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CANopen for machines

Catalog

February 2016



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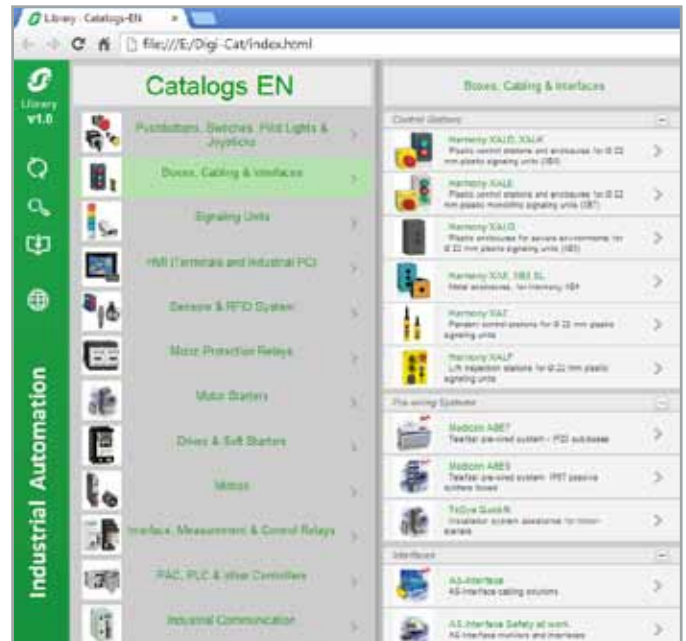
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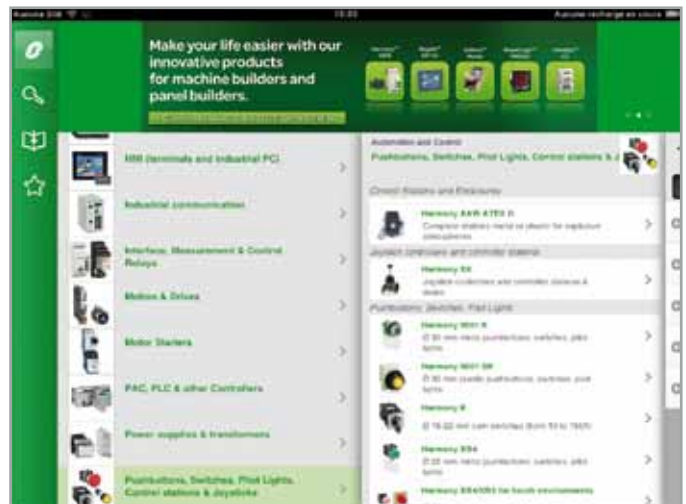
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General content

CANopen for machines

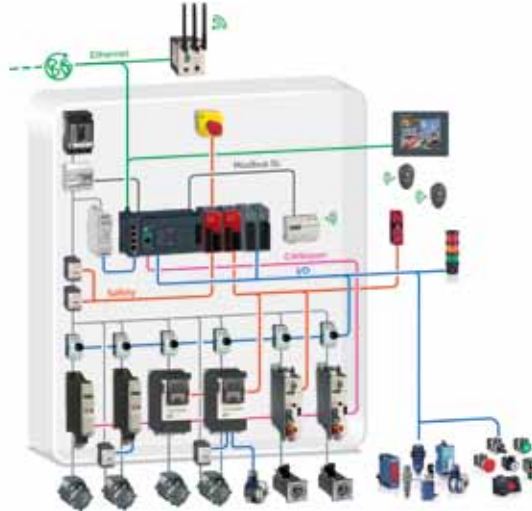
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CANopen for machines

Integrated CANopen bus port on Modicon M241 and Modicon M251 logic controllers

Tested, Validated and Documented Architectures

Modicon M241 and Modicon M251 logic controllers



Presentation

Schneider Electric has selected CANopen for its machines and installations because of its wealth of functions and its resulting benefits in the automation world.

This decision was based on the general acceptance of CANopen, and the fact that CANopen products are increasingly used in control system architectures.

CANopen is an open network supported by more than 400 companies worldwide, and promoted by CAN in Automation (CiA).

CANopen conforms to standards EN 50325-4 and ISO 15745-2.

Schneider Electric is heavily involved in working groups, which are important for machine and installation architectures, systems and products.

- The bus uses a double shielded twisted pair on which, with Modicon M241 and Modicon M251 logic controllers, a maximum of 63 devices are connected by daisy-chaining or by tap junctions.
- Each end of the bus must be fitted with a line terminator. On M241 controllers, this line terminator is already integrated on the master side and can be disconnected using a switch located next to the CAN connector.



Connector for linking to the CANopen bus (screw terminals)

TM241CEC... controllers



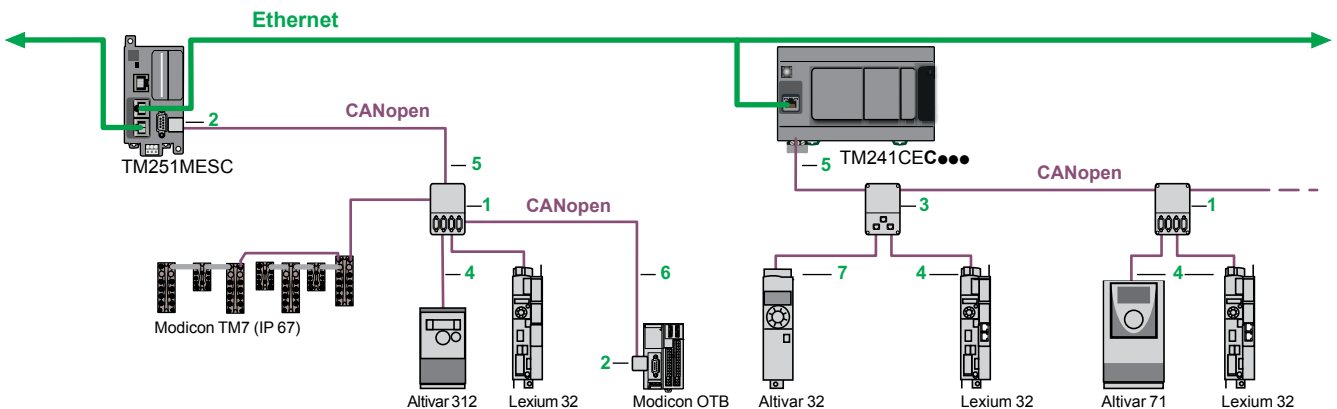
Connector for linking to the CANopen bus (9-way SUB-D)

TM251MESC controller

CANopen port on M241 and M251 controllers

Type	M241: screw terminals ; M251: 9-way SUB-D							
Standards	DS 301 V4.02, DR 303-1							
Class	M10							
Data rate								
Max. length (m / ft.)	20/ 65.62	40/ 131.23	100/ 328.08	250/ 820.21	500/ 1640.42	1000/ 3280.84	2500/ 8202.1	5000/ 16404.2
Data rate (Kbps)	1000	800	500	250	125	50	20	10
Number of slaves	63 slaves max. with limit of: 252 RPDOs and 252 TPDOs							

CANopen connection architecture



CANopen for machines

Integrated CANopen bus port on Modicon M241 and Modicon M251 logic controllers

References

CANopen standard taps and connectors

Designation	Description	Item	Lgth. mm / ft	Unit reference	Weight kg / lb
IP20 CANopen tap junction	Line termination : 4 SUB-D ports. Screw terminals for connecting the trunk cables	1	–	TSXCANTDM4	0.196 / 0.432
IP 20 CANopen connectors 9-way female SUB-D Line end adapter switch	Right-angle	2	–	TSXCANKCDF90T	0.046 / 0.101
	Straight (for connection to the Altivar IMC integrated controller card)	2	–	TSXCANKCDF180T	0.049 / 0.108
	Right-angle with 9-way SUB-D for connecting a PC or diagnostic tool	2	–	TSXCANKCDF90TP	0.051 / 0.112
IP 20 CANopen tap junction for Altivar and Lexium 32	2 RJ45 ports	3	–	VW3CANTAP2	0.250 / 0.551
Daisy chain taps	Equipped with: □ 2 sets of spring terminals for daisy chain connection of the CANopen bus □ 1 preassembled cordset with RJ45 connector for connecting the drive	–	0.6 / 1.97	TCSCTN026M16M	–
	Equipped with: □ 2 RJ45 connectors for daisy chain connection of the CANopen bus □ 1 preassembled cordset with RJ45 connector for connecting the drive	–	0.3 / 0.98	TCSCTN023F13M03	–
CANopen line terminators	For RJ45 connector <i>Sold in lots of 2</i>	–	–	TCSCAR013M120	–
	For screw terminal connector <i>Sold in lots of 2</i>	–	–	TCSCAR01NM120	–



TSXCANTDM4



VW3CANTAP2



TSXCANKCDF90T



TSXCANKCDF180T



TSXCANKCDF90TP



TCSCAR013M120



VW3CANA71

IP 20 standard cables and preassembled cordsets

Designation	Description	Item	Length	Unit reference	Weight kg / lb	
CANopen cables (2 x AWG 22 2 x AWG 24)	For standard environment (1), CE marking: Low smoke. Zero halogen. Non flame propagating (IEC 60332-1)	5	50 / 164.042	TSXCANCA50	4.930 / 10.869	
			100 / 328.08	TSXCANCA100	8.800 / 19.401	
			300 / 984.25	TSXCANCA300	24.560 / 54.146	
	For standard environment (1), UL certification, CE marking: Flame-retardant (IEC 60332-2)	5	50 / 164.04	TSXCANCB50	3.580 / 7.893	
			100 / 328.08	TSXCANCB100	7.840 / 17.284	
			300 / 984.25	TSXCANCB300	21.870 / 48.215	
For harsh environment (1) or mobile installation, CE marking: Low smoke. Zero halogen. Non flame propagating (IEC 60332-1). Oil-resistant	5	50 / 164.04	TSXCANCD50	3.510 / 7.738		
		100 / 328.08	TSXCANCD100	7.770 / 17.130		
		300 / 984.25	TSXCANCD300	21.700 / 47.840		
CANopen preassembled cordsets	Cordsets with one 9-way female SUB-D connector at each end	For standard environment (1), CE marking: Low smoke. Zero halogen. Non flame propagating (IEC 60332-1)	6	0.3 / 0.98	TSXCANCADD03	0.091 / 0.201
				1 / 3.28	TSXCANCADD1	0.143 / 0.315
				3 / 9.84	TSXCANCADD3	0.295 / 0.650
		For standard environment (1), UL certification, CE marking: Flame-retardant (IEC 60332-2)	6	0.3 / 0.98	TSXCANCBDD03	0.086 / 0.190
				1 / 3.28	TSXCANCBDD1	0.131 / 0.289
				3 / 9.84	TSXCANCBDD3	0.268 / 0.591
	Cordsets with one 9-way female SUB-D connector and one RJ45 connector	For standard environment (1), CE marking: Low smoke. Zero halogen. Non flame propagating (IEC 60332-1)	4	0.5 / 1.64	TCSCCN4F3M05T	0.100 / 0.220
				1 / 3.28	TCSCCN4F3M1T	0.100 / 0.220
				3 / 9.843	VW3M3805R010 (2)	0.100 / 0.220
		For standard environment (1), UL certification, CE marking: Flame-retardant (IEC 60332-2)		1 / 3.281	VW3M3805R030 (2)	0.300 / 0.661
				3 / 9.84	TCSCCN4F3M3T	0.160 / 0.353
				0.5 / 1.64	TLACDCBA005	0.100 / 0.220
Cordsets with two 9-way SUB-D connectors, one male and one female	For standard environment (1), CE marking: Low smoke. Zero halogen. Non flame propagating (IEC 60332-1)	–	1.5 / 4.92	TLACDCBA015	0.120 / 0.265	
			3 / 9.84	TLACDCBA030	0.190 / 0.419	
			5 / 16.40	TLACDCBA050	0.350 / 0.772	
Preassembled cordsets with one RJ 45 connector at each end	For standard environment (1), CE marking: Low smoke. Zero halogen. Non flame propagating (IEC 60332-1)	7	0.3 / 0.984	VW3CANCARR03	0.100 / 0.220	
			1 / 3.281	VW3CANCARR1	0.100 / 0.220	
Adapter for Altivar 71 speed drive	One RJ45 connector at each end	–	–	VW3CANA71	0.100 / 0.220	

Taps and IP 67 accessories

Please consult the [Modicon TM7 IP 67 modular I/O system catalog](#) (DIA3ED2140405EN), or on our web site www.schneider-electric.com

(1) Standard environment: no particular environmental constraints, operating temperature between +5°C and +60°C (+41°F and +140°F), and in fixed installations.

Harsh environment: resistance to hydrocarbons, industrial oils, detergents, solder splashes, relative humidity up to 100%, saline atmosphere, significant temperature variations, operating temperature between -10°C and +70°C (+14°F and +158°F), or in mobile installations.

(2) Cordset equipped with a line terminator.

CANopen for machines

Integrated CANopen bus port on Altivar IMC drive controller for ATV 61/71 variable speed drives

Tested Validated and Documented Architecture



- 1 Altivar IMC card
- 2 Altivar 61/71 variable speed drive

Altivar IMC drive controller card CANopen port

The Altivar IMC drive controller card acts as the CANopen master. The bus consists of a master station, the Altivar IMC card, and slave stations. The master is in charge of configuration, exchanges and diagnostics to the slaves. The CANopen configurator is integrated in the SoMachine software and can also be used to import standard description files in EDS format.

The CANopen bus is used to manage a variety of slaves such as:

- Discrete slaves
- Analog slaves
- Variable speed drives
- Motor starters
- Etc.



CANopen machine bus port:
9-way male SUB-D
connector

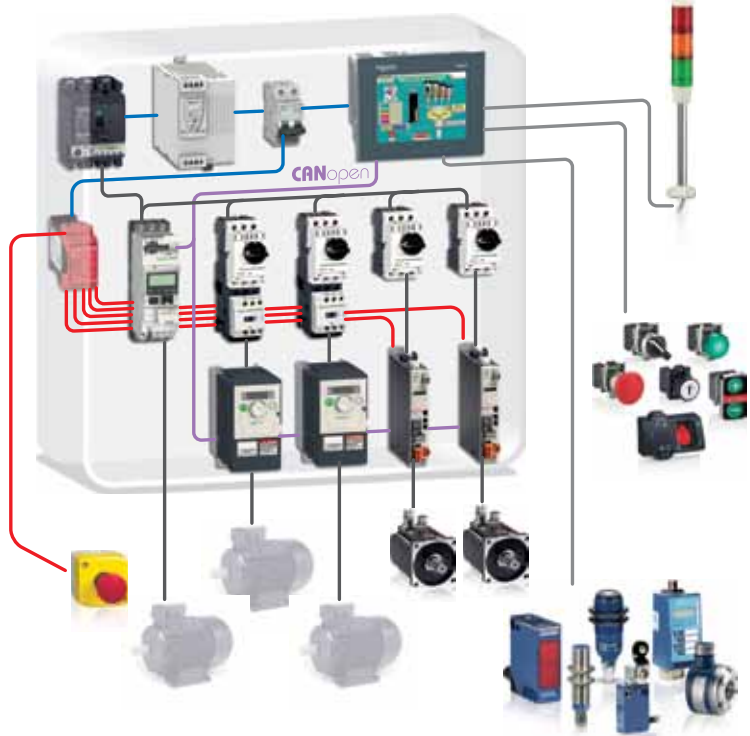
CANopen port

Standards	DS 301 V4.02, DR 303-1						
Class	Conformity class M20, limited to 16 slaves						
Data rate	max. Length (m / ft.)	20/ 65.62	100/ 328.08	250/ 820.21	500/ 1640.42	1000/ 3280.84	2500/ 8202.1
	Data rate (kbps)	1000	500	250	125	50	20
Number of slaves	16 max. with max. limit of: 32 RPDOs and 32 TPDOs						
Connection	On 9-way male SUB-D port						

CANopen for machines

CANopen bus master module for Magelis XBTGC controllers, and XBTGT, XBTGK advanced panels

Tested Validated and Documented Architecture



Magelis XBTGC controller + XBTZGCCAN CANopen bus master module



CANopen machine bus port: 9-way male SUB-D connector

XBTZGCCAN



XBTGT Advanced panels



XBTZGCANM CANopen bus master module



XBTGK Advanced panels



CANopen machine bus port: 9-way male SUB-D connector

XBTZGCANM

Presentation

The CANopen bus master module provides the control function for Magelis XBTGC controllers and XBTGT, XBTGK Advanced Panels and is configured with the SoMachine software.

The various services available are:

- One or more profiles are supplied for Schneider Electric slaves such as ATV 312/61/71 variable speed drives and Lexium 32 servo drives. This makes it possible to configure the slave according to a predefined mode. Profiles provide a defined operating mode so that there is no need for users to configure the mode.
- For third-party slaves
 - The user can choose from a list which can be modified. This simply involves importing an EDS (Electronic Data Sheet) description file
 - The slave can be positioned on the bus: the slave number, speed, monitoring, etc. can be defined
 - The user can select variables from the list of variables managed by the slave
 - A link between variables and the data exchanged
 - Symbolization of data exchanged

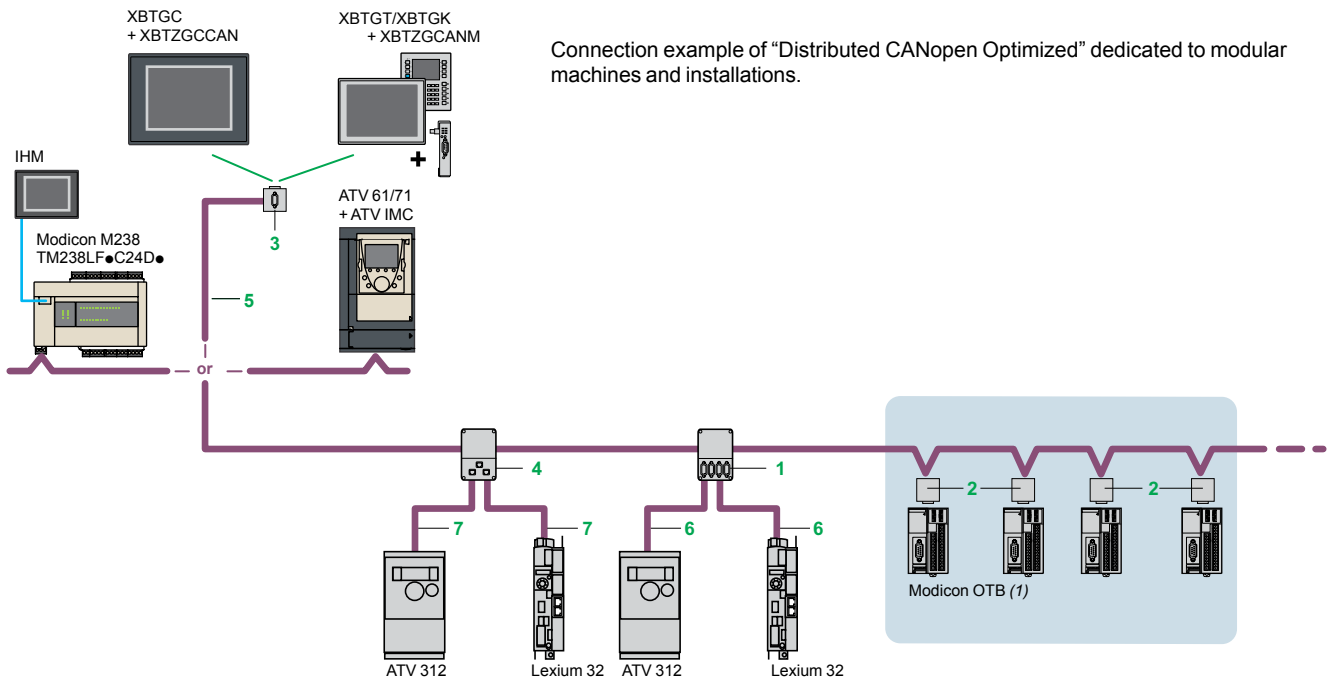
Reference

Description	Reference	Masse kg / lb
CANopen bus master module for Magelis XBTGC controller Conformity class M10	XBTZGCCAN	0.100 0.220
CANopen bus master module for Magelis XBT GT/GK Advanced Panels Conformity class M10	XBTZGCANM	0.100 0.220

CANopen for machines

CANopen Optimized architecture with Altivar IMC drive controller, Magelis XBTGC controllers, and XBTGT, XBTGK advanced panels

CANopen Optimized architecture



Connection example of “Distributed CANopen Optimized” dedicated to modular machines and installations.

References

Standard junction boxes and connectors

Description	Composition	Item	Length m / ft	Unit reference	Weight kg lb
CANopen IP 20 tap junction box	4 SUB-D ports. Screw terminal blocks for connection of main cables Line end adapter	1	–	TSXCANTDM4	0.196/ 0.432
IP 20 connectors CANopen 9-way SUB-D female. Line end adapter switch	Elbowed (90°)	2	–	TSXCANKCDF90T	0.046/ 0.101
	Straight (For connection to Altivar IMC drive controller)	–	–	TSXCANKCDF180T	0.049/ 0.108
	Elbowed (90°) with 9-way SUB-D connector for connection to PC or diagnostic tool	3	–	TSXCANKCDF90TP	0.051/ 0.112
M12 connectors IP 67	Male	–	–	FTXCN12M5	0.050/ 0.110
	Female	–	–	FTXCN12F5	0.050/ 0.110
CANopen IP 20 tap junction box for Altivar and Lexium 05	2 x RJ45 ports	4	–	VW3CANTAP2	0.250/ 0.551
Daisy chain taps	Equipped with: - 2 spring terminal blocks for connecting the CANopen bus in a daisy chain - 1 preassembled cordset with an RJ45 connector for connecting the drive	–	0.6 / 1.969	TCSCNT026M16M	–
	Equipped with: - 2 RJ45 connectors for connecting the CANopen bus in a daisy chain - 1 preassembled cordset with an RJ45 connector for connecting the drive	–	0.3 / 0.984	TCSCNT023F13M03	–
CANopen line terminators	For RJ45 connector <i>Sold in packs of 2</i>	–	–	TCSCAR013M120	–
	For screw terminal connector <i>Sold in packs of 2</i>	–	–	TCSCAR01NM120	–

(1) Modicon OTB product range. please consult on our web site www.schneider-electric.com



TSXCANTDM4



VW3CANTAP2



TSXCANKCDF90T



TSXCANKCDF180T



TSXCANKCDF90TP



TCSCAR013M120

CANopen for machines

CANopen Optimized architecture

with Altivar IMC drive controller, Magelis XBTGC controllers, and XBTGT, XBTGK advanced panels

References (continued)

Standard IP 20 formed cables

Description	Application	Item	Length m / ft	Unit reference	Weight kg / lb
CANopen cables (2 x AWG 22 2 x AWG 24)	For standard environments (2), CE marking: low fume emission. Halogen-free. Non flame propagating (IEC 60332-1)	5	50 / 164.042	TSXCANCA50	4.930/ 10.869
			100 / 328.08	TSXCANCA100	8.800/ 19.401
			300 / 984.25	TSXCANCA300	24.560/ 54.146
	For standard environments (2), UL certified, CE marking: non flame propagating (IEC 60332-2)	5	50 / 164.04	TSXCANCB50	3.580/ 7.893
			100 / 328.08	TSXCANCB100	7.840/ 17.284
			300 / 984.25	TSXCANCB300	21.870/ 48.215
	For standard environments (2) or mobile installation, CE marking: low fume emission. Halogen-free. Non flame propagating (IEC 60332-1). Oil resistant	5	50 / 164.04	TSXCANCD50	3.510/ 7.738
			100 / 328.08	TSXCANCD100	7.770/ 17.130
			300 / 984.25	TSXCANCD300	21.700/ 47.840
CANopen formed cables 1 x 9-way SUB-D female connector at each end.	For standard environments (2), CE marking: low fume emission. Halogen-free. Non flame propagating (IEC 60332-1)	-	0.3 / 0.98	TSXCANCADD03	0.091/ 0.201
			1 / 3.28	TSXCANCADD1	0.143/ 0.315
			3 / 9.84	TSXCANCADD3	0.295/ 0.650
	For standard environments (2), UL certified, CE marking: non flame propagating (IEC 60332-2)	-	0.3 / 0.98	TSXCANCBDD03	0.086/ 0.190
			1 / 3.28	TSXCANCBDD1	0.131/ 0.289
			3 / 9.84	TSXCANCBDD3	0.268/ 0.591
	For standard environments (2), UL certified, CE marking: non flame propagating (IEC 60332-2)	-	0.3 / 0.98	TSXCANCBDD5	0.400/ 0.882
			1 / 3.28	TSXCANCBDD1	0.131/ 0.289
			3 / 9.84	TSXCANCBDD3	0.268/ 0.591
		5 / 16.40	TSXCANCBDD5	0.400/ 0.882	
		5 / 16.40	TSXCANCBDD5	0.400/ 0.882	
CANopen formed cables	Formed cables with 1 x 9-way SUB-D female connector and 1 x RJ45 connector	6	0.5 / 1.64	TCSCCN4F3M05T	0.100/ 0.220
			1 / 3.28	TCSCCN4F3M1T	0.100/ 0.220
			3 / 9.843	VW3M3805R010(2)	0.100/ 0.220
			1 / 3.281	VW3M3805R030(2)	0.300/ 0.661
			3 / 9.84	TCSCCN4F3M3T	0.160/ 0.353
	Formed cables with 2 x 9-way SUB-D connectors, 1 female and 1 male	-	0.5 / 1.64	TLACDCBA005	0.100/ 0.220
			1.5 / 4.92	TLACDCBA015	0.120/ 0.265
			3 / 9.84	TLACDCBA030	0.190/ 0.419
			5 / 16.40	TLACDCBA050	0.350/ 0.772
IP 20 connection accessories					
CANopen connector for Altivar 71 (3)	9-way SUB-D female. Line end adapter switch. 180° cable entry	-	-	VW3CANKCDF180T	0.100/ 0.220
Adapter for Altivar 71 variable speed controller	CANopen SUB-D to RJ45 adapter	-	-	VW3CANA71	0.100/ 0.220
Formed CANopen cables	1 RJ45 connector at each end.	7	0.3 / 0.984	VW3CANCARR03	0.100/ 0.220
			1 / 3.281	VW3CANCARR1	0.100/ 0.220
CANopen bus adapter for Lexium 17D	Hardware interface for link conforming to the CANopen standard + 1 connector for connection of PC terminal	-	-	AM02CA001V000	0.110/ 0.243
Y connector	CANopen/Modbus	-	-	TCSCTN011M11F	0.100/ 0.220



VW3CANA71



AM02CA001V000



FTXDP21●●

(1) Standard environment: without any particular environmental restrictions, operating temperature between + 5 °C and + 60 °C, (+ 41 °F and + 140 °F) and for fixed installation. Harsh environments: resistant to hydrocarbons, industrial oils, detergents, solder splashes, hygrometry up to 100%, saline environment, wide temperature variations, operating temperature between - 10 °C and + 70 °C (+ 14 °F and + 158 °F), or mobile installation.

(2) Cable equipped with line end adapter.

(3) For variable speed controllers ATV71H●●●M3, ATV71HD11M3X, HD15M3X, ATV71H075N4... HD18N4, this connector can be replaced by connector TSXCAN KCDF180T.

CANopen for machines

Integrated CANopen bus port on Modicon M258 logic controllers

Tested Validated Documented Architectures

Modicon M258 logic controllers



CANopen bus link connector

M258 logic controllers type TM258 LF●●●●

CANopen port on M258 logic controllers

Modicon M258 logic controllers (referenced **TM258 LF●●●●**) include a 9-way male SUB-D CANopen port and act as the CANopen master.

The bus consists of a master station, M258 logic controller and slave stations. The master is in charge of configuration, exchanges and diagnostics to the slaves.

The CANopen bus is a communication bus and is used to manage a variety of slaves, such as:

- Digital slaves
- Analog slaves
- Variable speed drives
- Motor starters
- Etc.

CANopen port

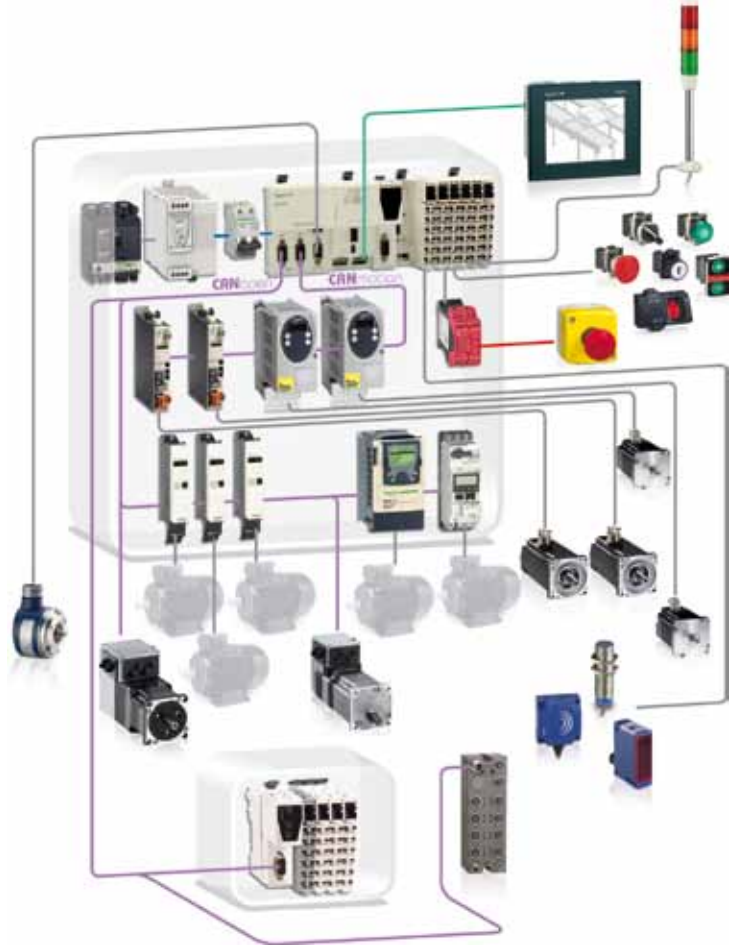
Standards	DS 301 V4.02, DR 303-1								
Class	Conformity class M10, limited to 63 slaves								
Data rate	Max. length (m/ ft)	20/ 65.62	40/ 131.23	100/ 328.08	250/ 820.21	500/ 1640.42	1000/ 3280.84	2500/ 8202.1	5000/ 16404.2
	Data rate (kbps)	1000	800	500	250	125	50	20	10
Number of slaves	63 max. with max. limit of: 64 TDPOs/64 RPDOs								
Connection	On 9-way male SUB-D port								

CANopen for machines

Integrated CANopen/CANmotion bus ports on Modicon LMC058 motion controllers

Tested Validated Documented Architectures

Modicon LMC058 motion controllers



9-way male SUB-D CANopen connector, marked CAN0, for connecting to CANopen bus
 9-way male SUB-D CANopen connector, marked CAN1, for connecting to CANmotion bus

LMC058 motion controllers

CANopen port on LMC058 motion controllers

Modicon LMC058 motion controllers include a 9-way male SUB-D CANopen port and act as the CANopen master.

The bus consists of a master station, LMC058 motion controller and slave stations. The master is in charge of configuration, exchanges and diagnostics to the slaves. The CANopen bus is a communication bus and is used to manage a variety of slaves, such as:

- Digital slaves
- Analog slaves
- Variable speed drives
- Motor starters
- Etc.

CANopen port

Standards	DS 301 V4.02, DR 303-1							
Class	Conformity class M10, limited to 63 slaves							
Data rate Max. length (m/ ft)	20/ 65.62	40/ 131.23	100/ 328.08	250/ 820.21	500/ 1640.42	1000/ 3280.84	2500/ 8202.1	5000/ 16404.2
	Data rate (kbps)	1000	800	500	250	125	50	20
Number of slaves	63 max. with max. limit of: 64 TDPOs/64 RPDOs							
Connection	On 9-way male SUB-D port							

CANmotion port on LMC058 motion controllers

LMC058 motion controllers include a 9-way male SUB-D CANmotion port and act as the CANmotion master.

This CANmotion connection offers the option of configuring and controlling up to 8 Lexium 32 servo drives and/or Lexium SD3 stepper drives.

The CANmotion bus cycle time ensures that the axis positions will be refreshed.

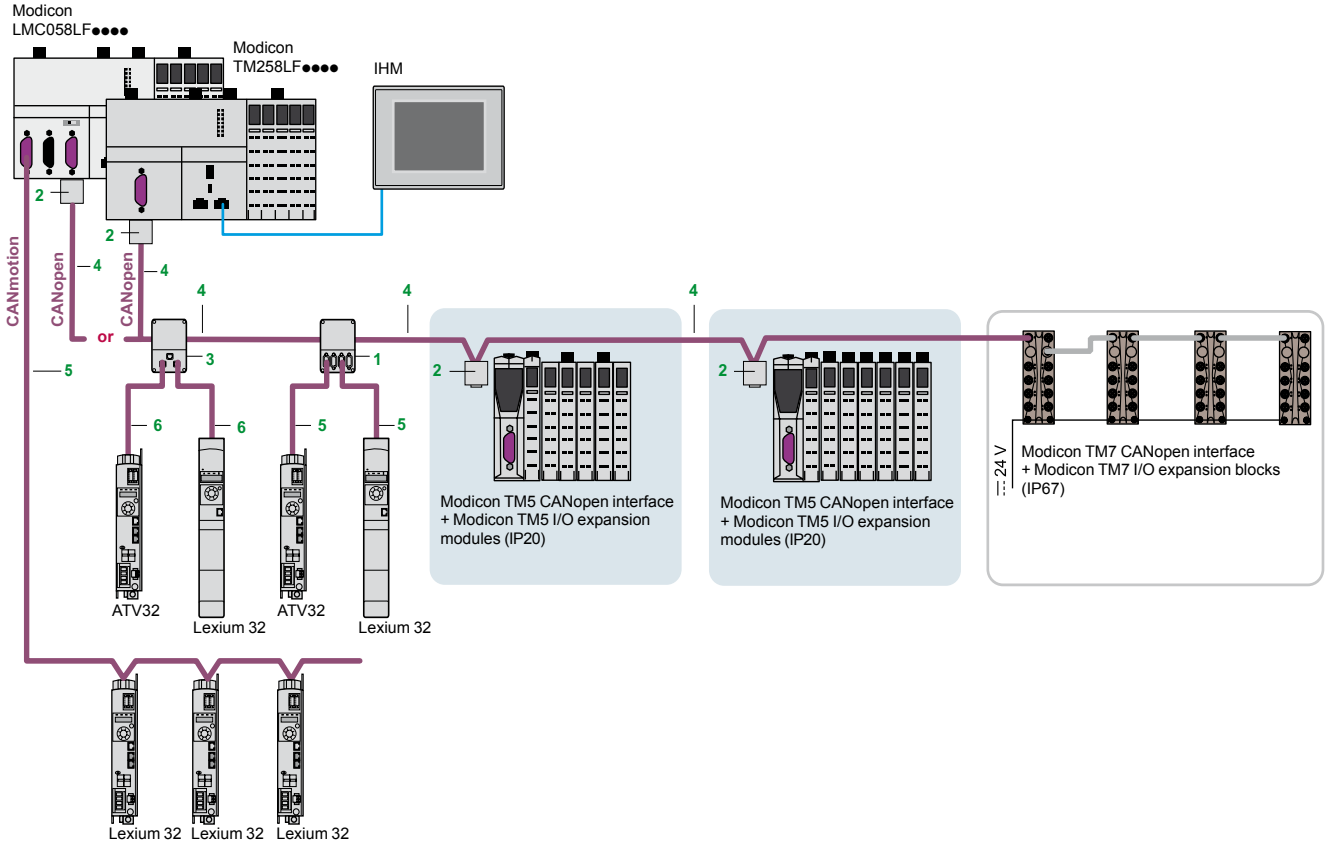
CANopen for machines

CANopen Performance architecture with Modicon TM5/TM7

for Modicon M258 logic controller and Modicon LMC058 motion controller

CANopen Performance architecture

Example of connection of a CANopen Performance architecture dedicated to machines and modular installations.



References

Standard tap junctions and connectors

Designation	Description	Item no.	Length	Reference	Weight kg / lb
IP 20 CANopen tap junction	4 SUB-D ports. Screw terminal block for connecting the trunk cables Line termination	1	–	TSXCANTDM4	0.196 / 0.432
IP 20 connectors CANopen 9-way female SUB-D. Switch for line termination	90° angled	2	–	TSXCANKCDF90T	0.046 / 0.101
	Straight (For connection to Altivar IMC drive controller card)	–	–	TSXCANKCDF180T	0.049 / 0.108
	90° angled with 9-way SUB-D for connecting a PC or diagnostic tool	–	–	TSXCANKCDF90TP	0.051 / 0.112
IP 20 CANopen tap junction for Altivar and Lexium	2 RJ45 ports	3	–	VW3CANTAP2	0.250 / 0.551



TSXCANTDM4



VW3CANTAP2



TSXCANKCDF90T



TSXCANKCDF180T



TSXCANKCDF90TP

CANopen for machines

CANopen Performance architecture with Modicon TM5/TM7

for Modicon M258 logic controller and Modicon LMC058 motion controller

References (continued)							
IP 20 standard cables and preassembled cordsets							
Designation	Description	Item no.	Length m/ ft	Reference	Weight kg/ lb		
CANopen cables (2 x AWG 22 2 x AWG 24)	For standard environment (1), CE marking: low smoke. Zero halogen. Flame-retardant (IEC 60332-1)	4	50/ 164.042	TSXCANCA50	4.930/10.869		
			100/ 328.08	TSXCANCA100	8.800/19.401		
			300/ 984.25	TSXCANCA300	24.560/54.146		
	For standard environment (1), UL certification, CE marking: flame-retardant (IEC 60332-2)	4	50/ 164.042	TSXCANCB50	3.580/7.893		
			100/ 328.08	TSXCANCB100	7.840/17.284		
			300/ 984.25	TSXCANCB300	21.870/48.215		
	For harsh environments (1) or mobile installations, CE marking: low smoke. Zero halogen. Flame-retardant (IEC 60332-1). Oil-resistant	4	50/ 164.04	TSXCANCD50	3.510 / 7.738		
			100/ 328.08	TSXCANCD100	7.770 / 17.130		
			300/ 984.25	TSXCANCD300	21.700 / 47.840		
CANopen preassembled cordsets One 9-way female SUB-D connector at each end.	For standard environment (1), CE marking: low smoke. Zero halogen. Flame-retardant (IEC 60332-1)	-	0.3/ 0.98	TSXCANCADD03	0.091/0.201		
			1/ 3.28	TSXCANCADD1	0.143/0.315		
			3/ 9.84	TSXCANCADD3	0.295/0.650		
	For standard environment (1), UL certification, CE marking: flame-retardant (IEC 60332-2)	-	0.3/ 0.98	TSXCANCBDD03	0.086/0.190		
			1/ 3.28	TSXCANCBDD1	0.131/0.289		
			3/ 9.84	TSXCANCBDD3	0.268/0.591		
	CANopen preassembled cordsets	Cordsets with one 9-way female SUB-D connector and one RJ45 connector	5	0.5/1.64	TCSCCN4F3M05T	0.100/0.220	
				1/ 3.28	TCSCCN4F3M1T	0.100/0.220	
				3/ 9.843	VW3M3805R010 (2)	0.100/0.220	
3/ 9.843				TCSCCN4F3M3T	0.160/0.353		
Cordsets with two 9-way SUB-D connectors, one female and one male		-	0.5/ 1.64	TLACDCBA005	0.100/0.220		
			1.5/ 4.92	TLACDCBA015	0.120/0.265		
			3/ 9.84	TLACDCBA030	0.190/0.419		
			5/ 16.40	TLACDCBA050	0.350/0.772		
IP 20 connection accessories							
CANopen connector for Altivar 71 (3)	9-way female SUB-D Switch for line termination. Cables exit at 180°	-	-	VW3CANKCDF180T	0.100/0.220		
Adaptor for Altivar 71 drive	SUB-D to RJ45 CANopen adaptor	-	-	VW3CANA71	0.100/0.220		
CANopen preassembled cordsets	1 RJ45 connector at each end	6	0.3/ 0.984	VW3CANCARR03	0.100/0.220		
			1/ 3.281	VW3CANCARR1	0.100/0.220		
CANopen bus adaptor for Lexium 17D	Hardware interface for CANopen-compliant link + 1 connector for a PC terminal	-	-	AM02CA001V000	0.110/0.243		
Y-connector	CANopen/Modbus	-	-	TCSCTN011M11F	0.100/0.220		



VW3 CAN A71



AM02 CA 001 V000

IP 67 cables and preassembled cordsets, IP 67 connection accessories for Modicon TM7 blocks

Please consult [Modicon TM7 IP 67 modular I/O system](#) catalog (DIA3ED2140405EN) or on our web site www.schneider-electric.com

(1) Standard environment: no particular environmental constraints, operating temperature between + 5°C and + 60°C, and in fixed installations

Harsh environment: resistance to hydrocarbons, industrial oils, detergents, solder splashes, relative humidity up to 100%, saline atmosphere, significant temperature variations, operating temperature between - 10°C and + 70°C, or in mobile installations.

(2) Cordset equipped with a line terminator.

(3) For ATV 71H●●M3, ATV 71HD11M3X, HD15M3X, ATV 71H075N4... HD18N4 drives, this connector can be replaced by the TSX CAN KCDF 180T connector.

CANopen for machines

Interface modules for distributed I/O on CANopen bus

Applications	Optimum distributed I/O (IP 20)
Compatibility	<ul style="list-style-type: none"> ■ XBTGC controller, XBTGT, XBTGK with monitoring function ■ Altivar IM C drive controller ■ Modicon M238 logic controller
	
Available buses and networks	<ul style="list-style-type: none"> ■ CANopen bus ■ Ethernet Modbus TCP/IP ■ Modbus serial link (RS 485)
Configuration with I/O expansion modules	<p>Modicon TM2:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Digital I/O modules <input type="checkbox"/> Analog I/O modules <input type="checkbox"/> Expert modules <input type="checkbox"/> Common distribution modules
Capacity	<p>For 1 Modicon OTB interface module: 7 Modicon TM2 modules max. Including:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Digital I/O modules: <ul style="list-style-type: none"> - 132 I/O max. with modules with screw terminals - 188 I/O max. with modules with spring terminals - 244 I/O max. with modules with HE10 connector <input type="checkbox"/> Analog I/O modules with screw terminals: up to 7 x 8 inputs, or 7 x 2 outputs, or 7 x (4I/2O) <input type="checkbox"/> Expert modules <input type="checkbox"/> Common distribution module
Integrated I/O	<p>Number and type (depending on model)</p> <p>12 x 24 V $\overline{\text{DC}}$ digital inputs 2 x 24 V $\overline{\text{DC}}$ solid state outputs 6 x 30 V $\overline{\text{DC}}$/240 V \sim relay outputs 2 channels: 5 kHz/20 kHz 2 PWM function channels</p>
Range	Modicon OTB
Type of distributed I/O expansion module	interface modules
Page	14

Performance distributed I/O (IP 20)	Performance distributed I/O (IP 67)
<ul style="list-style-type: none"> ■ Modicon M258 logic controller ■ Modicon LMC058 motion controller ■ Modicon LMC078 motion controller 	<ul style="list-style-type: none"> ■ Modicon M258 logic controller ■ Modicon LMC058 motion controller ■ Modicon LMC078 motion controller
	
Available buses and networks	CANopen bus
Configuration with I/O expansion modules	<p>Modicon TM5 modules and/or Modicon TM7 blocks:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Digital I/O modules <input type="checkbox"/> Analog I/O modules <input type="checkbox"/> Common distribution modules (TM5 only)
Capacity	<p>For 1 Modicon TM5 interface module: 40 TM5/TM7 modules max. Including:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Digital I/O modules: 240 inputs and 240 outputs max. <input type="checkbox"/> Analog I/O modules: 20 inputs and 20 outputs <p>Maximum distance from the expansion bus (TM5 or TM7): 2500 m. Maximum distance between 2 islands of TM5 modules: 100 m. Maximum distance between 2 TM7 blocks: 100 m. Maximum distance between 1 island of TM5 modules and 1 TM7 block: 100 m.</p>
Integrated I/O	<p>8 to 16 digital channels that can be configured as inputs (24 V $\overline{\text{DC}}$) or outputs (24 V $\overline{\text{DC}}$)</p>
Range	Modicon TM5
Type of distributed I/O expansion module	CANopen interface module
Page	16

CANopen for machines

Distributed I/O on CANopen bus with Modicon OTB (IP 20)



OTB1C0DM9LP
CANopen bus interface module

Presentation

The Modicon OTB offer proposes fewer references relating to spare parts and accessories that are required for creating an island.

The Modicon OTB offer has also been designed to be as simple as possible. This offer, compatible with Magelis XBTGC controllers, XBTGT/XBTGK advanced panels, Altivar IMC drive controller, and Modicon M238 logic controller, includes 2 communication bases (interface modules) for the various types of fieldbus:

- CANopen bus,
- Modbus RS 485 Serial Line.

Inputs and outputs are directly integrated in the interface modules. Each base incorporates 20 I/O:

- 12 \pm 24 V inputs,
- 6 relay outputs,
- 2 \pm 24 V solid-state outputs.

The Modicon OTB bases use a \pm 24 V supply. Of monobloc design, each Modicon OTB interface module can be fitted with expansion modules of Modicon TM2.

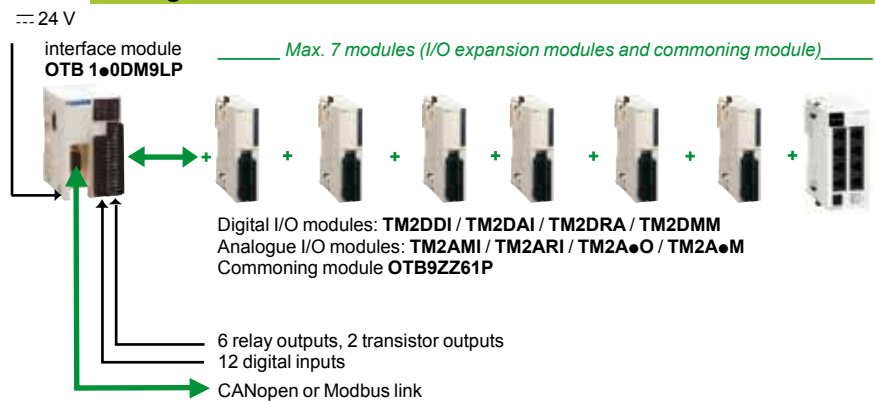
With its range of I/O expansions, the Modicon OTB offer provides a wide modularity: a base can be fitted with up to 7 digital I/O modules **TM2D●●** or analogue I/O modules **TM2A●●**. The expansion modules, like the interface modules, simply clip-on to 35 mm (1.378 in.) symmetrical rail and enable configurations of up to 244 digital I/O and up to 42 analogue I/O channels, or a mixture of both types (within the limit of 7 expansion modules), to be obtained.

Sensors and actuators are connected to the interface modules and I/O expansion modules using removable screw terminal blocks.

The Modicon OTB module range provide an IP 20 degree of protection.

To simplify sensor and actuator connections, as well as linking commons, the Modicon OTB offer also includes a commoning module **OTB9ZZ61JP**. This module, as the other modules of the Modicon OTB range, allows the through connection of the internal bus or network (passively in this case) and enables connection of the commons in two isolated groups for each commoning module.

Configuration of interface modules



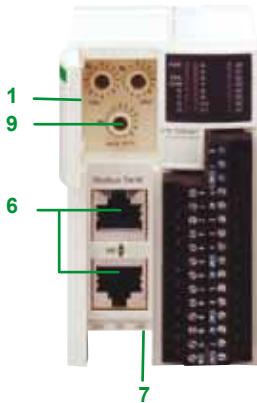
CANopen for machines

Distributed I/O on CANopen bus with Modicon OTB (IP 20)

Description

The Modicon OTB (1) interface modules comprise:

- 1 An access door.
- 2 Indicator lights:
 - module and communication status (PWR, RUN, ERR, COM, STAT)
 - I/O states (IN● and OUT●)
- 3 A connector for expansion modules (right-hand side).
- 4 Two removable screw terminal connectors for connection of inputs/outputs.
- 5 or 6 Depends on model:
 - 5 A SUB-D 15-way connector for connection CANopen bus with OTB1C0DM9LP model.
 - 6 Two RJ45 connectors for connection Modbus serial link with OTB1S0DM9LP model.
- 7 Terminal for connection of \pm 24 V supply.
- 8 One RJ45 connector for operating system update of interface.



Via access door 1

- 9 Two or three coding wheels (depending on model) for OTB island address and communication data rate adjustment.

Mounting: the interface modules is mounted on 35 mm (1.378 in.) symmetrical \perp rail. Mounting kit TWDXMT5 (supplied in lots of 5) allows plate or panel mounting.

Interface modules with integrated digital I/O

Supply voltage	Number and type of integrated I/O			Connection by Link	Reference	Weight kg lb
	Inputs	Solid-state outputs	Relay outputs			
\pm 24 V	12 I \pm 24 V IEC type 1 (1 common)	2 O \pm 24 V (1 common)	6 O \pm 30 V / \sim 240 V 2 A (3 commons)	Removable screw terminal block	CANopen bus Modbus RS 485 serial link	OTB1C0DM9LP 0.195 0.430 OTB1S0DM9LP 0.190 0.430

Separate parts

Description	Application	Number of commons	Connection by	Number of wires	Reference	Weight kg
Commoning modules	For grouping input or output commons, 8 A maximum; inter-module	2 isolated groups	Removable screw terminal block	2 x 10	OTB9ZZ61JP	0.100 0.220
Mounting kit Sold in lot of 5	Plate or panel mounting of modules	–	–	–	TWDXMT5	–
Software and documentation	Configuration software "Modicon Configuration Tool-Lite" and hardware user guide	–	–	–	FTXES01	0.050 1.102

Connection accessories

Description	Application	Reference	–
CANopen bus	Cabling system: junction boxes, cables, cordsets, IP 20 and IP 67 accessories	See page 4	–

(1) Only the communication part 5, 6 and 9 is dedicated to each model and can differ, the general description remains the same.



OTB1C0DM9LP



OTB1S0DM9LP



OTB9ZZ61JP

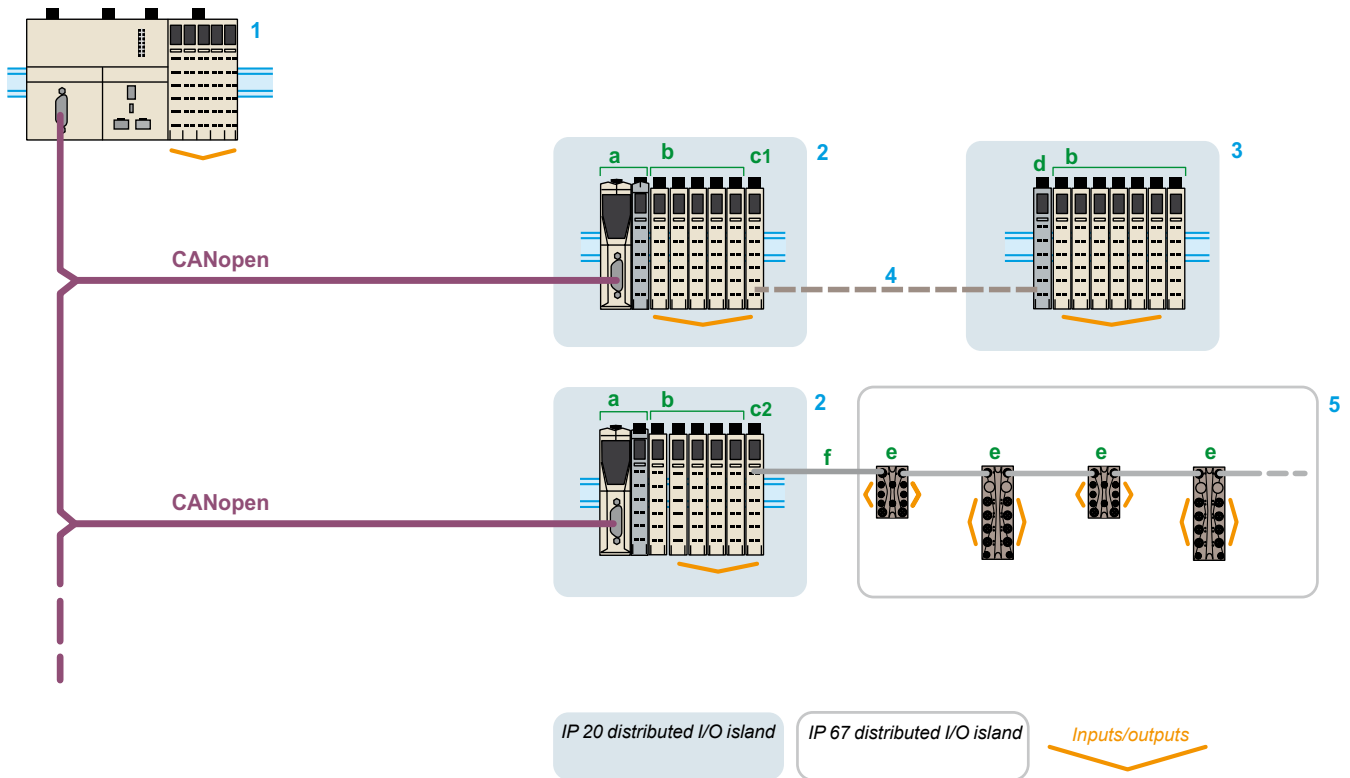
CANopen for machines

Modicon TM5 (IP 20) interface module for distributed I/O on CANopen bus for Modicon M258 logic controller, Modicon LMC058 and Modicon LMC078 motion controllers

Presentation

To enhance its "Flexible machine Control" concept, a key component of MachineStruxure™, the Modicon M258 logic controller, Modicon LMC058 and Modicon LMC078 motion controller offers, Schneider Electric offers a Modicon TM5 CANopen interface module providing CANopen access to distributed I/O.

- M258 logic controller, Modicon LMC058 and Modicon LMC078 motion controllers offer the possibility of creating distributed I/O islands via the TM5 expansion bus, which enables the architecture to be adapted to match the topology of the machine as closely as possible and reduces wiring costs.
- The Modicon TM5 CANopen interface module allows the connection of distributed I/O islands (sensors and actuators) that are distributed over machines via the CANopen fieldbus. These islands communicate on the CANopen bus.



- 1 Modicon M258 logic controller, Modicon LMC058 or Modicon LMC078 motion controllers: CANopen bus masters.
- 2 IP 20 distributed I/O islands (1). Composition: TM5 CANopen interface module (slave) (a) + TM5 compact block or I/O modules (b) + transmitter modules TM5SBET1 (c1)/TM5SBET7 (c2).
- 3 IP 20 distributed I/O island (1). Composition: receiver module TM5SBER2 (d) + TM5 compact block or TM5 I/O modules (b).
- 4 TM5 expansion bus (1). Composition: remote I/O connection cable TCSXCNNXN100.
- 5 IP 67 distributed I/O island (2). Composition: TM7 IP67 I/O blocks (digital or analog) (e) + expansion bus cable TM7TCSXCN●●●E (f).

(1) Modicon TM5 extension modules.
 (2) Modicon TM7 I/O blocks and TM7 expansion bus cables.

CANopen for machines

Modicon TM5 (IP 20) interface module for distributed I/O on CANopen bus for Modicon M258 logic controller, Modicon LMC058 and Modicon LMC078 motion controllers



Presentation

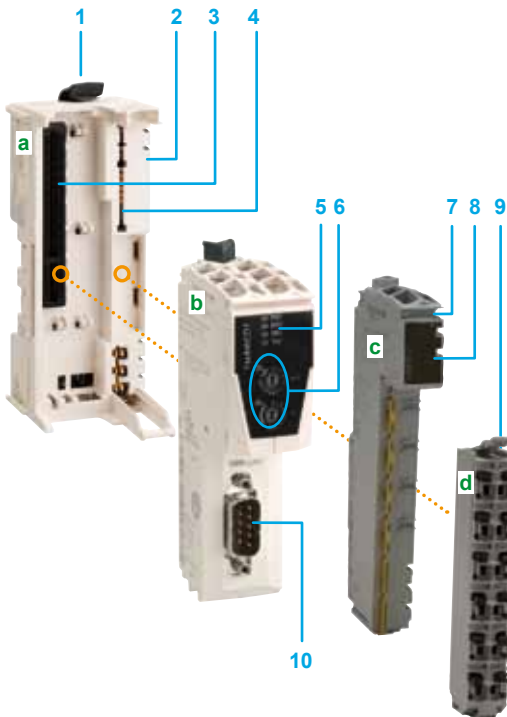
The TM5 CANopen interface module offer consists of 4 parts to be ordered separately (1):

- A bus base, TM5ACBN1 (2)
- A CANopen electronic interface module, TM5NCO1
- A power distribution electronic module, TM5SPS3
- A removable terminal block, TM5ACTB12PS

The modules can be mechanically assembled on the bus base before mounting on a symmetrical rail.

These modules offer the following advantages:

- Removable terminal block
- Spring terminals for connecting the power supply of the interface module and the I/O expansion modules quickly, with no tools required. In addition, the quality of the spring terminals avoids the need for periodic retightening



Description

The CANopen interface module is a combination of 4 products: A TM5ACBN1 bus base (a) + a TM5NCO1 CANopen electronic interface module (b) + a TM5SPS3 power distribution electronic module (c) (1) + a TM5ACTB12PS removable terminal block (d).

This assembly comprises:

- 1 A mechanical locking lever for mounting/dismounting on a symmetrical rail
- 2 On the side of the base, an expansion bus connection for the link with the next module
- 3 A slot for the CANopen interface module with connector
- 4 A slot for the power distribution module with connector
- 5 A channel and interface module diagnostics LED display block
- 6 Two rotary selector switches for addresses on the bus
- 7 A slot for labelling (label-holder)
- 8 A channel and power distribution module diagnostics LED display block
- 9 A removable spring terminal block with locking clip and slots for coloured identifiers
- 10 A 9-way male SUB-D connector for connecting to the CANopen bus

(1) Also sold in kit, see page 19

(2) Supplied with 2 protective plates, TM5ACPL10 and TM5ACPR10.

CANopen for machines

Modicon TM5 (IP 20) interface module for distributed I/O on CANopen bus for Modicon M258 logic controller, Modicon LMC058 and Modicon LMC078 motion controllers

Specifications		
Conformity with standards		IEC 61131-2
Product certifications		CE, UL, CSA, GOST-R and c-Tick
Temperature	Operation	Horizontal mounting: - 10...+ 60°C (1) Vertical mounting: - 10...+ 50°C
	Storage	- 40...+ 70°C
Relative humidity		95% max. without condensation
Degree of protection		IP 20 conforming to IEC 61131-2
Degree of pollution		≤ 2 conforming to IEC 60664
Altitude	Operation	0...2000 m
	Storage	0...3000 m
Vibration resistance (mounting on rail)		5...8.4 Hz (3.5 mm fixed amplitude) 8.4...150 Hz (9.8 m/s ² fixed acceleration)
Shock resistance		147 m/s ² (15 gn) for 11 ms
Connector	Type	Removable spring terminals
	Number of operations	50 min.
Electromagnetic compatibility		
Electrostatic discharges conforming to EN/IEC 61000-4-2		8 kV: air discharge 4 kV: direct contact
Electromagnetic fields conforming to EN/IEC 61000-4-3		10 V/m (80 MHz...2 GHz) 1 V/m (2...2.7 GHz)
Fast transients conforming to EN/IEC 61000-4-4		Supply: 2 kV I/O: 1 kV Shielded cable: 1 kV (repetition frequency 5 and 100 kHz)
Immunity to overvoltages, 24 V\overline{DC} circuit conforming to EN/IEC 61000-4-5		1 kV in common mode
		0.5 kV in differential mode
Induced magnetic fields conforming to EN/IEC 61000-4-6		10 Vrms (0.15...80 MHz)
Conducted emissions conforming to EN/IEC 55011/CISPR11		150...500 kHz, quasi-peak at 79 dB μ V
		500 kHz...30 MHz, quasi-peak at 73 dB μ V
Radiated emissions conforming to EN/IEC 55011/CISPR11		30...230 MHz, 10 m @ 40 dB μ V/m
		230 MHz...1 GHz, 10 m @ 47 dB μ V/m

(1) Some devices have an operating temperature which requires a weighting factor between 55° and 60°C and may be subject to other restrictions. Refer to the user guide, which can be downloaded from www.schneider-electric.com

CANopen for machines

Modicon TM5 (IP 20) interface module for distributed I/O on CANopen bus for Modicon M258 logic controller, Modicon LMC058 and Modicon LMC078 motion controllers



TM5NCO1



TM5SPS3



TM5ACBN1



TM5ACTB12PS



TM5ACTLC100



TM5ACTCH100



TM5ACLPL10



TM5ACLPR10



TM5NCO1K

References

CANopen electronic interface module

Description	Characteristics	Reference	Weight kg/ lb
CANopen electronic interface module	CAN bus communication module with CANopen protocol Module colour: white	TM5NCO1	0.025/ 0.055

Power distribution electronic module

Input power supply	Characteristics	Reference	Weight kg/ lb
24 V ~	Power supply for the CANopen bus interface and I/O expansion modules Module colour: grey	TM5SPS3	0.025/ 0.055

Bus base

Power supply	Characteristics	Unit reference	Weight kg/ lb
24 V ~	Use for TM5NCO1 and TM5SPS3 electronic modules Supplied with 2 protective plates TM5ACPL10 and TM5ACPR10 Colour of the base: white	TM5ACBN1	0.020/ 0.044

Terminal block

Used for	Characteristics	Unit reference	Weight kg/ lb
Power distribution electronic module TM5SPS3	12 spring terminals Terminal block colour: grey	TM5ACTB12PS	0.016/ 0.035

Accessories

Description	Use for	Colour	Sold in lots of	Unit reference	Weight kg/ lb
Plain text cover holder (label-holder)	Labelling the I/O channel terminal blocks	Transparent	100	TM5ACTCH100	0.200/ 0.441
Terminal block shield locking clip (Order with plain text cover holder TM5ACTCH100)	Locking plain text cover holder TM5ACTCH100	Transparent	100	TM5ACTLC100	0.100/ 0.220
Precut sheet of paper labels	Plain text cover holder TM5ACTCH100	White	100	TM5ACTLS100	
Coloured plastic identifiers	Labelling 16 connection channel terminals	White	1	TM5ACLITW1	0.015/ 0.033
		Red	1	TM5ACLITR1	
		Blue	1	TM5ACLITB1	
Metal tool	Inserting/removing TM5ACLIT●1 identifiers	Black	1	TM5ACLT1	0.030/ 0.066
Retaining plates for bus bases	Held on the left side	White	10	TM5ACLPL10	0.004/ 0.009
	Held on the right side	White	10	TM5ACLPR10	
Locking clips	For electronic modules	Black	100	TM5ACADL100	0.001/ 0.002

Interface module kit

Description	Composition	Reference	Weight kg/ lb
Kit including a CANopen electronic interface module, a power distribution electronic module, a bus base and a terminal block	TM5NCO1 + TM5SPS3 + TM5ACBN1 + TM5ACTB12PS	TM5NCO1K	0.076/ 0.168

Configuration software

SoMachine software, Performance distributed I/O configuration software, please consult on our web site www.schneider-electric.com

CANopen for machines

CANopen interface blocks IP 67

for Modicon M258 logic controller, Modicon LMC058 and LMC078 motion controllers

Presentation

To enhance its "Flexible machine Control" concept, a key component of MachineStruxure™, Schneider Electric offers Modicon TM7 IP 67 blocks for mounting outside electrical cabinets, directly on the installation. The IP 67 protection of these blocks enables them to be used within processes or machines in harsh environments (splashing water, oil, dust, etc.).

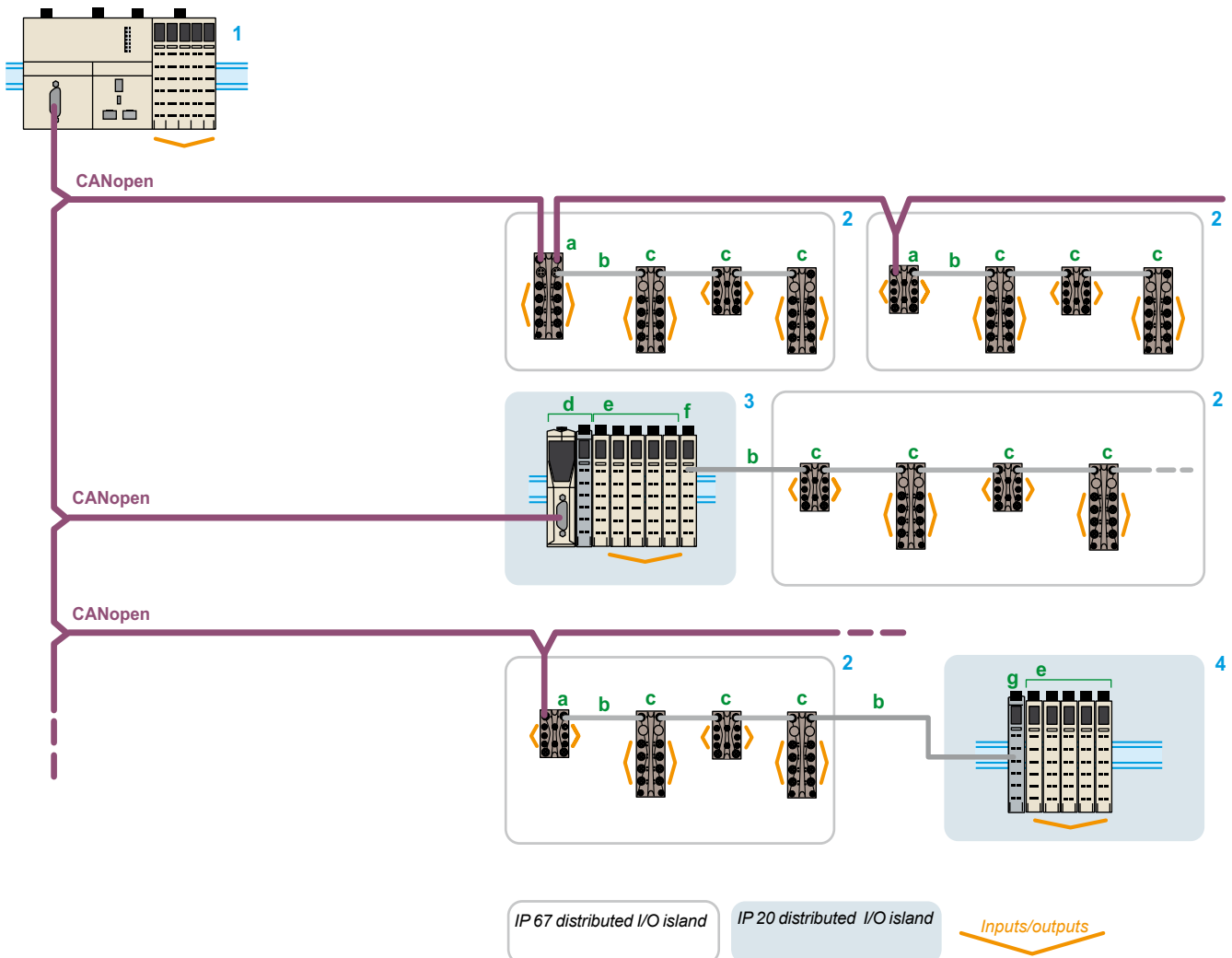
They have the following characteristics:

- Dust and damp proof
- Robust and compact
- Rapid wiring, economical to use

The CANopen interface blocks enable sensors and actuators distributed over machines to be connected via the CANopen fieldbus. These interface I/O blocks communicate on the bus. They have one part for connecting sensors and actuators using M8 or M12 connectors and one part for connection to the CANopen fieldbus.

The interface I/O block offer comprises IP 67 blocks that connect to a CANopen bus and have digital channels that can be configured as inputs or outputs, including:

- A CANopen interface block with 8 configurable I/O for connection via M8 connector
- Two CANopen interface blocks with 16 configurable I/O



- 1 Modicon M258 logic controller or Modicon LMC058 and LMC078 motion controllers: CANopen bus masters.
- 2 IP 67 distributed I/O islands. Composition: TM7 CANopen interface block (slave) with digital I/O (a) + TM7 expansion bus cable (b) + TM7 digital/analog blocks (c) (1).
- 3 IP 20 distributed I/O island. Composition: TM5 CANopen interface module (slave) (d) + TM5 compact (2) or TM5 modules (e) (2) + transmitter module TM5SBET7 (f) (2).
- 4 IP 20 distributed I/O island. Composition: receiver module TM5SBER2 (g) (2) + TM5 modules (e) (2).

(1) Modicon TM7 Digital or analog block, please consult on our web site www.schneider-electric.com
 (2) Modicon TM5 offer, please consult on our website www.schneider-electric.com

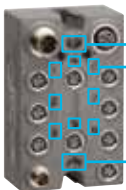
CANopen for machines

CANopen interface blocks IP 67

for Modicon M258 logic controller, Modicon LMC058 and LMC078 motion controllers



CANopen interface block with digital I/O



Communication bus status LED
Channel status LED

Power supply status LED

Diagnostic functions

The diagnostic monitoring of faults is indicated by LEDs on CANopen interface I/O blocks, expansion blocks and power distribution blocks and informs the control system (M258 logic controller or LMC058 and LMC078 motion controllers) via the TM7 bus.

Each Modicon TM7 block has LEDs

- To display the status of the TM7 bus, the channel and the power supply
- For quick, precise location of a fault

There are several levels of diagnostics:

- Diagnostics per channel:
 - State of inputs
 - State of outputs
- Communication bus diagnostics:
 - On CAN bus (CANopen interface I/O block)
 - On TM7 expansion bus (CANopen interface I/O block and I/O expansion blocks).

Specifications

Conformity with standards	IEC 61131-2
Product certifications	CE, cURus, GOST-R and c-Tick, ATEX (II 3g EEx nA II T5, IP 67, Ta = 0...60°C)
Temperature	Operation: -10...+60°C (14...140°F) Storage: -25...+85°C (-13...185°F)
Relative humidity	5...95% (without condensation)
Degree of pollution conforming to IEC 60664	2
Degree of protection conforming to IEC 61131-2	IP 67
Altitude	Operation: 0...2000 m (0...6560 ft.) (1) Storage: 0...3000 m (0...9842 ft.)
Vibration resistance conforming to IEC 60721-3-5 Class 5M3	DIN rail mounted 7.5 mm (0.295 in.) 2...8 Hz fixed amplitude 20 m/s ² (2 gn) 8...200 Hz fixed acceleration 40 m/s ² (4 gn) 200...500 Hz fixed acceleration
Shock resistance conforming to IEC 60721-3-5 Class 5M3	300 m/s ² (30 gn) for 11 ms, 1/2 sine wave, type 1 shock
Connectors	Type: M8 and/or M12 Number of operations: 50 min.

Electromagnetic compatibility

Electrostatic discharges conforming to IEC/EN 61000-4-2	± 8 kV, criterion B (air discharge) ± 4 kV, criterion B (direct discharge)
Electromagnetic fields conforming to IEC/EN 61000-4-3	10 V/m, amplitude modulation 80% at 1 kHz (80 MHz...2 GHz) 1 V/m (2...2.7 GHz)
Fast transients conforming to IEC/EN 61000-4-4	Supply: 2 kV, criterion B I/O: 1 kV, criterion B Shielded cable: 1 kV, criterion B Repetition frequency: 5 and 100 kHz
Immunity to overvoltages, 24 V $\overline{\text{---}}$ circuit conforming to IEC/EN 61000-4-5	Supply: □ 1 kV (12 Ω), criterion B in common mode □ 0.5 kV (2 Ω), criterion B in differential mode Unshielded links: □ 1 kV (42 Ω), criterion B in common mode □ 0.5 kV (42 Ω), criterion B in differential mode Shielded links: □ 1 kV (12 Ω), criterion B in common mode □ 0.5 kV (2 Ω), criterion B in differential mode
Induced magnetic fields conforming to IEC/EN 61000-4-6	Line supply, I/O signal connections > 10 m (32.8 ft.) Functional earth connection: 10 Vrms, criterion A, amplitude modulation 80% at 1 kHz (150...80 MHz)
Conducted emissions conforming to EN 55011 (IEC/CISPR11)	150...500 kHz, peak 79 dB μV 500 kHz...30 MHz, peak 73 dB μV
Radiated emissions conforming to EN 55011 (IEC/CISPR11)	30...230 MHz, 10 m (32.8 ft) at 40 dB (μV/m) 230 MHz...1 GHz, 10 m (32.8 ft) at 47 dB (μV/m)

(1) Temperature reduction of 0.5°C (32.9°F) for every additional 100 m (328 ft.) altitude above 2000 m (6560 ft.). Refer to the instruction sheet for each product, downloadable from www.schneider-electric.com

CANopen for machines

CANopen interface blocks IP 67
for Modicon M258 logic controller, Modicon LMC058
and LMC078 motion controllers

Applications

CANopen bus interface with digital I/O



Degree of protection

IP 67	IP 67
-------	-------

Type of housing

Plastic	Plastic
---------	---------

Modularity (number of channels)

Max. number of digital channels	8 channels configurable as inputs or outputs	16 channels configurable as inputs or outputs
Digital inputs	0...8 according to software configuration	0...16 according to software configuration
Digital outputs	0...8 according to software configuration	0...16 according to software configuration

Digital inputs

Voltage/current	24 V \pm 4.4 mA	24 V \pm 4.4 mA
Type	Sink (1)	Sink (1)
IEC 61131-2 conformity	Type 1	Type 1

Digital outputs

Voltage	24 V \pm	24 V \pm
Type	Transistor/Source (2)	Transistor/Source (2)
Current per output	0.5 A max.	0.5 A max.
Current per interface I/O block	4 A max.	4 A max.

Sensor/actuator power supply

Voltage	24 V \pm	24 V \pm
Max. current	500 mA for all channels	500 mA for all channels
Protection against	Overloads, short-circuits and reverse polarity	Overloads, short-circuits and reverse polarity

Connection

CANopen bus	Bus input connector	A-coded 5-way male M12	A-coded 5-way male M12
	Bus output connector	-	A-coded 5-way female M12
TM7 expansion bus	Bus input connector	-	-
	Bus output connector	B-coded 4-way female M12	B-coded 4-way female M12
Digital I/O channels	Sensor connector	3-way female M8, 1 channel per connector	3-way female M8, 1 channel per connector
	Actuator connector	3-way female M8, 1 channel per connector	3-way female M8, 1 channel per connector
Interface I/O block power supply	Input connector	4-way male M8	4-way male M8
	Output connector	4-way female M8	4-way female M8

Diagnostics

By interface I/O block	Yes	Yes
By channel	Yes	Yes
By communication	On CANopen bus	Yes
	On TM7 bus	Yes

Type of CANopen interface I/O block

TM7NCOM08B	TM7NCOM16B
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(1) Sink inputs: positive logic
(2) Source outputs: positive logic

Degree of protection

IP 67

Type of housing

Plastic

Modularity (number of channels)

Max. number of digital channels	16 channels configurable as inputs or outputs
Digital inputs	0...16 according to software configuration
Digital outputs	0...16 according to software configuration

Digital inputs

Voltage/current	24 V \pm 4.4 mA
Type	Sink (1)
IEC 61131-2 conformity	Type 1

Digital outputs

Voltage	24 V \pm
Type	Transistor/Source (2)
Current per output	0.5 A max.
Current per interface I/O block	4 A max.

Sensor/actuator power supply

Voltage	24 V \pm
Max. current	500 mA for all channels
Protection against	Overloads, short-circuits and reverse polarity

Connection

CANopen bus	Bus input connector	A-coded 5-way male M12
	Bus output connector	A-coded 5-way female M12
TM7 expansion bus	Bus input connector	-
	Bus output connector	B-coded 4-way female M12
Digital I/O channels	Sensor connector	A-coded 5-way female M12, 2 channels per connector
	Actuator connector	A-coded 5-way female M12, 2 channels per connector
Interface I/O block power supply	Input connector	4-way male M8
	Output connector	4-way female M8

Diagnostics

By interface I/O block	Yes
By channel	Yes
By communication	Yes
On TM7 bus	Yes

Type of CANopen interface I/O block

TM7NCOM16A

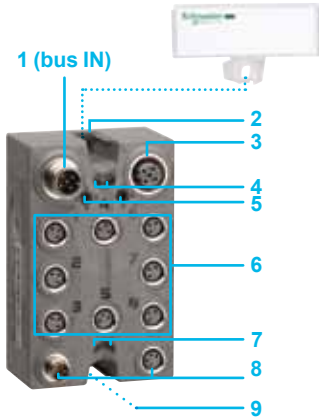
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CANopen for machines

CANopen interface blocks IP 67

for Modicon M258 logic controller, Modicon LMC058 and LMC078 motion controllers

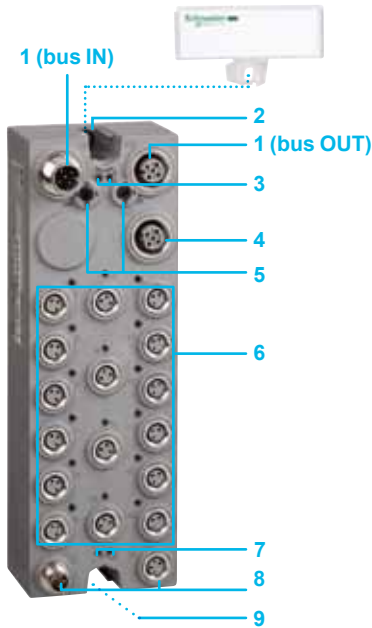


Description

CANopen interface I/O blocks

CANopen **8-channel** interface I/O blocks have the following on the front panel:

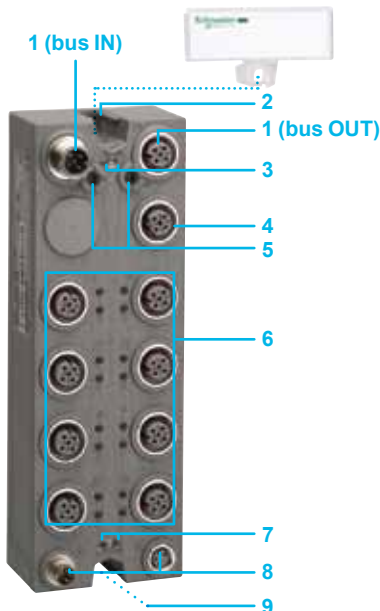
- 1 A male M12 connector (bus IN) for connecting the CANopen bus
- 2 A slot for the interface I/O block label (1)
- 3 A female M12 connector for connecting the TM7 expansion bus
- 4 Two bus diagnostic LEDs
- 5 CANopen address settings rotary switches
- 6 Eight female M8 connectors for connecting sensors and actuators with eight LEDs for indicating channel status
- 7 Two LEDs indicating the status of the sensor and actuator 24 V $\overline{\text{DC}}$ power supplies
- 8 Two M8 connectors for connecting the 24 V $\overline{\text{DC}}$ sensor and actuator power supplies: male for PWR IN, female for PWR OUT
- 9 Fixing using two \varnothing 4 screws (not supplied) and connection of the functional earth when fixing the block on a metal support



CANopen **16-channel** interface I/O blocks have the following on the front panel:

- 1 A male M12 connector (bus IN) and a female M12 connector (bus OUT) for connecting the CANopen bus
- 2 A slot for the interface I/O block label (1)
- 3 Two bus diagnostic LEDs
- 4 A female M12 connector for connecting the TM7 expansion bus
- 5 CANopen address settings rotary switches
- 6 Eight M12 connectors (2 channels per connector) or sixteen M8 connectors for connecting sensors and actuators with LEDs for indicating channel status
- 7 Two LEDs indicating the status of the sensor and actuator 24 V $\overline{\text{DC}}$ power supplies
- 8 Two M8 connectors for connecting the 24 V $\overline{\text{DC}}$ sensor and actuator power supplies: male for PWR IN, female for PWR OUT
- 9 Fixing using two \varnothing 4 screws (not supplied) and connection of the functional earth when fixing the block on a metal support

(1) Label-holder supplied with IP 67 block



CANopen for machines

CANopen interface blocks IP 67

for Modicon M258 logic controller, Modicon LMC058 and LMC078 motion controllers



TM7NCOM08B



TM7NCOM16B



TM7NCOM16A

Modicon TM7 CANopen interface blocks with digital I/O

Max. no. of channels	Number, type of inputs	Number, type of outputs	Sensor/actuator connection	Communication bus	Reference	Weight kg/lb
8 I/O	8, sink (1)	8, transistor/source (2)	8 female M8 connectors	CANopen, TM7 bus	TM7NCOM08B	0.195/ 0.430
16 I/O	16, sink (1)	16, transistor/source (2)	16 female M8 connectors	CANopen, TM7 bus	TM7NCOM16B	0.320/ 0.705
	16, sink (1)	16, transistor/source (2)	8 female M12 connectors	CANopen, TM7 bus	TM7NCOM16A	0.320/ 0.705

(1) Sink inputs: positive logic

(2) Source outputs: positive logic

Architecture, connecting cables

See page 26

Modicon TM7 I/O expansion blocks

Please see our [Modicon TM7 IP 67 modular I/O system](#) catalog (DIA3ED2140405EN), or on our web site www.schneider-electric.com

Connection accessories

See page 28

Separate parts

See page 29

Configuration software

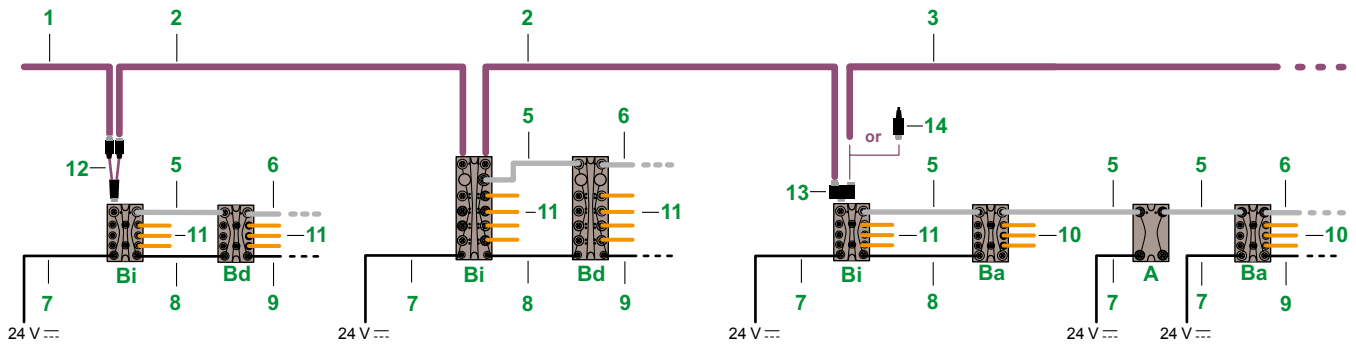
- SoMachine software, please consult our web site www.schneider-electric.com
- Performance distributed I/O configuration software, please consult our web site www.schneider-electric.com

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CANopen interface blocks IP 67

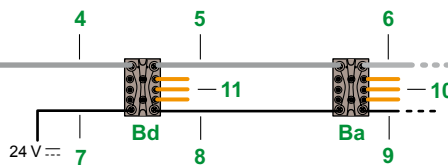
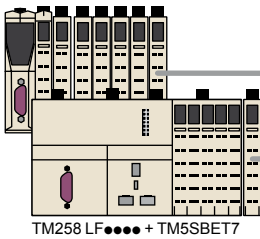
for Modicon M258 logic controller, Modicon LMC058
and LMC078 motion controllers

CANopen architecture



TM7 bus architecture

TM5 NCO1 + TM5 SBET7

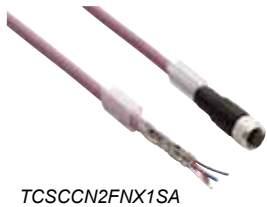


- A** Power distribution block
- Ba** Analog I/O expansion block
- Bd** Digital I/O expansion block
- Bi** CANopen interface I/O block

References

Cables for connection to the CANopen bus

Designation	Description	Item no.	Length m/ft	Reference	Weight kg/lb
CANopen bus connection cables (bus IN)	Equipped with one A-coded 5-way angled female M12 connector and 1 flying lead	1	1/3.28	TCSCCN2FNX1SA	0.089/0.196
			3/9.843	TCSCCN2FNX3SA	0.195/0.430
			10/32.81	TCSCCN2FNX10SA	0.563/1.241
	Equipped with one A-coded 5-way straight female M12 connector and 1 flying lead	1	1/3.28	TCSCCN1FNX1SA	0.089/0.196
			3/9.843	TCSCCN1FNX3SA	0.195/0.430
			10/32.81	TCSCCN1FNX10SA	0.563/1.241
CANopen bus daisy chain cables	Equipped with two A-coded 5-way angled M12 connectors, 1 male and 1 female, at each end	2	0.3/0.98	TCSCCN2M2F03	0.090/0.198
			1/3.28	TCSCCN2M2F1	0.127/0.280
			2/6.56	TCSCCN2M2F2	0.179/0.395
			5/16.40	TCSCCN2M2F5	0.337/0.743
			10/32.81	TCSCCN2M2F10	0.600/1.323
			15/49.21	TCSCCN2M2F15	0.863/1.903
	Equipped with two A-coded 5-way straight M12 connectors, 1 male and 1 female, at each end	2	0.3/0.98	TCSCCN1M1F03	0.090/0.198
			1/3.28	TCSCCN1M1F1	0.127/0.280
			2/6.56	TCSCCN1M1F2	0.179/0.395
			5/16.40	TCSCCN1M1F5	0.337/0.743
			10/32.81	TCSCCN1M1F10	0.600/1.323
			15/49.21	TCSCCN1M1F15	0.863/1.903
CANopen bus connection cables (bus OUT)	Equipped with one A-coded 5-way angled male M12 connector and 1 flying lead	3	1/3.28	TCSCCN2MNX1SA	0.089/0.196
			3/9.843	TCSCCN2MNX3SA	0.195/0.430
			10/32.81	TCSCCN2MNX10SA	0.563/1.241
	Equipped with one A-coded 5-way straight male M12 connector and 1 flying lead	3	1/3.28	TCSCCN1MNX1SA	0.089/0.196
			3/9.843	TCSCCN1MNX3SA	0.195/0.430
			10/32.81	TCSCCN1MNX10SA	0.563/1.241
	25/82.02	TCSCCN1MNX25SA	1.352/2.981		



TM7 expansion bus cables

Designation	Description	Item no.	Length m/ft	Reference	Weight kg/lb
TM7 expansion bus cables (bus IN)	Equipped with one B-coded 4-way angled female M12 connector and 1 flying lead	4	1/3.28	TCSXCN2FNX1E	0.089/0.196
			3/9.843	TCSXCN2FNX3E	0.195/0.430
			10/32.81	TCSXCN2FNX10E	0.563/1.241
			25/82.02	TCSXCN2FNX25E	1.352/2.981
		Equipped with one B-coded 4-way straight female M12 connector and 1 flying lead	4	1/3.28	TCSXCN1FNX1E
	3/9.843		TCSXCN1FNX3E	0.195/0.430	
	10/32.81		TCSXCN1FNX10E	0.563/1.241	
	25/82.02		TCSXCN1FNX25E	1.352/2.981	

CANopen for machines

CANopen interface blocks IP 67

for Modicon M258 logic controller, Modicon LMC058 and LMC078 motion controllers

Connection accessories (continued)

Designation	Description	Item no.	Length m/ft	Reference	Weight kg/lb
TM7 expansion bus cables (continued)					
TM7 bus daisy chain cables	Equipped with two B-coded 4-way angled M12 connectors, 1 male and 1 female, at each end	5	0.3/0.98	TCSXCN2M2F03E	0.090/0.198
			1/3.28	TCSXCN2M2F1E	0.127/0.280
			2/6.56	TCSXCN2M2F2E	0.179/0.395
			5/16.40	TCSXCN2M2F5E	0.337/0.743
			10/32.81	TCSXCN2M2F10E	0.600/1.323
	Equipped with two B-coded 4-way straight M12 connectors, 1 male and 1 female, at each end	5	0.3/0.98	TCSXCN1M1F03E	0.090/0.198
			1/3.28	TCSXCN1M1F1E	0.127/0.280
			2/6.56	TCSXCN1M1F2E	0.179/0.395
			5/16.40	TCSXCN1M1F5E	0.337/0.743
			10/32.81	TCSXCN1M1F10E	0.600/1.323
TM7 expansion bus cables (bus OUT)					
TM7 expansion bus cables (bus OUT)	Equipped with one B-coded 4-way angled male M12 connector and 1 flying lead	6	1/3.28	TCSXCN2MNX1E	0.089/0.196
			3/9.843	TCSXCN2MNX3E	0.195/0.430
	Equipped with one B-coded 4-way straight male M12 connector and 1 flying lead	6	10/32.81	TCSXCN2MNX10E	0.563/1.241
			25/82.02	TCSXCN2MNX25E	1.352/2.981
Power distribution cables					
Power IN power distribution cables	Equipped with one 4-way angled female M8 connector and 1 flying lead	7	1/3.28	TCSXCNEFNX1V	0.041/0.090
			3/9.843	TCSXCNEFNX3V	0.105/0.231
			10/32.81	TCSXCNEFNX10V	0.329/0.725
	Equipped with one 4-way straight female M8 connector and 1 flying lead	7	25/82.02	TCSXCNEFNX25V	0.809/1.784
			1/3.28	TCSXCNDFNX1V	0.041/0.090
			3/9.843	TCSXCNDFNX3V	0.105/0.231
Power daisy chain cables					
Power daisy chain cables	Equipped with two 4-way angled M8 connectors, 1 male and 1 female, at each end	8	10/32.81	TCSXCNDFNX10V	0.329/0.725
			25/82.02	TCSXCNDFNX25V	0.809/1.784
			0.3/0.98	TCSXCNEMEF03V	0.028/0.062
			1/3.28	TCSXCNEMEF1V	0.050/0.110
			2/6.56	TCSXCNEMEF2V	0.082/0.181
	Equipped with two 4-way straight M8 connectors, 1 male and 1 female, at each end	8	5/16.40	TCSXCNEMEF5V	0.178/0.392
			10/32.81	TCSXCNEMEF10V	0.338/0.745
			15/49.21	TCSXCNEMEF15V	0.498/1.098
			0.3/0.98	TCSXCNDMDF03V	0.105/0.231
			1/3.28	TCSXCNDMDF1V	0.329/0.725
Power OUT power distribution cables					
Power OUT power distribution cables	Equipped with one 4-way angled male M8 connector and 1 flying lead	9	2/6.56	TCSXCNDMDF2V	0.809/1.784
			5/16.40	TCSXCNDMDF5V	0.105/0.231
			10/32.81	TCSXCNDMDF10V	0.329/0.725
			15/49.21	TCSXCNDMDF15V	0.809/1.784
			1/3.28	TCSXCNEEXN1V	0.041/0.090
	Equipped with one 4-way straight male M8 connector and 1 flying lead	9	3/9.843	TCSXCNEEXN3V	0.105/0.231
			10/32.81	TCSXCNEEXN10V	0.329/0.725
			25/82.02	TCSXCNEEXN25V	0.809/1.784
			1/3.28	TCSXCNDMNX1V	0.041/0.090
			3/9.843	TCSXCNDMNX3V	0.105/0.231
Cables for connecting analog sensors and actuators					
Cables for connecting sensors and actuators	Equipped with one A-coded 5-way angled male M12 connector and 1 flying lead	10	2/6.56	TCSXCN2M2SA	0.143/0.315
			5/16.40	TCSXCN2M5SA	0.258/0.569
			15/49.21	TCSXCN2M15SA	0.546/1.204
	Equipped with one A-coded 5-way straight male M12 connector and 1 flying lead	10	2/6.56	TCSXCN1M2SA	0.143/0.315
			5/16.40	TCSXCN1M5SA	0.258/0.569
			15/49.21	TCSXCN1M15SA	0.546/1.204
Cables for connecting digital sensors and actuators					
Please consult our "Detection for OsiSense automation solutions" catalog		11			
Accessories					
See next page		12			
		13			
		14			



TCSXCN1M1F●●E



TCSXCN1MNX●●E



TCSXCNDFNX●●V



TCSXCNDMDF●●V



TCXCNEEXN●●V



TCSXCN1M●●SA

CANopen for machines

CANopen interface blocks IP 67

for Modicon M258 logic controller, Modicon LMC058 and LMC078 motion controllers



TM7ACYCJ



TM7ACYC



TM7ACTHA

Accessories

Description	Composition	Item no.	Reference	Weight kg/lb
CAN bus Y cable	Equipped with 2x5-way M12 connectors, 1 male and 1 female, and at the other end: 1x5-way male M12 connector	12	TM7ACYCJ	0.031/0.068
CAN Y connector	For connecting 2xM12 connectors, 1 male and 1 female, to male M12 connector on the expansion block	13	TM7ACYC	0.100/0.220
Line terminator (for end of bus)	Equipped with 1x5-way male M12 connector	14	TM7ACTLA	0.023/0.051
Connector with temperature probe for measurement by thermocouple (1)	Equipped with 1x5-way male M12 connector	–	TM7ACTHA	0.100/0.220

(1) For use with the **TM7 BAI4PLA** expansion block for measurement with compensation of the temperature of the connector.

CANopen for machines


CANopen interface blocks IP 67

for Modicon M258 logic controller, Modicon LMC058
and LMC078 motion controllers



TM7ACMP

Separate parts

Description	Composition	Unit reference	Weight kg/lb
Sealing plugs (1)	For M8 connector for Modicon TM7 IP 67 blocks Lot of 50	TM7ACCB	0.100/0.220
	For M12 connector for Modicon TM7 IP 67 blocks Lot of 50	TM7ACCA	0.100/0.220
Mounting plate on  symmetrical DIN rail	For Modicon TM7 IP 67 blocks	TM7ACMP	0.020/0.044
	For Modicon TM7 IP 67 blocks Lot of 10	TM7ACMP10	0.200/0.441
Set of two screwdrivers	For tightening the rings on M8 and M12 connectors to the correct torque	TM7ACTW	0.198/0.437

(1) The use of sealing plugs ensures that unused connectors on Modicon TM7 IP 67 blocks have IP 67 protection.

A	TCSCNT026M16M	3	TCSXCNEMEF10V	27	TSXCANCADD3	3	VW3CANTAP2	10
AM02CA001V000		7	TCSXCNEMEF15V	27		7		3
		11	TCSXCNEXNX1V	27		11		6
F	TCSXCN1FNX1E	26	TCSXCNEXNX3V	27	TSXCANCADD5	3	VW3M3805R010	3
FTXCN12F5	TCSXCN1FNX3E	26	TCSXCNEXNX10V	27		7		11
FTXCN12M5	TCSXCN1FNX10E	26	TCSXCNEXNX25V	27		11		7
FTXES01	TCSXCN1FNX25E	26	TLACDCBA005	3	TSXCANCB100	3	VW3M3805R030	3
	TCSXCN1M1F1E	27		7		7		7
	TCSXCN1M1F2E	27		11		11		
	TCSXCN1M1F03E	27	TLACDCBA015	3	TSXCANCB300	3	X	
	TCSXCN1M1F5E	27		7		7	XBTZGCANM	5
	TCSXCN1M1F10E	27		11		11	XBTZGCCAN	5
	TCSXCN1M1F15E	27	TLACDCBA030	3	TSXCANCB50	3		
	TCSXCN1M2SA	27		7		7		
	TCSXCN1M5SA	27		11		11		
	TCSXCN1M15SA	27	TLACDCBA050	3	TSXCANCBDD03	3		
	TCSXCN1MNX1E	27		7		7		
	TCSXCN1MNX3E	27		11		11		
	TCSXCN1MNX10E	27	TM5ACADL100	19	TSXCANCBDD1	3		
	TCSXCN1MNX25E	27	TM5ACBN1	19		7		
	TCSXCN2FNX1E	26	TM5ACLITB1	19		11		
	TCSXCN2FNX3E	26	TM5ACLITR1	19	TSXCANCBDD3	3		
	TCSXCN2FNX10E	26	TM5ACLITW1	19		7		
	TCSXCN2FNX25E	26	TM5ACLPL10	19		11		
	TCSXCN2M2F1E	27	TM5ACLPR10	19	TSXCANCBDD5	3		
	TCSXCN2M2F2E	27	TM5ACLT1	19		7		
	TCSXCN2M2F03E	27	TM5ACTB12PS	19		11		
	TCSXCN2M2F5E	27	TM5ACTCH100	19	TSXCANGD100	3		
	TCSXCN2M2F10E	27	TM5ACTLC100	19		7		
	TCSXCN2M2F15E	27	TM5ACTLS100	19		11		
	TCSXCN2M2SA	27	TM5NCO1	19	TSXCANC300	3		
	TCSXCN2M5SA	27	TM5NCO1K	19		7		
	TCSXCN2M15SA	27	TM5SPS3	19	TSXCANC50	3		
	TCSXCN2MNX1E	27	TM7ACCA	29		7		
	TCSXCN2MNX3E	27	TM7ACCB	29		11		
	TCSXCN2MNX10E	27	TM7ACMP	29	TSXCANCDF180T	10		
	TCSXCN2MNX25E	27	TM7ACMP10	29		3		
	TCSXCNDFNX1V	27	TM7ACTHA	28		6		
	TCSXCNDFNX3V	27	TM7ACTLA	28	TSXCANKCDF90T	10		
	TCSXCNDFNX10V	27	TM7ACTW	29		3		
	TCSXCNDFNX25V	27	TM7ACYC	28		6		
	TCSXCNDMDF1V	27	TM7ACYCJ	28	TSXCANKCDF90TP	10		
	TCSXCNDMDF2V	27	TM7NCOM08B	25		3		
	TCSXCNDMDF03V	27	TM7NCOM16A	25		6		
	TCSXCNDMDF5V	27	TM7NCOM16B	25	TSXCANTDM4	10		
	TCSXCNDMDF10V	27	TSXCANCA50	3		3		
	TCSXCNDMDF15V	27		7		6		
	TCSXCNDMNX1V	27		11	TWDXMT5	15		
	TCSXCNDMNX3V	27	TSXCANCA100	3	V			
	TCSXCNDMNX10V	27		7	VW3CANA71	3		
	TCSXCNDMNX25V	27		11		7		
	TCSXCNEFNX1V	27	TSXCANCA300	3		11		
	TCSXCNEFNX3V	27		7	VW3CANCARR03	3		
	TCSXCNEFNX10V	27		11		7		
	TCSXCNEFNX25V	27	TSXCANCADD1	3		11		
	TCSXCNEMEF1V	27		7	VW3CANCARR1	3		
	TCSXCNEMEF2V	27		11		7		
	TCSXCNEMEF03V	27	TSXCANCADD03	3		11		
	TCSXCNEMEF5V	27		7	VW3CANKCDF180T	7		
				11		11		

The Next Generation



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