**SUBJECT:**

**DOC. NAME:** Interface Requirements Specifications (IRS)

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**List of Changes: YAMAB IRS**

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\* Means: D - For Deletion

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U -For Update

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# Scope

This Interface Requirements Specification (IRS/IDD) document describes the interfaces of the (ATE).

## Identification

This IRS establishes the interface requirements of the CSCI identified in the YAMAB project.

The IRS document is identified as document 018082E-00 ZABAD.

This document, applies to the following interfaces:

* ZABAD – ZABAD omputer communication protocol

## System Overview

The is an electronic box containing a CPU, CIO card , and POWER SUPPLY card. The YAMAB computer is a ATOM N455 Type CPU that controls various functions in the YAMAB, designed for Siman 4b tank.



Figure 1 - yamab and related sub systems simplified block diagram

Figure 2 depicts the external and internal interfaces of the subsystem.



Figure 2 - External and internal interfaces of the

## Document Overview

This IRS/IDD defines and describes the software aspects of the YAMAB interfaces to other CSCIs and HWCIs of the

This document is divided into the following Chapters:

- Chapter 1: This chapter describes the YAMAB, its purposes, the system configuration and the components of the system.

- Chapter 2: Describes the interfaces to other CSCIs and HWCIs in the system. This section also describes the major interfaces within the CSCI.

# Interface Design

## External Interfaces

The has several interfaces, which connect the with an external systems/sub-systems (HWCI/CSCI).

The external interface of the system is as follows:

* ZABAD – ZABAD computer communication protocol

## Interface

The YAMAB interface is an Ethernet protocol with the YAMAB computer being the server and the ZABAD computer being the client.

The messages is an Ethernet protocol TCP.

Package structure:

|  |
| --- |
| **Unit Code** |
| **Opcode** |
| **Length** |
| **.**  **Data** |

“Unit Code” is one-byte fields.

“Opcode” is two byte field

“Length” is two-byte fields.

The “Length” describes the number of bytes in the “Data” field.

The units codes involved in this interface are as follows:

0x90 - ZABAD Computer

0x47 - YAMAB Computer

IP Address

ZABAD – 132.4.5.100 port 3000

YAMAB – 132.4.5.50 port 3000

### Output Messages

The following list specifies the transmitted data from YAMAB to ZABAD:

1. YAMAB Echo Request ‎3.2.1.1
2. הודעת חיישנים מימ"ב לצב"ד ‎3.2.1.2
3. All Baz Failures ‎3.2.1.3
4. Baz Failures update ‎3.2.1.4

#### YAMAB Echo Request

|  |  |  |
| --- | --- | --- |
| Unit Code | 47H | |
| Operation code | 0006H | |
| Number of Data bytes without Op-Code | 0001H | |
| Description of Data | Byte # | Description |
| 1 | Destination – 0x90 |
| Reason of transmitting | Periodically every 1 second | |
| Reaction of the receiver | Reply with Echo message | |

#### הודעת חיישנים מימ"ב לצב"ד (Periodic data 5Hz)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Unit Code | 47H | | | | |
| Operation code | 0011H | | | | |
| Number of Data bytes without Op-Code | 0015H | | | | |
| Description of Data | Bytes | Description | Type | Scale | Range |
| 1 | 0-2 – מוד בז | Byte | 0-2 | 0 = חירום  1 = ש. לתותח  2 = ש. לכוונת |
|  |  |  |  |  |  |
|  | 2-5 | זווית צידוד מראת תותחן | Float |  | mrad |
|  | 6-9 | זווית הגבהה מראת תותחן | Float |  | mrad |
|  | 10 | סולונואיד הגבהה | Byte | 0-1 | 0 = סגור  1 = פתוח |
|  | 11 | סולונואיד צידוד | Byte | 0-1 | 0 = סגור  1 = פתוח |
|  | 12-15 | ערך איפוס סחיפות צידוד | Float |  | mrad |
|  |  |  |  |  |  |
|  | 16-19 | ערך איפוס סחיפות הגבהה | Float |  | mrad |
|  | 21 | סטטוס תהליך איפוס סחיפות | Byte |  | 0 = לא בתהליך  1 = בתהליך |
| Reason of transmitting |  |  |  |  |  |
| Reaction of the receiver |  |  |  |  |  |

#### All Baz Failures

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Unit Code | 47H | | | | |
| Operation code | 0007H | | | | |
| Number of Data bytes without Op-Code | 2+2 x Number of error being reported | | | | |
| Description of Data | Bytes | Description | Type | Scale | Range |
|  |  |  |  |  |  |
|  | 0-1 | Number of Failures | ushort |  |  |
|  | 2-3 | Error Number | ushort | 0-1534 |  |
| Reason of transmitting | Init, communication resume) | | | | |
| Reaction of the receiver | Update Tiful system and Yatush displays | | | | |

#### Baz Failures update

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Unit Code | 47H | | | | |
| Operation code | 0008H | | | | |
| Number of Data bytes without Op-Code | 3 | | | | |
| Description of Data | Bytes | Description | Type | Scale | Range |
|  | 0-1 | Failure Number | Ushort | 0-1534 |  |
|  | 2 | Status | Byte |  | 0 = not exist  1 = exist |
| Reason of transmitting | Baz failure status change | | | | |
| Reaction of the receiver | Update Tiful system and Yatush displays | | | | |

#### 

### Input Messages

The following list specifies the transmitted data from ZABAD to YAMAB:

1. YAMAB Echo Responsfe ‎3.2.2.1
2. Set Main System Mode ‎3.2.2.2
3. Set Baz Parameters ‎3.2.2.3‎
4. Set DRIFT Mode ‎3.2.2.4
5. Request Error Table ‎3.2.2.5‎

#### 

#### YAMAB Echo Responsfe

|  |  |  |
| --- | --- | --- |
| Unit Code | 90H | |
| Operation code | 0006H | |
| Number of Data bytes without Op-Code | 0001H | |
| Description of Data | Byte # | Description |
| 1 | Destination – 0x47 |
| Reason of transmitting | On request from YAMAB | |
| Reaction of the receiver | Updates CPV/ZABAD communication status | |

#### Set Main System Mode

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Unit Code | 90H | | | | |
| Operation code | 0007H | | | | |
| Number of Data bytes without Op-Code | 0002H | | | | |
| Description of Data | Bytes | Description | Type | Scale | Range |
|  | 1 | Destination – 0x47 | | | |
|  | 2 | System Mode | Byte | 0-2 | 0 = Mod\_mech\_emergency  1 = Mod\_gun\_slaved  2 = Mod\_sight\_slaved |
| Reason of transmitting | On Event (from Yatush) | | | | |
| Reaction of the receiver | Enter requested System Mode | | | | |

#### Set Baz Parameters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Unit Code | 90H | | | | |
| Operation code | 000AH | | | | |
| Number of Data bytes without Op-Code | 0007H | | | | |
| Description of Data | Bytes | Description | Type | Scale | Range |
|  | 1 | Destination – 0x47 | | | |
|  | 2 | Type | Byte | 0-3 | 3 = E\_MANUAL |
|  | 3 | Baz Param Type | Byte | 0-C | 4 = COMP\_STATIC\_EL  5 = COMP\_STATIC\_DF |
|  | 4-7 | Value | Float |  | Relevant only  in Manual |
| Reason of transmitting | On Event | | | | |
| Reaction of the receiver |  | | | | |
|  |  | | | | |

#### 

#### Set DRIFT Mode

|  |  |  |
| --- | --- | --- |
| Unit Code | 90H | |
| Operation code | 0011H | |
| Number of Data bytes without Op-Code | 0001H | |
| Description of Data | Byte # | Description |
| 1 | Destination – 0x47 |
| Reason of transmitting |  | |
| Reaction of the receiver |  | |

#### Request Error Table

#### 

|  |  |  |
| --- | --- | --- |
| Unit Code | 90H | |
| Operation code | 0005H | |
| Number of Data bytes without Op-Code | 0001H | |
| Description of Data | Byte # | Description |
| 1 | Destination – 0x47 |
| Reason of transmitting | On power on or on communication recovery. | |
| Reaction of the receiver | Send All Baz Failures message | |