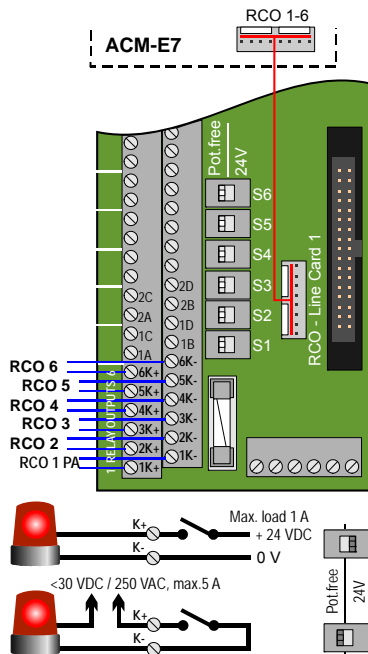All RCO functions are programmed in AlphaPro.

*Figure 10   RCO connection*

## 3.7 PA Connection

The description below refers to SPA-V2 public address system. See SPA manual A100K 10369 for further details. Other amplifiers may be connected in similar way. The line input should be balanced, accepting 0.5 -1.5 Vrms (0dB) signal over 47 Kohm.

The second intercom subscriber line on line board 2 (directory no. 114) is used as audio interface to the PA amplifier. The audio out from this line can be routed through a filter and volume control to plug J15, *Audio Out2* by setting jumper S18 to ON.

It is possible to connect an intercom station to the same line (line connection point 8) for use as a PA announcement monitor.

*NOTE!      Do NOT connect an amplifier to line point 8A/B as the 40 kHz signal carrier may seriously damage the equipment!*

SPA-V2 does not have any dedicated input for ACM/AlphaCom audio. Several solutions are possible where two alternatives are normally used.

**Alternative 1** – connect to X11, *PABX* (or X12, *PABX with recall* if X11 is already used).

- Used when ACM shall have lower priority than microphones.
- Preferred solution for analogue ACM exchanges with one-way audio announcements (AMC-M-A).

**Alternative 2** – connect to X7, *Talk-Back*.

- Normally not suited for ACM-M-A-V2 unless if ACM must have highest priority.
- Preferred solution for digital ACM exchanges with two-way audio.

### 3.7.1  PA amplifier with chime, without monitor

● Connect a screened, twisted pair cable between pins 2/3 on terminal J15, *'Out2 Audio'* on the LCM unit and pins 1/2 on terminal X11, (X12) on the SPA-TERM board which is connected to the CALL input in the PA amplifier. Connect the cable screen to system ground.

● Connect cables between terminals 1K+/1K- on the LCM unit and pin 3/4 on terminal X11 (X12) on the SPA-TERM board which is connected to the PRIORITY terminal in the PA amplifier. This will establish a chime signal in front of a call. The CHIME switch in the PA amp. must be *ON*.

*Figure 11   PA interface connection*

● Set switch S18 to *ON* to activate the audio filter
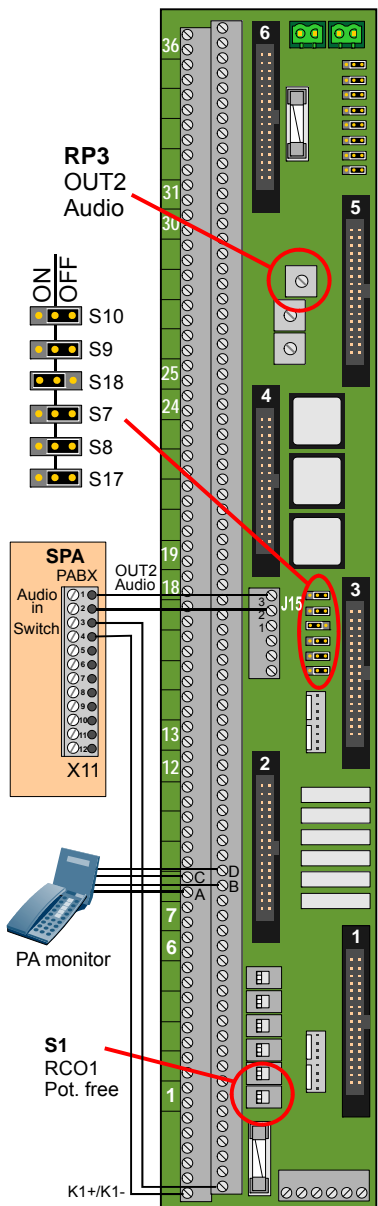
- Set switch S9 to *ON* to simulate audio-out load when monitor station is missing

- Set switch S10 to *ON* to simulate audio-in load when monitor station is missing

- Leave switches S7, S8 and S17 *OFF*.

- Set volume control RP3, *OUT2*, to mid pos. **This must be readjusted to 1±0.5 Vrms during live test**

- Set switch S1 in *Potent. Free* position for chime activation.

### 3.7.2 Intercom station as PA monitor

- Connect the PA amplifier and chime relay as described above.

- Connect an intercom station to line point 8A/B/C/D

- Set switch S18 to *ON* to activate the audio filter

- Leave all other switches *OFF*

| PA on OUT2 Audio | STATION | CONNECT TO | S9 | S10 | S18 |
|---|---|---|---|---|---|
| NO | Normal | 8A/B/C/D | NA | OFF | OFF |
| YES | NO | - | ON | ON | ON |
| YES | PA Monitor | 8A/B/C/D | OFF | OFF | ON |

See section 6.6 for PA programming.

## 3.8 External Communication
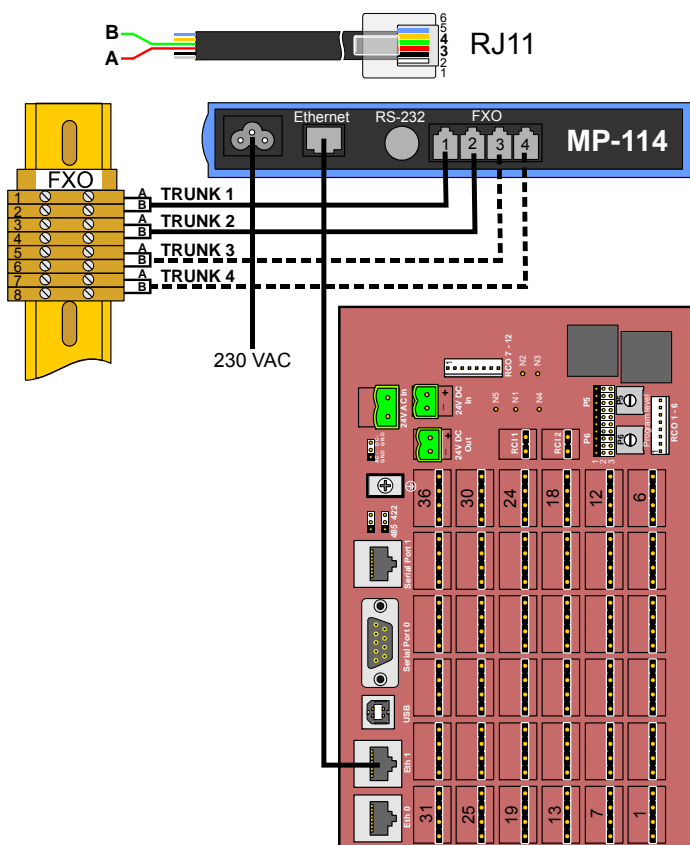


An optional Analogue Telephone Gateway MP-114 provides external communication towards the satellite communication system using 2 or 4 analogue trunks. Optionally, MP-118 provides up to 8 trunks.

The gateway and screw terminal block are mounted on the left side wall inside the cabinet.

The Ethernet 1 output on the exchange backplane is connected to the Ethernet input on the gateway.

A and B wires on pin 3 and 4 in the RJ11 FXO outputs are connected to the FXO screw terminal block.

The Gateway and LAN interface are ready mounted and wired from the factory if included in the customer's order.

Connect the analogue trunks to terminals FXO 1-8

See the SIP Gateway Configuration Manual A100K 10333 for further description of AudioCodes MP114/118.

*Figure 12  Wiring of Analogue Telephone Gateway*

# 4 PROGRAMMING AND CABLE REFERENCE LIST

The ACM-M-A-V2 programming and cable reference list consists of a set of tables summarizing the main information needed to program an ACM-M-A-V2 exchange for a vessel.

The standard programming is documented in a Microsoft Excel Spreadsheet. This sheet should be modified by the customer in accordance with his needs. This information is then used by the supplier to perform the programming of the ACM-M-A-V2 exchange.

The exchange is delivered ready programmed, but may be modified by the customer later on by use of AlphaPro and AlphaWeb programming tools.

## 4.1 Station and User Information

| STATION AND USER INFORMATION | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Programming | | | | | Terminal connections | | | | | | Additionals | | Board |
| Dir. No: | Phys No: | Group member-ship | Group Access Level | COS Priority | Display text (Max 12 characters) | Station type: | LCM | A | B | C | D | RCO | Information | Ext field equipment | Pos: |
| 101 | 1 | 1 | 2 | 5 | Wheelhouse | TC1020 | 1 | 1 | 1 | | | 1K+, 1K- | Member ringing group 6701 | | 1 |
| 102 | 2 | 1 | 2 | 5 | Wheelhouse | TC1020 | 1 | | | 1 | 1 | 2K+, 2K- | Member ringing group 6701 | | 1 |
| 103 | 3 | 1 | 0 | 1 | Station 3 | - | 1 | 2 | 2 | | | 3K+, 3K- | | | 1 |
| 104 | 4 | 1 | 0 | 1 | Station 4 | - | 1 | | | 2 | 2 | 4K+, 4K- | | | 1 |
| 105 | 5 | 1 | 2 | 4 | Captain Day | TC1020 | 1 | 3 | 3 | | | 5K+, 5K- | Parallel ringing 1 | | 1 |
| 106 | 6 | 1 | 2 | 4 | Captain Bed | DT-800M | 1 | | | 3 | 3 | 6K+, 6K- | Parallel ringing 1 | | 1 |
| 107 | 277 | 1 | 2 | 3 | Chief Eng.Day | HSB03 | 1 | 4 | 4 | | | | Parallel ringing 2 | | 1 |
| 108 | 278 | 1 | 2 | 3 | Chief Eng.Bed | DT-800M | 1 | | | 4 | 4 | | Parallel ringing 2 | | 1 |
| 109 | 279 | 1 | 0 | 1 | Messroom | TC1020 | 1 | 5 | 5 | | | | Member ringing group 6701 | | 1 |
| 110 | 280 | 1 | 0 | 1 | Hospital | DT-800M | 1 | | | 5 | 5 | | | | 1 |
| 111 | 281 | 1 | 0 | 1 | Station 11 | - | 1 | 6 | 6 | | | | | | 1 |
| 112 | 282 | 1 | 0 | 1 | Station 12 | - | 1 | | | 6 | 6 | | | | 1 |
| 113 | 7 | 1 | 0 | 1 | Station 13 | - | 1 | 7 | 7 | 7 | 7 | | Intercom station | | 2 |
| 114 | 8 | 1 | 0 | 1 | PA monitor | VMP-619 | 1 | 8 | 8 | 8 | 8 | | PA monitor station | | 2 |
| 115 | 9 | 1 | 0 | 1 | Station 15 | - | 1 | 9 | 9 | 9 | 9 | | Intercom station | | 2 |
| 116 | 10 | 1 | 0 | 1 | Station 16 | - | 1 | 10 | 10 | 10 | 10 | | Intercom station | | 2 |
| 117 | 11 | 1 | 0 | 1 | Station 17 | - | 1 | 11 | 11 | 11 | 11 | | Intercom station | | 2 |
| 118 | 12 | 1 | 0 | 1 | Station 18 | - | 1 | 12 | 12 | 12 | 12 | | Intercom station | | 2 |
| 119 | 13 | 1 | 0 | 1 | Station 19 | - | 1 | 13 | 13 | | | | | | 3 |
| 120 | 14 | 1 | 0 | 1 | Station 20 | - | 1 | | | 13 | 13 | | | | 3 |
| 121 | 15 | 1 | 0 | 1 | Station 21 | - | 1 | 14 | 14 | | | | | | 3 |
| 122 | 16 | 1 | 0 | 1 | Station 22 | - | 1 | | | 14 | 14 | | | | 3 |
| 123 | 17 | 1 | 0 | 1 | Station 23 | - | 1 | 15 | 15 | | | | | | 3 |
| 124 | 18 | 1 | 0 | 1 | Station 24 | - | 1 | | | 15 | 15 | | | | 3 |
| 125 | 289 | 1 | 0 | 1 | Station 25 | - | 1 | 16 | 16 | | | | | | 3 |
| 126 | 290 | 1 | 0 | 1 | Station 26 | - | 1 | | | 16 | 16 | | | | 3 |

*Table 3    Station and user information example*

### 4.1.1 Station info

- **Directory Number**
  - The number to dial to reach the station.
  The default is successive 3-digit numbers from 101 to 166

- **Physical Number**
  - All stations are identified by the exchange with its physical number. The first 6 lines on the ASLT12 cards are numbered 1, 2, 3 and so on up to 36, while the last 6 lines are numbered 277 to 312. See section 3.5.1 for list of physical numbers.

- **Display Text**
  - The station ID text shown in the called station's display. Even if the telephones or intercom stations do not have a display, this text must be entered as the info is used for other identification like logging, billing and DECT display. The default text should normally be substituted by the station location or the subscriber's name. The max. number of characters is 16 including the station directory number.

- **Station Type**
  - Used to define the type of station e.g. DT-800M or TC1020D

### 4.1.2 Programming

● **Group membership**
  - A station may be member of several groups.
By default all stations are member of Group 1. Group 1 defines all stations that shall receive emergency PA announcements.

*Note! Analogue telephones will receive the PA announcement only if they are in a conversation.*

● **Group Access Level**
  - Used to specify which group and PA calls a user may perform.
Each group used for group and PA calls will have an associated *'Group Access Level'*. The levels are:

*low (=0), medium(=1) and high(=2).*

The user must have a higher or the same group access level.

By default the group used for emergency PA announcement is programmed as *group 1* with group access level *high*. Only users with group access level *high* can make an emergency PA announcement.

● **Class of Service (COS)**
  - Determines which system features the station can activate.
There are 16 different classes available and each can be freely programmed. A station (analogue telephone) can only have one defined COS.

An ACM solution is usually programmed with the following available Classes of Service:

  - COS 1      Regular stations in the system
  - COS 2      Notify busy station
  - COS 3      Override of absent or private feature
  - COS 4      Busy override
  - COS 5      Override of busy, absent and private
  - COS 16     Includes all services. Default for SuperUser

### 4.1.3 Terminal connections

● **LCM**
  - The LCM module number.
ACM-M-A-V2 has only one module. Large exchanges (ACM-48, ACM-144) may have more than 60 subscribers and need for two or more modules.

● **Station terminal number**
The A,B,C and D wires are the 4 wires used towards stations.

  - An intercom station uses all 4 wires.
  - Analogue telephones use 2 wires, either the A/B or C/D wires.

● **RCO**
  - These are programmable relay outputs linked to the associated ACM physical numbers. (The first 6 on line board 1).
The RCOs are used to signal to external PA system and signal units.

### 4.1.4 Additionals

● **Information**
Each station may have the following additional functions:

  - **Members of a ringing group**. A ringing group is a group of stations that will receive external calls in parallel. Calls to a ringing group will have distinct ringing.
  - **Parallel ringing.** Stations that are set up belonging to same parallel ringing will ring in parallel. Up to 10 stations can be in parallel ringing.

● **Ext field equipment**
  - Field equipment is unit types that are installed in parallel on the line to the telephone set, for instance an IRR-3 relay boxes.

● **Board pos.**
  - Line board position in the AlphaCom exchange.

## 4.2 Integrated PA Interface

By default the system is programmed to support emergency PA announcements (ALL CALL) initiated from analogue telephones with group access level = 2.

| INTEGRATED PA INTERFACE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Signal direction | Type | LCM | A | B | C | D | RCO | Terminal | Info |
| ACM to SPA | Audio 0dB | 1 | 8 | 8 | | | | LCM, J15, OUT2 Audio | 8A/B for PA monitor |
| ACM to SPA | PA - ALL CALL | | | | | | RCO1 | LCM, 1K+,1K- | S1 = Poten. free |

*Table 4      Integrated PA interface example*

PA ALL CALL is accessed by dir.no. 84. The call is configured with group access level 2 (high). Only subscribers with access level 2 can make PA ALL CALL.

- **Signal direction**
  - The system initiating the PA call.

- **Type**

Type of signal on the interface. The different types are:

  - Audio
  - Normal call to a zone
  - Emergency call to all stations and speakers
  - Digital I/O
  - Mute relay (used to signal 'mute' to external systems such as sirens).

- **RCO**
  - Indicates the station associated with the remote control output.

- **Terminal**
  - Specifies the ACM terminal block where the signal is connected.

## 4.3 IP Configuration

This table shows the IP configuration for the different components in the ACM rack if applicable.

| IP CONFIGURATION | | | | |
|---|---|---|---|---|
| Equipment | Port # | Note | IP address | Mask |
| ACM | Eth0 | Master node | 169.254.1.5 | 255.255.255.0 |
| ACM | Eth1 | Master node | 10.1.0.10 | 255.255.255.0 |
| Data switch | - | | 10.1.0.50 | 255.255.255.0 |
| Telephone gateway, MP-11X | - | | 10.1.0.101 | 255.255.255.0 |
| Alarm module | - | | 10.1.0.200 | 255.255.255.0 |
| DECT Server | - | | 10.1.0.201 | 255.255.255.0 |
| DECT BS-1 | - | | 10.1.0.202 | 255.255.255.0 |
| DECT BS-2 | - | | 10.1.0.203 | 255.255.255.0 |
| DECT BS-3 | - | | 10.1.0.204 | 255.255.255.0 |
| DECT BS-x | - | | 10.1.0.204 | 255.255.255.0 |

*Table 5      IP Configuration example*

# 4.4 Trunk Lines

| TRUNK LINES: | | | | | | | FXO Terminal block | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dir. No: | SIP type | | Node | Line | Incoming | Display Text | A | B | | | | Additional functions |
| 001 | FXO | MP-114 | 2 | 1 | 6701 | Trunk 1  Basic | 1 | 2 | | | | |
| 002 | FXO | MP-114 | 2 | 2 | 6701 | Trunk 2  Basic | 3 | 4 | | | | |
| 003 | FXO | MP-114 | 2 | 3 | 101 | Trunk 3  Extra | 5 | 6 | | | | |
| 004 | FXO | MP-114 | 2 | 4 | 101 | Trunk 4  Extra | 7 | 8 | | | | |

*Table 6      Trunk lines example*

- ● **Directory No.**
  - The number to dial to get external trunk line.

- ● **SIP type**
  - The SIP gateway used for the trunk.
    Possible types are MP-114 and MP-118.
  - FXO is the supported analogue telephone interface from the MP gateways.

- ● **Node**
  - The AlphaNet node number used for the SIP gateway. Default is 2.

- ● **Line**
  - The line number for the trunk

- ● **Incoming**
  - The extension the incoming calls on the trunk is placed to.

- ● **Display text**
  - The display text that is shown in the ACM station for incoming calls on the trunk

- ● **Terminal block X6**
  - The physical position used for the trunk on the terminal block

- ● **Additional functions**
  - Add information if incoming calls shall be placed in parallel or sequential order if multiple stations shall receive the incoming call. If calls shall be placed in parallel to stations, these calls must be members of same ringing group.

# 5    PROGRAMMING OVERVIEW

The ACM-M-A-V2 exchange is delivered ready programmed, but may be modified by the customer later on.

The main tools used to program and manage AlphaCom E7 are:

- AlphaPro Professional
- AlphaWeb

### *AlphaPro*

AlphaPro is the professional tool for configuration of the ACM system. It is self contained, simple to install and use. When a new exchange shall be configured, the exchange is given a default working factory setting suited for ACM-M-A-V2. The operator can then modify the settings.

AlphaPro is an off-line tool. This means that it is possible to enter all parameters without the necessity of being connected to the exchange. Once all parameters are entered, AlphaPro can be connected to the exchange and the parameters can be transferred. AlphaPro can also upload configuration information from an exchange. AlphaPro connects to the AlphaCom E7 over an IP network.

### *AlphaWeb*

The AlphaWeb is an embedded web server running on the AlphaCom E7 exchange. It allows the users to log in using a standard web browser such as Internet Explorer or Firefox to operate and manage the AlphaCom system.

## 5.1  AlphaWeb, Getting Started
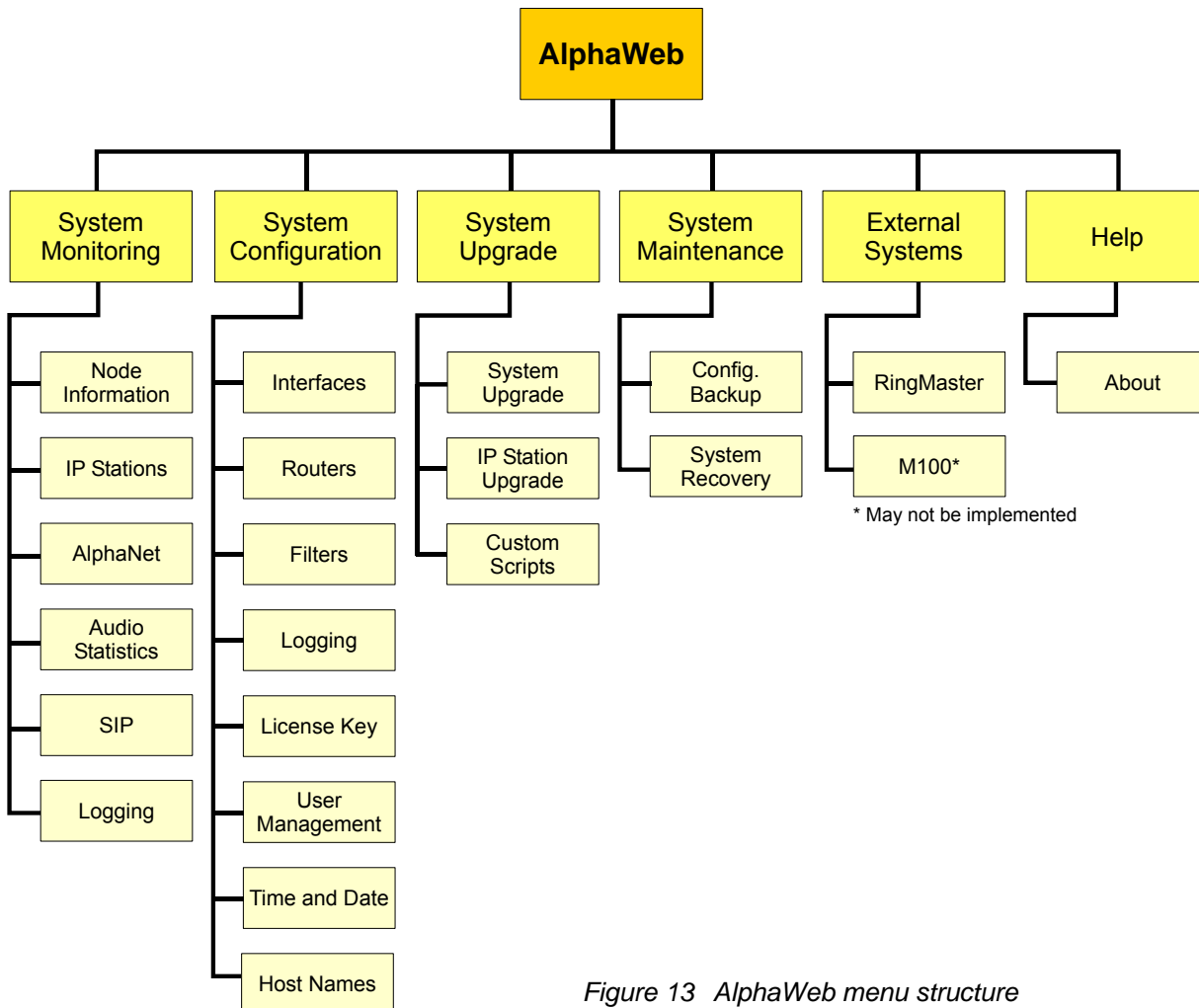


*Figure 13   AlphaWeb menu structure*
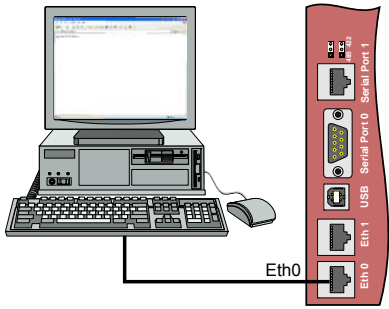
*Figure 14  Connect the PC to Eth0*



*Figure 15  AlphaWeb Login window*

### 5.1.1  Connect to AlphaWeb

● Connect the PC Ethernet port to the LAN port (Eth0) on the ACM-E7 backplane.

● Use your web-browser to connect to the AlphaWeb.
Enter http://169.254.1.5 (default address) in the address field[1]
Connection with the ACM is verified by the text:

● [Login] Secure AlphaWeb (https)
[Login] Unsecure AlphaWeb (http)

● Click on [**Login**] for unsecure (http) unless encrypted access to internet is required for safety reasons

● User is prompted for user name and password
Default user name:       **alpha**
Default password:        **com**

This login will give reading rights only.

● To be able to change the configuration, the user must log in as an administrator. The default login will then be:
User name:       **admin**
Password:        **alphaadmin**

A window with the exchange configuration is shown.

### 5.1.2  Save and apply changes

When new configuration parameters are entered, they should be saved to the configuration file by pressing the **Save** button.

The configuration data is then saved to the AlphaCom configuration file only, and not applied to the running configuration. To get the new configuration data applied to the running configuration, press the **Apply** button.



**Node AlphaCom_1**

**Node State**

| Operational | Enabled |
|---|---|
| Usage | Idle (0/250) |

**HW Configuration**

| Module (CC) | Board Position | Board Type | Board State | Board Version | Board SBI |
|---|---|---|---|---|---|
| Master (65) | 01 | ASLT_0 | OPERATING | 03.00 | 1 x SBI_02 |
| Master (65) | 25 | AMC_3 | OPERATING | 10.00 | 4 x SBI_03 |

**SW Configuration [Detailed View]**

| Software | Release |
|---|---|
| AMC System Package | Version 10.00 (X0327) |
| AlphaWeb Package | Version 00.09 |
| AMC Board Support Package | Version 02 |
| Customer Database | Version 10.00 (X997728/119752) |

**MAC-chip**

| MAC address | 00:60:35:03:B5:BC |
|---|---|
| Vendor | Generic |

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*Figure 16  Exchange configuration*

---

[1] The PC must be assigned to an IP address and network mask to the same network as the AlphaCom. If the PC is set to 'Obtain IP address automatic', this will happen automatically after 1 minute (Windows Automatic Private Address).

## 5.2 AlphaPro, Getting Started

### 5.2.1 PC setup

- Start up the computer
- Download the latest AlphaPro version from www.zenitel.com or insert the CD-ROM with the AlphaPro installation
- Select and run file **installalphapro.exe**
- Follow the instructions on the screen
- You can safely answer "**YES**" to all questions

### 5.2.2 Insert the HW dongle

- Insert the hardware dongle in the PC's parallel port or USB port depending on the dongle type.
- Leave the dongle in the PC during programming and transferring of data to the exchange.
- If the dongle is not inserted, the AlphaPro will run in AlphaPro M mode. You will still have access to all functions (except AlphaNet), but only for 36 subscribers.

### 5.2.3 AlphaPro Menu Structure



Use the menus in AlphaPro to change the default system setup. The menu is divided in 12 main menus accessed by clicking on its symbol icon at the top of the screen. Each main menu will have one or more selectable tabs or sub menus.

AlphaPro may be run without being connected to the system (off-line), all changes can be saved to the PC and copied to the system later on.

It is good practice to start the programming in the exchange menu and continue towards the right on the icon bar.

### 5.2.4 Create New Network and Exchange(s)

When you want to configure the settings for an exchange the first time, you would need to create a new network and exchange. This will create an AlphaPro configuration database.

#### *Select network*

- Select [+] in the main window
- Enter system name (customer / network name)
  - maximum 100 characters
  - don't use national characters like æ, ø, å, ä, é, etc.
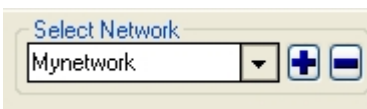
#### *Select exchange*

- Select [+] in the main window
- Enter node (exchange) name
  - maximum 16 characters
- Enter exchange node number
  - applies to AlphaNet nodes, otherwise enter 1
- Select the desired type of node (exchange)
- Select the language for the exchange
- Tick for AlphaNet: **Adm. Here**
  - Creates an exchange with full database, which can be configured from this PC.
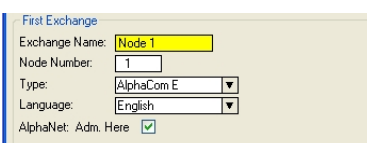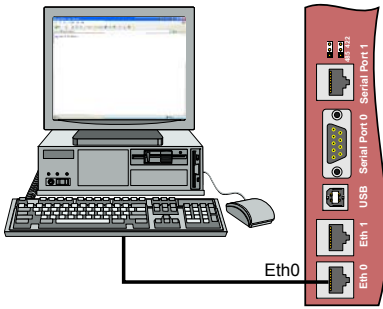
### 5.2.5 Data communication

In order to establish communication between the PC and the exchange, the PC must be connected to the ACM exchange.

● Connect the PC to the Eth0 port in the ACM exchange
  - When the PC is connected to the ACM, the AlphaPro communication program can be opened.

*Figure 17  PC connection to the Eth0 port in ACM*

***Note! During data transfer to the ACM, it is not possible to modify configuration data in the ACM.***

#### *Establish data communication*

● Click on the **Connection** icon

  - The Communication window appears
  - The connection is confirmed when the communication is established, the buttons will then become active.

#### *Get information from the exchange*

When the exchange is defined, an AlphaPro configuration database is created with factory default settings.

● Click on **GetAll** to download all data from the exchange.

#### *Send information to the exchange*

When the desired changes to the programming are done, the new configuration must be loaded into the exchange.

● Click on **SendAll** to send all data

● Click on **SendChgd** to send changed data only
  - An icon in the lower left corner flashes during transmission.

● The transmission may be stopped by clicking **Cancel**
  - The Cancel key changes to **OK** when the transmission is finished.

● Click on **OK**

# 6 PROGRAMMING GUIDE

## 6.1 Programming Overview

The main steps for programming of a ACM-M-A-V2 system are:

- Perform cold start
- Configure IP address
- Enter license key
- Configure general user settings
- Configure interface to PA
- Configure external communication

A complete programming procedure is described in the System Maintenance Manual A100K 10338.

*Note: If an existing exchange configuration shall be modified, download the configuration from the exchange. See section 5.2.5. Do NOT perform cold start!*

## 6.2 Perform Cold Start

A cold start of the AMC-IP board will delete all previous programming, load the default database and set the default IP-address to **169.254.1.5** with mask **255.255.0.0** on Eth0.
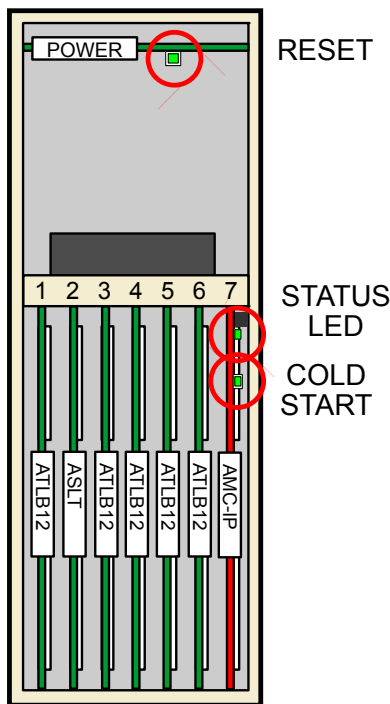
### 6.2.1 Cold start procedure

- Turn the exchange mains switch ON
  (auto-fuse in the rear of the cabinet)
- Hold the cold start button on the AMC-IP board depressed
- Press the reset button located on the power card briefly
- Keep the cold start button pressed at least 1 sec. after reset. The AMC st*atus LED will blink green when the boot is ready*.

### 6.2.2 Cold start of AMC application only, keep IP setting

- Press the reset button located on the power card briefly
- After 10 sec., press the cold start button on the AMC-IP board.
- Keep cold start button pressed until AMC running LED is blinking green.



*Figure 18   Cold start*
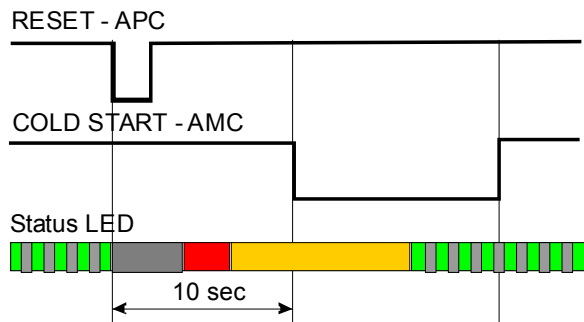


*Figure 19   Cold start to load default database*



*Figure 20    Cold start and keep IP setting*

# 6.3  Configure IP Address

To connect the AlphaCom E to your IP network, you need to enter the IP settings for the Ethernet ports and IP route entries according to the network. See Chapter 4.3 ACM Programming and Cable Reference List for IP settings to use.

### Set IP address for Ethernet port 0 and/or 1

- Log in to **AlphaWeb**
- Select **System Configuration > Interfaces**
- Enter IP address
- Enter subnet mask
- **Save** and **Apply** changes

**IP-Interface address settings**

| Interface 0 | Name: npe_eth0 |
|---|---|
| IP Address: | 10 . 5 . 3 . 40 |
| Subnet Mask: | 255 . 255 . 255 . 0 |
| **Interface 1** | **Name: npe_eth1** |
| IP Address: | 169 . 254 . 1 . 5 |
| Subnet Mask: | 255 . 255 . 0 . 0 |

Save

**Config File**

| Config File | Last saved | Last applied/saved |
|---|---|---|
| amc_ip_config.xml | 2008-06-18 08:04:53 | 2008-06-18 08:04:53 |

Apply

**System IP Status**

Mask

| Interface Name | IP | MAC | |
|---|---|---|---|
| npe_eth0 | 10.5.3.40 | 255.255.255.0 | 00:13:CB:00:04:CF |
| npe_eth1 | 169.254.1.5 | 255.255.0.0 | 00:13:CB:80:04:CF |

*Figure 21  AlphaWeb IP interface address setting*

**Configured IP-Routes**

| Route type | Destination IP | Destination Mask | Gateway | Out Interface | Action |
|---|---|---|---|---|---|
| default | | | 10.5.3.1 | npe_eth0 | Delete |

**Add a new IP-Route**

| Route type | Destination IP | Destination Mask | Gateway | Out Interface |
|---|---|---|---|---|
| net | . . . | . . . | . . . | npe_eth0 |

Save

**Config File**

| Config File | Last saved | Last applied/saved |
|---|---|---|
| amc_ip_config.xml | 2006-05-31 21:00:23 | 2006-06-02 10:33:24 |

Apply

**System Route Status**

| Destination IP | Destination Mask | Gateway | Out Interface |
|---|---|---|---|
| 10.5.3.0 | 255.255.255.0 | * | npe_eth0 |
| default | 0.0.0.0 | 10.5.3.1 | npe_eth0 |

*Figure 22  AlphaWeb IP Routes*

*Set IP gateway (router)*

Route type '*Host'* is used to set up a route to a single device outside the subnet of the AlphaCom.

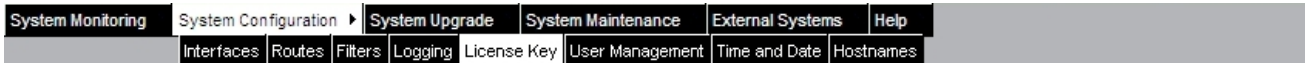Route type '*Net'* is used to set up a route to another network.

Route type '*Default'* is used to set up a general route to any device outside the subnet of the AlphaCom.

- Select **System Configuration > Routes**
- Select type of IP route
  - default IP route, specific IP route or specific host route
- **Default IP route**.
  Enter only gateway (IP address) and Ethernet port (Eth0/1)
- **Network route**.
  Enter destination IP address, network mask, gateway and Ethernet port
- **Host route**.
  Enter IP address, gateway and Ethernet port
- **Save** and **Apply** changes

## 6.4  Enter License Key

- Obtain license key from your ACM distributor.
- Select **System Configuration > License Key**
- Enter the key string under **New License Key**
- Press the **Insert new license key** button to install this license.
  The license configuration is shown on top of the page.

*Note! The ACM-M-A-V2 requires IP station license and SIP trunk licenses for the number of IP stations and analogue telephone trunks the exchange shall support.*

| System Monitoring | System Configuration ▶ | System Upgrade | System Maintenance | External Systems | Help |
|---|---|---|---|---|---|
| | Interfaces | Routes | Filters | Logging | License Key | User Management | Time and Date | Hostnames |

**License Configuration**

| License type | # of licenses | Current used | Available | Rejections |
|---|---|---|---|---|
| IP AlphaNet Lines | 0 | 0 | 0 | 0 |
| SIP Trunk Lines | 30 | 0 | 30 | 0 |
| IP Stations | 1 | 1 | 0 | 0 |
| SIP Stations | 0 | 0 | 0 | 0 |
| Ring Master | 0 | 0 | 0 | 0 |
| M100 | 0 | 0 | 0 | 0 |
| OPC server | 552 | 78 | 474 | 0 |

**License Key**

| License key | MAC Address |
|---|---|
| METitDRse3w7oAjMO2alJKHW | 00:13:CB:00:04:CF |

**New License Key**

| Input License Key | |
|---|---|
| | |

Insert new license key

*Figure 24    AlphaWeb License Manager*

## 6.5 Configure User Settings

This chapter describes how to program the system user and station directory in order to comply with marine requirement for emergency two way communication. The chapter is divided in the following parts:

- General user settings
- Program different class of service for users
- Program call priority

Before you will be able to program the user and station directory, the Program and Cable Reference List must have been filled in. See chapter **Error! Reference source not found.**.

### 6.5.1 General user settings

- Click on the **User & Stations** icon in AlphaPro.

The main field for a normal configuration is:

- Physical Number
- Directory Number
- Display Text
- Station Type
- Volume Setting
- Group Access Level
- Call Setup Priority
- Class of Service
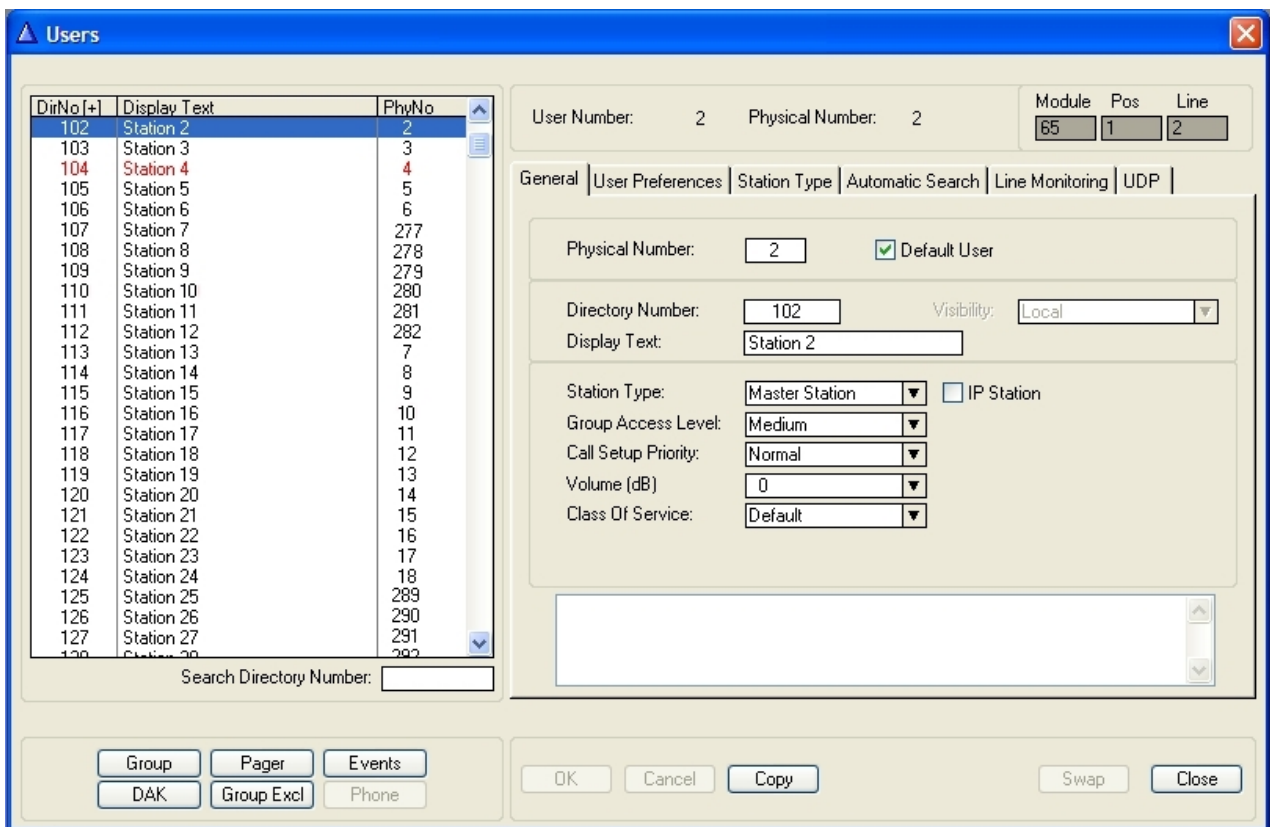


*Figure 25 Station configuration window*

**'Physical Number'** - all stations are identified by the exchange with its physical number.

The physical number for a star wired station is the number of the physical wire connection point on the ATLB-12 card. See chapter 3.5.1 for overview of physical numbers.

**'Directory Number'** is the number to dial to reach the station.
The default number can be changed to any 2-8 digit number starting

with 1, 2, 3, 4 or 5. Numbers with first digit 6-9 are reserved for functions. If these numbers should be used, the corresponding function code must be changed.

**'Display Text'** is the station ID text shown in the called station's display and system logs as well as for billing and DECT display.

The default text should normally be substituted by the station location or the subscriber's name. The max number of characters is 16 including the station directory number.

**'Station Type'** is used to define the type of station on the actual physical number.

*'Master Station'* is the default choice; this setting will automatically detect the connected type of station. Analogue telephones shall have station type 'Master Station'.

*'Substation'* should be selected for stations with limited keypad and lines used for interfacing public address amplifier system.

*'Display'* option can be selected to ensure faster and safer line error detection on display station lines.
Other special station options can be selected to obtain optimal performance and programming for these stations.

**'Volume'** setting is used to compensate for volume loss on long lines, and to tune volume level according to marine requirements.

Available values are -14 dB to +16 dB. The default setting is 0 dB. For ordinary regulation of the volume, the volume bar or the station is used.

The exchange must be reset if the volume setting has been changed.

**'Group Access Level'** is used to specify which group and PA calls a user may make. Each group, used for group and PA calls, will have an associated 'Group Access Level'. The levels are *low, medium and high*. The user must have a higher or the same group access level.

By default the group used for emergency PA announcements are programmed as group 1 with group access level *high*. Only users with group access level *high* can make an emergency PA announcement.

**'Call Setup Priority'** is used to specify how outgoing calls from the station shall be treated.

| Priority | Low | Medium | High | Alarm |
|----------|-----|--------|------|-------|
| Call to an idle, open station | Rings | Connects | Connects | Connects |
| Call to station with private switch ON | Rings | Rings | Connects | Connects |
| Call to a station with absence message | Hears the message | Hears the message | Connects | Connects |
| Call to a busy station | Busy tone | Busy tone | Busy tone | Connects |

*Table 7   Call Setup Priority*

Call setup priority is used to give special treatment to users that should never meet a busy tone, such as the bridge station and captain's station.

**'Class of Service'** determines which features in the system the station can activate.

There are 16 different classes available and each can be freely programmed. A Station can only have one Class of Service defined. The following classes have a Default setup (which can be changed):

● COS 1    Regular stations in the system

● COS 16  Includes all services. Default for SuperUser.

### 6.5.2 Program different class of service for users

An ACM solution is usually programmed with the following Classes of Service:

- COS 1    Regular stations in the system
- COS 2    Notify busy station
- COS 3    Override of absent or private feature
- COS 4    Busy override
- COS 5    Override of busy, absent and private
- COS 16   Includes all services. Default for SuperUser

***Create a new Class of Service***

- Click on the **Class of Service** icon
  - The Class of Service window is opened
- Select the Class of Service you want to modify and press **Change**
  - A window to change the selected Class of Service is opened
- Press the **Copy from** button and select **Default**
  - The selected Class of Service gets the same service set as the default station (Class of Service 1)
- Select the services you want to assign to the selected Class of Service
- Press **OK** when all services are selected.
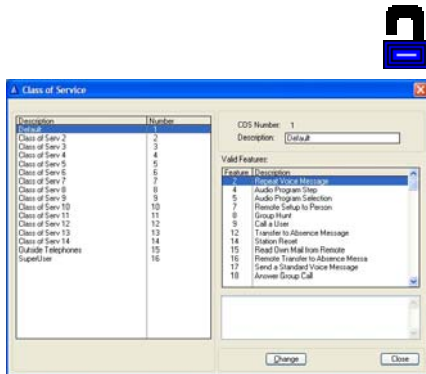


*Figure 26   COS feature selection*

## 6.6  Configure Interface to PA

A normal subscriber (user) extension is used as interface from the ACM system to the PA system. At each subscriber position the ACM has a remote control output, where RCO1 is at subscriber position 1 and so on. The RCO is used to signal PTT and muting of GA during emergency PA to the PA system.

- Press **User and Stations** icon
- Select the subscriber position used as interface to the PA system
  In ACM-M-A-V2 physical no. 8 is used.
- Press **Events**
- Press **Insert**
- Select Event Type to **Audio**
- Press the **Detail** button
- Select **Voice Paging**
- Press **OK**
- Select **RCO1** to be used to control PTT
- Press **OK**

## 6.7  Configure External Communication

See the A100K 10333 - SIP Gateway AudioCodes MP-114/118 manual for information on how to program and configure external communication.

# 7 USER GUIDE

## 7.1 Overview

The functions and codes are the same for all analogue telephones.

Some analogue telephones have special feature keys which are needed for some of the described functions.
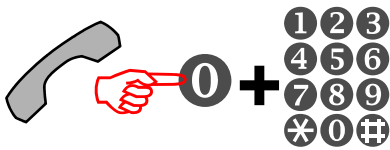
## 7.2 Basic Functions

### 7.2.1 Establish internal telephone call

- Lift handset
- Dial number of desired phone
  - Call is set up when remote phone handset is lifted
- Replace handset to end the conversation

### 7.2.2 Establish external telephone call

- Lift handset
- Dial trunk access code (default = 001) to get external dial tone
  - Optional: Enter user and PIN code for call authorization for call billing. See programming list for actual code
- Dial external phone number
  - Call is set up when handset on remote phone is lifted
- Replace handset to end the conversation

### 7.2.3 Receive call in noisy area
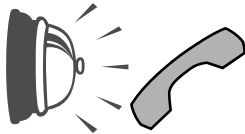
For calls in noisy areas, the telephone line will be connected in parallel to a signal unit.

  - Signal unit will provide visual or audio indication on incoming call
- Lift handset to receive call

### 7.2.4 Public address (PA) call

- Lift handset
- Dial 84 for general PA call without zones
  - Call is set up towards the PA system
  - System plays a DING-DONG to the PA system
- After DING-DONG, speak into handset for PA announcement
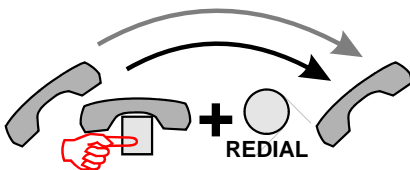- Replace handset to end the PA call

### 7.2.5 Microphone mute

*Only for telephones with MUTE button.*

- Press and hold the MUTE button to block own microphone during conversation
- Release the MUTE button to re-open the microphone

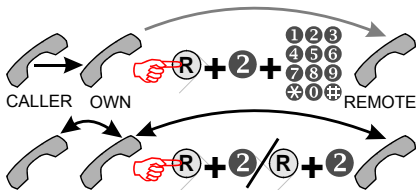### 7.2.6 Re-dial

*Only for telephones with REDIAL button.*

- Replace handset or push the handset switch
- Lift handset
- Press the REDIAL button to repeat last dialed number
  *Redial can not be used for external calls*

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## 7.3 Other PBX Functions

The system supports a set of other PBX functions.
The main supported PBX functions are:

### 7.3.1 Inquiry call

*Only for telephones with R button.*

- Press R+2 during conversation
- Dial number of desired phone
  - Call is set up when handset on remote enquired phone is lifted
- Press R+2 to toggle between the phones
  - The other conversation will be parked
- Replace handset to disconnect both phones

### 7.3.2 Call transfer

*Only for telephones with R button.*
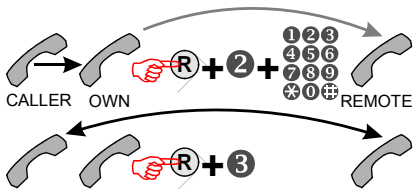
- Press R+2 during conversation
- Dial number of desired phone
  - Call is set up when handset on remote enquired phone is lifted
- Press R+3 to transfer the call
- Replace handset to withdraw from conversation
  - The two other phones will remain in conversation

### 7.3.3 Call forwarding
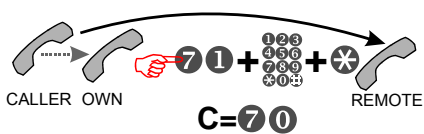
- Lift handset
- Dial 71
- Dial remote phone number you want calls forwarded to
- Press the ✱ button to confirm
- Replace handset
  - Own phone will ring for 10 sec. when called, then forwarded if not answered
- Dial 70 from your own phone to cancel Call forwarding

### 7.3.4 Follow me
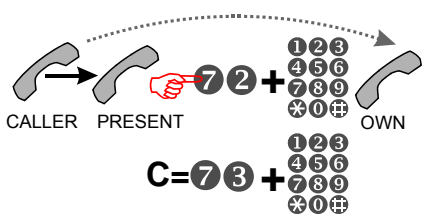
- Lift handset on phone you want calls to be transferred to
- Dial 72
- Dial your own phone number
- Replace handset
  - Own phone will ring for 10 sec. when called, then transferred to present phone if not answered
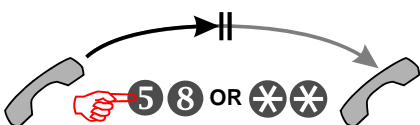- Dial 73 + own phone number to cancel Follow me

### 7.3.5 Busy notify
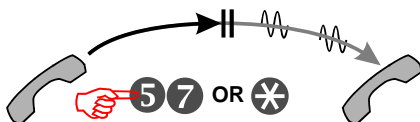
- If the called station is busy, dial 57 or press the ✱ button to send an attention tone (3 beeps) to the busy stations.

### 7.3.6 Call priority and busy override

*Only a selected set of telephones will have option for busy override. See programming and cable reference list.*

- If caller get busy tone, dial 58 or ✱✱ for busy override
  - The other call is disconnected and the priority call is set up

# 8   SPESIFICATIONS

| | |
|---|---|
| **Dimension (mm)** | 600W x 600H x 350D |
| **Weight** | 45 kg |
| **Mounting** | Wall mounted |
| **Temperature range** | 0 - 55°C (recommended 18 - 25°C) |
| **Power** | 230 VAC mains; max. power 150 W<br>24 VDC emergency; max power 150 W<br>Automatic switchover between mains and emergency |
| **IP class** | IP 20 |
| **Subscriber capacity** | 60 analogue telephones<br>6 intercom stations |
| **Call capacity** | Max 12 concurrent calls |
| **PA interface** | 0 dB/600Ω audio<br>1 relay to signal PA calls |
| **External interface and billing** | Option analogue telephone gateway<br>Option GSM telephone gateway<br>Option VINGTOR Billing system |
| **IP multi-module** | Up to 2 system racks |
| **Data interfaces** | 2 x 10/100 Mbps Ethernet AutoMDIX (RJ45)<br>1 x RS232 serial data (RJ45) |
| **Data networking** | Option 4 port industrial data switch<br>Option 5 port industrial power over Ethernet switch |
| **IP protocols** | IP unicast - IP multicast - IP v4 - TCP - UDP - Telnet - FTP – TFTP - NTP – HTTP - HTTPS - Syslog - SNMP v2c - SIP - RTP -RTCP - VoIP AlphaNet - STENTOFON data – OPC |
| **Remote system management** | AlphaPro over IP<br>Web |

## 8.1  Environment Requirements

The ACM system has been tested and fulfills all requirements according to EN 60945 and IACS E10 standards.

- Rack Temperature:   0°C to +55°C
- Humidity:   >95% RH @ 25°C / 93% RH @ 55°C
- Compass safety:   Distance to ACM-rack:        325 cm
  Distance to telephones:      95 cm

*Note ! It is strongly recommend to install the rack in a ventilated technical instrument room with temperature between 18°C and 25°C. This will increase the system life time.*
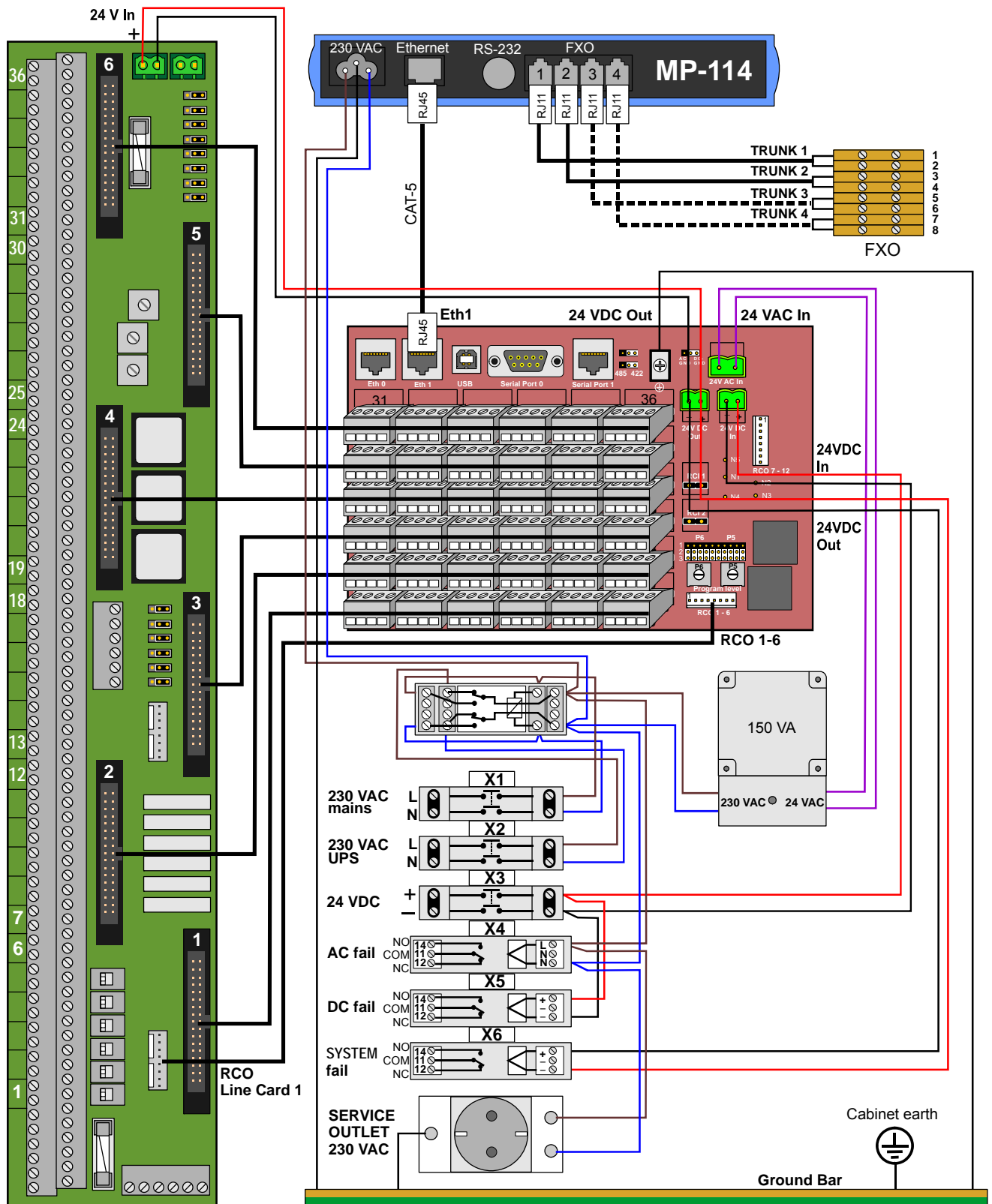
# 9    WIRING DIAGRAM



*Figure 27   Internal wiring in ACM-M-A-V2*

# www.vingtor.com