Modicon TM5
expansion modules

Catalog

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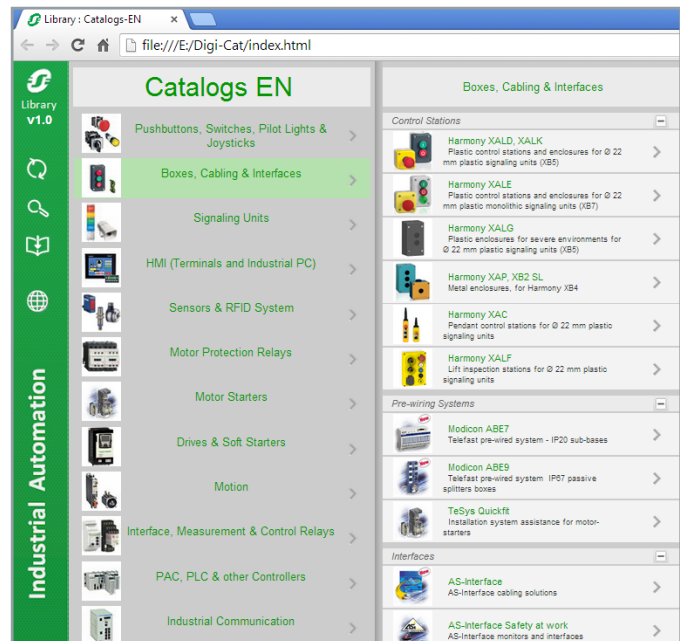
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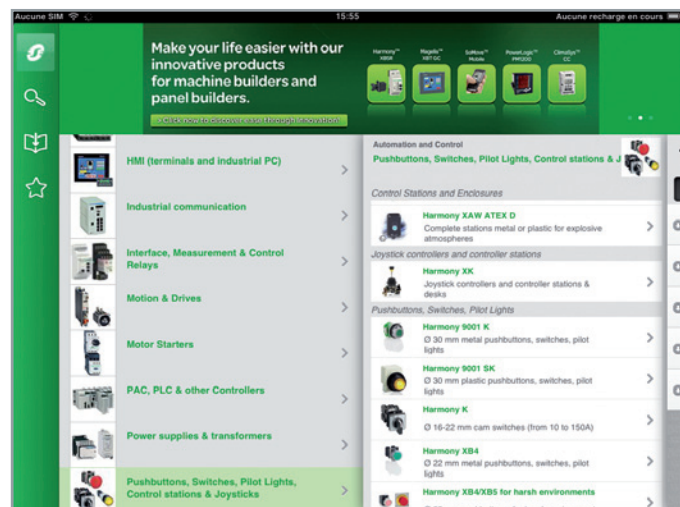
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General contents

Modicon TM5 Expansion modules
Modicon TM5 compact blocks

Applications	Modicon TM5 compact block	20 I/O	36 I/O	42 I/O
	Compatibility of offers	■ Modicon M258 logic controller ■ Modicon LMC058 motion controller		

Channel connection		With removable spring terminal blocks (supplied)		
Digital inputs	Number	**12**	**24**	**24**
	Nominal input voltage	24 V ---	24 V ---	24 V ---
	IEC/EN 61131-2 conformity	Type 1	Type 1	Type 1
	Type of signal (1)	Sink	Sink	Sink
	Type of wiring	3-wire	1-wire	1-wire
	Limit values	20.4... 28.8 V ---	20.4... 28.8 V ---	20.4... 28.8 V ---
	Nominal input current	3.75 mA	3.75 mA	3.75 mA
	Input impedance	6.4 kΩ	6.4 kΩ	6.4 kΩ
	State 0	5 V max. ---	5 V max. ---	5 V max. ---
	State 1	15 V min. ---	15 V min. ---	15 V min. ---
Digital outputs	Number	**8**, transistor	**12**, relays with NO contact	**18**, transistor
	Nominal output voltage	24 V ---	24 V ---	24 V ---
	Output current per channel	0.5 A	0.5 A	0.5 A
	Output current per group of channels	1 A max.	5 A max.	2 A max.
	Type of signal (1)	Source	Source	Source
	Type of wiring	3-wire	1-, 2- or 3-wire	2-wire
	Limit values	20.4...28.8 V ---	20.4...28.8 V ---	20.4...28.8 V ---
	Short-circuit and overload protection	Yes	Yes	Yes
Analog inputs	Number			
	Type			
	Range			
	Resolution			
	Sampling period without filtering			
	with filtering			
Analog outputs	Number			
	Type			
	Range			
	Resolution			
	Response time			
Power supply				
Isolation	Channel-to-channel			
	Between channel groups			
	Channel-to-bus			
Type of Modicon TM5 compact block		**TM5C12D8T**	**TM5C24D12R**	**TM5C24D18T**
Page		5		

(1) Source output: PNP output. Sink output: NPN output.

		24 I/O	16 I/O		

	With removable spring terminal blocks (supplied)			
12				
24 V ---				
Type 1				
Sink				
2-wire				
20.4... 28.8 V ---				
3.75 mA				
6.4 kΩ				
5 V max. ---				
15 V min. ---				
6, transistor				
24 V ---				
0.5 A				
2 A max.				
Source				
2-wire				
20.4...28.8 V ---				
Yes				

4	**8**	**8**	**8**
Voltage/current	Voltage	Current	**4** Voltage + **4** current
- 10…+ 10 Vdc 0…20 mA/4…20 mA	- 10…+ 10 Vdc	0….20 mA/4…20 mA	Voltage : - 10…+ 10 Vdc Current : 0…20 mA/4…20 mA
12 bits	11 bits + sign	12 bits	Voltage: 11 bits + sign Current: 12 bits
300 µs	–	–	–
1 ms	50 ms	50 ms	50 ms
2	**8**	**8**	**8**
Voltage/current	Voltage	Current	**4** Voltage + **4** current
- 10…+ 10 Vdc 0…20 mA	- 10…+ 10 Vdc	0…20 mA	Voltage : - 10…+ 10 Vdc Current : 0…20 mA
12 bits	11 bits + sign	12 bits	Voltage: 11 bits + sign Current: 12 bits
1 ms max.	20 ms max. 5 ms per channel	20 ms max. 5 ms per channel	20 ms max. 5 ms per channel
Internal	Internal	Internal	Internal
Non-isolated	Non-isolated	Non-isolated	Non-isolated
–	–	–	–
500 V ∿ RMS	500 V ∿ RMS	500 V ∿ RMS	500 V ∿ RMS
TM5C12D6T6L	**TM5CAI8O8VL**	**TM5CAI8O8CL**	**TM5CAI8O8CVL**
5			

Modicon TM5 Expansion modules
Modicon TM5 compact blocks

Presentation

Modicon **TM5C●●●●●●●** compact blocks offer a low-cost solution for expanding digital and/or analogue I/O control system configurations.
They consist of a block containing the circuit boards, the bus bases, and the **TM5ACTB12** removable terminal blocks.

They complement the embedded I/O in the various M258 controllers and LMC058/LMC078 motion controllers and represent a cost-effective way to create configurations requiring a large number of digital or analogue channels.

The **TM5C●●●●●●●** I/O compact block offer consists of:
■ A 24 V ⎓ digital I/O compact block, with 12 sink inputs and 8 transistor outputs
■ A 24 V ⎓ digital I/O compact block, with 24 sink inputs and 12 relay outputs
■ A 24 V ⎓ digital I/O compact block, with 24 sink inputs and 18 transistor outputs
■ A 24 V ⎓ mixed I/O compact block, with 12 sink digital inputs and 4 analogue inputs, and 6 transistor digital outputs and 2 analogue outputs
■ 3 x 24 V ⎓ analogue I/O compact block:
□ a block with 8 voltage I/O
□ a block with 8 current I/O
□ a block with 4 voltage I/O + 4 current I/O.

Regardless of which compact block is chosen, the format is the same and corresponds to five I/O expansion modules.
TM5 compact blocks are connected to the TM5 expansion bus on M258 controllers and LMC058/LMC078 motion controllers.

The advantage of these blocks is their compact size, ease of wiring and, depending on the reference, the option of combining different types of channel.
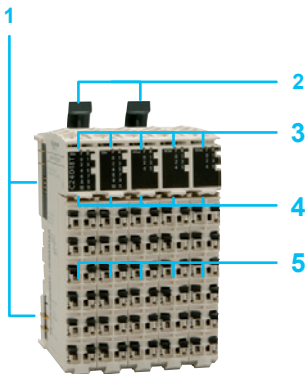
Description

TM5 compact blocks comprise:
1 On each side of the base, a bus expansion connection for the link with the previous controller or block
2 Two mechanical locking clips for mounting/dismounting on a symmetrical rail
3 Five LED display blocks for the channels and compact block diagnostics
4 Five slots for the plain text cover holder (label-holder)
5 Five removable spring terminal blocks, each with locking clip and slots for coloured identifiers

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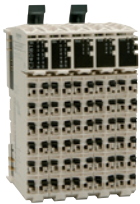
TM5C12D8T

TM5C24D12R

TM5C24D18T

TM5C12D6T6L

TM5CAI8O8VL

TM5CAI8O8CL

TM5CAI8O8CVL

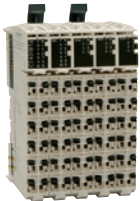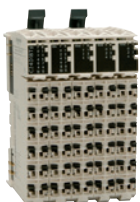| References				
Number of I/O	**Inputs**	**Outputs** *(1)*	**Reference**	**Weight** **kg** *lb*
TM5 I/O digital compact blocks				
20 I/O	12 digital inputs, 24 V ⎓, Sink, 3-wire	8 transistor digital outputs, 3-wire, 24 V ⎓, Source, 0.5 A	**TM5C12D8T**	0.037 *0.082*
36 I/O	24 digital inputs, 24 V ⎓, Sink, 1-wire, 0.5 A max	12 digital outputs, 5 A relay, with NO contact, 30 V ⎓/230 V ∿	**TM5C24D12R**	0.037 *0.082*
42 I/O	24 digital inputs, 24 V ⎓, Sink, 1-wire	18 transistor digital outputs, 24 V ⎓, Source, 0.5 A, 2-wire	**TM5C24D18T**	0.037 *0.082*
TM5 I/O digital/analogue compact blocks				
24 I/O	12 digital inputs, 24 V ⎓, Sink, 2-wire	6 transistor digital outputs, 2-wire, 24 V ⎓, Source, 0.5 A	**TM5C12D6T6L**	0.037 *0.082*
	4 analogue inputs - 10…+ 10 V, 0…20 mA, 4…20 mA, resolution 12 bits	2 analogue outputs, - 10…+ 10 V, 0…20 mA, resolution 12 bits		
TM5 I/O analogue compact blocks				
16 I/O	8 analogue voltage inputs - 10…+ 10 Vdc Resolution 11 bits + sign	8 analogue voltage ouputs - 10…+ 10 Vdc Resolution 11 bits + sign	**TM5CAI8O8VL**	0.037 *0.082*
	8 analogue current inputs 0…20 mA/4…20 mA Resolution 12 bits	8 analogue current ouputs 0…20 mA Resolution 12 bits	**TM5CAI8O8CL**	0.037 *0.082*
	8 analogue inputs: □ 4 voltage inputs - 10…+ 10 Vdc □ 4 current inputs 0…20 mA/4…20 mA Resolution □ voltage: 11 bits + sign □ current : 12 bits	8 analogue outputs: □ 4 voltage outputs - 10…+ 10 Vdc □ + 4 current outputs 0…20 mA Resolution □ voltage: 11 bits + sign □ current : 12 bits	**TM5CAI8O8CVL**	0.037 *0.082*

Terminal blocks			
Use	**Description**	**Reference**	**Weight** **kg** *lb*
For I/O compact blocks, 24 V ⎓ power supply	12 spring terminals	**TM5ACTB12**	0.020 *0.044*
Accessories			
See page 26			

(1) Source output: PNP output, sink output: NPN output.

Modicon TM5 Expansion modules
Modicon TM5 Digital modules
and Modicon TM5 Digital/Analog module

Applications

	2 to 16 digital input channels	4 digital input channels and 1 analog input channel 2 digital output channels and 1 analog output channel	4 digital input channels and 4 transistor output channels with timestamping and oversampling function	8 digital input channels 4 transistor output channels	2 to 16 transistor output channels	2 transistor output channels	2 to 4 relay output channels
Type of expansion module	see above						
Compatibility of offers	■ Modicon M258 logic controller ■ Modicon LMC058 motion controller ■ Modicon LMC078 motion controller ■ PacDrive LMC Eco/Pro/Pro2 controllers	■ PacDrive LMC Eco/Pro/Pro2 controllers			■ Modicon M258 logic controller ■ Modicon LMC058 motion controller ■ Modicon LMC078 motion controller ■ PacDrive LMC Eco/Pro/Pro2 controllers		

Channel connection
With removable spring terminal blocks (to be ordered separately)

Digital inputs (2 to 16 digital input channels)

Number	2	4	6	12	16	2	4	6
Nominal input voltage	24 V ⎓					100/240 V ∿		
IEC/EN 61131-2 conformity	Type 1					Type 1		
Type of signal (1)	Sink					–		
Type of wiring	1-, 2- or 3-wire		1 or 2-wire		1-wire	1-, 2- or 3-wire		1 or 2-wire
Limit values	⎓ 20.4... 28.8 V					∿ 100... 240 V		
Nominal input current	3.75 mA				2.68 mA	5 mA at ∿ 100 V 11 mA at ∿ 240 V		10 mA at ∿ 120 V
Input impedance	6.4 kΩ				8.9 kΩ			
State 0	⎓ 5 V max.					–		
State 1	⎓ 15 V min.					–		

Type of electronic expansion module	TM5 SDI2D	TM5 SDI4D	TM5 SDI6D	TM5 SDI12D	TM5 SDI16D	TM5 SDI2A	TM5 SDI4A	TM5 SDI6U
Associated bus base (2)	TM5ACBM11, TM5ACBM15					TM5ACBM12		
Associated terminal block (2)	TM5ACTB06, TM5ACTB12			TM5 ACTB12	TM5 ACTB16	TM5ACTB32		
Pages	9					11		

Digital inputs (right page modules)

Number	4	4	8
Nominal input voltage	24 V ⎓	24 V ⎓	24 V ⎓
IEC/EN 61131-2 conformity	Type 1	Type 1	Type 1
Type of signal (1)	Sink	Sink	Sink
Type of wiring	1-wire	1-wire	1-wire
Limit values	⎓ 20.4...28.8 V	⎓ 20.4...28.8 V	⎓ 20.4...28.8 V
Nominal input current	3.3 mA	1.3 mA	3.75 mA
Input impedance	7.2 kΩ	18.4 kΩ	6.4 kΩ
State 0	⎓ 5 V max.	⎓ 5 V max.	⎓ 5 V max.
State 1	⎓ 15 V min.	⎓ 15 V min.	⎓ 15 V min.

Digital outputs (right page modules)

Number	2	4	4	2	4	4	6	8	12	16	2	2	4
Nominal output voltage	24 V ⎓	24 V ⎓	24 V ⎓	24 V ⎓							100/240 V ∿	⎓ 30/∿ 230 V	
Output current per channel	0.5 A	0.1 A	0.5 A	0.5 A	0.5 A	2 A	0.5 A	2 A	0.5 A		1 A	5 A	
Output current per group of channels	1 A max.	0.4 A	2 A max.	1 A max.	2 A max.	4 A max.	3 A max.	8 A max.	6 A max.		1 A	10 A max.	
Type of signal (1)	Source	Source	Source	Source							Solid state relay	Relay	
Type of wiring	1-wire	1-wire	1-wire	1-, 2- or 3-wire			1 or 2-wire	1-wire			3-wire	NO/NC contact	
Limit values	⎓ 20,.4...28.8 V	⎓ 20,.4...28.8 V	⎓ 20.4...28.8 V	⎓ 20.4...28.8 V							∿ 80…264 V	⎓ 24…36 V ∿ 184...276 V	
Short-circuit and overload protection	Yes	Yes	Yes	Yes							Yes	No	

Analog inputs

Number	1
Type	Voltage/current
Range	- 10…+ 10 Vdc 0…20 mA/4…20 mA
Resolution	12 bits + sign
Sampling period — without filtering	400 ms
— with filtering	1 ms max.

Analog outputs

Number	1
Type	Voltage/current
Range	- 10…+ 10 Vdc 0…20 mA
Resolution	12 bits
Response time	1 ms max.

Type of electronic expansion module	TM5 SMM6D2L	TM5 SDM8DTS	TM5 SDM12DT	TM5 SDO2T	TM5 DO4T	TM5 SDO4TA	TM5 SDO6T	TM5 SDO8TA	TM5 SDO12T	TM5 SDO16T	TM5 SDO2S	TM5 SDO2R	TM5 SDO4R TM5 SDO4R4
Associated bus base (2)	TM5ACBM11, TM5ACBM15											TM5ACBM12	
Associated terminal block (2)	TM5ACTB12			TM5ACTB06, TM5ACTB12						TM5ACTB12	TM5 ACTB16	TM5ACTB32	
Pages	9											11	

(1) Source output: PNP output, sink output: NPN output. (2) to be ordered separately.

More technical information on www.schneider-electric.com

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Modicon TM5 Expansion modules
Modicon TM5 Digital modules
and Modicon TM5 Digital/Analog module

Presentation

The **TM5S●●●●** digital module offer consists of:
■ Thirteen input, mixed I/O and output electronic modules (sensor and preactuator 24 V ⎓ power supply): **TM5SD●●●●**
■ One mixed I/O module with timestamping and oversampling functions: **TM5SDM8DTS.**
The Time stamping function is to associate a date and time to an event and to record the time when the operation was effected. The electronic module TM5SDM8DTS was designed to be used (only) with the system PacDrive 3 and the Sercos bus interface TM5NS31 *(1)*.
■ One Digital/Analog mixed I/O electronic module: **TM5SMM6D2L**.

They complement the embedded I/O in the various M258 logic controllers and LMC058/LMC078 motion controllers. They are used to adapt to the application requirements as closely as possible to reduce the installation and wiring costs.
Each digital expansion module consists of three parts to be ordered separately *(2)*:
□ An I/O electronic module
□ A bus base
□ A terminal block

These modules can be mechanically assembled before mounting on a symmetrical rail.
These modules offer the following advantages:
□ Removable terminal
□ Spring terminals which can be used for quick, tool-free connection of the sensors and preactuators in addition, the quality of the spring terminals avoids the need for periodic retightening
□ Hot swapping

The digital modules offer includes:
■ Five 24 V ⎓ digital input modules with 2, 4, 6, 12 or 16 sink inputs
■ One 24 V ⎓ digital mixed I/O electronic module, with 8 sink inputs and 4 source transistor outputs
■ Seven digital output electronic modules with 2, 4, 6, 12 or 16 source transistor outputs

The digital/analog module offer includes:
■ one mixed I/O electronic module with four 24 V ⎓ digital inputs and one voltage/current analog input, two 24 V digital outputs and one voltage/current analog output.

Description

TM5SD●●●● digital modules and digital/analog **TM5SMM6D2L** module comprise:
1 A bus base
2 A mechanical locking lever for mounting/dismounting on a symmetrical rail
3 On each side of the base, a bus expansion connection for the link with the previous controller or module
4 A digital input, I/O or output electronic module
5 A channel and module diagnostics LED display block
6 A slot for labelling (label-holder)
7 A removable spring terminal block with locking lever and slots for coloured identifiers

(1) Sercos bus interface TM5NS31, see page 34.
(2) Also sold in kits, see page 27
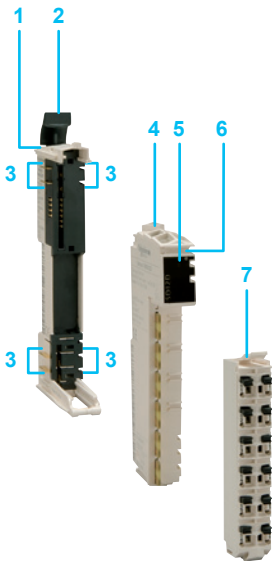
TM5SD●●●

TM5SMM6D2L

TM5ACBM●●

TM5ACTB●●

References

Digital input electronic modules

Voltage	Number and type of channels (1)		Reference	Weight kg lb
24 V ⎓ inputs	2 sink inputs		**TM5SDI2D**	0.025 *0.055*
	4 sink inputs		**TM5SDI4D**	
	6 sink inputs		**TM5SDI6D**	
	12 sink inputs		**TM5SDI12D**	
	16 sink inputs		**TM5SDI16D**	

Digital mixed inputs/outputs electronic module

24 V ⎓ inputs/ outputs	4 digital inputs 4 source transistor outputs, 0.1 A per channel, with timestamping and oversampling function		**TM5SDM8DTS** *For use only with PacDrive 3 system and TM5 Sercos bus interface TM5NS31*	0.022 *0.048*
	8 sink inputs, 4 source transistor outputs		**TM5SDM12DT**	0.025 *0.055*

Digital output electronic modules

24 V ⎓ outputs	2 source transistor outputs	0.5 A per channel	**TM5SDO2T**	0.025 *0.055*
	4 source transistor outputs	0.5 A per channel	**TM5SDO4T**	
	4 source transistor outputs	2 A per channel, 4 A per module	**TM5SDO4TA**	
	6 source transistor outputs	0.5 A per channel	**TM5SDO6T**	
	8 source transistor outputs	2 A per channel	**TM5SDO8TA**	
	12 source transistor outputs	0.5 A per channel	**TM5SDO12T**	
	16 source transistor outputs	0.5 A per channel	**TM5SDO16T**	

Digital/Analog mixed inputs/outputs electronic module

24 V ⎓ inputs/outputs	4 sink digital inputs	–	**TM5SMM6D2L**	0.025 *0.055*
	1 analog input	- 10...+ 10 Vdc, 0…20 mA/4…20 mA		
	2 source transistor outputs	0.5 A per channel		
	1 analog output	0…20 mA		

Bus bases

Power supply	Characteristics		Reference	Weight kg lb
24 V ⎓	–		**TM5ACBM11**	0.020 *0.044*
	Address setting		**TM5ACBM15**	0.020 *0.044*

Terminal blocks

Use	Description		Reference	Weight kg lb
For electronic modules, 24 V ⎓ power supply	6 contacts		**TM5ACTB06**	0.016 *0.035*
	12 contacts		**TM5ACTB12**	0.020 *0.044*
	16 contacts		**TM5ACTB16**	0.020 *0.044*

Accessories

See page 26

Digital I/O expansion module kits

See page 27

(1) Source output: PNP output, sink output: NPN output.

Presentation

The **TM5SD●●●** digital module offer consists of six input and output electronic modules (sensor and preactuator 100/240 V ∿ power supply).

They complement the embedded I/O in the various M258 controllers and LMC058/LMC078 motion controllers. They are used to adapt to the application requirements as closely as possible to reduce the installation and wiring costs.

Each digital module consists of three parts to be ordered separately *(1)*:
□ An I/O electronic module
□ A bus base
□ A terminal block

These modules can be mechanically assembled before mounting on a symmetrical rail.

These modules offer the following advantages:
□ Removable terminal
□ Spring terminals which can be used for quick, tool-free connection of the sensors and preactuators in addition, the quality of the spring terminals avoids the need for periodic retightening
□ Hot swapping

The digital modules offer includes:
■ Two 100/240 V ∿ digital input electronic modules, with 2 or 4 inputs
■ A 100/120 V ∿ digital input electronic module, with 6 inputs
■ A 100/240 V ∿ digital output electronic modules, with 2 outputs
■ Two 30 V ⎓/230 V ∿ digital output electronic modules, with 2 or 4 relay outputs

Description

TM5SD●●● digital modules comprise:

1 A bus base

2 A mechanical locking lever for mounting/dismounting on a symmetrical rail

3 On each side of the base, a bus expansion connection for the link with the previous controller or module

4 A digital input or output electronic module

5 A channel and module diagnostics LED display block

6 A slot for labelling (label-holder)

7 A removable spring terminal block with locking lever and slots for coloured identifiers

(1) Also sold in kit, see page 27

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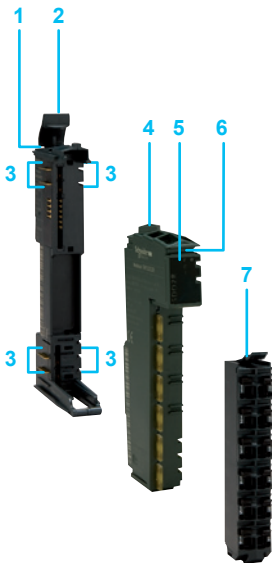
TM5SDI●●

TM5SDO●●

TM5ACBM●●

TM5ACTB●●

References

Multivoltage digital input electronic modules

Voltage	Number and type of channels (1)	Sold in lots of	Unit reference	Weight kg *lb*
100/240 V $\sim$ inputs	2 inputs	**1**	**TM5SDI2A**	0.025 *0.055*
	4 inputs	**1**	**TM5SDI4A**	0.025 *0.055*
100/120 V $\sim$ inputs	6 inputs	**1**	**TM5SDI6U**	0.025 *0.055*

Digital output electronic modules

100/240 V $\sim$ outputs	2 x 1 A transistor outputs	**1**	**TM5SDO2S**	0.025 *0.055*
30 V ⎓/230 V $\sim$ outputs	2 x 5 A relay outputs, NO/NC contact	**1**	**TM5SDO2R**	0.025 *0.055*
	4 x 5 A relay outputs, NO/NC contact	**1**	**TM5SDO4R**	0.025 *0.055*
		4	**TM5SDO4R4**	0.100 *0.220*

Bus bases

Power supply	Characteristics		Reference	Weight *kg*
$\sim$ **240 V**	–		**TM5ACBM12**	0.020 *0.044*

Terminal blocks

Use	Description		Reference	Weight *kg*
For digital I/O electronic module, 240 V $\sim$ power supply	12 contacts		**TM5ACTB32**	0.025 *0.055*

Accessories
See page 26

Digital I/O expansion module kit
See page 27

(1) Source output: PNP output, sink output: NPN output.

Presentation

TM5SP●●● common distribution modules make cabling more flexible by "branching" the various voltages needed to power the I/O expansion modules used.

Each common distribution module consists of three parts to be ordered separately:
□ A common distribution electronic module
□ A bus base
□ A terminal block to be chosen according to the number of terminals

These modules can be mechanically assembled before mounting on a symmetrical rail.

These modules offer the following advantages:
□ Removable terminal
□ Spring terminals which can be used for quick, tool-free connection of the sensors and preactuators in addition, the quality of the spring terminals avoids the need for periodic retightening
□ Hot swapping

The power supply common modules offer includes four common distribution electronic modules which have a removable fuse.

This offer is completed by a non-functioning dummy module **TM5SD000** which can be used to:
□ Increase the flexibility in managing the various options for an installation: machine with or without temperature sensors for example.
□ Reserve a physical slot and a logical address on the backplane bus, for adding a functioning module at a later date: application-specific I/O expansion for example.

Description

TM5SP●●● common distribution modules comprise:

1 A bus base

2 A mechanical locking lever for mounting/dismounting on a symmetrical rail

3 On each side of the base, a bus expansion connection for the link with the previous controller or module

4 A common distribution electronic module

5 A channel and module diagnostics LED display block

6 A slot for labelling (label-holder)

7 A removable spring terminal block with locking lever and slots for coloured identifiers
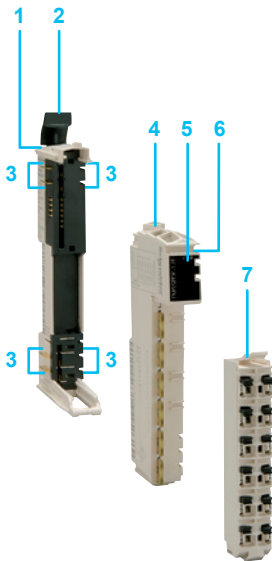
TM5SPDG●●●

TM5ACBM●●

TM5ACTB●●

References

Common distribution electronic modules (1)

Power supply type	Characteristics	Reference	Weight kg *lb*
24 V ⎓	12 common x 0 Vdc with 1 fuse	**TM5SPDG12F**	0.025 *0.055*
	12 common x 24 Vdc with 1 fuse	**TM5SPDD12F**	0.025 *0.055*
	5 common x 0 Vdc 5 common x 24 Vdc with 1 fuse	**TM5SPDG5D4F**	0.025 *0.055*
	6 common x 0 Vdc 6 common x 24 Vdc with 1 fuse	**TM5SPDG6D6F**	0.025 *0.055*

Dummy electronic module

Characteristics	Used for	Reference	Weight kg *lb*
Non-functioning	Reservation of slots and logical address	**TM5SD000**	0.015 *0.033*

Bus bases

Power supply	Characteristics	Reference	Weight kg *lb*
24 V ⎓	–	**TM5ACBM11**	0.020 *0.044*
	Address setting	**TM5ACBM15**	0.020 *0.044*

Terminal blocks

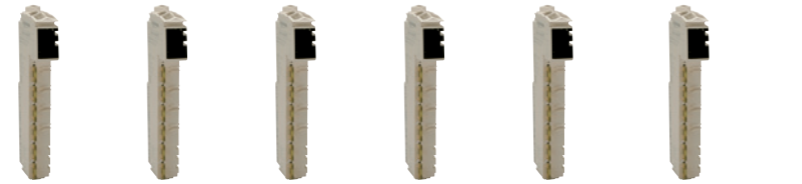| Use	Description	Reference	Weight kg *lb*
For common distribution electronic module, 24 V ⎓ power supply	6 contacts	**TM5ACTB06**	0.016 0.035
	12 contacts	**TM5ACTB12**	0.020 *0.044*

Accessories

See page 26

(1) Equipped with 5 x 20 internal fuse, slow-blow 6.3 A

Applications	Type of expansion module	1 to 6 analog input channels						2 to 4 analog output channels
	Compatibility of offers	■ Modicon M258 logic controller ■ Modicon LMC058 motion controller ■ Modicon LMC078 motion controller ■ PacDrive LMC Eco/Pro/Pro2 controllers						

Left page — 1 to 6 analog input channels

		TM5SAI2L	TM5SAI2H	TM5SAI4L	TM5SAI4H	TM5SAI2PH	TM5SAI4PH
Channel connection		With removable spring terminal blocks (to be ordered separately)					
Analog inputs	Number	2	2	4	4	2	4
	Type	Voltage/current				Pt100/Pt1000 temperature probe	
	Range	- 10…+ 10 Vdc 0…20 mA/ 4…20 mA	- 10…+ 10 Vdc 0…20 mA	- 10…+ 10 Vdc 0…20 mA/ 4…20 mA	- 10…+ 10 Vdc 0…20 mA	- 200…+ 850°C	
	Resolution	12 bits + sign	15 bits + sign	12 bits + sign	15 bits + sign	16 bits	
	Sampling period without filtering	300 µs	–	400 µs	–	–	
	Sampling period with filtering	1 ms	50 µs	1 ms	50 µs	–	
Analog outputs	Number						
	Type						
	Range						
	Resolution						
	Response time						
Digital inputs	Number						
	Nominal input voltage						
	IEC/EN 61131-2 conformity						
	Type of signal (1)						
	Type of wiring						
	Limit values						
	Nominal input current						
	Input impedance						
	State 0						
	State 1						
Digital outputs	Number						
	Nominal output voltage						
	Output current per channel						
	Output current per group of channels						
	Type of signal (1)						
	Type of wiring						
	Limit values						
	Short-circuit and overload protection						
Power supply		Internal					
Isolation	Channel-to-channel	Non-isolated					
	Between channel groups	–					
	Channel-to-bus	∼ 500 V RMS					
Type of electronic module		TM5SAI2L	TM5SAI2H	TM5SAI4L	TM5SAI4H	TM5SAI2PH	TM5SAI4PH
Associated bus base (2)		TM5ACBM11, TM5ACBM15					
Associated terminal block (2)		TM5ACTB06, TM5ACTB12		TM5ACTB12		TM5ACTB06, TM5ACTB12	TM5ACTB12
Page		17					

(1) Source output: PNP output, sink output: NPN output.
(2) to be ordered separately.

Right page — 2 to 4 analog output channels

		TM5SAI2TH	TM5SAI6TH	TM5SEAISG	TM5SAO2L	TM5SAO2H	TM5SAO4L	TM5SAO4H
Channel connection		With removable spring terminal blocks (to be ordered separately)						
Analog inputs	Number	2	6	1				
	Type	J, K, S, N thermocouple		Full bridge Strain Gauge				
	Range	Type J: - 210…+ 1200°C Type K: - 270…+ 1372°C Type S: - 50…+ 1768°C Type N: - 270…+ 1300°C		Differential: 85…5000 Ω				
	Resolution	16 bits		24 bits				
	Sampling period without filtering	–		–				
	Sampling period with filtering	–		–				
Analog outputs	Number				2	2	4	4
	Type				Voltage/current			
	Range				- 10…+ 10 Vdc 0…20 mA			
	Resolution				12 bits + sign	15 bits + sign	12 bits + sign	15 bits + sign
	Response time				1 ms max.			
Power supply		Internal		Internal	Internal			
Isolation	Channel-to-channel	Non-isolated		Non-isolated	Non-isolated			
	Between channel groups	–		–	–			
	Channel-to-bus	∼ 500 V RMS		∼ 500 V RMS	∼ 500 V RMS			
Type of electronic module		TM5SAI2TH	TM5SAI6TH	TM5SEAISG	TM5SAO2L	TM5SAO2H	TM5SAO4L	TM5SAO4H
Associated bus base (2)		TM5ACBM11, TM5ACBM15						
Associated terminal block (2)		TM5ACTB06, TM5ACTB12		TM5ACTB12	TM5ACTB06, TM5ACTB12		TM5ACTB12	
Page		17			17			

Presentation

TM5SAI●● and **TM5SEIAISG** analog modules are used to acquire various analog values encountered in industrial applications.

TM5SAO●●● Analog output modules are used to control preactuators in physical units, such as variable speed drives or valves and applications where process control is required. The output current or voltage is proportional to the numerical value defined by the user program.

On a controller "stop", the outputs can be configured with fallback (set to the bottom scale value or held at their value). This function, with holding the value, is used when debugging the application or on a fault so as not to disturb the controlled process.

Each analog module consists of three parts to be ordered separately *(1)*:
□ An I/O electronic module
□ A bus base
□ A terminal block
These modules can be mechanically assembled before mounting on a symmetrical rail.
These modules offer the following advantages:
□ Removable terminal
□ Spring terminals which can be used for quick, tool-free connection of the sensors and preactuators in addition, the quality of the spring terminals avoids the need for periodic retightening
□ Hot swapping

The offer of 13 analog modules:
■ Four electronic modules with 2 or 4 voltage/current inputs
■ Two electronic modules with 2 or 4 Pt100/Pt1000 temperature probes
■ Two electronic modules with 2 or 6 J, K, S and N thermocouple inputs
■ One electronic module with 1 Full-bridge strain gauge input
■ Four electronic modules with 2 or 4 voltage/current outputs
Depending on the application requirements, these electronic modules are available in 12, 16 or 24 bit-resolution.

It is advisable to use the **TM2XMTGB** earthing plate which simplifies connection of the analog sensor and actuator cable shielding. This shielding must be connected to the device's functional earth.

Description

Analog modules comprise:

1 A bus base

2 A mechanical locking lever for mounting/dismounting on a symmetrical rail

3 On each side of the base, a bus expansion connection for the link with the previous controller or module

4 An analog input or output electronic module

5 A channel and module diagnostics LED display block

6 A slot for labelling (label-holder)

7 A removable spring terminal block with locking lever and slots for coloured identifiers

(1) Also sold in kits, see page 27

Schneider Electric
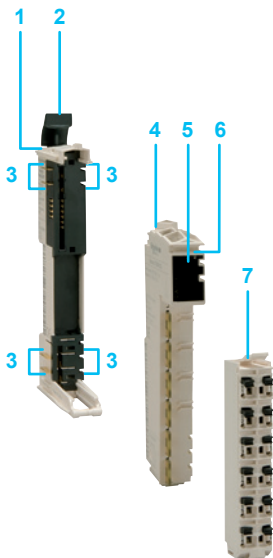
TM5SAI●●

TM5SAO●●

TM5ACBM●●

TM5ACTB●●

TM2XMTGB

TM200RSRCEMC

References

Analog input electronic modules

Number and type of inputs	Input range	Resolution	Reference	Weight kg *lb*
2 voltage/current inputs	- 10…+ 10 V DC, 0…20 mA/4…20 mA	12 bits + sign	**TM5SAI2L**	0.025 *0.055*
	- 10…+ 10 V DC, 0…20 mA	15 bits + sign	**TM5SAI2H**	
4 voltage/current inputs	- 10…+ 10 Vdc, 0…20 mA/ 4…20 mA	12 bits + sign	**TM5SAI4L**	
	- 10…+ 10 V DC, 0…20 mA	15 bits + sign	**TM5SAI4H**	
2 Pt100/Pt1000 temperature probe inputs	- 200…+ 850°C	16 bits	**TM5SAI2PH**	
4 Pt100/Pt1000 temperature probe inputs		16 bits	**TM5SAI4PH**	
2 J, K, S, N thermocouple inputs	Type J: - 210…+ 1200°C	16 bits	**TM5SAI2TH**	
6 J, K, S, N thermocouple inputs	Type K: - 270…+ 1372°C Type S: - 50…+ 1768°C Type N: - 270…+ 1300°C	16 bits	**TM5SAI6TH**	
1 Full bridge strain gauge input	Differential: 85…5000 Ω	24 bits	**TM5SEAISG**	

Analog output electronic modules

Nber and type of O	Output range	Resolution	Reference	Weight kg *lb*
2 voltage/current outputs	- 10…+ 10 V DC, 0…20 mA	12 bits + sign	**TM5SAO2L**	0.025 *0.055*
		15 bits + sign	**TM5SAO2H**	
4 voltage/current outputs	- 10…+ 10 V DC, 0…20 mA	12 bits + sign	**TM5SAO4L**	
		15 bits + sign	**TM5SAO4H**	

Bus bases

Power supply	Characteristics	Sold in lots of	Reference	Weight kg *lb*
24 V ⎓	–	**1**	**TM5ACBM11**	0.020 *0.044*
	Address setting	**1**	**TM5ACBM15**	0.020 *0.044*

Terminal blocks

Use	Type	Sold in lots of	Reference	Weight kg *lb*
For analog I/O electronic module, 24 V ⎓ power supply	6 contacts	**1**	**TM5ACTB06**	0.016 *0.035*
	12 contacts	**1**	**TM5ACTB12**	0.020 *0.044*

Accessories
See page 26

Separate parts

Designation	Description	Unit reference	Weight kg *lb*
Earthing plate	Support equipped with 10 male Faston connectors for connecting the cable shielding (via 6.35 mm connectors, not supplied) and the functional earths (FE)	**TM2XMTGB**	0.045 *0.099*
Shielding connection clamps Sold in lots of 25	Attachment and earthing of the cable shielding. Pack of 25 clamps including 20 for Ø 4.8 mm cable and 5 for Ø 7.9 mm cable	**TM200RSRCEMC**	–
Mounting kit Sold in lots of 5	For mounting the analog modules on a plate or panel	**TWDXMT5**	0.065 *0.143*

Analog I/O expansion module kits
See page 27

Applications	Upcounting, downcounting, period measurement, frequency meter, frequency generator, axis following with encoder		Upcounting, downcounting, period measurement, frequency meter, frequency generator, axis following with encoder		
Compatibility of offers	■ **Modicon M258 logic controller** ■ **Modicon LMC058 motion controller** ■ **Modicon LMC078 motion controller** ■ **PacDrive LMC Eco/Pro/Pro2 controllers**		■ **Modicon M258 logic controller** ■ **Modicon LMC058 motion controller** ■ **Modicon LMC078 motion controller** ■ **PacDrive LMC Eco/Pro/Pro2 controllers**		
Channel connection	With removable spring terminal blocks (to be ordered separately)		With removable spring terminal blocks (to be ordered separately)		
Number of counter channels	2	1	2	1	1
IEC/EN 61131-2 conformity	Type 1	Incremental	Incremental	Incremental	SSI absolute
Type of signal *(1)*	Sink	Sink	Sink	RS422, Sink	Sink
Type of input	1-, 2- or 3-wire	–	–	–	–
Nominal input voltage	24 V ⎓	24 V ⎓ asymmetrical	24 V ⎓ asymmetrical	5 V ⎓ symetrical	5 V ⎓ symetrical
Voltage limit values	20.4... 28.8 V ⎓	–	–	20.4... 28.8 V ⎓	20.4... 28.8 V ⎓
Frequency per channel	50 kHz	100 kHz	100 kHz	250 kHz	1 MHz
Resolution	–	16/32 bits	16/32 bits	16/32 bits	32 bits
Functions	Event counting Interval measurement	2 x 24 V ⎓ auxiliary inputs 24 V ⎓ encoder power supply	2 x 24 V ⎓ auxiliary inputs 24 V ⎓ encoder power supply	2 x 24 V ⎓ auxiliary inputs	2 x 24 V ⎓ auxiliary inputs
Types of counter module	**TM5SDI2DF**	**TM5SE1IC01024**	**TM5SE2IC01024**	**TM5SE1IC02505**	**TM5SE1SC10005**
Compatible bus base *(2)*	**TM5ACBM11, TM5ACBM15**		**TM5ACBM11, TM5ACBM15**		
Compatible terminal block *(2)*	**TM5ACTB12**		**TM5ACTB12**		
Page	21		21		

(1) Source output: PNP output, sink output: NPN output.
(2) To be ordered separately.

Modicon TM5 Expansion modules
Modicon TM5 Expert modules

Presentation

TM5SDI12DF and **TM5SE●●●●●●●** Expert modules for Modicon M258 logic controller and LMC058/LMC078 motion controllers are used to count the pulses generated by a sensor or to process the signals from an incremental encoder, depending on the reference chosen.

The extent of the high-speed counter module offer makes it possible to adapt the configuration to the machine's precise requirements: the five counter modules differ in their frequency and their functions.

Expert electronic modules	No. of channels	Max. frequency	Integrated functions	Signal
TM5SDI12DF	2	50 kHz	Event counting, interval measurement	Sink
TM5SE1IC01024	1	100 kHz	2 x 24 V ⎓ auxiliary inputs 24 V ⎓ encoder power supply	Sink
TM5SE2IC01024	2	100 kHz	2 x 24 V ⎓ auxiliary inputs 24 V ⎓ encoder power supply	Sink
TM5SE1IC02505	1	250 kHz	2 x 24 V ⎓ auxiliary inputs ⎓ 5 V encoder power supply	Sink
TM5SE1SC10005	1	1 MHz	2 x 24 V ⎓ auxiliary inputs ⎓ 5 V SSI encoder power supply	Sink

The function parameters are set by configuration using SoMachine software.

Each Expert module consists of three parts to be ordered separately:
□ An electronic counter module
□ A bus base
□ A terminal block

These modules can be mechanically assembled before mounting on a symmetrical rail.

These modules offer the following advantages:
□ Removable terminal
□ Spring terminals which can be used for quick, tool-free connection of the sensors and preactuators in addition, the quality of the spring terminals avoids the need for periodic retightening
□ Hot swapping

Description

TM5 Expert modules comprise:

1 A bus base

2 A mechanical locking lever for mounting/dismounting on a symmetrical rail

3 On each side of the base, a bus expansion connection for the link with the previous controller or module

4 An electronic counter module

5 A channel and module diagnostics LED display block

6 A slot for labelling (label-holder)

7 A removable spring terminal block with locking lever and slots for coloured identifiers

Schneider Electric
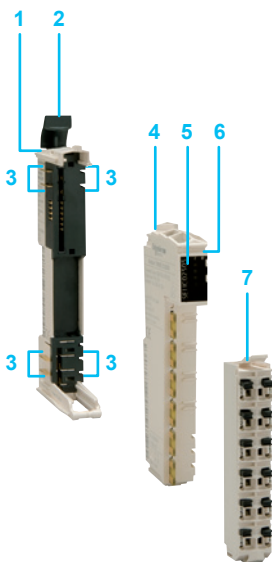
TM5SDI2DF

TM5SE●●●●●●●

TM5ACBM●●

TM5ACTB●●

References

Expert electronic modules

Counting frequency	Number of channels	Function	Reference	Weight kg *lb*
50 kHz	2	Event counting, interval measurement	**TM5SDI2DF**	0.025 *0.055*
100 kHz	1	2 x 24 V ⎓ auxiliary inputs 24 V ⎓ encoder power supply	**TM5SE1IC01024**	0.025 *0.055*
	2	2 x 24 V ⎓ auxiliary inputs 24 V ⎓ encoder power supply	**TM5SE2IC01024**	0.025 *0.055*
250 kHz	1	2 x 24 V ⎓ auxiliary inputs	**TM5SE1IC02505**	0.025 *0.055*
1 MHz	1	2 x 24 V ⎓ auxiliary inputs	**TM5SE1SC10005**	0.025 *0.055*

Bus bases

Power supply	Characteristics	Reference	Weight kg *lb*
24 V ⎓	–	**TM5ACBM11**	0.020 *0.044*
	Address setting	**TM5ACBM15**	0.020 *0.044*

Terminal blocks

Use	Description	Reference	Weight kg *lb*
For electronic counter module powered with 24 V ⎓	12 contacts	**TM5ACTB12**	0.020 *0.044*

Accessories

See page 26

Presentation

TM5SP●● power distribution modules are intended to supply power to the I/O modules and/or the TM5 bus.

Each power distribution module consists of three parts to be ordered separately:
□ A power distribution electronic module
□ A bus base
□ A terminal block
These modules can be mechanically assembled before mounting on a symmetrical rail.
These modules offer the following advantages:
□ Removable terminal
□ Spring terminals which can be used for quick, tool-free connection of the sensors and preactuators in addition, the quality of the spring terminals avoids the need for periodic retightening.

Four power distribution modules are available.
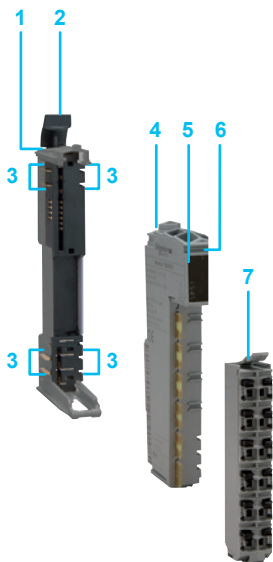
Description

Power distribution modules comprise:

1 A bus base

2 A mechanical locking lever for mounting/dismounting on a symmetrical rail

3 On each side of the base, a bus expansion connection for the link with the previous controller or module

4 A power distribution electronic module

5 A channel and module diagnostics LED display block

6 A slot for labelling (label-holder)

7 A removable spring terminal block with locking lever and slots for coloured identifiers

TM5SP●●

TM5ACBM●●

TM5ACTB●●

References

Power distribution electronic modules

Input power supply	Used for	Fuse	Reference	Weight kg *lb*
24 V ⎓	Supplying power to the I/O modules in 24 V ⎓ Total I max: 10 A	–	**TM5SPS1**	0.030 *0.066*
		6.3 A internal fuse	**TM5SPS1F**	0.030 *0.066*
	Supplying power □ to the I/O modules in 24 V ⎓ □ and the TM5 bus (Bus power supply: 7 W)	–	**TM5SPS2**	0.030 *0.066*
		6.3 A internal fuse	**TM5SPS2F**	0.030 *0.066*

Bus bases

Power supply	Characteristics	Reference	Weight kg *lb*
24 V ⎓	Isolated on the left on the power supply to the I/O modules in 24 V ⎓	**TM5ACBM01R**	0.020 *0.044*
	Isolated on the left on the power supply to the I/O modules in 24 V ⎓ Address setting	**TM5ACBM05R**	0.020 *0.044*

Terminal block

Use	Characteristics	Reference	Weight kg *lb*
For power distribution electronic module 24 V ⎓	12 contacts	**TM5ACTB12PS**	0.020 *0.044*

Accessories

See page 26

Modicon TM5 Expansion modules
Modicon TM5 Transmitter and Receiver modules

IP 20 distributed I/O island

IP 67 distributed I/O island
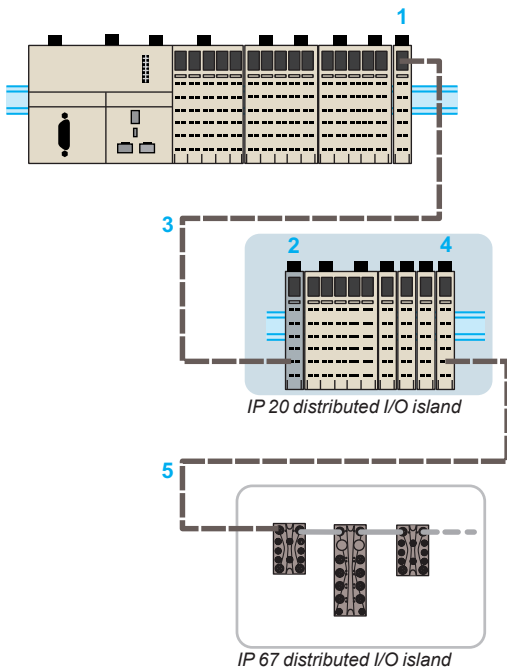
Presentation

M258 logic controllers, LMC058 motion controllers, and PacDrive LMC Eco/Pro/Pro2 controllers offer the possibility of creating IP 20 islands of distributed I/O via the TM5 expansion bus.

This makes it possible to:
- Adapt the architecture as closely as possible to the machine topology
- Reduce the wiring costs by minimizing the distance between the modules and the sensors/preactuators
- Take full advantage of the TM5 expansion bus exchange performance
- Save the cost of a fieldbus connection

In addition, irrespective of the expansion module local or remote slot, the modules remain synchronized due to use of the same expansion bus. Modicon TM5 Remote modules are needed to:

□ Increase the number of remote I/O on M258 logic controller, LMC058 motion controller, and LMC Eco/Pro/Pro2 controllers beyond 100 m
□ Exchange incoming and outgoing data produced by the I/O expansion modules
□ Guarantee the performance of data exchanges

Three remote modules are available:
□ The **TM5SBET1** electronic module: transmitter (**1**), for data transmission between IP 20 islands
□ The **TM5SBET7** electronic module: transmitter (**4**), for data transmission from an IP 20 island to an IP 67 island *(1)* via a TM7 expansion bus (**5**)
□ **TM5SBER2** electronic modules: receiver (**2**)

The transmitter (**1**) and receiver (**2**) modules are physically linked by the remote connection cable (**3**) **TCSXCNNXNX100**.
The maximum distance between islands is 100 m and the maximum total distance is 2500 meters.

Each remote module consists of three parts to be ordered separately:
□ An electronic module, either transmitter or receiver
□ A bus base
□ A connection block

These modules can be mechanically assembled before mounting on a symmetrical rail.

These modules offer the following advantages:
□ Removable connector
□ Spring terminals which can be used for quick, tool-free connection of the sensors and preactuators. In addition, the quality of the spring terminals avoids the need for periodic retightening

Description

Transmitter and receiver modules comprise:

1 A bus base

2 A mechanical locking lever for mounting/dismounting on a symmetrical rail

3 On each side of the base, a bus expansion connection for the link with the previous controller or module

4 A remote I/O electronic module, either transmitter or receiver

5 A channel and module diagnostics LED display block

6 A slot for labelling (label-holder)

7 A removable spring terminal block with locking lever and slots for coloured identifiers

(1) Modicon TM7 I/O blocks: Please refer to "Modicon TM7 IP67 modular I/O system", or on our web site, www.schneider-electric.com.
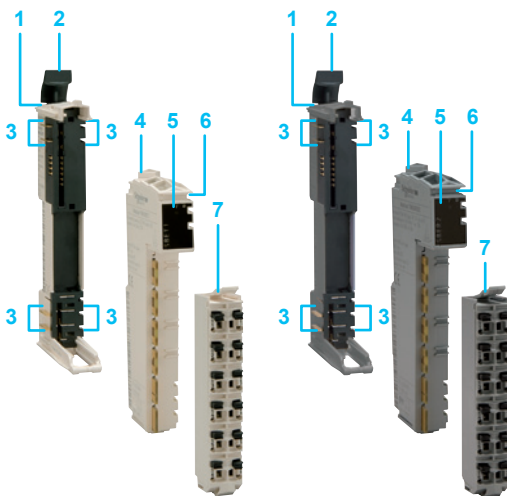
Transmitter module

Receiver module

TM5SBET1   TM5SBET7   TM5SBER2

TM5ACBM1●   TM5ACBM0●R

TM5ACTB●●   TM5ACTB12PS

References

Remote I/O electronic modules

Description	Characteristics	Reference	Weight kg lb
Transmitter module	Electronic module for data transmission between IP 20 I/O islands (1)	TM5SBET1	0.025 0.055
	Electronic module for data transmission between IP 20 I/O island and IP 67 I/O island (2) Includes the power supply for the TM7 expansion modules (2)	TM5SBET7	
Receiver module	Data reception electronic module Power distribution module for electronic modules and the TM5 bus, 24 V --- power supply	TM5SBER2	

Expansion bus

Description	Usage	Length	Reference	Weight kg lb
Remote connection cable	Bus extension by linking transmitter and receiver modules	100 m	TCSXCNNXNX100	8.800 19.401

Bus bases

Power supply	For use with	Reference	Weight kg lb
–	TM5SBET1 and TM5SBET7 transmitter modules	TM5ACBM11	0.020 0.044
	TM5SBET1 and TM5SBET7 transmitter modules with address setting	TM5ACBM15	0.020 0.044
24 V ---	TM5SBER2 receiver module	TM5ACBM01R	0.020 0.044
	TM5SBER2 receiver module, with address setting	TM5ACBM05R	0.020 0.044

Terminal blocks

For use with	Characteristics	Reference	Weight kg lb
Transmitter module TM5SBET1	6 contacts	TM5ACTB06	0.016 0.035
Transmitter modules TM5SBET1 and TM5SBET7	12 contacts	TM5ACTB12	0.020 0.044
Receiver module TM5SBER2	12 contacts	TM5ACTB12PS	0.020 0.044

Accessories
See page 26

(1) IP 20 I/O islands, see page 30.
(2) IP 67 I/O islands with Modicon TM7: Please refer to "Modicon TM7 IP67 modular I/O system", or on our web site, www.schneider-electric.com..
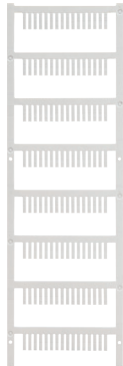
TM5ACTCH100

TM5ACTLC100

TM5ACLPL10

TM5ACLITW1

TM5ACLT1

TM5ACADL100

TM5ACLPR10

References					
Accessories					
Description	**Used for**	**Colour**	**Sold in lots of**	**Unit reference**	**Weight kg** *lb*
Plain text cover holder (label-holder)	Marking the terminal blocks on the I/O channels	Transparent	**100**	**TM5ACTCH100**	0.002 *0.004*
Plain text cover holder locking clip *(Order with plain text cover holder TM5ACTCH100)*	Locking plain text cover holder TM5 ACTCH100	Transparent	**100**	**TM5ACTLC100**	0.001 *0.002*
Precut legend strips of paper (A4 size)	Plain text cover holder TM5ACTCH100	White	**100**	**TM5ACTLS100**	0.001 *0.002*
Coloured plastic identifiers	Labelling 16 connection channel terminals	White	**1**	**TM5ACLITW1**	0.015 *0.033*
		Red	**1**	**TM5ACLITR1**	0.015 *0.033*
		Blue	**1**	**TM5ACLITB1**	0.015 *0.033*
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**	0.004 *0.009*
Locking clips	For modules	Black	**100**	**TM5ACADL100**	0.001 *0.002*

Schneider Electric
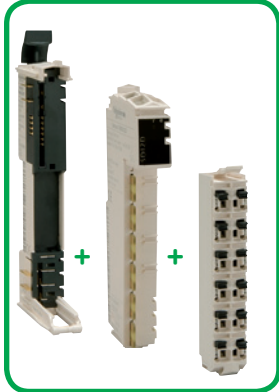
TM5SD●12DK

TM5SDO4RK
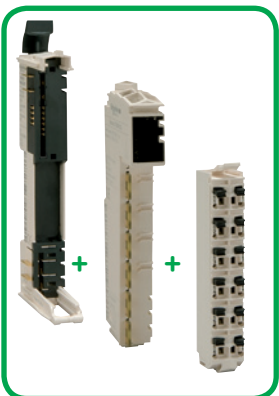
TM5SA●4●K

References

Digital I/O expansion module kits

24 V $\overline{\cdots}$ power supply

Designation	Composition	Reference	Weight kg *lb*
Kit including: a digital input or output electronic module, a bus base, a terminal block	TM5SDI12D + TM5ACBM11 + TM5ACTB12	**TM5SDI12DK**	0.065 *0.143*
	TM5SDO12T + TM5ACBM11 + TM5ACTB12	**TM5SDO12TK**	

Digital I/O expansion module kit

100/240 V $\sim$ power supply

Designation	Composition	Reference	Weight kg *lb*
Kit including: a digital output electronic module, a bus base, a terminal block	TM5SDO4R + TM5ACBM12 + TM5ACTB32	**TM5SDO4RK**	0.070 *0.154*

Analog I/O expansion module kits

Designation	Composition	Reference	Weight kg *lb*
Kits including: an analog input or output electronic module, a bus base, a terminal block	TM5SAI4L + TM5ACBM11 + TM5ACTB12	**TM5SAI4LK**	0.075 0.165
	TM5SAI4H + TM5ACBM11 + TM5ACTB12	**TM5SAI4HK**	
	TM5SAO4L + TM5ACBM11 + TM5ACTB12	**TM5SAO4LK**	

Modicon TM5 expansion modules
Modicon TM5 communication module for RS232 serial link

Presentation

Communication module

The **TM5SE1RS2** communication module is designed for PacDrive 3 motion controllers (PacDrive LMC Eco, LMC Pro and LMC Pro2) and Modicon LMC078 motion controller.
It brings a multiple RS232 ports on the Sercos bus to connect third party devices to PacDrive 3 motion controllers.
The **TM5SE1RS2** communication module can be integrated in distributed and remote architectures.

SoMachine Motion softwares provide configuration, read and write functionality.
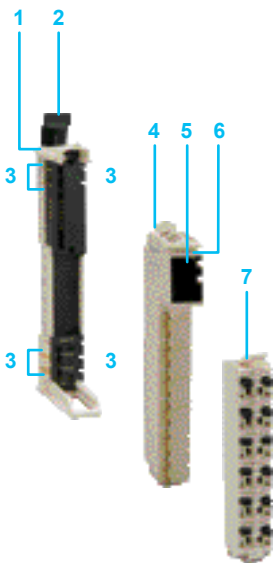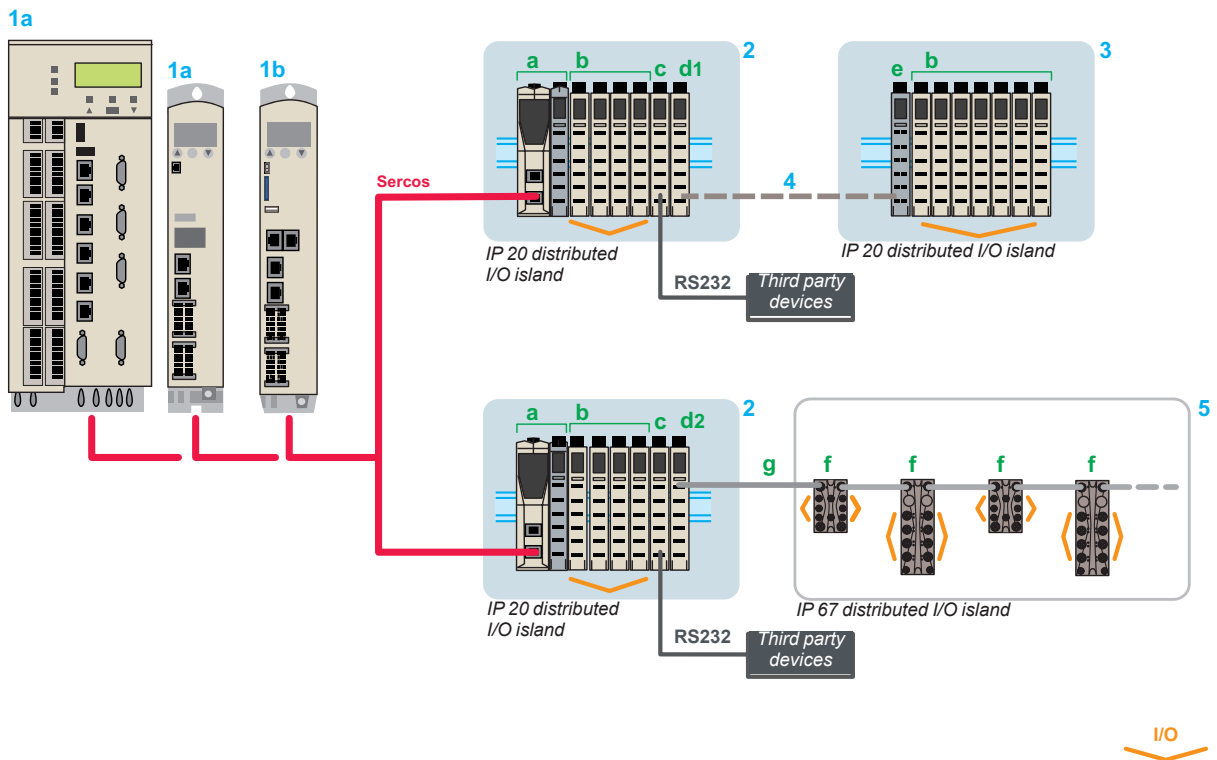
1 Masters on sercos bus : **a** PacDrive 3 motion controllers (PacDrive LMC Eco, LMC Pro and LMC Pro2) / **b** Modicon LMC078 Modicon LMC078 motion controller.
2 IP 20 distributed I/O islands *(1)*. Composition: TM5 interface module (**a**) + TM5 compact block or I/O modules (**b**) + TM5 communication module (**c**) transmitter modules TM5SBET1 (**d1**)/TM5SBET7 (**d2**).
3 IP 20 distributed I/O island *(1)*. Composition: receiver module TM5SBER2 (**e**) + TM5 compact block or TM5 I/O modules (**b**).
4 TM5 expansion bus *(1)*. Composition : remote I/O connection cable TCSXCNNXNX100.
5 IP 67 distributed I/O island *(2)*. Composition: TM7 IP 67 I/O blocks (digital or analog) (**e**) + expansion bus cable TM7 TCSXCN●●●E (**g**).

Description

The **TM5SE1RS2** communication module features:
1 A bus base
2 A mechanical locking lever for mounting/dismounting on a symmetrical rail
3 On each side of the base, a bus expansion connection for the link with the previous controller or module
4 A RS232 electronic interface module
5 A channel and module diagnostics LED display block
6 A slot for labelling (label-holder)
7 A removable spring terminal block with locking lever and slots for coloured identifiers

(1) Modicon TM5 extension modules: see page 2.
(2) Modicon TM7 I/O blocks: Please refer to "Modicon TM7 IP67 modular I/O system", or on our web site, www.schneider-electric.com.

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References

Modicon TM5 expansion modules
Modicon TM5 communication module for
RS232 serial link

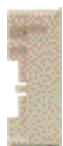*TM5SE1RS2* *TM5ACTB●●*

TM5ACBM●●

TM5ACTLC100 *TM5ACTCH100*

TM5ACLPL10 *TM5ACLPR10*

References

RS232 electronic interface module

Designation	Description	Reference	Weight kg/ lb
RS232 electronic interface module	□ SoMachine Motion Protocol □ Physical layer: RS232 □ Speed (Baud rates): 1200 to 115200 Kbits/s □ Capacity: 7 or 8 data bits □ Services: Low/High/Even, None, Odd parity Bit	**TM5SE1RS2**	0.064 *0.141*

Bus bases

Power supply	Characteristics	Reference	Weight kg/ lb
24 V ⎓	–	**TM5ACBM11**	0.020 *0.044*

Terminal blocks

Use	Type	Reference	Weight kg/ lb
For RS232 electronic interface module, 24 V ⎓ power supply	6 contacts	**TM5ACTB06**	0.016 *0.035*
	12 contacts	**TM5ACTB12**	0.020 *0.044*

Accessories

| Designation	Used for	Colour	Sold in lots of	Unit reference	Weight kg/ lb
Plain text cover holder (label-holder)	Marking the terminal blocks on the I/O channels	Transparent	**100**	**TM5ACTCH100**	0.002 *0.004*
Plain text cover holder locking clip *(Order with plain text cover holder TM5ACTCH100)*	Locking plain text cover holder TM5ACTCH100	Transparent	**100**	**TM5ACTLC100**	0.001 *0.002*
Precut legend strips of paper (A4 size)	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 modules	Black	**100**	**TM5ACADL100**	0.001 *0.002*

Modicon TM5 expansion modules
Modicon TM5 (IP 20) interface module for distributed I/O on CANopen bus

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.

IP 20 distributed I/O island / IP 67 distributed I/O island / Inputs/outputs
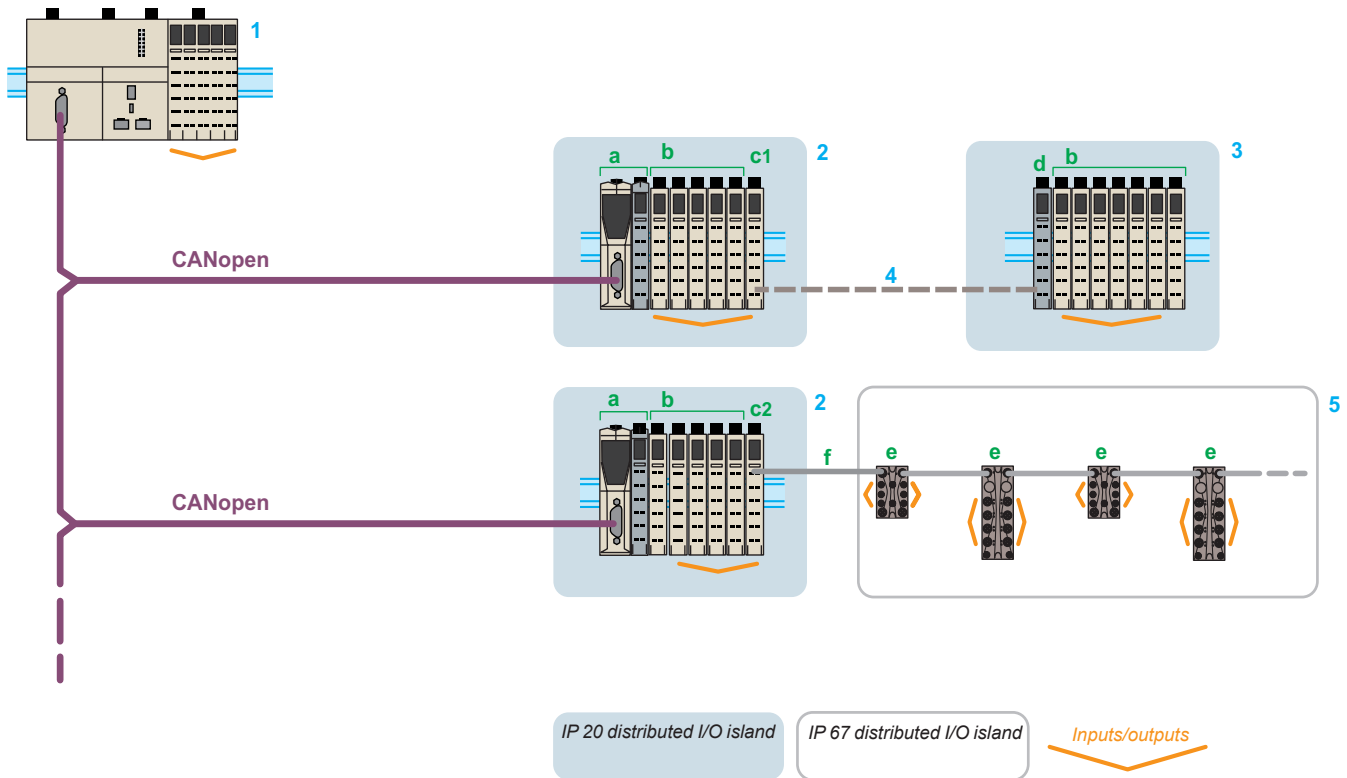
1 Modicon M258 logic controller, Modicon LMC058 or Modicon LMC078 motion controllers: CANopen bus masters.

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 TCSXCNNXNX100.

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: see page 2.
(2) Modicon TM7 I/O blocks: Please refer to "Modicon TM7 IP67 modular I/O system", or on our web site, www.schneider-electric.com.

Modicon TM5 expansion modules
Modicon TM5 (IP 20) interface module for
distributed I/O on CANopen bus

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
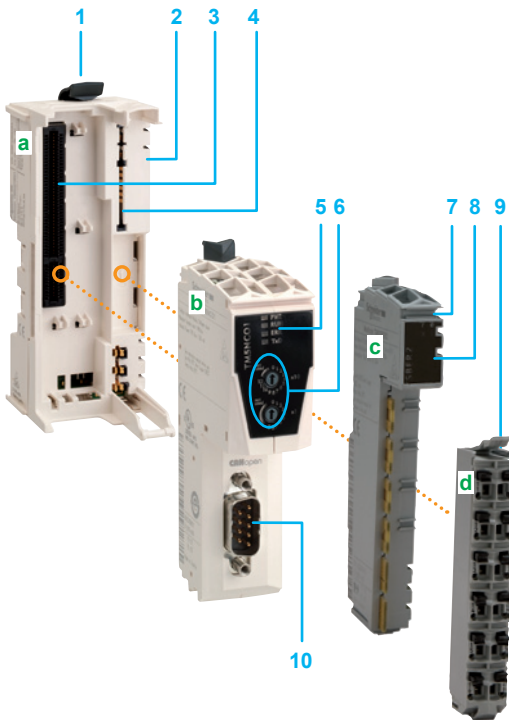
Description

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 33
(2) Supplied with 2 protective plates, TM5ACPL10 and TM5ACPR10.

Modicon TM5 expansion modules
Modicon TM5 (IP 20) interface module for distributed I/O on CANopen bus

Specifications		
Conformity with standards		IEC 61131-2
Product certifications		C€, 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/s² fixed acceleration)
Shock resistance		147 m/s² (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⎓ 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 dBµV
	500 kHz...30 MHz, quasi-peak at 73 dBµV
Radiated emissions conforming to EN/IEC ???55011/CISPR11	30...230 MHz, 10 m @ 40 dBµV/m
	230 MHz...1 GHz, 10 m @ 47 dBµV/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

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Modicon TM5 expansion modules
Modicon TM5 (IP 20) interface module for distributed I/O on CANopen bus

TM5NCO1
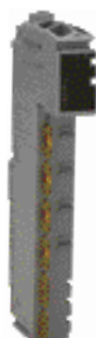
TM5SPS3
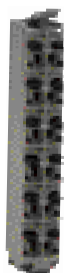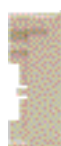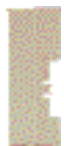

TM5ACBN1

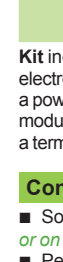*TM5ACTB12PS*

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	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	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 TM5 ACTCH100	Transparent	**100**	**TM5ACTLC100**	0.100/ 0.220
Precut legend strips of paper (A4 size)	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, *Please refer to "SoMachine configuration software", or on our web site, www.schneider-electric.com*.
■ Performance distributed I/O configuration software, please consult on our web site www.schneider-electric.com

(1) Modicon TM5 Transmitter/Receiver modules (see page 2)

Modicon TM5 expansion modules
Modicon TM5 Interface module for distributed I/O modules on Sercos bus

Sercos Bus

Fully integrated real time Ethernet based communication
With the addition of Sercos, Schneider Electric has created the first fully Ethernet-based communication solution for PacDrive and Modicon applications, enabling communication with both drives and field devices.
Sercos also smoothes the way for the integration of safety automation.
Sercos is a true standard, it does not rely upon a specific manufacturer, and it is one of the most powerful Ethernet-based communication solutions currently on the market.

Modicon TM5 interface module for Sercos bus

To enhance its "Flexible machine Control" concept, a key component of MachineStruxure™, and the PacDrive 3 motion controller offer, Schneider Electric offers an interface module providing Sercos access to distributed I/O.
■ The PacDrive 3 motion controllers and the Modicon LMC078 motion controller offer the possibility of creating distributed I/O islands via the TM5 interface 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 interface module allows the connection of distributed I/O islands (sensors and actuators) that are distributed over machines via the Sercos bus. These islands communicate on the Sercos bus.

Applications	■ Performance distributed I/O (IP 20)
Compatibility	■ Motion controllers: □ PacDrive LMC Eco, LMC Pro and LMC Pro2 □ Modicon LMC078
Available bus	■ Sercos bus
Configuration with I/O expansion modules	■ Module type: □ Modicon TM5 modules and/or Modicon TM7 blocks: □ Digital I/O modules □ Analog I/O modules □ Common distribution modules (TM5 only) ■ Capacity: For 1 TM5 interface module: 64 TM5/TM7 modules max. including: □ Digital I/O: 768 I/O max. □ Analog I/O: 364 I/O max. ■ Maximum distances □ from the expansion bus (TM5 or TM7): 2500 m (8202 ft). □ between 2 islands of TM5 modules: 100 m (328 ft). □ between 2 TM7 blocks: 100 m (328 ft). □ between 1 island of TM5 modules and 1 TM7 block: 100 m (328 ft).
Integrated I/O	None
Type of distributed I/O expansion module	TM5 interface module for Sercos bus

TM5 interface module for Sercos bus

Schneider Electric

Modicon TM5 expansion modules

Modicon TM5 Interface module for distributed
I/O modules on Sercos bus

Distributed I/O on Sercos bus architecture

IP 20 distributed I/O island

IP 20 distributed I/O island

IP 20 distributed I/O island

IP 67 distributed I/O island

1 Masters on Sercos bus : **a** PacDrive 3 motion controllers (PacDrive LMC Eco, LMC Pro and LMC Pro2) / **b** Modicon LMC078 Modicon LMC078 motion controller.

2 IP 20 distributed I/O islands *(1)*. Composition: TM5 interface module (**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 TCSXCNNXNX100.

5 IP 67 distributed I/O island *(2)*. Composition: TM7 IP 67 I/O blocks (digital or analog) (**e**) + expansion bus cable TM7 TCSXCN●●●E (**f**).

(1) Modicon TM5 extension modules: see page 2.
(2) Modicon TM7 I/O blocks: Please refer to "Modicon TM7 IP67 modular I/O system" , or on our web site, www.schneider-electric.com.

Modicon TM5 expansion modules
Modicon TM5 Interface module for distributed I/O on Sercos bus

Presentation

The TM5 interface module is dedicated to applications as Optimum distributed I/O (IP 20) on Sercos bus and is compatible with PacDrive 3 motion controllers (PacDrive LMC Eco, LMC Pro and LMC Pro2) and Modicon LMC078 motion controller.

The TM5 interface module is a combination of 4 products to be ordered separately:
□ TM5ACBN1 bus base (**a**)
□ TM5NS31 electronic interface module (**b**)
□ TM5SPS3 power distribution electronic module (**c**) (1)
□ TM5ACTB12PS removable terminal block (**d**).

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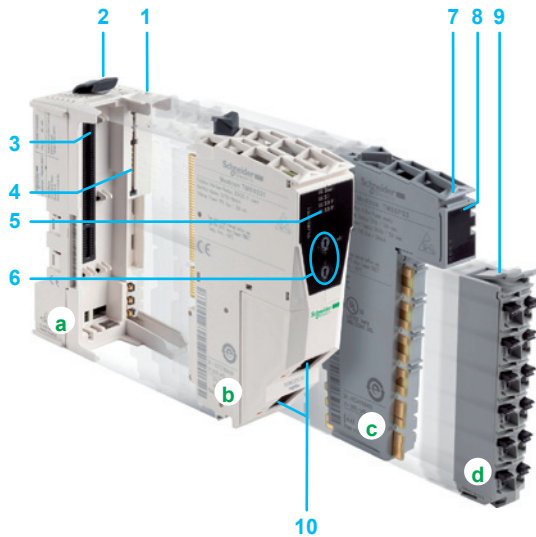
Description

This assembly comprises:

1 On the side of the base, an expansion bus connection for the link with the next module

2 A mechanical locking lever for mounting/dismounting on a symmetrical rail

3 A slot for the power distribution module with connector

4 A slot for the Sercos interface 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 Two RJ45 connectors for connecting to the Sercos bus (bus in / bus out)

(1) Supplied with 2 protective plates, TM5 ACPL10 and TM5ACPR10.

TM5NS31
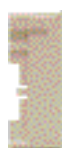
TM5SPS3

TM5ACBN1

TM5ACTB12PS

TM5ACTLC100

TM5ACTCH100

TM5ACLPL10

TM5ACLPR10

TM5 interface module for Sercos bus

Electronic interface module

Description	Characteristics	Reference	Weight kg/ *lb*
Electronic interface module	Sercos communication module with Sercos protocol Module colour: white	TM5NS31	0.025 *0.055*

Power distribution electronic module

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

Bus base

Power supply	Characteristics	Reference	Weight kg/ *lb*
24 V ⎓	Use for TM5 NS31 and TM5SPS3 electronic module Supplied with 2 protective plates TM5ACPL10 and TM5ACPR10 Colour of the base: white	TM5ACBN1	0.020 *0.044*

Terminal block

Used for	Characteristics	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 legend strips of paper (A4 size)	Plain text cover holder TM5ACTCH100	White	100	TM5ACTLS100	0.100 *0.220*
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*

Configuration software

■ SoMachine software, *Please refer to "SoMachine configuration software" – or on our web site, www.schneider-electric.com*.
■ Performance distributed I/O configuration software, please consult on our web site www.schneider-electric.com

(1) Modicon TM5 Transmitter/Receiver modules: see page 2.

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Schneider Electric Industries SAS

Design: Schneider Electric
Photos: Schneider Electric

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