



MEETING MARITIME REQUIREMENTS WITH MOTOTRBO





Ships fulfil many functions and come in many shapes and sizes. Whether fishing, transporting goods, taking holidaymakers on a cruise or carrying out research, ships make a huge contribution to the global economy. Shipping is an international industry and is only able to operate effectively and safely when regulations and standards are agreed, adopted and implemented on an international basis.

To meet that need, a conference held by the United Nations in 1948 adopted a convention establishing the International Maritime Organization (IMO) to improve maritime safety and prevent marine pollution. The IMO's first conference focussed on safety, and the International Convention on Safety of Life at Sea (SOLAS) came into force in 1965, covering a wide range of issues. A new version of SOLAS was adopted in 1974 and forms the basis of the current regulations, although it has been modified several times to reflect technical advances and changes in the industry.

They are not commonplace, but fires can happen on board ships and the consequences can be catastrophic. Quick, effective response is key to minimising the effect of an incident and reliable communications help underpin any

response. SOLAS Chapter II-2 details fire safety provisions including protection, detection and extinction and Regulation 10.10.4 requires that a minimum of two two-way portable radiotelephones are carried on board for each fire party, in order to provide a dedicated means of communication between fire-fighters and a crew member outside the incident area. Depending on the size and type of vessel, it may actually be required to carry more than two devices. From 1 July 2018, all ships will be required to comply with the regulation.

Although Regulation 10.10.4 does not specify the frequency band to be used by the fire-fighter radios, UHF frequencies are most commonly used for on-board communication as they provide better propagation within the metal structures of ships.

SOLAS CHAPTER II-2 REGULATION 10.10.4

“ For ships constructed on or after 1 July 2014, a minimum of **two two-way portable radiotelephone apparatus for each fire party** for fire-fighter's communication shall be carried on board. Those two-way portable radiotelephone apparatus shall be of an **explosion-proof type or intrinsically safe**. Ships constructed before 1 July 2014 shall comply with the requirements of this paragraph not later than the first survey after **1 July 2018**. ”

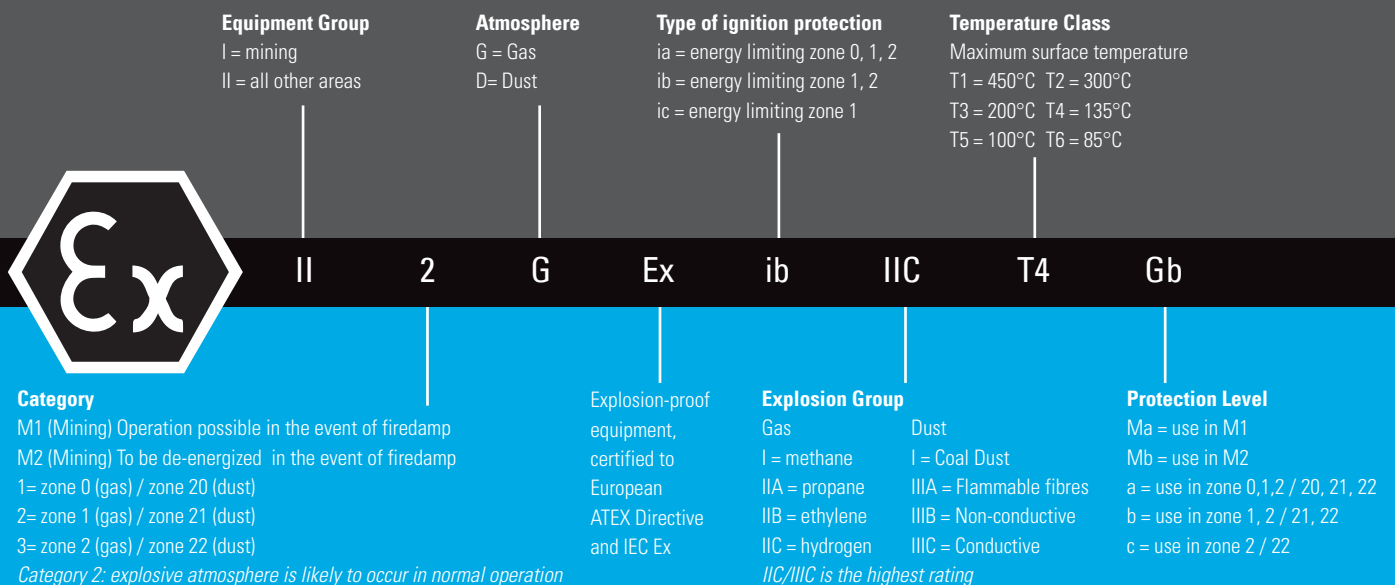


The radiotelephone apparatus provided must be of an explosion-proof type or intrinsically safe. For EU- and UK-registered ships, intrinsically safe equipment to be used within potentially explosive environments must meet the requirements mandated by the ATEX Directive 2014/34/EU. Additionally, the equipment must meet the Marine Equipment Directive 2014/90/EU (EU-registered) or the Merchant Shipping (Marine Equipment) Regulations 2016 (UK-registered). The ATEX regulations define multiple categories of environment and set down stringent parameters for the behaviour of equipment exposed to potentially explosive dust and gas.

Motorola Solutions supplies a number of “intrinsically safe” radios as required by the SOLAS regulation. These devices are designed so that they do not cause ignition of hazardous substances when used in environments that have explosive vapour or dust present in the atmosphere - for example in locations concerned with fuel storage.

The MOTOTRBO™ DP4000 Ex Series is certified against the ATEX Directive and meets some of the most stringent classifications of any two-way radio available on the market today, meaning that they can be used safely in a wide variety of explosive environments.

ATEX RATING EXPLAINED





DP4401 Ex

MOTOTRBO DP4000 Ex SERIES ATEX PORTABLE RADIOS

The MOTOTRBO DP4000 Ex Series combines the best of two-way radio functionality with the latest digital technology to deliver reliable, clear audio. These dual mode devices can operate with both digital DMR and analogue signalling and are packed with enhanced features that are easy to use and help protect workers.

BUILT RUGGED

DP4000 Ex is rugged and durable to meet the most stringent standards. Dust and water can damage radios, but the DP4000 Ex Series is designed to withstand the worst. It meets or exceeds MIL STD 810 for exceptional durability and is IP67 rated* to keep out damaging water and dust. The design has also been subjected to Motorola Solutions unique Accelerated Life Test to simulate five years of hard use.

EASY TO OPERATE

The DP4000 Ex Series features a large push-to-talk button, volume and channel knobs and programmable buttons that are easy to use, even when wearing gloves. The large, colour display (DP4801 Ex) and bright LED show radio status information at a glance. Plus the prominent orange emergency button enables workers to quickly call for assistance when needed.

WORK SAFELY

Everything about the DP4000 Ex Series is designed for worker safety. Loud, clear performance and innovative features like Intelligent Audio and Transmit Interrupt help ensure messages get through in the noisiest environments. Integrated man-down and lone worker features send an instant alert if a mishap occurs. And the bright blue colour helps ensure workers can easily identify and carry only ATEX-approved radios into hazardous environments.

ATEX AND MARITIME REGULATIONS COMPLIANT

DP4000 Ex Series is ATEX / IEC Ex certified and meets the requirements of SOLAS Chapter II-2 Regulation 10.10.4 for fire-fighter radios carried on board ships. UHF models carry the Wheel Mark and Red Ensign Mark and are certified to meet MED/5.20 and UK/5.20 as required for EU- and UK-registered ships.





To accompany the DP4000 Ex Series, Motorola Solutions offers a range of accessories to make the radios easier and safer to use on-board by fire-fighters. And like the radio, Motorola Solutions audio and energy accessories meet the most stringent ATEX standards. Unlike other suppliers, we test the radio and accessories together as a system to ensure the highest levels of performance and compliance.

BATTERIES AND CHARGERS

Single-and multi-unit chargers allow recharging individually or in groups of up to 6 and Motorola Solutions unique IMPRES technology provides intelligent battery maintenance to increase lifetime.

REMOTE SPEAKER MICROPHONE (RSM)

RSMs provide quick access to key controls without the need to remove the radio from the user's belt. And having the loudspeaker closer to the user's ear makes it easier to hear calls so helps prevent missed messages.

CARRY SOLUTIONS

A range of carry cases and belt clips let the user keep their radio close, but leave their hands free for carrying out their tasks.

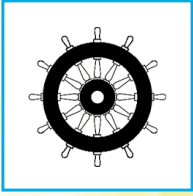
HEADSETS

Heavy duty headsets with built-in boom microphone provide ear defence in noisy environments but allow the user to hear and make calls on their radio. Available with headband or as helmet attach.



DP4801 Ex





SINCE 3 OCTOBER 2022, ANY NEW FIRE-FIGHTER RADIOS ON EU-REGISTERED VESSELS HAVE HAD TO BEAR THE “WHEELMARK” THAT CONFIRMS CERTIFICATION TO THE EU MARITIME DIRECTIVE (MED/5.20).



FROM 1 JANUARY 2023, NEW FIRE-FIGHTER RADIOS ON UK-REGISTERED VESSELS MUST BE MARKED WITH THE “RED ENSIGN” THAT SHOWS COMPLIANCE WITH UK MERCHANT SHIPPING REGULATIONS (UK/5.20).



DP4000 Ex Series is designed and built to a high standard for performance and compliance with relevant standards and directives.

EUROPEAN UNION HARMONIZATION LEGISLATION:

2014/53/EU: Radio Equipment Directive

2014/34/EU: ATEX (Explosive Atmosphere Directive), including all amendments

2014/90/EU: Marine Equipment Directive

2012/19/EU: WEEE Waste Electrical and Electronic Equipment

2011/65/EU: on RoHS-2 for Restriction of the use of Hazardous Substances

2013/35/EU: on Occupational Exposure to Electromagnetic Fields

UNITED KINGDOM LEGISLATION:

Merchant Shipping (Marine Equipment) Regulations 2016

REGULATORY STANDARDS:

EN 300 086 V2.1.2: Land Mobile Service; Radio equipment with an internal or external RF connector intended primarily for analogue speech

EN 300 113-2 v2.2.1: Land Mobile Service; Radio equipment intended for the transmission of data (and/or speech) using constant or non-constant envelope modulation and having an antenna connector

EN 300 219-2 v2.1.1: Land Mobile Service; Radio equipment transmitting signals to initiate a specific response in the receiver

EN 300 413 V1.1.1: Satellite Earth Stations and Systems (SES); Global Navigation Satellite System (GNSS) receivers; Radio equipment operating in the 1 164 MHz to 1 300 MHz and 1 559 MHz to 1 610 MHz frequency bands

EN 60945:2002-10: Maritime navigation and radiocommunication equipment and systems - General requirements - Methods of testing and required test results

EN 300 720 V2.1.1: Ultra-High Frequency (UHF) on-board vessels communications systems and equipment

EN 301 489-1 V2.2.2: Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

EN 301 489-5 V2.1.1: Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 5: Specific conditions for Private land Mobile Radio (PMR) and ancillary equipment (speech and non-speech)

EN IEC 60079-0:2018: Explosive atmospheres - Part 0: Equipment - general requirements

EN 60079-11:2012: Explosive atmospheres. Equipment protection by intrinsic safety "i"

EN 62368-1:2014/AC: 2015/A11: 2017: Audio/video, information and communication technology equipment - Part 1: Safety requirements



With exceptional voice quality, long battery life and ATEX-certified for safety, the DP4000 Ex Series meets the requirements of SOLAS Chapter II-2 Regulation 10.10.4, MED/5.20 and UK/5.20 for fire-fighter radios carried on board ships.

To learn more about MOTOTRBO, visit www.motorolasolutions.com/mototrbo

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* DP4000 Ex Series radios are rated IP67 and are also certified to the highest ingress protection available under ATEX/IECEx test conditions - IP64. Availability is subject to individual country law and regulations. All specifications shown are typical unless otherwise stated and are subject to change without notice.

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