

Mini Etude User Guide





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Catalog Number

Part Number
MINIETUDE-DEMOCASE

Note: There is also a CAN communication version available (consult factory).

Revision History

Version	Details
1.000	Initial release
1.001	Updated release

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Chapter 1: Safety Information

In order to achieve the optimum, safe operation of the Mini Etude, it is imperative that you implement the safety procedures included in this user guide. This information is provided to protect you and to keep your work area safe when operating the Mini Etude and accompanying equipment.

Before you start, ensure that all system components are connected to earth ground. Electrical safety is provided through a low-resistance earth connection.

Only qualified personnel may install, adjust, maintain and repair the Mini Etude. A qualified person has the knowledge and authorization to perform tasks such as transporting, assembling, installing, commissioning and operating motors.

The Mini Etude contains electrostatic-sensitive components that can be damaged if handled incorrectly. To prevent any electrostatic damage, avoid contact with highly insulating materials, such as plastic film and synthetic fabrics. Place the product on a conductive surface and ground yourself in order to discharge any possible static electricity build-up.

To avoid any potential hazards that may cause severe personal injury or damage to the product during operation, keep all covers and cabinet doors closed.

The following safety symbols are used in this manual:



Warning:

This information is needed to avoid a safety hazard, which might cause bodily injury.



Caution:

This information is necessary for preventing damage to the product or to other equipment.





L.1. Warnings

- To avoid electric arcing and hazards to personnel and electrical contacts, never connect/disconnect the Mini Etude while the power source is on.
- Power cables can carry a high voltage, even when the Mini Etude is not in motion. Disconnect the Mini Etude from all voltage sources before it is opened for servicing.
- The Mini Etude contains grounding conduits for electric current protection. Any disruption to these conduits may cause the instrument to become hot (live) and dangerous.
- After shutting off the power and removing the power source from your equipment, wait at least 1 minute before touching or disconnecting parts of the equipment that are normally loaded with electrical charges (such as capacitors or contacts). Measuring the electrical contact points with a meter, before touching the equipment, is recommended.



1.2. Cautions

The Mini Etude contains electrical components during operation.

- The maximum DC power supply connected to the instrument must comply with the parameters outlined in this guide.
- When connecting the Mini Etude to an approved isolated 100–240 VAC auxiliary power supply, connect it through a line that is separated from hazardous live voltages using reinforced or double insulation in accordance with approved safety standards.
- Before switching on the Mini Etude, verify that all safety precautions have been observed and that the installation procedures in this manual have been followed.
- Do not clean any of the Mini Etude drive's soldering with solvent cleaning fluids of pH greater than 7 (8 to 14). The solvent corrodes the plastic cover causing cracks and eventual damage to the drive's PCBs.

Elmo recommends using the cleaning fluid Vigon-EFM which is pH Neutral (7).

For further technical information on this recommended cleaning fluid, select the link:

http://www.zestron.com/fileadmin/zestron.com-usa/daten/electronics/Product_TI1s/TI1-VIGON EFM-US.pdf

1.3. Warranty Information

The products covered in this manual are warranted to be free of defects in material and workmanship and conform to the specifications stated either within this document or in the product catalog description. All Elmo drives are warranted for a period of 12 months from the time of installation, or 18 months from time of shipment, whichever comes first. No other warranties, expressed or implied — and including a warranty of merchantability and fitness for a particular purpose — extend beyond this warranty.



Chapter 2: Introduction

This user guide describes the Mini Etude and contains all essential information for the user to make full use of the product. This manual includes a description of the Mini Etude functions and capabilities, modes of operations, and step-by-step procedures for its use.

2.1 Product Description

The Mini Etude is a standalone mobile testing station that can run up to three AC servo motors simultaneously.

Each motor is controlled by Elmo's Gold DC Whistle, a compact digital servo drive. The Mini Etude has up to three Gold DC Whistles, all controlled by a single GMAS Controller.

2.2 Gold DC Whistle Digital Servo Drive

The Gold DC Whistle is an advanced high power density servo drive. It provides top servo performance, advanced networking and built-in safety, all in a compact package. The Gold DC Whistle has a fully featured motion controller and local intelligence.

The Gold DC Whistle operates from a DC power source. The drive can operate as a standalone device or as part of a multi-axis system in a distributed configuration on a real-time network.

The Gold DC Whistle drive is easily set up and tuned using Elmo Application Studio (EAS) software tools. As part of the Gold product line, it is fully programmable with the Elmo motion control language. For more about software tools, refer to the Elmo Application Studio Software Manual



The Gold DC Whistle can also operate with a 24 VDC auxiliary power supply as a back-up power supply.

Feature	Units	1/100	2.5/100	5/100	10/100	15/100	20/100	
Minimum supply voltage	VDC	12						
Nominal supply voltage	VDC			:	85			
Maximum supply voltage	VDC				95			
Maximum continuous power output	W	80	200	400	800	1200	1600	
Efficiency at rated power (at nominal conditions)	%			>	99			
Maximum output voltage			> 95% o	f DC bus v	voltage at f =	= 22 kHz		
Auxiliary power supply	VDC	12 – 95 VDC (up to 6 VA inc. 5 V/2 x 200 mA for encoder)						
Amplitude sinusoidal/DC continuous current	A	1.0 2.5 5 10 15 20					20	
Sinusoidal continuous RMS current limit (Ic)	A	0.7	1.8	3.5	7	10.6	14.1	
Peak current limit	А			2	x lc			
Weight	g (oz)	267 (9.42 oz)						
Dimensions	mm (in)	115 x 75 x 25.8 mm (4.5" x 3.0" x 1")						
Digital in		6						
Digital out		4						
Analog in		1						
Mounting method			W	/all Moun	t / Book She	lf		



2.3 The Gold Maestro Multi-axis Controller

Elmo's multi-axis controller, the Gold Maestro, connects to all the Gold DC Whistle servo drives via EtherCAT communications.

The Gold Maestro is a distributed multi-axis network controller that controls up to 100 axes with a high level of synchronization and accuracy.

The main features of the Gold Maestro appear below:

- Communications:
 - EtherCAT real-time device networking (CoE)
 - CANopen DS-301, DS-305, DS-401(I/O device profile), DS-402 (Drives and motion control device profile)
- Fast and efficient program execution with a large amount of memory:
 - Native application 'C' programming on the target
 - IEC 61131-3, PLCopen
- PLCopen motion API
- Isolated communications:
 - Ethernet/EtherCAT
 - CAN bus
- Large variety of host communication protocols:
 - Ethernet, TCP/IP, UDP (fast binary protocols, Modbus, Ethernet/IP, Telnet, FTP, HTTP)
 - USB 2.0
- Real-time extension for the Linux operating system
- Application templates for common applications
- Mounting options:
 - Panel mount
 - Board mount
 - Embedded core (soldering)
 - DC powered: 12 V to 196 V



2.4 System Architecture



Figure 1: Mini Etude System Block Diagram

2.5 How to Use this Guide

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In order to operate your Elmo Mini Etude, safety and operation instructions are available in this documentation. After carefully reading the safety instructions in the first chapter, the following chapters provide you with operation instructions.

Upon completing the instructions in this guide, you should be able to use Elmo's Mini Etude



Chapter 3: The Mini Etude System Main Parts

The Mini Etude kit is comprised of the following products:

Quantity	Description	
3	Gold DC Whistle	
	Elmo Part Number:	G-DCWHI2.5/100EE
1	Gold Maestro	
	Elmo Part Number:	GOLD-MAESTRO01
3	AC Servo Motors 30 W	
	Komotek	P/N KANZ-A3BF5N2
1	Power Supply: 100 VAC	~240 VAC to 24 VDC
	MEAN WELL	P/N MDR-20-24
1	Power Supply: 100 VAC	~240 VAC to 48 VDC
	MEAN WELL	P/N MDR-60-48
1	Control Panel	
18	Cables	
2	Gantry cables	P/N CBL-GDCWHIGANTC-B



Figure 2: Gold Maestro





Figure 3: 30 W AC Servo Motor

Figure 4: 48 VDC Power Supply





Figure 5: Gold DC Whistle 2.5/100

3.1 Unpacking the Drive Components

Before you begin working with the Mini Etude, verify that you have all the items listed in the Bill of Materials (BOM):

Quantity	Item Number	Item Description
1	APMINIETUDE	ATP Mini Etude Democase
1	TOO-HE0001	Allen Key 3 mm Round Head
1	TOO-SUITCASE2	Suitcase Plastic Mini Etude + Drilling + Pocket
2	P/N CBL-GDCWHIGANTC-B	Gantry Cables
1	CBL-POWCORD	CABLE ISRAEL POWER CORD 3X1.5MM 1.8M

The Mini Etude is shipped in a cardboard box with Styrofoam protection.

To unpack the Mini Etude:

- 1. Carefully remove the Mini Etude from the box and the Styrofoam.
- 2. Check the Mini Etude to ensure that there is no visible damage to the device. If any damage has occurred, report it immediately to the carrier that delivered your drive.
- 3. To ensure that the Mini Etude you have unpacked is the appropriate type for your requirements, locate the part number sticker on the side of the Mini Etude. It looks like this:



MINIETUDE001A

4. Verify that the Mini Etude is the one that you ordered.



3.2 Cable Catalog Numbers

The catalog numbers of the cables are listed in the following table:

Elmo P/N	Cable Quantity
CBL-GMAS01	1
CBL-COM110E	2
CBL-RUNNER01-M	3
CBL-GSTOMINIETUDE	3
CBL-IOMINIETUDE	1
CBL-POWCORD	1
CBL-POWIOINT	1

3.3 Preparations

Before powering-up the Mini Etude, do the following:

- 1. Ensure that all the switches on the control panel are off.
- 2. Connect the power cord to the input power inlet.
- 3. Connect the power cord to the mains (230 VAC/110 VAC).
- 4. Check that the STO switches are in the "off" position.
- 5. Make sure that the motor cover is closed.

3.4 Powering Up

After the Mini Etude suitcase is connected to the AC outlet via its cable, it is ready to be powered up.



Caution: Before applying power, ensure that the AC supply is within the specified range.

3.5 Initializing the System

After the Mini Etude has been connected, the system must be set up and initialized. This is accomplished using the Elmo Application Studio (EAS), Elmo's Windows-based software application. Install the application and then perform setup and initialization according to the directions in the EAS Software Manual.

Note: If you do not have the Elmo Application Studio (EAS) installed in your computer, you can download the application from Elmo's website.

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Chapter 4: Operating Instructions



Figure 6: Mini Etude Control Panel

4.1 The Mini Etude Components

The Mini Etude suitcase consists of the following components:

- Power supply outlet connect the AC supply cable here
- S1 main switch Press the button to switch the Mini Etude On/Off
- GMAS ports supports up to 100 axes
 - GMAS USB port
 - GMAS Ethernet port
- GMAS Controller the Gold Maestro controller
- Servo drives 3x G-DCWHI2.5/100EE
- EtherCAT OUT port



- Axes
 - Axis 1 the resonance axis that gives or shows the pressure of the axis
 - Axes 2 and 3 axes with different parameters, the axis button is concealed under a cover.
- I/O Interface
 - OUT 1, OUT 2, OUT 3, OUT 4 LEDs Digital output LEDs, the LED is green when the respective digital output interface is On
 - IN 1, IN 2, IN 3, IN 4, IN 5, IN 6 Digital input switches that you can turn on/off manually. You can view whether the digital input is active/inactive through the EAS (Drive Setup and Motion > Expert Tools > Motion > Status Area –I/O).

Status Area - 10 Bit Number	1	2	3	4	5	6	14	15	16	Safety Inputs
Functions										ST01 ST02
Digital Inputs										0 0
Digital Outputs										Refresh

The Digital Input LED representation turns green on the EAS when the related digital switch input is On.

- STO 1 and STO 2 switches STO 1/STO 2 is On if the EtherCAT status LED in the Gold DC Whistle servo drive is green; it is Off if the EtherCAT status LED in the Gold DC Whistle servo drive is red. In EAS, the Safety Inputs radio button is marked when the STO is On and not marked when STO 1/STO 2 is Off.
- Analog Input

Analog Input is a function that gives the user the opportunity to convert DC volts from analog to digital with a special power supply that produces artificial DC volts from -10 V to 10 V or vice versa (artificial voltage to test the inputs). The user can connect the Mini Etude to a voltmeter to view the linearity of the voltage (see image below) and the user can compare the linearity of the DC input voltage from the EAS.





The user can view the linearity of the voltage under the **Current** tab (**Drive Setup and Motion > Expert Tools > Motion > Motion Area > Current** tab) in the EAS.

Motion Area			
Drive Mode Position Loo	p 🔽 Speed Units: cnt/	'sec 💌	Drive Enable
Position Velocity Current	Sine References		
Torque Command Parameters			
Torque Command 1 [Amp]	0	Set 1	
Torque Command 2 [Amp]	0	Set 2	
Torque Command 3 [Amp]	0	Set 3	
			Stop

To connect the voltmeter to the Analog Input:

- 1. Switch off the Mini Etude.
- 2. Switch off the voltmeter.
- 3. Insert the red probe (positive probe) to the voltmeter analog input (red) on one end and insert the other end of the red probe to the Mini Etude monitor terminal analog input.
- 4. Insert the black probe (negative probe) to the voltmeter analog input (black) on one end and insert the other end of the black probe to the Mini Etude monitor terminal analog input.
- 5. Switch on the Mini Etude.
- 6. Switch on the voltmeter.
- 7. To monitor the voltage of the analog input command, turn/rotate the potentiometer.



4.2 Operating the Mini Etude

To operate the Mini Etude:

- Press the S1 switch to turn the Mini Etude on.
 The system is now powered by the auxiliary voltage.
- 2. Check that the red LEDs on the Gold DC Whistle servo drives are on.
- Check that the Gold DC Whistle servo drive's Drive Status LED is green and that it is On.
 The Mini Etude is ready for use.

4.2.1 Checking Connections

Ensure that the Gold Maestro Controller is connected to the computer as follows:

- 1. Open your laptop.
- 2. Connect the laptop's power cable to the AC power outlet.
- 3. Connect the network cable to the RJ-45 (Ethernet) connector.

The diagram below shows how the PC, Gold Maestro and Gold DC Whistle are connected.



Figure 7: Mini Etude System Block Diagram

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4.3 Getting Started

1. Connect to the GMAS Controller by connecting between the GMAS USB Port in the Mini Etude suitcase and a computer with the EAS installed in it.

Notes:

- If you do not have a computer with the EAS application installed in it, download the EAS application from the Elmo website.
- When installing EAS, the application automatically place the drivers in the C:\Windows
 directory. If you are prompted by the application for any driver at any stage of the installation
 or configuration, just direct it to the C:\Windows directory.
- 2. Download the firmware to the Gold Maestro. For more details, refer to Chapter 5: Configurations.
- 3. Set and download the Gold Maestro resource file via the EASII (Elmo Application Studio) according to the requirements (e.g., number of axes, baud rate, etc.). For more details, refer to Chapter 5: Configurations.
- 4. Set the required baud rate for the drivers via the EAS while using the Gold Maestro Controller as a gateway. The default baud rate is 500 Mbps.
- 5. To run the GMAS program, connect via Telnet to the GMAS IP 192.168.1.3 and set User=User, Password=User.



4.4 Mini Etude Connection Diagrams



Figure 8: Mini Etude Electrical Diagram





Figure 9: Mini Etude Connection Diagram

4.5 Turning the Mini Etude Off

Press the S1 red button to turn the Mini Etude off; the green light will turn off slowly and the three Gold DC Whistle servo drive motors will come to a stop.



Warning:

When a dangerous or unexpected situation occurs such as overheating, any type of malfunction or when smoke is visible, immediately press the **Emergency Stop** button.

The user is recommended to have the **Emergency Stop** button nearby.

Chapter 5: Configurations

5.1 G-MAS USB Connection

This section describes how to communicate with the G-MAS when connected via a USB connection from a host system to allow the GMAS ports to be configured and operate via the LAN. This connection imitates a COM port connection at a COM Port. Therefore, if an RS-232 Terminal connection is opened at the host system, *udev* execution opens a terminal from which it is possible to perform the following basic operations.

- Change / Read IP Address.
- Change / Read Gateway.
- Change / Read Subnet mask.
- Change / Read Server IP.
- Change / Read download version path.
- Change / Read DHCP

5.1.1 Connection Procedure

The following procedure describes how to connect the host system to the G-MAS via USB connection and configure the communication parameters of the G-MAS.

- 1. Make sure that the G-MAS is powered on.
- 2. Connect the USB connection from the host system to the G-MAS. The G-MAS should emit a sound signifying that a connection is made.
- 3. Open the Device Manager and locate the Ports section in the hierarchal structure. Verify which COM port is defined for the Elmo GMAS.
- 4. At the host computer, open a communications Terminal to a COM port.



The prompt should display *GMAS>*.



5. At the prompt, enter any command detailed in sections 5.1.1.2 - 5.1.1.5 to perform the appropriate operation at the G-MAS.
For example; to request the IP address enter *ipaddr*.
The G-MAS IP address is returned.

Note: By default, the G-MAS IP address is set to 192.168.1.3. However, the customer may prefer to integrate the G-MAS with his network system and therefore may wish to change the default value. Use this procedure to perform this action.

5.1.2 dhcp - Static / Dynamic IP

Purpose	 Set DHCP mode. Request display DHCP mode. 							
Syntax	dhcp							
Parameters	None or integer							
Attributes	Type Source Default values Range							
	Parameter, integer	Interprete	r N/A	0 – Static IP				
				1 – Dynamic IP				
Examples								
	Input Output							
	dhcp		Static IP					
	dhcp1		OK					



Purpose	1. 2.	Set DHCP mode. Request display DHCP n	node.
	dhcp		Dynamic IP

5.1.3 ipaddr - GMAS IP Address

Purpose	 Set a new IP address. Request display of GMAS's IP address. 								
Syntax	ipaddr								
Parameters	None or string								
Attributes	Type Source Default values Range								
	Parameter, string	Interprete	ter N/A N/A						
Examples									
	Input		Output						
	ipaddr		10.10.10.1						
	Ipaddr 10.10.20	.2	OK						

5.1.4 ipmask – GMAS IP Subnet Mask

Purpose	 Set a new IP subnet mask. Request display of GMAS's IP subnet mask. 				
Syntax	ipmask	ipmask			
Parameters	None or string				
Attributes	Type Source		Default values	Range	
	Parameter, string	Interpreter	N/A	N/A	
Examples					
	Input	0	utput		
	ipmask		255.255.255.0		
	ipmask 255.255.255.0		OK		

5.1.5 defgateway – GMAS Default Gateway

Purpose	1.	Set a new default gateway.
	2.	Request display of GMAS's default gateway.

Table of Contents



Purpose	 Set a new default gateway. Request display of GMAS's default gateway. 				
Syntax	defgateway	defgateway			
Parameters	None or string				
Attributes	Туре	Source	Default values	Range	
	Parameter, string	Interpreter	N/A	N/A	
Examples					
	Input		Output		
	defgateway		10.10.10.1		
	Defgateway 10.10.10.2		OK		

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5.2 G-MAS PC Configuration

This Windows setup configuration covers Windows XP, and Windows 7

5.2.1 Windows XP Setup

To set the PC configuration in Windows XP:

1. On your desktop, go to Start > Settings > Control Panel, click Network Connections then double-click on the Local Area Connection icon.



2. On the Local Area Connection Status dialog box, go to the General tab and click on the Properties button.



eneral Suppo	t	
Connection		
Status:		Connected
Duration:		00:12:59
Speed:		100.0 Mbps
Activity	Sent — J	Received
Packets:	163,196	258,569
Properties	Disable	

 In the GMAS Connection Properties, click the General tab window and select the Internet Protocol (TCP/IP) option from the list of connections and click OK.

🗕 GMAS connection Properties 🛛 🕐 🔀
General Advanced
Connect using:
Broadcom NetXtreme 57xx Gigabit Cc
This connection uses the following items:
▼ 3〒 Network Monitor Driver
Broadcom Advanced Server Program Driver ST Internet Protocol (TCP/IP)
Install Uninstall Properties
Description Transmission Control Protocol/Internet Protocol. The default
wide area network protocol that provides communication
Show icon in notification area when connected
Notify me when this connection has limited or no connectivity
OK Cancel

- 4. Perform the USB Connection procedure as described in the section above **0**.
- 5. From the terminal window, check the IP Address, Default Gateway, and Subnet Mask, of the G-MAS.



🏀 GMAS USB - HyperTerminal File Edit View Call Transfer Help	
GMAS> ipaddr reading version params table 192.168.1.2 OK GMAS> defgateway reading version params table 192.168.1.1 OK GMAS> ipmask reading version params table 255.255.255.0 OK GMAS>	
Connected 00:09:11 Auto detect 115200 8-N-1 SCROLL CAPS NUM	Capture Print echo

6. Click Properties and select the radio button. *Use the following IP Address*.

Internet Protocol (TCP/IP) Proper	ties 🔹 🛛 ? 🔀
General	
You can get IP settings assigned autom this capability. Otherwise, you need to a the appropriate IP settings.	atically if your network supports sk your network administrator for
O Obtain an IP address automatically	
Ose the following IP address:	
IP address:	192.168.1.2
S <u>u</u> bnet mask:	255 . 255 . 255 . 0
<u>D</u> efault gateway:	192.168.1.1
Obtain DNS server address autom	atically
• Use the following DNS server add	resses:
Preferred DNS server:	<u> </u>
Alternate DNS server:	· · ·
	Ad <u>v</u> anced
	OK Cancel

- 7. Enter the IP Address, Default Gateway, and Subnet Mask from the terminal window.
- 8. Click **OK**.
- 9. Open the EAS application.



- 10. Click System Configuration
- 11. In the Connection type select **GMAS TCP/IP**.



	GMAS_EtherCATWorkspace - Elmo Application Studio v.1.3.0.	- °×
Elmo Updates System	Abotion Brive User Constant Setup&Motion Programming Setup&Motion Programming Tools	
12 😫 🗒 🗇		× I
Image: System Configuration for Workspace Default Image: System Configuration for Workspace Default	I Tage Mare I Ta	EUI Uranomi Tone CIVAS Electration Tone ECANS TEP/IP 192.161.3 ETHERICAT False 192.161.2
		0. 1

12. In IP Address, select the same addresses entered to the Internet Protocol Properties window above.

13.

Click **Apply** to save the drive's properties.

Right-click the drive's name and click **Connect**. The GMASResource data window opens. 14.

E Workspace "Elmo_C	GMAS" ₽		
Drive01	4 1. General		
Drive02	1.1 Target Name		G02
G01	1.2 Target Version	1	Unknown
Device Network (Eth	herCAT) 1.3 Project		
-01	1.4 Active		True
	1.5 Target Type		GMAS EtherCAT
a02	1.6 Cycle Time		1000
🖻 Gateway	1.7 Mailbox Cycle	Time	5000
	1.8 Background	Cycle Time	100
2 G01 =00	1.9 Receive f.b. s	tatus	False
	▲ 2. Target Conr	ection	
Rem	iove Target	1	GMAS ICP/IP
		_	192.168.1.3
-u- Conr	nect		FTUEDOAT
Sil Creat	te New Ethercat Configuration		ETHERCAT
		alaray	Fales
Edit E	Ethercat Configuration	erface	T diac
🗊 Diagi	nostics Ethercat Configuration	cildee	192 168 1 2
- Char	nge GMAS to PreOP Mode		102.100.112
	3	_	
Add 🐨	Gold Drive to EtherCAT Network		
add 🐨	SimplIQ Drive to EtherCAT Network		
BbA 🐨	IO Device to EtherCAT Network		
Hoda 🐨	Group		
bbA 🐨	Virtual Axis to EtherCAT Network		

15. In the GMASResource, select Upload Resource file from GMAS and update Workspace. The Resource file is uploaded to the host system.





On completion the G-MAS is connected (green marker), and drives connected to the G-MAS appear.

Drive01	4 1 General	
Drive02	1.1 Target Name	G02
G01	1.2 Target Version	1.1.1.1
Device Network (EtherCAT)	1.3 Project	
Device Network (LinerCAT)	1.4 Active	True
a01	1.5 Target Type	GMAS EtherCAT
a02	1.6 Cycle Time	1000
Gateway	1.7 Mailbox Cycle Time	5000
	1.8 Background Cycle Time	100
	1.9 Receive f.b. status	False
GUI.auz	4 2. Target Connection	
- 🔣 G02	2.1 Connection Type	GMAS TCP/IP
Device Network (EtherCAT)	2.2 IP Address	192.168.1.3
	4 3. GMAS Network	
001	3.1 Network Type	ETHERCAT
auz	▲ 4. Gateway	
a03	4.1 Auto Connect Gateway	False
Gateway	₄ 5. Host TCP/IP Interface	
260 G02 a01	5.1 Host IP Address	192.168.1.2
24 C02-02		
GUZ.aUZ		

16. Select the first drive and right-click to choose **Connect**. The drive Personality is uploaded, and the drive is connected. Connect the other drives linked to the G-MAS.

i02.a01 - Uplo	ad Personality		
Load Perso	nality		
		Upload Personality	
		43%	
-			
			Cancel

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5.2.2 Windows 7 Setup

To set the PC configuration in Windows 7

- 1. Connect the USB connection from the Host system to the G-MAS.
- 2. Perform the USB Connection procedure as described in the section above **5.1.1**.
- 3. From the terminal window, check the IP Address, Default Gateway, and Subnet Mask, of the G-MAS.

Putty	x
	*
GMAS> ipaddr	
reading version params table	
192.168.1.3	
OK	
GMAS> defgateway	
reading version params table	
192.168.1.1	
GMISS inmage	
reading version params table	
255.255.255.0	
OK	
GMAS>	
	-

4. Open the Network Connection window, and locate the Local Area Connection to the G-MAS.



 Right-click on the Connection, and select Status. Make sure that the IPv4 and IPv6 Connectivity show No network access.



eneral		
Connection		
IPv4 Connectiv	ity:	No network access
IPv6 Connectiv	ity:	No network access
Media State:		Enabled
Duration:		01:24:17
Speed:		100.0 Mbps
Details	1	
Details)	
Details	Sent —	Received
Details Activity Packets:	Sent — 559	Received

6. Click Properties, and select Internet Protocol Version 4 (TCP/IPv4).

Local Area Connectio	on Properties	l.	2
Networking Sharing			
Connect using:			
Realtek PCIe GB	E Family Controller		
This connection uses th	e following items:	Configure	
Client for Micro Kaspersky Anti OoS Packet S File and Printer File and Printer File and Printer File and Printer File and Printer Linternet Protoc	soft Networks i-Virus NDIS 6 Filter cheduler r Sharing for Microsof col Version 6 (TCP/IP col Version 4 (TCP/IP pology Discovery Map pology Discovery Res	t Networks Vr6) Vr4) ppper I/O Driver sponder	
Install	Uninstall	Properties	
Description Transmission Control wide area network pr across diverse interco	Protocol/Internet Pro rotocol that provides onnected networks.	otocol. The default communication	
		OK Can	cel

7. Select **Properties** and enter the Default Gateway, and Subnet Mask obtained from the Telnet window.

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eneral	
You can get IP settings assigned this capability. Otherwise, you r for the appropriate IP settings.	d automatically if your network supports need to ask your network administrator
🔘 Obtain an IP address auto	matically
• Use the following IP addres	ss:
IP address:	192.168.1.2
Subnet mask:	255.255.255.0
Default gateway:	192.168.1.1
Obtain DNS server address	s automatically
Ose the following DNS server	/er addresses:
Preferred DNS server:	
Alternate DNS server:	
- welter and a second second	it Advanced

- 8. In the Internet Protocol Version 4 (TCP/IPv4 Properties window, Insert an IP Address similar to the G-MAS own address but different at the fourth set of digits, as shown, e.g., 192.168.1.2, and then click OK.
- In the Local Area Connection Properties window, select Internet Protocol Version 6(TCP/IPv6).
- 10. In the Internet Protocol Version 6(TCP/IPv6) Properties window, click the radio button next to **Obtain an IPv6 address automatically** as shown below, and click **OK**.

neral		
/ou can get IPv6 settings assign Otherwise, you need to ask your	ed automatically if your network sup network administrator for the appro	ports this capability. priate IPv6 settings.
Obtain an IPv6 address aut	omatically	
O Use the following IPv6 addr	ess:	
IPv6 address:		
Subnet prefix length:		
Default gateway:		
Obtain DNS server address	automatically	
Use the following DNS serve	er addresses:	
Preferred DNS server:		
Alternate DNS server:		
Validate settings upon exit		Advanced
		OK Casal

11. Check the connection to the G-MAS by pinging it. Enter the following at the Windows prompt:

Ping -t <G-MAS IP Address>, e.g., 192.168.1.3



ping -t 192.168.1.3		
See more results		
ning -t 192 168 1 3	×	Shut down

A Command Prompt should open with the reply results demonstrating a connection to the G-MAS.

Pinging 192.168.1.3 with 32 bytes of data: Reply from 192.168.1.3: bytes=32 time=1ms TTL=64 Reply from 192.168.1.3: bytes=32 time<1ms TTL=64	C:\Windows\system32\ping.exe	
Reply from 192.168.1.3: bytes=32 time(1ms ITL=64 Reply from 192.168.1.3: bytes=32 time(1ms ITL=64	Pinging 192.168.1.3 with 32 bytes of data: Reply from 192.168.1.3: bytes=32 time=1ms TTL=64 Reply from 192.168.1.3: bytes=32 time<1ms TTL=64 R	

12. Open the EAS Application at the System Configuration window and right-click on the Workspace to setup a new G-MAS.

Elmo_GMAS - Elmo Application Studio v.	1.3.0.1		x
Elmo Updates & News	System Configuration	r GMAS GMAS GMAS Setup&Motion Programming Tools	
Workspace "Emo_GMAS" Workspace "Emo_GMAS" Signature of the second seco	21 3 1. General 1.1 Target Name 1.2 Target Version 1.3 Project 1.4 Active 1.5 Target Type 1.6 Cycle Time 1.7 Malbox Cycle Time 1.7 Malbox Cycle Time 1.9 Receive fb. status 2. Target Connection 2.1 Connection 2.1 Connection 2.1 Connection 2.1 Connect Gateway 4.1 Auto Connect Gateway 1.1 Target Name The target's unique no case sensitive name.	G02 Unknown True GMAS EtherCAT 1000 5000 100 Felse Offline ETHERCAT Felse	
System Configuration for Workspace Elm	o_GMAS	0. 0.0	?

13. Setup the EtherCAT configuration of the G-MAS with the respective TCP/IP addresses setup in the Windows configuration and from the Terminal feedback.



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Elmo_GMAS - Elmo Application Studio v.3	.3.0.1		
Elmo Updates & News	System Configuration	GMAS GMAS GMAS Setup&Motion Programming Tools	
		× 1	
E Workspace "Elmo_GMAS"			
Drive01	4 1. General		
Drive02	1.1 Target Name	G02	
G	1.2 Target Version	Unknown	
- Device Network (EtherCAT)	1.3 Project		
	1.4 Active	True	
	1.5 Target Type	GMAS EtherCAT	
a02	1.6 Cycle Time	1000	
⊡-Gateway	1.7 Mailbox Cycle Time	5000	
	1.8 Background Cycle Time	100	
23 G01 a02	1.9 Receive f.b. status	False	
	4 2. Target Connection		- 1
	2.1 Connection Type	GMAS ICP/IP	-11
	2.2 IP Address	192.168.1.3	- 1
	4 3. GMAS Network	ETHERCAT	- 1
	5. I Network Type	EINERCAI	- 1
	4 1 Auto Connect Gateway	Faleo	- 1
	4 5 Host TCP/IP Interface	T diac	
	5.1 Host IP Address	192 168 1 2	
	5.1 Host IP Address		-
	The Host's IP address.	\sim	
System Configuration for Workspace Elm	o_GMAS	SL ?	

- 14. Click **Apply** to save the drive's properties.
- 15. Right-click the drive's name and click **Connect**. The GMASResource data window opens.



16.

In the GMASResource, select **Upload Resource file from GMAS and update Workspace**. The Resource file is uploaded to the host system.





On completion the G-MAS is connected (green marker), and drives connected to the G-MAS appear.

Drive01	▲ 1. General	
Drive02	1.1 Target Name	G02
🗄 🏧 🖬 G01	1.2 Target Version	1.1.1.1
Device Network (EtherCAT)	1.3 Project	
	1.4 Active	True
a01	1.5 Target Type	GMAS EtherCAT
a02	1.6 Cycle Time	1000
⊟ Gateway	1.7 Mailbox Cycle Time	5000
2 G01 =01	1.8 Background Cycle Time	100
	1.9 Receive f.b. status	False
24≣J G01.a02	4 2. Target Connection	
🖻 🚮 G02	2.1 Connection Type	GMAS TCP/IP
Device Network(EtherCAT)	2.2 IP Address	192.168.1.3
	A 3. GMAS Network	
	3.1 Network Type	ETHERCAT
a02	▲ 4. Gateway	
a03	4.1 Auto Connect Gateway	False
Gateway		
	5.1 Host IP Address	192.168.1.2
~~~~ G02.a02		
G02.a03		
- 12 GU2.803		

17. Select the first drive and right-click to choose Connect. The drive Personality is uploaded, and the drive is connected. Connect the other drives linked to the G-MAS.

Load Personality			
	Up	load Personality	
		43%	

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**Note:** When using a static IP address and a wireless network, verify that the network attributes on the two networks are not the same (different gateways). Alternatively, disconnect the wireless network.

## 5.3 Installing the firmware to GMAS

**Note:** To install the GMAS firmware, refer to the *Elmo Application Studio (EAS) User Manual*.

## 5.4 EtherCAT Configuration

**Note:** To configure EtherCAT, refer to the *Elmo Application Studio (EAS) User Manual*.

# 5.5 Installing the Firmware to the Gold DC Whistle Servo Drives

**Note:** To install the firmware to the Gold DC Whistle servo drives, refer to the *Elmo Application Studio (EAS) User Manual*.

## 5.6 Installing PAL Firmware

Note: To install the PAL firmware, refer to the Elmo Application Studio (EAS) User Manual.

## 5.7 Installing the Servo Drive Parameters

**Note:** To install the Servo Drive parameters, refer to the *Elmo Application Studio (EAS) User Manual*.

## 5.8 Motion Test

**Note:** To perform Motion tests, refer to the *Elmo Application Studio (EAS) User Manual*.



