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 ES1232.1-A* at our website: *Click HERE*

ES1232_1-ug-en.book Seite 1 Dienstag, 29. Juli 2003 10:09 10

ES1232.1-A
ETK Interface Board

User's Guide

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

ES1232_1-ug-en.book Seite 2 Dienstag, 29. Juli 2003 10:09 10

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 described in it can only be used if the customer is in possession of a general license agreement or 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 2002 ETAS GmbH, Stuttgart

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

Document QH110608 R1.0.1 EN TTN F 00K 103 045

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

ES1232_1-ug-en.book Seite 3 Dienstag, 29. Juli 2003 10:09 10

Contents

1 Introduction 5
- **1.1** Applications 5
- **1.2** Front Panel 6

2 Hardware 7
- **2.1** Block Diagram 7
- **2.2** VMEbus Interface 7
- **2.3** Power Supply 8
- **2.4** PowerPC (MPC555) 8
- **2.5** Data Acquisition Memory Controller (DAMC) 8
- **2.6** Serial ETK Interface 8

3 ETK Interface Operating Modes 9
- **3.1** Overview 9
- **3.2** Basic Operating Mode 9
- **3.3** Compatibility Operating Mode 9
- **3.4** Advanced Operating Mode 10
- **3.5** Software Requirements 10

4 Setup Hints. 11
- **4.1** Recommended Layout when using Several ETK Interfaces 11

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

ES1232_1-ug-en.book Seite 4 Dienstag, 29. Juli 2003 10:09 10

4.2 Parameterizing the Hardware Configuration (HWC) in INCA 12
4.2.1 Automatic Hardware Configuration 12
4.2.2 Manually Hardware Configuration 12

5 Technical Data 15
5.1 Pin Assignments ETK Interface 15
5.2 Firmware Update 15
5.3 Electrical and Mechanical Data 15
5.4 Environmental Conditions 16

6 Interface Cable 17

7 Order Information 18
7.1 ES1232.1-A Board 18
7.2 Upgrade ES1231-A to ES1232.1-A 18
7.3 ETK Interface Cable CBM150 18

8 ETAS Contact Addresses 19

Index 21

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

ES1232_1-ug-en.book Seite 5 Dienstag, 29. Juli 2003 10:09 10

1 Introduction

This section contains information about the basic features and applications of the ES1232.1-A ETK Interface Board (ETK = Emulator Test Probe). A block diagram is also included here to show the schematic layout of the interface board.

note

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

1.1 Applications

The ES1232.1-A ETK Interface Board is designed for VME64x systems with 3 U height. The ES1232.1-A realizes a high performance ETK emulator test probe integration into the ES1000 system for measurement and calibration, as well as for rapid prototyping applications. This board covers sophisticated requirements concerning real time performance, huge data throughput and comfortable user handling.

Features

The ES1232.1-A has the following features and components:

- VME64x interface
- High performance interface board to an ETK
- ETK Interface Operating Modes: Basic, Compatibility, Advanced
- ETK Protocol Speed: 100 MBit/s and 8 MBit/s
- ETK Protocol Transfer: Single Mode and Block Mode
- Up to 32 rasters for measurement and rapid prototyping
- ETK Support: automatic detection and configuration
- ETK Interface galvanic isolated
- Motorola MPC555 40-MHz processor
  - 1 MByte SRAM (32-bit, burstable)
  - 1 MByte Flash (16-bit)
- Data Acquisition Memory Controller (DAMC) for linking the ETK to the ES1000 system in real time
- 16 MByte Data Acquisition Memory on board

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

- Up to 4 ETK interfaces (e.g. four ES1232.1-A boards) can be operated simultaneously on an ES1000
- Firmware update with service software on PC
- Extended temperature range from -40 °C to +85 °C

These features guarantee that the real-time requirements are fulfilled when the ES1000 is used.

1.2 Front Panel

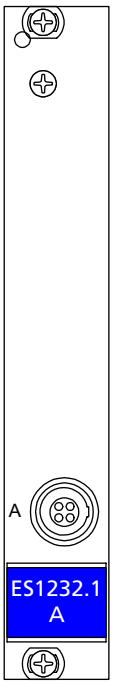


Fig. 1-1 Front View of the ES1232.1-A

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

2 Hardware

2.1 Block Diagram

Fig. 2-1 shows the block diagram of the ES1232.1-A with the major functional units.

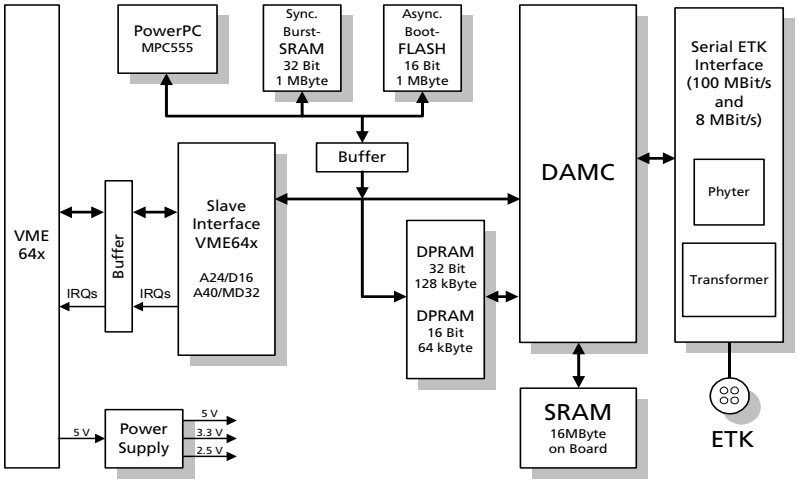


Fig. 2-1 Block Diagram of the ES1232.1-A

2.2 VMEbus Interface

The ES1232.1-A communicates with the ES1130 Simulation Controller or the ES1120 System Controller via the VMEbus. A VME64x slave interface which supports A24/D16 and A40/MD32 master board accesses has been implemented to ensure high system performance. The slave interface converts accesses to the VMEbus into accesses to corresponding memory areas on the board.

The processor board has direct access to the Data Acquisition Memory Controller (DAMC) via the VMEbus. The DAMC is responsible for the communication between ETK and ES1232.1-A. Interrupts control the data transfer between the master CPU and ES1232.1-A.

It is possible to manipulate or preprocess the large amounts of data with the local CPU (MPC555). The local CPU can also be accessed via the VMEbus.

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

In addition to the A24/D16 modes, which make it possible to work with existing boards, an A40/MD32 access (multiplexed address and data accesses, VME64 extension) is used. The maximum bus transfer rate with A40/MD32 access in VMEbus block mode is approximately 40 MByte/s. A high data transfer rate can be attained using the VMEbus together with the ES1120 System Controller.

Type	Slave
Access types	A24:D16; A40:MD32
Interrupters	16 interrupters; level and vector can be programmed
Configuration	Auto-ID configuration

2.3 Power Supply

The power supply makes voltages of 5 V, 3.3 V and 2.5 V available. ICs with a low supply voltage are generally used to keep the power consumption down.

2.4 PowerPC (MPC555)

The PowerPC and the connected memory modules can be addressed via the VMEbus.

2.5 Data Acquisition Memory Controller (DAMC)

The Data Acquisition Memory Controller (DAMC) has a fast RISC processor designed for applications in real-time data acquisition and real-time addressing of external modules.

Measurement data is given a time stamp. The RISC processor is controlled by interrupts and can also be addressed from the VMEbus.

Data is exchanged via the memory connected to the DAMC. The connected memory (SDRAM) is also managed by the DAMC. The VMEbus and the PowerPC can access this memory simultaneously.

2.6 Serial ETK Interface

The serial ETK interface is dc decoupled from the board. Distances up to 20 meters between ETK and ES1232.1-A are reachable.

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

ES1232_1-ug-en.book Seite 9 Dienstag, 29. Juli 2003 10:09 10

3 ETK Interface Operating Modes

3.1 Overview

Three ETK Interface Operating Modes with different features provide optimal solution for different applications:

	ETK Interface Operating Mode		
	Basic	**Compatibility**	**Advanced**
No. of Variables	29/45/45	extended	configurable
Rasters	3 + 2	3 + 2	16 + 16
ETK Speed	8 MBit/s	8/100 MBit/s	100 MBit/s
ETK Transfer	single	block	block
A2L File	existing	existing	new
ETAS Hardware	ES1200, ES1201, ES1231,ES1232, MAC2, ES690	ES1231, ES1232, ES690	ES1232, ES690

3.2 Basic Operating Mode

Using the Basic Operating Mode all current projects will be supported without any change. The advantage is that all ETK Interface hardware like MAC2, ES690, ES1200, ES1201, ES1231-A, and ES1232.1-A can be used in the manner customary.

3.3 Compatibility Operating Mode

The Compatibility Operating Mode is essential characterized by the Block Transfer. The activation of Block Transfer happens automatically between ETK and ES1232.1-A. In result, you will have this advantages:

- extended No. of Variables per measurement raster
- much faster download times for code and data to ECU
- essentially improved transfer times for rapid prototyping raster

To use these advantages immediately for your daily work, you just have to replace the ES1200/ES1201 with the ES1232.1-A.

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

ES1232_1-ug-en.book Seite 10 Dienstag, 29. Juli 2003 10:09 10

3.4 Advanced Operating Mode

The Advanced Operating Mode opens even more possibilities. The 100 MBit/s Block ETK Protocol offers a totally new ETK interface performance. The most important benefits in comparison to the Compatibility Operating Mode are:

- 16 rasters for measurement and
- 16 rasters for rapid prototyping
- configurable number of variables per measurement raster.

The Advanced Operating Mode can only used by ES1232-A and ES690.

3.5 Software Requirements

Minimal required software versions for ES1232-A:

- INCA V4.0
- ASCET-SD V4.2
- Target Integration Package Experimental V4.4.
- Hardware Service Pack V1.2.

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

ES1232_1-ug-en.book Seite 11 Dienstag, 29. Juli 2003 10:09 10

4 Setup Hints

4.1 Recommended Layout when using Several ETK Interfaces

If you are using several different ETK interfaces in your ES1000.2 system, please observe the order of installation shown in the figure below to ensure the hardware configuration remains clear.

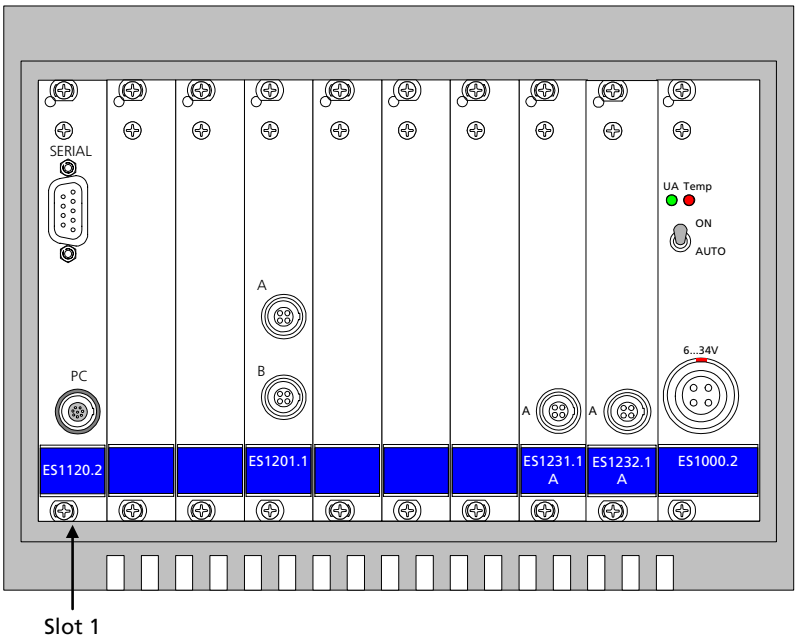


Fig. 4-1 Positioning of boards in ES1000.2 system

Slot 1 is reserved for the system controller. The other positions are standard positions which can used by any board in compliance with the following rule:

snb (ES1201.1) < snb (ES1200.1) < snb (ES1231.1-A) < snb (ES1232.1-A)

snb = slot number

The following is also true for the ES1200.1 and ES1201.1:

ID1 slot number < ID2 slot number

note

Please note that there must not be more than four ETK ports in the system. Further, there can only be one ES1200.1 in the system.

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

ES1232_1-ug-en.book Seite 12 Dienstag, 29. Juli 2003 10:09 10

4.2 Parameterizing the Hardware Configuration (HWC) in INCA

4.2.1 Automatic Hardware Configuration

It is recommend to have the Hardware Configuration generated automatically. Use the menu **Hardware** →**Search for Hardware** for this operation.

It will be searched for connected hardware by interrogating all interfaces. All hardware that is physically connected will be added to the hardware configuration.

4.2.2 Manually Hardware Configuration

If you want to organize or change your Hardware Configuration manually, you must note how the ETK Controller (ETKC) counts as well as observing the order of installation in the ES1000.2 system recommended above:

- starting from the left, the ETK ports are referred to as ETKC-A through ETKC-D. The system controller can operate a maximum of 4 ETK controllers,
- the ETK ports are always numbered consecutively by the system controller,
- this numbering has to be reflected exactly in the HWC.

The **ETK index** parameter can be selected accordingly in the Hardware Configuration with the ETKC device.

The following tables show two configuration examples as specified in the Hardware Configurations shown below (Fig. 4-2and Fig. 4-3).

The description of the ETK ports in the HWC has to correspond **exactly** to where the hardware is installed.

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

Configuration Example 1

Hardware			INCA Hardware Configuration Editor
Board	**Type**	**Port**	**Parameter: ETK index**
1	ES1200.1	A	ETKC-A
1	ES1200.1	B	not assembled
2	ES1231.1-A	A	ETKC-B
3	ES1232.1-A	A [1)]	ETKC-C
4	ES1232.1-A	A [2)]	ETKC-D

[1)] ES1232.1-A board number 1; [2)] ES1232.1-A board number 2

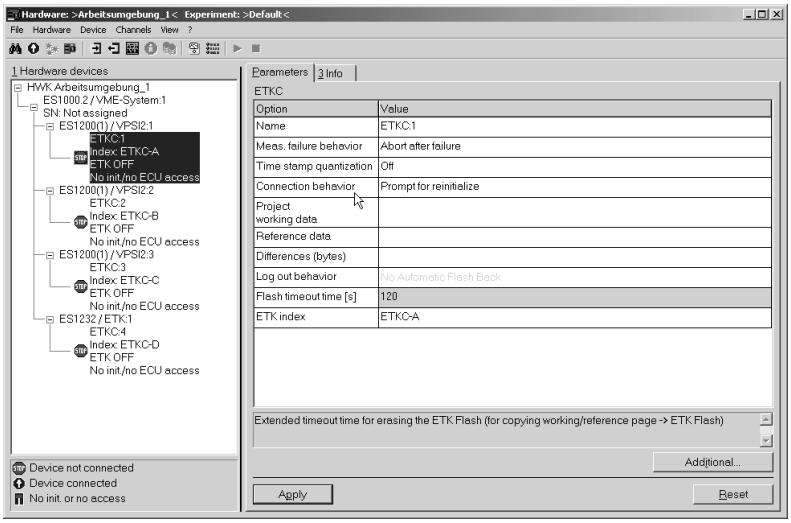


Fig. 4-2 INCA Hardware Configuration Editor (example 1)

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

Configuration Example 2

Hardware			INCA Hardware Configuration Editor
Board	**Board Type**	**Port**	**Parameter: ETK index**
1	ES1201.1	A	ETKC-A
1	ES1201.1	B	ETKC-B
2	ES1200.1	A	ETKC-C
2	ES1200.1	B	not assembled
3	ES1232.1-A	A	ETKC-D

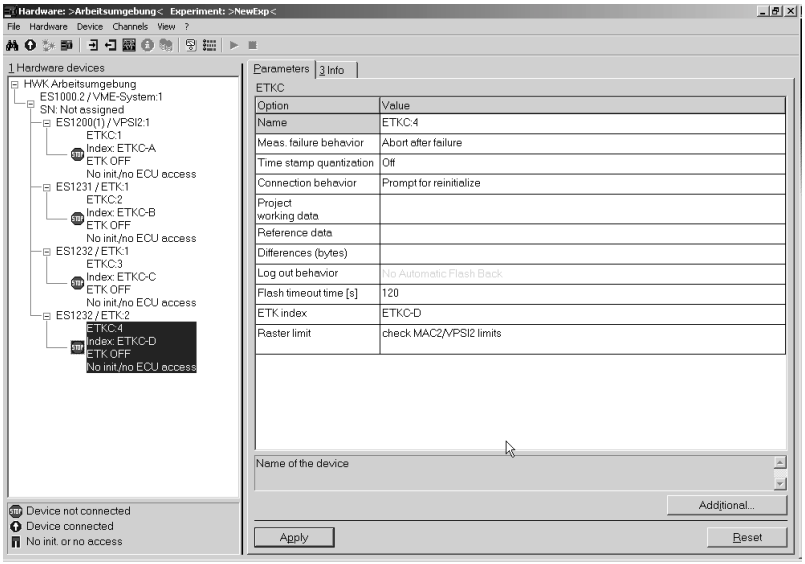


Fig. 4-3 INCA Hardware Configuration Editor (example 2)

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

5 Technical Data

5.1 Pin Assignments ETK Interface

A four-pin Lemo socket (1B dimensions) is used as a connector for the ETK Interface.

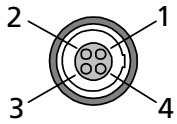


Fig. 5-1 Connector "A"

Pin	Function	Pin	Function
1	TX+	3	RX+
2	TX-	4	RX-

Fig. 5-2 Pin Assignment ETK Interface "A"

5.2 Firmware Update

The firmware of the ES1232.1-A ETK Interface board can be updated using a service software running on the connected PC while the board is mounted in the ES1000 system.

5.3 Electrical and Mechanical Data

Processor

Processor	Motorola PowerPC MPC555, 40 MHz
Memory	1 MByte SRAM (32-bit, burstable) 1 MByte Flash (16-bit)

Data Acquisition Memory

On-board	16 MByte
Memory Extension	Planned; memory slot exists

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

VMEbus Interface

Type	Slave
Address and data lines	A24:D16, A40:MD32
Interrupters	16 interrupters; level and vector programmable
Configuration	Standard Auto-ID configuration
Connector	160-pin DIN 41612

ETK Interface

Operating Modes	Basic, Compatibility, Advanced
ETK Protocol Speed	8 MBit/s / 100 MBit/s
ETK Protocol Transfer	Single mode / Block mode
Connector	4-pin Lemo, 1B dimensions
Cable	Double-shielded, twisted pair

Power Supply

Power consumption (standard/maximum)	5 W/7 W

Mechanical Data

Circuit board	100 x 160 mm²
Front panel	Height: 3 U Width: 4 HP (20.4 mm)

5.4 Environmental Conditions

Ambient temperature during operation	-40 °C to +85 °C
Storage temperature	-55 °C to +85 °C
Relative humidity	0 to 95 %, no condensation

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

ES1232_1-ug-en.book Seite 17 Dienstag, 29. Juli 2003 10:09 10

6 Interface Cable

ETK Interface Cable CBM150

A special cable is needed to connect the ES1232.1-A to the ETK.

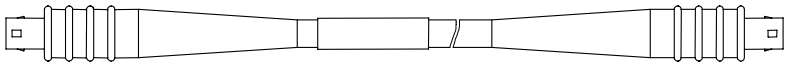


Fig. 6-1 ETK Interface Cable CBM150

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

ES1232_1-ug-en.book Seite 18 Dienstag, 29. Juli 2003 10:09 10

7 Order Information

7.1 ES1232.1-A Board

note

Please note that the ES1232.1-A ETK Interface Board includes in delivery an ETK Interface Cable CBM150-3.

Order Name	Short Name	Order Number
ETK Interface Board (1-CH, 100 MBit/s)	ES1232.1-A	F-00K-103-055

7.2 Upgrade ES1231-A to ES1232.1-A

ETAS has a special service for all owners of an ES1231-A board:

To upgrade ES1231-A to ES1232.1-A send your board to ETAS GmbH, ETAS/TEF, Stuttgart.

Label the package as a Repair/Upgrade ES1232.1_U1, please!

Order Name	Short Name	Order Number
Upgrade ES1231.1-A to ES1232.1-A	ES1232.1_U	F-00K-103-062

7.3 ETK Interface Cable CBM150

Order Name	Short Name	Order Number
Lemo 1B FFG - Lemo 1B FFG (4mc-4mc, 3m)	CBM150-3	F-00K-102-556
Lemo 1B FFG - Lemo 1B FFG (4mc-4mc, 5m)	CBM150-5	F-00K-102-557
Lemo 1B FFG - Lemo 1B FFG (4mc-4mc, 10m)	CBM150-10	F-00K-102-553
Lemo 1B FFG - Lemo 1B FFG (4mc-4mc, 15m)	CBM150-15	F-00K-102-554
Lemo 1B FFG - Lemo 1B FFG (4mc-4mc, 20m)	CBM150-20	F-00K-102-555

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

ES1232_1-ug-en.book Seite 19 Dienstag, 29. Juli 2003 10:09 10

8 ETAS Contact Addresses

ETAS HQ

ETAS GmbH

Borsigstr. 14	Phone:	+49 (711) 8 96 61-0
70469 Stuttgart	Fax:	+49 (711) 8 96 61-105
Germany	E-mail:	sales@etas.de
	WWW:	www.etas.de

France

ETAS SAS

1, place des Etats-Unis	Phone:	+33 (1) 56 70 00 50
SILIC 310	Fax:	+33 (1) 56 70 00 51
94588 Rungis Cedex	E-mail:	sales@etas.fr
France	WWW:	www.etas.fr

Great Britain

ETAS Engineering Tools Application and Services Ltd.

Studio 3, Waterside Court	Phone:	+44 (0) 1283 - 546512
3rd Avenue, Centrum 100	Fax:	+44 (0) 1283 - 548767
Burton-upon-Trent	E-mail:	sales@etas-uk.net
Staffordshire DE14 2WQ	WWW:	www.etas-uk.net
England		

Japan

ETAS K.K.

9-1, Ushikubo 3-chome,	Phone:	+81 (45) 912-9550
Tsuzuki-ku	Fax:	+81 (45) 912-9552
Yokohama 224-0012	E-mail:	sales@etas.co.jp
Japan	WWW:	www.etas.co.jp

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

Korea

ETAS Korea Co. Ltd.

3F, Samseung Bldg.	Phone:	+82 (2) 5747 016
61-1, Yangjae-dong	Fax:	+82 (2) 5747 120
Seocho-gu	E-mail:	sungik.hong@etas.co.kr
Seoul		
Republic of Korea		

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@etasinc.com
	WWW:	www.etasinc.com

South America

UNIT

Av. Cel Amancio Bueno, 30	Phone:	+55 (19) 3242 0620
Jd. Chapadao	Fax:	+55 (19) 3241 96 96
Campinas SP 13066 740	E-mail:	unit@mpc.com.br
Brazil		

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

ES1232_1-ug-en.book Seite 21 Dienstag, 29. Juli 2003 10:09 10

Index

A
Advanced Operating Mode 10
Applications 5

B
Basic Operating Mode 9
Block Diagram 7

C
Compatibility Operating Mode 9

D
Data Acquisition Memory 15
Data Acquisition Memory Controller (DAMC) 8
Delivery 18

E
Electrical Data 15
Environmental Conditions 16
ETK Index 12
ETK Interface 16
ETK Interface Cable 17
ETK Interface Operating Mode
Advanced 10
Basic 9
Compatibility 9
Overview 9
ETK Port 12

F
Firmware Update 15
Front View 6

H
Hardware Configuration (HWC) in INCA 12

I
Interface Cable 17
Introduction 5

L
Layout 11

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

M
Mechanical Data 15, 16

O
Operating Mode
Advanced 10
Basic 9
Compatibility 9
Overview 9
Order Information
ES1232.1-A Board 18
ETK Interface Cable CBM150 18
Upgrade ES1231-A to ES1232.1-A 18

P
Pin Assignments ETK Interface 15
Power Supply 8, 16
PowerPC 8
Processor 15

S
Serial ETK Interface 8
Software Requirements 10

T
Technical Data 15

V
VME64x Slave Interface 7
VMEbus
A24/D16 Mode 8
A40/MD32 Mode 8
VMEbus Interface 7, 16

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