

1 Overview *S/103167*

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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED *N/A*

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 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)	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	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

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	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 Overview

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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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED N/A

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 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)	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	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

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	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 Overview

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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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED N/A

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 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)	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	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

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	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 Overview

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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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED N/A

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 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)	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	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

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	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 Overview *S1103971*

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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED *N/A*

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 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)	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	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

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	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 Overview

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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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED N/A

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 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)	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	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

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	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 Overview *S1103973*

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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED *N/A*

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 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)	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	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

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	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 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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED N/A

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 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)	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	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

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	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 Overview *E11 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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED N/A

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 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)	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	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

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	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 Overview S1103976

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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED N/A

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 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)	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	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

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	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 Overview *S1103977*

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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED *N/A*

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 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)	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	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

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	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 Overview *S1103978*

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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED N/A

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 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)	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	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

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	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 Overview *S1103979*

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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED *N/A*

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 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)	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	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

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	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 Overview *S1103980*

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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED N/A

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 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)	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	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

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	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 Overview 51103981

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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ 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 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)	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	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

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	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 Overview *311 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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED *N/A*

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 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)	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	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

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	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 Overview *S11 03983*

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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED *n/A*

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 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)	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	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

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	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 Overview *S11 03984*

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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED *N/A*

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 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)	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	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

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	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 Overview *5/10/3985*

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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED NA

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 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)	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	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

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	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 Overview

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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED N/A

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 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)	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	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

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	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 Overview *S110397*

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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED *N/A*

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 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)	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	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

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	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 Overview *S11 03988*

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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED N/A

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 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)	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	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

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	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 Overview *S1103989*

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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED *N/A*

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 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)	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	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

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	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 Overview *s1103990*

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—D1100691-v1 (LSC) and D1100696-v1 (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 $\pm 18V$ to the LSC demodulator concentrator. Check that the LED on the front panel is lit.

Front panel LED N/A

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 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)	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	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

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	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