Eight serial ports can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. The concentrator supports RS232, RS422 and RS485 serial communications. There are jumpers on the concentrator boards that select which signals are connected to which pins on the connector. The serial connectors are 9-pin D-sub male. The EtherCAT uplink is connected through a single DB37 cable. The corresponding interface board for EtherCAT system is part of the serial concentrator and is tested together.

2 Test Equipment

- Computer running Windows Hyperterm
- * A serial port running RS232, e.g, XS880 from usconverters.com (USB Serial Adapter Professional)
- A serial port running RS422, e.g, <u>USUT890</u> from <u>usconverters.com</u> (USB to RS485 / RS422 Professional)
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3 Documentation

- Concentrator schematic—<u>D1100632-v1</u>
- EtherCAT interface schematics— D1100638-v1

4 Tests

Power up the measurement equipment and connect the EtherCAT interface board to the serial concentrator with a DB37 cable. Follow the instruction below for testing. After finishing the test leave the concentrator and EtherCAT interface in their final configuration.

4.1 Power

Set the jumpers on the serial concentrator to support RS422. Leave the jumpers in the EtherCAT interface board in standard settings. Now connect the RS422 loopback connector to the first port of the serial concentrator. Connect the RS422 adapter cable between the first port of the EtherCAT interface and the RS422 of the computer. Set the serial speed on the computer to 115200 baud, 8 bits, no parity, and 1 stop bit. Open the Hyperterminal application, turn the echo off and send a couple of characters !"\$(09@}~aAzZ (space before the 0) to the serial port. Watch for the echo characters and make sure they are identical without errors. Repeat the procedure for all 8 ports.

Port	Configuration	Pass/Fail
1	RS422	lis 5
	RS232 standard	Pass
2	RS422	Press
	RS232 3-wire	P.55
3	RS422	Ress.
	RS232 standard	Pess
4	RS422	Pass
	RS232 3-wire	less
5	RS422	RSS
	RS232 standard	Pess
6	RS422	Pass
	RS232 3-wire	Pass
7	RS422	P< 55
	RS232 standard	Poss
8	RS422	Pass
	RS232 3-wire	P455

Eight serial ports can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. The concentrator supports RS232, RS422 and RS485 serial communications. There are jumpers on the concentrator boards that select which signals are connected to which pins on the connector. The serial connectors are 9-pin D-sub male. The EtherCAT uplink is connected through a single DB37 cable. The corresponding interface board for EtherCAT system is part of the serial concentrator and is tested together.

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4.1 Power

Set the jumpers on the serial concentrator to support RS422. Leave the jumpers in the EtherCAT interface board in standard settings. Now connect the RS422 loopback connector to the first port of the serial concentrator. Connect the RS422 adapter cable between the first port of the EtherCAT interface and the RS422 of the computer. Set the serial speed on the computer to 115200 baud, 8 bits, no parity, and 1 stop bit. Open the Hyperterminal application, turn the echo off and send a couple of characters !"\$(09@}~aAzZ (space before the 0) to the serial port. Watch for the echo characters and make sure they are identical without errors. Repeat the procedure for all 8 ports.

Port	Configuration	Pass/Fail
1	RS422	Vasc
	RS232 standard	Vas s
2	RS422	Pass
	RS232 3-wire	Pasr
3	RS422	F-> 5
	RS232 standard	Pass
4	RS422	Pass
	RS232 3-wire	1-55
5	RS422	1.55
	RS232 standard	f=55
6	RS422	P255
	RS232 3-wire	Pess
7	RS422	fas 5
	RS232 standard	Pass
8	RS422	Fa. 5.5
	RS232 3-wire	1/235

Eight serial ports can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. The concentrator supports RS232, RS422 and RS485 serial communications. There are jumpers on the concentrator boards that select which signals are connected to which pins on the connector. The serial connectors are 9-pin D-sub male. The EtherCAT uplink is connected through a single DB37 cable. The corresponding interface board for EtherCAT system is part of the serial concentrator and is tested together.

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4 Tests

Power up the measurement equipment and connect the EtherCAT interface board to the serial concentrator with a DB37 cable. Follow the instruction below for testing. After finishing the test leave the concentrator and EtherCAT interface in their final configuration.

4.1 Power

Set the jumpers on the serial concentrator to support RS422. Leave the jumpers in the EtherCAT interface board in standard settings. Now connect the RS422 loopback connector to the first port of the serial concentrator. Connect the RS422 adapter cable between the first port of the EtherCAT interface and the RS422 of the computer. Set the serial speed on the computer to 115200 baud, 8 bits, no parity, and 1 stop bit. Open the Hyperterminal application, turn the echo off and send a couple of characters !"\$(09@}~aAzZ (space before the 0) to the serial port. Watch for the echo characters and make sure they are identical without errors. Repeat the procedure for all 8 ports.

Port	Configuration	Pass/Fail
1	RS422	Pass
· • · · · · · · · · · · · · · · · · · ·	RS232 standard	f sr
2	RS422	fl.ss
	RS232 3-wire	P-SS
3	RS422	Pass
	RS232 standard	Vess
4	RS422	P > 5
	RS232 3-wire	Pess
5	RS422	Pess
	RS232 standard	P255
6	RS422	Fass
	RS232 3-wire	Pacs
7	RS422	fass.
	RS232 standard	Pasc
8	RS422	Pass
	RS232 3-wire	Pess

Eight serial ports can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. The concentrator supports RS232, RS422 and RS485 serial communications. There are jumpers on the concentrator boards that select which signals are connected to which pins on the connector. The serial connectors are 9-pin D-sub male. The EtherCAT uplink is connected through a single DB37 cable. The corresponding interface board for EtherCAT system is part of the serial concentrator and is tested together.

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4 Tests

Power up the measurement equipment and connect the EtherCAT interface board to the serial concentrator with a DB37 cable. Follow the instruction below for testing. After finishing the test leave the concentrator and EtherCAT interface in their final configuration.

4.1 Power

Set the jumpers on the serial concentrator to support RS422. Leave the jumpers in the EtherCAT interface board in standard settings. Now connect the RS422 loopback connector to the first port of the serial concentrator. Connect the RS422 adapter cable between the first port of the EtherCAT interface and the RS422 of the computer. Set the serial speed on the computer to 115200 baud, 8 bits, no parity, and 1 stop bit. Open the Hyperterminal application, turn the echo off and send a couple of characters !"\$(09@}~aAzZ (space before the 0) to the serial port. Watch for the echo characters and make sure they are identical without errors. Repeat the procedure for all 8 ports.

Port	Configuration	Pass/Fail
1	RS422	RSS
	RS232 standard	P-55
2	RS422	1455
	RS232 3-wire	Pass
3	RS422	1955
	RS232 standard	P-56
4	RS422	1.55
	RS232 3-wire	Pase
5	RS422	P.555
	RS232 standard	Pasc
6	RS422	
,	RS232 3-wire	K5(
7	RS422	Pass
	RS232 standard	P=55
8	RS422	Pasi
	RS232 3-wire	Rese

Eight serial ports can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. The concentrator supports RS232, RS422 and RS485 serial communications. There are jumpers on the concentrator boards that select which signals are connected to which pins on the connector. The serial connectors are 9-pin D-sub male. The EtherCAT uplink is connected through a single DB37 cable. The corresponding interface board for EtherCAT system is part of the serial concentrator and is tested together.

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4 Tests

Power up the measurement equipment and connect the EtherCAT interface board to the serial concentrator with a DB37 cable. Follow the instruction below for testing. After finishing the test leave the concentrator and EtherCAT interface in their final configuration.

4.1 Power

Set the jumpers on the serial concentrator to support RS422. Leave the jumpers in the EtherCAT interface board in standard settings. Now connect the RS422 loopback connector to the first port of the serial concentrator. Connect the RS422 adapter cable between the first port of the EtherCAT interface and the RS422 of the computer. Set the serial speed on the computer to 115200 baud, 8 bits, no parity, and 1 stop bit. Open the Hyperterminal application, turn the echo off and send a couple of characters !"\$(09@}~aAzZ (space before the 0) to the serial port. Watch for the echo characters and make sure they are identical without errors. Repeat the procedure for all 8 ports.

Port	Configuration	Pass/Fail
1	RS422	Pesc
	RS232 standard	Jess,
2	RS422	P251
	RS232 3-wire	Rus
3	RS422	less
	RS232 standard	Pesr
4	RS422	Pass
	RS232 3-wire	Pass
5	RS422	6.55
	RS232 standard	1-55
6	RS422	Pess
	RS232 3-wire	Ris
7	RS422	Pass
_	RS232 standard	Pass
8	RS422	Ass
	RS232 3-wire	fess 1ess

Eight serial ports can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. The concentrator supports RS232, RS422 and RS485 serial communications. There are jumpers on the concentrator boards that select which signals are connected to which pins on the connector. The serial connectors are 9-pin D-sub male. The EtherCAT uplink is connected through a single DB37 cable. The corresponding interface board for EtherCAT system is part of the serial concentrator and is tested together.

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4 Tests

Power up the measurement equipment and connect the EtherCAT interface board to the serial concentrator with a DB37 cable. Follow the instruction below for testing. After finishing the test leave the concentrator and EtherCAT interface in their final configuration.

4.1 Power

TP8 (+12V)_	<i>t1</i> 2
TP3 (-12V)_	-17
TP6 (+ 5V)	t 5

Set the jumpers on the serial concentrator to support RS422. Leave the jumpers in the EtherCAT interface board in standard settings. Now connect the RS422 loopback connector to the first port of the serial concentrator. Connect the RS422 adapter cable between the first port of the EtherCAT interface and the RS422 of the computer. Set the serial speed on the computer to 115200 baud, 8 bits, no parity, and 1 stop bit. Open the Hyperterminal application, turn the echo off and send a couple of characters !"\$(09@)~aAzZ (space before the 0) to the serial port. Watch for the echo characters and make sure they are identical without errors. Repeat the procedure for all 8 ports.

Port	Configuration	Pass/Fail
1	RS422	Pess
	RS232 standard	155
2	RS422	1/251
	RS232 3-wire	1255
3	RS422	Vess
	RS232 standard	Pag
4	RS422	P-55
	RS232 3-wire	Pass
5	RS422	P258
	RS232 standard	P-58
6	RS422	Pass
	RS232 3-wire	Pass
7	RS422	Pes 5
	RS232 standard	P=55
8	RS422	Pass
-	RS232 3-wire	Pess

Eight serial ports can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. The concentrator supports RS232, RS422 and RS485 serial communications. There are jumpers on the concentrator boards that select which signals are connected to which pins on the connector. The serial connectors are 9-pin D-sub male. The EtherCAT uplink is connected through a single DB37 cable. The corresponding interface board for EtherCAT system is part of the serial concentrator and is tested together.

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4 Tests

Power up the measurement equipment and connect the EtherCAT interface board to the serial concentrator with a DB37 cable. Follow the instruction below for testing. After finishing the test leave the concentrator and EtherCAT interface in their final configuration.

4.1 Power

Set the jumpers on the serial concentrator to support RS422. Leave the jumpers in the EtherCAT interface board in standard settings. Now connect the RS422 loopback connector to the first port of the serial concentrator. Connect the RS422 adapter cable between the first port of the EtherCAT interface and the RS422 of the computer. Set the serial speed on the computer to 115200 baud, 8 bits, no parity, and 1 stop bit. Open the Hyperterminal application, turn the echo off and send a couple of characters !"\$(09@}~aAzZ (space before the 0) to the serial port. Watch for the echo characters and make sure they are identical without errors. Repeat the procedure for all 8 ports.

Port	Configuration	Paşs/Fail
1	RS422	1/255
	RS232 standard	1635
2	RS422	lass
	RS232 3-wire	1-55
3	RS422	Pesr
	RS232 standard	Pess
4	RS422	Ess
-	RS232 3-wire	f-55
5	RS422	Posc
	RS232 standard	Pess
6	RS422	fess
	RS232 3-wire	P55
7	RS422	less.
	RS232 standard	Pass
8	RS422	1275
	RS232 3-wire	P.X

Eight serial ports can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. The concentrator supports RS232, RS422 and RS485 serial communications. There are jumpers on the concentrator boards that select which signals are connected to which pins on the connector. The serial connectors are 9-pin D-sub male. The EtherCAT uplink is connected through a single DB37 cable. The corresponding interface board for EtherCAT system is part of the serial concentrator and is tested together.

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Power up the measurement equipment and connect the EtherCAT interface board to the serial concentrator with a DB37 cable. Follow the instruction below for testing. After finishing the test leave the concentrator and EtherCAT interface in their final configuration.

4.1 Power

Set the jumpers on the serial concentrator to support RS422. Leave the jumpers in the EtherCAT interface board in standard settings. Now connect the RS422 loopback connector to the first port of the serial concentrator. Connect the RS422 adapter cable between the first port of the EtherCAT interface and the RS422 of the computer. Set the serial speed on the computer to 115200 baud, 8 bits, no parity, and 1 stop bit. Open the Hyperterminal application, turn the echo off and send a couple of characters !"\$(09@}~aAzZ (space before the 0) to the serial port. Watch for the echo characters and make sure they are identical without errors. Repeat the procedure for all 8 ports.

Port	Configuration	Pass/Fail
1	RS422	1455
	RS232 standard	1825
2	RS422	Pass
	RS232 3-wire	P-55
3	RS422	P-55
	RS232 standard	Pess
4	RS422	less -
	RS232 3-wire	Pess
5	RS422	Pass
	RS232 standard	Pass
6	RS422	P-25
_	RS232 3-wire	Pass
7	RS422	Pass
	RS232 standard	Pas
8	RS422	Pays.
	RS232 3-wire	P456

Eight serial ports can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. The concentrator supports RS232, RS422 and RS485 serial communications. There are jumpers on the concentrator boards that select which signals are connected to which pins on the connector. The serial connectors are 9-pin D-sub male. The EtherCAT uplink is connected through a single DB37 cable. The corresponding interface board for EtherCAT system is part of the serial concentrator and is tested together.

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4 Tests

Power up the measurement equipment and connect the EtherCAT interface board to the serial concentrator with a DB37 cable. Follow the instruction below for testing. After finishing the test leave the concentrator and EtherCAT interface in their final configuration.

4.1 Power

Set the jumpers on the serial concentrator to support RS422. Leave the jumpers in the EtherCAT interface board in standard settings. Now connect the RS422 loopback connector to the first port of the serial concentrator. Connect the RS422 adapter cable between the first port of the EtherCAT interface and the RS422 of the computer. Set the serial speed on the computer to 115200 baud, 8 bits, no parity, and 1 stop bit. Open the Hyperterminal application, turn the echo off and send a couple of characters !"\$(09@}~aAzZ (space before the 0) to the serial port. Watch for the echo characters and make sure they are identical without errors. Repeat the procedure for all 8 ports.

Port	Configuration	Pass/Fail
1	RS422	1255
	RS232 standard	lass
2	RS422	Pass
	RS232 3-wire	Pass.
3	RS422	6255
	RS232 standard	1355
4	RS422	for
	RS232 3-wire	125
5	RS422	Pest
	RS232 standard	Pass
6	RS422	Pass
	RS232 3-wire	Fass
7	RS422	P.55
	RS232 standard	Piss
8	RS422	Pess
	RS232 3-wire	P-35

Eight serial ports can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. The concentrator supports RS232, RS422 and RS485 serial communications. There are jumpers on the concentrator boards that select which signals are connected to which pins on the connector. The serial connectors are 9-pin D-sub male. The EtherCAT uplink is connected through a single DB37 cable. The corresponding interface board for EtherCAT system is part of the serial concentrator and is tested together.

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4 Tests

Power up the measurement equipment and connect the EtherCAT interface board to the serial concentrator with a DB37 cable. Follow the instruction below for testing. After finishing the test leave the concentrator and EtherCAT interface in their final configuration.

4.1 Power

Check the P12, N12 and VCC voltage on the concentrator port. The voltage should be within 5% of nominal. 5 // 03474

TP8 (+12V) +/2V TP3 (-12V) -/2V TP6 (+ 5V) +5V

Set the jumpers on the serial concentrator to support RS422. Leave the jumpers in the EtherCAT interface board in standard settings. Now connect the RS422 loopback connector to the first port of the serial concentrator. Connect the RS422 adapter cable between the first port of the EtherCAT interface and the RS422 of the computer. Set the serial speed on the computer to 115200 baud, 8 bits, no parity, and 1 stop bit. Open the Hyperterminal application, turn the echo off and send a couple of characters !"\$(09@}~aAzZ (space before the 0) to the serial port. Watch for the echo characters and make sure they are identical without errors. Repeat the procedure for all 8 ports.

Port	Configuration	Pass/Fail
1	RS422	(255)
	RS232 standard	/255
2	RS422	P255
	RS232 3-wire	1255
3	RS422	Pass
	RS232 standard	Pass
4	RS422	P\$55
	RS232 3-wire	Vass
5	RS422	Pass
-	RS232 standard	PSS
6	RS422	P= 55
	RS232 3-wire	P=55
7	RS422	PSS
	RS232 standard	Pass
8	RS422	Pess
	RS232 3-wire	Pass

Eight serial ports can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. The concentrator supports RS232, RS422 and RS485 serial communications. There are jumpers on the concentrator boards that select which signals are connected to which pins on the connector. The serial connectors are 9-pin D-sub male. The EtherCAT uplink is connected through a single DB37 cable. The corresponding interface board for EtherCAT system is part of the serial concentrator and is tested together.

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Port	Configuration	Pass/Fail
1	RS422	Kass
	RS232 standard	fes5
2	RS422	V755
	RS232 3-wire	fess
3	RS422	Kass
	RS232 standard	Poss
4	RS422	Pass
	RS232 3-wire	less
5	RS422	RS
_	RS232 standard	Pass
6	RS422	P255
	RS232 3-wire	Pess
7	RS422	Pess
	RS232 standard	P.S.
8	RS422	Pess
	RS232 3-wire	P-55

Eight serial ports can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. The concentrator supports RS232, RS422 and RS485 serial communications. There are jumpers on the concentrator boards that select which signals are connected to which pins on the connector. The serial connectors are 9-pin D-sub male. The EtherCAT uplink is connected through a single DB37 cable. The corresponding interface board for EtherCAT system is part of the serial concentrator and is tested together.

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4 Tests

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4.1 Power

Check the P12, N12 and VCC voltage on the concentrator port. The voltage should be within 5% of nominal. $\frac{5}{0}$

TP8 (+12V) +12V TP3 (-12V) -/2V TP6 (+ 5V) +5V

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Port	Configuration	Pass/Fail
1	RS422	RSS
	RS232 standard	fass
2	RS422	P.55
	RS232 3-wire	Viss
3	RS422	F-55
	RS232 standard	K55
4	RS422	P=55
	RS232 3-wire	Pass
5	RS422	Kes
·	RS232 standard	Pass
6	RS422	Post
	RS232 3-wire	Pass
7	RS422	Pass
	RS232 standard	P=55
8	RS422	Piss
	RS232 3-wire	1-35

Eight serial ports can be connected to the concentrator and will be connected to the EtherCAT system with a single cable. The concentrator supports RS232, RS422 and RS485 serial communications. There are jumpers on the concentrator boards that select which signals are connected to which pins on the connector. The serial connectors are 9-pin D-sub male. The EtherCAT uplink is connected through a single DB37 cable. The corresponding interface board for EtherCAT system is part of the serial concentrator and is tested together.

2 Test Equipment

- Computer running Windows Hyperterm
- * A serial port running RS232, e.g, XS880 from usconverters.com (USB Serial Adapter Professional)
- A serial port running RS422, e.g, <u>USUT890</u> from <u>usconverters.com</u> (USB to RS485 / RS422 Professional)
 - Serial loopback cables <u>D1100872-v1</u> for RS232 and RS422
 - Serial adapter cables <u>D1100874-v1</u> for RS232 and RS422
 - DC power supplies

3 Documentation

- Concentrator schematic—D1100632-v1
- EtherCAT interface schematics— <u>D1100638-v1</u>

4 Tests

Power up the measurement equipment and connect the EtherCAT interface board to the serial concentrator with a DB37 cable. Follow the instruction below for testing. After finishing the test leave the concentrator and EtherCAT interface in their final configuration.

4.1 Power

Check the P12, N12 and VCC voltage on the concentrator port. The voltage should be within 5% of nominal. 5/105477

TP8 (+12V) + | U | TP3 (-12V) - | U | TP6 (+ 5V) + 5 | U |

Set the jumpers on the serial concentrator to support RS422. Leave the jumpers in the EtherCAT interface board in standard settings. Now connect the RS422 loopback connector to the first port of the serial concentrator. Connect the RS422 adapter cable between the first port of the EtherCAT interface and the RS422 of the computer. Set the serial speed on the computer to 115200 baud, 8 bits, no parity, and 1 stop bit. Open the Hyperterminal application, turn the echo off and send a couple of characters !"\$(09@)~aAzZ (space before the 0) to the serial port. Watch for the echo characters and make sure they are identical without errors. Repeat the procedure for all 8 ports.

Port	Configuration	Pass/Fail
1	RS422	Pass
	RS232 standard	Pass.
2	RS422	F-55
	RS232 3-wire	PSS
3	RS422	Pass
	RS232 standard	Pass
4	RS422	ESS
	RS232 3-wire	Poss
5	RS422	F-55
	RS232 standard	Pass
6	RS422	Pasi
	RS232 3-wire	lass.
7	RS422	less
	RS232 standard	Ress
8	RS422	liss
	RS232 3-wire	lass

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Check the P12, N12 and VCC voltage on the concentrator port. The voltage should be within 5% of nominal. 51/03478

TP8 (+12V) 1/2 V TP3 (-12V) - /2 V TP6 (+ 5V) + SV ge at

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Port	Configuration	Pass/Fail
1	RS422	fizz;
	RS232 standard	Pass
2	RS422	P-55
	RS232 3-wire	655
3	RS422	Post
	RS232 standard	1.55
4	RS422	Pass
	RS232 3-wire	Pess
5	RS422	Pass
	RS232 standard	Pess
6	RS422	Pass
	RS232 3-wire	his
7	RS422	Post
	RS232 standard	1.35
8	RS422	Pess
	RS232 3-wire	Post

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Power up the measurement equipment and connect the EtherCAT interface board to the serial concentrator with a DB37 cable. Follow the instruction below for testing. After finishing the test leave the concentrator and EtherCAT interface in their final configuration.

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TP8 (+12V)_	T12V
TP3 (-12V)_	-12V
TP6 (+ 5V)_	

Set the jumpers on the serial concentrator to support RS422. Leave the jumpers in the EtherCAT interface board in standard settings. Now connect the RS422 loopback connector to the first port of the serial concentrator. Connect the RS422 adapter cable between the first port of the EtherCAT interface and the RS422 of the computer. Set the serial speed on the computer to 115200 baud, 8 bits, no parity, and 1 stop bit. Open the Hyperterminal application, turn the echo off and send a couple of characters !"\$(09@}~aAzZ (space before the 0) to the serial port. Watch for the echo characters and make sure they are identical without errors. Repeat the procedure for all 8 ports.

Port	Configuration	Pass/Fail	
1	RS422	1/555	
	RS232 standard	Vass.	
2	RS422	Pais	
	RS232 3-wire	Pers	
3	RS422	Pess	
	RS232 standard	Pass	
4	RS422	P.55	
	RS232 3-wire	lass	
5	RS422	Pro	
	RS232 standard	Pass	
6	RS422	Keg5	
	RS232 3-wire	Pass	
7	RS422	Pass	
	RS232 standard	Pais	
8	RS422	las)	
	RS232 3-wire	Van	