

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *ETAS ES1310.1 / ES1203* at our website: ***Click HERE***

ES1310.1
D/A Board
User's Guide

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Copyright

The data in this document may not be altered or amended without special notification from ETAS GmbH. ETAS GmbH undertakes no further obligation in relation to this document. The software presented herein is provided on the basis of a general license agreement or a single license. Using and copying is only allowed in concurrence with the specifications stipulated in the contract.

Under no circumstances may any part of this document be copied, reproduced, transmitted, stored in a retrieval system or translated into another language without the express written permission of ETAS GmbH.

© Copyright 2007 ETAS GmbH, Stuttgart

The names and designations used in this document are trademarks or brands belonging to the respective owners.

Document QH131001 R1.0.5 EN TTN F 00K 102 868

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Contents

1 Introduction 5
- **1.1** Features 5
- **1.2** Applications 6
- **1.3** Block Diagram 7
- **1.4** Software Support 7
- **1.5** Placement 7

2 Hardware 9
- **2.1** Functional Description 9
  - **2.1.1** Connectors 9
  - **2.1.2** Outputs 9
  - **2.1.3** Board ID 9
- **2.2** Hardware Configuration 9
- **2.3** Addressing the D/A Converters 11
- **2.4** Offset for Data Transfer, Board ID and Reset 11
- **2.5** Operating Multiple ES1310.1 D/A Boards 12
- **2.6** Technical Data 14

3 ETAS Contact Addresses 15

List of Figures 17

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

List of Tables 19
Index 21

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

1 Introduction

This section contains information about the basic features and applications of the ES1310.1 D/A Board.

Note

Some components of the ES1310.1 D/A Board may be damaged or destroyed by electrostatic discharges. Please keep the D/A Board in its storage package until it is installed.
The D/A Board should only be taken from its package, configured and installed at a work place that is protected against static discharge.

1.1 Features

The ES1310.1 D/A Board has eight D/A converters and a VMEbus interface.

The board has the following features:

- 8 analog outputs
- dc decoupling of the analog outputs from the VMEbus
- common ground of the analog outputs
- Lemo connector for EMC-proof connection to external analog measuring systems
- extended temperature range for use in vehicles
- cable with conversion from Lemo to BNC connectors is part of the delivery package

The following figure shows the front panel of the ES1310.1 D/A Board.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

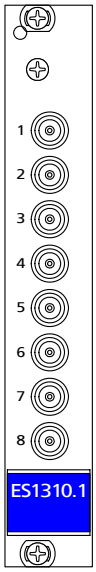


Fig. 1-1 Front Panel of the ES1310.1 D/A Board

1.2 Applications

The ES1310.1 D/A Board is used for the analog output of data, e.g. for control and simulation tasks. The data to be issued is transferred from the VMEbus, converted on the ES1310.1 D/A Board and then output as analog data.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

1.3 Block Diagram

The following figure shows you a block diagram of the ES1310.1 D/A Board.

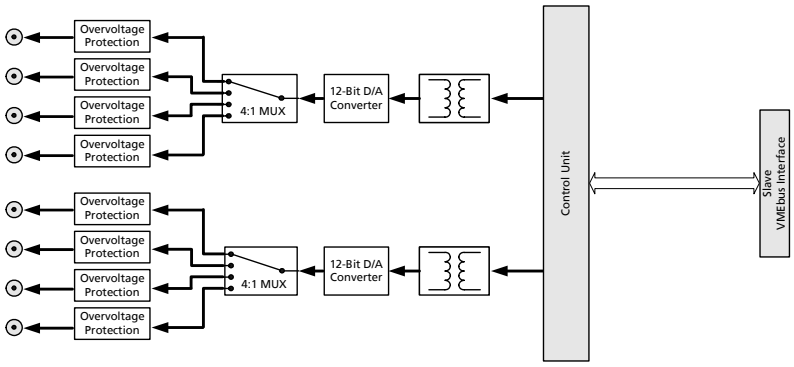


Fig. 1-2 Block Diagram

On the right you can see the VMEbus and how the signals are routed via the VME interface to the control logic or to the D/A converters after dc decoupling. On the left, the signals are converted in the D/A converters DAC 1 and DAC 2 and are made available via eight analog outputs.

1.4 Software Support

In one VME bus system, multiple cards of this type can be used. ASCET-SD, equipped with Target Integration Package Experimental (TIPExp), and INCA support up to three ES1310.1 cards.

Note

The ES1310.1 card is not multi-master capable. This means that a given card can only be accessed by either the application or the simulation node. Hence, the simultaneous use of one card by INCA (measurement) and ASCET-SD (RTIO/simulation) is impossible.

1.5 Placement

The ES1310.1 cards have to be inserted to the right of the bus master card.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

2 Hardware

This section contains a detailed description of the functions, information on the hardware configuration and the connectors and the technical data of the ES1310.1 D/A Board.

2.1 Functional Description

This section provides you with a detailed overview of the features of the ES1310.1 D/A Board. It contains information on the following aspects:

- connectors
- outputs
- board ID and status

2.1.1 Connectors

The eight Lemo connectors on the front panel are designed as sockets and are used to issue the output signals.

The middle pin routes the output signal, the ground is on the connector housing.



Fig. 2-1 Lemo Connector

2.1.2 Outputs

All eight analog outputs have a common ground and are dc decoupled from the VMEbus ground. The insulation voltage is 500 V.

2.1.3 Board ID

The board has an ID which is used to identify the type of board in the VMEbus system. The ID can be queried under the offset 0x20. The ID is 0xA5.

2.2 Hardware Configuration

This section describes the base address configuration of the board.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

The base address of the board is determined with jumpers J400 to J407. A jumper that is plugged in is a logical 1; an open jumper is a logical 0. The board has an address range of 1 KB. The following table shows you the assignment of the jumpers to the address lines.

Jumper	Address Line
J400	A16
J401	A17
J402	A18
J403	A19
J404	A20
J405	A21
J406	A22
J407	A23

Tab. 2-1 Base address configuration

The address lines A15 and A14 have to be 0 for addressing the board. The address lines A13 to A7 and A0 are not evaluated.

The following figure shows you the position of the jumpers.

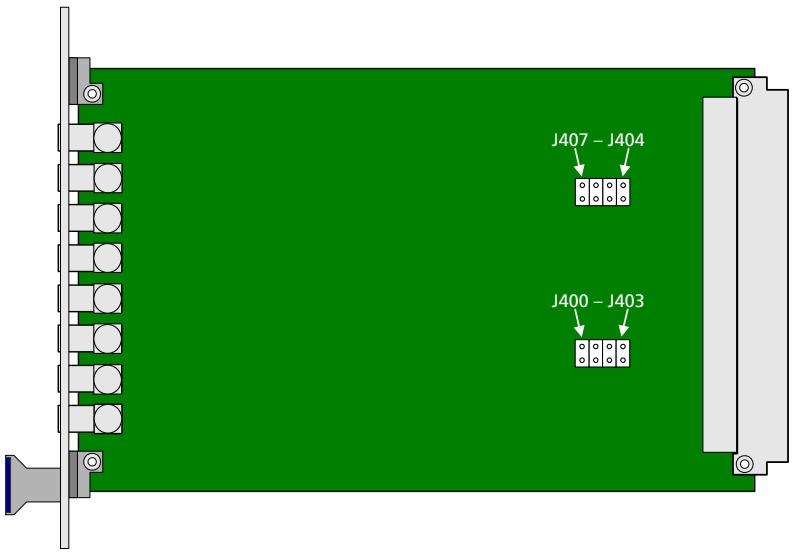


Fig. 2-2 Position of the Jumpers

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

2.3 Addressing the D/A Converters

The individual channels of the D/A converters are addressed by an offset to the base address.

The following tables show the offsets for the individual channels. Only 16-bit write accesses are allowed to these addresses.

D/A Converter	Channel	Offset
0	1	0x00
0	2	0x02
0	3	0x04
0	4	0x06
1	5	0x08
1	6	0x0A
1	7	0x0C
1	8	0x0E

Tab. 2-2 D/A converter channel offsets

2.4 Offset for Data Transfer, Board ID and Reset

The output data for the D/A converters is only transferred from the internal buffers to the D/A converters after the address with the offset 0x10 is write-accessed. This makes it possible to change all eight analog values synchronously.

The output signals of all D/A converters are reset to zero with a write access to the address with the offset 0x30.

The board ID can be determined by read-accessing the address with the offset 0x20.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

The following table shows the offsets of the control addresses.

Function	Offset
Transfer D/A register – output	0x10
Status address: status query	0x20
Reset address: D/A reset (0 V)	0x30

Tab. 2-3 Control address offsets

2.5 Operating Multiple ES1310.1 D/A Boards

It is possible to operate up to three ES1310.1 D/A Boards in a development and experimenting environment. They have to be configured using the jumpers J400-J407. The following table shows the position of the jumpers.

Jumper	Card #1 base address E10000 (default)	Card #2 base address E20000	Card #3 base address E30000
J400	Closed	Open	Closed
J401	Open	Closed	Closed
J402	Open	Open	Open
J403	Open	Open	Open
J404	Open	Open	Open
J405	Closed	Closed	Closed
J406	Closed	Closed	Closed
J407	Closed	Closed	Closed

Tab. 2-4 Jumper assignment when operating multiple boards

The following figure shows which jumpers are open and closed on the relevant board.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

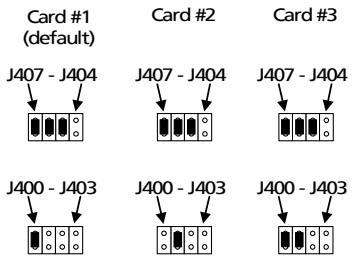


Fig. 2-3 Jumper assignment when operating multiple boards

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

2.6 Technical Data

This section contains the technical data of the ES1310.1 D/A Board in tabular form.

Electrical Data of the Outputs

Output voltage	0 to 10 V
Output current	4 mA max.
Output resistance	50 Ω

Electrical Data

Resolution	12-bit
Number of channels	8
Overvoltage protection	+/- 25 V
Dc decoupling between VMEbus and D/A output	500 V DC
Accuracy	+/-2 LSB
Setup time	25 µs, 0.01% max. area
Output rate of the analog values between two consecutive values	10 µs
Output	5 W max.

Environmental Conditions

Temperature range	-40 °C to +85 °C

Physical Dimensions

Board:	
Length	160 mm
Width	100 mm
Front panel:	
Height	3 U
Width	4 HP

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

3 ETAS Contact Addresses

ETAS HQ

ETAS GmbH

Borsigstraße 14	Phone:	+49 711 89661-0
70469 Stuttgart	Fax:	+49 711 89661-105
Germany	E-mail:	sales@etas.de
	WWW:	www.etasgroup.com

North America

ETAS Inc.

3021 Miller Road	Phone:	+1 888 ETAS INC
Ann Arbor, MI 48103	Fax:	+1 734 997-9449
USA	E-mail:	sales@etas.us
	WWW:	www.etasgroup.com

Japan

ETAS K.K.

Queen's Tower C-17F	Phone:	+81 45 222-0900
2-3-5, Minatomirai, Nishi-ku	Fax:	+81 45 222-0956
Yokohama 220-6217	E-mail:	sales@etas.co.jp
Japan	WWW:	www.etasgroup.com

Great Britain

ETAS Ltd.

Studio 3, Waterside Court	Phone:	+44 1283 54 65 12
Third Avenue, Centrum 100	Fax:	+44 1283 54 87 67
Burton-upon-Trent	E-mail:	sales@etas-uk.net
Staffordshire DE14 2WQ	WWW:	www.etasgroup.com
Great Britain		

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

France

ETAS S.A.S.

1, place des Etats-Unis	Phone:	+33 1 56 70 00 50
SILIC 307	Fax:	+33 1 56 70 00 51
94588 Rungis Cedex	E-mail:	sales@etas.fr
France	WWW:	www.etasgroup.com

Korea

ETAS Korea Co. Ltd.

4F, 705 Bldg. 70-5	Phone:	+82 2 57 47-016
Yangjae-dong, Seocho-gu	Fax:	+82 2 57 47-120
Seoul 137-889	E-mail:	sales@etas.co.kr
Korea		www.etasgroup.com

China

ETAS (Shanghai) Co., Ltd.

2404 Bank of China Tower	Phone:	+86 21 5037 2220
200 Yincheng Road Central	Fax:	+86 21 5037 2221
Shanghai 200120	E-mail:	sales.cn@etasgroup.com
P.R. China	WWW:	www.etasgroup.com

India

ETAS Automotive India Pvt. Ltd.

No. 690, Gold Hill Square	Phone:	+91 80 4191 2585
12F Hosur Road, Bommanahalli	Fax:	+91 80 4191 2586
Bangalore 560 068	E-mail:	sales.in@etasgroup.com
India	WWW:	www.etasgroup.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

List of Figures

Fig. 1-1 Front Panel of the ES1310.1 D/A Board 6
Fig. 1-2 Block Diagram 7
Fig. 2-1 Lemo Connector 9
Fig. 2-2 Position of the Jumpers 10
Fig. 2-3 Jumper assignment when operating multiple boards 13

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

List of Tables

Tab. 2-1 Base address configuration 10
Tab. 2-2 D/A converter channel offsets 11
Tab. 2-3 Control address offsets 12
Tab. 2-4 Jumper assignment when operating multiple boards 12

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Index

A
Applications 6

B
Block diagram 7
Board ID and status 9

C
Configuration 9
Connectors 9
    Lemo 9

D
Data 14

E
Electrical data 14
Electrical data of the outputs 14
Environmental conditions 14
ETAS Contact Addresses 15

F
Features 5
Front view 6
Functional description 9

H
Hardware configuration 9

L
Lemo connectors 9

O
Operating multiple ES1310.1 boards 12
Outputs 9

P
Physical dimensions 14
Position of the jumpers 10

T
Technical data 14

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP