1. Introduction

Hardware manual

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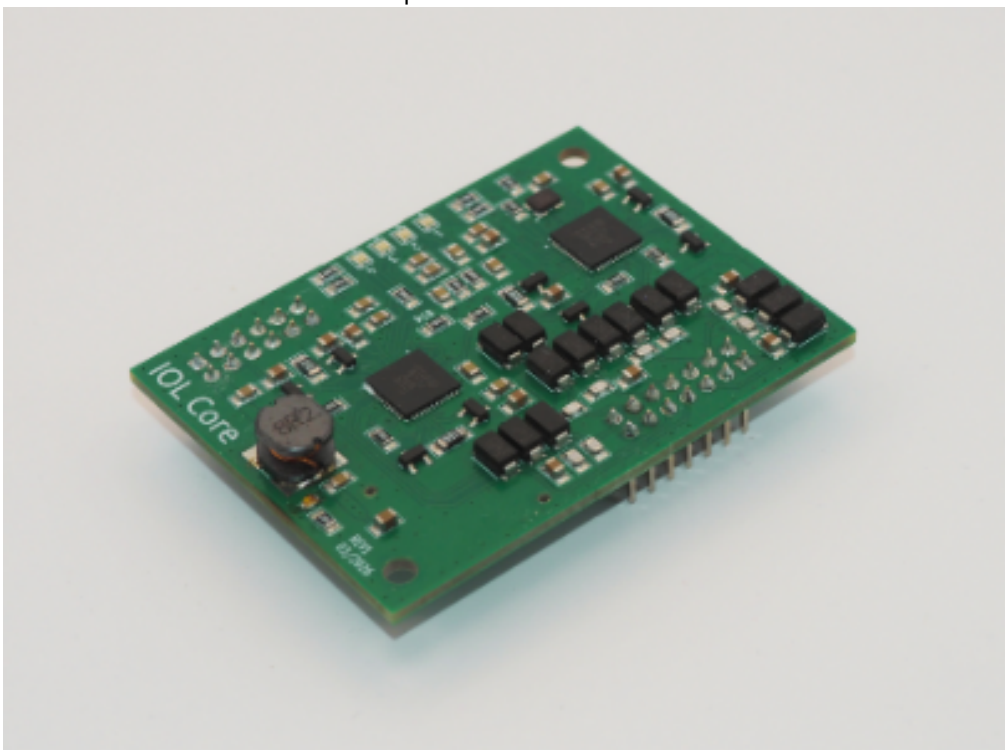

Table of Contents

1. Introduction

1.1 Purpose

The IOL Core4 is a compact IO-Link® [1)] master module designed for integration into embedded host systems. It provides four IO-Link ports compliant with IEC 61131-9 (SDCI), enabling direct connectivity to industrial sensors and actuators in IIoT and automation applications.

This Integration Manual describes the hardware interface of the IOL Core4 and provides all information necessary to integrate the module into a host system. It covers the electrical interface, mechanical dimensions and mounting, connector pinouts, and relevant operating conditions.

The document is intended for hardware engineers and system integrators who are developing host boards or carrier systems for the IOL Core4. Readers are expected to be familiar with standard embedded hardware design practices, including SPI communication and PCB layout for mixed-signal systems.

This manual does not cover firmware integration or IO-Link protocol stack configuration.

The following signs will guide you for dedicated areas of interest. The content is relevant for safe operation of the IOL Core4.

This symbol is used to show information that is relevant for the operation of the IOL Core4

This symbol is used to show areas of special attention that need to be considered for the safe operation of the IOL Core4

1.2 Intended Audience

This Hardware Integration Guide is intended for the following audiences:

- **Hardware Engineers:** Primary audience responsible for implementing the electronic and mechanical design
- **Manufacturing Engineers:** To prepare production processes and tooling
- **Project Managers:** To understand technical scope, dependencies, and resource requirements
- **Technical Management:** For integration review and approval processes
- **Regulatory Compliance Team:** To ensure integration meets applicable standards and regulations
- **Technical Documentation Team:** As source material for user manuals and service documentation

This document assumes the reader has fundamental knowledge of electronic design principles, manufacturing processes, and engineering terminology relevant to electronic hardware development.

1.3 Project Overview

1.3.1 Key Hardware Features

- **IO-Link Master Implementation:** Based on the Analog Devices MAX14819ATM+ IO-Link Master Transceiver chip, providing 4x IO-Link ports per IOL Core4 module.
- **Plug-In Design:** The module shall be plugged in via 2x 2,54mm connectors to plug into a host. One

connector provides power and host connection, the other connector shall provide the 4 IOL master ports.
- **Industrial Compliance:** Compatible with SDCI devices according to IEC 61131-9, supporting class A devices (< 500mA consumption).
- The host communication uses one SPI connection with 2x CS signals.

1.3.2 Target Applications

- Industrial automation and monitoring
- Smart factory implementations
- Data acquisition from industrial sensors
- Process control and quality assurance
- Testing and experimental systems
- IIoT edge computing solutions

1.3.3 Product Variants

Variant	Part No.	Description
IOL Core4	1204	The IO-Link master stack runs on the host.
IOL Core4 µC	1205	The IO-Link master stack runs on an integrated microcontroller on the module.

1.4 References and Related Documents

1. MAX14819: Dual IO-Link Master Transceiver with Integrated Framers and L+ Supply Controllers Data Sheet (Rev.3): https://www.analog.com/media/en/technical-documentation/data-sheets/MAX14819.pdf

1.5 Definitions, Acronyms, and Abbreviations

Abbreviation	Meaning
IOL	IO-Link

1.6 Important user information

Please note that the information and procedures described in this manual are subject to change without prior notice. We continuously strive to improve our products and services, which may result in product updates, product modifications and modifications to the content provided herein.

As a user of our product, it is important to acknowledge that you are responsible for following all relevant local laws, standards, and regulations applicable to your usage. These laws, standards, and regulations may vary depending on your location and the intended use of the product. It is your responsibility to ensure compliance with such requirements.

While we make every effort to provide accurate and up-to-date information, we cannot guarantee that the content of this manual will always reflect the latest developments or changes. Therefore, we encourage you to regularly check for updates and revisions to ensure that you have the most current information available.

By using our product and following the procedures outlined in this manual, you agree to accept responsibility for your actions and to comply with all applicable laws, standards, and regulations. If you have any questions or concerns regarding the information provided in this manual, please contact our customer support team for assistance.

Warning: Not for Critical Applications

The device described herein, including all associated hardware and software components, shall not be used for fail-safe, life-supporting, or other critical applications where the failure of the device could result in significant harm, injury, loss of life, or catastrophic damage.

While every effort has been made to design and manufacture the device to high standards of reliability and performance, it is not intended for use in situations where its failure could have severe consequences. Such critical applications may include, but are not limited to, medical devices, transportation systems, industrial control systems, and emergency response systems.

Using the device in critical applications could lead to unpredictable outcomes, including system failures, data loss, or malfunction, which may pose serious risks to safety, health, or property. Therefore, it is imperative that the device is only employed in non-critical applications where the potential impact of its failure is minimal.

By using the device, you acknowledge and accept this warning, and you agree to indemnify and hold harmless the manufacturer and its affiliates from any liabilities, damages, or losses arising from the improper use of the device in critical applications.

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IO-Link is a registered trademark of PROFIBUS Nutzerorganisation e.V.: io-link.com, profibus.com. The IOL Core4 is compatible with IO-Link devices. It is not a certified IO-Link master.