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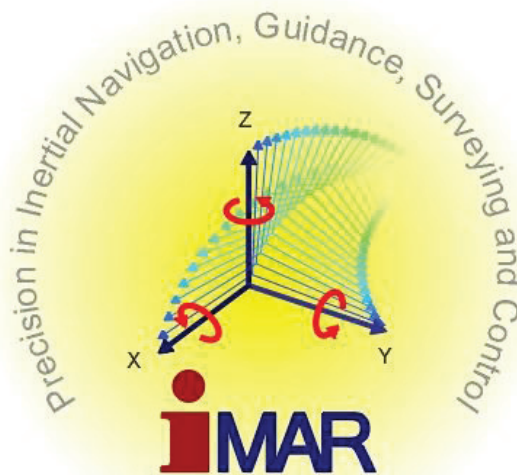
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ICD

iXCOM

Protocol Description


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DOCUMENT CHANGE RECORD

I = Issued; C = Checked
AI = Approved (iMAR)
AC = Approved (Customer)

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1.02	All	Some minor changes due to the previous review.	I	08.12.14	TiSc	DE
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Acronyms of Functions

Industrial/MIL Projects / Industrie- & MIL-Projekte

CEO	Chief Executive Officer (Geschäftsführer)
CUST	Customer (Kunde)
DE	Design Engineer / Development Engineer (Entwicklungsingenieur)
HD	Head of Development (Entwicklungsleiter)
PJM	Project Manager (Projektleiter)
PM	Production Manager (Fertigungsleiter)
QA	Quality Assurance (Qualitätssicherung)
QM	Quality Manager (Qualitätsmanagement-beauftragter)

Aviation & Space Projects / Luft- und Raumfahrtprojekte

AM	Accountable Manager
CUST	Customer (Kunde)
DE	Design Engineer / Development Engineer (Entwicklungsingenieur)
HD	Head of Design (Entwicklungsleiter)
HoA	Head of Office of Airworthiness (Leiter Musterprüfleitstelle)
HoD	Head of Design Organisation
PJM	Project Manager (Projektleiter)
PM	Production Manager (Fertigungsleiter)
CVE	Compliance Verification Engineer (Musterprüfingenieur)
QA	Quality Assurance (Qualitätssicherung)
QM	Quality Manager (Qualitätsmanagement-beauftragter)




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RELATED DOCUMENTS

Related Document	Description	DOC-No.
ICD iNAT ARINC825	ICD of ARINC825 interface	DOC141106133
ICD iNAT-xxxx-B Hardware	iNAT-xxxx-B hardware interface description	DOC141203029
ICD iXCOM Protocol Description	iXCOM Protocol description (UART, ETHERNET)	DOC141126064
ICD iNAT CANopen	Description of the iMAR CANopen implementation; see also: www.CAN-CIA.org	TBC

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1 INTRODUCTION

This document describes the format of iMAR's standard protocol iXCOM (extended communication protocol). The iXCOM protocol is a binary output format being available for all communication devices such as UART, USB and Ethernet. iXCOM provides both the possibility of sending message packages continuously as well as setting/requesting parameters.

The iXCOM protocol is available on all iMAR Inertial Navigation System (INS) hardware of type iNAT-xxxx.

The CAN bus protocol (standard CAN / CANopen as well as ARINC825 and CANaero), which is also supported on most iMAR systems, is defined in a separate ICD (iNAT-xxxx ARINC825 ICD, DOC141106133).

The ARINC429 protocol, which is also supported on most iMAR aviation systems, is defined in a separate ICD.

Each multi-byte binary data type is transmitted as little-endian, meaning that the least significant byte is the first one to be transmitted by the system. Signed integers are coded as two's complement.

Every iXCOM package consists of a 16-byte block header, which is followed by a payload. Each package is completed with a 16-bit *cyclic redundancy check* (CRC).

Figure 1 shows the general structure of an iXCOM package. A detailed description of all package fields can be found in section 2 and section 4.

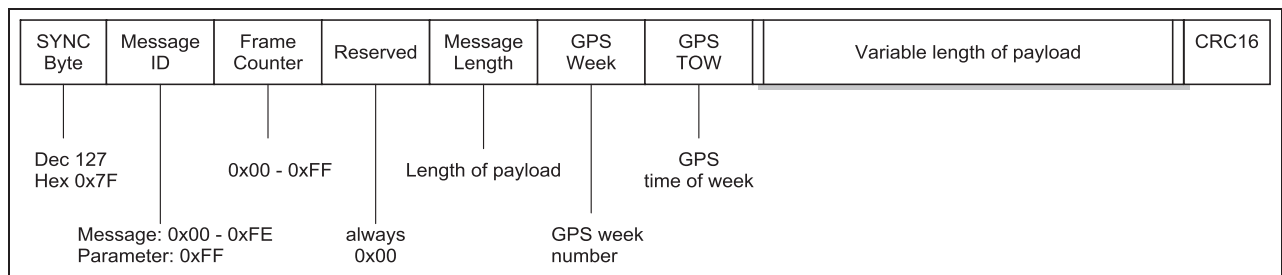


Figure 1: iXCOM Package Overview

The iXCOM protocol is implemented as a binary protocol. To give the user the chance to enter ASCII commands via a command line without a special PC based software, for each binary iXCOM package an ASCII alternative in plain text format exists. These alternatives are listed in each message chapter as an example.

iMAR also offers an alternative to the binary protocol. It is a plain text based protocol and does not provide the flexibility and complexity as the binary protocol. A detailed description of the plain text protocol can be found in section 8 on page 137.