PRA-SCL System controller, large

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BOSCH
Invented for life

▶ Full control of PRAESENSA devices and audio routing

▶ Built-in supervised storage for messages and tone files

▶ Support for Dante audio input and output streams

▶ Open interface to third party applications

▶ IP-networked on OMNEO for audio and control

The PRA-SCL is the most powerful version in a range of system controllers.

The system controller manages all system related functions in a PRAESENSA Public Address and Voice Alarm system. It routes all audio connections between network-connected PRAESENSA audio sources and destinations. It supervises and plays back messages and tones, stored on its flash memory, either scheduled or manually started from a call station or PC. It manages the routing of background music streams, along with business calls and emergency calls, all based on priority level and zone occupancy. It collects all status information of connected system devices, manages the event logs and reports faults. The system controller is network-connected via OMNEO and DC-powered from a multifunction power supply with integrated battery backup, accommodating both centralized and decentralized system topologies. Connections to other devices in the system are made using the built-in 5-port switch, supporting RSTP. The built-in web server allows for system configuration using a browser.

Functions

System control and audio routing
- Capability to control a system with up to 250 devices, serving more than 500 zones.

- Native support for switched single-subnet networks, with add-on support for routed multi-subnet topologies.*
- Dynamic allocation of multiple and simultaneous audio channels to save on network bandwidth; audio connections are created when a call or a message is broadcast, and freed up immediately afterwards.
- Secure interconnections using Advanced Encryption Standard (AES128) for audio data and Transport Layer Security (TLS) for control data.
- Receiver for Dante or AES67 audio channels from external sources, with dynamic re-routing to open or secure OMNEO channels.
- Internal storage capacity for messages and tones; up to eight messages can be played back simultaneously.
- Internal real time clock for scheduled events and event time stamping; support for Network Time Protocol (NTP) with automatic adjustment for Daylight Saving Time (DST).
- Internal system event and fault event log.
- Networked control interface for third party applications.
- Built-in webserver for configuration and file management using a browser.
- Dual redundant system controller option for highest system availability in mission-critical applications.
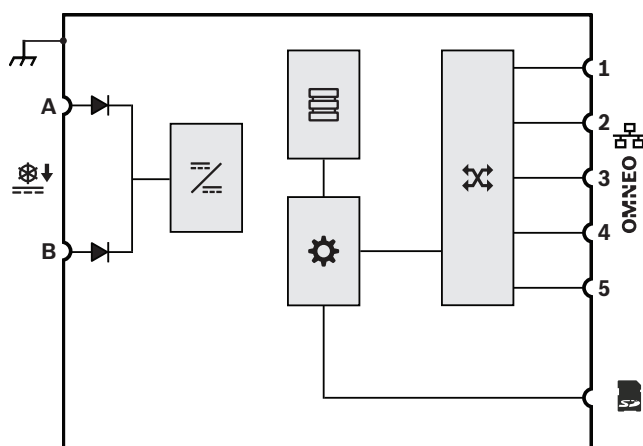
Sound quality
- Audio-over-IP, using OMNEO, the Bosch high-quality digital audio interface, compatible with Dante and AES67; audio sample rate is 48 kHz with 24-bit sample size.
- Messages and tones are stored as high definition uncompressed wav-files.

Supervision
- Supervision of stored messages and tones.
- Supervision of data integrity of site specific data.
- Internal watchdog timers to detect and recover from processing errors.
- Faults or problems of all system devices are collected, reported and logged.

Fault tolerance
- Five OMNEO network connection ports, supporting RSTP.
- Dual DC-inputs with polarity reversal protection.

Connection and functional diagram

	Diode		DC to DC converter
	Message and tone storage		Controller
	OMNEO network switch		

Front view

Front panel indicators

⚠	Device fault present	Yellow
🔗	Network link present Network link lost Standby for redundancy	Green Yellow Blue
⏻	Power on	Green

Rear view

Rear panel indicators

	100 Mbps network 1 Gbps network	Yellow Green
⏻	Power on Device in identification mode	Green Green blinking
⚠	Device fault present	Yellow
	SD card busy; do not remove	Green

Rear panel controls

↺	Device reset (to factory default)	Button

Rear panel connections

	24 to 48 VDC input A-B	
	Memory card	
OMNEO	Network port 1-5	
	Chassis ground	

Architects' and engineers' specifications

The IP-networked system controller shall be designed exclusively for use with Bosch PRAESENSA systems. The system controller shall dynamically assign network audio channels for audio routing between system devices across multiple subnets. It shall support >100 simultaneous High Definition audio channels (24-bit, 48 kHz) for music routing and making calls, with encryption and authentication to protect against eavesdropping and hacking. It shall be capable of receiving Dante and AES67 audio streams. The system controller shall provide an interface for control data and multi-channel digital audio over OMNEO using an integrated 5-port Ethernet switch for redundant network connections, supporting RSTP and loop-through cabling. The system controller shall have dual power supply inputs and power supplies. The system controller shall manage all devices in the system to provide the configured system functions. It shall incorporate a supervised storage for message and tone files with networked playback of up to eight streams simultaneously. It shall keep an internal log of fault events and call events. The system controller shall provide a secure TCP/IP open interface for remote control and diagnostics. The system controller shall provide front-panel LED indications for the status of power supplies and the presence of faults in the system and provide additional software monitoring and fault reporting features. The system controller shall be rack mountable (1U). It shall be possible to connect a backup system controller for dual redundancy with automatic fail-over. The system controller shall be certified for EN 54-16 / ISO 7240-16, marked for CE and be compliant with the RoHS directive. Warranty shall be three years minimum. The system controller shall be a Bosch PRA-SCL.

Certifications and approvals

Emergency standard certifications

Europe	EN 54-16
International	ISO 7240-16
Maritime applications	DNV GL Type Approval

Emergency standard compliance

Europe	EN 50849
UK	BS 5839-8

Regulatory areas

Safety	EN/IEC/CSA/UL 62368-1
Immunity	EN 55024 EN 55103-2 (E1, E2, E3) EN 50130-4

Regulatory areas

Emissions	EN 55032 EN 61000-6-3 ICES-003 ANSI C63.4 FCC-47 part 15B class A
Environment	EN 50581
Railway applications	EN 50121-4

Conformity declarations

Europe	CE/CPR
Australia	RCM
Morocco	CMIM
Russian Federation	EAC
United Arabic Emirates	CoC Civil Defense

Parts included

Quantity	Component
1	System controller
1	Set of 19"-rack mounting brackets (pre-mounted)
1	Set of screw connectors and cables
1	Quick Installation Guide
1	Safety information

Technical specifications

Quick overview

	PRA-SCL System controller, large
Operating voltage (VDC)	20 - 60 VDC
Power consumption (W)	6 W maximum
Number of channels - OMNEO	Unlimited
Number of channels - Dante	120
Number of Ethernet ports	5
Ethernet type	100BASE-TX; 1000BASE-T
Protocols and interfaces	OMNEO; Dante; AES 70; AES 67
Sample rate (kHz)	48 kHz
Pre-Installed Operating System	Linux
Configuration	Web server
Encryption	AES 128; TLS

	PRA-SCL System controller, large
Real time clock synchronization	NTP
Daylight saving time correction	Automatic
Message storage (min)	90 min
Number of events (storage)	3000
Protection	Watchdog; RSTP
Degree of protection (IEC 60529)	IP30
Operating temperature (℃)	-5 - 50 ℃
Dimension (H x W x D) (mm)	44 x 483 x 400 mm
Weight (kg)	5,80 kg

Electrical

Control

Audio routing (dynamic) OMNEO channels	Unlimited
Tone/message playback (dynamic) OMNEO channels	8
Audio inputs (static) Dante or AES67 channels	120
Audio outputs (static) Dante channels	8

Logging (internal storage)
    Call events
    Fault events
    General events
	1000
	1000
	1000

Real Time Clock
    Accuracy (with NTP)
    Accuracy (no NTP)
    Daylight Saving Time (DST)
    Backup battery
	< 1 s/yr off
	< 11 min/yr off
	Automatic
	CR2032 Lithium cell

Message/tone storage capacity Mono, uncompressed, 48 kHz, 16-bit	90 min
SD card size	1 to 32 GB

System size
    Networked devices
    Zones
	250 (single subnet)
	500

Configuration	Web server/browser

Power transfer

Power supply input A/B
    Input voltage range
    Input voltage tolerance
	24 to 48 VDC
	20 to 60 VDC

Power consumption (24 V)
    Duty mode
    Per active port
	3.9 W
	0.4 W

Supervision

Run fault (watchdog reset)	All processors
System integrity Fault report time	< 100 s

Site specific data integrity
    Fault report time
    Supervised message storage
	< 1 hour
	90 min

Power supply input A/B	Undervoltage

Network interface

Ethernet
 	
    Protocol
    Redundancy
	100BASE-TX,
	1000BASE-T
	TCP/IP
	RSTP

Audio/control protocol
    Network audio latency
    Audio data encryption
    Control data security
	OMNEO
	10 ms
	AES128
	TLS

Ports	5

Reliability

MTBF (extrapolated from calculated MTBF of PRA-AD608)	1.000.000 h

Environmental

Climatic conditions

Temperature
    Operating
 	
    Storage and transport
	-5 to +50 ℃
	(23 to 122 ℉)
	-30 to +70 ℃
	(-22 to 158 ℉)

Humidity (non condensing)	5 to 95 %
Air pressure (operating)	560 to 1070 hPa
Altitude (operating)	-500 to +5000 m (-1640 to 16404 ft)

Vibration (operating)
    Amplitude
    Acceleration
	< 0.7 mm
	< 2 G

Bump (transport)	< 10 G

Mechanical

Enclosure

Dimensions (HxWxD)
    With mounting brackets
 	
    Rack unit
	44 x 483 x 400 mm
	(1.75 x 19 x 15.7 in)
	19 in, 1U

Ingress protection	IP30

Enclosure

Case	
Material	Steel
Color	RAL9017
Frame	
Material	Zamak
Color	RAL9022HR
Weight	5.8 kg (12.8 lb)

Ordering information

PRA-SCL System controller, large
Network-connected, DC-powered, system controller
and message manager for Public Address and Voice
Alarm applications.
Order number **PRA-SCL**