

VCS 3020X

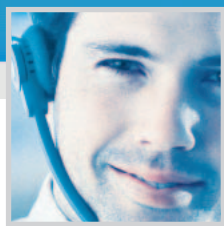
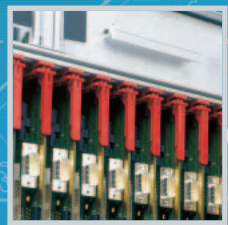
EVOLUTIONS IN SAFETY

VOICE COMMUNICATION SYSTEM

6000 VOICE CHANNELS

IP READY-WHEN YOU ARE

Orig. No.	Destination	Schleusen	NR0	Type
LH 458	Landsort/Heathrow	1810	B	321
LH 808	Jülich	1810	A	300
LH 911	Köln/Bonn	1815	A	302
LH 533	Düsseldorf	1815	A	709
LH 533	Düsseldorf	1820	B	301
OS 508	Maastricht	1820	D	094
OS 118	Wien	1820	A	726
OR 557	Zürich	1825	D	305
LH 922	Frankfurt/Main	1840	A	844
OU 437	Zagreb	1840	B	825
LH 924	Düsseldorf	1845	A	093
LH 924	Düsseldorf	1845	A	094
LH 643	Düsseldorf	1845	A	321
LH 924	Düsseldorf	1845	A	322
SI 7990	Oslo	1830	B	128
SI 822	Helsinki	1840	A	323
SI 820	Helsinki/Tegel	1850	D	142
LH 624	Nürnberg	1850	A	AT5
LH 808	Frankfurt	1850	A	818
LH 808	Frankfurt/Jugend	1850	B	304
DI 716	Köln/Bonn	1850	D	727
DI 808	Düsseldorf	1850	A	723
LH 554	Düsseldorf	1855	B	342
OS 102	Maastricht	1855	B	143
OS 102	Maastricht	1855	B	144
OS 102	Maastricht	1855	B	145
OS 102	Maastricht	1855	B	146
OS 102	Maastricht	1855	B	147
OS 102	Maastricht	1855	B	148
OS 102	Maastricht	1855	B	149
OS 102	Maastricht	1855	B	150
OS 102	Maastricht	1855	B	151
OS 102	Maastricht	1855	B	152
OS 102	Maastricht	1855	B	153
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OS 102	Maastricht	1855	B	155
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OS 102	Maastricht	1855	B	300





VCS 3020X

THE VCS 3020X IS A COMBINED VOICE AND DATA SWITCH. THE FIBRE OPTIC DUPLICATED BACKBONE WITH A BANDWIDTH OF 622MBIT/S DISTRIBUTES BOTH DIGITAL VOICE AND DATA.

THE VCS 3020X USES THE PROVEN APPLICATION SOFTWARE AND THE LATEST PERIPHERAL HARDWARE FOR INTERFACES AND OPERATOR POSITIONS. THIS EXCITING DESIGN OFFERS FUTURE-PROVEN SWITCHING TECHNOLOGY COMBINED WITH A SOUND ARCHITECTURE.

23-45				POS 34				BL-4 AG-0 GG-1			
ABCD EFGH 123 4567	TOP N 119.87	TOP N COO	OFF N COO	LOW N COO	N ASSIST	GROUP 1	LAST CALL				
LRP N 134.35	LOW N 128.70	TOP AS COO	OFF AS COO	LOW AS COO	AS ASSIST	EAST					
CHANNEL A	DRAGON 5	TOP W COO	OFF W COO	LOW W COO	W ASSIST	VIENNA 5					
URF-B7 126.175	URF-U4 119.450	TOP MIC	MED MIC	OFF MIC	LOW MIC	ES					
KAPCDO 211.55	KOBCKDK 9121.50										
EMERG UHF 243.0	EMERG VHF 121.5	F1C	TMA F1C	SUP	TEC						
		TWR LOW	TWR LOM	TWR LOST	VIE						
		EXT 12234	BCA 3	SAR	MATCH 5	DUAL PND					
SETTING	ROLES	MORE FUNC	REV	CALL FWD	CONF	TRF	HOLD	END CALL			

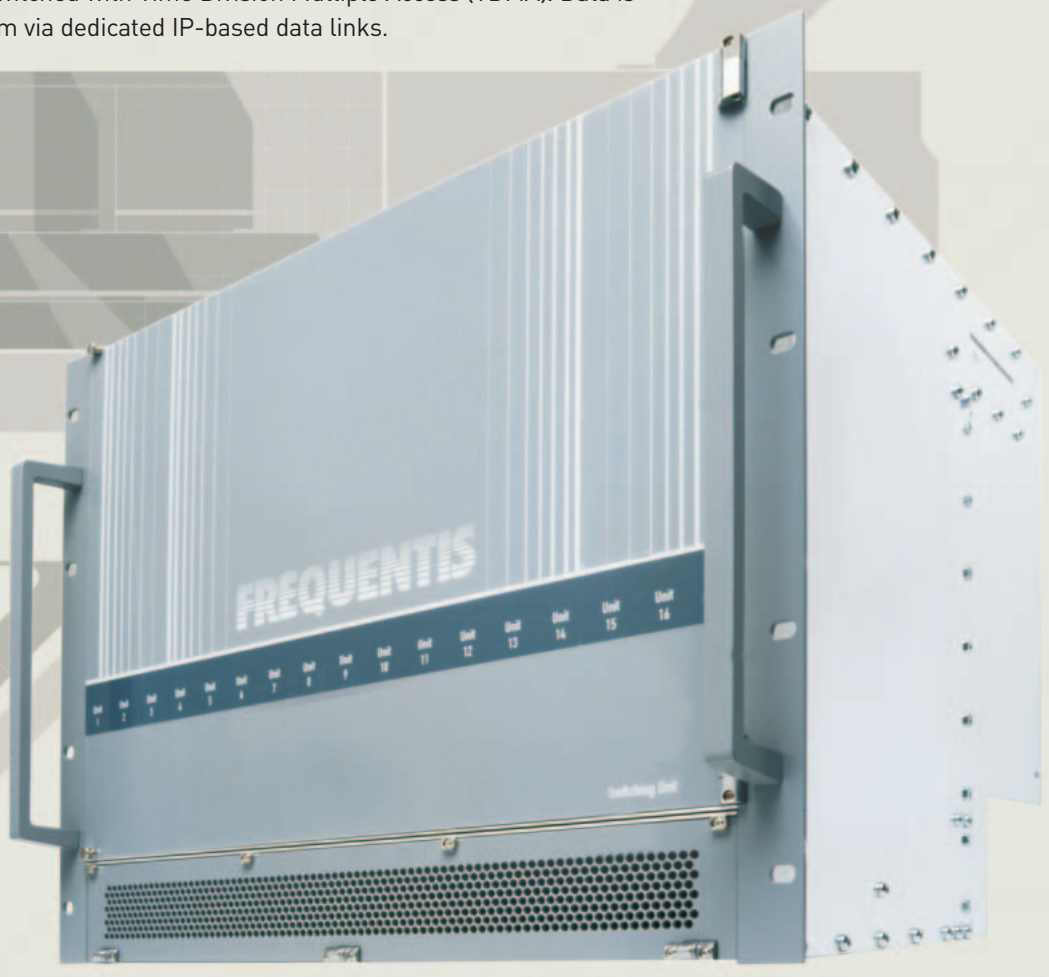




VOICE COMMUNICATION SYSTEMS

DECENTRALISED SWITCHING

The major part of the application software of the VCS 3020X runs fully distributed in the peripheral devices. The critical switching and routing core software is kept simple. The fully decentralised call control leads to the unrivalled resilience of the system against software failures. Audio is switched with Time Division Multiple Access (TDMA). Data is routed within the core system via dedicated IP-based data links.



.6000

THE UCS 3020X MEETS DEMANDS - NOW AND

VOICE COMMUNICATION SYSTEMS - THE VCS 3020X OPENS UP A WORLD OF COMMUNICATIONS

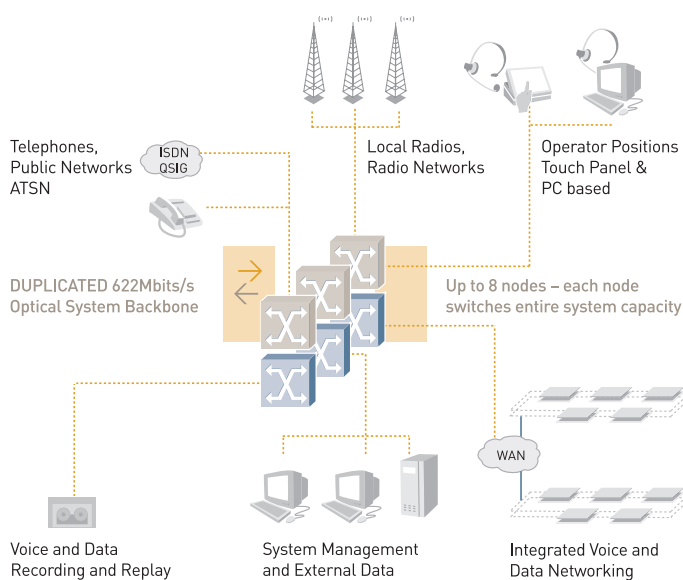
ARCHITECTURE

The architecture of the VCS 3020X balances optimal performance and low risk communications and is based on a legacy of proven systems unrivalled in safety and reliability.

The VCS 3020X provides integrated voice communications for radio, telephone and intercom in one unique system with unlimited conferencing capabilities.

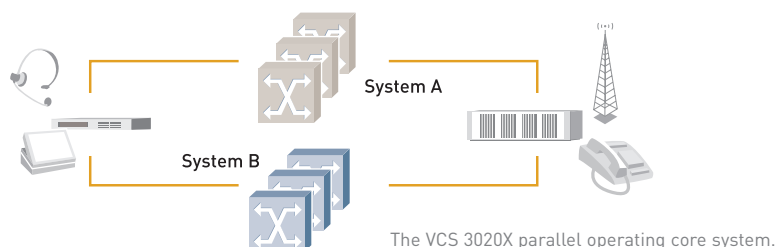
The VCS 3020X provides any operator access to all communication channels, regardless of the system load at any side and any time.

THE FIBRE OPTIC SYSTEM BACKBONE



6000 time slots are available due to the interconnection of multiple VCS 3020X system nodes. Up to eight duplicated switching nodes are interconnected via a duplicated optical fibre backbone, carrying both voice and data.

DUPLICATION - NO SINGLE POINT OF FAILURE

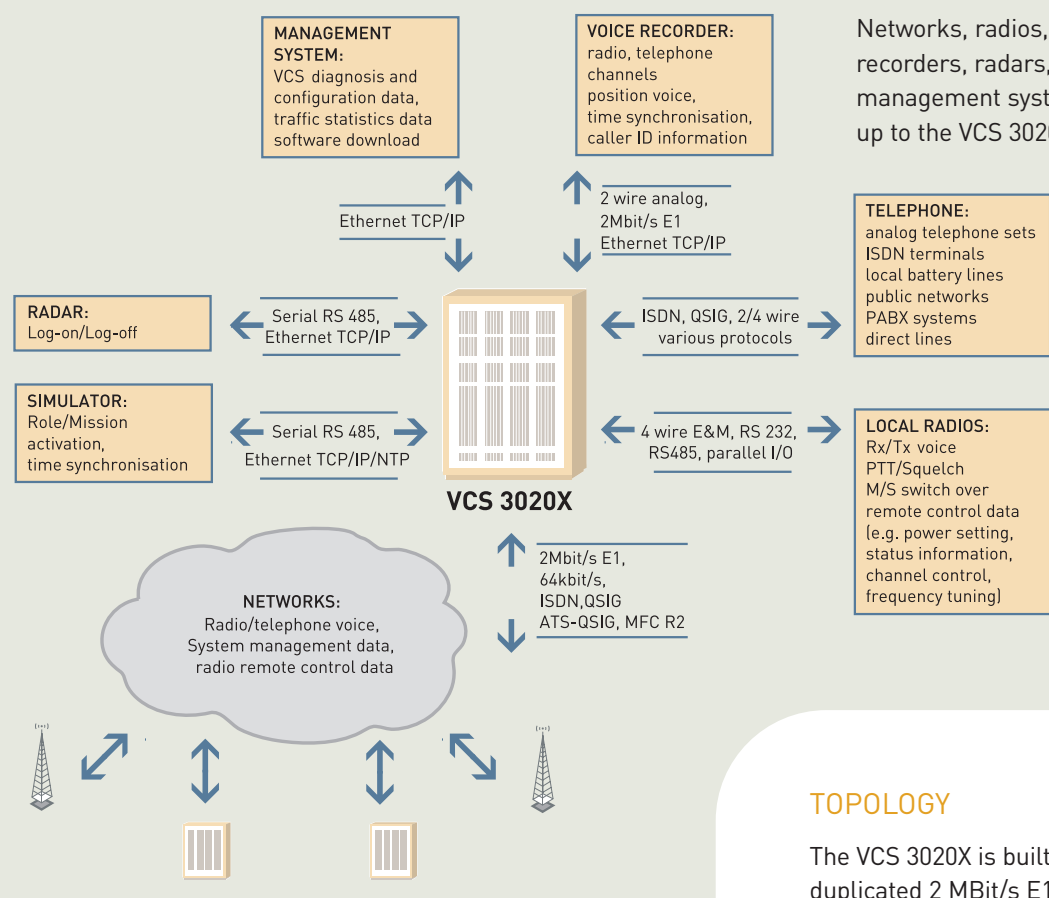


FREQUENTIS HAS CHOSEN AN EVOLUTIONARY APPROACH BY INTRODUCING VCS 3020X RELEASE 4.0 IN 2004, WHICH ALREADY PREPARED THE MIGRATION TO IP-ENVIRONMENTS AND IP-BASED VOICE SWITCHING. NOW, THIS MIGRATION CONTINUES BY COMING UP WITH AN IP-GATEWAY TO CONNECT TO RADIOS USING AN IP-INFRASTRUCTURE.



The extensive duplication of critical system components, such as the parallel operating core system, limits the fault range to one communication channel. Peripheral hardware like operator positions and interfaces are connected to both duplicated nodes A and B.

ATS AIR TRAFFIC MANAGEMENT D IN THE FUTURE

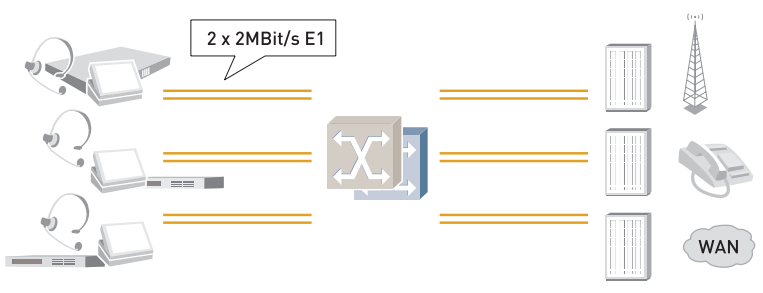


Networks, radios, telephones, voice recorders, radars, simulators, and a management system can be hooked up to the VCS 3020X.

TOPOLOGY

The VCS 3020X is built on a star architecture with duplicated 2 MBit/s E1 communication links, using standard CAT7 for structured cabling to all peripheral devices. A fibre optic backbone allows both system extensions and the splitting of systems. All critical components of the VCS 3020X are duplicated to ensure the availability of the communication paths. The decentralised and modular VCS 3020X provides full scalability without requiring software changes. This goes for small systems as well as for large centres.

THE STAR ARCHITECTURE INCREASES RELIABILITY



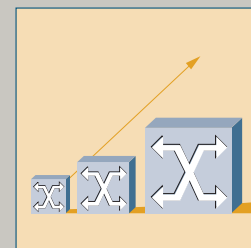
The symmetric star topology connects line interfaces and operator positions to the system core. In the unlikely event that one branch fails the other branches and operations remain unaffected. The VCS 3020X star topology forms the base for decentralised switching.

The VCS 3020X star topology – the base for decentralised switching.

SCALABILITY: gate X

THE SYSTEM THAT GROWS WITH YOUR NEEDS

MEET THE NEW MEMBER OF THE VCS 3020X FAMILY: A SLIM MODULE CALLED "GATE X" FORMS THE CORE SWITCH FOR SMALL APPLICATIONS SUCH AS TOWER SYSTEMS, USING THE SAME SOFTWARE, HARDWARE AND FUNCTIONS AS EVEN THE BIGGEST SYSTEMS. VCS 3020X WITH GATE X: THE FIRST REALLY SCALABLE SYSTEM WITHOUT ANY FUNCTIONAL LIMITATIONS. GATE X MODULES ARE STACKABLE TO CREATE ANY SYSTEM SIZE.



Best configuration options for any system size.



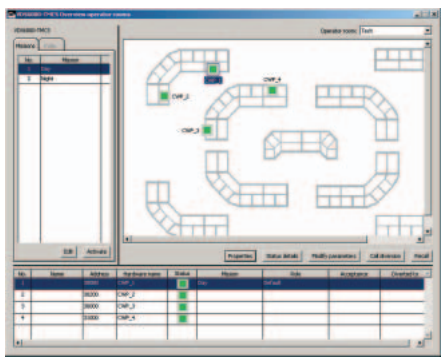
GATE X – THE IP-GATEWAY

By using the appropriate software, gate X also serves as remote radio connection, which allows accessing remote radio via IP. The multifunctional gate X may also be used as data server/role server, IP telephony/radio server, and TDM/IP media gateway.

THE TECHNICAL MONITORING AND CONTROL SYSTEM

The TMCS is the system's installation and configuration tool featuring a graphical room view that allows operational supervisors to get an overview of all currently active missions and role configurations at each operator position. This is true for both stand-alone systems, as well as for networked configurations.

An easy-to-use Traffic & Analysis tool, which increases system efficiency by providing detailed reports using historical data is also available.



NETWORKING

As an important building block of the Frequentis i-volution concept, VCS3020X satisfies your networking needs; be it operating radios of other VCS sites via digital links or be it countrywide telephone and radio networking.

The advanced role system optimises all available resources for safest and most efficient ATC.

EASY CUSTOM ADAPTATIONS

THE CONTINUOUSLY GROWING NUMBER OF FEATURES AND SERVICES DERIVED FROM SEVERAL PROJECTS AS WELL AS FUTURE STANDARDS AND RECOMMENDATIONS ARE INTEGRATED INTO A PROVEN COMMERCIAL-OFF-THE-SHELF SOFTWARE. HOWEVER, THERE IS PLENTY OF ROOM LEFT FOR INDIVIDUAL CUSTOM ADAPTATIONS.

INTEGRATION WITH RADAR SYSTEMS

→ nowadays, it is possible to operate the VCS 3020X via a window on the radar work-station or to use the air picture derived from the radar system for best-signal-selection.

TELEPHONE AND RADIO SERVICES

→ your special phone and radio services combined with Frequentis customer specific solutions optimise usability.

VOICE AND DATA RECORDING

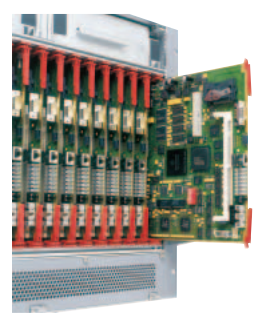
→ the VCS 3020X is prepared for integrated recording of voice and radio channel/telephone subscriber information.

MANAGEMENT SYSTEM INTEGRATION

→ the VCS 3020X central facility management system allows configuring and diagnosing external systems.

SAFETY AND SECURITY

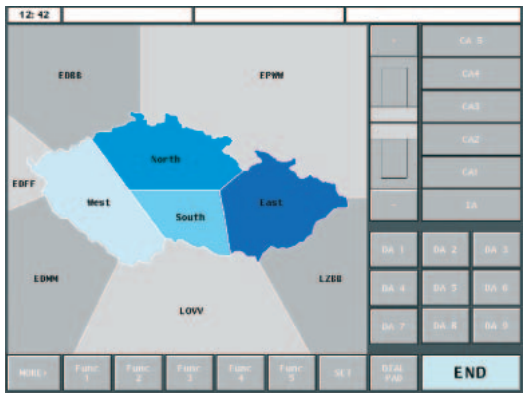
Frequentis systems are frequently used in classified environments and have to comply with stringent security requirements. We have policies and procedures in place to properly handle classified information in accordance with the requirements of several countries. We are familiar with and provide systems compliant to Common Criteria.





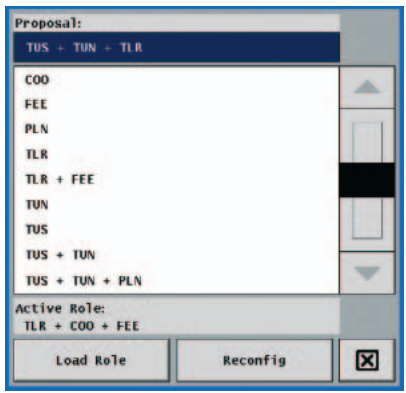
FLEXIBLE PANEL LAYOUT ADAPTATIONS

The panel layout can easily be customised by using the intuitive applications. This ranges from simple colour changes to new complex layouts or the integration of maps. Our experienced User Interface Design Center offers workshops and trainings to respond to and meet any of your requirement.



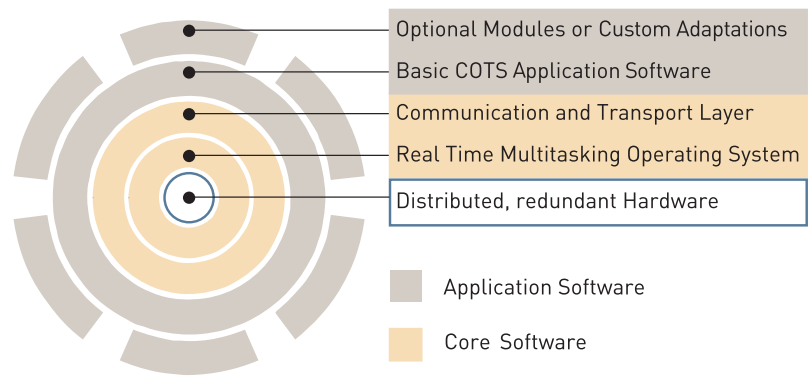
ADVANCED ROLE HANDLING – “IT IS YOUR CHOICE!”

In ATC, it is of utmost importance to provide ATC-controllers with the respective panel layout, defined by assigned frequencies, dial keys and function keys. Quick, safe and reliable access to different roles, required by different situations, are one of the highlights of the VCS 3020X. Depending on the configuration, operators may select a new role, or have a new role assigned by their supervisor.



DEVELOPMENT

Our voice communication system software is designed in modular, hierarchical layers with sophisticated interfaces. This open architecture allows splitting the services provided by the system into modular units, which can then be combined according to your needs. This will entail no changes to the basic software.



SELECTED FEATURES

INTEGRATED SHORT-TERM RECORDING

- The integrated short-term recording has a capacity of 2 x 30 min. If configured, supervisors may retrieve recordings made at any position. Additionally, export of recordings as WAV-file is also possible.

MOVING CALL QUEUE

- The continuously updated call queue presents all incoming calls on the Touch Panel.

BUSY INDICATION ON DA-KEYS

- The busy indication on DA-keys indicates if there is an active call at the position the operator intends to call.

FAIL-SAFE PTT-DETECTION

- This function immediately indicates if a certain frequency appears occupied due to faulty PTT-switches (e.g. cable defects or blocked footswitches).

RADIO REMOTE CONTROL

- The integrated radio remote control allows controlling and monitoring remote radios via a serial RS232/RS422/RS485- or DTMF-link from both the TED of the operator position and the TMCS.

TMCS SUPER CLIENT

- For networked environments, dedicated super clients may log into any VCS connected within the system. This gives the supervisor control of the entire system to change parameters or to check the system status. The TMCS receives, summarises and displays general system information concerning all system parts connected to the network. This information can then be processed by a management system of a higher order.

INTEGRATION TO FREQUENTIS DIVOS RECORDERS

- Combining the VCS 3020X with DIVOS recorders provides you with advantages only one supplier can give. Imagine listening to ongoing position and interface conversations via the TMCS PC, just to give an example.

ADVANCED ROLE CONCEPT

- Depending on the operational needs, the system is fully configurable. It can be decided whether roles shall be "pushed" by the supervisor or "pulled" by the operator.

FREQUENCY COUPLING MODES

- The VCS3020X supports both simplex as well as duplex frequency coupling to satisfy any operational requirement.



FACTS

RELEASE POLICY

The Frequentis release policy guarantees that well-trying and tested systems and applications continuously impact the development of new and future systems.

REFERENCES

The VCS 3020X is the pinnacle of the experience accumulated over the past 50 years. After all Frequentis has installed more than 10,000 operator positions in over 40 countries, e.g.:

- DFS, Germany
- NavCanada, Canada
- STNA, ADP, France
- Airways New Zealand
- LFV, Sweden
- Austrocontrol

Due to the fact that our products and services are continuously being brought up-to-date, technical specifications and requirements, correct at the time of going into print, may be subject to variation without prior notice. Frequentis has endeavoured to ensure that to the best of its knowledge, the information in this document is correct and fairly stated, but does not accept any liability whatsoever for any error or omission.

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