VDE Prüf- und
Zertifizierungsinstitut

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Offenbach, 2017-07-28

Your ref.	Your letter	Our ref. - please indicate	Contact
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Translation: In any case the German version shall prevail

PRÜFBERICHT
zur Information des Auftraggebers

Test Report for the Information of the applicant

Produkt / *Product*: **Micro controller**

Typ / *Type*: **S1, S3, S5, S7**

Dear Sirs,

dieser Prüfbericht enthält das Ergebnis einer einmaligen Untersuchung an dem zur Prüfung vorgelegten Erzeugnis. Ein Muster dieses Erzeugnisses wurde geprüft, um die Übereinstimmung mit den nachfolgend aufgeführten Normen bzw. Abschnitten von Normen festzustellen.
Die Prüfung wurde durchgeführt vom 2017-07-21 bis 2017-07-28.

This test report contains the result of a singular investigation carried out on the product submitted. A sample of this product was tested to found the accordance with the thereafter listed standards or clauses of standards resp. The testing was carried out from 2017-07-21 to 2017-07-28.

Der Prüfbericht berechtigt Sie nicht zur Benutzung eines Zertifizierungszeichens des VDE und berücksichtigt ausschließlich die Anforderungen der unten genannten Regelwerke.

The test report does not entitle for the use of a VDE Certification Mark and considers solely the requirements of the specifications mentioned below.

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Wenn gegenüber Dritten auf diesen Prüfbericht Bezug genommen wird, muss dieser Prüfbericht in voller Länge an gleicher Stelle verfügbar gemacht werden.

Whenever reference is made to this test report towards third party, this test report shall be made available on the very spot in full length.

I BESCHREIBUNG / *DESCRIPTION*

Produkt / *Product:*	Selbst-Diagnose-Rotinen für Milro-Controller Familie der Typen S1; S3; S5 und S7 *Self-Diagnostic Routines for Micro Controller Family Types S1; S3; S5 and S7*

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Typenbezeichnungen(en) *Type reference(s)* .... :							
S1		S3		S5		S7	
cpu_test.c	1.x	cpu_test.c	1.x	cpu_test.c	1.x	cpu_test.c	1.x
CPU_Test_Control.asm	1.x	CPU_Test_Control.asm	1.x	CPU_Test_Control.asm	1.x	CPU_Test_Control.asm	1.x
cpu_test_coupling.c	1.x	cpu_test_coupling.c	1.x	cpu_test_coupling.c	1.x	cpu_test_coupling.c	1.x
CPU_Test_General_High.asm	1.x	CPU_Test_General_High.asm	1.x	CPU_Test_General_High.asm	1.x	CPU_Test_General_High.asm	1.x
CPU_Test_General_Low.asm	1.x	CPU_Test_General_Low.asm	1.x	CPU_Test_General_Low.asm	1.x	CPU_Test_General_Low.asm	1.x
N/A	---	fpu_control.asm	1.x	fpu_control.asm	1.x	fpu_control.asm	1.x
N/A	---	fpu_exten.asm	1.x	fpu_exten.asm	1.x	fpu_exten.asm	1.x
N/A	---	fpu_test_coupling.c	1.x	fpu_test_coupling.c	1.x	fpu_test_coupling.c	1.x
N/A	---	TestFPUCouplingEnd.asm	1.x	TestFPUCouplingEnd.asm	1.x	TestFPUCouplingEnd.asm	1.x
N/A	---	TestFPUCouplingStart_A.asm	1.x	TestFPUCouplingStart_A.asm	1.x	TestFPUCouplingStart_A.asm	1.x
N/A	---	TestFPUCouplingStart_B.asm	1.x	TestFPUCouplingStart_B.asm	1.x	TestFPUCouplingStart_B.asm	1.x
TestGPRsCouplingEnd.asm	1.x	TestGPRsCouplingEnd.asm	1.x	TestGPRsCouplingEnd.asm	1.x	TestGPRsCouplingEnd.asm	1.x
TestGPRsCouplingStart_A.asm	1.x	TestGPRsCouplingStart_A.asm	1.x	TestGPRsCouplingStart_A.asm	1.x	TestGPRsCouplingStart_A.asm	1.x

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TestGPRsCouplingStart_B.asm	1.x	TestGPRsCouplingStart_B.asm	1.x	TestGPRsCouplingStart_B.asm	1.x	TestGPRsCouplingStart_B.asm	1.x
N/A	---	TestFPUCouplingS0_S3_A.asm	1.x	TestFPUCouplingS0_S3_A.asm	1.x	TestFPUCouplingS0_S3_A.asm	1.x
N/A	---	TestFPUCouplingS0_S3_B.asm	1.x	TestFPUCouplingS0_S3_B.asm	1.x	TestFPUCouplingS0_S3_B.asm	1.x
N/A	---	TestFPUCouplingS4_S7_A.asm	1.x	TestFPUCouplingS4_S7_A.asm	1.x	TestFPUCouplingS4_S7_A.asm	1.x
N/A	---	TestFPUCouplingS4_S7_B.asm	1.x	TestFPUCouplingS4_S7_B.asm	1.x	TestFPUCouplingS4_S7_B.asm	1.x
N/A	---	TestFPUCouplingS8_S11_A.asm	1.x	TestFPUCouplingS8_S11_A.asm	1.x	TestFPUCouplingS8_S11_A.asm	1.x
N/A	---	TestFPUCouplingS8_S11_B.asm	1.x	TestFPUCouplingS8_S11_B.asm	1.x	TestFPUCouplingS8_S11_B.asm	1.x
N/A	---	TestFPUCouplingS12_S15_A.asm	1.x	TestFPUCouplingS12_S15_A.asm	1.x	TestFPUCouplingS12_S15_A.asm	1.x
N/A	---	TestFPUCouplingS12_S15_B.asm	1.x	TestFPUCouplingS12_S15_B.asm	1.x	TestFPUCouplingS12_S15_B.asm	1.x
N/A	---	TestFPUCouplingS16_S19_A.	1.x	TestFPUCouplingS16_S19_A.	1.x	TestFPUCouplingS16_S19_A.	1.x

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		asm		asm		asm	
N/A	---	TestFPUCouplingS16_S19_B.asm	1.x	TestFPUCouplingS16_S19_B.asm	1.x	TestFPUCouplingS16_S19_B.asm	1.x
N/A	---	TestFPUCouplingS20_S23_A.asm	1.x	TestFPUCouplingS20_S23_A.asm	1.x	TestFPUCouplingS20_S23_A.asm	1.x
N/A	---	TestFPUCouplingS20_S23_B.asm	1.x	TestFPUCouplingS20_S23_B.asm	1.x	TestFPUCouplingS20_S23_B.asm	1.x
N/A	---	TestFPUCouplingS24_S27_A.asm	1.x	TestFPUCouplingS24_S27_A.asm	1.x	TestFPUCouplingS24_S27_A.asm	1.x
N/A	---	TestFPUCouplingS24_S27_B.asm	1.x	TestFPUCouplingS24_S27_B.asm	1.x	TestFPUCouplingS24_S27_B.asm	1.x
N/A	---	TestFPUCouplingS28_S31_A.asm	1.x	TestFPUCouplingS28_S31_A.asm	1.x	TestFPUCouplingS28_S31_A.asm	1.x
N/A	---	TestFPUCouplingS28_S31_B.asm	1.x	TestFPUCouplingS28_S31_B.asm	1.x	TestFPUCouplingS28_S31_B.asm	1.x
TestGPRsCouplingR0_A.asm	1.x	TestGPRsCouplingR0_A.asm	1.x	TestGPRsCouplingR0_A.asm	1.x	TestGPRsCouplingR0_A.asm	1.x
TestGPRsCouplingR0_B.asm	1.x	TestGPRsCouplingR0_B.asm	1.x	TestGPRsCouplingR0_B.asm	1.x	TestGPRsCouplingR0_B.asm	1.x
TestGPRsCouplingR1_R3_A.asm	1.x	TestGPRsCouplingR1_R3_A.asm	1.x	TestGPRsCouplingR1_R3_A.asm	1.x	TestGPRsCouplingR1_R3_A.asm	1.x

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TestGPRsCouplingR1_R3_B.asm	1.x	TestGPRsCouplingR1_R3_B.asm	1.x	TestGPRsCouplingR1_R3_B.asm	1.x	TestGPRsCouplingR1_R3_B.asm	1.x
TestGPRsCouplingR4_R6_A.asm	1.x	TestGPRsCouplingR4_R6_A.asm	1.x	TestGPRsCouplingR4_R6_A.asm	1.x	TestGPRsCouplingR4_R6_A.asm	1.x
TestGPRsCouplingR4_R6_B.asm	1.x	TestGPRsCouplingR4_R6_B.asm	1.x	TestGPRsCouplingR4_R6_B.asm	1.x	TestGPRsCouplingR4_R6_B.asm	1.x
TestGPRsCouplingR7_R9_A.asm	1.x	TestGPRsCouplingR7_R9_A.asm	1.x	TestGPRsCouplingR7_R9_A.asm	1.x	TestGPRsCouplingR7_R9_A.asm	1.x
TestGPRsCouplingR7_R9_B.asm	1.x	TestGPRsCouplingR7_R9_B.asm	1.x	TestGPRsCouplingR7_R9_B.asm	1.x	TestGPRsCouplingR7_R9_B.asm	1.x
TestGPRsCouplingR10_R12_A.asm	1.x	TestGPRsCouplingR10_R12_A.asm	1.x	TestGPRsCouplingR10_R12_A.asm	1.x	TestGPRsCouplingR10_R12_A.asm	1.x
TestGPRsCouplingR10_R12_B.asm	1.x	TestGPRsCouplingR10_R12_B.asm	1.x	TestGPRsCouplingR10_R12_B.asm	1.x	TestGPRsCouplingR10_R12_B.asm	1.x
clock_monitor.c	1.x	clock_monitor.c	1.x	clock_monitor.c	1.x	clock_monitor.c	1.x
crc.c	1.x	crc.c	1.x	crc.c	1.x	crc.c	1.x
CRC_Verify.c	1.x	CRC_Verify.c	1.x	CRC_Verify.c	1.x	CRC_Verify.c	1.x
ramtest_march_c.c	1.x	ramtest_march_c.c	1.x	ramtest_march_c.c	1.x	ramtest_march_c.c	1.x

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ramtest_march_c_HW.c	1.x	ramtest_march_c_HW.c	1.x	ramtest_march_c_HW.c	1.x	ramtest_march_c_HW.c	1.x
ramtest_march_HW.c	1.x	ramtest_march_HW.c	1.x	ramtest_march_HW.c	1.x	ramtest_march_HW.c	1.x
ramtest_march_x_wom.c	1.x	ramtest_march_x_wom.c	1.x	ramtest_march_x_wom.c	1.x	ramtest_march_x_wom.c	1.x
ramtest_march_x_wom_HW.c	1.x	ramtest_march_x_wom_HW.c	1.x	ramtest_march_x_wom_HW.c	1.x	ramtest_march_x_wom_HW.c	1.x
ramtest_stack.c	1.x	ramtest_stack.c	1.x	ramtest_stack.c	1.x	ramtest_stack.c	1.x
test_adc14.c	1.x	test_adc14.c	1.x	test_adc12.c	1.x	test_adc12.c	1.x

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II NORMEN / *STANDARD*

Prüfnorm(en) / *Standard(s) used*:

DIN EN 60335-1 (VDE 0700-1):2012-10 DIN EN 60335-1 Ber.1 (VDE 0700-1 Ber.1):2014-04 Annex R	EN 60335-1:2012 EN 60335-1:2012/AC:2014 EN 60335-1:2012/A11:2014 Annex R
DIN EN 60730-1 (VDE 0631-1):2012-10 Annex H	EN 60730-1:2011 Annex H

IEC 60335-1:2010
IEC 60335-1:2010/AMD1:2013
IEC 60335-1:2010/AMD2:2015
Annex R

IEC 60730-1:2013
IEC 60730-1:2013/AMD1:2015
Annex H

III PRÜFUNG / *TEST*

Die unter I benannten Selbst-Diagnose-Routinen sind vorgesehen für folgende Maßnahmen nach Tabelle R.1 / H.1 der unter II benannten Normen. /

The self-diagnostic routines mentioned under I are foreseen for following measures of table R.1 / H.1 of the standards mentioned under II.

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S1 File Name	S3 File Name	S5 File Name	S7 File Name	Measure
cpu_test.c	cpu_test.c	cpu_test.c	cpu_test.c	1.1 CPU Register
CPU_Test_Control.asm	CPU_Test_Control.asm	CPU_Test_Control.asm	CPU_Test_Control.asm	
cpu_test_coupling.c	cpu_test_coupling.c	cpu_test_coupling.c	cpu_test_coupling.c	
CPU_Test_General_High.asm	CPU_Test_General_High.asm	CPU_Test_General_High.asm	CPU_Test_General_High.asm	
CPU_Test_General_Low.asm	CPU_Test_General_Low.asm	CPU_Test_General_Low.asm	CPU_Test_General_Low.asm	
N/A	fpu_control.asm	fpu_control.asm	fpu_control.asm	
N/A	fpu_exten.asm	fpu_exten.asm	fpu_exten.asm	
N/A	fpu_test_coupling.c	fpu_test_coupling.c	fpu_test_coupling.c	
N/A	TestFPUCouplingEnd.asm	TestFPUCouplingEnd.asm	TestFPUCouplingEnd.asm	
N/A	TestFPUCouplingStart_A.asm	TestFPUCouplingStart_A.asm	TestFPUCouplingStart_A.asm	
N/A	TestFPUCouplingStart_B.asm	TestFPUCouplingStart_B.asm	TestFPUCouplingStart_B.asm	
TestGPRsCouplingEnd.asm	TestGPRsCouplingEnd.asm	TestGPRsCouplingEnd.asm	TestGPRsCouplingEnd.asm	
TestGPRsCouplingStart_A.asm	TestGPRsCouplingStart_A.asm	TestGPRsCouplingStart_A.asm	TestGPRsCouplingStart_A.asm	
TestGPRsCouplingStart_B.asm	TestGPRsCouplingStart_B.asm	TestGPRsCouplingStart_B.asm	TestGPRsCouplingStart_B.asm	
N/A	TestFPUCouplingS0_S3_A.asm	TestFPUCouplingS0_S3_A.asm	TestFPUCouplingS0_S3_A.asm	

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N/A	TestFPUCouplingS0_S3_B.asm	TestFPUCouplingS0_S3_B.asm	TestFPUCouplingS0_S3_B.asm	
N/A	TestFPUCouplingS4_S7_A.asm	TestFPUCouplingS4_S7_A.asm	TestFPUCouplingS4_S7_A.asm	
N/A	TestFPUCouplingS4_S7_B.asm	TestFPUCouplingS4_S7_B.asm	TestFPUCouplingS4_S7_B.asm	
N/A	TestFPUCouplingS8_S11_A.asm	TestFPUCouplingS8_S11_A.asm	TestFPUCouplingS8_S11_A.asm	
N/A	TestFPUCouplingS8_S11_B.asm	TestFPUCouplingS8_S11_B.asm	TestFPUCouplingS8_S11_B.asm	
N/A	TestFPUCouplingS12_S15_A.asm	TestFPUCouplingS12_S15_A.asm	TestFPUCouplingS12_S15_A.asm	
N/A	TestFPUCouplingS12_S15_B.asm	TestFPUCouplingS12_S15_B.asm	TestFPUCouplingS12_S15_B.asm	
N/A	TestFPUCouplingS16_S19_A.asm	TestFPUCouplingS16_S19_A.asm	TestFPUCouplingS16_S19_A.asm	
N/A	TestFPUCouplingS16_S19_B.asm	TestFPUCouplingS16_S19_B.asm	TestFPUCouplingS16_S19_B.asm	
N/A	TestFPUCouplingS20_S23_A.asm	TestFPUCouplingS20_S23_A.asm	TestFPUCouplingS20_S23_A.asm	
N/A	TestFPUCouplingS20_S23_B.asm	TestFPUCouplingS20_S23_B.asm	TestFPUCouplingS20_S23_B.asm	
N/A	TestFPUCouplingS24_S27_A.asm	TestFPUCouplingS24_S27_A.asm	TestFPUCouplingS24_S27_A.asm	
N/A	TestFPUCouplingS24_S27_B.asm	TestFPUCouplingS24_S27_B.asm	TestFPUCouplingS24_S27_B.asm	
N/A	TestFPUCouplingS28_S31_A.asm	TestFPUCouplingS28_S31_A.asm	TestFPUCouplingS28_S31_A.asm	
N/A	TestFPUCouplingS28_S31_B.asm	TestFPUCouplingS28_S31_B.asm	TestFPUCouplingS28_S31_B.asm	
TestGPRsCouplingR0_A.asm	TestGPRsCouplingR0_A.asm	TestGPRsCouplingR0_A.asm	TestGPRsCouplingR0_A.asm	

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TestGPRsCouplingR0_B.asm	TestGPRsCouplingR0_B.asm	TestGPRsCouplingR0_B.asm	TestGPRsCouplingR0_B.asm	
TestGPRsCouplingR1_R3_A.asm	TestGPRsCouplingR1_R3_A.asm	TestGPRsCouplingR1_R3_A.asm	TestGPRsCouplingR1_R3_A.asm	
TestGPRsCouplingR1_R3_B.asm	TestGPRsCouplingR1_R3_B.asm	TestGPRsCouplingR1_R3_B.asm	TestGPRsCouplingR1_R3_B.asm	
TestGPRsCouplingR4_R6_A.asm	TestGPRsCouplingR4_R6_A.asm	TestGPRsCouplingR4_R6_A.asm	TestGPRsCouplingR4_R6_A.asm	
TestGPRsCouplingR4_R6_B.asm	TestGPRsCouplingR4_R6_B.asm	TestGPRsCouplingR4_R6_B.asm	TestGPRsCouplingR4_R6_B.asm	
TestGPRsCouplingR7_R9_A.asm	TestGPRsCouplingR7_R9_A.asm	TestGPRsCouplingR7_R9_A.asm	TestGPRsCouplingR7_R9_A.asm	
TestGPRsCouplingR7_R9_B.asm	TestGPRsCouplingR7_R9_B.asm	TestGPRsCouplingR7_R9_B.asm	TestGPRsCouplingR7_R9_B.asm	
TestGPRsCouplingR10_R12_A.asm	TestGPRsCouplingR10_R12_A.asm	TestGPRsCouplingR10_R12_A.asm	TestGPRsCouplingR10_R12_A.asm	
TestGPRsCouplingR10_R12_B.asm	TestGPRsCouplingR10_R12_B.asm	TestGPRsCouplingR10_R12_B.asm	TestGPRsCouplingR10_R12_B.asm	
clock_monitor.c	clock_monitor.c	clock_monitor.c	clock_monitor.c	3. Clock
crc.c	crc.c	crc.c	crc.c	4.1 invariable memory
CRC_Verify.c	CRC_Verify.c	CRC_Verify.c	CRC_Verify.c	
ramtest_march_c.c	ramtest_march_c.c	ramtest_march_c.c	ramtest_march_c.c	4.2 variable memory
ramtest_march_c_HW.c	ramtest_march_c_HW.c	ramtest_march_c_HW.c	ramtest_march_c_HW.c	
ramtest_march_HW.c	ramtest_march_HW.c	ramtest_march_HW.c	ramtest_march_HW.c	
ramtest_march_x_wom.c	ramtest_march_x_wom.c	ramtest_march_x_wom.c	ramtest_march_x_wom.c	

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ramtest_march_x_wom_HW.c	ramtest_march_x_wom_HW.c	ramtest_march_x_wom_HW.c	ramtest_march_x_wom_HW.c	
test_adc14.c	test_adc14.c	test_adc12.c	test_adc12.c	7.2.1 A/D- and D/A-converter

Zu Details der Prüfungen siehe VDE-Prüfbericht / 240201-AS6-1

For details of testing see VDE Test Report:

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IV ERGEBNIS / *RESULT*

Die unter I benannten Selbst-Diagnose-Routinen erfüllen die Anforderungen der unter II benannten Normen. Die unter I benannten Selbst-Diagnose-Routinen können zum Aufbau einer Selbst-Test-Biliothek gemäß der unter II benannten Normen verwendet werden. /

The self-diagnostic routines mentioned under I fulfill the requirements of the standards mentioned under II. The self-diagnostic routines mentioned under I are suitable to be used to create a self-test library according the standards mentioned under II.

Best regards

VDE Testing- and Certification Institute
Appliances and Systems for House and Commercial Use

P. Fuhl

Dipl.-Ing. Christoph Türk

Peter Fuhl

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