

DeviceNet Conformance Test Result

Test Date: 07 June 2004 **Composite Test Revision:** 18
Test Suite: M002

ODVA File Number: 10105

Vendor ID: 706
Vendor Name: Bronkhorst High-Tech B.V.
Vendor Address: Nijverheidsstraat 1a
 NL-7261 AK Ruurlo
 The Netherlands

Product Name(s) (Device actually tested)	Bronkhorst meter/controller
Product Code(s)	7
Product Revision	1.001
Device Type Code	26
Device Profile Name	Mass Flow Controller
Electronic Data Sheet Revision	1.2
Comments:	Passed DeviceNet conformance composite 18 – See advisories

Conformance Advisories:

- 1- Peak inrush current is 19A at 25VDC. See accompanying file "INRUSH.DOC"

Protocol Conformance Test Revision A-17:

Protocol Test Software Revision		A-17
SOC File Name	Mbc.stc	Pass
Protocol Test Log File	Mbc_500K.log	
Minimum wait for Explicit	0 ms	

1 Physical Layer Test Revision B3:

Physical Layer Test Plan Revision	B3
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1) Connector check:	Pass
2) Transmit level check:	Pass

Transmitter Requirements

		measured value [V]		Pass/Fail	Comments
Tests		@25V	@11V		
Dominant level on CAN_H	Max	4.06	4.06	3.0V<Pass<5.1V 3.0V<Warning<3.5V 4.5V<Warning<5.1V	Pass
	Min	3.86	3.88		
	Ave.				
Dominant level on CAN_L	Max	1.52	1.54	0.75V<Pass<2.85V 0.75V<Warning<1.25V 2.25V<Warning<2.85V	Pass
	Min	1.42	1.44		
	Ave.				
Recessive level on CAN_H	Max	2.98	3.10	2.25V<Pass<3.6V 2.25V<Warning<2.7V 3.1V<Warning<3.6V	Pass
	Min	2.66	2.66		
	Ave.				
Recessive level on CAN_L	Max	2.88	3.04	2.25V<Pass<3.6V 2.25V<Warning<2.7V 3.1V<Warning<3.6V	Pass
	Min	2.60	2.60		
	Ave.				

File Name (Dominant)	PHY25VDC.CSV
File Name (Recessive)	PHY11VDC.CSV

Receiver Requirements

		measured value [V]		Pass/Fail	Comments
Tests		@25V	@11V		
Dominant level Differential (CAN_H – CAN_L)	Max	2.52	2.52	1.5V<Pass<3.0V	Pass
	Min				
	Ave.				
Recessive level Differential (CAN_H – CAN_L)	Max	+40mv	+40mv	-500mV<Pass<+50mV	Pass
	Min	0 mv	0 mv		
	Ave.				

3) Current Drain check:

Average current @ 25v	<u>0.129 A</u>
Average current @ 11v	<u>0.142 A</u>
Maximum current value specified in SOC	<u>0.250 A</u>

2 Physical Layer Test Revision B4 (Advisory)

1) Connector check

The connector used matches that defined in the SOC.	Pass
The presence of gold coloring on the pins of the connector.	Pass
The DeviceNet connector is male-type connector.	Pass

2) Indicator check

LEDs supported by this product :	None
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2-1) Module status LED operation

The product contains a red/green indicator for the module status.	N/A
Indicator operation (0.25 sec GREEN, then 0.25 sec RED at a self-test).	N/A
Indicator operation (GREEN flashing or GREEN ON after a self-test).	N/A
Detection of MAC ID switch change by flashing RED	N/A
Detection of Baud Rate switch change by flashing RED	N/A

2-2) Network status LED operation

The product contains a red/green indicator for the network status.	N/A
Indicator operation (0.25 sec GREEN, then 0.25 sec RED at a self-test).	N/A
Indicator operation (LED OFF after a self-test when a DUT is a solitary node).	N/A
Indicator operation (GREEN flashing after a self-test when a DUT is an occupied node).	N/A
Detection of a bus-off condition by CAN_H to CAN_L short.	N/A
Detection of a bus-off condition by CAN_H, CAN_L to +5v, 0V	N/A
Detection of an invalid MAC ID at power up by solid RED	N/A
Detection of an invalid Baud Rate at power up by solid RED	N/A
Detection of MAC ID conflict by solid RED	N/A

3) MAC ID Switch

Switch used for this product : None

The switch is labeled in decimal format.	N/A
The MSD switch is set to the left or top of the product.	N/A

MAC ID set by DIP Switch	MAC ID set by Rotary Switch	Actual MAC ID on a network	Pass/Fail
0	0	N/A	
01H	1	N/A	
02H	11	N/A	
04H	22	N/A	
08H	33	N/A	
10H	44	N/A	
20H	55	N/A	
3FH	63	N/A	
> 3FH	> 63		

5) Power

5-1) Physical Layer Power Sense Verification: N/A

5-2) Minimum Operating Voltage: <11.0 V

5-4) Inrush current

Peak inrush current pulse / duration to 3A @ 11v 7.5 A / 30 us

Peak inrush current pulse / duration to 3A @ 25v 19 A / 40 us

File Name (Inrush 11VDC)	
File Name (Inrush 17VDC)	
File Name (Inrush 25VDC)	INR25VDC.CSV

6) CAN timing

6-1) Bit Timing Measurement

Bit time @ 125kbps:	<u>8.00 μs</u>
Bit time @ 250kbps:	<u>4.00 μs</u>
Bit time @ 500kbps:	<u>2.00 μs</u>

6-2) ACK delay time

ACK delay time @ 125kbps	<u>-280 ns to +120 ns</u>
ACK delay time @ 250kbps	<u>-40 ns to +140 ns</u>
ACK delay time @ 500kbps	<u>-10 ns to +80 ns</u>

7) Mis-wiring

Initial Rin, Cin	<u>38.0k , 4 pf</u>
Final Rin, Cin	<u>38.0k , 4 pf</u>
Operation	<u>Pass</u>

3 Interoperability Test Revision C6

Master devices used for the interoperability test

Primary master devices: Allen-Bradley 1769-DNB (Revision 3.010)

Alternate master devices: NA

Manager tools used for the interoperability test

Primary Manager tool: Rockwell Automation RSNetWorx for DeviceNet (Revision 3.00.02)

Alternate Manager tool: NA

Test used the primary master devices

1-1) Power Supply Sequence Test for a slave with non-isolated physical layer

No.	Power supply turn ON sequence			Pass/Fail	Comments
	1	2	3		
1	Network	Master	Aux. Pwd Dev	Pass	
2	Network	Aux. Pwd Dev	Master	Pass	
3	Master	Network	Aux. Pwd Dev	Pass	
4	Aux. Pwd Dev	Network	Master	Pass	
5	Master	Aux. Pwd Dev	Network	Pass	

1-1) Power Supply Sequence Test for a slave with isolated physical layer

No.	Power supply turn ON sequence				Pass/Fail	Comments
	1	2	3	4		
1	Network	Master	DUT	Aux. Pwr		
2	Network	DUT	Aux. Pwr	Master		
3	Network	DUT	Master	Aux. Pwr		
4	Network	Aux. Pwr	DUT	Master		
5	DUT	Master	Network	Aux. Pwr		
6	DUT	Aux. Pwr	Network	Master		
7	DUT	Master	Aux. Pwr	Network		

1-2) Power On/Off Test

No.	Test	Pass/Fail	Comments
1	Master Power On/Off (5 times)	Pass	
2	Network Power On/Off (5 times)	Pass	
3	DUT Power On/Off (5 times)	N/A	

1-3) Device Disconnect-Reconnect Test

No.	Test	Pass/Fail	Comments
1	Master Disconnect-Reconnect Test with time out (5 times)	Pass	
2	Master Disconnect-Reconnect Test without time out (5 times)	Pass	
3	DUT Disconnect-Reconnect Test (5 times)	Pass	

1-4) Network Aerobic Test

Pass _____

Note:

1) Interscan delay time: 2.0 ms

4 EDS file Test (Advisory test items)

EDS Checker Software	Version 2.18	
EDS File:	bht_dmfc.eds	
EDS File Revision	1.0	
Log File:	bht_dmfc.ecf	Pass

3-1) Test used the Primary Manager Tool

No.	Test	Pass/Fail	Comments
1	Install the EDS of the DUT into the Manager	Pass	
2	Use the Manager to configure the DUT using EDS file data.	Pass	
3	Use the Manager to upload Parameters from DUT.	Pass	
4	Use the Manager to modify Parameters for the DUT.	Pass	

3-2) Test used the Alternate Manager Tool

No.	Test	Pass/Fail	Comments
1	Install the EDS of the DUT into the Manager		
2	Use the Manager to configure the DUT using EDS file data.		
3	Use the Manager to upload Parameters from DUT.		
4	Use the Manager to modify Parameters for the DUT.		

TESTER IDENTIFICATION

Tested By William Henry
Date 07 June 2004