

CiA 808



Application note

CiA 444 implementation guideline

Version: 1.0.0
09 February 2007

© CAN in Automation (CiA) e. V.

HISTORY

Date	Changes
2007-02-09	<i>Publication of version 1.0 as application note</i>

General information on licensing and patents

CAN in AUTOMATION (CiA) calls attention to the possibility that some of the elements of this CiA application note may be subject of patent rights. CiA shall not be responsible for identifying any or all such patent rights.

Because this application note is licensed free of charge, there is no warranty for this application note, to the extent permitted by applicable law. Except when otherwise stated in writing the copyright holder and/or other parties provide this application note “as is” without warranty of any kind, either expressed or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. The entire risk as to the correctness and completeness of the specification is with you. Should this application note prove failures, you assume the cost of all necessary servicing, repair or correction.

Trademarks

CANopen® and CiA® are registered community trademarks of CAN in Automation. The use is restricted for CiA members or owners of CANopen vendor ID. More detailed terms for the use are available from CiA.

© CiA 2007

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from CiA at the address below.

CAN in Automation e. V.
Kontumazgarten 3
DE - 90429 Nuremberg, Germany
Tel.: +49-911-928819-0
Fax: +49-911-928819-79
Url: www.can-cia.org
Email: headquarters@can-cia.org

CONTENTS

1	Scope	4
2	Normative references.....	4
3	Definitions.....	4
4	General introduction.....	4
5	CAN connection between a new crane and a new spreader	5
6	CAN or direct-wired connection between an old crane and a new spreader	5
7	CAN or direct-wired connection between a new crane and an old spreader	6
8	Direct-wired connection between an old crane and an old spreader	6
8.1	General	6
8.2	Hardware compatibility	7
8.3	Manufacturer-specific transmission with a boosted CANopen network	7

1 Scope

This application note describes the recommended practice and gives application hints for implementing the connection of crane and spreader.

2 Normative references

/ISO11898-2/ ISO 11898-2: Road vehicles – Controller area network (CAN) – Part 2: High-speed medium access unit

3 Definitions

new crane

crane with a CANopen interface

new spreader

spreader with a CANopen interface

old crane

crane without a CANopen interface

old spreader

spreader without a CANopen interface

The definitions given /ISO11898-2/ apply to this application note, too.

4 General introduction

Goal of this application note is to explain the different ways to physically connect spreader (or other crane add-on devices) to a crane with or without CANopen interfaces. It is intended for system designers.

Both, crane and spreader may be direct wired or equipped with a CANopen interface. In the normal application of a crane it is possible to have different spreaders attached to different cranes. The four possible configurations are:

- CAN connection between a new crane and a new spreader
- CAN or direct-wired connection between an old crane and a new spreader
- CAN or direct-wired connection between a new crane and an old spreader
- Direct-wired connection between an old crane and an old spreader

5 CAN connection between a new crane and a new spreader

CAN connection between a new crane and a new spreader may be performed as shown in Figure 1.

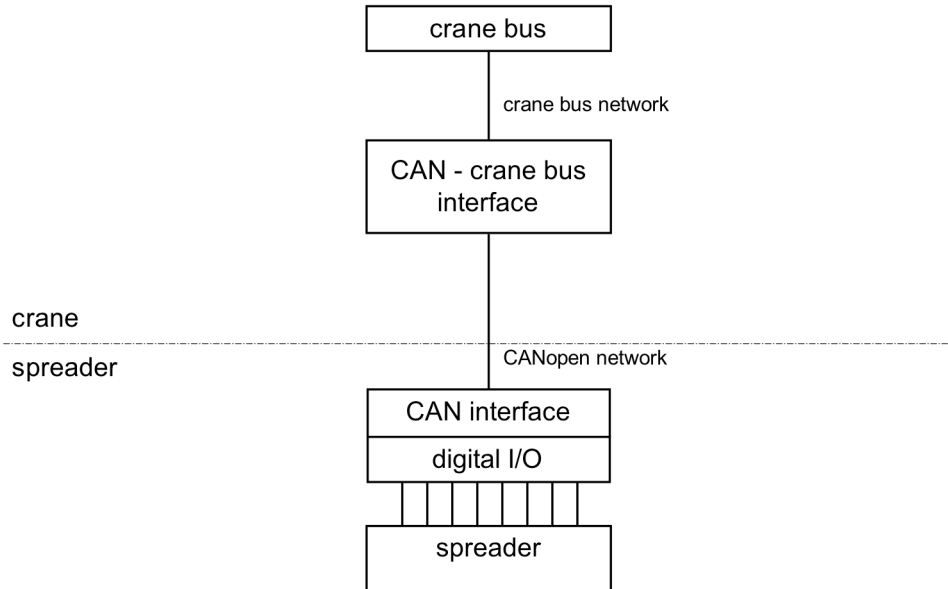


Figure 1 – CAN connection between a new crane and a new spreader

6 CAN or direct-wired connection between an old crane and a new spreader

The CAN or direct-wired connection between an old crane and a new spreader may be retrofitted as shown in Figure 2.

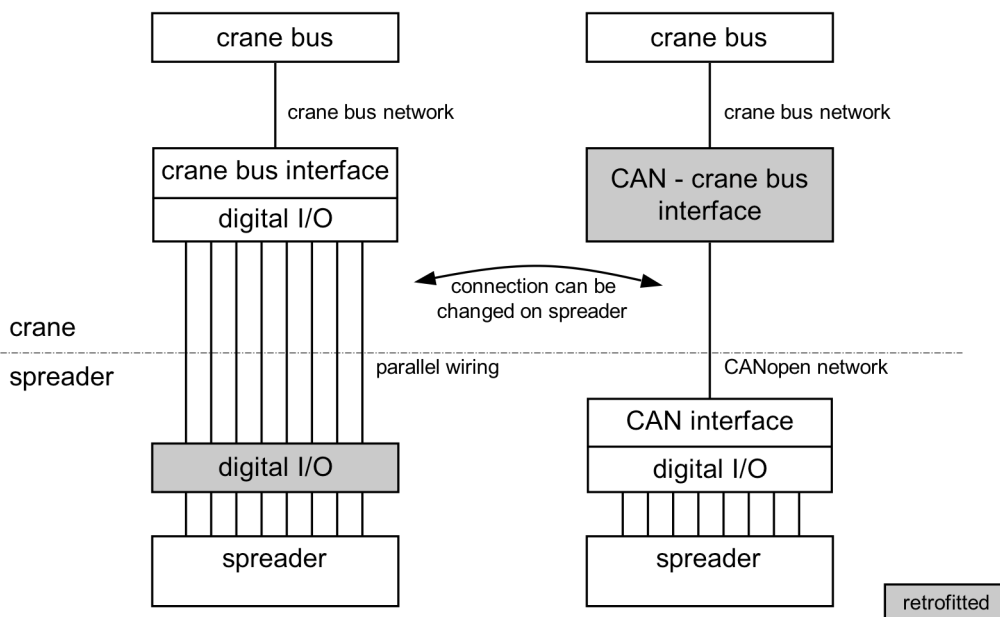


Figure 2 – CAN or direct-wired connection between an old crane and a new spreader

7 CAN or direct-wired connection between a new crane and an old spreader

The CAN or direct-wired connection between a new crane and an old spreader may be retrofitted as shown in Figure 3.

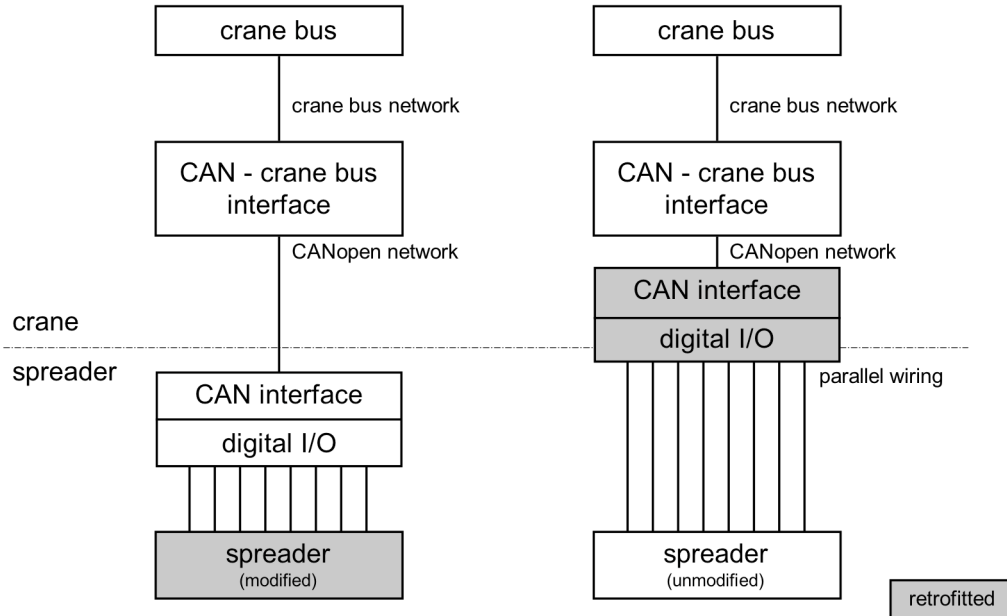


Figure 3 – CAN or direct-wired connection between a new crane and an old spreader

8 Direct-wired connection between an old crane and an old spreader

8.1 General

Figure 4 shows the direct-wired connection between an old crane and an old spreader.

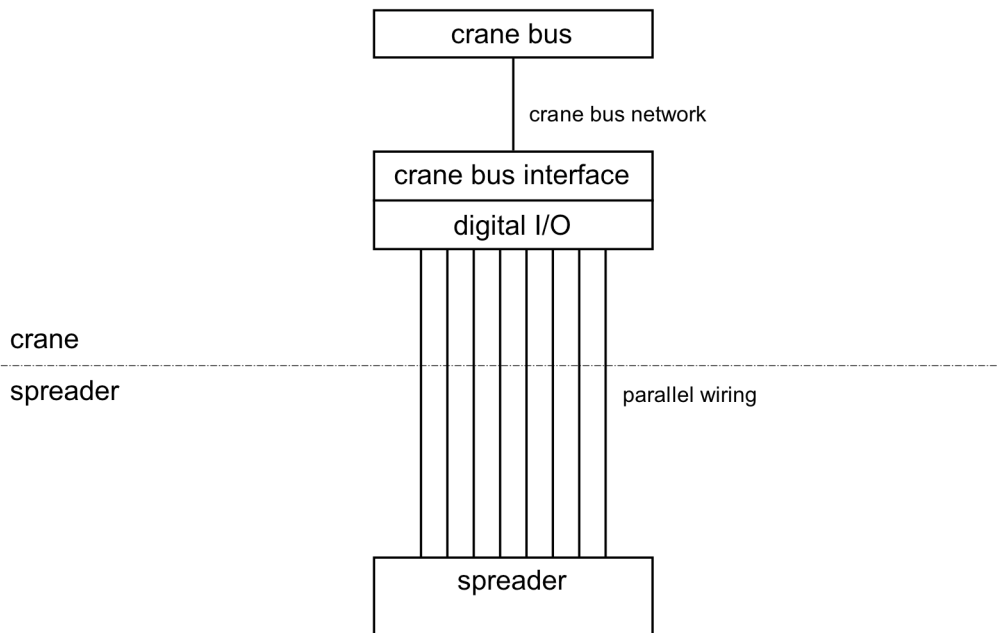


Figure 4 – Direct-wired connection between an old crane and an old spreader

8.2 Hardware compatibility

Table 1 shows the worst-case hardware configuration for connection between an old crane and an old spreader.

Table 1 – Worst-case hardware configuration for connection between an old crane and an old spreader

Hardware configuration
CAN cable length between crane and spreader up to 200 m: - Unshielded multicore cable - High-energy transmission in same cable
Up to two slip rings: Slip rings for CAN transmission not separated from energy transmission
Up to four connectors

8.3 Manufacturer-specific transmission with a boosted CANopen network

If the normal physical layer as defined in /ISO11898-2/ is not suitable for the electric environment of the crane/spreader application, a boosted physical layer may be used that is connected to the standard CAN via converters.

Figure 5 shows the manufacturer-specific transmission with a boosted CAN physical layer.

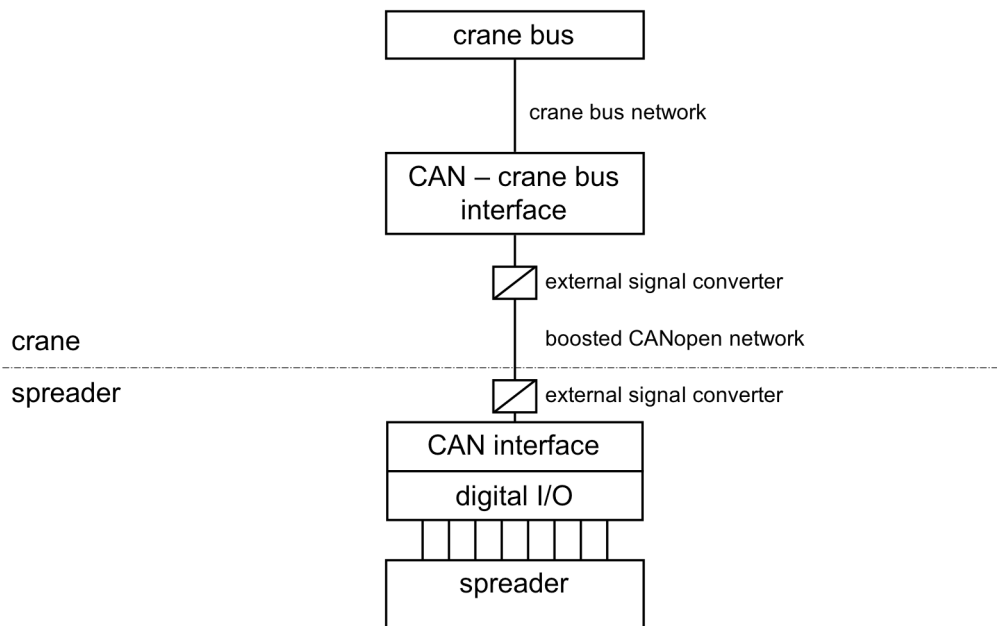


Figure 5 – Manufacturer-specific transmission with a boosted CANopen network