



User Manual
Wiring Instructions
EtherCAT

Hilscher Gesellschaft für Systemautomation mbH

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Table of Contents

- 1 INTRODUCTION.....3
 - 1.1 About the User Manual.....3
 - 1.1.1 List of Revisions3
 - 1.1.2 Conventions in this Manual3
- 2 WIRING INSTRUCTIONS ETHERCAT4
 - 2.1 General Notes on Wiring in EtherCAT4
 - 2.2 Standard Wiring (Without Redundancy)4
 - 2.3 Redundant Wiring4
- 3 APPENDIX6
 - 3.1 List of Figures6
 - 3.2 List of Tables.....6
 - 3.3 Legal Notes.....7
 - 3.4 Registered Trademarks.....10
 - 3.5 Contacts.....11

1 Introduction

1.1 About the User Manual

This user manual provides the wiring instructions for EtherCAT.

1.1.1 List of Revisions

| Index | Date | Chapter | Revisions |
|-------|------------|---------|--|
| 1 | 2012-11-05 | All | created |
| 2 | 2018-09-07 | 2.3 | Section <i>Redundant Wiring</i> : Prerequisites updated. |

Table 1: List of Revisions

1.1.2 Conventions in this Manual

Notes are marked as follows:

Notes



Important: <important note>



Note: <note>



<note, where to find further information>

2 Wiring Instructions EtherCAT

2.1 General Notes on Wiring in EtherCAT

- Use shielded Ethernet cables that meet the requirements of at least category 5 (Cat 5) according to EN 50173 or ISO/IEC 11801.
- Do not use **hubs** in an EtherCAT network.
- Use **switches** only between EtherCAT master and first EtherCAT slave device (100 MBit/s, Full Duplex).
- The cable length between two EtherCAT devices must not exceed 100 meter.

2.2 Standard Wiring (Without Redundancy)

Standard wiring in EtherCAT connects channel 0 (also known as Port 0 or Main Port) of the master device to the IN Port of the first slave device. The OUT Port of the first slave device is connected to the IN Port of the next slave device, and so forth. The OUT Port of the last slave device and channel 1 of the master device remain unused.

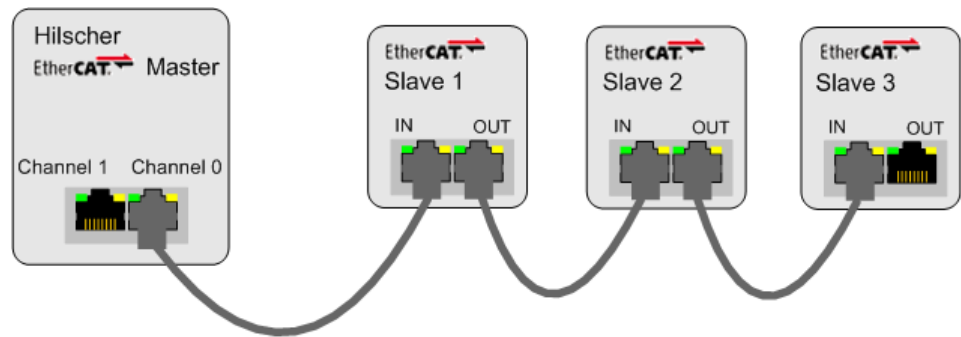


Figure 1: Standard Wiring in EtherCAT Network

2.3 Redundant Wiring

EtherCAT master firmware version ≥ 2.5 supports redundant wiring. In redundant wiring, the OUT Port of the last slave device is connected to channel 1 (Port 1) of the master device in addition to the standard wiring, thus creating a “ring topology” with the master channel 1 serving as “redundancy port”.

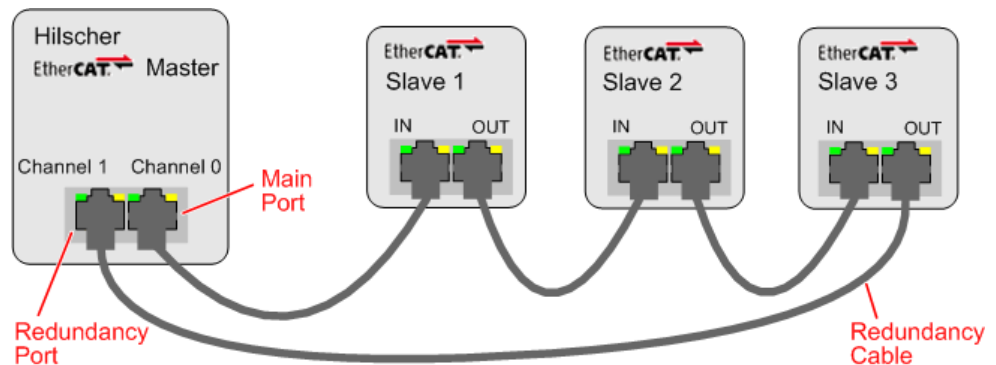


Figure 2: Redundant Wiring in EtherCAT Network

In case of an interrupted cable connection between two EtherCAT slaves or in case of a defective slave device, the redundant cable maintains communication between the master and the other slaves, which otherwise would be cut-off from the bus.

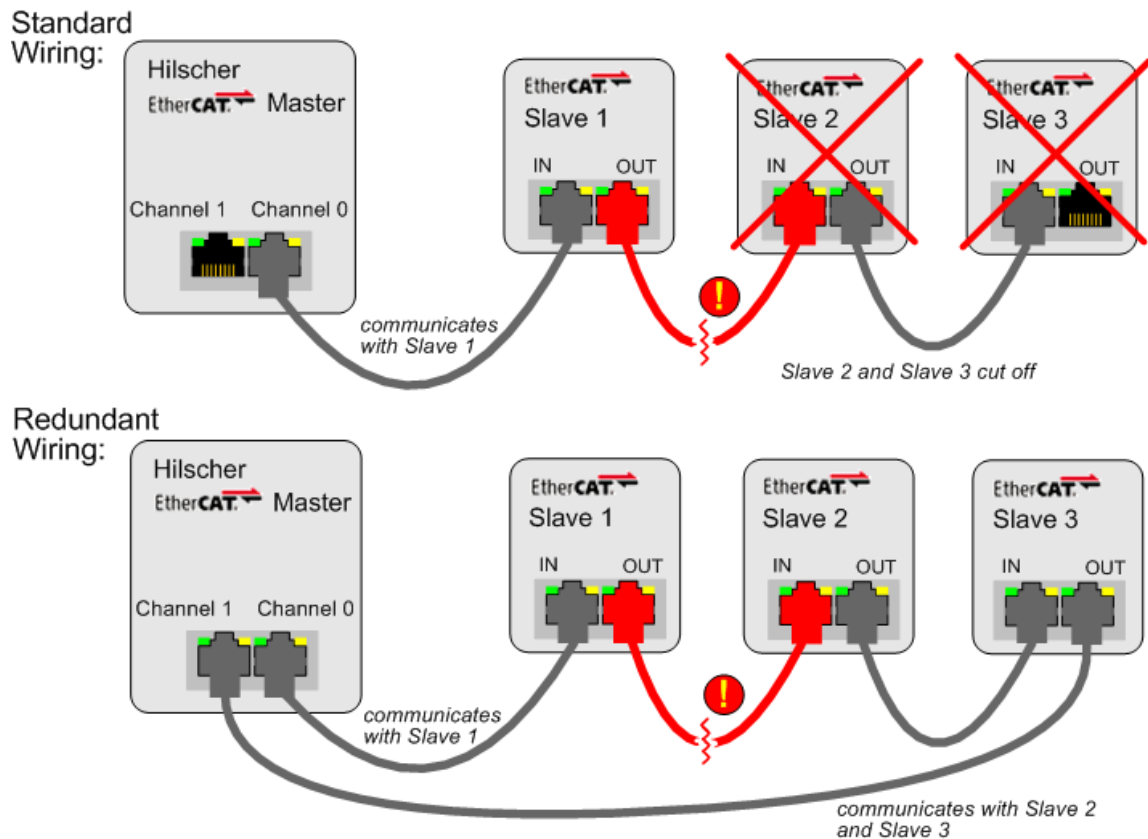


Figure 3: Cable Interrupt in Standard/Redundant Wiring in EtherCAT Network

Prerequisites for using redundant wiring in EtherCAT

- Hilscher EtherCAT master firmware is version 2.5 or higher
- Redundancy function has been enabled in configuration of master

3 Appendix

3.1 List of Figures

| | |
|--|---|
| Figure 1: Standard Wiring in EtherCAT Network | 4 |
| Figure 2: Redundant Wiring in EtherCAT Network | 4 |
| Figure 3: Cable Interrupt in Standard/Redundant Wiring in EtherCAT Network | 5 |

3.2 List of Tables

| | |
|----------------------------|---|
| Table 1: List of Revisions | 3 |
|----------------------------|---|

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