

MMS - The Hardware

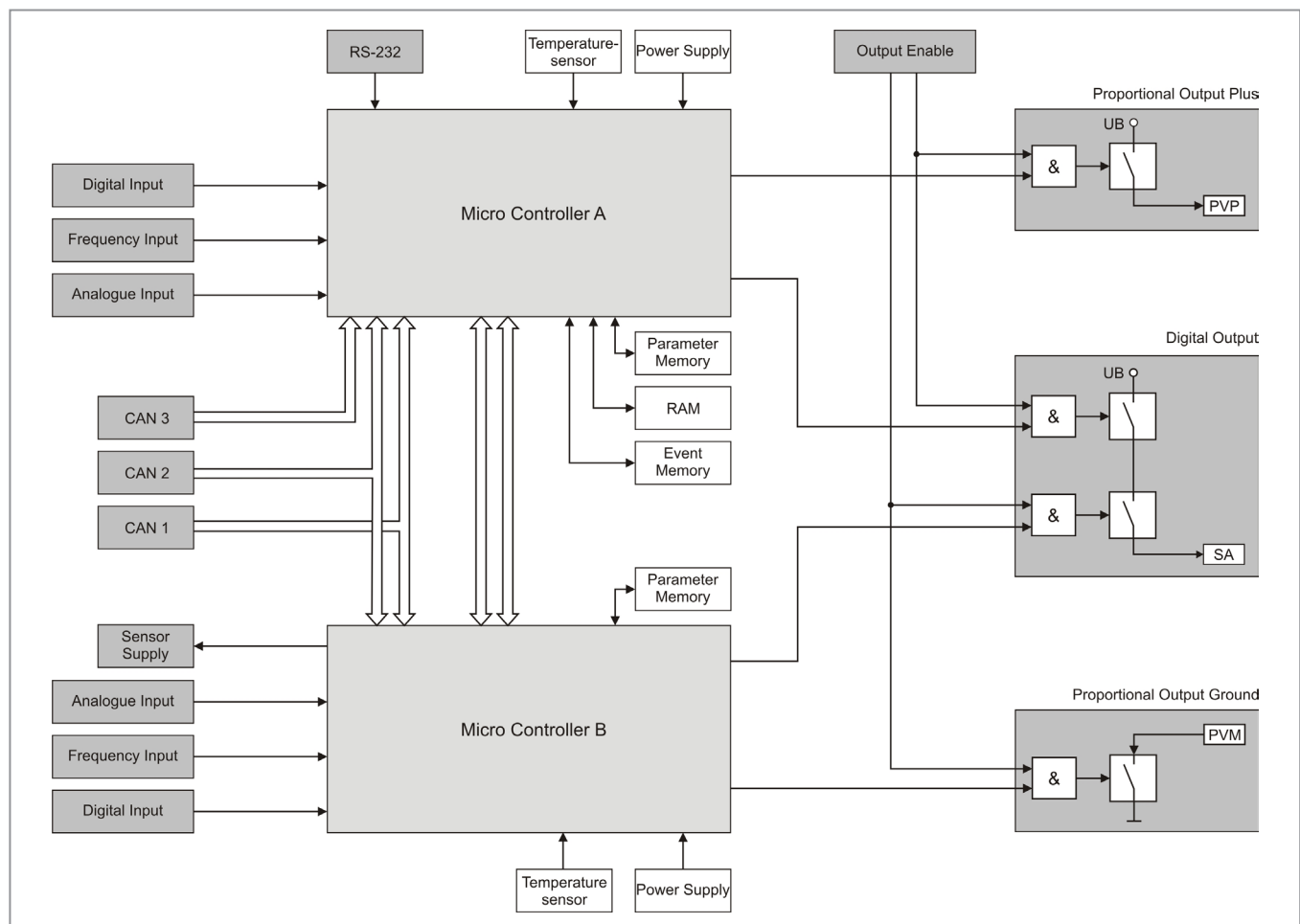
The MMS safety control system enables manufacturers to implement easily the latest security requirements for mobile machines. It provides functional safety according to Safety Integrity Level (SIL) 2 specified by IEC 61508 or comparable standards.

The operating system ensures a clear separation between normal machine functions and the safety functions. For this purpose, it uses the redundant structure.

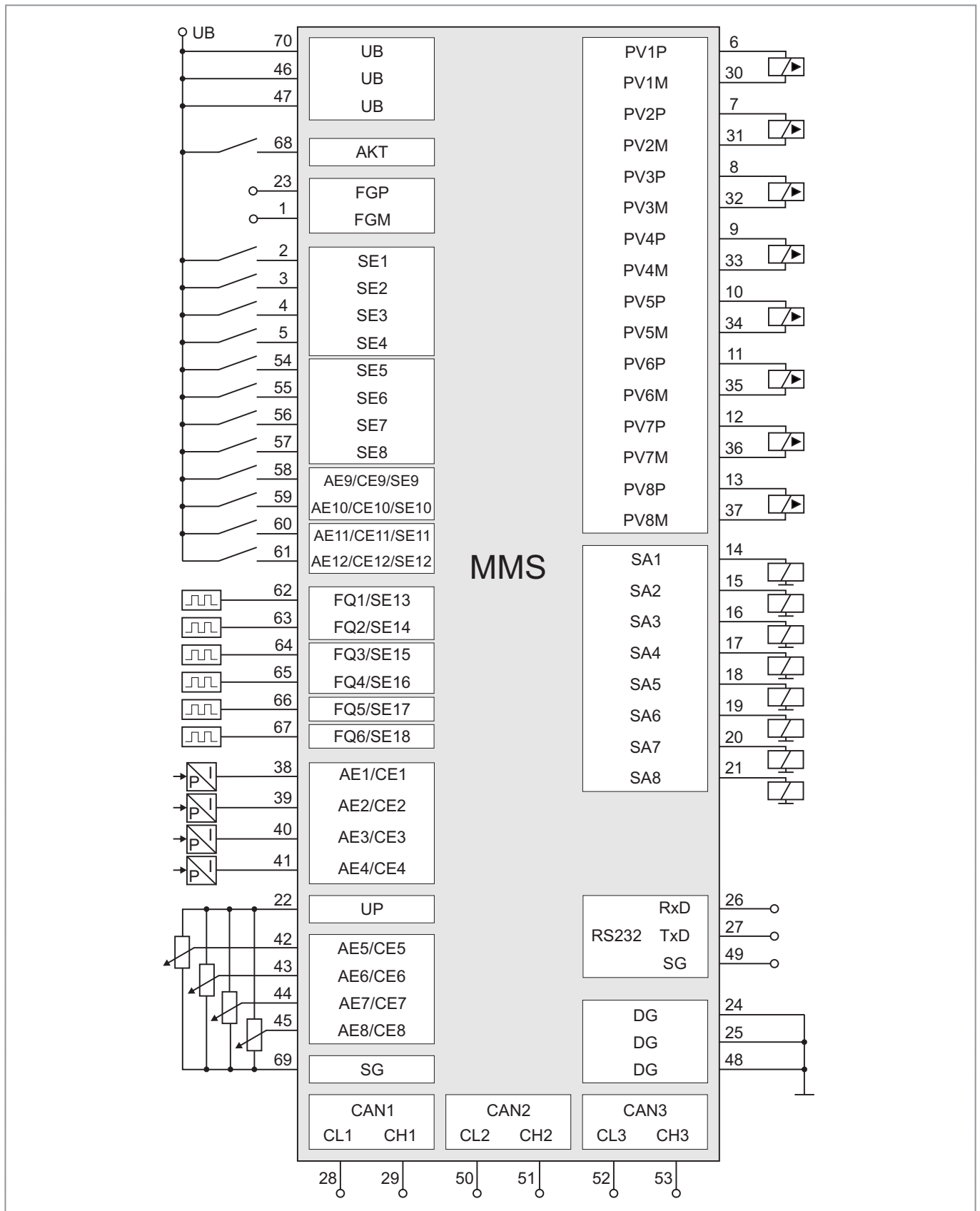
Development time is shortened.

Commissioning and field tests of the machine functions run independently and parallel to the safety certification process.

Within the defined safety area MMS supports the agile further development of the machine functions. The functional safety is fully encapsulated.



MMS - Connection diagram



MMS - Pin assignment

14	SA1	Switch output 1
15	SA2	Switch output 2
16	SA3	Switch output 3
17	SA4	Switch output 4
18	SA5	Switch output 5
19	SA6	Switch output 6
20	SA7	Switch output 7
21	SA8	Switch output 8
6	PV1P	Proportional output 1 Plus
30	PV1M	Proportional output 1 Minus
7	PV2P	Proportional output 2 Plus
31	PV2M	Proportional output 2 Minus
8	PV3P	Proportional output 3 Plus
32	PV3M	Proportional output 3 Minus
9	PV4P	Proportional output 4 Plus
33	PV4M	Proportional output 4 Minus
10	PV5P	Proportional output 5 Plus
34	PV5M	Proportional output 5 Minus
11	PV6P	Proportional output 6 Plus
35	PV6M	Proportional output 6 Minus
12	PV7P	Proportional output 7 Plus
36	PV7M	Proportional output 7 Minus
13	PV8P	Proportional output 8 Plus
37	PV8M	Proportional output 8 Minus
29	CH1	CAN1 line H
28	CL1	CAN1 line L
51	CH2	CAN2 line H
50	CL2	CAN2 line L
53	CH3	CAN3 line H
52	CL3	CAN3 line L
49	SG	Signal earth
26	RXD	RS232 receive cable for PC
27	TXD	RS232 send cable for PC
69	SG	Signal earth
22	UP	Supply voltage for sensors

MMS - Technical data

Dimensions	(W/H/D) 188,5mm x 52mm x 140mm
Housing	Aluminium housing with ventilation membrane Protection category IP69 (DIN EN 60529)
Weight	900g
Plug connections	AMP connector 1-0967280-1, 70 pins
Power supply	UB = 8...32V
Operation temperature	-40...85°C
Current consumption	Approx. 140mA at 12V
Total current	Maximum permissible total current: 25A
Microcontroller	2x XC229xH / 100MHz
Program memory	2x 1600kByte Flash (Microcontroller) 1x 2048kByte serial flash (external)
Data memory	2x 138kByte RAM (Microcontroller) 1x 512kByte RAM (external) Up to 2048kB RAM (external) possible
Parameter memory	2x 32kByte EEPROM
Inputs	<p>8 Digital switch inputs, thereof 4 with individually switchable 4.8 kΩ pull-up and pull-down resistors, and 4 with fixed 4.5 kΩ pull-down resistors, adjustable switching thresholds in the range from 0 ... 32V.</p> <p>6 Frequency inputs, $f_{max} = 4\text{kHz}$, each with switchable 4,6kΩ pullup and pulldown resistors, adjustable switching thresholds in the range of -2 ... 28V. Can also be used as digital switch inputs with adjustable switching thresholds in the range 0 ... 32V.</p> <p>12 Analogue inputs 4 ... 20mA current inputs with 82Ω burden to earth and 10 bit resolution, protected against overload. Switchable as analogue inputs with a voltage range from 0 ... 10V with 10 bit resolution and 100kΩ input resistance. 4 of them can be switched as switch inputs with 4.8 kΩ pull-down resistors.</p> <p>1 Activation input for switching on the controller.</p> <p>2 Release inputs Enable plus / minus for external release of the outputs.</p>

MMS - Technical Data

Outputs	<p>8 Proportional solenoid outputs, each current regulated for a maximum of 3A. Can also be used as switch outputs.</p> <p>8 Switch outputs, each for a maximum of 4A.</p> <p>1 Power supply output (adjustable between 5V, 8V and 10V) for sensors and potentiometers, Maximum 0.45A (10V); 1A (5V).</p> <p>2 Signal grounds for connecting sensors and potentiometers.</p>																
Interfaces	<p>1 RS232, maximum baud rate: 115kBaud</p> <p>3 CAN 2.0B, maximum baud rate: 1Mbit/s</p>																
Safety	<p>Two microcontrollers, mutual control</p> <p>Each with a microcontroller-watchdog</p> <p>Separate voltage regulation</p> <p>Separate cycle generation</p> <p>External safety shutdown of the outputs (FGP / FGM)</p> <p>Reverse polarity protection</p>																
MTTFd	45 Years																
EMV	<p>Road vehicles: Directive 2014/30/EU (2004/108/EG), UN/ECE-R10 ISO 10605, ISO 7637-1, ISO 7637-2, ISO 7637-3</p> <p>Construction machinery: DIN EN 13309</p> <p>Agricultural and forestry vehicles: Directive 2009/64/EG, DIN EN ISO 14982</p> <p>Industrial use: DIN EN 61000 6-2, DIN EN 61000 6-4</p>																
Mechanical stability, climatic resistance	<table> <tr> <td>Cold:</td> <td>DIN EN 60068-2-1</td> </tr> <tr> <td>Dry heat:</td> <td>DIN EN 60068-2-2</td> </tr> <tr> <td>Oscillation:</td> <td>DIN EN 60068-2-6</td> </tr> <tr> <td>Temperature changes:</td> <td>DIN EN 60068-2-14</td> </tr> <tr> <td>Shocks:</td> <td>DIN EN 60068-2-27</td> </tr> <tr> <td>Permanent shocks:</td> <td>DIN EN 60068-2-27</td> </tr> <tr> <td>Damp heat:</td> <td>DIN EN 60068-2-30</td> </tr> <tr> <td>Shocks due to rough handling:</td> <td>DIN EN 60068-2-31</td> </tr> </table>	Cold:	DIN EN 60068-2-1	Dry heat:	DIN EN 60068-2-2	Oscillation:	DIN EN 60068-2-6	Temperature changes:	DIN EN 60068-2-14	Shocks:	DIN EN 60068-2-27	Permanent shocks:	DIN EN 60068-2-27	Damp heat:	DIN EN 60068-2-30	Shocks due to rough handling:	DIN EN 60068-2-31
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We reserve the rights to make technical changes · Status 05/2017

MMS - Dimensions

