Industrial controls

SIRIUS Innovations
Load Feeder with AS-Interface Connection to the Control and Integration into STEP 7

Application description • June 2010

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Table of contents

1 Preface

1.1 Objective of the application

The use of function modules with AS-Interface facilitates use in decentralized solutions. This ensures connection to the TIA environment.

This application shows the structure of load feeders 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 via AS-Interface

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 load feeder with function module for AS-Interface. When loading and unloading machine tools, individual conveyors can easily be combined in groups.

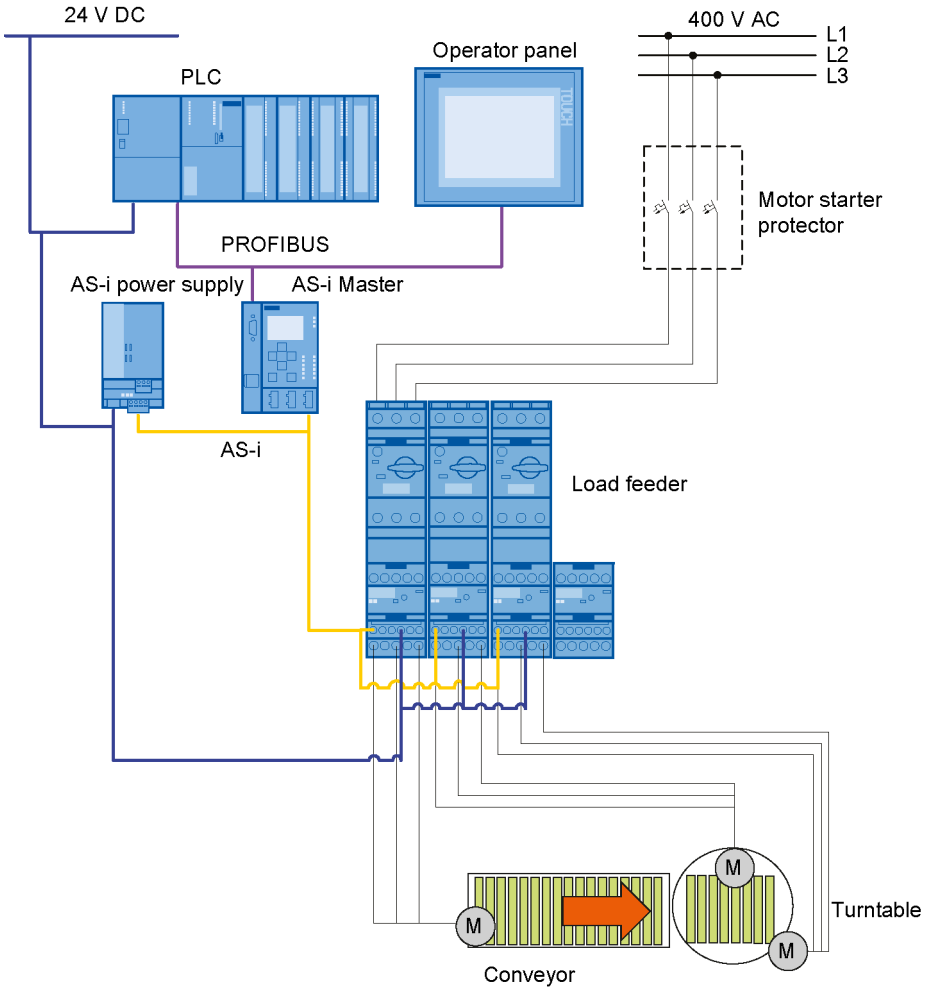
The following is an example for the connection of load feeders to a control via AS-Interface.

2.2 Structure

2.2.1 Overview

For the control of conveyors positioned at a distance from one another within the system, the load feeders are supplied via a power bus. The diagram below shows an example of a conveyor with a turntable. Connection to the control is implemented via AS-Interface.

Figure 2-1 Connection of the load feeder via AS-Interface



2.2.2 Requirements

The main energy supply (400 V AC) is ensured via a power bus. A line must be used which is protected against short-circuits and overload (e.g. within the control cabinet).

The load feeders need a separate 24 V DC supply.

Installation of the DP/AS-i Link depends on the extent of the AS-Interface bus.

2.2.3 Advantages of this solution

With a distributed configuration, AS-Interface is a convenient solution for controlling the drives. The load feeders can be combined to groups.

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	—
AS-i Master	1	6GK1415-2BA10	—
AS-i power supply	1	3RX9502-0BA00	—
Components for direct starters			
Motor starter protector	2	3RV2011-1AA10	—
Link module	2	3RA1921-1DA00	—
Contactor	2	3RT2015-1BB41-0CC0	—
Function module for AS-Interface, direct start	2	3RA2712-1AA00	—
Components for reversing starters			
Motor starter protector	1	3RV2011-1AA10	—
Link module	1	3RA1921-1DA00	—
Installation kit for reversing combination	1	3RA2913-2AA1	• Wiring modules top and bottom • Mechanical interlocking • Two connection clips
Contactor	2	3RT2015-1BB42-0CC0	—
Function module for AS-Interface, reversing start	1	3RA2712-1BA00	—

Table 2-3 Software components

Component	Quantity	MLFB / order number	Note
SIMATIC STEP 7	1	6ES7810-4CC08-0JA5	—

2.2.5 Alternative solutions

An AS-i Master CP - CP 243-2 (S7-200) or CP 343-2 (S7-300) - can be used instead of a DP/AS-i Link.

An IE/AS-i Link must be used for the connection of the AS-Interface to the PROFINET.

The configuration of the application with a load feeder is the same for the alternative solutions.

3 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 provided in chapter 2.2.1. Standard lines can be used for the connection to the AS-i modules.

Note The installation guidelines for all components 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

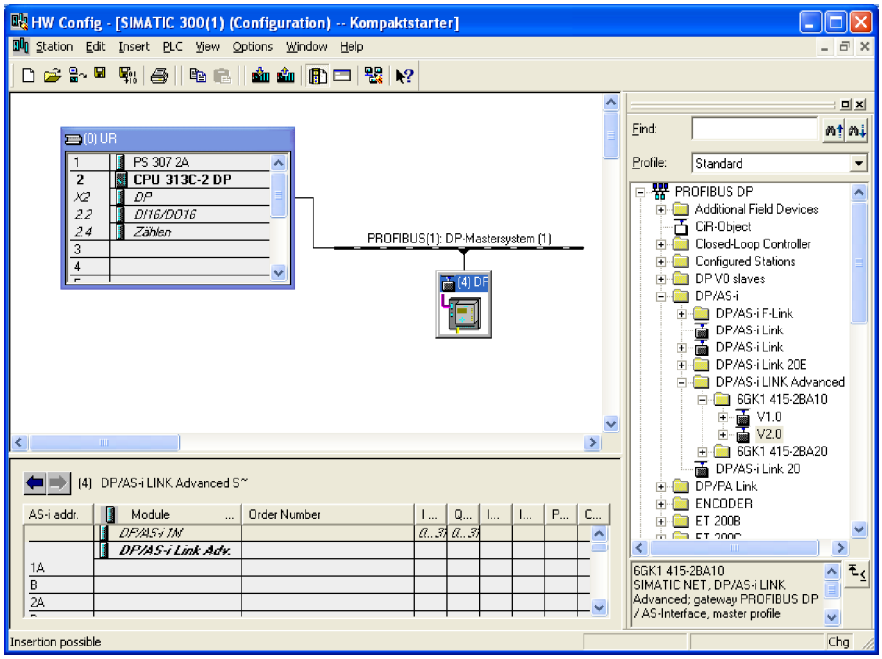
4 Configuration

In order to integrate the load feeder into the control, an AS-i Master (here: AS-Interface DP/AS-i Link Advanced) must be assigned to the CPU.

4.1 Configuration of the station

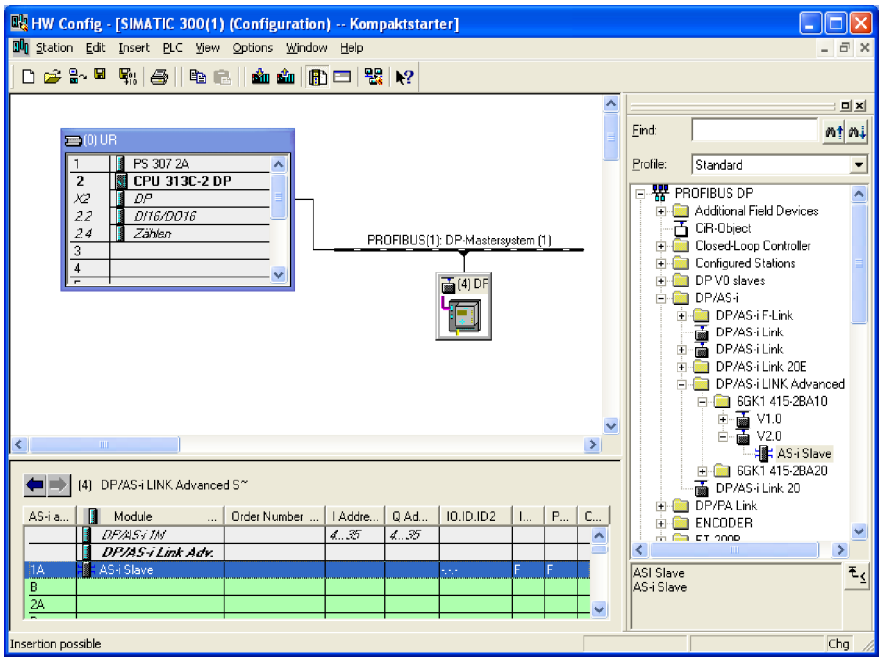
As a first step, an AS-I Master must be connected to the DP master system in HW Config.

Figure 4-2



A slave must then be inserted into the AS-i Master The individual load feeders can be configured as slaves with the AS-i Master.

Figure 4-3



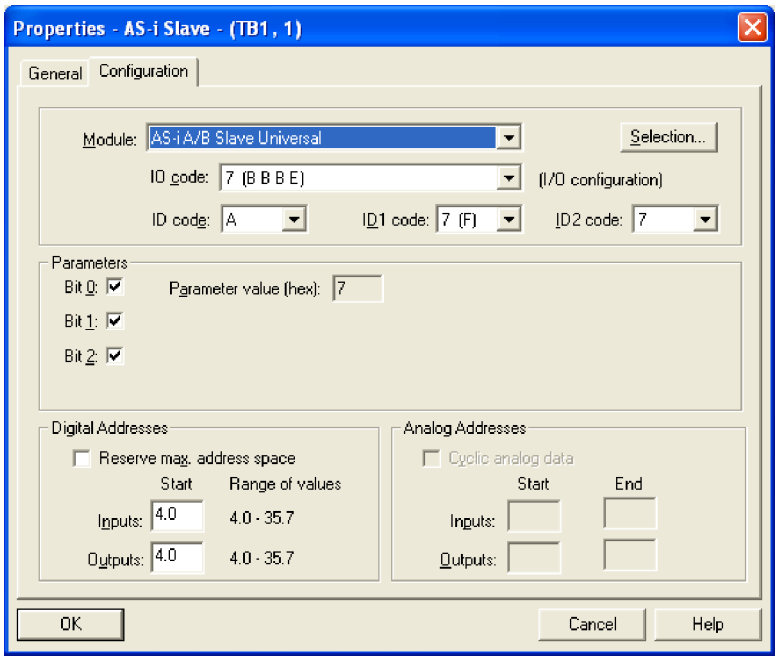
An AS-Interface A/B slave profile must be selected for the load feeder. The AS-i profile must be set as follows within the "Object properties" dialog:

Table 4-5

IO code	7
ID code	A
ID1 code	7
ID2 code	7

With this configuration, the I/O address can be changed for each load feeder.

Figure 4-4



As an alternative, the slave parameterization with the AS-i Master can be omitted.

5 Further reading

5.1 Literature references

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

Table 5-6

	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 5-7

	Topic	Title
\1\	Link to the document	http://support.automation.siemens.com/WW/view/en/41141976
\2\	Siemens A&D Customer Support	http://support.automation.siemens.com
\3\	AS-Interface system manual	http://support.automation.siemens.com/WW/view/com/26250840
\4\	Catalog News LV 1 N - SIRIUS Innovations	http://www.siemens.com/industrial-controls/catalogs

6 History

Table 6-8 History

Version	Date	Change
V1.0	11.01.2010	First issue
V2.0	28.06.2010	Update of the components for direct starters and reversing starters order numbers