

Series SX402

Alphanumeric displays with PROFINET IO RT interface QuickStart for TIA Portal (version 2.10)

Table of contents

1	Contact	3
2	Legal note	4
3	Safety precautions	5
	Important information	5
	Safety	5
	Intended use	5
	Mounting and installation	5
	Grounding	5
	EMC measures	6
	Disposal and return of old devices	6
4	Quick Start	7
	Step 1: Open project	8
	Step 2: Install GSDML file of the display and add display	9
	Step 3: Switch to project view and add device	9
	Step 4: Establish connection to the display	10
	Step 5: Add sub-module to the display and define address range	10
	Step 6: Assign a PROFINET device name to the display	12
	Step 7: Define text	13
	Step 8: Load hardware configuration and program into the control system	13
5	Display messages	13

1 Contact

www.siebert-group.com

GERMANY

Siebert Industrieelektronik GmbH Siebertstrasse, D-66571 Eppelborn Phone +49 (0)6806 980-0 email: info.de@siebert-group.com

AUSTRIA

Siebert Österreich GmbH Simmeringer Hauptstrasse 24, A-1110 Wien Phone +43 (0)1 74040153 email: info.at@siebert-group.com

FRANCE

Siebert France Sarl 4 rue de l'Abbé Louis Verdet, F-57200 Sarreguemines Phone +33 (0)3 87 98 63 68 email: info.fr@siebert-group.com

ITALY

Siebert Italia Srl Via Galileo Galilei 2A, I-39100 Bolzano (BZ) Phone +39 (0)471 053753 email: info.it@siebert-group.com

THE NETHERLANDS

Siebert Nederland B.V. Jadedreef 26, NL-7828 BH Emmen Phone +31 (0)591-633444 email: info.nl@siebert-group.com

SWITZERALND

Siebert AG Bützbergstrasse 2, CH-4912 Aarwangen Phone +41 (0)62 922 18 70 (german) +41 (0)62 922 20 44 (french) +41 (0)62 922 28 38 (italien) email: info.ch@siebert-group.com

2 Legal note

© Siebert Industrieelektronik GmbH

This operation manual has been prepared with the utmost care. However, we do not accept any liability for possible errors. We always appreciate your suggestions for improvement, corrections, comments and proposals. Please contact us: editing@siebert-group.com

Siebert[®], LRD[®] and XC-Board[®] are registered trademarks of Siebert Industrieelektronik GmbH. All other product names mentioned herein may be trademarks or registered trademarks of their respective owners.

We reserve the right to make alterations to the technical data and delivery options without notice. - All rights reserved, including the rights of translation. No part of this document may in any form or by any means (print, photocopy, microfilm or any other process) be reproduced or by using electronic systems be processed, copied or distributed without our written permission.

3 Safety precautions

Important information

Read these operating instructions before using the device. It contains important information on the use, safety and maintenance of the device. This helps you to protect yourself and prevent damage to the device.



Instructions that may lead to death, personal injury or considerable material damage if they are not followed or not followed correctly are highlighted by the warning triangle shown here.

The operating instructions are intended for trained professional electricians familiar with the safety standards of electrical technology and industrial electronics. The manufacturer is not liable if the information in these operating instructions is not complied with.

Store these operating instructions in an appropriate place.

Safety



Components inside the devices are energized with electricity during operation. For this reason, mounting and maintenance work may only be performed by qualified personnel in accordance with the relevant safety regulations.

The repair and replacement of components and modules may only be carried out by the manufacturer for safety reasons and due to the required compliance with the documented unit properties.

The devices do not have a power switch. They are in operation immediately after the operating voltage is applied.

Intended use

The devices are intended for use in industrial environments. They may only be operated within the limit values stipulated by the technical data.

When configuring, installing, maintaining and testing the devices, the safety and accident-prevention regulations relevant to use in each individual case must be complied with.

Trouble-free, safe operation of the units requires proper transport, storage, installation, mounting and careful operation and maintenance of the devices.

Mounting and installation

The attachment options for the units were conceived in such a way as to ensure safe, reliable mounting.



The user must ensure that the fastening material used, the device carrier and the anchoring at the unit device are sufficient for secure mounting under the given on-site conditions.

The devices are to be mounted in such a way that they can be opened up while mounted. Sufficient space for the cables must be available in the unit near the cable entries.

Sufficient space is to be kept clear around the devices to ensure air circulation and to prevent the build-up of heat resulting from use. The relevant information must be heeded in the case of units ventilated by other means.



When the housing fasteners are opened, the front frame of the housing hinges out upward or downward (depending on the unit version) automatically.

Grounding

All devices are equipped with a metal housing. They comply with safety class I and require a protective earth connection. The connecting cable for the operating voltage must contain a protective earth wire of a sufficient cross section (DIN VDE 0106 part 1, DIN VDE 0411 part 1).



EMC measures

The devices comply with the current EU Directive (EMC Directive) and provide the required interference immunity. Observe the following when connecting the operating voltage and data cables.

Use shielded data cables.

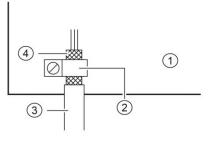
The data and operating voltage cables must be laid separately. They may not be laid together with heavy-current cables or other interference-producing cables.

The cable thickness must be properly assessed (DIN VDE 0100 Part 540).

The cable lengths inside the units are to be kept as short as possible to prevent interference. This applies especially to unshielded operating voltage cables. Shielded cables are also to be kept short due to any interference which might be emitted by the shielding.

Neither excessively long cables nor cable loops may be placed inside the units.

The connection of the cable shielding to the functional ground (PE) must be as short and lowimpedance as possible. It should be made directly to the mounting plate over a large area with a conductive clip:



mounting plate
 conductive clamp
 data lines
 cable shielding

The cable shielding is to be connected at both cable ends. If equipotential bonding currents are expected due to the cable arrangement, electrical isolation is to be performed on one side. In this case, capacitive connection (approx. 0.1μ F/600 V AC) of the shielding on the isolated side must occur.

Disposal and return of old devices

Dispose the packing in an environmentally friendly manner. This device is subject to the European directive on waste electrical and electronic equipment (WEEE). The directive provides the framework for the EU-wide take-back and recycling of old appliances. Enquiries therefore should be sent by e-mail to the following e-mail address: info@siebert-group.com

Units or unit parts which are no longer needed are to be disposed of in accordance with the regulations in effect in your country. Personal data on the old appliances to be disposed of must be deleted by the user.



4 Quick Start

This Quick Start applies to all alphanumeric displays of the SX402-...-N0 series with firmware from V1.0.9 and device ID 0x1402. The firmware of a device can be checked in advance, e.g. with the PRONETA Basic software from SIEMENS.

Hersteller-ID	Geräte-ID	Firmwareversion	Hersteller-Name	Bestellnummer
0x0161	0x1402	V1.0.9	Siebert Industrieelektronik GmbH	SX402N0

The display is put into operation by following the steps below. The display then shows the values sent via PROFINET.

The screenshots were created with the hardware and software listed in the following table. The illustrations may differ for other engineering frameworks.

Display	SX402-420/05/0G-001/0B-N0
Engineering-Framework	Siemens TIA Portal V17, Update 4
PLC	Siemens S7-1214C DC/DC/Rly, V4.5, 6ES7 214-1HG40-0XB0
Operating system	Microsoft Windows 10 Professional, 64 Bit

The Quick Start describes the parameterization of the display. Operation of the TIA Portal is a prerequisite.

The devices are delivered without PROFINET names.

The sample project from this Quick Start is available for download on the website <u>www.siebert-group.com</u>.



Step 1: Open project

Open a new project in the engineering framework and define the CPU. The Siemens S7-1214C DC/DC/Rly version 4.5 was used to create this Quick Start.

Add new device				×
Device name:				
PLC_1]	
	- 🥁 SIMATIC S7-1200	^	Device:	
	🛨 🛅 CPU			
	CPU 1211C AC/DC/Rly			ill Book
Controllers	CPU 1211C DC/DC/DC			
	CPU 1211C DC/DC/Rly			<u> </u>
	CPU 1212C AC/DC/Rly			CPU 1214C DC/DC/Rly
	CPU 1212C DC/DC/DC			cro iz ne bebeniy
	CPU 1212C DC/DC/Rly		And also and	
	CPU 1214C AC/DC/Rly		Article no.:	6ES7 214-1HG40-0XB0
HMI	CPU 1214C DC/DC/DC		Version:	V4.5
	🗕 🏹 CPU 1214C DC/DC/Rly	≡		
	6ES7 214-1HE30-0X		Description:	
	🚺 6ES7 214-1HG31-0X			100 KB; 24VDC power supply with
	🚺 6ES7 214-1HG40-0X			INK/SOURCE, DQ10 x relay and AI2 h-speed counters and 4 pulse
	CPU 1215C AC/DC/Rly			ard; signal board expands on-
PC systems	CPU 1215C DC/DC/DC		board I/O; up to	o 3 communication modules for
	CPU 1215C DC/DC/Rly		for I/O expansion	nication; up to 8 signal modules on; PROFINET IO controller, I-
	CPU 1217C DC/DC/DC		device, transpo	ort protocol TCP/IP, secure Open
	CPU 1212FC DC/DC/DC			cation, S7 communication, Web
	CPU 1212FC DC/DC/Rly		server, OPC UA	: Server DA
	CPU 1214FC DC/DC/DC			

Set the settings for the IP address, name, protection level, etc...

Step 2: Install GSDML file of the display and add display

Install the GSDML file 'GSDML-V2.43-Siebert-SX402-XX-...' of the display. You can find this on the data carrier included in the scope of delivery or on <u>www.siebert-group.com</u>. After installation, the display is listed in the hardware catalog.

In the device catalog, activate the checkbox 'Filter' and navigate to:

'General / Siebert Industrieelektronik GmbH / Siebert SX402'.

Step 3: Switch to project view and add device

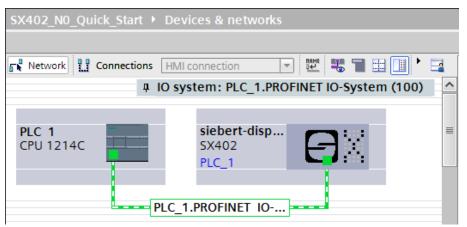
Switch to 'Devices & networks / Network view'.

Drag the 'SX402' head module from the catalog to the 'Devices & networks / network view' area.

SX402_N0_Quick_Start > Devices & networks	Hardware catalog
	Options
💦 Network 🔡 Connections 🛛 HMI connection 💽 📴 🖫 🗐 🕒 🗐 🕨 🛁	
	✓ Catalog
	<search></search>
PLC 1 siebert-disp	Filter Profile: <all></all>
CPU 1214C SX402	✓ ☐ Other field devices
Not assigned	Additional Ethernet devices
	✓ Im PROFINET IO
	Drives
	Encoders
	🕨 📊 Gateway
	🕶 📊 General
	 International Systems
	👻 🛅 Siebert Industrieelektronik GmbH
	Siebert C9302
	Siebert \$102/\$202/\$302
	 Initialized Except
	Siebert SX102/SX202/SX302
	 Sebert SOL3
	▼ ji Siebert SX402
	SX402
	Siebert SX502/SX602/SX702
	Siebert XCPLUS
	▶ [j] I/O
	Image: Sensors

Step 4: Establish connection to the display

In the network view, assign the display to the desired control. The PROFINET connection is then displayed as a dashed green line.



Step 5: Add sub-module to the display and define address range

Now add the 'Simplified line module' from the hardware catalog to the device overview.

This specifies that the display expects the values to be displayed as an ASCII string. The module occupies 32 bytes in the IO area (in this example, addresses 64 to 95).

									_
SX402_N0_Quick_Start Ungrouped devices siebert-dis	play [SX40)2]							
🔐 🔄 siebert-display [SX402] 🔽 🖽 🔛 🔛 🔍 ±		Device overview							
sebertaispipa		Y Module		. Rack	Slot	I address	Q address	Туре	
alise Pit		 siebert-display 		0	0			SX402	
eitu		DAP INTERFACE MC	DULE	0	0 X1			siebert-display	
tiebt		Port 1 - RJ45		0	0 X1 P1			Port 1 - RJ45	
*		Port 2 - RJ45		0	0 X1 P2			Port 2 - RJ45	
		Simplified line module_	_1	0	1		6495	Simplified line mod	ł
				0	2				
				0	3				
				0	4				
				0	5				
				0	Hardy	vare cata	log		
				0	Optio	ns		_	
				0					
	_			0				_	
 ▲ 100% 			_	•	✓ Ca				-
Simplified line module_1 [Simplified line module]					≪ear	ch>		_	
General IO tags System constants Texts					🛃 Filt	er Pro	file: <all:< td=""><td>></td><td></td></all:<>	>	
▶ General					- 🖬	Head mod	ule		
Module parameters					_ [SX402			
I/O addresses Line number parameter					- 🛅	Module			
					E	📄 Display			
Line number 01 or 04							lified line m		
(depending on type):	Line #00					Stan	dard line m	odule	-
					1.10	_		_	
Visualization mode									
Visualization mode value 08									
Visualization mode value 08	-								_

You can change the name specified by the TIA Portal individually.

In the Assembly parameters area, you can define initialization parameters for brightness and text alignment.

Leave the first entry 'Line number parameter' for this Quick Start unchanged at the value line #00.



SX402_N0_Quick_Start → Un	grouped devices 🔸 siebert-disj	ay [SX40	2]							
Re La contra travers										
	- 🗉 🗹 🍊 🗉 🔲 Q. ±		Device overview							
sieberratio	at .	-	Module Module		Rack		I address	Q address	Туре	Article number
N ^{SQ}		-	 siebert-display 		0	0			SX402	SX402N0
erte			 DAP INTERFAC 		0	0 X1			siebert-display	
sieb			Port 1 - RJ4		0	0 X1 P1			Port 1 - RJ45	
			Port 2 - RJ4		0	0 X1 P2			Port 2 - RJ45	
			Simplified line mo	odule_1	0	1		6495	Simplified line mod	
					0	2				
_		•			0	3				
-	EX I				0	4				
-					0	5				
					0	6				
					0	7				
					0	8				
		~			0	9				
< II > 1	100%	🔟 _			0	10				
General IO tags Sys	tem constants Texts									
	terri constants Texts									
General Module parameters	Module parameters									
I/O addresses	Line number parameter									
	Line number 01 or 04	1.22 800								
(depending on type): Line #00										
	Visualization mode									
	- Isaan Ea aon - Ino ao									
	Visualization mode value 08									
	(display attribute):	100% intens	sity							
	Text alignment									
	Alignment mode (left,									
	centered, right):	Left aligned								

Using the 'Visualization mode' parameter, you can select different values for the brightness and/or the flashing pattern.

With the parameter 'Text alignment', you can select different values for the text alignment on the display. Texts that are longer than the display are cut off according to the selected alignment.

Line number parameter		Line numb	ber parameter	
Line number 01 or 04 (depending on type):	Line #00		e number 01 or 04 depending on type):	Line #00
Visualization mode		Visualizati	on mode	
Visualization mode value 08 (display attribute):	100% intensity 25% intensity	Visualizati	ion mode value 08 (display attribute):	100% intensity
Text alignment	50% intensity 100% intensity	Text align	ment	
Alignment mode (left, centered, right):	Blinking 100%/50% Blinking 100%/25% Blinking 100%/off Blinking 50%/25% Blinking 50%/off	Al	lignment mode (left, centered, right):	Left aligned Left aligned Centered
	Blinking 25%/off			Right aligned



Step 6: Assign a PROFINET device name to the display

Now assign an IP address and a device name to the display. To do this, for example, call up the context menu of the Siebert display in the device view and click on 'Assign device name'.

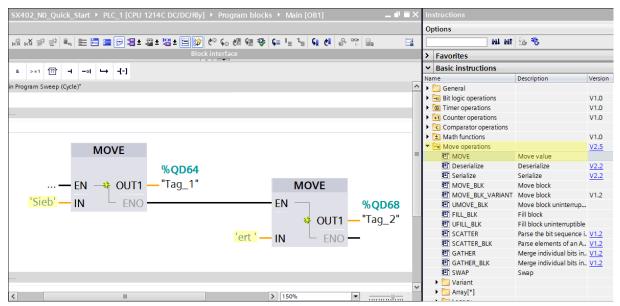
After the data has been successfully transferred to the display, the configuration is displayed in the engineering tool as follows.

Assign PROFINET device	e name.								×
-		Configured F	ROFIN	NET device					
		PROFINET device		siebert-display			-		
		Online acces Type of the PG/PC in PG/PC in		Ų_ PN/IE ₩ Intel(R) 82574L Gig	abit N	etwork Conn	• ection •		
		Device filter							
		🗹 Only show	devices of	f the same type					
		Only show	devices w	ith bad parameter settin	gs				
		Only show	devices w	ithout names					
	Accessible dev	vices in the network:							
	IP address	MAC address	Device	PROFINET device nam	e	Status			
	0.0.0.0	40-ED-98-B0-25-1	SX402	siebert-display		OK			
🔤 Flash LED									
	<			1111					>
					Upda	ate list	Ass	sign name	



Step 7: Define text

To send a value to display, you can, for example, create a function chart with 'MOVE' instructions. In the following screenshot, the text 'Siebert' is sent. Two 'MOVE' blocks are required for this.



Step 8: Load hardware configuration and program into the control system

After switching on the display, the start text 'SX402' is displayed.

As soon as the configuration and the program module are loaded into the control, the control connects to the display via PROFINET and the display shows the text 'Siebert'.

5 Display messages

The data traffic via PROFINET is indicated with status LEDs on both RJ45 sockets. The meaning is the same for both ports.

LED green	LED yellow	Meaning
off	off	 no power supply
		 no network connection
on	ons	 network connection exists
on	flashing	 initialization phase
	0	 application relation is set up
on	on	 application relation is established

If the connection can not be established or faults occur during operation the display shows error messages. Possible causes are IP problems due to incorrect network parameters, multiple device names, command of undefined properties or other fieldbus errors.