

Industrial controls

**SIRIUS Innovations
Compact Starter with IO-Link
Connection to the Control and
Integration into STEP 7**

Application description • June 2010

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SIRIUS Innovations Compact Starter with IO-Link

Connection to the Control and Integration into STEP 7

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Preface

1.1 Objective of the application

The use of compact starters with IO-Link facilitates use in decentralized solutions. This ensures connection to the TIA environment.

This application shows the structure of compact starters using conveyors in a conveyor system and their integration into STEP 7.

Core content of this application

The following core issues are discussed:

- Connection to a control system via IO-Link

Basic knowledge of this topic is required.

Structure of the document

The documentation of this application is divided into the following main parts.

Table 1-1

Part	Description
Application description	This chapter gives you an overview. The required standard hardware and standard software components are introduced, as well as the specially programmed application software.
Structure and installation of the application	This section provides a step-by-step explanation of the structure and installation of the application.
Configuration	This chapter describes the software configuration steps which are necessary for the configuration of the hardware components.
Further reading	This chapter provides further information, e.g. literature references.

2

Application description

2.1 Content

This application example describes the connection of a conveyor to a compact starter with IO-Link. When loading and unloading machine tools, individual conveyors can easily be combined in groups.

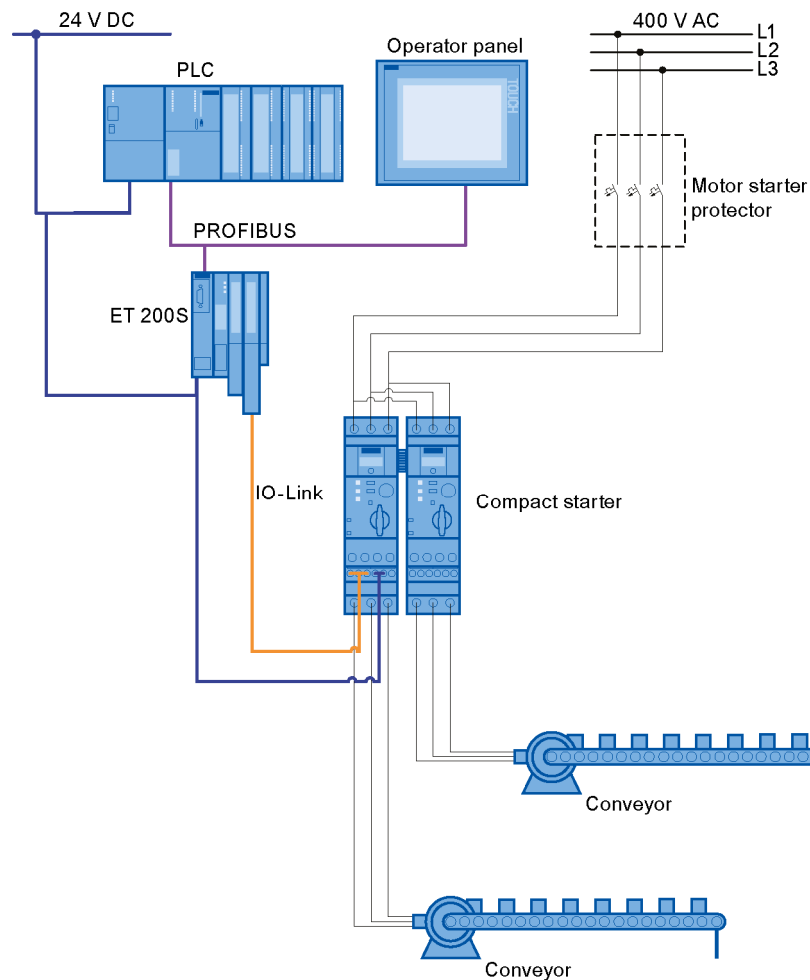
The following is an example of the connection of compact starters to a control system via the IO-Link master.

2.2 Structure

2.2.1 Overview

For the control of band conveyors positioned close to one another within the system, the compact starters can be constructed in a control cabinet. Connection to the control is implemented via IO-Link.

Figure 2-1: Connection of the compact starter via IO-Link



2.2.2 Requirements

A line must be used for the power supply to the compact starters which is protected against short-circuits and overloads.

The compact starters need a separate 24 V DC supply.

2.2.3 Advantages of this solution

In small or locally concentrated systems, the drives can be controlled in a control cabinet.

2.2.4 Required hardware and software components

The following tables show the minimum configuration of the hardware and software components.

Table 2-2 Hardware components

Component	Quantity	MLFB / order number	Note
24 V DC power supply	1	6EP1 33..	Depends on the required output
SIMATIC S7 300 CPU CPU313C-2 DP	1	6ES7313-6CF03-0AB0	—
ET 200S IM151-HF	1	6ES7151-1BA02-0AB0	—
ET 200S PM-E module	1	6ES7138-4CA01-0AA0	—
ET 200S IO-Link master	1	3RK1005-0LB0-0AA0	—
ET 200S terminal module	1	6ES7193-4CD20-0AA0	PM-E terminal module
ET 200S terminal module	1	6ES7193-4CA40-0AA0	Terminal module IO-Link master
Motor starter protector	1	3RV20	Depends on the number of starters
Compact starter direct starter	1 ... 16	3RA6400-.....	Reversing starter also possible

Table 2-3 Software components

Component	Quantity	MLFB / order number	Note
SIMATIC STEP 7 V 5.4 + SP 5	1	6ES7810-4CC08-0JA5	—
S7-PCT V 2.0	1		—

Structure and installation of the application

3.1 Content

This section provides a step-by-step explanation of the structure and installation of the application.

3.2 Installation and commissioning

This chapter describes the hardware and software that must be installed, as well as the commissioning steps for the example.

3.3 Installation of the hardware and software

This chapter describes the hardware and software components that must be installed. The descriptions, manuals and delivery information supplied with the respective product must be observed under all circumstances.

Installation of the hardware

The hardware components can be found in chapter 2.2.4.

The structure of the hardware components is shown in chapter 2.2.1. Screened cables must not be used for the IO-Link connections.

Note

The installation guidelines must always be observed.

Installation of the software

Table 3-4

No.	Action	Note
1.	SIMATIC STEP 7 installation	Please observe the instructions provided by the installation program
2.	Installation of S7-PCT V 2.0	Please observe the instructions provided by the installation program

4

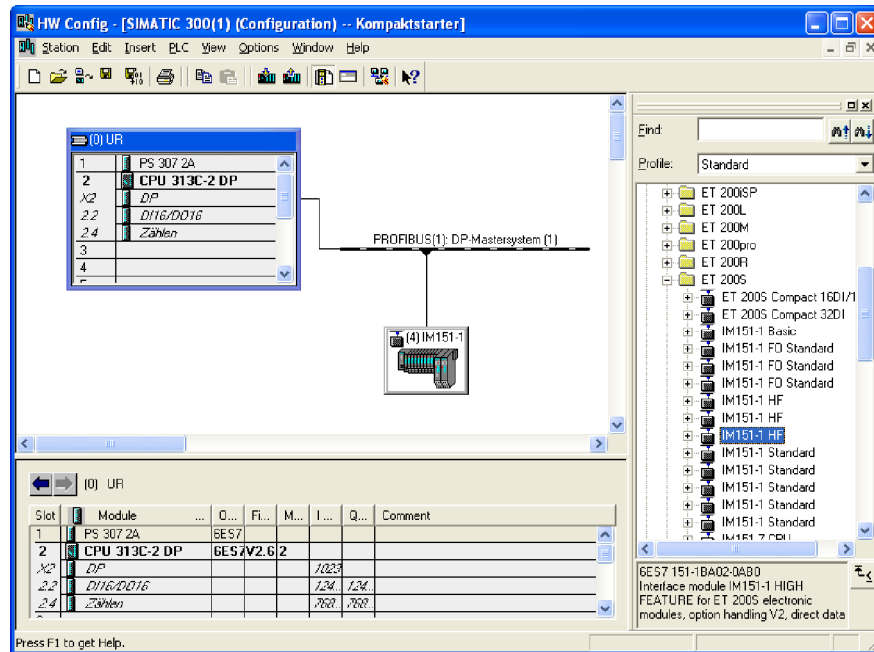
Configuration

In order to integrate the compact starter into the control system, an IO-Link master must be allocated to the CPU.

4.1 Configuration of the station

As a first step, an ET 200S station must be connected to the DP master system in HW Config.

Figure 4-2

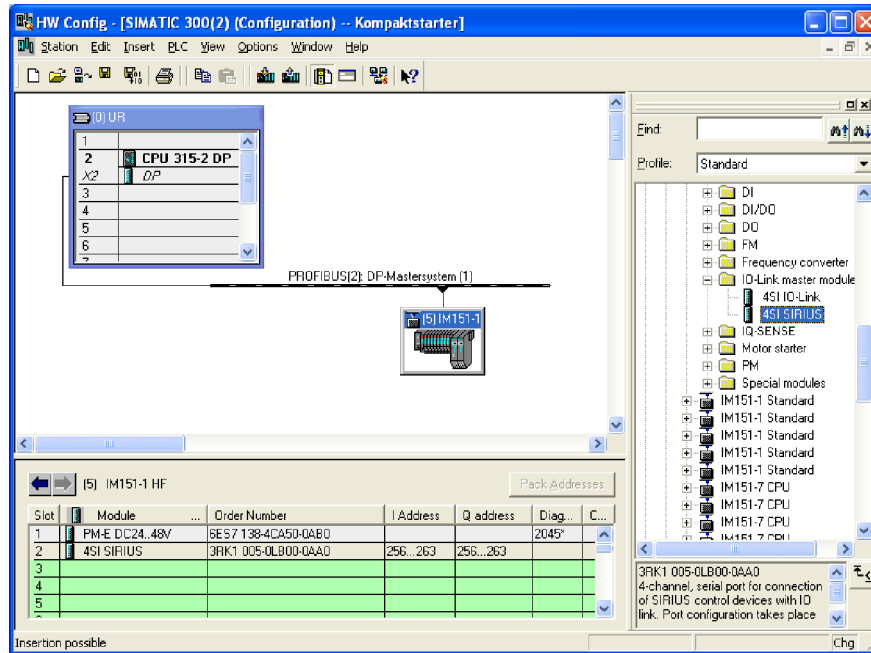


Configuration

4.1 Configuration of the station

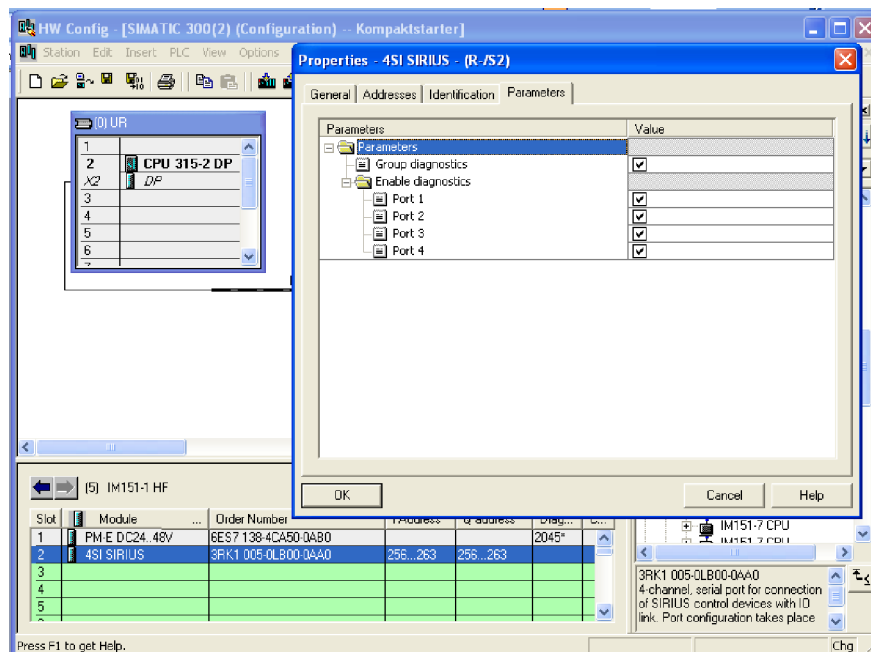
A PM-E module and an IO-Link SIRIUS master must be integrated into the ET 200S station.

Figure 4-3



For the IO-Link master, the diagnoses for the individual ports must be released in the properties dialog under "Parameters".

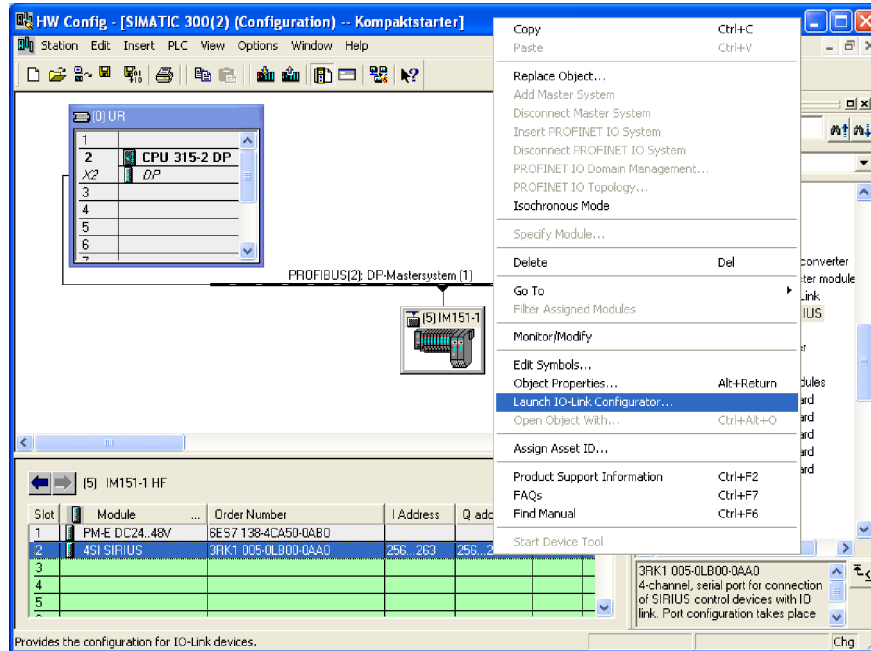
Figure 4-4



The parameterization of the individual compact starters must be carried out as follows:

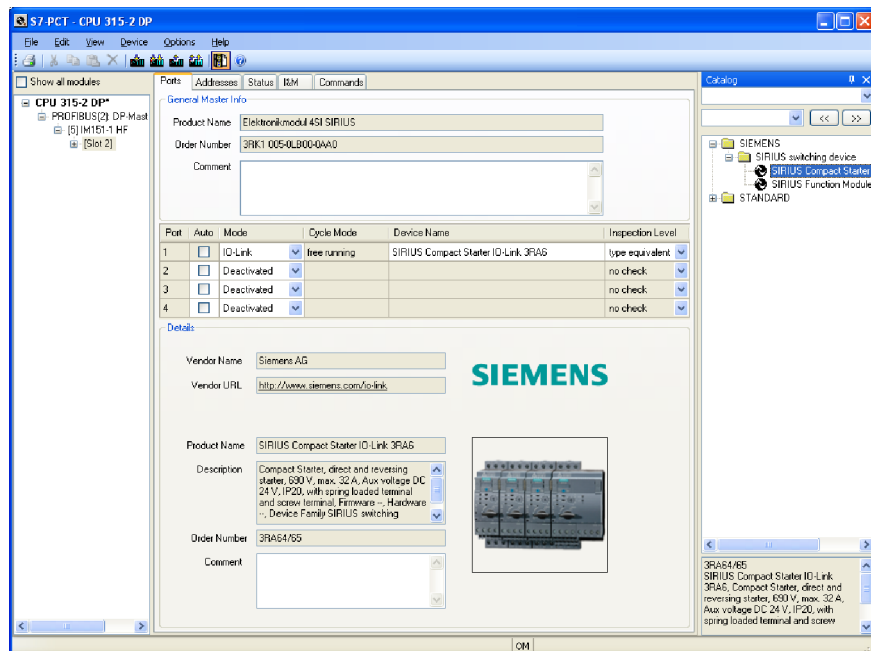
Select the IO-Link master (4SI SIRIUS) and open the context menu by clicking the right mouse button. Start S7-PCT by selecting "Launch IO-Link Configurator...".

Figure 4-5



Drag the appropriate switching device from the catalog to the ports.

Figure 4-6

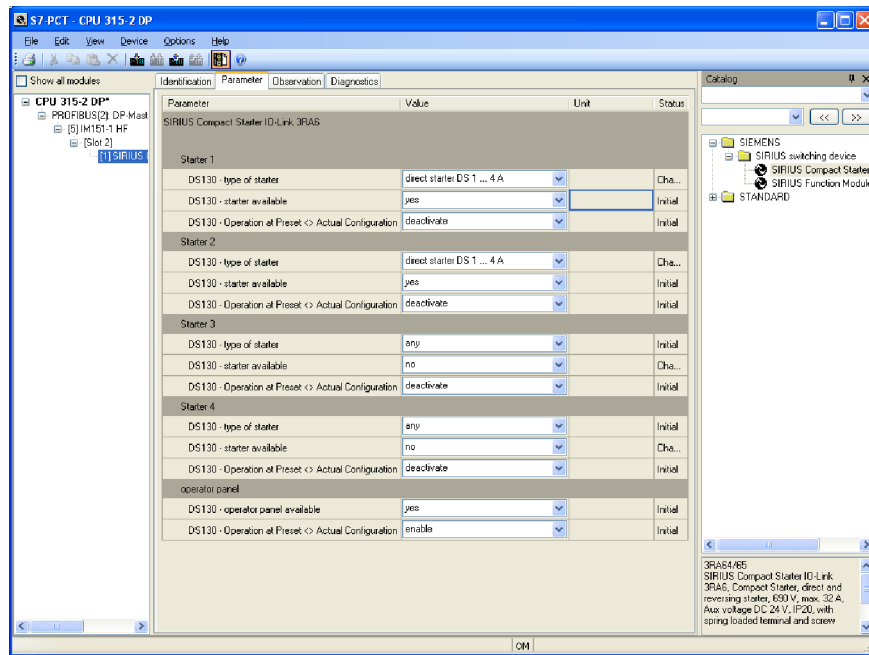


Configuration

4.1 Configuration of the station

Then parameterize the individual compact starter types on the ports. Unused slots must be de-selected manually.

Figure 4-7



5

Further reading

5.1 Literature references

This list is not complete. It only provides a selection of possible further reading.

Table 5-5

	Topic	Title
/1/	STEP 7	Automatisieren mit STEP 7 in AWL und SCL Hans Berger Publicis MCD Verlag ISBN 3-89578-113-4

5.2 Internet link information

This list is not complete. It only provides a selection of possible further reading.

Table 5-6

	Topic	Title
\1\	Link to the document	http://support.automation.siemens.com/WW/view/en/40845590
\2\	Siemens A&D Customer Support	http://support.automation.siemens.com
\3\	Catalog News LV 1 N – SIRIUS Innovations	http://www.siemens.com/industrial-controls/catalogs

6

History

Table 6-7: History

Version	Date	Change
V1.0	16.12.2009	First issue
V2.0	09.06.2010	Revision of the hardware assembly overview