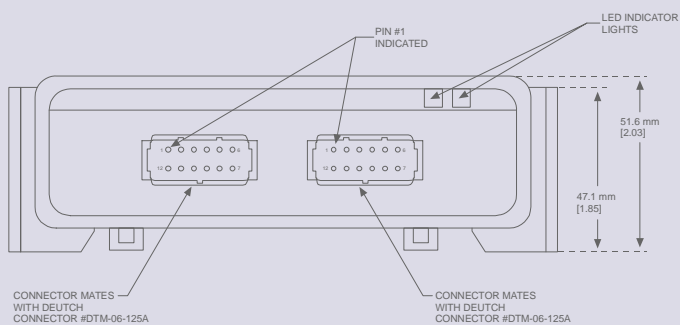
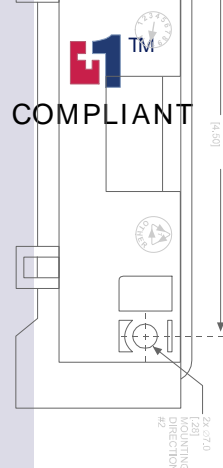
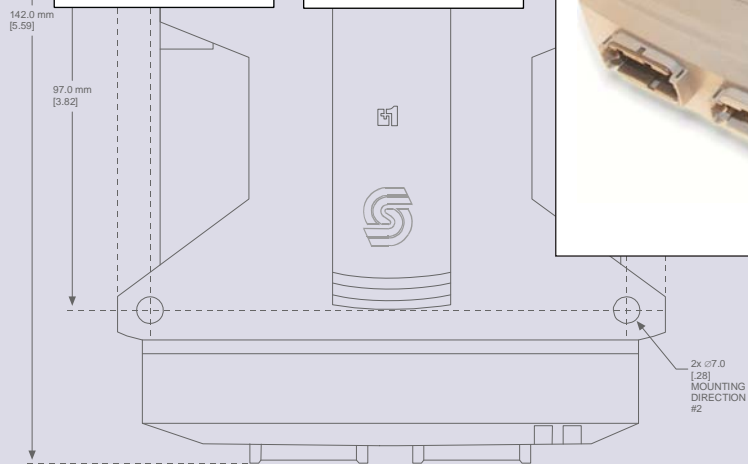
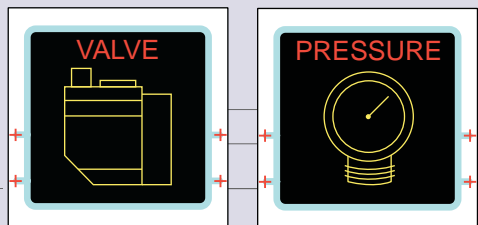
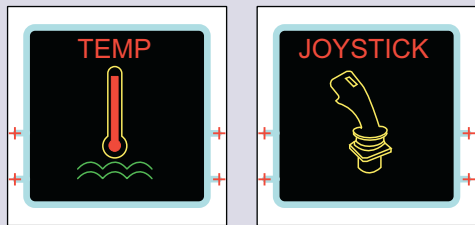


PLUS+1 Compliant
SASA Function Block
User Manual





PLUS+1 Compliant SASA Function Block User Manual

About this Manual

Organization and Headings

To help you quickly find information in this manual, the material is divided into sections, topics, subtopics, and details, with descriptive headings set in **red type**. Section titles appear at the top of every page in **large red type**.

In the PDF version of this document, clicking an item *underlined in blue italic type* jumps you to the referenced page in the document.

Special Text Formatting

Controls and indicators are set in **bold black type**.

Table of Contents

A Table of Contents (TOC) appears on the next page. In the PDF version of this document, the TOC entries are hyperlinked.

Revision History

Revision	Date	Comment
Rev A	April 2007	
Rev AB	May 2010	

©2010 Sauer-Danfoss. All rights reserved.

Sauer-Danfoss accepts no responsibility for possible errors in catalogs, brochures and other printed material. Sauer-Danfoss reserves the right to alter its products without prior notice. This also applies to products already ordered provided that such alterations can be made without affecting agreed specifications.

All trademarks in this material are properties of their respective owners.

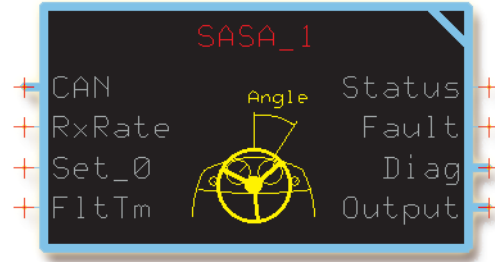
PLUS+1, GUIDE, and Sauer-Danfoss are trademarks of the Sauer-Danfoss Group. The PLUS+1 GUIDE, PLUS+1 Compliant, and Sauer-Danfoss logotypes are trademarks of the Sauer-Danfoss Group.



PLUS+1 Compliant SASA Function Block
User Manual

Contents

SASA Function Block	4
Overview	4
Inputs.....	4
Outputs.....	5
Connections and Signals Overview.....	5
Status and Fault Logic.....	6



Overview

The output of an **SASA** (Steering Angle Sensor Absolute) function block indicates the steering angle of a Sauer-Danfoss Steering Angle Sensor, and the amount that angle has changed since angle information was last received through a CAN message.

See [Connections and Signals Overview](#) on page 5 for an overview of the **SASA** function block's connections and signals.

Inputs

SASA Function Block Inputs

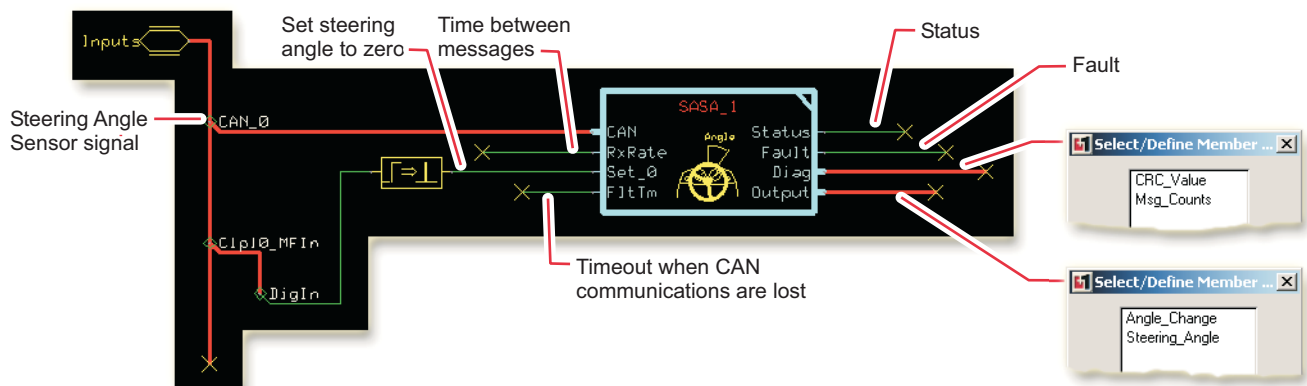
Input	Type	Range	Description
CAN	—	—	The CAN bus in the GUIDE template reports the output of a Sauer-Danfoss Steering Angle Sensor. Route a bus from the GUIDE template's CAN input to this function block's CAN input.
RxRate	U8	5 to 20	The RxRate (Prescribed Rate) signal specifies the frequency that messages are received from the angle sensor. There is the option of specifying once every 5, 10, or 20 ms.
Set_0	Bool	—	The Set_0 (Set-to-zero) signal specifies that the current steering angle is to now be set at 0 degrees. A set-to-zero command is transmitted to the sensor during an F to T transition of Set_0 . T = 0°.
FltTm	—	LoopTime to 65535	The FltTm (Fault Time) signal specifies how long to wait before the CAN bus signal is considered lost and a fault is declared.

Outputs

SASA Function Block Outputs

Output	Type	Range	Description
Status	U16	---	The Status signal reports the function block's status conditions. The Status signal does not use a standard bitwise scheme. For more information about status logic, see Status and Fault Logic on page 6.
Fault	U16	---	The Fault signal reports the function block's fault conditions. The Fault signal does not use a standard bitwise scheme. For more information about fault logic, see Status and Fault Logic on page 6.
Diag	Bus	---	Use these signals for troubleshooting. The Diag (Diagnostic) bus contains the CRC_Value (Cyclic Redundancy Check Value) and the Msg_Counts (Message Counts) signals.
CRC_Value	U16	0-65535	CRC_Value is a checksum value that is received with the CAN message from the sensor. The value is used inside the block to determine if valid data is received.
Msg_Counts	U8	0-255	Msg_Counts is a fault-detection value. Every message from the sensor is given a running number that is increased by 1 every time a message is sent. Used to determine if messages have been lost, and how many have been lost.
Output	Bus	---	The Output bus contains the Angle Change and Steering Angle signals:
Angle Change	S32	-35991 to 35991	The angle between two CAN measurements. 1° = 100
Steering Angle	U16	0 to 35991	The absolute angle relative to the 0-index point. 1° = 100

Connections and Signals Overview



Status and Fault Logic

The **SASA** function block does not use standard status and fault codes.

The status codes indicate the calibration state of the function block.

Status Logic

Status	Bit*	Reported While
Program Pending	1	The SASA is writing a parameter to memory.

*Position of set bit in a 16 bit fault status code. Bit 1 is the least significant bit.

Fault Logic

Fault	Cause	Bit*	Response	Delay [†]	Latch [‡]	Correction
CRC error	A CRC_Value checksum value from the CAN message indicates that an error occurred during the transmission of that message.	1	Data freezes	No	No	There is a physical layer problem. Ensure the CAN bus integrity.
Count error	When comparing the number of messages received with a Msg_Counts fault-detection value, it was found that two or more messages in a row had not been received.	2				Check that the controller's OS.ExecTime is less than RxRate . (OS.ExecTime is a global parameter on all devices.)
Timeout on CAN	The delay in receiving CAN signals exceeds the FltTim setting.	3				There is a physical layer problem. Ensure the CAN bus integrity.
Programming error		4	Old settings are used			Check that the correct RxRate is applied.

*Position of set bit in a 16 bit fault code. Bit 1 is the least significant bit.



PLUS+1 Compliant SASA Function Block
User Manual

(This page is intentionally blank.)

OUR PRODUCTS

Hydrostatic transmissions
 Hydraulic power steering
 Electric power steering
 Electrohydraulic power steering
 Closed and open circuit axial piston pumps and motors
 Gear pumps and motors
 Bent axis motors
 Orbital motors
 Transit mixer drives
 Planetary compact gears
 Proportional valves
 Directional spool valves
 Cartridge valves
 Hydraulic integrated circuits
 Hydrostatic transaxles
 Integrated systems
 Fan drive systems
 Electrohydraulics
 Microcontrollers and software
 Electric motors and inverters
 Joysticks and control handles
 Displays
 Sensors

Sauer-Danfoss Hydraulic Power Systems

- Market Leaders Worldwide

Sauer-Danfoss is a comprehensive supplier providing complete systems to the global mobile market.

Sauer-Danfoss serves markets such as agriculture, construction, road building, material handling, municipal, forestry, turf care, and many others.

We offer our customers optimum solutions for their needs and develop new products and systems in close cooperation and partnership with them.

Sauer-Danfoss specializes in integrating a full range of system components to provide vehicle designers with the most advanced total system design.

Sauer-Danfoss provides comprehensive worldwide service for its products through an extensive network of Global Service Partners strategically located in all parts of the world.

Local address:
 Sauer-Danfoss Inc.
 3500 Annapolis Lane North
 Minneapolis, MN 55447, USA
 Phone: +1 763 509-2000
 Fax: +1 763 559-5769

Sauer-Danfoss (US) Company
 2800 East 13th Street
 Ames, IA 50010, USA
 Phone: +1 515 239-6000
 Fax: +1 515 239-6618

Sauer-Danfoss GmbH & Co. OHG
 Postfach 2460, D-24531 Neumünster
 Krokamp 35, D-24539 Neumünster, Germany
 Phone: +49 4321 871-0
 Fax: +49 4321 871 122

Sauer-Danfoss ApS
 DK-6430 Nordborg, Denmark
 Phone: +45 7488 4444
 Fax: +45 7488 4400

Sauer-Danfoss-Daikin LTD
 Shin-Osaka TERASAKI 3rd Bldg. 6F
 1-5-28 Nishimiyahara, Yodogawa-ku
 Osaka 532-0004, Japan
 Phone: +81 6 6395 6066
 Fax: +81 6 6395 8585