HMI Controllers

Magelis™ XBT GC HMI Controllers
Magelis™ XBT GT/GK Standard Advanced Panels with control

Magelis XBT GC HMI Controllers

XBT GT Advanced Panels

XBT GK Advanced Panels

Module XBT ZG CANM

HMI function: Magelis XBT GT/GK Advanced Panels
+
Control function: XBT ZG CANM CANopen master module

Presentation

Magelis HMI Controllers are part of Schneider's Flexible Machine Control concept, a key element in MachineStruxure™.

The Magelis HMI Controller offer brings together Human Machine Interface and control functions within in a single product. This reduces the amount of equipment required and the associated costs throughout the life cycle of the machine.

This offer features two product ranges:
- The compact range: Magelis XBT GC HMI Controllers
- The modular range: Magelis XBT GT/GK Standard Advanced Panels + XBT ZC CANM CANopen module

Magelis XBT GC HMI Controllers
(compact range)

The compact design of Magelis XBT GC HMI Controllers optimizes setup.

This range comprises six touch screen terminals, with the following, depending on the model:
- 3.8” monochrome screen, 12 integrated inputs/6 integrated outputs (sink or source)
- 5.7” monochrome or colour screen, 16 integrated inputs/16 integrated outputs (sink or source)
- A wide choice of communication interfaces (USB, serial link, CANopen and Ethernet)

In order to adapt easily to different configurations, it is possible to add digital or analog I/O expansion modules at the rear of the Controller.

Magelis XBT GT/GK Standard Advanced Panels + XBT ZC CANM CANopen module (modular range)

This range is made up of the complete Magelis XBT GT or Magelis XBT GK Standard Advanced Panels offers combined with a control part using the XBT ZG CANM CANopen module. During operation, this module controls the I/O and the peripherals distributed via the CANopen bus.

The combination with Magelis XBT GT or Magelis XBT GK Standard Advanced Panels gives a wide choice of screen sizes and types of data entry, depending on the model:
- 17 XBT GT touch screen terminals:
  - 5.7” monochrome or colour screens
  - 7.5”, 10.4”, 12.1” and 15” colour screens
- 3 XBT GK terminals with keypad and/or touch screen:
  - 5.7” monochrome or colour screens
  - 10.4” colour screens

This combination also offers numerous Standard Advanced functions such as video, data management (sharing of data, log), etc.

Operation

With their fast, multitasking processors, all the HMI Controllers combine HMI and control functions and share the same screen and communication features and dimensions.

The internal memory can be freely used by both the HMI function and the control function.
Processing is split 75% on the HMI part and 25% on the control part. The processing can be configured for 3 tasks, including 1 master task.

XBT GC HMI Controllers also share the same I/O modules, the same Telefast pre-wired system and the same peripherals on the CANopen bus as the M238 logic controller.

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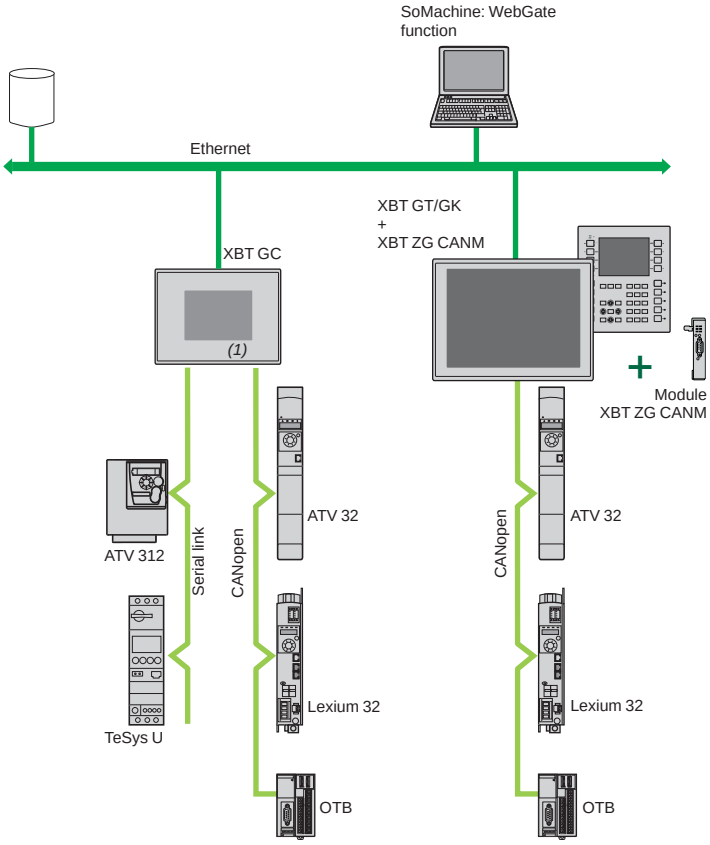
SoMachine

Vijeo Designer (included in SoMachine)

Configuration

Magelis XBT GC HMI Controllers and Magelis XBT GT/GK Standard Advanced Panels are configured using Schneider Electric's unique machine automation software, SoMachine.
This software, combining both HMI and control functions, is based on Vijeo Designer software in the Windows XP Professional and Windows 7 Professional 32/64-bit environment.
SoMachine software boasts an advanced user interface with many configurable windows, enabling unique projects to be developed quickly and easily.
See page 36300/2.

Communication



(1) With XBT ZGC CAN CANopen master module

Examples of communication architectures

Depending on the model, Magelis HMI Controllers and Magelis XBT GT/GK Standard Advanced Panels communicate with automation devices via 1 or 2 integrated serial links using the following communication protocols:
- Schneider Electric (Uni-TE, Modbus)
- Third-party: Mitsubishi Electric, Omron, Allen-Bradley and Siemens

Depending on the model, they can be connected to Ethernet TCP/IP networks with the Modbus TCP protocol or a third-party protocol, and can be used as the CANopen master to control all the peripherals which can be connected on this bus.

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Magelis™ XBT GC HMI Controllers
Magelis™ XBT GT/GK Standard Advanced Panels with control

Functions

Magelis HMI Controllers are part of Schneider's Flexible Machine Control concept, a key element in MachineStruxure™.

Magelis XBT GC HMI Controllers and Magelis XBT GT/GK Standard Advanced Panels offer the following HMI functions:
- Display of animated mimics with 8 types of animation (pressing the touch panel, colour changes, filling, movement, rotation, size, visibility and value display)
- Control, modification of numeric and alphanumeric values
- Display of current date and time
- Real-time curves and trend curves with log
- Alarm display, alarm log and management of alarm groups
- Multi-window management
- Page calls initiated by the operator
- Multilingual application management (10 languages simultaneously)
- Recipe management
- Data processing via Java script
- Application support and USB key external memory logs
- Management of serial printers and barcode readers

Magelis XBT GC HMI Controllers and Magelis XBT GT/GK Standard Advanced Panels *(1)* have been designed for Transparent Ready architectures and equipment (combination of Web and Ethernet TCP/IP technologies).

With the WebGate function, it is possible to control or carry out maintenance remotely.

Magelis XBT GC HMI Controllers and Magelis XBT GT/GK Standard Advanced Panels offer the following functions for control:
- Execution of programmed logic sequences with the five IEC 1131-2 languages (LD, ST, FBD, SFC, IL)
- Management of equipment on the CANopen fieldbus

In addition to these functions, Magelis XBT GC HMI Controllers manage:
- Integrated and remote I/O on expansion modules
- Remote analog I/O on expansion modules

(1) Depending on model.

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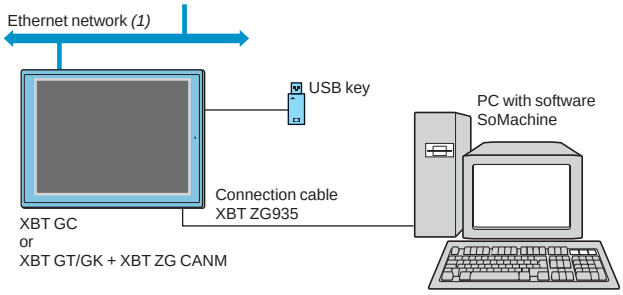
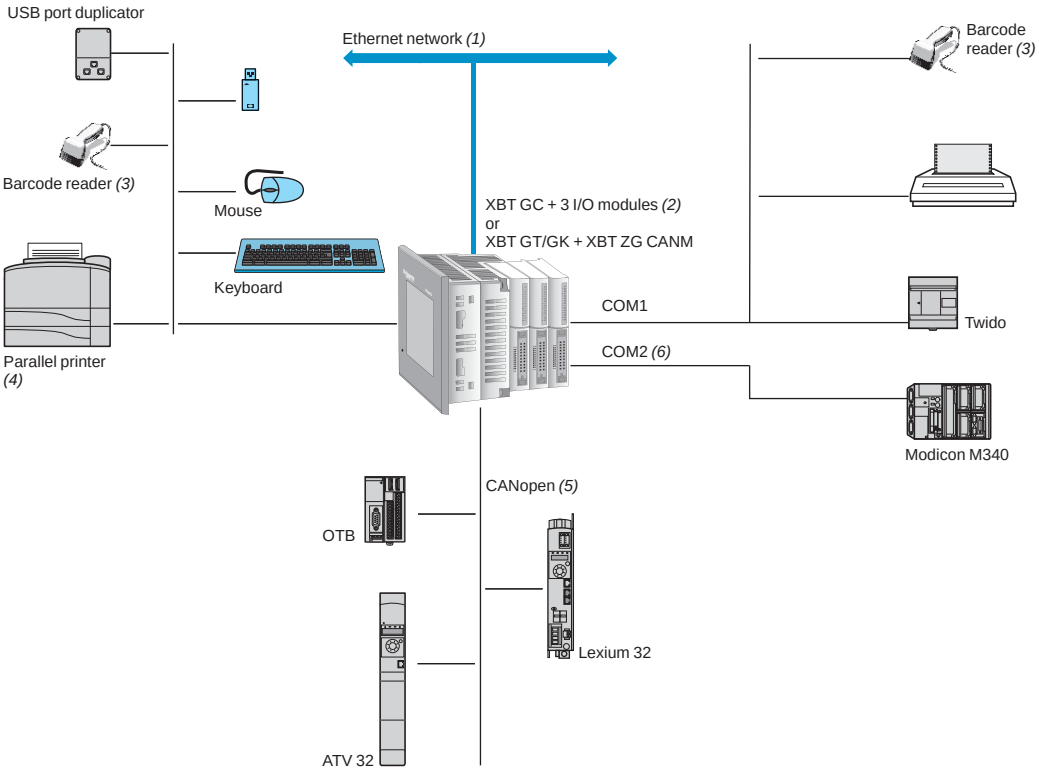
Operating modes for the terminals

The illustrations below show which equipment can be connected to XBT terminals based on their two operating modes.

Edit mode

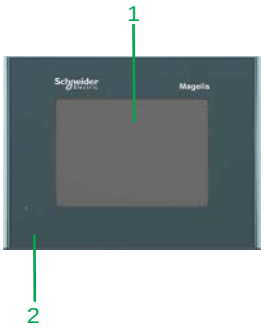


Run mode



(1) With XBT GC 2230T/U, XBT GT●●30, XBT GT●●40, XBT GK●●30
(2) With XBT GC●●●●T/U, maximum 2/3 I/O modules according to model
(3) Should be a DataLogic Gryphon barcode reader
(4) Should be a Hewlett Packard printer via a USB/PIO converter
(5) Requires:
- for XBT GC: XBT ZGC CAN CANopen master module
- for XBT GT/GK: XBT ZG CANM CANopen master module
(6) With XBT GT/GK

HMI Controllers
Magelis™ XBT GC HMI Controllers with 3.8” screen

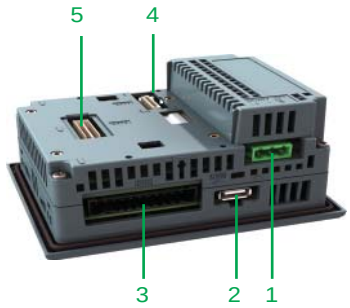


Description

Magelis XBT GC1100T and XBT GC1100U HMI Controllers

The front panel comprises:

1 A touch screen for displaying mimics (3.8” amber or red mode monochrome)
2 A control indicator showing the terminal's operating mode



The rear panel comprises:

1 A removable screw terminal block for 24 V ⎓ power supply
2 A type A USB master connector for peripheral connection and application transfer
3 A removable terminal block for 12 digital inputs and 6 digital outputs
4 An interface for connecting M238 logic controller I/O expansion modules
5 An interface for connecting the CANopen bus master module (see page 43645/3)
6 Digital (TM2 D●●) or analog (TM2 A●●) I/O expansion module (to be ordered separately, see pages 43647/9 and 43647/10)
It is possible to combine a maximum of two I/O expansion modules, depending on the module type (see page 43647/11).

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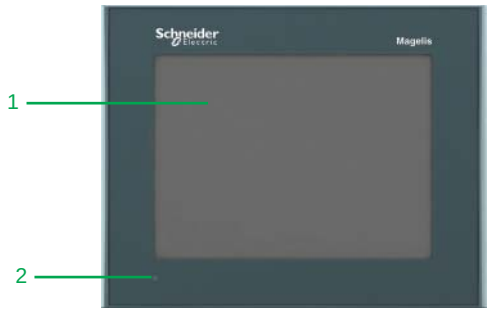
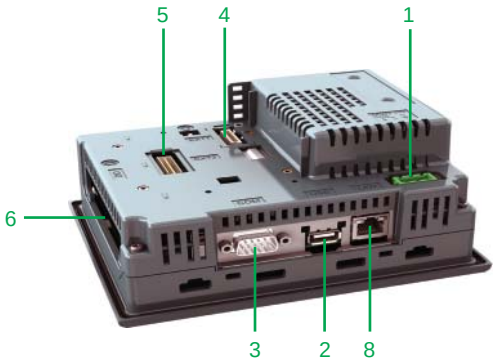


Description

Magelis XBT GC2●20 and XBT GC2●30 HMI Controllers

The front panel comprises:

1 A touch screen for displaying mimics (5.7” monochrome or colour)
2 A multicolour indicator (green, orange and red) showing the terminal's operating mode

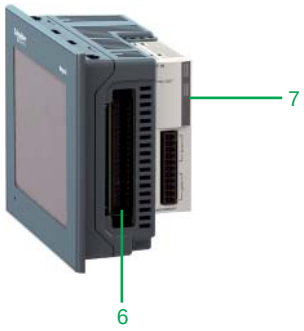


The rear panel comprises:

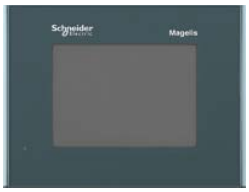
1 A removable screw terminal block for 24 V ⎓ power supply
2 A type A USB master connector for peripheral connection and application transfer
3 A 9-way male SUB-D connector for RS 232C or RS 422/485 serial link to PLCs (COM1)
4 An interface for connecting the M238 logic controller I/O expansion module
5 An interface for connecting the CANopen bus master module (see page 43646/2)
6 A removable terminal block for 16 digital inputs and 16 digital outputs
7 Digital (TM2 D●●) or analog (TM2 A●●) I/O expansion module (to be ordered separately, see pages 43647/9 and 43647/10)
It is possible to combine a maximum of three I/O expansion modules, depending on the module type (see page 43647/11).

For XBT GC2230 only:

8 An RJ45 connector for Ethernet TCP/IP 10BASE-T/100BASE-TX link



HMI Controllers
Magelis™ XBT GC HMI Controllers



XBT GC1100●

XBT GC2●●●●

XBT ZGUSB

Magelis XBT GC HMI Controllers *(1)*

Type of screen	No. of ports	Application memory capacity	Compact Flash memory	Integrated I/O	No. of Ethernet ports	Reference	Weight kg
3.8" screen							
STN amber or red	1 USB	16 MB	No	12 I/6 O source	-	**XBT GC1100T**	0.400
				12 I/6 O sink	-	**XBT GC1100U**	0.400
5.7" screen							
STN black and white mode	1 COM 1 1 USB	16 MB	No	16 I/16 O source	-	**XBT GC2120T**	1.000
				16 I/16 O sink	-	**XBT GC2120U**	1.000
5.7" screen							
STN colour	1 COM 1 1 USB	16 MB	No	16 I/16 O source	1	**XBT GC2230T**	1.000
				16 I/16 O sink	1	**XBT GC2230U**	1.000

Separate parts

Designation	Compatibility	Size	Reference	Weight kg
Protective sheets (5 peel-off sheets)	XBT GC 1100	–	**XBT ZG60**	0.200
	XBT GC2●●0	–	**XBT ZG62**	0.200

Designation	Description	Length	Reference	Weight kg
Remote USB port location for type A XBT terminal	Enables the USB port to be located remotely on the rear of the XBT terminal on a panel or cabinet door (Ø 21 mm fixing device)	1 m	**XBT ZGUSB**	–
Remote USB port location for mini type B XBT terminal		-	**XBT ZGUSBB**	–
XBT GC connection to CANopen master fieldbus	Connection via card on bus extension	-	**XBT ZGCCAN**	–
Cable for transferring application to PC	USB TTL connector	2 m	**XBT ZG 935**	–

Replacement parts

Designation	Used for	Reference	Weight kg
Seals	XBT GC1100	**XBT ZG51**	0.030
	XBT GT21●0	**XBT ZG52**	0.030
USB fastenings	XBT GC 1100	**XBT ZGCLP2**	–
	XBT GC 2●●0	**XBT ZGCLP4**	–
Mounting kit	4 clips and screws (max. tightening torque: 0,5 Nm), included with all XBT GC terminals	**XBT ZG FIX**	0.100
Spring clip for expansion modules on XBT GC	XBT GC2●●0 terminals	**XBT ZGCHOK**	0.030
Power supply connector	XBT GC1●●● / GC2●●●	**XBT ZGPWS1**	0.030
Dierct I/O connector	XBT GC1000	**XBT ZG DIO1**	–
	XBT GC2000	**XBT ZG DIO2**	–

(1) Terminals supplied with mounting kit (screw clips), locking device for USB connectors, spring clip for expansion modules (except XBT GC 1100) and instruction sheet. The setup documentation for XBT GC terminals is supplied in electronic format with SoMachine software (see page 36300/5).

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HMI Controllers
Magelis™ XBT GC HMI Controllers
Digital I/O expansion modules

TM2 DDI 8DT

TM2 DDO 8● T/DRA 8RT

TM2 DDO 32●K

TM2 DDM 24DRF

Digital I/O expansion modules

Digital I/O expansion modules are mounted on the rear of XBT GC controller bases. The maximum permitted number of digital and/or analog I/O modules depends on the type of XBT GC terminal and the thickness of the modules (see combination rule on page 43647/11).

Digital input modules *(1)*

Input voltage	No. of channels	No. of common points	Connection	Thickness mm (Type)	Reference	Weight kg
24 V ⎓ sink/source	8	1	By removable screw terminal block (provided)	23.5 (B)	**TM2 DDI 8DT**	0.085
	16	1	By removable screw terminal block (provided)	23.5 (B)	**TM2 DDI 16DT**	0.100
			By HE 10 connector	23.5 (B)	**TM2 DDI 16DK** *(2)*	0.065
	32	2	By HE 10 connector	29.7 (C)	**TM2 DDI 16DK** *(2)*	0.100
120 V ∿	8	1	By removable screw terminal block (provided)	23.5 (B)	**TM2 DAI 8DT**	0.081

Digital output modules *(1)*

Input voltage	No. of channels	No. of common points	Connection	Thickness mm (Type)	Reference	Weight kg
Transistors 24 V ⎓	8, sink 0.3 A	1	By removable screw terminal block (provided)	23.5 (B)	**TM2 DDO 8UT**	0.085
	8, sink 0.5 A	1	By removable screw terminal block (provided)	23.5 (B)	**TM2 DDO 8TT**	0.085
Transistors 24 V ⎓	16, sink 0.1 A	1	By HE 10 connector	17.6 (A)	**TM2 DDO 16UK**	0.070
	16, sink 0.4 A	1	By HE 10 connector	17.6 (A)	**TM2 DDO 16TK** *(2)*	0.070
	32, sink 0.1 A	2	By HE 10 connector	29.7 (C)	**TM2 DDO 32UK**	0.105
	32, sink 0.4 A	2	By HE 10 connector type	29.7 (C)	**TM2 DDO 32TK** *(2)*	0.105
2 A relays (Ith) **230 V ∿ /30 V ⎓**	8 (NO contact)	2	By removable screw terminal block (provided)	23.5 (B)	**TM2 DRA 8RT**	0.110
	16 (NO contact)	2	By removable screw terminal block (provided)	23.5 (B)	**TM2 DRA 16RT**	0.145

Digital mixed I/O modules *(1)*

No. of I/O	No./type of inputs	No./type of outputs	No. of common points	Connection	Thickness mm (Type)	Reference	Weight kg
8	4 I, 24 V ⎓ sink/source	4 relay O (NO contact) 2 A (Ith)	Inputs: 1 common Outputs: 1 common	By removable screw terminal block (provided)	23.5 (B)	**TM2 DMM 8DRT**	0.095
24	16 I, 24 V ⎓ sink/source	8 relay O (NO contact) 2 A (Ith)	Inputs: 1 common Outputs: 2 common	By spring terminal block	39.1 (D)	**TM2 DMM 24DRF**	0.140

(1) Please refer to the "Modicon M238 logic controller" catalogue.
(2) Module supports use of the Modicon Telefast ABE 7 pre-wired system.

References XBT GC:
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Analog I/O expansion modules

Analog I/O expansion modules are mounted on the rear of XBT GC controller bases. The maximum number of digital and/or analog I/O modules depends on the type of XBT GC terminal and the thickness of the modules (see combination rule on page 43647/11).

TM2 AMI 2LT

TM2 ARI 8LRJ

TM2 ARI 8LT

Analog input modules *(1)*

Channel type	Input range	Output range	Resolution	Connected by	Thickness mm (Type)	Reference	Weight kg
2 inputs	0…10 V 4…20 mA	–	12-bit	Removable screw terminal block (provided)	23.5 (B)	**TM2 AMI 2LT**	0.085
	Thermocouple J, K, T	–	12-bit	Removable screw terminal block (provided)	23.5 (B)	**TM2 AMI 2LT**	0.085
4 inputs	0…10 V 0…20 mA 2, 3 or 4 wire Pt100/1000 Ni100/1000 temperature probe	–	12-bit	Removable screw terminal block (provided)	23.5 (B)	**TM2 AMI 4LT**	0.085
8 inputs	0…10 V 4…20 mA	–	10-bit	Removable screw terminal block (provided)	23.5 (B)	**TM2 AMI 8LT**	0.085
	2 or 3-wire Pt100/1000 temperature probe	–	12-bit	RJ11 connector	23.5 (B)	**TM2 ARI 8LRJ**	–
				Removable screw terminal block (provided)	23.5 (B)	**TM2 ARI 8LT**	–
	PTC/NTC	–	10-bit in NTC Detection of 2 thresholds in PTC	Removable screw terminal block (provided)	23.5 (B)	**TM2 ARI 8LT**	0.085

Analog output modules *(1)*

1 output	–	0…10 V 4…20 mA	12-bit	Removable screw terminal block (provided)	23.5 (B)	**TM2 AMO 1HT**	0.085
2 outputs	–	± 10 V	11-bit + sign	Removable screw terminal block (provided)	23.5 (B)	**TM2 AVO 2HT**	0.085

Analog I/O modules *(1)*

2 inputs and 1 output	0…10 V 4…20 mA	0…10 V 4…20 mA	12-bit	Removable screw terminal block (provided)	23.5 (B)	**TM2 AMM 3HT**	0.085
	Thermocouple J, K, T 2 or 3-wire Pt100 temperature probe	0…10 V 4…20 mA	12-bit	Removable screw terminal block (provided)	23.5 (B)	**TM2 ALM 3LT**	0.085
4 inputs and 1 output	0…10 V 4…20 mA	0…10 V 4…20 mA	12-bit	Removable screw terminal block (provided)	23.5 (B)	**TM2 AMM 6HT**	0.085

Separate parts

Designation	Description	Reference	Weight kg
Earthing plate	Support equipped with 10 male Faston connectors for connecting the cable shielding (via 6.35 mm Faston connectors, not included) and the functional earths (FE)	**TM2 XMT GB**	0.045
Mounting kit Sold in lots of 5	For plate or panel mounting of analog modules	**TWD XMT 5**	0.065

(1) For characteristics, please refer to the "Modicon M238 logical controller" catalogue.

References XBT GC:
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HMI Controllers
Magelis™ XBT GC HMI Controllers
I/O expansion modules

TM2 D●●
TM2 A●●

XBT GC1●●●

TM2 D●●
TM2 A●●

XBT GC2●●●

XBT GC1●●● Combinations of two expansion modules			
Combinations of 2 I/O expansion modules with XBT GC1●●●	**Type** *(1)*	**Type** *(1)*	**Total thickness (mm)**	
	A	A	35.2	Permitted combinations
	A	B	41.1	
	B	B	47.0	
	A	C	47.3	
	B	C	53.2	
	A	D	56.7	
	C	C	59.4	
	B	D	62.6	Prohibited combinations
	C	D	68.8	
	D	D	78.2	

XBT GC2●●● Combinations of two expansion modules			
Combinations of 2 I/O expansion modules with XBT GC2●●●	**Type** *(1)*	**Type** *(1)*	**Total thickness (mm)**	
	A	A	35.2	Permitted combinations
	A	B	41.1	
	B	B	47.0	
	A	C	47.3	
	B	C	53.2	
	A	D	56.7	
	C	C	59.4	
	B	D	62.6	Prohibited combinations
	C	D	68.8	
	D	D	78.2	

XBT GC2●●● Combinations of three expansion modules				
Combinations of 3 I/O expansion modules with XBT GC2●●●	**Type** *(1)*	**Type** *(1)*	**Type** *(1)*	**Total thickness (mm)**	
	A	A	A	52.8	Permitted combinations with hook *(2)*
	A	A	B	58.7	
	A	B	B	64.6	
	B	B	B	70.5	
	All other combinations			–	Prohibited

(1) For digital (TM2 D●●) and analog (TM2 A●●) I/O expansion module types, see pages 43648/2 and 43648/3:
- *Type A: thickness 17.6 mm*
- *Type B: thickness 23.5 mm*
- *Type C: thickness 29.7 mm*
- *Type D: thickness 39.1 mm*

(2) Hook included with product

References XBT GC:
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