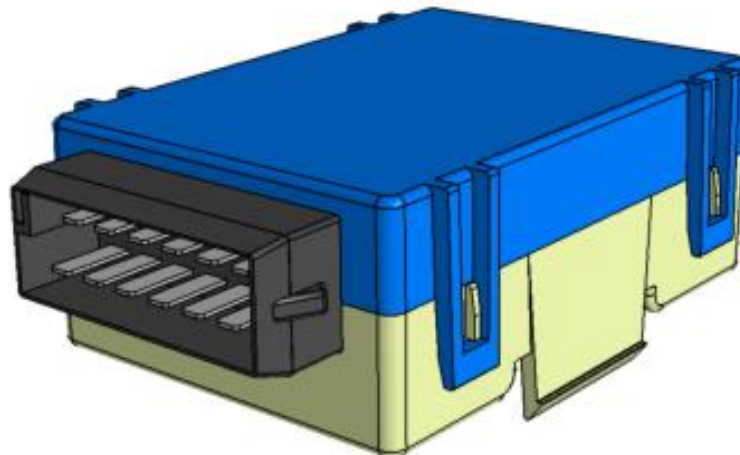


Datasheet CASCO

- Configurable Automotive Semiconductor Controller -



List of Contents

1.	Fields of Application	2
2.	Mechanical Properties	2
	a) Dimensions	2
	b) Material	3
	c) Environmental Conditions.....	3
3.	Product Features	3
	a) Control Unit CASCO:.....	3
	b) PC and CASCO:.....	3
	c) Electrical Data:.....	3
	d) Lifespan	4
	e) Anti-Pinch	4
4.	Application and installation instructions.....	4
	a) Connection.....	4
	b) Installation.....	6
5.	Version history	7

Document:	PDS-CASCO_EN	Product:
Title:	Product Data Sheet	Configurable Automotive Semiconductor Controller
Author:	Alexander Liebert	Any alterations are subject to the approval of the author
Date of Issue:	01.07.2020	Copyright © by Bauer Safety Engineering GmbH 2020
Last update:	01.07.2020	All rights reserved

1. Fields of Application

The controller is used for standard DC brushed motors in a LIN environment with a high load range with fast switching times with the need for precise position information.

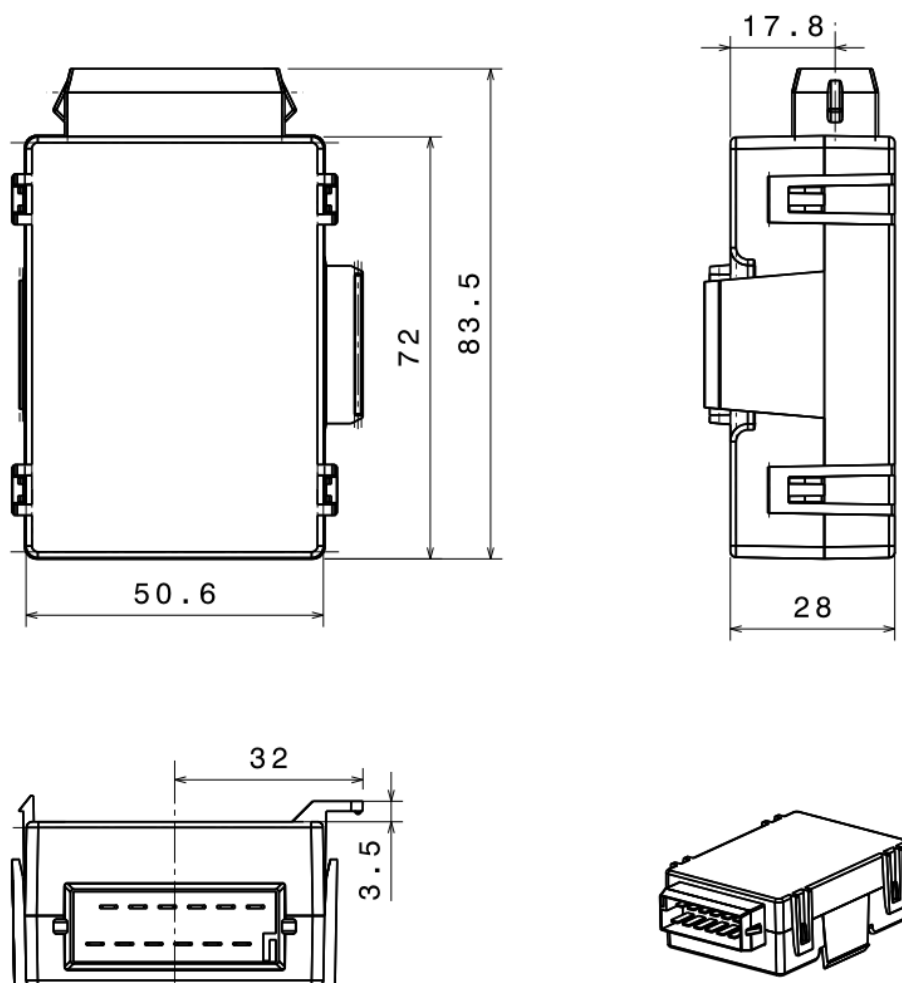
Possible areas of application in the automotive sector include shading systems, window regulators, electrically adjustable mirrors, sunroofs, electric seat adjusters, wash water pumps, door locks, spoiler adjusters, and electric tailgate drives.

2. Mechanical Properties

a) Dimensions

Dimensions: 72 x 50,6 x 28 mm³

Weight: 80g



Document:	PDS-CASCO_EN	Product:
Title:	Product Data Sheet	Configurable Automotive Semiconductor COntroller
Author:	Alexander Liebert	Any alterations are subject to the approval of the author
Date of Issue:	01.07.2020	Copyright © by Bauer Safety Engineering GmbH 2020
Last update:	01.07.2020	All rights reserved

b) Material

Plastics PA6-GF15, black

c) Environmental Conditions

Operating Temperature: -40 to 85°C

Sealing: IP53 with 2 component-based potting

Storage Temperature: -40 to +110°C

3. Product Features

a) Control Unit CASCO:

The ECU is intended for the control of DC motors in various applications in the automotive sector to adjust a mechanical system.

- It is connected to the on-board electrical system via terminal 30 (permanent plus).
- Control and communication take place via LIN bus (the associated LIN master box and PC GUI are available from BSafEr)
- The ECU can also be controlled using a discrete switch (optional on request)
- Possibility of output of diagnostic messages
- Configurability by the customer
- Position monitoring and determination via the Hall sensors from the motor
- Braking time with current reference system: 15ms
- Compatible with up to two Hall sensors as GND switches
- Magnet ring with four magnetic poles (current reference system); Adaptation possible
- Compatible with up to two switches as GND switches
- Compatible with wiring harness and a control box as LIN Master (available from BSafEr)
- Easy to use with PC GUI (available from BSafEr)

b) PC and CASCO:

A configuration tool (available from BSafEr) is available for system configuration in order to adapt the software parameters of the ECU to the corresponding application.

The GUI enables the configuration, saving, reading and writing of the parameter set, as well as the control of the ECU. The GUI also enables online diagnosis.

The determined parameter set can be transmitted to BSafEr, on the basis of which the final software can be created.

c) Electrical Data:

- Supply (terminal 30): 12 VDC nominal (9-16 VDC functional range)
- Motor operation: max. terminal 30 with up to 19 A (inrush current up to 30 A)
- Power consumption (sleep mode): max. 100 µA @ 12VDC
- Power consumption (normal mode): max. 15 mA @ ECU only
- Hall supply output: max. terminal 30
- Hall sensor inputs (2x): integrated pull-ups via terminal 30
- Hall supply and Hall sensor inputs: up to 20 mA total current (internal limitation)
- Minimum On-time between two edges of one Hall sensor: 2ms
- Switch inputs (2x): integrated pull-ups via terminal 30 with up to 20 mA total current (internal limitation)

Document:	PDS-CASCO_EN	Product:
Title:	Product Data Sheet	Configurable Automotive Semiconductor COntroller
Author:	Alexander Liebert	Any alterations are subject to the approval of the author Copyright © by Bauer Safety Engineering GmbH 2020 All rights reserved
Date of Issue:	01.07.2020	
Last update:	01.07.2020	

- Energy reserve: min. 23ms

d) Lifespan

CASCO-ECU has been qualified according to:

- GMW3097-2006 (EMC)
- GMW3172-2011 (Electrical and environmental tests)
- EMC-CS-2010JLR (CE420, RE310)
- JLR LIN HW Review
- GMW3097-2015 (EMC Pulse 1)

e) Anti-Pinch

The algorithm for the detection of a pinching situation and the required reaction to it was developed with shading systems. Application to other systems is possible.

With the reference system, legal requirements according to FMVSS118 and 74/60/EEC are met.

Functionality:

To determine the relevant forces, the gradients of current and speed profiles are evaluated. This means that no absolute values come into play, only changes compared to long-term reference values are evaluated. The gradients are analyzed over different time periods.

Through the use of several speed ranges and associated several threshold values, the algorithm serves a dynamic bandwidth, with which even varying basic loads can be compensated.

4. Application and installation instructions

a) Connection

ECU connection:

Pin	Type	Function
1		Not connected
2	Output	Hall supply (+)
3	Input	Hall sensor 2
4	Input	Hall sensor 1
5	Input	Switch 1
6	Input	Switch 2
7	Power	KL30 (+)
8	Bus	LIN
9	Output	Motor B
10	Output	Hall supply (-)
11	Power	KL31 (-)
12	Output	Motor A

ECU connector: FCI 33130201.

Matching plug socket housing: Tyco 12P Junior Timer GH (827603-1)

Document:	PDS-CASCO_EN	Product:
Title:	Product Data Sheet	Configurable Automotive Semiconductor COntroller
Author:	Alexander Liebert	Any alterations are subject to the approval of the author
Date of Issue:	01.07.2020	Copyright © by Bauer Safety Engineering GmbH 2020
Last update:	01.07.2020	All rights reserved

Wiring harness (without switch connection):



Symbolic photo, subject to technical changes.

ECU	Wiring	Connection to
7	1,2 m x 2,5 mm ² red	Power supply (+)
11	1,2 m x 2,5 mm ² black	Power supply (-)

Cable ends are without pre-assembly, these must be assembled by the user according to the power supply.

ECU	Wiring	Connection to
7	1,5 m x 0,5 mm ² red	Baby-LIN (+)
11	1,5 m x 0,5 mm ² black	Baby-LIN (-)
8	1,5 m x 0,5 mm ² yellow	Baby-LIN (LIN)

The cable end is already pre-assembled for connection to the Baby-LIN.

ECU	Wiring	Connection to
2	0,8 m x 0,5 mm ² red	Motor hall supply (+)
10	0,8 m x 0,5 mm ² black	Motor hall supply (-)
4	0,8 m x 0,5 mm ² yellow	Motor hall sensor 1
3	0,8 m x 0,5 mm ² white	Motor hall sensor 2
12	0,8 m x 2,5 mm ² green	Motor A
9	0,8 m x 2,5 mm ² blue	Motor B

Cable ends are without pre-assembly, these must be assembled by the user according to the motor.

Document:	PDS-CASCO_EN	Product:
Title:	Product Data Sheet	Configurable Automotive Semiconductor COntroller
Author:	Alexander Liebert	Any alterations are subject to the approval of the author
Date of Issue:	01.07.2020	Copyright © by Bauer Safety Engineering GmbH 2020
Last update:	01.07.2020	All rights reserved

b) Installation

Components:



- Wiring harness
- Baby-LIN
- PC-GUI
- CASCO-ECU
- Power supply with voltage range up to 20V (DC) and current up to 20A (DC)

The system setup and installation must be carried out sequentially:

- Connect the ECU, motor and Baby-LIN to the wiring harness
- Connect Baby-LIN to the PC using the USB cable provided (drivers must be installed beforehand)
- Connect wiring harness supply to power supply (power supply is already switched on and ready)
- Start the PC GUI

Notes on Baby-LIN:

- Baby-LIN is supplied directly via the cable harness
- LIN communication is not possible without supply
- Green LED flashes briefly: Baby-LIN is connected to the PC
- Green LED flashes intensely: there is supply via the cable harness
- Red LED flashes: Error in the LIN communication (e.g. CASCO ECU does not respond)

Working with the PC GUI:

CASCO GUI is the executable exe file provided by BSafEr which has an “.exe” extension. To run the .exe file, follow the below instructions:

- Java runtime environment (JRE) should be installed on the PC.
- If JRE is not installed, it can be downloaded from the following link:
<https://www.java.com/en/download/manual.jsp>

Document:	PDS-CASCO_EN	Product:
Title:	Product Data Sheet	Configurable Automotive Semiconductor COntroller
Author:	Alexander Liebert	Any alterations are subject to the approval of the author
Date of Issue:	01.07.2020	Copyright © by Bauer Safety Engineering GmbH 2020
Last update:	01.07.2020	All rights reserved

- Select the respective Operating System under Windows. For 32-bit click on Windows-offline and for 64-bit click on Windows-offline(64-bit).
- After successful download run the Java .exe file for installing JRE on the PC.
- Now copy the GUI .exe file into the desired folder and open it by double clicking the GUI .exe file.

5. Version history

Version	Description	Author / Date
01	Initial Release	AL / 01.07.2020

Document:	PDS-CASCO_EN	Product:
Title:	Product Data Sheet	Configurable Automotive Semiconductor COntroller
Author:	Alexander Liebert	Any alterations are subject to the approval of the author
Date of Issue:	01.07.2020	Copyright © by Bauer Safety Engineering GmbH 2020
Last update:	01.07.2020	All rights reserved