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 51103991

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) +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\_\_\_\_\_\_\_

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pess 5
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Past
1/DB15	BNC 1 / RF1 (full amplitude)	Pass
1/DB15	BNC 2 / LO1	Pess
1/DB15	BNC 3 / RF2	1655
1/DB15	BNC 4 / LO2	Pass
1/DB15	OK switch / OK12 LED (LED1)	Pess
1/DB15	SGN1 switch / SGN1 switch (LED2) ED3	Pass
1/DB15	SGN2 switch / SGN2 switch (LED3) LE.	8655
2/DB9	BNC 1/LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	PESS
2/DB9	BNC 4 / RF4	P555
2/DB15	BNC 1 / RF3	PSSS
2/DB15	BNC 2 / LO3	Pass
2/DB15	BNC 3 / RF4	Pass
2/DB15	BNC 4 / LO4	Pass

2/DB15	OK switch / OK34 LED (LED4) LED 2	Pass
2/DB15	SGN1 switch / —	Pass
2/DB15	SGN2 switch / —	Pass
3/DB9	BNC 1 / LO5	Pess
3/DB9	BNC 2 / RF5	P-55
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	Poss
3/DB15	BNC 1 / RF5	Pas
3/DB15	BNC 2 / LO5	P=55
3/DB15	BNC 3 / RF6	Pess
3/DB15	BNC 4 / LO6	Pass
3/DB15	OK switch / —	Pass
3/DB15	SGN1 switch / —	fe >5
3/DB15	SGN2 switch / —	Pass
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	RS5
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	Pass
4/DB15	BNC 1 / RF7	Pess
4/DB15	BNC 2 / LO7	Poss
4/DB15	BNC 3 / RF8	Pess
4/DB15	BNC 4 / LO8	Pass
4/DB15	OK switch / —	Pass
4/DB15	SGN1 switch / —	1655
4/DB15	SGN2 switch / —	Pess

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 \$1103992

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) +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 /e.S

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pess
1/DB9	BNC 2 / RF1	Res5
1/DB9	BNC 3 / LO2	Piss
1/DB9	BNC 4 / RF2	RSS
1/DB15	BNC 1 / RF1 (full amplitude)	Pass
1/DB15	BNC 2 / LO1	Pass
1/DB15	BNC 3 / RF2	Pass
1/DB15	BNC 4 / LO2	Pess
1/DB15	OK switch / OK12 LED (LED1)	Pass
1/DB15	SGN1 switch / SGN1 switch (LED2) (E)	177
1/DB15	SGN2 switch / SGN2 switch (LED3) LEAY	Pess
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pess
2/DB9	BNC 4 / RF4	Pass
2/DB15	BNC 1 / RF3	Pass
2/DB15	BNC 2 / LO3	Pass
2/DB15	BNC 3 / RF4	Pass
2/DB15	BNC 4 / LO4	Pess

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2/DB15	OK switch / OK34 LED (LED4) LED 2	(ass
2/DB15	SGN1 switch / —	Pas>
2/DB15	SGN2 switch / —	Pass
3/DB9	BNC 1 / LO5	1055
3/DB9	BNC 2 / RF5	1955
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	Pc) 5
3/DB15	BNC 1 / RF5	Pass
3/DB15	BNC 2 / LO5	Va 55
3/DB15	BNC 3 / RF6	Pc>5
3/DB15	BNC 4 / LO6	P655
3/DB15	OK switch / —	Pass
3/DB15	SGN1 switch / —	Pass
3/DB15	SGN2 switch / —	Pass
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	Pa55
4/DB15	BNC 1 / RF7	Pass
4/DB15	BNC 2 / LO7	Pass
4/DB15	BNC 3 / RF8	jass
4/DB15	BNC 4 / LO8	Pass
4/DB15	OK switch / —	Pass
4/DB15	SGN1 switch / —	Poss
4/DB15	SGN2 switch / —	Pass

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 51103 993

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.

Demodulator	Signal	Pass/Fail
1/DB9_	BNC 1 / LO1 (half amplitude)	1255
1/DB9	BNC 2 / RF1	P-55
1/DB9	BNC 3 / LO2	Q55
1/DB9	BNC 4 / RF2	Pass
1/DB15	BNC 1 / RF1 (full amplitude)	Pess
1/DB15	BNC 2 / LO1	Pess 5
1/DB15	BNC 3 / RF2	Pess
1/DB15	BNC 4 / LO2	Pess
1/DB15	OK switch / OK12 LED (LED1)	1.55
1/DB15	SGN1 switch / SGN1 switch (LED2) ED 3	T 71
1/DB15	SGN2 switch / SGN2 switch (LED3) LED1	Pes S
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Persos
2/DB9	BNC 4 / RF4	Pisr
2/DB15	BNC 1 / RF3	Pess
2/DB15	BNC 2 / LO3	Pass
2/DB15	BNC 3 / RF4	Ress
2/DB15	BNC 4 / LO4	Pass

2/DB15	OK switch / OK34 LED (LED4) LED	- Pass
2/DB15	SGN1 switch / —	P-55
2/DB15	SGN2 switch /	1P255
3/DB9	BNC 1 / LO5	Pass
3/DB9	BNC 2 / RF5	Pesc
3/DB9	BNC 3 / LO6	Pess
3/DB9	BNC 4 / RF6	Pass
3/DB15	BNC 1 / RF5	Pess
3/DB15	BNC 2 / LO5	Pass
3/DB15	BNC 3 / RF6	P=>5
3/DB15	BNC 4 / LO6	Pess
3/DB15	OK switch / —	Pass
3/DB15	SGN1 switch /	fess
3/DB15	SGN2 switch / —	Pass
4/DB9	BNC 1 / LO7	ikss
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pess
4/DB9	BNC 4 / RF8	Pass
4/DB15	BNC 1 / RF7	Fass
4/DB15	BNC 2 / LO7	Pess
4/DB15	BNC 3 / RF8	Pess
4/DB15	BNC 4 / LO8	Pass
4/DB15	OK switch / —	Puss
4/DB15	SGN1 switch / —	Piss
4/DB15	SGN2 switch / —	Pess

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 51103994

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 Yes

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
1/DB15	BNC 1 / RF1 (full amplitude)	Pass
1/DB15	BNC 2 / LO1	Pass
1/DB15	BNC 3 / RF2	Pass
1/DB15	BNC 4 / LO2	Pass
1/DB15	OK switch / OK12 LED (LED1)	Pass
1/DB15	SGN1 switch / SGN1 switch (LED2) (E)	.   .
1/DB15	SGN2 switch / SGN2 switch (LED3) LEJ	N
2/DB9	BNC 1 / LO3	Ross
2/DB9	BNC 2 / RF3	Poss
2/DB9	BNC 3 / LO4	ifes,5
2/DB9	BNC 4 / RF4	Pe>>>
2/DB15	BNC 1 / RF3	Pass
2/DB15	BNC 2 / LO3	Pess
2/DB15	BNC 3 / RF4	Pis
2/DB15	BNC 4 / LO4	Q255

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2/DB15	OK switch / OK34 LED (LED4) LED 2	- Pa>5
2/DB15	SGN1 switch / —	Pass
2/DB15	SGN2 switch / —	Pess
3/DB9	BNC 1 / LO5	less
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	Pers
3/DB9	BNC 4 / RF6	Pas
3/DB15	BNC 1 / RF5	PE55
3/DB15	BNC 2 / LO5	Pass
3/DB15	BNC 3 / RF6	less
3/DB15	BNC 4 / LO6	Pess
3/DB15	OK switch / —	Pess
3/DB15	SGN1 switch / —	1055
3/DB15	SGN2 switch / —	Vess
4/DB9	BNC 1 / LO7	1525
4/DB9	BNC 2 / RF7	Pus
4/DB9	BNC 3 / LO8	(255 (5)
4/DB9	BNC 4 / RF8	1)
4/DB15	BNC 1 / RF7	1455
4/DB15	BNC 2 / LO7	PASS.
4/DB15	BNC 3 / RF8	1655
4/DB15	BNC 4 / LO8	Y 25 5
4/DB15	OK switch / —	Vess
4/DB15	SGN1 switch / —	145 5
4/DB15	SGN2 switch / —	Vess

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—D1100691-v1 (LSC) and D1100696-v1 (ASC)
- Tester—D1101141-v1

4 Tests 511 0395

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 <u>Yes</u>

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Po 25
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	PESS
1/DB9	BNC 4 / RF2	Pass
1/DB15	BNC 1 / RF1 (full amplitude)	Pass
1/DB15	BNC 2 / LO1	Pess
1/DB15	BNC 3 / RF2	Pass
1/DB15	BNC 4 / LO2	Ress
1/DB15	OK switch / OK12 LED (LED1)	Pass
1/DB15	SGN1 switch / SGN1 switch (LED2) (E)	1 ^
1/DB15	SGN2 switch / SGN2 switch (LED3) LED	
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	Pa 5 5
2/DB15	BNC 1 / RF3	Pass
2/DB15	BNC 2 / LO3	Pass)
2/DB15	BNC 3 / RF4	Pass
2/DB15	BNC 4 / LO4	Pass

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2/DB15	OK switch / OK34 LED (LED4) LED	2 Pasis
2/DB15	SGN1 switch / —	Pass
2/DB15	SGN2 switch / —	Riss
3/DB9	BNC 1 / LO5	Pass
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	las 5
3/DB15	BNC 1 / RF5	Pass
3/DB15	BNC 2 / LO5	Pews
3/DB15	BNC 3 / RF6	Pass
3/DB15	BNC 4/LO6	Pass
3/DB15	OK switch / —	Pass
3/DB15	SGN1 switch / —	Pass
3/DB15	SGN2 switch / —	Pass
4/DB9	BNC 1 / LO7	Pais
4/DB9	BNC 2 / RF7	Par
4/DB9	BNC 3 / LO8	Ris
4/DB9	BNC 4 / RF8	Pc.>s
4/DB15	BNC 1 / RF7	P035
4/DB15	BNC 2 / LO7	1655
4/DB15	BNC 3 / RF8	Pc >5
4/DB15	BNC 4 / LO8	P255
4/DB15	OK switch / —	fr. >5
4/DB15	SGN1 switch / —	1,022
4/DB15	SGN2 switch / —	8455

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

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•	10010	711/299	0

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) +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 <u>\forall a > </u>

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	Poss
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pars
1/DB15	BNC 1 / RF1 (full amplitude)	Pess .
1/DB15	BNC 2 / LO1	P2-55
1/DB15	BNC 3 / RF2	P055
1/DB15	BNC 4 / LO2	Pass
1/DB15	OK switch / OK12 LED (LED1)	Pass
1/DB15	SGN1 switch / SGN1 switch (LED2) (E) 3	Pass
1/DB15	SGN2 switch / SGN2 switch (LED3) LED1	Pess 5
2/DB9	BNC 1 / LO3	Pe55
2/DB9	BNC 2 / RF3	Ps.
2/DB9	BNC 3 / LO4	Poss
2/DB9	BNC 4 / RF4	Pess
2/DB15	BNC 1 / RF3	Pass
2/DB15	BNC 2 / LO3	P. 55
2/DB15	BNC 3 / RF4	Vez ,
2/DB15	BNC 4 / LO4	Pers

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2/DB15	OK switch / OK34 LED (LED4) LED 2	6>5
2/DB15	SGN1 switch / —	Pess
2/DB15	SGN2 switch / —	Pass
3/DB9	BNC 1 / LO5	Poss
3/DB9	BNC 2 / RF5	f-35
3/DB9	BNC 3 / LO6	Pass
3/DB9	BNC 4 / RF6	Pass
3/DB15	BNC 1 / RF5	Pass
3/DB15	BNC 2 / LO5	1 1655
3/DB15	BNC 3 / RF6	Pass
3/DB15	BNC 4 / LO6	8-55
3/DB15	OK switch /	Pess.
3/DB15	SGN1 switch / —	Pess
3/DB15	SGN2 switch / —	1455
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	P-25
4/DB9	BNC 3 / LO8	8-55
4/DB9	BNC 4 / RF8	Pass
4/DB15	BNC 1 / RF7	Pess
4/DB15	BNC 2 / LO7	Pass
4/DB15	BNC 3 / RF8	Pass
4/DB15	BNC 4 / LO8	Pass
4/DB15	OK switch / —	Poss
4/DB15	SGN1 switch / —	1.25
4/DB15	SGN2 switch / —	8-75

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

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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)	15U

## 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.

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pc-59
1/DB9	BNC 4 / RF2	Pess
1/DB15	BNC 1 / RF1 (full amplitude)	() (455
1/DB15	BNC 2 / LO1	Pess
1/DB15	BNC 3 / RF2	1455
1/DB15	BNC 4 / LO2	P=55
1/DB15	OK switch / OK12 LED (LED1)	Poss
1/DB15	SGN1 switch / SGN1 switch (LED2)(E)	\ \( \cdot\)
1/DB15	SGN2 switch / SGN2 switch (LED3) LF.)	P-55
2/DB9	BNC 1 / LO3	Pess.
2/DB9	BNC 2 / RF3	Page
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	Pess
2/DB15	BNC 1 / RF3	Pass,
2/DB15	BNC 2 / LO3	Pa > 5
2/DB15	BNC 3 / RF4	Pass
2/DB15	BNC 4 / LO4	Pc 55

		To
2/DB15	OK switch / OK34 LED (LED4) LED 2	Pess
2/DB15	SGN1 switch / —	(e) 2
2/DB15	SGN2 switch / —	Mass
3/DB9	BNC 1 / LO5	Pers
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	less
3/DB9	BNC 4 / RF6	Pass
3/DB15	BNC 1 / RF5	Pass
3/DB15	BNC 2 / LO5	Vass
3/DB15	BNC 3 / RF6	Pass
3/DB15	BNC 4 / LO6	Pass
3/DB15	OK switch / —	Pass
3/DB15	SGN1 switch / —	Pass
3/DB15	SGN2 switch / —	Bess.
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	8055
4/DB9	BNC 3 / LO8	Pc. 55
4/DB9	BNC 4 / RF8	Pass
4/DB15	BNC 1 / RF7	fle 55
4/DB15	BNC 2 / LO7	Pess
4/DB15	BNC 3 / RF8	Rss
4/DB15	BNC 4 / LO8	Pass
4/DB15	OK switch / —	Pess
4/DB15	SGN1 switch / —	Pass
4/DB15	SGN2 switch / —	fors

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)\_ +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 /25

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
1/DB15	BNC 1 / RF1 (full amplitude)	1-55
1/DB15	BNC 2 / LO1	Pos
1/DB15	BNC 3 / RF2	Ves 5
1/DB15	BNC 4 / LO2	Pass
1/DB15	OK switch / OK12 LED (LED1)	Pess
1/DB15	SGN1 switch / SGN1 switch (LED2) LED 3	Pass
1/DB15	SGN2 switch / SGN2 switch (LED3) LEJY	8655
2/DB9	BNC 1 / LO3	P.55
2/DB9	BNC 2 / RF3	Pess
2/DB9	BNC 3 / LO4	80.25
2/DB9	BNC 4 / RF4	Ress
2/DB15	BNC 1 / RF3	Pass
2/DB15	BNC 2 / LO3	(c 55
2/DB15	BNC 3 / RF4	Pas 5
2/DB15	BNC 4 / LO4	be ss

		10
2/DB15	OK switch / OK34 LED (LED4) LED 2	(a)5
2/DB15	SGN1 switch / —	Pess
2/DB15	SGN2 switch / —	Jess
3/DB9	BNC 1 / LO5	// Ss
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	8-55
3/DB9	BNC 4 / RF6	Pess
3/DB15	BNC 1 / RF5	Pasc
3/DB15	BNC 2 / LO5	Pass
3/DB15	BNC 3 / RF6	Pc 55
3/DB15	BNC 4 / LO6	Pess
3/DB15	OK switch /	Pers
3/DB15	SGN1 switch / —	P.55
3/DB15	SGN2 switch / —	P255
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	Pess
4/DB9	BNC 3 / LO8	1.55
4/DB9	BNC 4 / RF8	Pc 55
4/DB15	BNC 1 / RF7	P. 55
4/DB15	BNC 2 / LO7	Mess
4/DB15	BNC 3 / RF8	16.>5
4/DB15	BNC 4 / LO8	14.25
4/DB15	OK switch / —	Keys
4/DB15	SGN1 switch / —	1455
4/DB15	SGN2 switch / —	1639

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 S11 03999

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) +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\_\_\_\_\_\_

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	lass
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pese
1/DB9	BNC 4 / RF2	Pass
1/DB15	BNC 1 / RF1 (full amplitude)	Pess
1/DB15	BNC 2 / LO1	Pc 55
1/DB15	BNC 3 / RF2	Phis
1/DB15	BNC 4 / LO2	less
1/DB15	OK switch / OK12 LED (LED1)	Yest
1/DB15	SGN1 switch / SGN1 switch (LED2) (LED2)	3 KSS
1/DB15	SGN2 switch / SGN2 switch (LED3) LF.	*1 Pess
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	10-55
2/DB9	BNC 3 / LO4	V-59
2/DB9	BNC 4 / RF4	Pass
2/DB15	BNC 1 / RF3	Pass
2/DB15	BNC 2 / LO3	Pass
2/DB15	BNC 3 / RF4	Pass
2/DB15	BNC 4 / LO4	Pays

#### LIGO-E1100544-v2

2/DB15	OK switch / OK34 LED (LED4) LE	D2 Yess
2/DB15	SGN1 switch / —	fass
2/DB15	SGN2 switch / —	10.95
3/DB9	BNC 1 / LO5	Pess .
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	Pass Va-SS
3/DB9	BNC 4 / RF6	1-55
3/DB15	BNC 1 / RF5	Pass
3/DB15	BNC 2 / LO5	P=35
3/DB15	BNC 3 / RF6	Pass
3/DB15	BNC 4 / LO6	Pess
3/DB15	OK switch / —	Pax
3/DB15	SGN1 switch / —	Press
3/DB15	SGN2 switch / —	Pass
4/DB9	BNC 1 / LO7	Va Ss
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	Pess
4/DB15	BNC 1 / RF7	P-55
4/DB15	BNC 2 / LO7	Pross
4/DB15	BNC 3 / RF8	Pass
4/DB15	BNC 4 / LO8	(2)5
4/DB15	OK switch / —	Pa 55
4/DB15	SGN1 switch / —	P.,,
4/DB15	SGN2 switch / —	Pogs

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 Silvycox

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) +5U

## 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\_\_\_\_\_\_

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	1255
1/DB9	BNC 2 / RF1	1/a55
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pass
1/DB15	BNC 1 / RF1 (full amplitude)	P253
1/DB15	BNC 2 / LO1	P-55
1/DB15	BNC 3 / RF2	Pass
1/DB15	BNC 4 / LO2	P655
1/DB15	OK switch / OK12 LED (LED1)	FD3 Pasi
1/DB15	SGN1 switch / SGN1 switch (LED2)	FD4 7.55
1/DB15	SGN2 switch / SGN2 switch (LED3) L	Pess
2/DB9	BNC 1 / LO3	Pess
2/DB9	BNC 2 / RF3	P255
2/DB9	BNC 3 / LO4	Pess
2/DB9	BNC 4 / RF4	Pasi
2/DB15	BNC 1 / RF3	P2,5
2/DB15	BNC 2 / LO3	Pass
2/DB15	BNC 3 / RF4	Pe.55
2/DB15	BNC 4 / LO4	

LIGO

2/DB15	LIGO-E1100544-v2
2/DB15	OK switch / Orre
2/DB15	OK switch / OK34 LED (LED4) LED 2
3/DB9	SGN2 switch
3/DB9	BNC1/V
3/DB9	BNC 2 / PDC
3/DB9	BNC 3/LO6 Pass
3/DB15	BNC 4/RF6
	BNC 1/RF5
3/DB15	BNC 2/LO5
3/DB15	BNC 3/RF6
3/DB15	BNC 4/LO6
3/DB15	OK switch/
3/DB15	SGN1 switch/
3/DB15	SGN2 switch /—
4/DB9	BNC 1/107
4/DB9	BNC 2 / RF7 Page 1
4/DB9	BNC 3/LO8
4/DB9	BNC 4 / RF8 P-55
4/DB15	BNC 1 / RF7 P=35
4/DB15	BNC 2/LO7  Pess
4/DB15	BNC 3 / RF8
4/DB15	BNC 4/LO8
4/DB15	OK switch /— P=53
I/DB15	SGN1 switch /— Pess
4/DB15	SGN2 switch / — Pass

2

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

4 Tests	51104001
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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) +SV

## 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 Yes

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. Connect the oscilloscope to the first BNC of the EtherCAT side of the tester. Make sure that all the other BNCs on the EtherCAT side are terminated by 50\Omega. 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 disconnect the DB9 and again. Now, exercise the OK switch on the first demodulator of the tester and watch the Repeat this for the 2 sign switches.

Demodulator	Signal	Dece/Page
1/DB9	BNC 1 / LO1 (half amplitude)	Pass/Fail
1/DB9	BNC 2 / RF1	1625
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pass
1/DB15	BNC 1 / RF1 (full amplitude)	P-55
1/DB15	BNC 2 / LO1	Pas
1/DB15	BNC 3 / RF2	Pass
1/DB15	BNC 4 / LO2	Res
1/DB15	OK switch / OK12 LED (LED1)	Pass
1/DB15	SGN1 switch / SGN1 switch (LED2) (E) 3	Pess
1/DB15	SGN2 switch / SGN2 switch (LEDS) LE 1	Pess
2/DB9	BNC 1 / LO3	RSS
2/DB9	BNC 2 / RF3	P455
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	P=55
2/DB15	BNC 1 / RF3	1-25
2/DB15	BNC 2 / LO3	Pass
2/DB15	BNC 3 / RF4	V-55
2/DB15	BNC 4 / LO4	Pass

2/DB15	OK switch / OK34 LED (LED4)	LED 2 Piss
2/DB15	SGN1 switch / —	Pass
2/DB15	SGN2 switch / —	Pess
3/DB9	BNC 1 / LO5	Pass
3/DB9	BNC 2 / RF5	Pux
3/DB9	BNC 3 / LO6	Pe55
3/DB9	BNC 4 / RF6	Dess.
3/DB15	BNC 1 / RF5	Pass
3/DB15	BNC 2 / LO5	Pess
3/DB15	BNC 3 / RF6	Ress
3/DB15	BNC 4 / LO6	Pass
3/DB15	OK switch / —	Pers
3/DB15	SGN1 switch / —	Pess
3/DB15	SGN2 switch / —	less
4/DB9	BNC 1 / LO7	P.58
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	P655
4/DB9	BNC 4 / RF8	(2-35
4/DB15	BNC 1 / RF7	Pass
4/DB15	BNC 2 / LO7	12-55
4/DB15	BNC 3 / RF8	Pezz
4/DB15	BNC 4 / LO8	ρ.55
4/DB15	OK switch /	P2.55
4/DB15	SGN1 switch / —	Ry
4/DB15	SGN2 switch / —	Pusy

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 Siloyan.

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) 75V

## 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\_\_\_\_\_\_\_

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	1655
1/ <b>DB</b> 9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pass
1/DB15	BNC 1 / RF1 (full amplitude)	P6 8 5
1/DB15	BNC 2 / LO1	Pass
1/DB15	BNC 3 / RF2	Pess
1/DB15	BNC 4 / LO2	P=55
1/DB15	OK switch / OK12 LED (LED1)	Piss
1/DB15	SGN1 switch / SGN1 switch (LED2) (ED3)	
1/DB15	SGN2 switch / SGN2 switch (LED3) LED1	Pass
2/DB9	BNC 1 / LO3	£ 55
2/DB9	BNC 2 / RF3	() (6.55)
2/DB9	BNC 3 / LO4	P255
2/DB9	BNC 4 / RF4	Po > 5
2/DB15	BNC 1 / RF3	Pass
2/DB15	BNC 2 / LO3	Pess
2/DB15	BNC 3 / RF4	1/47)
2/DB15	BNC 4 / LO4	Pass

	22.2	1000
2/DB15	OK switch / OK34 LED (LED4) LED 2	Pass
2/DB15	SGN1 switch / —	Pass
2/DB15	SGN2 switch / —	Pc55
3/DB9	BNC 1 / LO5	P2 55
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	Pals
3/DB9	BNC 4 / RF6	Pass
3/DB15	BNC 1 / RF5	P-SS
3/DB15	BNC 2 / LO5	Pess
3/DB15	BNC 3 / RF6	Pe55
3/DB15	BNC 4 / LO6	Pass
3/DB15	OK switch / —	Pess
3/DB15	SGN1 switch / —	Poss
3/DB15	SGN2 switch /	Vass
4/DB9	BNC 1 / LO7	Pess
4/DB9	BNC 2 / RF7	Pess
4/DB9	BNC 3 / LO8	Pas
4/DB9	BNC 4 / RF8	Pest
4/DB15	BNC 1 / RF7	Pess
4/DB15	BNC 2 / LO7	Pess
4/DB15	BNC 3 / RF8	Pass
4/DB15	BNC 4 / LO8	Pass
4/DB15	OK switch / —	Pase
4/DB15	SGN1 switch / —	Pess
4/DB15	SGN2 switch / —	lig

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 51104003

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) +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.

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pasc
1/DB9	BNC 4 / RF2	Pess
1/DB15	BNC 1 / RF1 (full amplitude)	RSS
1/DB15	BNC 2 / LO1	Pass
1/DB15	BNC 3 / RF2	P.S
1/DB15	BNC 4 / LO2	B-22
1/DB15	OK switch / OK12 LED (LED1)	Pess
1/DB15	SGN1 switch / SGN1 switch (LED2) ED3	3 1-55
1/DB15	SGN2 switch / SGN2 switch (LED3) LED	Pess
2/DB9	BNC 1 / LO3	Pess
2/DB9	BNC 2 / RF3	Pess
2/DB9	BNC 3 / LO4	1-55
2/DB9	BNC 4 / RF4	Pess
2/DB15	BNC 1 / RF3	Pers
2/DB15	BNC 2 / LO3	Pess
2/DB15	BNC 3 / RF4	less
2/DB15	BNC 4 / LO4	Pers

Γ		<del></del>
2/DB15	OK switch / OK34 LED (LED4) LED 2	Jass
2/DB15	SGN1 switch / —	lass
2/DB15	SGN2 switch / —	FSS
3/DB9	BNC 1 / LO5	Pass
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	Pa.55
3/DB9	BNC 4 / RF6	Pess
3/DB15	BNC 1 / RF5	Pass
3/DB15	BNC 2 / LO5	P655
3/DB15	BNC 3 / RF6	Pass
3/DB15	BNC 4 / LO6	Ress
3/DB15	OK switch / —	Poss
3/DB15	SGN1 switch / —	Pass
3/DB15	SGN2 switch / —	Pess
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	Puss
4/DB9	BNC 3 / LO8	Pess
4/DB9	BNC 4 / RF8	Pess
4/DB15	BNC 1 / RF7	Pess
4/DB15	BNC 2 / LO7	Pess
4/DB15	BNC 3 / RF8	Pess
4/DB15	BNC 4 / LO8	Pass
4/DB15	OK switch / —	Pess
4/DB15	SGN1 switch / —	Ress
4/DB15	SGN2 switch / —	Pose

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	31	104004
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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) +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 Y-es

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Q \$55
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pass
1/DB15	BNC 1 / RF1 (full amplitude)	Va. 55
1/DB15	BNC 2 / LO1	Pass
1/DB15	BNC 3 / RF2	Pass
1/DB15	BNC 4 / LO2	P-55
1/DB15	OK switch / OK12 LED (LED1)	Pass
1/DB15	SGN1 switch / SGN1 switch (LED2)(E) 3	Pass
1/DB15	SGN2 switch / SGN2 switch (LED3) LEJY1	RSS
2/DB9	BNC 1 / LO3	P-55
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	Pess
2/DB15	BNC 1 / RF3	Pa 53
2/DB15	BNC 2 / LO3	Pess
2/DB15	BNC 3 / RF4	Pass
2/DB15	BNC 4 / LO4	Pass

	-5.2	10.
2/DB15	OK switch / OK34 LED (LED4) LED 2	Pass
2/DB15	SGN1 switch / —	Yess
2/DB15	SGN2 switch / —	Pess
3/DB9	BNC 1 / LO5	Pass
3/DB9	BNC 2 / RF5	less
3/DB9	BNC 3 / LO6	P-55
3/DB9	BNC 4 / RF6	Pass
3/DB15	BNC 1 / RF5	Pass
3/DB15	BNC 2 / LO5	P259
3/DB15	BNC 3 / RF6	Pess
3/DB15	BNC 4 / LO6	Pess
3/DB15	OK switch / —	1.55
3/DB15	SGN1 switch / —	Pers
3/DB15	SGN2 switch / —	Pass
4/DB9	BNC 1 / LO7	Pars
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pesc
4/DB9	BNC 4 / RF8	Pess
4/DB15	BNC 1 / RF7	Pc 55
4/DB15	BNC 2 / LO7	Pess
4/DB15	BNC 3 / RF8	Pers
4/DB15	BNC 4 / LO8	Pass
4/DB15	OK switch /	14255
4/DB15	SGN1 switch/—	Pess
4/DB15	SGN2 switch / —	Pess

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	Slloya	v5
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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.

1F0(+3V)	TP6 (+ 5V)_	tsu	
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# 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	Yes

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pes 5
1/DB9	BNC 2 / RF1	P=>5
1/DB9	BNC 3 / LO2	Pess
1/DB9	BNC 4 / RF2	Ress
1/DB15	BNC 1 / RF1 (full amplitude)	Pess
1/DB15	BNC 2 / LO1	Pass
1/DB15	BNC 3 / RF2	Yess
1/DB15	BNC 4 / LO2	PSS
1/DB15	OK switch / OK12 LED (LED1)	RSS
1/DB15	SGN1 switch / SGN1 switch (LED2)(LE)	3 P.SS
1/DB15	SGN2 switch / SGN2 switch (LED3) LE	4 Pess
2/DB9	BNC 1 / LO3	Pc55
2/DB9	BNC 2 / RF3	De55
2/DB9	BNC 3 / LO4	Pess
2/DB9	BNC 4 / RF4	Pass
2/DB15	BNC 1 / RF3	Pess
2/DB15	BNC 2 / LO3	less
2/DB15	BNC 3 / RF4	RSS
2/DB15	BNC 4 / LO4	Piss

		<del>-                                    </del>
2/DB15	OK switch / OK34 LED (LED4) LED	L Pass
2/DB15	SGN1 switch / —	Jes5
2/DB15	SGN2 switch / —	Yess
3/DB9	BNC 1 / LO5	(65
3/DB9	BNC 2 / RF5	RSS
3/DB9	BNC 3 / LO6	1455
3/DB9	BNC 4 / RF6	Pess
3/DB15	BNC 1 / RF5	R55
3/DB15	BNC 2 / LO5	Pess
3/DB15	BNC 3 / RF6	Ress
3/DB15	BNC 4 / LO6	Pess
3/DB15	OK switch / —	1655
3/DB15	SGN1 switch / —	Poss
3/DB15	SGN2 switch / —	P237
4/DB9	BNC 1 / LO7	R55
4/DB9	BNC 2 / RF7	Pess
4/DB9	BNC 3 / LO8	Pass
4/DB9	BNC 4 / RF8	Pess
4/DB15	BNC 1 / RF7	1655
4/DB15	BNC 2 / LO7	less
4/DB15	BNC 3 / RF8	1655
4/DB15	BNC 4 / LO8	Pess
4/DB15	OK switch / —	Perss
4/DB15	SGN1 switch / —	Vest
4/DB15	SGN2 switch / —	Ry

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 51104006

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) +5 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.

Front panel LED yes

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Rus
1/DB9	BNC 2 / RF1	1255
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	P2 >5
1/DB15	BNC 1 / RF1 (full amplitude)	P-55
1/DB15	BNC 2 / LO1	Pasa
1/DB15	BNC 3 / RF2	Pess
1/DB15	BNC 4 / LO2	Pass
1/DB15	OK switch / OK12 LED (LED1)	Ris
1/DB15	SGN1 switch / SGN1 switch (LED2) E)	
1/DB15	SGN2 switch / SGN2 switch (LED3) LF1)	
2/DB9	BNC 1 / LO3	Pess
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	Pess
2/DB15	BNC 1 / RF3	Pass
2/DB15	BNC 2 / LO3	Pass
2/DB15	BNC 3 / RF4	Pess
2/DB15	BNC 4 / LO4	Pass

2/DB15	OK switch / OK34 LED (LED4) LED 2	Pass
2/DB15	SGN1 switch / —	10-55
2/DB15	SGN2 switch / —	Pess
3/DB9	BNC 1 / LO5	Pes S
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	Vess .
3/DB9	BNC 4 / RF6	Pass
3/DB15	BNC 1 / RF5	Pass
3/DB15	BNC 2 / LO5	Pass
3/DB15	BNC 3 / RF6	P-5'5
3/DB15	BNC 4 / LO6	R>5
3/DB15	OK switch /	1253
3/DB15	SGN1 switch / —	P=55
3/DB15	SGN2 switch / —	Pess
4/DB9	BNC 1 / LO7	1855
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pa>5
4/DB9	BNC 4 / RF8	Pess
4/DB15	BNC 1 / RF7	V-SS
4/DB15	BNC 2 / LO7	<u>                                     </u>
4/DB15	BNC 3 / RF8	/e>s
4/DB15	BNC 4 / LO8	() c>s
4/DB15	OK switch / —	(4)5
4/DB15	SGN1 switch / —	(0)55
4/DB15	SGN2 switch / —	Poss

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 51104007

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)\_\_\_\_+SU\_\_\_\_

# 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\_\_\_\_\_\_\_\_

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pess
1/DB9	BNC 2 / RF1	RSS
1/DB9	BNC 3 / LO2	Pass
1/DB9	BNC 4 / RF2	Pass
1/DB15	BNC 1 / RF1 (full amplitude)	Poss
1/DB15	BNC 2 / LO1	1/659
1/DB15	BNC 3 / RF2	Pess
1/DB15	BNC 4 / LO2	Pess
1/DB15	OK switch / OK12 LED (LED1)	1655
1/DB15	SGN1 switch / SGN1 switch (LED2)(E) 3	
1/DB15	SGN2 switch / SGN2 switch (LED3) LED	( )
2/DB9	BNC 1 / LO3	PESS
2/DB9	BNC 2 / RF3	1655
2/DB9	BNC 3 / LO4	Poss
2/DB9	BNC 4 / RF4	Pas
2/DB15	BNC 1 / RF3	Pess
2/DB15	BNC 2 / LO3	Pass
2/DB15	BNC 3 / RF4	Pi-ss
2/DB15	BNC 4 / LO4	Pers

2/DB15	OK switch / OK34 LED (LEBA) LED 2	1055
2/DB15	SGN1 switch / —	fass
2/DB15	SGN2 switch / —	Pass
3/DB9	BNC 1 / LO5	PESS
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	P055
3/DB9	BNC 4 / RF6	Pass
3/DB15	BNC 1 / RF5	(2×5
3/DB15	BNC 2 / LO5	P-55
3/DB15	BNC 3 / RF6	Pass
3/DB15	BNC 4 / LO6	Pess
3/DB15	OK switch / —	V255
3/DB15	SGN1 switch / —	Pes 5
3/DB15	SGN2 switch / —	Pass
4/DB9	BNC 1 / LO7	Pass
4/DB9	BNC 2 / RF7	P255
4/DB9	BNC 3 / LO8	P-35
4/DB9	BNC 4 / RF8	Pass
4/DB15	BNC 1 / RF7	Pc >5
4/DB15	BNC 2 / LO7	Pa.>)
4/DB15	BNC 3 / RF8	7-55
4/DB15	BNC 4 / LO8	/·s>
4/DB15	OK switch / —	G55
4/DB15	SGN1 switch / —	P->5
4/DB15	SGN2 switch / —	P-35

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 5 110 4008

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) +5U

# 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.

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	Pass
1/DB9	BNC 2 / RF1	P22
1/DB9	BNC 3 / LO2	D.55
1/DB9	BNC 4 / RF2	Pess
1/DB15	BNC 1 / RF1 (full amplitude)	Pess
1/DB15	BNC 2 / LO1	P-S5
1/DB15	BNC 3 / RF2	Pess
1/DB15	BNC 4 / LO2	Pess
1/DB15	OK switch / OK12 LED (LED1)	Pess
1/DB15	SGN1 switch / SGN1 switch (LED2) (LED2) 3	Pess
1/DB15	SGN2 switch / SGN2 switch (LED3) LE 171	I 🛆
2/DB9	BNC 1 / LO3	Pess
2/DB9	BNC 2 / RF3	Pess
2/DB9	BNC 3 / LO4	Pist
2/DB9	BNC 4 / RF4	Pass
2/DB15	BNC 1 / RF3	RSS
2/DB15	BNC 2 / LO3	Pess
2/DB15	BNC 3 / RF4	6.55
2/DB15	BNC 4 / LO4	Pass

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2/DB15	OK switch / OK34 LED (LED4) LED 2	LCS5
2/DB15	SGN1 switch / —	Pess
2/DB15	SGN2 switch / —	Pass
3/DB9	BNC 1 / LO5	P5>3
3/DB9	BNC 2 / RF5	V255
3/DB9	BNC 3 / LO6	Pe>5
3/DB9	BNC 4 / RF6	Pess
3/DB15	BNC 1 / RF5	Pess
3/DB15	BNC 2 / LO5	Pess
3/DB15	BNC 3 / RF6	Pess
3/DB15	BNC 4 / LO6	Pess
3/DB15	OK switch / —	Pass
3/DB15	SGN1 switch / —	Pess
3/DB15	SGN2 switch / —	Pass
4/DB9	BNC 1 / LO7	P455
4/DB9	BNC 2 / RF7	Pess
4/DB9	BNC 3 / LO8	1255
4/DB9	BNC 4 / RF8	Pos
4/DB15	BNC 1 / RF7	Pess
4/DB15	BNC 2 / LO7	Pess
4/DB15	BNC 3 / RF8	1655
4/DB15	BNC 4 / LO8	Pass
4/DB15	OK switch / —	Pass
4/DB15	SGN1 switch / —	Pasi
4/DB15	SGN2 switch / —	Pass

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 5 1164009

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) + 5 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.

Front panel LED // s

Demodulator	Signal	Pass/Fail
1/DB9	BNC 1 / LO1 (half amplitude)	P255
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	Pess
1/DB9	BNC 4 / RF2	Pass
1/DB15	BNC 1 / RF1 (full amplitude)	Poss
1/DB15	BNC 2 / LO1	Pres
1/DB15	BNC 3 / RF2	Pex
1/DB15	BNC 4 / LO2	Pess
1/DB15	OK switch / OK12 LED (LED1)	Pess
1/DB15	SGN1 switch / SGN1 switch (LED2) ED 3	I
1/DB15	SGN2 switch / SGN2 switch (LED3) LEJY	Res
2/DB9	BNC 1 / LO3	Pers
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pess
2/DB9	BNC 4 / RF4	Posi
2/DB15	BNC 1 / RF3	P.rs
2/DB15	BNC 2 / LO3	1075
2/DB15	BNC 3 / RF4	Pass
2/DB15	BNC 4 / LO4	Poss

r		
2/DB15	OK switch / OK34 LED (LED4) LED 2	Pess
2/DB15	SGN1 switch / —	PLSS
2/DB15	SGN2 switch / —	Pess
3/DB9	BNC 1 / LO5	Pess
3/DB9	BNC 2 / RF5	Pss
3/DB9	BNC 3 / LO6	PSSS
3/DB9	BNC 4 / RF6	buss
3/DB15	BNC 1 / RF5	Pess
3/DB15	BNC 2 / LO5	Pess
3/DB15	BNC 3 / RF6	807
3/DB15	BNC 4 / LO6	V455
3/DB15	OK switch / —	Pass
3/DB15	SGN1 switch / —	Pass
3/DB15	SGN2 switch / —	655
4/DB9	BNC 1 / LO7	P2>5
4/DB9	BNC 2 / RF7	PA25
4/DB9	BNC 3 / LO8	1/4)8
4/DB9	BNC 4 / RF8	Pass
4/DB15	BNC 1 / RF7	Pass
4/DB15	BNC 2 / LO7	Pass
4/DB15	BNC 3 / RF8	Pers
4/DB15	BNC 4 / LO8	V~55
4/DB15	OK switch / —	Pass
4/DB15	SGN1 switch / —	P-59
4/DB15	SGN2 switch / —	Pasi

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 SIICHOLO

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) +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\_\_\_\_\_\_

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
1/DB15	BNC 1 / RF1 (full amplitude)	Pass
1/DB15	BNC 2 / LO1	Pass
1/DB15	BNC 3 / RF2	Parss
1/DB15	BNC 4 / LO2	Pass
1/DB15	OK switch / OK12 LED (LED1)	Pass
1/DB15	SGN1 switch / SGN1 switch (LED2) LED 3	Pass
1/DB15	SGN2 switch / SGN2 switch (LED3) LE171	Paus
2/DB9	BNC 1 / LO3	Rass
2/DB9	BNC 2 / RF3	Pais
2/DB9	BNC 3 / LO4	Pass
2/DB9	BNC 4 / RF4	Pass
2/DB15	BNC 1 / RF3	Pass
2/DB15	BNC 2 / LO3	lass
2/DB15	BNC 3 / RF4	Rus
2/DB15	BNC 4 / LO4	Mass

2/DB15	OK switch / OK34 LED (LED4) LED 2	Pass
2/DB15	SGN1 switch / —	Pass
2/DB15	SGN2 switch / —	Pass
3/DB9	BNC 1 / LO5	(ass
3/DB9	BNC 2 / RF5	Vass
3/DB9	BNC 3 / LO6	ass
3/DB9	BNC 4 / RF6	Pass
3/DB15	BNC 1 / RF5	lass
3/DB15	BNC 2 / LO5	Pass
3/DB15	BNC 3 / RF6	P655
3/DB15	BNC 4 / LO6	JESS
3/DB15	OK switch / —	P655
3/DB15	SGN1 switch / —	Jass
3/DB15	SGN2 switch / —	Jass
4/DB9	BNC 1 / LO7	V=55
4/DB9	BNC 2 / RF7	P6>5
4/DB9	BNC 3 / LO8	V655
4/DB9	BNC 4 / RF8	Y6>5
4/DB15	BNC 1 / RF7	1672
4/DB15	BNC 2 / LO7	1/25 S
4/DB15	BNC 3 / RF8	Dess
4/DB15	BNC 4 / LO8	Pi35
4/DB15	OK switch / —	Pa\$5
4/DB15	SGN1 switch / —	Po. 55
4/DB15	SGN2 switch / —	P251

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 51104011

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) 15U

# 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 /65

Demodulator	Signal	Pass/Fail
1/ <b>DB</b> 9	BNC 1 / LO1 (half amplitude)	Rus
1/DB9	BNC 2 / RF1	Pass
1/DB9	BNC 3 / LO2	RSS
1/DB9	BNC 4 / RF2	Pass
1/DB15	BNC 1 / RF1 (full amplitude)	Tass
1/DB15	BNC 2 / LO1	P455
1/DB15	BNC 3 / RF2	JE 55
1/DB15	BNC 4 / LO2	Pass
1/DB15	OK switch / OK12 LED (LED1)	Pe >s
1/DB15	SGN1 switch / SGN1 switch (LED2) (E)	3 Pess
1/DB15	SGN2 switch / SGN2 switch (LED3) LED	41 Pc-55
2/DB9	BNC 1 / LO3	Pass
2/DB9	BNC 2 / RF3	Pass
2/DB9	BNC 3 / LO4	Pess
2/DB9	BNC 4 / RF4	Pas 5
2/DB15	BNC 1 / RF3	Ja35
2/DB15	BNC 2 / LO3	Pass
2/DB15	BNC 3 / RF4	Pass
2/DB15	BNC 4 / LO4	Pass

2/DB15	OK switch / OK34 LED (LED4) LED 2	. loss
2/DB15	SGN1 switch / —	Pass
2/DB15	SGN2 switch / —	Riss
3/DB9	BNC 1 / LO5	Vass
3/DB9	BNC 2 / RF5	Pass
3/DB9	BNC 3 / LO6	1255
3/DB9	BNC 4 / RF6	Pass
3/DB15	BNC 1 / RF5	1655
3/DB15	BNC 2 / LO5	Pass
3/DB15	BNC 3 / RF6	R-25
3/DB15	BNC 4 / LO6	Pass
3/DB15	OK switch / —	Pess
3/DB15	SGN1 switch/—	255
3/DB15	SGN2 switch / —	Pess
4/DB9	BNC 1 / LO7	P.SS
4/DB9	BNC 2 / RF7	Pass
4/DB9	BNC 3 / LO8	Pess
4/DB9	BNC 4 / RF8	Pess
4/DB15	BNC 1 / RF7	Ves!
4/DB15	BNC 2 / LO7	14>5
4/DB15	BNC 3 / RF8	JE25
4/DB15	BNC 4 / LO8	Pass
4/DB15	OK switch / —	Pass
4/DB15	SGN1 switch / —	Pass
4/DB15	SGN2 switch / —	1/43/