



Digital Selective Calling System

Product Brochure

Rev. 02

Advenio is a Latin word which means **to arrive**.
In our professional activity, we work with firmness,
enthusiasm and perseverance **to achieve** our goals

Iris DSC - Overview

Digital Selective Calling (DSC) is a radio communication method which uses an automatic transmission technique for digitally encoding calls; this means that communication is not only by radiotelephony (voice). The DSC allows selectively calling a ship or a shore station. By pressing a button it is possible to launch an automated distress alert that will be received for any station on radio's range.

DSC is a fundamental part of the Global Maritime Distress and Safety System (GMDSS). DSC is a very important service for the safety of the human life and the navigation at sea and. In order to ensure a consistent service, not only communication hardware is necessary.

Covering these needs, **Advenio Software** has developed **Iris DSC**, a software system that digitally interconnects several DSC Shore Stations located along a country or region, configuring an innovative network solution. **Iris DSC** provides to DSC Authorities with a safe and reliable service for the reception, processing and broadcasting of VHF/MF/HF digital selective callings service via several shore stations.

Iris DSC involves a set of hardware components and software modules which interact to make the reception possible, by processing and broadcasting of all the VHF, MF and HF digital selective calls received by the different shore stations.

Modularity, Scalability & Connectivity

Iris DSC is a fully integrated, **modular, scalable and flexible radio communication system for shore stations supporting Digital Selective Calling operations.**

The modular design confers scalable configurations including from individual and independent coastal stations to great DSC GMDSS systems with interconnected shore stations along a country or region.

Developed with high quality standards, **Iris DSC** uses open source/multi-platform technologies, web based GUIs and TCP/IP protocols. It offers flexible networking, easiness for connectivity and remote access of workstations, modems and radio communication devices: Remote access and control/operation of any workstation is possible via a simple URL.

Iris DSC offers two software modules within an interconnected operative network: the Operator Console and the Operations Control Center.

Key Features

- **IMO GMDSS Compliant DSC System**
- **Fully scalable system**, enables configurations from a single operator and single radio to a national GMDSS system, covering a region or country
- **Full integration VHF DSC / VHF Voice, MF-HF DSC / MF-HF Voice**
- **Centralized management and monitoring of all the resources in the System**
- Full DSC messaging reception and transmission, **accomplishing ITU-R Recommendations M.493 and M.541**
- Fully flexible System configuration, enabling **system operation from "any Workstation by any Operator using any Radio"**
- **Efficient management of any kind of resources reduces operational costs and system maintenance**
- **Remote configuration and operation of Shore Stations**
- **Friendly web based interfaces** reduce Operator's workload
- Back end based on **multi platform Client/Server Architecture**, employing the most reliable and advanced software components
- Ship/Station's identification thanks to the shared **MMSI Directory**
- **Quality of Service Verification module**, enabling fault detection and alarms activation
- **GIS features** provide customizable definition of "Coverage Areas" for each Coastal Station and **positioning ships transmitting DSC messages**
- **Multilingual capabilities**
- Integration with **third party hardware and systems**

Minor operational costs

The connectivity allows efficient and reliable services with significant financial benefits. By allowing centralized management of technical resources, by enabling remote access/operation of workstations, by distributing important real time information and by ensuring effective responses in emergency situations, **Iris DSC** definitely helps to optimize resources and to reduce operational and maintenance costs.

Regulations compliance

Iris DSC was developed following standards, regulations and dispositions of the *International Maritime Organization and the International Telecommunications Union*. In this sense, **Iris DSC** supports full DSC messaging reception and transmission accomplishing ITU-R Recommendations M.493 (*Digital selective-calling system for use in the maritime mobile service*) and M.541 (*Operational procedures for the use of digital selective-calling equipment in the maritime mobile service*).

Quality certified

In **Advenio Software** we develop our products according to a Quality Management System certified under ISO 9001:2008 by TÜV Rheinland. Our Quality Policy emphasizes the development of **innovative technological solutions**, the creation of **valuable products** and the commitment to achieve **customer satisfaction exceeding their expectations**.

Our Quality Management System ensures systemic and methodical approaches of all the activities that we undertake in *Software Development* processes and

User friendly interfaces

Iris manages critical services. For this reason, it is intuitive, easy to use and robust. Friendly web based interfaces improve learnability and reduce Operator's workload. *Wizards* and *Templates* help the daily work ensuring reliable responses.

DSC Operator Console

The **Console** is an innovative Coastal Station software that enables to receive, process and responds callings from the Digital Selective Calling service, by controlling several VHF, MF and HF devices and antennas. The **Console** can work as a stand alone node or as part of an advanced Coastal Stations Network.

The **Console** offers the following features:

- **Reception and decoding of DSC messages:** Messages are displayed and highlighted accordingly to their status, priority, category, correctness, etc.
- **Easy transmission of DSC messages:** Based on the category, priority and receiver(s) of the message, an *Assistant* guides the operator in order to assemble the outgoing message in a reliable and agile way. Possibility of configure *Message templates* provides flexibility in sending frequent messages.
- **Alarms:** **Iris DSC** provides visual and / or audible alarms for different events that require operator attention: reception of messages of relevance for the Station, detection of inoperative hardware, etc.
- **Historical Records** provide historical information about all messages received and transmitted. Through the powerful and versatile combination of *filters*, it is possible to search information using different data filtering criteria.
- **MMSI Directory** feature allows to association of each registered **MMSI (Maritime Mobile Service Identity)** to the corresponding Name of the ship or coastal station, as appropriate. Thus, when receiving a message, the associated Name is displayed along with the MMSI for quick identification of the sender. Each time a MMSI is registered or updated, the data will be propagated to all the shore stations in the system. It allows **having a single directory** shared in every place.
- **GIS Support** locates on a map the position of ships that transmit DSC messages, graphically distinguishing each type of message received, highlighting those that are the most urgent and those that are not yet processed by any coastal station.

Iris DSC, a Coastal Stations Network

While Shore Stations can work as stand alone nodes, the major benefits of **Iris DSC** are obtained establishing a **network of Coastal Stations**. **Iris DSC**'s advanced network features enable shore stations to work within a highly innovative global system, controlled by a **DSC Operations Control Center**.

Iris DSC is a full synchronized system that permits that a **geographically distributed system behaves as a synchronized whole**, increasing the reliability and the potential of management of the DSC system:

- **Messages enter into the System by either antenna of the network.** It could be that a Coastal Station, for any reason (distance, fading, silence zone, antenna failure, etc.), doesn't receive a message directed to it. However, the message is received by other antenna. In these cases, the system detects this situation and digitally sends (through the network) the message to that Shore Station, highlighting that the message was not received by such antenna, but entered into the system by another station
- **The messages that are relevant to a Shore Station**, either because they were directed to it or because they were originated within its coverage area, **are properly highlighted**
- Any Distress Message received by the System more than once within a certain period of time, will be highlighted in appropriate coastal stations, prioritizing and warning that the message has not been addressed
- It is possible to **suscribe a Shore Station in order to receive messages from other Coastal Station**: when a Coastal Station receives a "All Stations" message, it is distributed to subscribed Shore Stations, via Network

By assigning remote resources, every modem and antenna of the System can be used from any Shore Station. Thus, a Station can remotely transmit via an antenna of other Station. It enables to get a range or power transmission that, otherwise, would not have. This extreme flexibility allows **Operation from any Workstation by any Operator using any Radio**

A **Quality of Service Verification module** detects possible failures from a receiver/transmitter verifying that messages transmitted by an antenna are received for antennas located within the range

Operations Control Center

The **Operations Control Center** centrally manages and monitors every Network's component: Coastal Stations, modems and antennas.

The **Operations Control Center** monitors the state of the entire service by ensuring that every call is attended and by controlling that the different nodes of the system are properly operating. **Control Center** meets issues about:

- **Monitoring Stations & Fault detection** provides **online information** about the status of each Coastal Station connected in the Network and all the hardware of communications that each Station manages
- **Remote operation of Shore Stations** enables to manage Stations without physically radio operators present, allowing to have stations in inhospitable or less accessible areas
- **Remote configuration** sets up parameters of racks and modems connected to transmitters/receivers. It also allows reception / transmission using modems / antennas physically present in distant coastal stations. This feature enables **system operation from "any Workstation by any Operator using any Radio"**
- **Monitoring Callings meets incoming/outgoing calls and actions** being carried out by radio operators in each Station, generating alerts for not answered messages
- Synchronization of shared information
- **Coverage Areas definition**, delimiting for every Shore Station, the region from which each Station has jurisdiction when receives a broadcast message