ECLV

ECL - LVDS Interface Converter

INSTALLATION AND OPERATION

Scope

ECLV Interface Converters for ECL and LVDS applications.

Part Numbers: ECLV-ASSY-0029

ECLV-ASSY-0089

Document Reference

ECLV-MAN-R119

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DECLARATION OF CONFORMITY

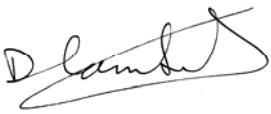
Name of Manufacturer:	Somerdata Ltd.
Address of Manufacturer:	Somerdata Ltd Underwood Business Park Wells Somerset BA5 1AF United Kingdom
Equipment description:	Interface Converter
Model:	ECLV

Conforms to the following Product Specifications:

Safety: IEC 950

EMC: 89/336/EEC EN55022 Harmonised Standard

The product complies with the requirements of the Electromagnetic Compatibility Directive 89/336/EEC as amended and the Low Voltage Directive 73/23/EEC and carries the CE marking accordingly.

Signed: 

Position: Technical Director

Date: 4th April 2006

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SOMERDATA AND THE ENVIRONMENT

Introduction

SomerData is committed to design and introduce products that conform to applicable environmental legislation and standards.

One of our missions is to integrate environmental stewardship into the business of providing quality products, services, and customer support at the best value.

In order to achieve this, SomerData has established a strategic team to focus on the importance of meeting our environmental obligations in the design, manufacture and suport of our products.

We have developed a broad appreciation of the impact of these directives on our entire business model, from technical processes for materials, to finished goods manufacturing.

Current Compliance Activities

The Company's current environmental compliance commitment has been structured to meet the following European Union directives:

- Restriction of Hazardous Substance or RoHS Compliance (EU Directive 2002/95/EC)
- Waste of Electrical & Electronic Equipment or WEEE Compliance (EU Directive 2002/96/EC)

Our goal is to meet or exceed compliance obligations of these EU directives.

Reduction of Hazardous Substances (RoHS)

SomerData has also established a RoHS qualification process to help ensure that products meet stringent reliability and quality requirements, as well as regulatory compliance requirements.

The maximum allowable hazardous substance at a homogeneous material level under the EU RoHS Directive is shown in the following table.

From 1st July 2006 all SomerData manufactured products use lead-free soldering

Substances	Maximum Concentration Values (ppm)
Lead and its compounds	1000
Mercury and its compounds	1000
Hexavalent Chromium (Cr+6)	1000
Cadmium and its compounds	100
PolyBrominated Biphenyls (PBBs)	1000
PolyBrominated Diphenyl Ethers (PBDEs)	1000

Waste of Electrical & Electronic Equipment WEEE

Your SomerData product may be returned to SomerData at the end of its life at the customer's expense, provided that the product is free from radiation or biological contaminants.

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1. INTRODUCTION

What's in this User Guide

This User Guide covers SomerData's ECLV Interface Converter for ECL - LVDS applications.

Section 2 – *PRODUCT DESCRIPTION* gives an overview of your unit's capabilities and features.

Section 3 – *SIGNAL CONNECTIONS* provides details of connectors and pinouts.

Section 4 – *ECL DATA INTERFACE* describes the ECL driver, receiver and signal timing.

Section 5 – *LVDS DATA INTERFACE* describes the LVDS driver, receiver and signal timing.

Section 6 – *TECHNICAL REFERENCE* provides maintanance information for sub-assembly handling, safety, fuse replacement and signal connections.

Section 7 – *SPECIFICATIONS* describes the unit's technical parameters.

Section 8 – *SUPPORT* describes the procedure and contact details for obtaining customer support on this product.

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2. PRODUCT DESCRIPTION

Introduction

ECLV converts signals between serial ECL and differential LVDS Data + Clock format.

ECL Input/Output interfaces can be specified as either single-ended (ECLV-ASSY-0029) or differential (ECLV-ASSY-0089).

The unit supports conversion of two independent bitstreams, each operating at bit-rates up to 100 Mbits/s.

3. SIGNAL CONNECTIONS

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Rear Panel

ECLV-ASSY-0029
ECLV-ASSY-0089

Always switch-off power before connecting and disconnecting !

RJ-45

LVDS Data + Clock Input/Output

BNC

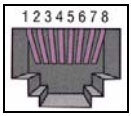
ECL Data + Clock Input/Output

Single-ended input/ouptut	ECLV-ASSY-0029
Differential input/output	ECLV-ASSY-0089

3-pin IEC

AC Power

LVDS Connector Pinouts



Pin	Signal	Comments
1	+ve DATA	Output
2	-ve DATA	Output
3	+ve DATA	Input
4	+ve CLOCK	Output
5	-ve CLOCK	Output
6	-ve DATA	Input
7	+ve CLOCK	Input
8	-ve CLOCK	Input

4. ECL DATA INTERFACE

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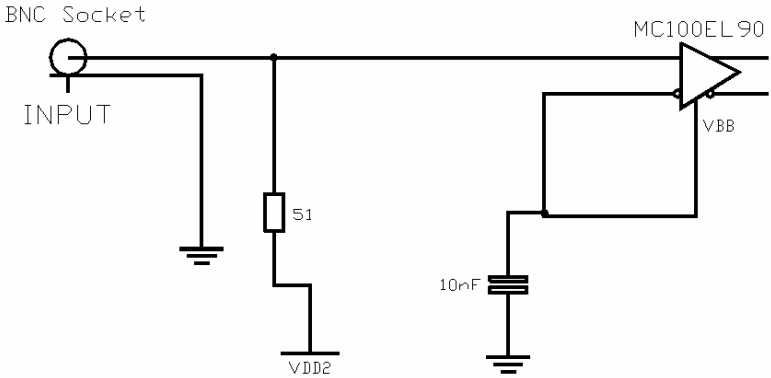
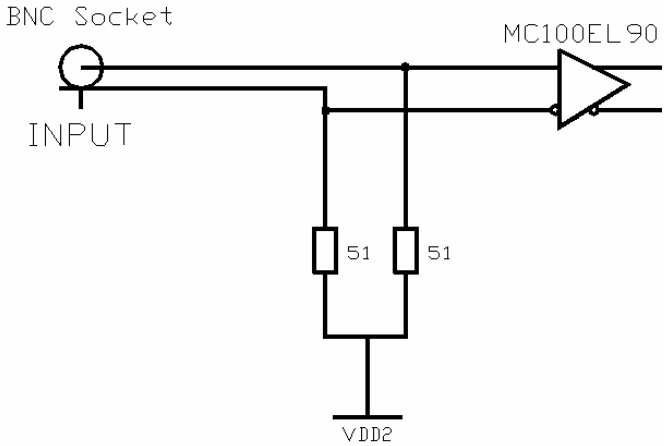
ECL Input

Single-Ended - ECLV-ASSY-0029

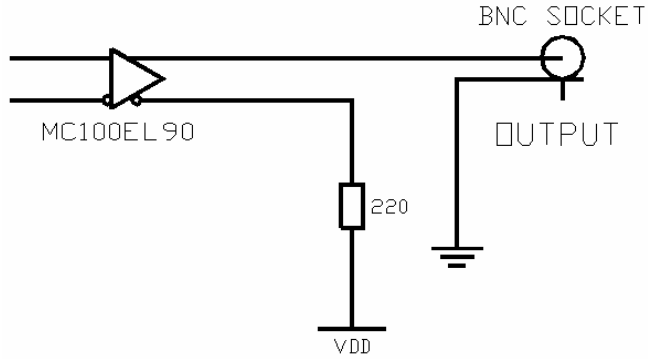


Differential - ECLV-ASSY-0089

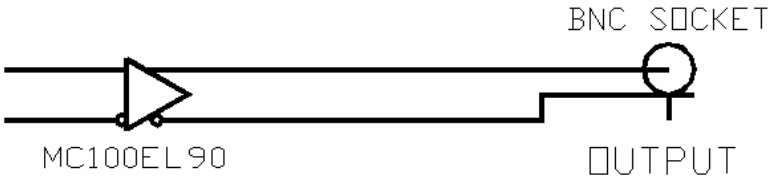


ECL Output

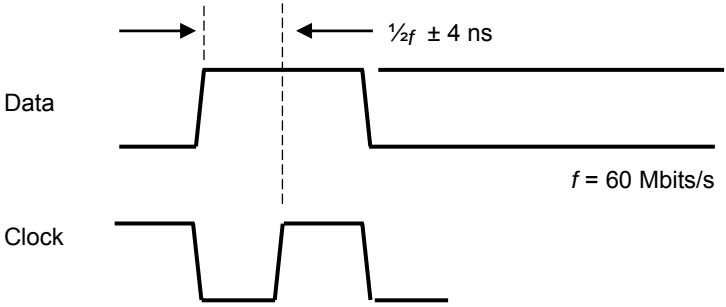
Single-Ended - ECLV-ASSY-0029



Differential - ECLV-ASSY-0089



Signal Timing



Recommended Clock/Data phasing

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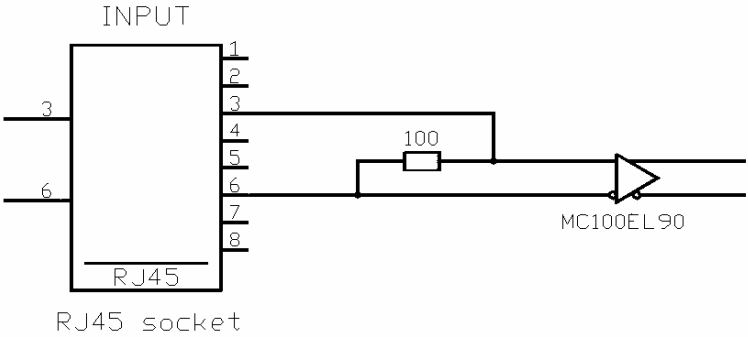
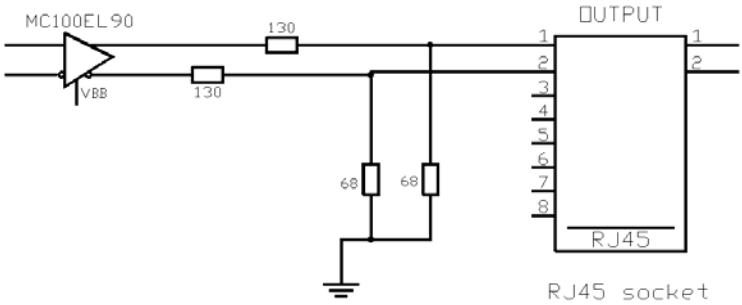
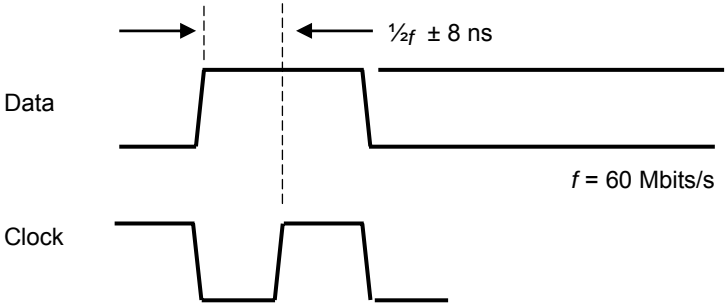
LVDS Input



LVDS Output



Signal Timing



Recommended Clock/Data phasing

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Sub-Assembly Handling

All electronic sub-assemblies should be considered sensitive to damage by Static discharge.

During normal handling, completed sub-assemblies contain sufficient internal protection to allow unpacking in a non-controlled environment.

Electronic sub-assemblies should NEVER be connected or disconnected with power applied.

This may cause damage that will invalidate the warranty and any test results from previous tests.

Removal and installation must only be carried out by trained personnel.

Safety and Electromagnetic Compatibility

This product has been designed to comply with all major EMC legislation.

Compliance is dependent upon correct assembly and use of designated connectors and cables.

SomerData takes no responsibility for customers or third parties incorrectly using or fitting of sub-assemblies, mating connectors or external cables.

The following sections define the connectors used, recommended mating parts and associated cables.

AC Power Input Circuit

The AC power inlet is a standard IEC three pin plug. An integral power filter provides 40 dB attenuation in the frequency range 2 MHz to 60 MHz. A class X2 capacitor provides additional RF immunity.

The power supply is designed to accept 90 to 260 Volts AC at 47 to 65 Hz.

It is important to note that, although ECLV may appear to function outside the specified range, such operation will be beyond the scope of the product's approved safety, EMC compliance and performance parameters.

AC power must be removed from the power inlet plug before any disassembling of ECLV is attempted.

Safety ground is provided on the rear panel of the case.

Complete removal of the rear panel requires the disconnection of these safety grounding straps.

These straps must be replaced when re-assembling the rear panel into the case.

A continuity check must also be performed to ensure effectiveness of this safety feature.

Fuse Information

AC Power Fuse

Circuit protection is provided by a 2 A HRC anti-surge fuse.

Care should to ensure that this rated value is not exceeded when fitting or replacing this fuse.

The fuse is fitted onto the ECLV motherboard with access via the rear panel which should only be removed by a qualified technician using the procedure described above.

+5 V Circuit Protection Fuse

This fuse auto-resets on power-up.

Signal Connections

Signals fall into three categories: single-ended ECL; differential ECL and differential LVDS.

Any deviation from the loadings specified below will invalidate the warranty, and prejudice conformity with the relevant EMC directives.

ECLV-ASSY-0029

ECL data and clock output signals are single-ended from MC100EL91 drivers.

ECL data and clock input signals are single-ended into MC100EL90 receivers.

Lightning protection is not provided.

ECLV-ASSY-0089

ECL data and clock output signals are differential from MC100EL91 drivers.

ECL data and clock input signals are differential into MC100EL90 receivers.

Lightning protection is not provided.

ECL Connectors

Connections should be made with 50 Ohm BNC plugs

A recommended cable is Belden 9860 screened twisted pair.

The recommended maximum cable length is 10 m.

Maximum differential length between clock and data cables is 25 mm, using the recommended cable.

LVDS Signals

LVDS data and clock output signals are differential from MC100EL90 drivers.

LVDS data and clock input signals are differential into MC100EL91 receivers.

Differential outputs are designed to drive terminated differential receivers.

Recommended LVDS receivers are MC100EL90 and recommended drivers are MC100EL91

Recommended termination is 100 Ohm across the differential lines.

LVDS Connectors

Recommended connectors are RJ-45 8-Way plugs

Cables should be Cat 5 or better.

The recommended maximum cable length is 10 m.

Maximum differential length between clock and data cables is 25 mm, using the recommended cable.

7. SPECIFICATIONS

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ECL Data Interface

50 Ohm BNC

ECL data + clock Input/Output

MC100EL90 input receiver

MC100EL91 output driver

Single-ended input/ouptut	ECLV-ASSY-0029
Differential input/output	ECLV-ASSY-0089

LVDS Data Interface

8-way RJ-45

LVDS data + clock Input/Output

100Ω differential input/output impedance

MC100EL90 input receiver

MC100EL91 output driver

Compatible with EIA 644

Signal AC Timing

ECL to LVDS

	Min	Max
Propagation Delay	340 ps	710 ps
Differential propagation delay high to low	390 ps	660 ps
Differential propagation delay low to high	390 ps	660 ps
Differential stream to stream skew	20 ps	200 ps
Output rise and fall time	150 ps	500 ps
Pulse width	10 ns	

LVDS to ECL

	Min	Max
Propagation Delay	490 ps	860 ps
Differential propagation delay high to low	540 ps	860 ps
Differential propagation delay low to high	540 ps	860 ps
Differential stream to stream skew	40 ps	200 ps
Output rise and fall time	270 ps	530 ps
Pulse width	10ns	

Signal Connections

LVDS

One 8-way RJ-45 connector per LVDS stream

Data + Clock input/output

ECL

One set of 50 Ohm BNC connectors per ECL stream

Single-ended input/ouptut	ECLV-ASSY-0029
Differential input/output	ECLV-ASSY-0089

Data input

Data output

Clock input

Clock output

Physical

1U rack-mount case

Height:	44 mm
Width:	483 mm
Depth:	320 mm (excluding mating connectors)
Weight:	2.2 kg

Power

3-pin IEC connector

85V - 264V, 47Hz - 63Hz, universal input

2 A HRC anti-surge AC power fuse (internal)

Resettable +5V DC circuit protection fuse

8. SUPPORT

In this Section

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What to do if you have a problem

Firstly, please ensure that you have followed the installation, connection and operation instructions in the appropriate User Guide.

Also, check the Troubleshooting section (where appropriate) to eliminate common problems.

Servicing, Maintenance and Repairs

Please contact your supplier or SomerData for all questions relating to maintenance and repairs.

Any unauthorised attempt to open, modify or otherwise repair the product will invalidate the SomerData warranty and may result in the product being left in an irreparable condition.

If you need Support

For warranty, technical and application support issues, you should initially contact your supplier to check whether your SomerData product is covered by warranty, extended warranty or maintenance contract.

At SomerData, we will make our best efforts to provide prompt and friendly support by phone, fax and e-mail.

However, please do not expect us to be magicians or mind-readers!

Diagnosing a problem will require your co-operation and we expect you to provide a detailed description of the problem in the form of a detailed Fault Report.

SomerData Contact Information

Address:	Somerdata Limited Underwood Business Park Wookey Hole Road Wells Somerset BA5 1AF UK	
Phone:	UK	01749-671481
	International	+44 1749-671481
Fax:	UK	01749-671482
	International	+44 1749-671482
E-Mail:	*support@somerdata.com*	
Website:	*www.somerdata.com*	

Support Requests

When contacting SomerData for support, please provide as much information as possible about the problem or issue for which you require assistance.

We will be able to deal with your request more efficiently if you provide the following details (where available) in your Fault Report:

- Part Number or Model Number
  (for example ECLV-ASSY-0029)
- Serial Number (for example 2006/20/005)
- Details of any symptoms
- Sequence of events/actions or other circumstances that triggered the problem
- How you are able to identify that there is a problem
- How you have been able to measure, log or otherwise display the problem

When we acknowledge your support request, you will be given a *Support Tracking Number* (STN), which should be quoted in all further correspondence relating to that specific support request.

Returns

Please do not return any products to SomerData without first contacting SomerData and obtaining a Return Merchandise Authorisation (RMA) Number.

This will ensure that the processing of any repair or upgrade is handled efficiently and in accordance with any agreed action.

If the SomerData product is under warranty, repairs are free-of charge. If not, there will be a repair charge, which will comprise an initial evaluation fee and quotation, followed by repair and parts (if authority is given to carry-out the repair).

Pack the item in its original packaging. If the original packaging is not available, it must be packed in such a way to avoid transit damage. Damage sustained in transit is not covered under warranty.

Returned goods should be accompanied by documentation that indicates the RMA Number along with a detailed fault report and contact details (name, organisation, phone, fax and e-mail).

Mark the RMA Number on the outside of the package.

Ship the item by insured, prepaid carrier to the above address.

Items being returned from outside the European Community *must* be accompanied by a Commercial Invoice. This should include a description of the goods, value for Customs Purposes and state that the goods are being temporarily returned to the UK for repair. SomerData will not accept liability for UK importation costs resulting from inadequate documentation.

End-of-Life Disposal

Your SomerData product may be returned to SomerData at the end of its life at the customer's expense under the EU proposed regulations on waste from electrical and electronic equipment legislation, provided that the product is free from radiation or biological contaminants and that no other legislation forbids the return.

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