Interface Control Document Imtech Bridge Guard

IBG-ICD

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References

IMO Res.A.694(17), MSC.128(75), MSC.191(79), IEC 60945 (2002) inc. corr.1 (2008), IEC 61162 Series, IEC 62288 Ed.1.0 (2008), IEC 62616 (2010) , IEC 61696-1 IEC FDIS Ed.2 TC80-690 FDIS VDR, IEC 61924-2 NEN-EN-IEC Ed.1 2012-12

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Introduction

Introduction

The purpose of this specification is to define the number, type and function of all the interfaces possible with the Imtech Bridge Guard.

For each connectable device type, the interface functionality is in this document.

Abbreviations list

BAM	Bridge Alarm Management
BNWAS	Bridge Navigational Watch Alarm System
IO	Input Output
NMEA	National Marine Electronics Association
PLC	Programmable Logic Controller
TCP/IP	Transmission Control Protocol/Internet Protocol
UDP	User Datagram Protocol
VDR	Voyage Data Recorder

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1. Overview

The system as a whole supports connection of the following interfaces:

- NMEA-450 EVE messages
- BAM approved alarm messages VDR messages
- Hardwired IO, like panel buttons, LED's, buzzers and alarms
- Communication to in- and external proprietary equipment

Each of these will be discussed in detail in the remainder of this document.

2. General requirement

All connected devices must adhere to or be tested against IMO Res.A.694(17), MSC.128(75), MSC.191(79), IEC 60945 (2002) inc. corr.1 (2008), IEC 61162 Series, IEC 62288 Ed.1.0 (2008), IEC 62616 (2010) , IEC 61696-1 IEC FDIS Ed.2 TC80-690 FDIS VDR, IEC 61924-2 NEN-EN-IEC Ed.1 2012-12

3. Interfaces

3.1 NMEA-450 EVE messages (external equipment reset interface)

These input ports are digital interfaces conforming to IEC 61162-1/2 and 61162-450

 : *The sentence EVE (General event message) is designed to transmit actions by the crew on the bridge. The tag code field should be set as "BNWAS" and the event description field should be set as "Operator activity".*

Example $RAEVE,,BNWAS,Operator activity*hh<CR><LF>

 : *The Incoming EVE-messages and the outgoing ALR-messages can be send over the TCP/IP connection as well as over the RS232-port of the DAP.*

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3.2 BAM approved Alarm messages, VDR messages

An output shall also be available for connection to a central alarm panel to repeat the malfunction indication as required in 3.4 by contacts, equivalent circuits or an IEC 61162-1/2 compliant interface or an IEC 61126-450 compliant interface

Additionally, the BNWAS shall provide an interface according to IEC 61162-1, ALR sentence, with the following message content:

– hhmmss.ss: this part may be left blank if the BNWAS does not include UTC time information
– xxx: Designation of source of alarm or source of reset command. The automatic mode will appear as “000”

– A: A = Dormant period exceeded
V = Dormant period not exceeded
– A: A = Alarm acknowledged
V = Alarm unacknowledged
– c - - c: BNWAS mode: c_1; c_2; c_3
c_1 = AUT or MAN or OFF
c_2 = Dormant period in min, (03 – 12)
c_3 = Alarm stage: 1, 2 or 3.

Example:

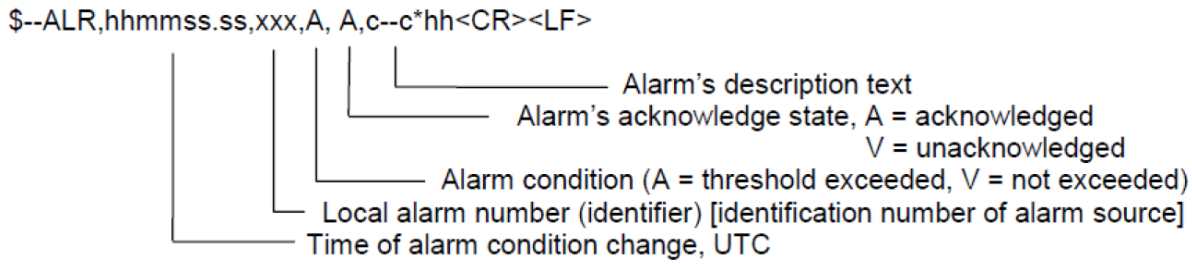

Figure 3-1: ALR sentence

: The alarm message shall be sent with any change of the BNWAS settings for mode or dormant period, and with any activated and reset alarm.

: The Incoming EVE-messages and the outgoing ALR-messages can be send over the TCP/IP connection as well as over the RS232-port of the DAP.

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3.3 Hardwired IO, like panel buttons, LED's, buzzers and alarms

Hardwired IO will be connected to the WAGO 750 series. The IO modules available will be shown hereafter.

The BNWAS panel will connect to the WAGO 750 series PLC through a modbus over TCP/IP slave connection.

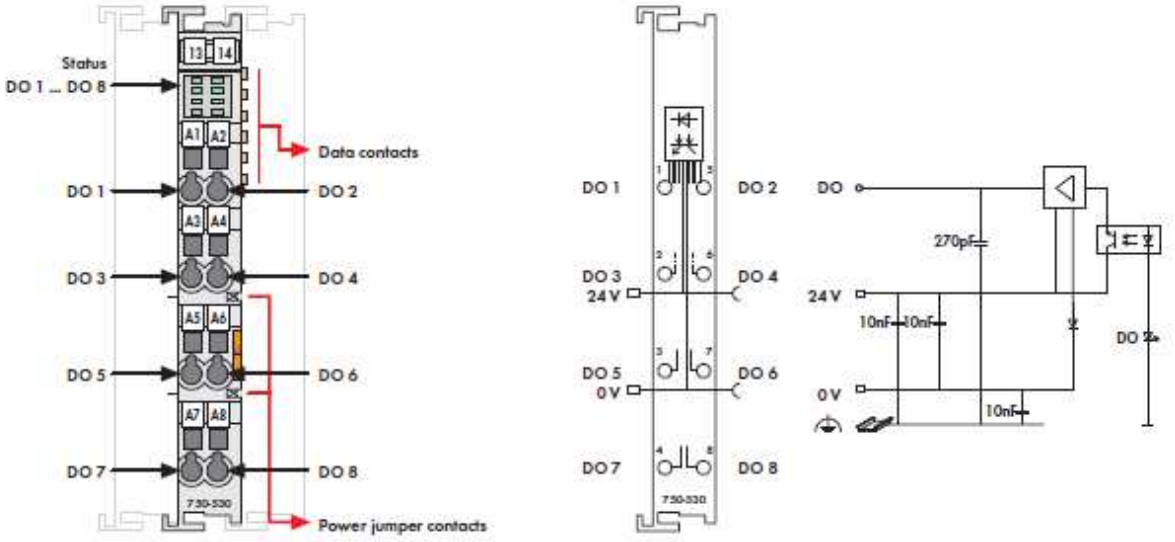

Figure 3-2: Basic circuitry 750-530

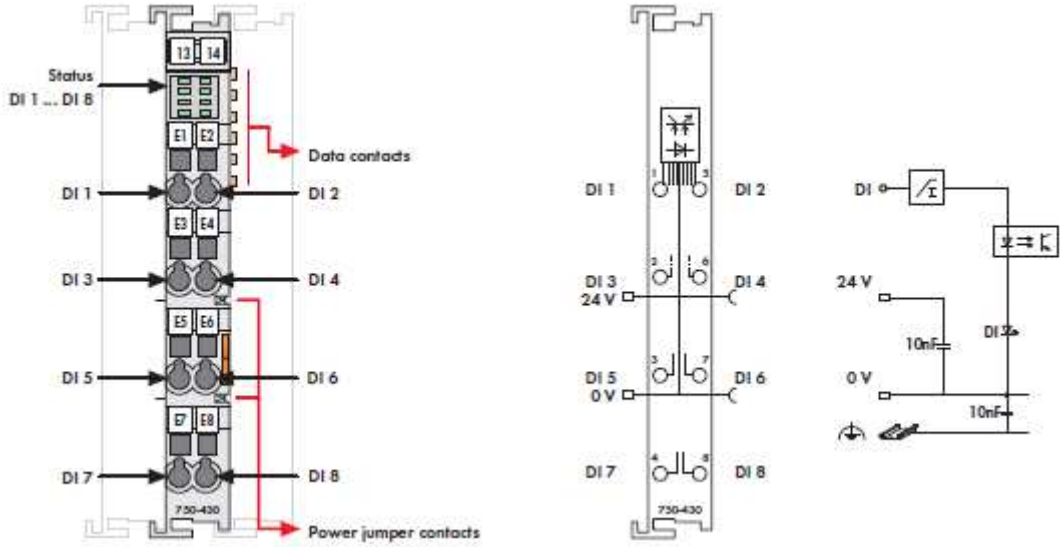

Figure 3-3: Basic circuitry 750-430

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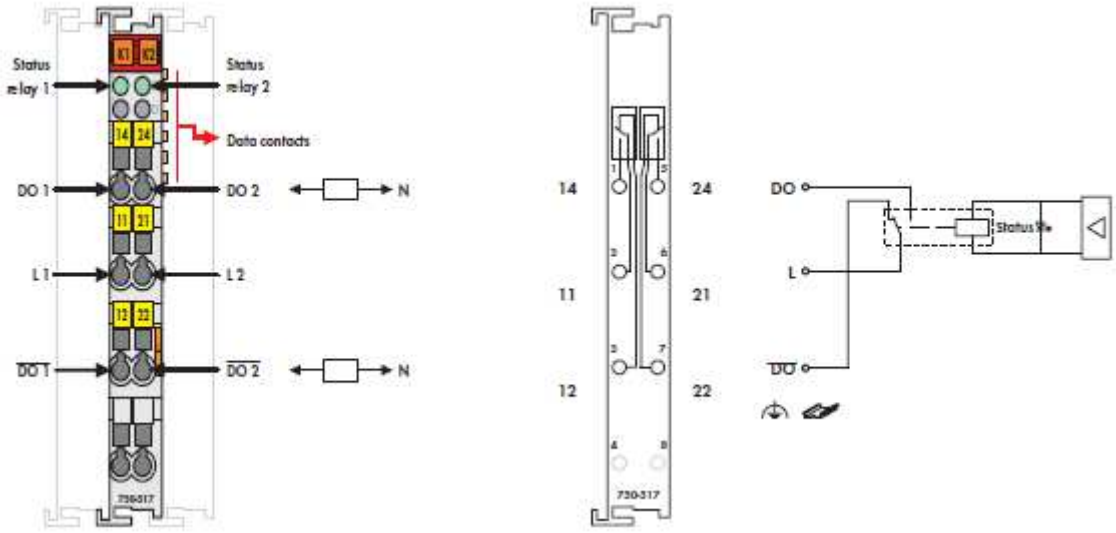

Figure 3-4: Basic circuitry 750-517

3.3.1 Characteristics

Digital input:
-can connect to potential free contacts
-can be driven by 24V signal input

Digital output:
-potential free contacts
-can provide 24V signal

3.3.2 Data definition

The following actuators can be connected to the respective WAGO-modules:

3.3.2.1 750-530

Buzzer WH location 1
LED WH location 1
Buzzer WH location 2
LED WH location 2
Buzzer WH location 3
LED WH location 3
Buzzer WH location 4
LED WH location 4

Buzzer/LED Stage 2 location 1
Buzzer/LED Stage 2 location 2
Buzzer/LED Stage 2 location 3
Buzzer/LED Stage 2 location 4

Buzzer/LED Stage 3 location 1
Buzzer/LED Stage 3 location 2
Buzzer/LED Stage 3 location 3
Buzzer/LED Stage 3 location 4

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3.3.2.2 750-430

BNWAS reset timer location 1
BNWAS reset timer location 2
BNWAS reset timer location 3
BNWAS reset timer location 4
BNWAS reset timer location 5
BNWAS reset timer location 6

BNWAS at Sea

BNWAS power failure

3.3.2.3 750-517

VDR stage 1 alarm
VDR stage 2 alarm
VDR stage 3 alarm

BNWAS Failure alarm

3.4 Communication to in- and external proprietary equipment

The BNWAS program will run on every DAP in the system. It will run in the background as long as the NavVision AM(C)S has connection to the DAP. NavVision can act as BNWAS panel as well as performing other features.

As soon as the connection is lost with the NavVision main station, the dedicated BNWAS panel will appear on screen.

The DAP's will have a priority order depending on their IP-address. The lowest IP-address is the main BNWAS panel. As soon as that panel stops working, the next "lowest" IP-address will become the main BNWAS panel. So for example, when 172.16.1.81 is the main BNWAS panel, the next in line will be the 172.16.1.82.

The BNWAS panel in charge will send (broadcast) a UDP message with a frequency of 2 Hz. This message can be read by every system on the network. The message will contain the following items:

- Time
- On
- Reset
- Emergency
- Status (on, off, at sea, failure, stage 1, stage 2, stage 3)
- Interval
- Delay 3rd stage
- Modulation settings
- Duty
- Failure (master, PLC, power)

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4. Installation requirement Power supply

Derived from the NEN-EN-IEC 62616 Chapter 5 (Design and installation requirements), paragraph 5.3 (Power supply), the following installation requirement will be observed:

(128/A6.3) The BNWAS shall be powered from the ship's main power supply. The malfunction indication, and all elements of the Emergency Call facility, if incorporated, shall be powered from a battery maintained supply.

Taking in consideration that the following test of this requirement will be fully incorporated and obliged to:

Confirm by inspection of documented evidence and measurement that when the supply of power is removed from the equipment the malfunction indication and Emergency Call facility operates for a period of 6 h.

Considering this, the installation will be powered in such a way, that all parts of the BNWAS that holds the malfunction indication (Wago, DAP) and the emergency call function (Wago, DAP, Switches) will function for an additional 6 hour after loss of power.

For the reset buttons, the following consideration will be taken. For the illumination of the LED lights in the buttons, a 24V power supply will be made available thet runs along with the bridge’s night illumination

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