



-power in control



DATA SHEET



Advanced Graphical Interface, AGI 400 series

- For dedicated HMI solutions
- Advanced programming software
- Designed for marine and harsh environments
- Available in 7", 10", 15" and 21"



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1. General information

1.1 Application and advantages

1.1.1 Application

A comprehensive HMI solution, DEIF's AGI 400 series connects to all DEIF Multi-line controllers, as well as third party electronics, via standard defined communication protocols, featuring functionalities which eliminate the need for other instruments, thus saving you both space and wiring.

The AGI 400 series is intended for visualisation and active control in multiple applications managed on board maritime vessels or platforms, where it provides full graphical overviews and user-friendly touch screen control with a quality display that is easily readable even at sharp angles. Monitor or control multiple setups simultaneously, or share data via Ethernet connections, effectively enabling the DEIF HMI to be used as a small SCADA system. AGI 400 supports multiple user levels and LAN clients, ensuring user control in several levels.

Application examples

- **Energy monitoring system - SEMS**
Monitor, track and store your energy production and consumption to optimise and implement the energy awareness on board the vessel.
- **Alarm handling and monitoring**
Use the AGI to monitor alarms. View historical alarm data and acknowledge active alarms.
- **Power management systems - control and supervision**
When you have multiple gensets, bus tie breakers, and so on, and you need to have the overall overview, the AGI can communicate with the controllers to create this overview and let you manage the PMS from one point.
- **Graphical interface - mechanical and electrical systems**
Interface with mechanical and electrical equipment to have a system overview locally. Trend measured values to monitor operation performance or when making fault findings on the equipment.



All systems mentioned above must comply with the guidelines of the classification societies.

1.1.2 Advantages

Hardware

AGI 407, AGI 410:

- TFT colour display, LED backlight 500cd/m²
- 24bit colour resolution
- Capacitive touch screen, supporting multi-touch widgets
- 3 Ethernet ports with individual MAC address with bridge option
- 2 USB2.0 host ports
- RS-232, RS-422 and RS-485 serial communication
- SD card slot
- Optional plug-in module for CANopen/J1939 communication
- Slim design. Mounting depth less than 60 mm

- Display backlight dimmable to 0 %
- LED backlight timeout option, for extensive LED durability

AGI 415, AGI 421:

- TFT colour display, LED backlight 300cd/m2
- 24bit colour resolution
- Capacitive touch screen, supporting multi-touch widgets
- 3 Ethernet ports with individual MAC address with bridge option
- 2 USB2.0 host ports
- RS-232, RS-422 and RS-485 serial communication
- SD card slot
- Optional plug-in module for CANopen/J1939 communication
- Slim design. Mounting depth less than 50 mm
- Display backlight dimmable to 0 %
- LED backlight timeout option, for extensive LED durability

Software

The AGI 400 series uses Linux RT operating system, and the platform has been designed to run the DEIF AGI software.

- Full vector graphic support. Native support of SVG graphic objects. Transparency and alpha blending.
- Full object dynamics: Control visibility and transparency, move, resize and rotate any object on screen. Change properties of basic and complex objects.
- TrueType fonts.
- Multi-language/alphabets and applications. Easily create and manage your applications in multiple languages to meet global requirements.
- AGI Creator supports easy third party translations and help to reduce development and maintenance costs of the application, with its built-in language tools.
- Data display in numerical, text, bar graph, analogue gauges and graphic image formats.
- Rich set of state-of-the-art HMI features: Data acquisition, alarm handling, scheduler and timed actions (daily and weekly schedulers, exception dates), recipes, users and passwords, email and RSS feeds.
- Multiple drivers communication capability, see separate section in this document.
- Mobile and tablet compatible WEB server embedded, for easy mobile platform implementation.
- Remote monitoring and control. Client-server functionality. Mobile clients supported.
- Offline simulation with AGI Creator.
- Supports powerful Codesys PLC runtime for automating HMI applications.
- Rich gallery of industrial standardiser symbols and objects.
- Embedded own user gallery workspace for fast application development.
- PDF reader for on-screen user guide reading.

Application development support

- DEIF specific application templates, free of charge.
- DEIF importable communication setup files, compatible with a DEIF controller.
- DEIF graphics included, covering over 4000 DEIF specific graphical elements.
- DEIF templates include a fully customisable menu structure.
- AGI system setting, included in templates.

2. Functionality

2.1 Funtionality

2.1.1 Remote access

AGI 400 series offer the following option to connect and control remotely:

Remote options available	
AGI Client - an MS Windows parallel client	YES (max. 4)
AGI WEB - tablet and smartphone access	YES, via configurable AGI web server
VNC server	YES
Email client with SSL	YES
FTP server	YES

2.1.2 Software functionality

The table below shows the software functionality.

User functionality	
Screen image orientation	Landscape 0°, portrait 90°, landscape 180° and portrait 270°
Multiple protocols	YES, please see protocol section
Data transfer between protocols	YES
RTC with NTP synchronisation	YES, with internal maintenance-free battery backup
Time scheduled tasks	YES
LED backlight off with custom timeout	YES
Screen saver with custom timeout	YES
Live trending curves	YES
Alarm handling	YES
Trend data logging	YES
Historical data logging and export to SD card/USB	YES (export trending)
Logging events (audit trails)	YES
Retentive memory	YES
Recipe handling	YES
Internal buzzer	YES
Industrial widgets	YES
Custom widget library	YES
Printer and PDF reports	YES
PDF reader	YES
User/access management	YES, local and client/remote
Multi-touch support	YES, swipe and pinch zoom
IP camera support	YES, monitor and control
HTML 5 webbrowser support	YES, based on web kit
TrueType fonts	YES, support multiple alphabets
SVG images	YES
Multi-language	YES
Object dynamics	YES, visibility, opacity, position, size, rotation
JavaScripting	YES
CODESYS runtime add on	YES, V3.5 (license needed to enable)

AGI Creator - application designer software	
Update project via USB memory	YES
Programming and updating over LAN	YES
Password protection of projects	YES
Upload from AGI and re-work project	YES
Simulation online/offline	YES
Import/Export TAG list	YES
Import/Export alarm list	YES
Converting existing application to newest version	YES
Language list	YES, import/export to spreadsheet file for translation

2.1.3 Maximum resources

Maximum resources available	
Number of pages	1000
Number of basic widgets/objects	2000 x page
Number of tags	10000
Number of dialogue pages	50 (max. 5 can be opened simultaneously)
Number of object of any types in one page	2000
Number of recipes	32
Number of parameter set for a recipe	1000
Number of elements for a recipe	1000
Number of user groups	50
Number of users	50
Number of concurrent clients	4
Number of schedulers	30
Number of alarms	4000 (10000 AGI PC)
Number of template pages	50
Number of actions programmable per button	32
Number of trend buffers	30
Number of curves per trend widget	5
Number of curves per page	10
Number of samples per trend buffer/block	200000
Number of trend buffer samples for a project	1200000 (2400000 AGI PC)
Number of trend buffer tags	200
Number of messages in a message field	1024
Number of languages	12
Number of events per buffer	2048
Number of event buffers	4
Number of maximum data transfers	1000
JavaScript file size per page	16 Kb
Retentive memory	16 Kb
Size of project on disk	60 Mb
Max. protocols	4

2.1.4 Communication protocols

The below table shows the supported communication protocols.

Protocol	Compatible hardware	
Modbus RTU	Generic	
Modbus RTU server	Generic	
Modbus TCP	Generic	
Modbus TCP server	Generic	
OPC UA client	Generic	
OPC UA server	Generic (TAGS and variables)	
CANopen HMI	GE Fanuc Moeller	SAM GPM500 ISaGraf
CODESYS V3	Codesys V3 DEIF license is required	
CAN J1939	DEIF CANopen module required (read only)	
NMEA 0183	Generic	
Ethernet/IP CIP	Logix 5000 Omron Sysmac Micro800	
Allan Bradley DF1	PLC3 PLC5/10/12/15/25 PLC5/40/40L PLC5/60/60L SLC500 fixed I/O	SLC500 Modular I/O Micrologix 1000 Micrologix 1500 Ultra5000
Allan Bradley DH 485	SLC500 fixed I/O SLC500 Modular I/O	Micrologix 1000 Micrologix 1500
Allan Bradley ENET	PLC 5 vie NET-ENI PLC5/10-25	SLC/Micrologix/NET-ENI SLC500 Modular I/O
Beckhoff ADS	BC/BX	PC/CX
Mitsubishi FX ETH	FX1N FX2N	FX3G FX3U
Mitsubishi FX SER	FX FX0/FX0S FX0N FX1N	FX1S FX2N FX3G FX3U
Mitsubishi Q/L ETH	Q00J/Q00/Q01 Q02/Q02H/Q06H/Q12H/Q25H QnU L02CPU	L26CPU-BT Q170M-PLC CPU Q170M-Motion CPU
Omron FINS ETH	CJx/CS1x/CP1x	
Omron FINS SER	CJx/CS1x/CP1x	

Protocol	Compatible hardware	
Siemens Simatic S7 ETH	S7-300 S7-313/314/315 S7-412 S7-413 S7-414 S7-416 S7-315-2 DP S7-318-2 DP	S7-417 S7-319-3PN DP S7-1200 CPU 1211 / 1212 S7-1200 CPU 1214 / 1215 S7-1500 CPU 15xx LOGO! 0BA7 ET200S IM151
Siemens Simatic S7 MPI	S7-300 S7-313/314/315 S7-412 S7-413 S7-414	S7-416 S7-315-2 DP S7-318-2 DP S7-417 S7-319-3PN DP
Siemens Simatic S7 PPI	S7-212 S7-214 S7-215/216 S7-221	S7-222 S7-224/226 S7-226XM

3. Technical information

3.1 Specifications

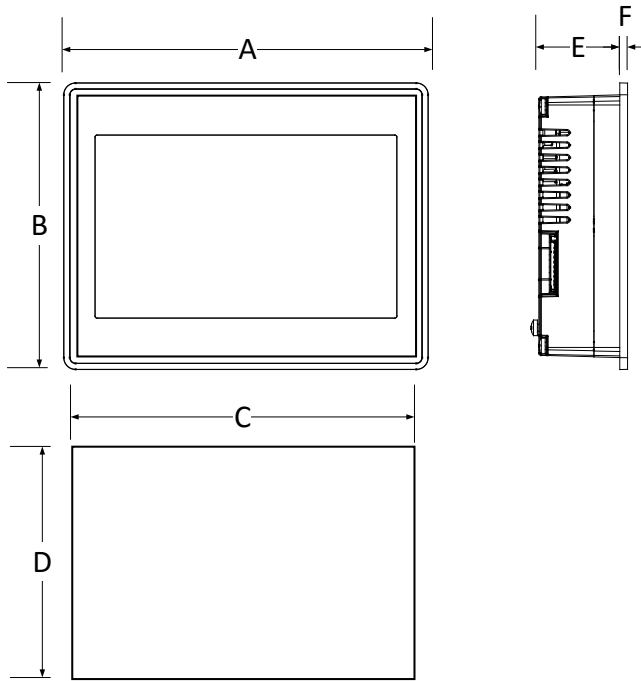
3.1.1 Product data and dimensions, AGI 407

Display	
Type	TFT
Resolution	800 × 480 pixel
Active display area	7" diagonal
Aspect ratio H/V	16:9
Colours	24 bit (16 million)
Viewing angle (H/V)	170/170
Backlight	LED
Brightness	500 Cd/m ² typ.
Backlight dimming 0 to 100 %	Yes
Backlight timeout	Yes, customisable
Backlight service time	50,000 h or more*
System resources	
Operating system	Linux RT
CPU	ARM Cortex-A9 iMX.6 Dual Core 1 GHz
RAM	1 GB DDR
User memory	4 GB Flash/64 KB FRAM
Operator interface	
Touch screen	Projected capacitive, multi-touch
Interface	
Ethernet	2 pcs. 10/100 Mbit, 1 pcs. 10/100/1000 Mbit
USB	2 × USB 2.0 (hosts) - max. 500 mA
Serial	RS-232, RS-485, RS-422, software configurable
Expansion slot	2 optional plug-ins
Memory card	SD card slot
Ratings	
Power supply voltage	24 V DC (10 to 32 V DC)
Current consumption	0.7 A at 24 V DC (max.)
Fuse	Automatic, self-resettable

Weight	Approximately 1.3 kg (un-boxed)
Battery	Rechargeable Lithium battery, not user-replaceable
Environmental conditions	
Operating temperature	-20 °C to +60 °C (vertical installation)
Storage temperature	-30 °C to +70 °C
Operating and storage humidity	95 % RH Condensation IEC 60068-2-30 Db (Cyclic)
Vibration	IEC 60068-2-6 and IACS UR E10. 2 to 13.2 Hz ±1 mm 13.2 to 100 Hz 0.7 g
Shock	IEC 60068-2-27, test Ea 50 g 11 ms
Protection class	IP66 (front) IP20 (rear) According to IEC/EN 60529
Dimensions	
Faceplate A × B	187 × 147 mm (7.36 × 5.79")
Cutout C × D	176 × 136 mm (6.93 × 5.35")
Depth E + F	47 + 8 mm (1.85 + 0.31")
Approvals	
CE	EN 61000-6-4 Emission, installation in industrial environments EN 61000-6-2 Immunity, installation in industrial environments EN 60945-2002 Maritime navigation and radio communication equipment and systems
DNV GL	IEC 60092-504 Electrical Installations in Ships - Part 504: Special features - Control and Instrumentation (IACS UR E10 Bridge and deck zone) IEC 60533 Electrical and electronic installations in ships – electromagnetic compatibility (IACS UR E10 Bridge and deck zone) DNV GL Type Approval Certificate
UL	UL508 Listed (Pending) Haz. Loc. Class I, Division 2, Groups A, B, C and D (Pending)
ATEX	Class 2 (Pending)
IECEX	Class 2 (Pending)
Lloyds Register	Pending
EU RO Mutual Recognition	Pending
Cyber security test conducted towards compliance with the draft IEC 62443 series	

* Time of continuous operation until the brightness of the backlight reaches 50 % of the rated value when the surrounding air temperature is 25 °C. Extended use in environments where the surrounding air temperature is 40 °C or higher may degrade backlight quality/reliability/durability.

Dimensions



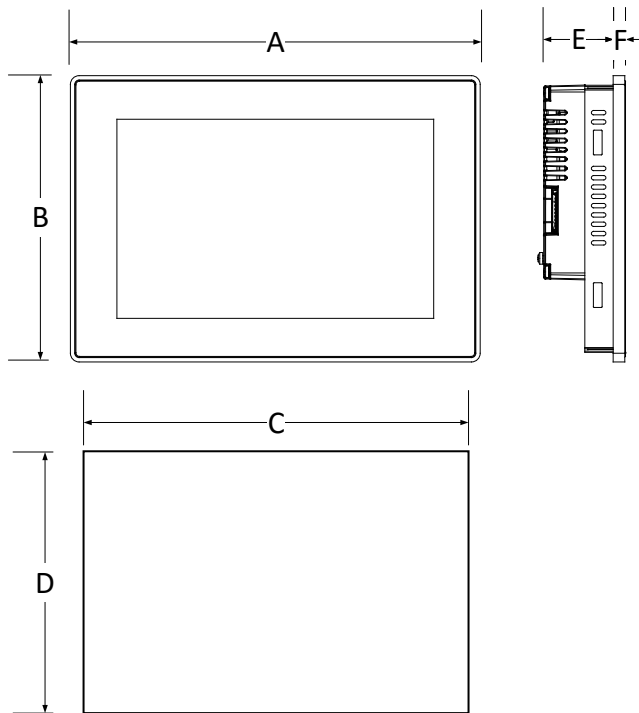
3.1.2 Product data and dimensions, AGI 410

Display	
Type	TFT
Resolution	1280 × 800 pixel
Active display area	10.1" diagonal
Colours	24 bit (16 million)
Aspect ratio H/V	16:9
Viewing angle (H/V)	170/170
Backlight	LED
Brightness	500 Cd/m ² typ.
Backlight dimming 0 to 100 %	Yes
Backlight timeout	Yes, customisable
Backlight service time	50,000 h or more*
System resources	
Operating system	Linux RT
CPU	ARM Cortex-A9 IMX.6 Dual Core 1 GHz
RAM	1 GB DDR
User memory	4 GB Flash/64 KB FRAM
Operator interface	
Touch screen	Projected capacitive, multi-touch
Interface	
Ethernet	2 pcs. 10/100 Mbit, 1 pcs. 10/100/1000 Mbit
USB	2 × USB 2.0 (hosts) - max. 500 mA
Serial	RS-232, RS-485, RS-422, software configurable
Expansion slot	2 optional plug-ins
Memory card	SD card slot
Ratings	
Power supply voltage	24 V DC (10 to 32 V DC)
Current consumption	1 A at 24 V DC (max.)
Fuse	Automatic, self-resettable
Weight	Approximately 1.7 kg (un-boxed)
Battery	Rechargeable Lithium battery, not user-replaceable

Environmental conditions	
Operating temperature	-20 °C to +60 °C (vertical installation)
Storage temperature	-30 °C to +70 °C
Operating and storage humidity	95 % RH Condensation IEC 60068-2-30 Db (Cyclic)
Vibration	IEC 60068-2-6 and IACS UR E10 2 to 13.2 Hz ±1 mm 13.2 to 100 Hz 0.7 g
Shock	IEC 60068-2-27, test Ea 50 g 11 ms
Protection class	IP66 (front) IP20 (rear) According to IEC/EN 60529
Dimensions	
Faceplate A × B	282 × 197 mm (11.10 × 7.80")
Cutout C × D	271 × 186 mm (10.67 × 7.32")
Depth E + F	56 + 8 mm (2.20 + 0.33")
Approvals	
CE	EN 61000-6-4 Emission, installation in industrial environments EN 61000-6-2 Immunity, installation in industrial environments EN 60945-2002 Maritime navigation and radio communication equipment and systems
DNV GL	IEC 60092-504 Electrical Installations in Ships - Part 504: Special features - Control and Instrumentation (IACS UR E10 Bridge and deck zone) IEC 60533 Electrical and electronic installations in ships – electromagnetic compatibility (IACS UR E10 Bridge and deck zone) DNV GL Type Approval Certificate
UL	UL508 Listed (Pending) Haz. Loc. Class I, Division 2, Groups A, B, C and D (Pending)
ATEX	Class 2 (Pending)
IECEX	Class 2 (Pending)
Lloyds Register	Pending
EU RO Mutual Recognition	Pending
Cyber security test conducted towards compliance with the draft IEC 62443 series	

* Time of continuous operation until the brightness of the backlight reaches 50 % of the rated value when the surrounding air temperature is 25 °C. Extended use in environments where the surrounding air temperature is 40 °C or higher may degrade backlight quality/reliability/durability.

Dimensions



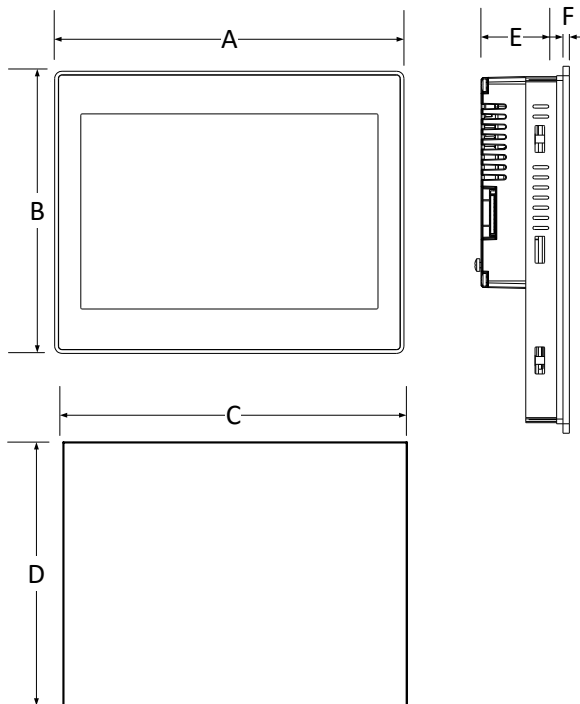
3.1.3 Product data and dimensions, AGI 415

Display	
Type	TFT
Resolution	1366 × 768 pixel
Active display area	15.6" diagonal
Aspect ratio H/V	16:9
Colours	24 bit (16 million)
Viewing angle (H/V)	160/160
Backlight	LED
Brightness	300 Cd/m ² typ.
Backlight dimming 0 to 100 %	Yes
Backlight timeout	Yes, customisable
Backlight service time	50,000 h or more*
System resources	
Operating system	Linux RT
CPU	ARM Cortex-A9 IMX.6 Quad Core 1 GHz
RAM	2 GB DDR
User memory	8 GB Flash/64 KB FRAM
Operator interface	
Touch screen	Projected capacitive, multi-touch
Interface	
Ethernet	2 pcs. 10/100 Mbit, 1 pcs. 10/100/1000 Mbit
USB	2 × USB 2.0 (hosts) - max. 500 mA
Serial	RS-232, RS-485, RS-422, software configurable
Expansion slot	2 optional plug-ins
Memory card	SD card slot
Ratings	
Power supply voltage	24 V DC (10 to 32 V DC)
Current consumption	1.2 A at 24 V DC (max.)
Fuse	Automatic, self-resettable
Weight	Approximately 4.1 kg (un-boxed)
Battery	Rechargeable Lithium battery, not user-replaceable

Environmental conditions	
Operating temperature	-20 °C to +60 °C (vertical installation)
Storage temperature	-30 °C to +70 °C
Operating and storage humidity	95 % RH Condensation IEC 60068-2-30 Db (Cyclic)
Vibration	IEC 60068-2-6 and IACS UR E10 2 to 13.2 Hz ±1 mm 13.2 to 100 Hz 0.7 g
Shock	IEC 60068-2-27, test Ea 50 g 11 ms
Protection class	IP66 (front) IP20 (rear) According to IEC/EN 60529
Dimensions	
Faceplate A × B	422 × 267 mm (16.6 × 10.5")
Cutout C × D	411 × 256 mm (16.18 × 10")
Depth E + F	56 + 8 mm (2.20 + 0.33")
Approvals	
CE	EN 61000-6-4 Emission, installation in industrial environments EN 61000-6-2 Immunity, installation in industrial environments EN 60945-2002 Maritime navigation and radio communication equipment and systems
DNV GL	IEC 60092-504 Electrical Installations in Ships - Part 504: Special features - Control and Instrumentation (IACS UR E10 Bridge and deck zone) IEC 60533 Electrical and electronic installations in ships – electromagnetic compatibility (IACS UR E10 Bridge and deck zone) DNV GL Type Approval Certificate
UL	UL508 Listed (Pending) Haz. Loc. Class I, Division 2, Groups A, B, C and D (Pending)
ATEX	Class 2 (Pending)
IECEX	Class 2 (Pending)
Lloyds Register	Pending
EU RO Mutual Recognition	Pending
Cyber security test conducted towards compliance with the draft IEC 62443 series	

* Time of continuous operation until the brightness of the backlight reaches 50 % of the rated value when the surrounding air temperature is 25 °C. Extended use in environments where the surrounding air temperature is 40 °C or higher may degrade backlight quality/reliability/durability.

Dimensions



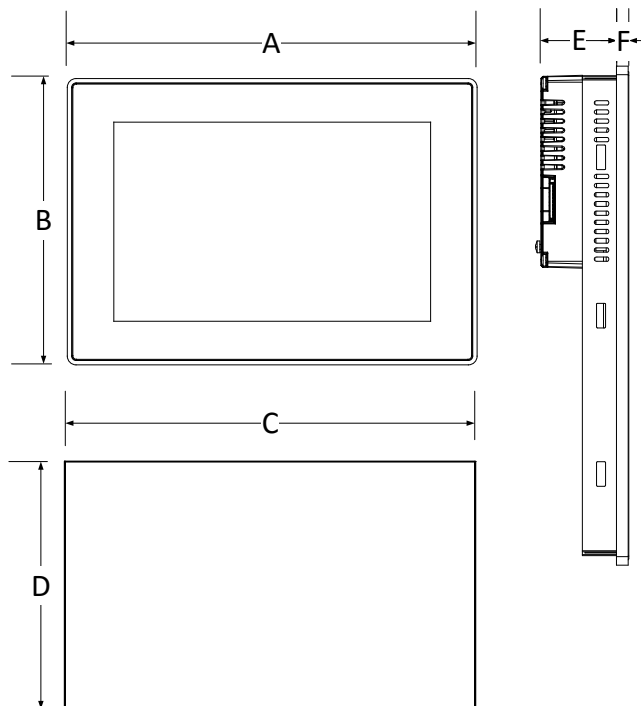
3.1.4 Product data and dimensions, AGI 421

Display	
Type	TFT
Resolution	1920 × 1080 pixel
Active display area	21.5" diagonal
Aspect ratio H/V	16:9
Colours	24 bit (16 million)
Viewing angle (H/V)	189/189
Backlight	LED
Brightness	300 Cd/m ² typ.
Backlight dimming 0 to 100 %	Yes
Backlight timeout	Yes, customisable
Backlight service time	50,000 h or more*
System resources	
Operating system	Linux RT
CPU	ARM Cortex-A9 IMX.6 Quad Core 1 GHz
RAM	2 GB DDR
User memory	8 GB Flash/64 KB FRAM
Operator interface	
Touch screen	Projected capacitive, multi-touch
Interface	
Ethernet	2 pcs. 10/100 Mbit, 1 pcs. 10/100/1000 Mbit
USB	2 × USB 2.0 (hosts) - max. 500 mA
Serial	RS-232, RS-485, RS-422, software configurable
Expansion slot	2 optional plug-ins
Memory card	SD card slot
Ratings	
Power supply voltage	24 V DC (10 to 32 V DC)
Current consumption	1.7 A at 24 V DC (max.)
Fuse	Automatic, self-resettable
Weight	Approximately 6.1 kg (un-boxed)
Battery	Rechargeable Lithium battery, not user-replaceable

Environmental conditions	
Operating temperature	-20 °C to +60 °C (vertical installation)
Storage temperature	-30 °C to +70 °C
Operating and storage humidity	95 % RH Condensation IEC 60068-2-30 Db (Cyclic)
Vibration	IEC 60068-2-6 and IACS UR E10 2 to 13.2 Hz ±1 mm 13.2 to 100 Hz 0.7 g
Shock	IEC 60068-2-27, test Ea 50 g 11 ms
Protection class	IP66 (front) IP20 (rear) According to IEC/EN 60529
Dimensions	
Faceplate A × B	552 × 347 mm (21.7 × 13.66")
Cutout C × D	541 × 336 mm (21.3 × 13.23")
Depth E + F	56 + 8 mm (2.20 + 0.33")
Approvals	
CE	EN 61000-6-4 Emission, installation in industrial environments EN 61000-6-2 Immunity, installation in industrial environments EN 60945-2002 Maritime navigation and radio communication equipment and systems
DNV GL	IEC 60092-504 Electrical Installations in Ships - Part 504: Special features - Control and Instrumentation (IACS UR E10 Bridge and deck zone) IEC 60533 Electrical and electronic installations in ships – electromagnetic compatibility (IACS UR E10 Bridge and deck zone) DNV GL Type Approval Certificate
UL	UL508 Listed (Pending) Haz. Loc. Class I, Division 2, Groups A, B, C and D (Pending)
ATEX	Class 2 (Pending)
IECEX	Class 2 (Pending)
Lloyds Register	Pending
EU RO Mutual Recognition	Pending
Cyber security test conducted towards compliance with the draft IEC 62443 series	

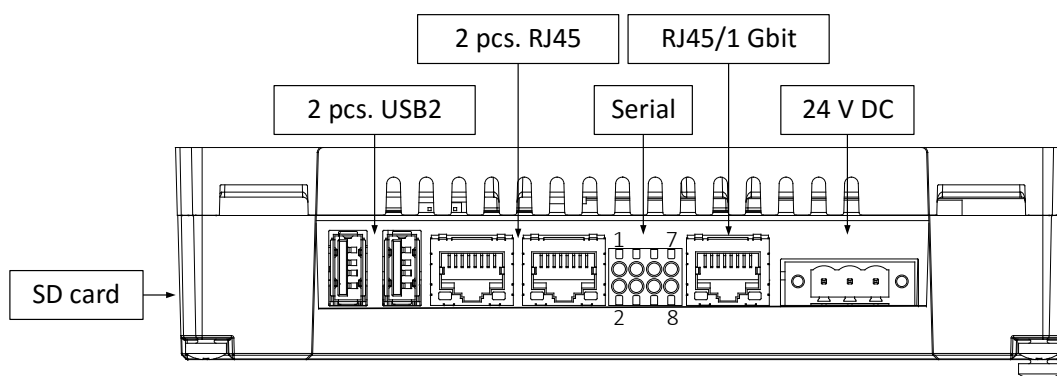
* Time of continuous operation until the brightness of the backlight reaches 50 % of the rated value when the surrounding air temperature is 25 °C. Extended use in environments where the surrounding air temperature is 40 °C or higher may degrade backlight quality/reliability/durability.

Dimensions



3.1.5 Connections

Below you will find the connection location, valid for all screen sizes.



4. Ordering information

4.1 Order specifications and disclaimer

4.1.1 Order specifications

Touch display

Item no.	Type
2912460020.01	AGI 407
2912460020.02	AGI 410
2912460020.03	AGI 415
2912460020.04	AGI 421
2912460020.05	AGI PC Runtime, MS Windows® Runtime license

Accessories and software licences

Item no.	Type
2912990120.01	EXM CAN CANopen extension module
2912990120.02	AGI Creator licence (includes 10 activations)
2912990120.05	Codesys PLC runtime activation license
2912990120.08	Table stand small, for 7" and 10" (set of 5 pcs.)
2912990120.09	Table stand large, for 15" and 21" (set of 2 pcs.)
2912990120.10	EXM AGIO-06 - digital I/O extension

4.1.2 Disclaimer

DEIF A/S reserves the right to change any of the contents of this document without prior notice.

The English version of this document always contains the most recent and up-to-date information about the product. DEIF does not take responsibility for the accuracy of translations, and translations might not be updated at the same time as the English document. If there is a discrepancy, the English version prevails.