Overview

1 Overview 5 //0367 Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+ 5V) ///

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED ///A

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator	Signal	Pass/Fail
1/ DB 9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	Pess
1/DB9	BNC 3 / LO2	Pas
1/DB9	BNC 4 / RF2	Pess
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	P<55
2/DB9	BNC 3 / LO4	Pess
2/DB9	BNC 4 / RF4	Pess
3/DB9	BNC 1 / LO5	Pess
3/DB9	BNC 2 / RF5	Pess
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	Pess
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pess
4/DB9	BNC 4 / RF8	Pess

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	Pess
1/DB9	BNC 3 / LO2	Pess
1/DB9	BNC 4 / RF2	Pass
2/DB9	BNC 1 / LO3	Pes
2/DB9	BNC 2 / RF3	Pas
2/DB9	BNC 3 / LO4	Pess
2/DB9	BNC 4 / RF4	Pess
3/DB9	BNC 1 / LO5	Pess
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	Pass
4/DB9	BNC 1 / LO7	Res
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pess
4/DB9	BNC 4 / RF8	Pess

1 Overview 5/163968

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+ 5V) // A

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED_________

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	lass
1/DB9	BNC 2 / RF1	RSS
1/DB9	BNC 3 / LO2	less.
1/DB9	BNC 4 / RF2	less
2/DB9	BNC 1 / LO3	Pess
2/DB9	BNC 2 / RF3	Rss
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	lass
3/DB9	BNC 1/LO5	Pass _
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	#SS
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	Pass

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Ros
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	fass
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	Pess
3/DB9	BNC 1 / LO5	Pess
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	Rss Pess
3/DB9	BNC 4 / RF6	Pess
4/DB9	BNC 1 / LO7	Rus
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	fass

1 Overview \$1103969

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+ 5V)

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED MA

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	PASS
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pass
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	Pass
3/DB9	BNC 1 / LO5	Pass
3/DB9	BNC 2 / RF5	P6 55
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	JASS
4/DB9	BNC 1 / LO7	P455
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	Pass

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	Fass
1/DB9	BNC 3 / LO2	1655
1/DB9	BNC 4 / RF2	Pass
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pa55
2/DB9	BNC 4 / RF4	1655
3/DB9	BNC 1/LO5	8535
3/DB9	BNC 2 / RF5	8655
3/DB9	BNC 3 / LO6	V250
3/DB9	BNC 4 / RF6	Pass
4/DB9	BNC 1 / LO7	Pais
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	Pass

1 Overview 51103970

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+ 5V) / A

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator	Signal	Pass/Fail
1/ DB 9	BNC 1 / LO1 (half amplitude)	Hass
1/DB9	BNC 2 / RF1	Pass
1/ DB 9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pass
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	Ress
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	Pasc
3/DB9	BNC 1/LO5	Pass
3/DB9	BNC 2 / RF5	1.55
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	lass.
4/DB9	BNC 1 / LO7	le 55
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	PSIS
4/DB9	BNC 4 / RF8	Pass

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	lass
1/ DB 9	BNC 2 / RF1	1255
1/DB9	BNC 3 / LO2	1655
1/DB9	BNC 4 / RF2	1-55
2/DB9	BNC 1 / LO3	P355
2/DB9	BNC 2 / RF3	1255
2/DB9	BNC 3 / LO4	8-25
2/DB9	BNC 4 / RF4	Pass
3/DB9	BNC 1 / LO5	Pass
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	fiss.
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	fe 55

1 Overview 51103971

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+ 5V) 1 /A

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED______

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Bottom Interface:		
Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	fass
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pass
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	Pass
3/DB9	BNC 1 / LO5	lass
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	RSS
3/DB9	BNC 4 / RF6	jass
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	RSS
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	Pass

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/ DB 9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pass
2/DB9	BNC 1 / LO3	Pc S s
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	las
3/DB9	BNC 1 / LO5	Pass
3/DB9	BNC 2 / RF5	PEST
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	Pass
4/DB9	BNC 1 / LO7	P6>5
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	155 555
4/DB9	BNC 4 / RF8	Vass

1 Overview Slic3972

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED / A

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator	Signal	Pass/Fail	
1/DB9	BNC 1 / LO1 (half amplitude)	Rus	
1/DB9	BNC 2 / RF1	Pass	
1/DB9	BNC 3 / LO2	Pass	
1/DB9	BNC 4 / RF2	1555	
2/DB9	BNC 1 / LO3	Pass	
2/DB9	BNC 2 / RF3	Pass	
2/DB9	BNC 3 / LO4	Pass	
2/DB9	BNC 4 / RF4	Pass	
3/DB9_	BNC 1 / LO5	Rus	
3/DB9	BNC 2 / RF5	Pass	
3/DB9	BNC 3 / LO6	Pess	
3/DB9	BNC 4 / RF6	Pass	
4/DB9	BNC 1 / LO7	Pass	
4/DB9	BNC 2 / RF7	Pasr	
4/DB9	BNC 3 / LO8	lass.	
4/DB9	BNC 4 / RF8	Pass	

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pa.35
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	P355
1/DB9	BNC 4 / RF2	1635
2/DB9	BNC 1 / LO3	Pas
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4/RF4	Pass
3/DB9	BNC 1 / LO5	Pros
3/DB9	BNC 2 / RF5	Past
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	Pass
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	Pers
4/DB9	BNC 3 / LO8	less
4/DB9	BNC 4 / RF8	Pass

1 Overview 51103973

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+ 5V)_____

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED_________

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator	Signal	Pass/Fail	
1/DB9	BNC 1 / LO1 (half amplitude)	[255	
1/DB9	BNC 2 / RF1	PRST	
1/DB9	BNC 3 / LO2	Pess	
1/DB9	BNC 4 / RF2	kss	
2/DB9	BNC 1 / LO3	PESS	
2/DB9	BNC 2 / RF3	P<55	
2/DB9	BNC 3 / LO4	Pass	
2/DB9	BNC 4 / RF4	1.55	
3/DB9	BNC 1 / LO5	655	
3/DB9	BNC 2 / RF5	P-55	
3/DB9	BNC 3 / LO6	P-ST	
3/DB9	BNC 4 / RF6	P=55	
4/DB9	BNC 1 / LO7	P-55	
4/DB9	BNC 2 / RF7	P-51	
4/DB9	BNC 3 / LO8	P+55	
4/DB9	BNC 4 / RF8	1-51	

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pess
1/DB9	BNC 2 / RF1	P=55
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pass
2/DB9	BNC 1 / LO3	1-55
2/DB9	BNC 2 / RF3	Pess
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	Pess
3/DB9	BNC 1 / LO5	Pass
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	P-5-
3/DB9	BNC 4 / RF6	f255
4/DB9	BNC 1 / LO7	Pess
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	less
4/DB9	BNC 4 / RF8	Pass

1 Overview 511 03974

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+ 5V) N/A

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED________

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Fass
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pasc
1/DB9	BNC 4 / RF2	Pass
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	Pass
3/DB9	BNC 1 / LO5	Pesr
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	PRSS
3/DB9	BNC 4 / RF6	Pess
4/DB9	BNC 1 / LO7	fess
4/DB9	BNC 2 / RF7	Pese
4/DB9	BNC 3 / LO8	Pess
4/DB9	BNC 4 / RF8	Pess

Demodulator	Signal	Pass/Fail	
1/DB9	BNC 1 / LO1 (half amplitude)	lass	
1/DB9	BNC 2 / RF1	Pass	
1/DB9	BNC 3 / LO2	Pass	
1/DB9	BNC 4 / RF2	Pass	
2/DB9	BNC 1 / LO3	RSS	
2/DB9	BNC 2 / RF3	Pas	
2/DB9	BNC 3 / LO4	P=55	
2/DB9	BNC 4 / RF4	655	
3/DB9	BNC 1 / LO5	1/255	
3/DB9	BNC 2 / RF5	Pass	
3/DB9	BNC 3 / LO6	1655	
3/DB9	BNC 4 / RF6	19.55	
4/DB9	BNC 1 / LO7	Pess	
4/DB9	BNC 2 / RF7	Poss	
4/DB9	BNC 3 / LO8	Pess	
4/DB9	BNC 4 / RF8	Pess	

1 Overview 5/1 03975

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+ 5V) NA

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED ///

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pess
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	P455
2/DB9	BNC 3 / LO4	Pess
2/DB9_	BNC 4 / RF4	Pess
3/DB9	BNC 1 / LO5	Pess
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	RSS
3/DB9	BNC 4 / RF6	Pass
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	fs,
4/DB9	BNC 4 / RF8	Pass

Demodulator	Signal	Pass/Fail	
1/DB9	BNC 1 / LO1 (half amplitude)	Pas	
1/DB9	BNC 2 / RF1	Pass	
1/DB9	BNC 3 / LO2	Pass	
1/DB9	BNC 4 / RF2	1255	
2/DB9	BNC 1/LO3	Pass	
2/DB9	BNC 2 / RF3	PESS	
2/DB9	BNC 3 / LO4	Pess	
2/DB9	BNC 4 / RF4	Pess	
3/DB9	BNC 1 / LO5	Pess	
3/DB9	BNC 2 / RF5	Pess	
3/DB9	BNC 3 / LO6	Pass	
3/DB9	BNC 4 / RF6	Pess	
4/DB9	BNC 1 / LO7	Pess	
4/DB9	BNC 2 / RF7	Pass	
4/DB9	BNC 3 / LO8	Pess	
4/DB9	BNC 4 / RF8	Pass	

Overview

1 Overview 51103976

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+ 5V) N/A

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED N/A

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	Pass
1/ DB 9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Fess
2/DB9	BNC 1 / LO3	1655
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	J&S3
3/DB9	BNC 1 / LO5	Pess
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	Pass
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pess
4/DB9	BNC 4 / RF8	Pass

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	fass
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pass
1/ DB 9	BNC 4 / RF2	Ress
2/DB9	BNC 1 / LO3	Poss
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	Ross
3/DB9	BNC 1/LO5	Pas
3/DB9	BNC 2 / RF5	less
3/DB9	BNC 3 / LO6	R>5
3/DB9	BNC 4 / RF6	Pass
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	Pos
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	Pass

1 Overview Suc3977

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester-D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+ 5V) N/A

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED________

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	PSS
1/ DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pess
1/DB9	BNC 4 / RF2	Pass
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pess
2/DB9	BNC 4 / RF4	[455
3/DB9	BNC 1 / LO5	Pass
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	Pass
4/DB9	BNC 1 / LO7	P255
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pess
4/DB9	BNC 4 / RF8	ress

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	lass
1/DB9	BNC 2 / RF1	1422
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pass
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	Pes 5
3/DB9	BNC 1 / LO5	Pess
3/DB9	BNC 2 / RF5	Pess
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	Pess
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	6255
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	Pass

1 Overview 51103978

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+ 5V) //A

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1 kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pass
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	Pass
3/DB9	BNC 1 / LO5	Pess
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	Pass
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	Pass

1 op interface:	<u></u>	· · · · · · · · · · · · · · · · · · ·	
Demodulator	Signal	Pass/Fail	
1/DB9	BNC 1 / LO1 (half amplitude)	Mas _	
1/DB9	BNC 2 / RF1	Pass	
1/DB9	BNC 3 / LO2	Pas	_
1/DB9	BNC 4 / RF2	Pass	
2/DB9	BNC 1 / LO3	Pais	
2/DB9	BNC 2 / RF3	Vass	
2/DB9	BNC 3 / LO4	Pass	_
2/DB9	BNC 4 / RF4	Pass	
3/DB9	BNC 1 / LO5	Par	_
3/DB9	BNC 2 / RF5	Pass	
3/DB9	BNC 3 / LO6	Pess	
3/DB9	BNC 4 / RF6	Pass	
4/DB9	BNC 1 / LO7	Pass	
4/DB9	BNC 2 / RF7	Pass	
4/DB9	BNC 3 / LO8	P655	
4/DB9	BNC 4 / RF8	fass	

1 Overview \$1103979

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+ 5V) NJA

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at $1 \mathrm{kHz}$. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	Pos
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pess
2/DB9	BNC 1/LO3	Pess
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	P255
3/DB9	BNC 1 / LO5	Pass
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	Pess
3/DB9	BNC 4 / RF6	Pess
4/DB9	BNC 1 / LO7	Pess
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pess
4/DB9	BNC 4 / RF8	Pass

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	ass
1/DB9	BNC 2 / RF1	455
1/DB9	BNC 3 / LO2	Pas
1/DB9	BNC 4 / RF2	Ross
2/DB9	BNC 1/LO3	RSS
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	R55
3/DB9	BNC 1 / LO5	less
3/DB9	BNC 2 / RF5	Poss
3/DB9	BNC 3 / LO6	PC 55
3/DB9	BNC 4 / RF6	Pass
4/DB9	BNC 1 / LO7	Pess
4/DB9	BNC 2 / RF7	PC55
4/DB9	BNC 3 / LO8	Pess
4/DB9	BNC 4 / RF8	Pass

1 Overview Su 03980

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+ 5V) / A

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED___N/A____

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	PESS
1/DB9	BNC 3 / LO2	Pess
1/DB9	BNC 4 / RF2	/ass
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	Pass
3/DB9	BNC 1 / LO5	Pass
3/DB9	BNC 2 / RF5	H255
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	Pess
4/DB9	BNC 1 / LO7	Bss
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	Pass

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pas
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	fa ₃₅
2/DB9	BNC 1/LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Ross
2/DB9	BNC 4 / RF4	Pass
3/DB9	BNC 1/LO5	PSS
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	Pass
4/DB9	BNC 1/LO7	Pess
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pess
4/DB9	BNC 4 / RF8	Pass

1 Overview 5/10398/

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 ((+ 5V)	1

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator	Signal	Pass/Fail	
1/DB9	BNC 1 / LO1 (half amplitude)	lass	
1/DB9	BNC 2 / RF1	Pass	
1/DB9	BNC 3 / LO2	Pass	
1/DB9	BNC 4 / RF2	Rest	
2/DB9	BNC 1 / LO3	Pess	
2/DB9	BNC 2 / RF3	Pess	
2/DB9	BNC 3 / LO4	Pess	
2/DB9	BNC 4 / RF4	Pess	
3/DB9	BNC 1 / LO5	Pass	
3/DB9	BNC 2 / RF5	lass	
3/DB9	BNC 3 / LO6	Pass	
3/DB9	BNC 4 / RF6	Pass	
4/DB9	BNC 1 / LO7	fe ss	
4/DB9	BNC 2 / RF7	Pass	
4/DB9	BNC 3 / LO8	Pass	
4/DB9	BNC 4 / RF8	Pass	

Demodulator	Signal	Pass/Fail	
1/DB9	BNC 1 / LO1 (half amplitude)	Pass	
1/DB9	BNC 2 / RF1	Pass	
1/DB9	BNC 3 / LO2	Pass	
1/DB9	BNC 4 / RF2	Pess	
2/DB9	BNC 1/LO3	RSS	
2/DB9	BNC 2 / RF3	Pass	
2/DB9	BNC 3 / LO4	Pass	
2/DB9	BNC 4/RF4	Pess	•
3/DB9	BNC 1/LO5	Pess	_
3/DB9	BNC 2 / RF5	Pess	
3/DB9	BNC 3 / LO6	Pass	·
3/DB9	BNC 4 / RF6	Pass	_
4/DB9	BNC 1 / LO7	Pass	
4/DB9	BNC 2 / RF7	Pass	
4/DB9	BNC 3 / LO8	Pess	
4/DB9	BNC 4 / RF8	Pay	

1 Overview 511 03982

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+ 5V) // A

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED MA

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1 kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator	Signal	Pașs/Fail	
1/DB9	BNC 1 / LO1 (half amplitude)	rass	
1/DB9	BNC 2 / RF1	Pass	
1/DB9	BNC 3 / LO2	Pass	
1/DB9	BNC 4 / RF2	Pass	
2/DB9	BNC 1 / LO3	Pass	
2/DB9	BNC 2 / RF3	Pass	
2/DB9	BNC 3 / LO4	Pass	
2/DB9	BNC 4 / RF4	Pass	
3/DB9	BNC 1 / LO5	Res	
3/DB9	BNC 2 / RF5	Pass	
3/DB9	BNC 3 / LO6	Pass	
3/DB9	BNC 4 / RF6	Pass	
4/DB9	BNC 1 / LO7	Pass	
4/DB9	BNC 2 / RF7	Pass	
4/DB9	BNC 3 / LO8	Pass	
4/DB9	BNC 4 / RF8	Pass	

Demodulator	Signal	Pass/Fail
1/ DB 9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	Pes5
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pas
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	1522
2/DB9	BNC 4/RF4	R>5
3/DB9	BNC 1 / LO5	Pass
3/DB9	BNC 2 / RF5	Pess
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	PESS
4/DB9	BNC 1 / LO7	PESS
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	Pass

1 Overview 5/103993

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+ 5V) 1 /A

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED________

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Bottom Interface:		
Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Cass
1/ DB 9	BNC 2 / RF1	Pass
1/DB9_	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pass
2/DB9	BNC 1 / LO3	Rss
2/DB9	BNC 2 / RF3	R55
2/DB9	BNC 3 / LO4	Pas 5
2/DB9	BNC 4 / RF4	Pass
3/DB9	BNC 1 / LO5	Pass
3/DB9	BNC 2 / RF5	RSS
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	Pass
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	Ros

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/ DB 9	BNC 2 / RF1	PSS
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pass
2/DB9	BNC 1/LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pe 55
2/DB9	BNC 4 / RF4	Pass
3/DB9	BNC 1 / LO5	Pa55
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	Pass
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	Pess
4/DB9	BNC 3 / LO8	Pess
4/DB9	BNC 4 / RF8	1.55

1 Overview 5)103984

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester-D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+ 5V) / /

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Ass
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pass
1/ DB9	BNC 4 / RF2	Pass
2/DB9	BNC 1/LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	Pass
3/ DB 9	BNC 1 / LO5	Pass
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	Pass
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	Pass

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pas
1/DB9	BNC 4 / RF2	lass
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Vass
2/DB9	BNC 4 / RF4	Pass
3/DB9	BNC 1 / LO5	Pass
3/DB9	BNC 2 / RF5	PSS
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	Pess
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	Poss

1 Overview 5/103985

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+ 5V)	N	A
	•	<u> </u>

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

ont panel LED NA
ont panel LED IV

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	Pos
1/ DB 9	BNC 3 / LO2	Pess
1/DB9	BNC 4 / RF2	P=35
2/DB9	BNC 1 / LO3	P-55
2/DB9	BNC 2 / RF3	PSS
2/DB9	BNC 3 / LO4	Pess
2/DB9	BNC 4 / RF4	Poss
3/DB9	BNC 1 / LO5	G-55
3/DB9	BNC 2 / RF5	Pose
3/DB9	BNC 3 / LO6	Be55
3/DB9	BNC 4 / RF6	Pess
4/DB9	BNC 1 / LO7	P.SS
4/DB9	BNC 2 / RF7	Pess
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	Pass

Demodulator	Signal	Pass/Fail	
1/DB9	BNC 1 / LO1 (half amplitude)	Pas	
1/DB9	BNC 2 / RF1	Pess	
1/DB9	BNC 3 / LO2	Pass	
1/DB9	BNC 4 / RF2	Pas	_
2/DB9	BNC 1 / LO3	Pass	
2/DB9	BNC 2 / RF3	1-51	
2/DB9	BNC 3 / LO4	Pess	
2/DB9	BNC 4 / RF4	P->>	
3/DB9	BNC 1/LO5	Pess	
3/DB9	BNC 2 / RF5	Pess	
3/DB9	BNC 3 / LO6	Poss	
3/DB9	BNC 4 / RF6	1-55	_
4/DB9	BNC 1 / LO7	Pess	
4/DB9	BNC 2 / RF7	Pass	
4/DB9	BNC 3 / LO8	Pess	
4/DB9	BNC 4 / RF8	Pess	

Overview

1 Overview 5/163966

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED //A

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at $1 \, \text{kHz}$. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pass
2/DB9	BNC 1/LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	Pass
3/DB9	BNC 1/LO5	Pass
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	Pasi
3/DB9	BNC 4 / RF6	Pass
4/DB9	BNC 1 / LO7	1255
4/DB9	BNC 2 / RF7	Pas s
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	Pass

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pass
2/DB9	BNC 1/LO3	RSS
2/DB9	BNC 2 / RF3	Pess
2/DB9	BNC 3 / LO4	1555
2/DB9	BNC 4 / RF4	125
3/DB9	BNC 1 / LO5	Pass
3/DB9	BNC 2 / RF5	PESS
3/DB9	BNC 3 / LO6	POS
3/DB9	BNC 4 / RF6	Pass
4/DB9	BNC 1 / LO7	Pess
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	Pess

1 Overview 5/103987

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+ 5V) N/A

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED 1/4

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1 kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator	Signal	Pass/Fail	
1/DB9	BNC 1 / LO1 (half amplitude)	Pass	
1/DB9	BNC 2 / RF1	Pess	
1/DB9	BNC 3 / LO2	Pess	
1/DB9	BNC 4 / RF2	Pass	
2/DB9	BNC 1 / LO3	655	
2/DB9	BNC 2 / RF3	Pass	
2/DB9	BNC 3 / LO4	Pass	
2/DB9	BNC 4 / RF4	P455	
3/DB9	BNC 1 / LO5	Pass	
3/DB9	BNC 2 / RF5	Pess	
3/DB9	BNC 3 / LO6	P255	
3/DB9	BNC 4 / RF6	Pass	
4/DB9	BNC 1 / LO7	8-55	
4/DB9	BNC 2 / RF7	P2)5	
4/DB9	BNC 3 / LO8	Pess	
4/DB9	BNC 4 / RF8	Pess	

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/ DB 9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	1-55
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	PESS
2/DB9	BNC 4/RF4	P-55
3/DB9	BNC 1 / LO5	Pess
3/DB9	BNC 2 / RF5	Pa 37
3/DB9	BNC 3 / LO6	Pess
3/DB9	BNC 4 / RF6	Pass
4/DB9	BNC 1 / LO7	f < 55
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	less
4/DB9	BNC 4 / RF8	Pass

1 Overview Shapes y
Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+5V) /

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED

•

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered, Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	255
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pass
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	Pess
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	Pass
3/DB9	BNC 1 / LO5	Pess
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	PSS
3/DB9	BNC 4 / RF6	Pess
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	1255
4/DB9	BNC 4 / RF8	1-55

Demodulator	Signal	Pass/Fail	
1/ DB 9	BNC 1 / LO1 (half amplitude)	Pass	
1/DB9	BNC 2 / RF1	Pa 25	
1/DB9	BNC 3 / LO2	Pass	
1/DB9	BNC 4 / RF2	Pass	
2/DB9	BNC 1 / LO3	Pess	
2/DB9	BNC 2 / RF3	Pess	
2/DB9	BNC 3 / LO4	Pess	
2/DB9	BNC 4 / RF4	Pess	
3/DB9	BNC 1 / LO5	Pass	
3/DB9	BNC 2 / RF5	RESS	
3/DB9	BNC 3 / LO6	1555	
3/DB9	BNC 4 / RF6	P255	
4/DB9	BNC 1 / LO7	Pass	
4/DB9	BNC 2 / RF7	Pass	
4/DB9	BNC 3 / LO8	Pass	
4/DB9	BNC 4 / RF8	Pess	

1 Overview 5/103989

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+ 5V) 1 / A

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED 1

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at 1 kHz. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pess
1/DB9	BNC 4 / RF2	Pass
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	Pass
3/DB9	BNC 1 / LO5	Pass
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	Pass
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	Pess
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	Pass

Top file face.				
Demodulator	Signal	Pass/Fail		
1/DB9	BNC 1 / LO1 (half amplitude)	Pass		
1/DB9	BNC 2 / RF1	RSS		
1/DB9	BNC 3 / LO2	Pass		
1/DB9	BNC 4 / RF2	Pess		
2/DB9	BNC 1/LO3	Pass		
2/DB9	BNC 2 / RF3	Pess		
2/DB9	BNC 3 / LO4	Pass		
2/DB9	BNC 4 / RF4	P-ST		
3/DB9	BNC 1 / LO5	P-55		
3/DB9	BNC 2 / RF5	Pass		
3/DB9	BNC 3 / LO6	Pas		
3/DB9	BNC 4 / RF6	Pass		
4/DB9	BNC 1 / LO7	Pass		
4/DB9	BNC 2 / RF7	Pass		
4/DB9	BNC 3 / LO8	Pass		
4/DB9	BNC 4 / RF8	Pess		

1 Overview \$11.03990

Multiple demodulators can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. There are variants for ASC and LSC. Both have a DB37 connection to the EtherCAT chassis; in the case of the ASC variant there are 2 identical interfaces mounted inside one enclosure. The connection to the ASC demodulator is made through 4 DB9 connectors for 2 channels each. With 2 identical interfaces this gives a total of 16 channels per enclosure. For the LSC variant each of the 4 DB9 connectors is in parallel to a DB15 connector. The DB15 connectors has additional digital status lines indicating OK and 2 sign bits. The DB9 connectors are used for the 4-channel demodulators, whereas the DB15 connectors are used for the 2-channel demodulators and 2-channel phase-frequency discriminators.

2 Test Equipment

- Oscilloscope
- Function generator
- Tester for demodulator concentrator
- DC power supplies

3 Documentation

- Schematic—<u>D1100691-v1</u> (LSC) and <u>D1100696-v1</u> (ASC)
- Tester—D1101141-v1

4 Tests

Power up the measurement equipment and connect the Tester to the DUT. One DB37 cable is permanently attached, whereas the DB9 and DB15 cables are switch from port 1 through 4 on the concentrator. For the ASC variant the procedure is repeated for the second interface.

4.1 Power

Check the VCC voltage on the concentrator port. The voltage should be within 5% of nominal.

TP6 (+ 5V)

4.2 Testing

4.2.1 LSC variant

Connect ±18V to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED /

-

4.2.2 ASC variant

Start with the lower interface. Connect up the first demodulator using the DB9 connector as well as the DB37 for the EtherCAT side. Set the function generator to a 20Vpp sine wave at $1 \, \text{kHz}$. Connect it to the first BNC of the first demodulator of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50Ω . Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Check that the sine wave propagates through the box unaltered. Repeat this test for the remaining 3 BNCs of the first demodulator by moving to the next EtherCAT BNC.

Now move to the second, third and fourth demodulator of the bottom interface and repeat the above measurements. After done, repeat the whole process for the top interface.

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pas5
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	1651
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	P-55
2/DB9	BNC 3 / LO4	P-55
2/DB9	BNC 4 / RF4	Pess
3/DB9	BNC 1 / LO5	Peas
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	Pass
4/DB9	BNC 1 / LO7	PESS
4/DB9	BNC 2 / RF7	les
4/DB9	BNC 3 / LO8	KIS
4/DB9	BNC 4 / RF8	Pass

1 op interface:				
Demodulator	Signal	Pass/Fail		
1/DB9	BNC 1 / LO1 (half amplitude)	Pa55		
1/DB9	BNC 2 / RF1	1255		
1/DB9	BNC 3 / LO2	1/255		
1/DB9	BNC 4 / RF2	Pess		
2/DB9	BNC 1 / LO3	RSS		
2/DB9	BNC 2 / RF3	Pers		
2/DB9	BNC 3 / LO4	Pess		
2/DB9	BNC 4 / RF4	Pess		
3/DB9	BNC 1 / LO5	P255		
3/DB9	BNC 2 / RF5	f<55		
3/DB9	BNC 3 / LO6	P<55		
3/DB9	BNC 4 / RF6	Pess		
4/DB9	BNC 1 / LO7	Pess		
4/DB9	BNC 2 / RF7	F255		
4/DB9	BNC 3 / LO8	Pass		
4/DB9	BNC 4 / RF8	1.55		