

# Logic controllers

# Modicon Easy M200

2-axis motion control, for simple machines up to 196 I/O

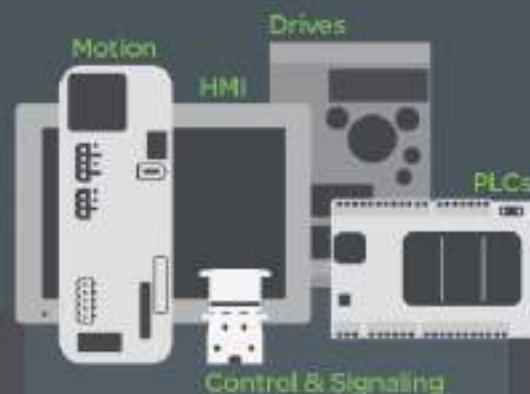
Catalog

February 2018



Introducing the **Easy** line  
Essential automation & control products

*When just enough is just right!*



**Schneider**  
Electric

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### Compatibility of offers

#### Modicon Easy M200 logic controllers

- Modicon TM3 expansion modules
- Modicon TM2 expansion modules
- TMCR2 cartridge
- SoMachine Basic software

In the modern industry world, being agile, adaptive and fast responding to the market needs are core values pursued by small and medium machine manufactures.

Easy™ line is the answer to your eager voice.

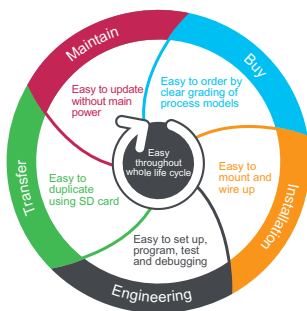
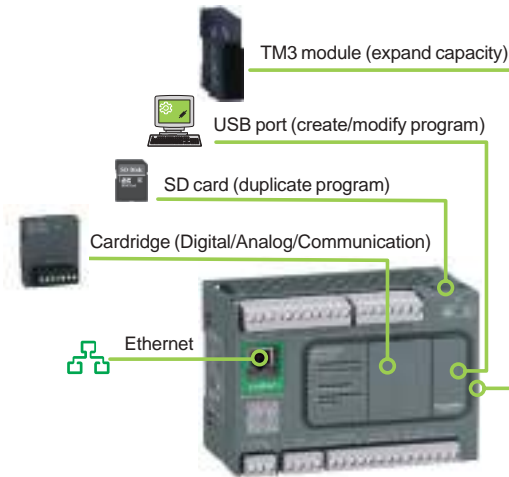
### A user-oriented range of products

The Modicon Easy M200 range of logic controllers has been designed to meet various customer requirements, specifically on the 3 following key points:

#### Fit for purpose

Designed for simple machines, the particularly small dimensions of Modicon Easy M200 logic controllers are ideal for fitting in wall-mounted and floor-standing control system enclosures.

- Modicon M200 controllers have an embedded Ethernet port (for models with TM200CE●●● references) meaning they can easily be integrated into control system architectures, for remote control and maintenance of machines by means of applications for tablets and PCs.
- The Modicon Easy M200 (TM200C●●●● references) offer provides excellent connection capacity and customization options using I/O or communication cartridges without increasing the controller size or additional wiring.
- Modicon TM3 expansion module offer enhance the digital and analog I/O capacity of M200 logic controller to a larger scale, thus make possible of more application scenarios.
- The functions embedded in Modicon M200 controllers minimize the cost of the machine: Modbus serial link, USB port dedicated to programming, and simple position control functions (high-speed counters and pulse train outputs with trapezoidal profile and S curve).
- SoMachine Basic's programming software is intuitive, making it quick to create applications.



Example: QR coder for TM200C16T

#### Easy throughout the whole life cycle

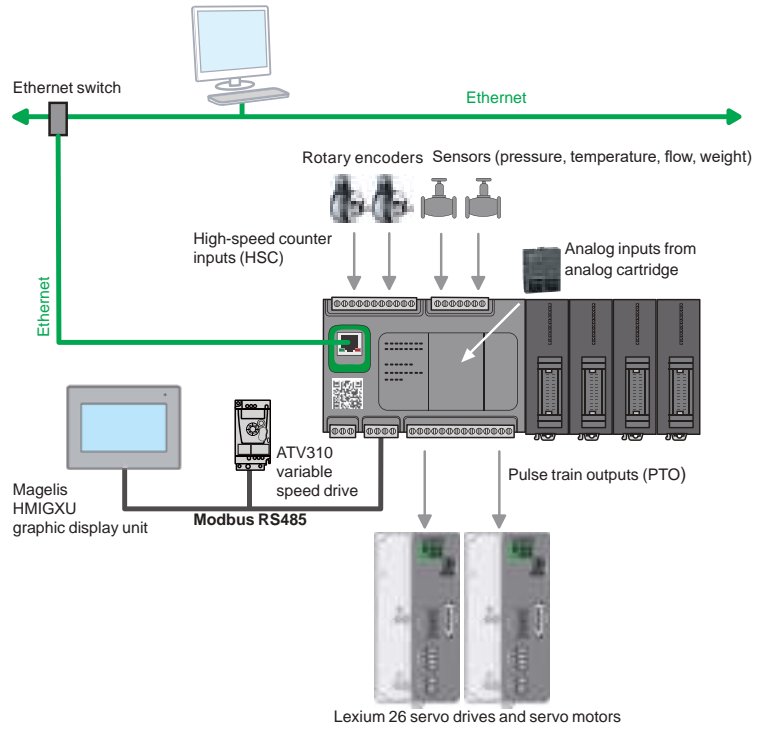
- Easy to order thanks to the "just enough" number of references
- Easy to mount and wire up
- Easy to set up and program thanks to SoMachine Basic software
- Easy to test and debug thanks to the standard USB port and removable terminal blocks
- Easy to duplicate without special skills using the Micro SD memory card
- Easy to maintain and update with its removable terminal block, USB downloading without mains power, and Micro SD memory card
- Easy to access information by scanning the QRcode carved on the front of the controller, linked to the real-time web database of the dedicated product model, with characteristics, dignostics, maintenance, connections, etc.

#### Robustness

- Inputs designed to help protect against overvoltage
- Transistor outputs monitored to help protect against short-circuits
- DC power supply monitored to help protect against reverse polarity
- Coated electronics for enhanced robustness in polluted environments

### Applications

The right level of flexibility to suit your scalable needs without frills: the range embeds the characteristics that a user might expect of a small PLC; attributes chosen dedicatedly are neat and enough to cover simple machine.



Typical application architecture employing Easy range solution

### Typical applications: repetitive machines

The M200 logic controller has been designed to be used in the following sectors and for the following repetitive machines:



#### Textiles

- Spinning machine
- Drawing frame
- Carding machine



#### Machine tools

- Grinding machine
- Punching machine
- Draw bench



#### Packaging

- Vertical or horizontal form fill seal machines (VFFS or HFFS)
- Labeling machine



#### HVAC

- Exchange station
- Air cooling system
- Water-cooling screw machine



#### Pumping

- Pumping station
- Pressure filter machine



#### Lift

- Elevator
- Stereo-garage
- Escalator
- Construction lift

**Modicon Easy M200: A user-oriented range of products**

**Intuitive machine programming with SoMachine Basic**

**SoMachine® is the universal programming software for machines automated by MachineStruxure controllers. Simple navigation that requires only fewer clicks delivers a more efficient engineering process.**

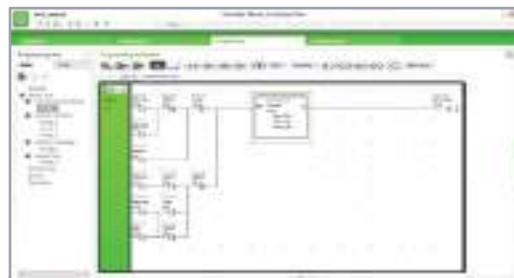
- > In order to reduce complexity we offer SoMachine Basic, a simplified engineering tool for the new controller Modicon Easy M200.
- > All programming, visualization, and commissioning are handled in just one intuitive tool that is available as a free download.



SoMachine simplifies every step in the design and commissioning of your machines



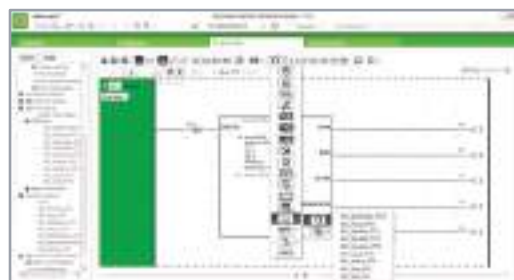
Configuration



Programming



Commissioning

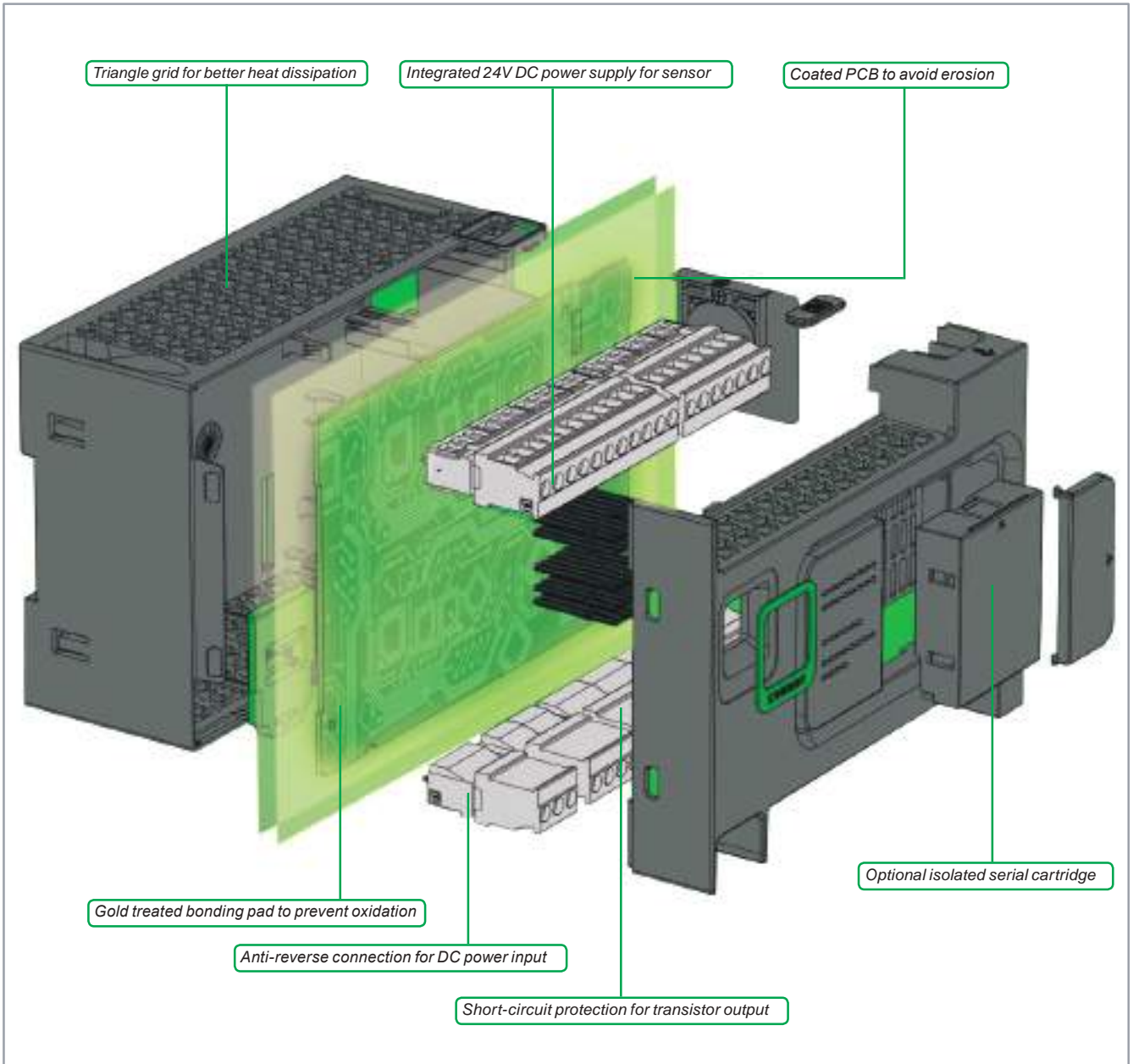








PTO Function Block



User Defined Function Block

Quality guaranteed  
to face various challenges in harsh environment



Applications		Control of simple machines											
													
<b>Supply voltage</b>		100-240 V ~	24 V ~	24 V ~	100-240 V ~	24 V ~	24 V ~	100-240 V ~	100-240 V ~	24 V ~	24 V ~	100-240 V ~	
<b>Inputs/outputs</b>	<ul style="list-style-type: none"> <li>■ Logic inputs/outputs</li> <li><input type="checkbox"/> No. and type of inputs</li> <li><input type="checkbox"/> No. and type of outputs</li> <li><input type="checkbox"/> Connection of the logic I/O</li> </ul>	<b>16 logic I/O</b>			<b>24 logic I/O</b>			<b>32 logic I/O</b>		<b>40 logic I/O</b>		<b>60 logic I/O</b>	
		9 sink/source 24 V ~ inputs, inc. 4 high-speed inputs and 4 fast inputs for FC			14 sink/source 24 V ~ inputs, inc. 4 high-speed inputs and 4 fast inputs for FC			20 sink/source 24 V ~ inputs, inc. 4 high-speed inputs and 4 fast inputs for FC		24 sink/source 24 V ~ inputs, inc. 4 high-speed inputs and 4 fast inputs for FC		36 sink/source 24 V ~ inputs, inc. 4 high-speed inputs and 4 fast inputs for FC	
		7 relay outputs	7 source transistor outputs, inc. 2 fast outputs	7 sink transistor outputs, inc. 2 fast outputs	10 relay outputs	10 source transistor outputs, inc. 2 high-speed outputs	10 sink transistor outputs, inc. 2 high-speed outputs	12 relay outputs	16 relay outputs	16 source transistor outputs, inc. 2 high-speed outputs	16 sink transistor outputs, inc. 4 high-speed outputs	24 relay outputs	
		On removable screw terminal block											
<b>I/O extension</b>	<ul style="list-style-type: none"> <li>■ Max. number of I/O expansion modules that can be connected</li> <li>■ Maximum number of transistor outputs</li> <li>■ Maximum number of relay outputs</li> </ul>	<ul style="list-style-type: none"> <li>■ 4 Modicon TM2/TM3 expansion modules, along with limited number of outputs.</li> <li>■ Possible use of Modicon TM2 expansion modules with restrictions.</li> </ul>											
		132	139	139	132	142	142	132	132	148	148	132	
		71	64	64	74	64	64	76	80	64	64	88	
<b>Embedded communication</b>	<ul style="list-style-type: none"> <li>■ Ethernet link</li> <li>■ Serial link</li> </ul>	<ul style="list-style-type: none"> <li>1 Ethernet port on TM200CE... controllers: Modbus TCP communication (client &amp; server), slave Modbus TCP, DHCP Client dynamic configuration, programming, downloading, monitoring, EtherNet/IP adapter</li> <li>1 serial link RS 232/RS 485 with + 5 V supply</li> </ul>											
<b>Embedded functions</b>	<ul style="list-style-type: none"> <li>■ Process control</li> <li>■ Counting</li> <li>■ Fast input</li> <li>■ Position control</li> </ul>	<ul style="list-style-type: none"> <li>PID</li> <li>4 high-speed counter inputs (HSC), 100 kHz frequency</li> <li>4 fast inputs for external or interrupt task</li> <li>Position control (PTO), with trapezoidal profile and S curve able to control either:                             <ul style="list-style-type: none"> <li><input type="checkbox"/> 2 axes in "pulse direction" (P/D) mode</li> <li><input type="checkbox"/> 1 axis in CW/CCW mode</li> </ul> </li> <li>PWM</li> <li>PLS</li> </ul>											
<b>Format</b>	W x H x D	4 controller sizes: 110 x 70 x 90 mm 4.33 x 2.76 x 3.55 in.			130 x 70 x 90 mm 5.12 x 2.76 x 3.55 in.			175 x 70 x 90 mm 6.89 x 2.76 x 3.55 in.				225 x 70 x 90 mm 8.86 x 2.76 x 3.55 in.	
<b>Options</b>	<ul style="list-style-type: none"> <li>■ Cartridges</li> <li>■ Number of cartridge slots</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 1 digital I/O expansion cartridge</li> <li><input type="checkbox"/> 5 analog I/O expansion cartridges</li> <li><input type="checkbox"/> 2 additional serial link communication cartridge (2)</li> </ul>											
		1			1			2				2	
<b>Mounting</b>		Mounting on  symmetrical rail or panel with specific mounting kit TMAM2											
<b>Software programming</b>		With SoMachine Basic software											
<b>Logic controller type</b>	<ul style="list-style-type: none"> <li>■ Controllers without Ethernet port</li> <li>■ Controllers with embedded Ethernet port</li> </ul>	<b>Modicon Easy M200</b>											
		TM200C16R	TM200C16T	TM200C16U	TM200C24R	TM200C24T	TM200C24U	TM200C32R	TM200C40R	TM200C40T	TM200C40U	TM200C60R	
					TM200CE24R	TM200CE24T	TM200CE24U	TM200CE32R	TM200CE40R	TM200CE40T	TM200CE40U		
<b>Pages</b>		12											

(1) SoMachine Basic V1.6 for M100/M200 logic controller could be activated with the special code "ulck8loca" in the software settings.  
 (2) Each controller can support 1 communication cartridge maximum.

**Main features (1)****Processing power**

- Execution speed: 0.2 μs/Boolean instruction
- Program: 10 K list instructions
- Number of words: 8,000%MW
- Number of internal bits: 1024%M
- Retain memory: 3,000 words (%MW0 to %MW2999)
- Application structure:
  - master task: 1 task configurable as freewheeling or cyclic
  - auxiliary task: 1 task configurable as timer cycle interrupt
  - interrupt task: 4 external tasks tripped by fast inputs and 4 high-speed counters

**Supply characteristics**

- Two power supplies are available (depending on the model):
  - 24 V  $\overline{\text{---}}$  or 100...220 V  $\sim$
- Voltage limit (ripple included): 20.4...28.8 V  $\overline{\text{---}}$ /85...264 V  $\sim$  (50/60Hz)
- Max. consumption:
  - 61-74 VA for AC power supply
  - 18 W for DC power supply

**Connection of the embedded I/O**

On removable screw terminal blocks at intervals of 5.08 mm / 0.2 in.; 24 V DC sensor power output provided by the controller (TM200C●●R models only):

- 250 mA for 16 and 24 I/O
- 300 mA for 32, 40 and 60 I/O

**Environmental characteristics**

- Degree of protection: IP 20 with protective cover in place
- Ambient operating temperature: 0...55 °C/32...131 °F
- Storage temperature: -25...70 °C/-13...158 °F
- Relative humidity: 5...95% (non-condensing)
- Operating altitude: 0...2,000 m/0...6,560 ft
- Storage altitude: 0...3,000 m/ 0...9,843 ft
- Vibration resistance: IEC/EN 61131-2 panel mounting or mounted on a top hat section rail (DIN rail)

**Product certification and conformity to standards**

- CE certification
- Conformity to the main national and international standards concerning electronic industrial control devices (IEC/EN 61131-2, UL 508, and IEC/EN 61010-2-201)

**Embedded communication**

M200 logic controllers have 3 types of integrated communication port:

- Ethernet (depending on the model)
- RS 485 embedded serial link
- Mini-USB programming port

**Communication on Ethernet network**

TM200CE●●● controllers have an embedded RJ 45 Ethernet port (10/100 Mbps, MDI/MDIX) with Modbus TCP (8 servers/1 client).

As well as the default address based on the MAC address, a controller IP address can be assigned via a DHCP server or via a BOOTP server.

- The Ethernet port also offers application uploading, updating, and debugging functions when the controller is supplied with power.
- The integrity of applications is maintained by cybersecurity functions.
- A firewall allows each communication protocol to be locked.

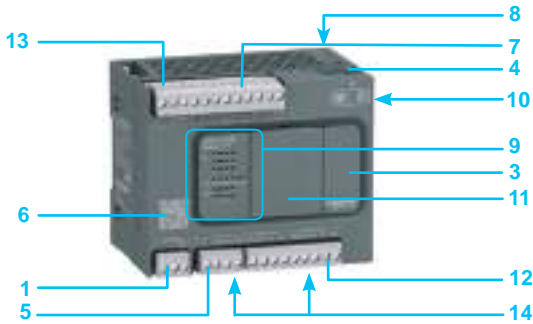
**Serial links**

Each TM200C●●● controller has an embedded RS 485 serial link. This serial link also provides the functionality for loading, updating and development when the controller is powered up. The two main commercially-available protocols are embedded in this link:

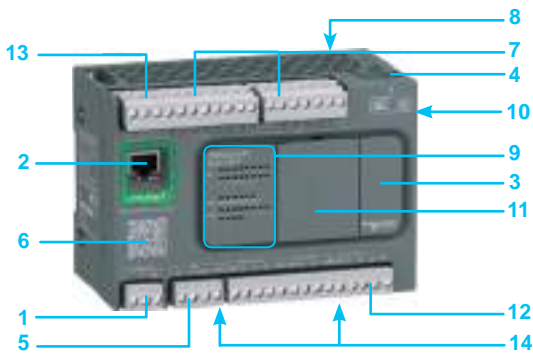
- Modbus ASCII/RTU Master or Slave
- Character string (ASCII)

(1) For more information on our range of products, please visit our site: [www.schneider-electric.com](http://www.schneider-electric.com).

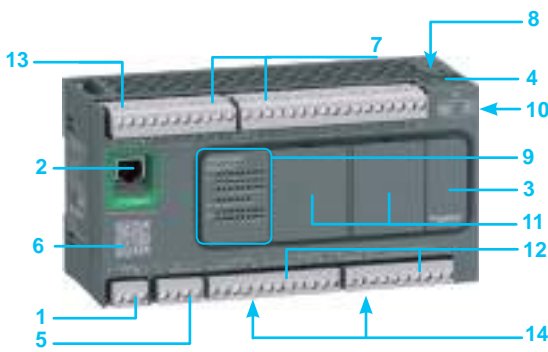




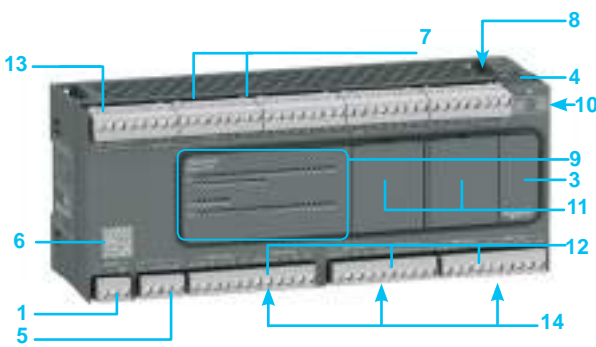
M200: 16 I/O



M200: 24 I/O and Ethernet port



M200: 32 I/O and Ethernet port  
M200: 40 I/O and Ethernet port



M200: 60 I/O port

## Description

### M200 logic controllers (TM200C●●●)

- 1 Removable screw terminal block, 3 terminals for connecting the 24 V  $\overline{\text{DC}}$  or the 110...220 V  $\sim$  power supply (depending on the model)
- 2 On TM200CE●●● controllers: RJ45 connector for Ethernet network, with exchange rate and activity LED
- 3 Behind the removable cover:
  - USB mini-B connector for connecting a PC equipped with the SoMachine Basic software
  - Run/Stop switch
- 4 Slot for Micro SD memory card
- 5 Serial link (RS 485): connector on removable screw terminal block
- 6 Controller technical documentation QR code
- 7 Connection of 24 V  $\overline{\text{DC}}$  digital inputs on removable screw terminal blocks (1)
- 8 On top of the controller: slot for RTC battery
- 9 LED display block showing:
  - the status of the controller and its components (battery, Micro SD memory card)
  - serial link status
  - I/O status
- 10 On the side of the controller: TM3 bus connector for the link with a Modicon TM3 expansion module
- 11 Slot(s) for I/O cartridge(s) or communication cartridge:
  - one on M200 controllers with 16 and 24 I/O
  - two on M200 controllers with 32, 40 and 60 I/O
- 12 Connection of relay or transistor (depending on the model) digital outputs: on removable screw terminal blocks (2)
- 13 Sensor power supply 24 V  $\overline{\text{DC}}$  output (TM200CE●●R or TM200C●●R models only)
- 14 Clip for locking on 35 mm/ 1.38 in. DIN rail

## Programming

Modicon Easy M200 controllers are programmed with SoMachine Basic software. SoMachine Basic is an integral component of SoMachine software (3).

### SoMachine Basic software

SoMachine Basic programming software is a neat tool designed to develop projects on Modicon Easy M200 or M100 logic controllers. It can convert applications created on TwidoSuite and TwidoSoft.

SoMachine Basic offers a modern interface, and programming with power off charging function. So that getting started is user-friendly, fast and convenient:

- Simplified interface helps you find the information you need in two or three clicks maximum
- Engineering process is efficient due to the functions available, including the FB (Function Block) and UDFB (User-Defined Function Block)
- Ability to upload an application program or the firmware without the controller being powered by another source

SoMachine Basic software runs on the following configurations:

- Microsoft Windows® 7 Professional Edition 32-bit and 64-bit, Microsoft Windows® 8 Professional Edition 32-bit and 64-bit, Microsoft Windows® 8.1 32-bit and 64-bit, Microsoft Windows® 10
- 1 GHz Premium processor, 1 GB hard disk, and 1 GB RAM minimum
- Recommended minimum screen resolution of 1280 x 800 pixels

(1) Number of digital inputs according to model: see next page.

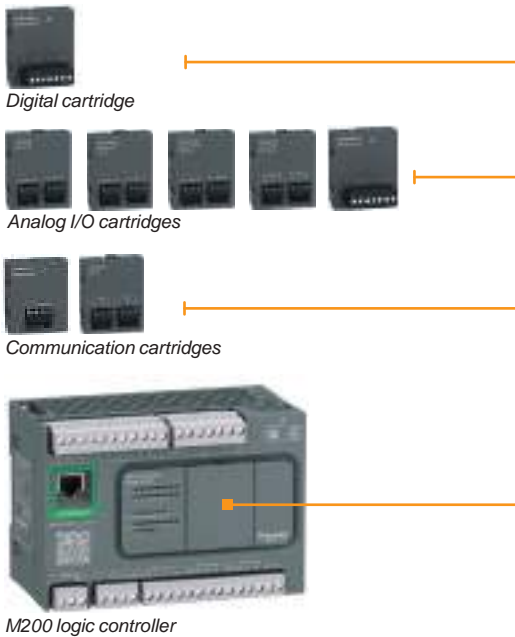
(2) Number of digital outputs according to model: see next page.

(3) Available as a free download from our website [www.schneider-electric.com](http://www.schneider-electric.com) and accessible with serial number "ulck8loca".

# Modicon Easy M200 logic controllers

## Options for Modicon Easy M200 logic controllers

### I/O expansion with Modicon TM3 expansion modules



#### Options for Modicon Easy M200 logic controllers

##### Cartridges

Depending on the controller size, one or two cartridges can be inserted on the front of Modicon Easy M200 controllers without increasing the dimensions:

- 1 cartridge for controllers with 16 and 24 I/O
- 2 cartridges for controllers with 32, 40 and 60 I/O

3 types of cartridges are offered:

- Digital I/O cartridges
    - **TMCR2DM4U** for 2 digital inputs and 2 transistor sink outputs
  - Analog I/O cartridges
    - **TMCR2AI2** for 2 analog inputs that can be configured as voltage or current
    - **TMCR2TI2** for 2 temperature inputs
    - **TMCR2AQ2V** for 2 voltage analog outputs
    - **TMCR2AQ2C** for 2 current analog outputs
    - **TMCR2AM3** for 2 analog inputs and 1 analog output
  - Communication cartridges
    - **TMCR2SL1** cartridge providing additional serial port terminals for connection of a printer, barcode reader, etc.
    - **TMCR2SL1A** cartridge providing additional isolated serial link
- Each controller can support one TMCR2SL1 or TMCR2SL1A serial link maximum.

#### I/O expansion with Modicon TM3 expansion modules

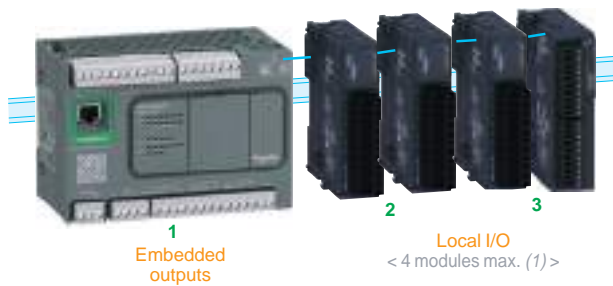
##### Modicon TM3 expansion modules

The capacity of M200 logic controllers can be enhanced with the Modicon TM3 expansion module offer:

- Digital I/O modules can be used to create configurations with up to 196 digital I/O. These modules are available with the same connections as the controllers.
- Analog I/O modules can be used to create configurations with up to 32 analog I/O and are designed to receive, amongst other things, position, temperature, and speed sensor signals. They are also capable of controlling variable speed drives or any other device equipped with a current or voltage input.

For more information, please refer to Modicon TM3 catalogs in [www.schneider-electric.com](http://www.schneider-electric.com).

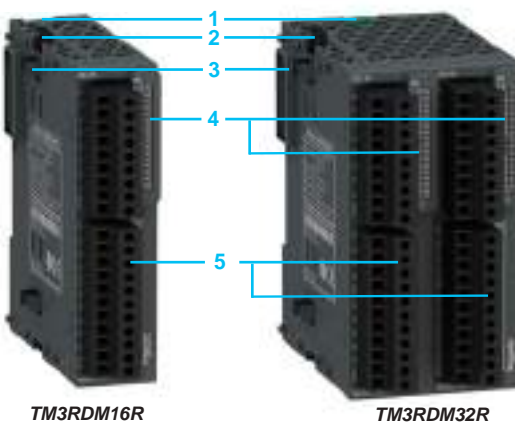
- 1 Modicon Easy M200 logic controller
- 2 Modicon TM3 digital I/O modules
- 3 Modicon TM3 analog I/O modules (2)



##### Modicon TM3R digital I/O modules

Modicon TM3R digital I/O modules, consist of 2 types of mixed input/output modules, are specially designed and only applicable for Modicon M200 logic controller.

- 1 Clip for locking on  $\perp$  symmetrical rail.
- 2 Adjacent module locking catch.
- 3 TM3 bus connectors (one on each side). These are designed to provide continuity of the link between connected modules.
- 4 LED display block for the module channels and diagnostics.
- 5 Input or output channel terminal blocks.



No. of logic I/O	Number and type of inputs	Number and type of outputs	References
16 inputs/outputs	8 sink/source 24 V $\overline{\text{---}}$ inputs	16 relay outputs, 2 A	<b>TM3RDM16R</b>
32 inputs/outputs	16 sink/source 24 V $\overline{\text{---}}$ inputs	16 relay outputs, 2 A	<b>TM3RDM32R</b>

(1) Depending on type of TM3 module used (see page 16).

(2) Compatibility of expansion module offers: the majority of Modicon TM2 expansion modules can be used with M200 logic controllers. However, adding a Modicon TM2 expansion module to a configuration can increase expansion module execution times by a few milliseconds. The compatibility between Modicon TM2 expansion modules and each M200 logic controller is specified on page 14.



### Presentation

Modicon Easy M200 controllers can easily be integrated in typical architectures:

- **machine to devices** (variable speed drives, remote I/O modules, operator dialog terminals) with the I/O Scanner function
- **machine to supervision** with the Modbus Client/Server function

Ethernet also brings transparency to the factory, in particular - thanks to the firewall functions - making it possible from any point on the network to:

- program or monitor a controller, or download an application
- access device parameters (variable speed drives for example)

The Modicon Easy M200 range of logic controllers has been designed to meet various customer requirements, specifically on the 4 following key points:

### The Modbus/TCP protocol

Modbus has been the industry communication standard since 1979. During the internet revolution, Modbus was combined with Ethernet Modbus/TCP to form Modbus/TCP, a completely open Ethernet protocol. The development of a connection to Modbus/TCP does not require any proprietary component, nor the purchase of a licence.

This protocol can easily be combined with any product supporting a standard Modbus/TCP communication stack.

The specifications can be downloaded free of charge from the following address: [www.modbus.org](http://www.modbus.org).

### Modbus/TCP, simple and open

- The Modbus application layer is simple and universally familiar with its 9 million installed connections.
- Thousands of manufacturers have already implemented this protocol. Many have already developed a Modbus/TCP connection and numerous products are currently available.
- The simplicity of Modbus/TCP enables any fieldbus device, such as an I/O module, to communicate on Ethernet without the need for a powerful microprocessor or a lot of internal memory.

### Modbus/TCP, high performance

Thanks to the simplicity of its protocol and fast speed of 100 Mbps, the performance of Modbus/TCP is excellent. This type of network can therefore be used in realtime applications such as I/O digitization.

### Modbus/TCP, a standard

- The application protocol is identical on Modbus serial link and Modbus/TCP: messages can be routed from one network to the other without converting the protocol.
- Since Modbus operates on the TCP higher layer, users benefit from IP routing, thus enabling devices located anywhere in the world to communicate without worrying about the distance between them.

Modbus and Modbus/TCP are recognized as a fieldbus by the international standard IEC/EN 61158. They also comply with the Chinese national standard managed by ITEI.

### Transparent Ready class and functions

	Logic controllers TM200CE●●●
Transparent Ready class	A10
Internet protocol version	IP V4
Ethernet services	
Programming, downloading, monitoring	
Client and server Modbus TCP	
Slave Modbus TCP	
Client DHCP dynamic configuration	

Function created



TM200C16R



TM200CE24R



TM200CE32R



TM200C60R



TM200C24U



TM200C40U



TM200CE40T

Modicon Easy M200 logic controllers <sup>(1)</sup>							
Number of digital I/O	W x H x D (mm/in.)	Digital inputs	Digital outputs	Embedded communication ports <sup>(2)</sup>		Reference	Weight kg lb
				Ethernet (RJ 45)	Serial link		
<b>110...220 V ~ power supply</b>							
16 I/O	110 x 70 x 90/ 4.33 x 2.76 x 3.55	9 sink/source 24 V $\overline{\text{---}}$ inputs, including 1 regular input 4 high-speed inputs for HSC and 4 fast inputs for FC	7 relay outputs	–	1	TM200C16R	0.359 0.791
24 I/O	130 x 70 x 90/ 5.12 x 2.76 x 3.55	14 sink/source 24 V $\overline{\text{---}}$ inputs, including 6 regular inputs 4 high-speed inputs for HSC and 4 fast inputs for FC	10 relay outputs	–	1	TM200C24R	0.405 0.893
32 I/O	175 x 70 x 90/ 6.89 x 2.76 x 3.55	20 sink/source 24 V $\overline{\text{---}}$ inputs, including 12 regular inputs 4 high-speed inputs for HSC and 4 fast inputs for FC	12 relay outputs	–	1	TM200C32R	0.504 1.111
40 I/O	175 x 70 x 90/ 6.89 x 2.76 x 3.55	24 sink/source 24 V $\overline{\text{---}}$ inputs, including 16 regular inputs 4 high-speed inputs for HSC and 4 fast inputs for FC	16 relay outputs	–	1	TM200C40R	0.504 1.111
60 I/O	225 x 70 x 90/ 8.86 x 2.76 x 3.55	36 sink/source 24 V $\overline{\text{---}}$ inputs, including 28 regular inputs 4 high-speed inputs for HSC and 4 fast inputs for FC	24 relay outputs	–	1	TM200C60R	0.700 1.543
<b>24 V <math>\overline{\text{---}}</math> power supply</b>							
16 I/O	110 x 70 x 90/ 4.33 x 2.76 x 3.55	9 sink/source 24 V $\overline{\text{---}}$ inputs, including 1 regular input 4 high-speed inputs for HSC and 4 fast inputs for FC	7 sink outputs, inc. 5 regular transistor outputs and 2 fast outputs (PWM/PLS/PTO)	–	1	TM200C16U	0.339 0.747
			7 source outputs, inc. 5 regular transistor outputs and 2 fast outputs (PWM/PLS/PTO)	–	1	TM200C16T	0.365 0.805
24 I/O	130 x 70 x 90/ 5.12 x 2.76 x 3.55	14 sink/source 24 V $\overline{\text{---}}$ inputs, including 6 regular inputs 4 high-speed inputs for HSC and 4 fast inputs for FC	10 sink outputs, inc. 8 regular transistor outputs and 2 fast outputs (PWM/PLS/PTO)	–	1	TM200C24U	0.382 0.842
			10 source outputs, inc. 8 regular transistor outputs and 2 fast outputs (PWM/PLS/PTO)	1	1	TM200CE24U	0.391 0.862
			10 source outputs, inc. 8 regular transistor outputs and 2 fast outputs (PWM/PLS/PTO)	–	1	TM200C24T	0.416 0.917
			10 source outputs, inc. 8 regular transistor outputs and 2 fast outputs (PWM/PLS/PTO)	1	1	TM200CE24T	0.424 0.935
40 I/O	175 x 70 x 90/ 6.89 x 2.76 x 3.55	24 sink/source 24 V $\overline{\text{---}}$ inputs, including 16 regular inputs 4 high-speed inputs for HSC and 4 fast inputs for FC	16 sink outputs inc. 14 regular transistor outputs and 2 fast outputs (PWM/PLS/PTO)	–	1	TM200C40U	0.468 1.032
			16 source outputs, inc. 14 regular transistor outputs and 2 fast outputs (PWM/PLS/PTO)	1	1	TM200CE40U	0.483 1.065
			16 source outputs, inc. 14 regular transistor outputs and 2 fast outputs (PWM/PLS/PTO)	–	1	TM200C40T	0.522 1.151
			16 source outputs, inc. 14 regular transistor outputs and 2 fast outputs (PWM/PLS/PTO)	1	1	TM200CE40T	0.523 1.153

- (1) M200 controllers are supplied with:
- removable screw terminal blocks for connecting the I/O
  - a removable screw terminal block for connecting the power supply
  - a removable screw terminal block for the serial link

(2) Each M200 logic controller has an embedded USB mini-B programming port.



### Options for Modicon Easy M200 logic controllers (1)

Description	Details	Unit reference	Weight kg lb
Digital I/O cartridges	2 digital inputs 2 transistor sink outputs Connection via screw terminal block	TMCR2DM4U	0.023 0.051
Analog I/O cartridges	2 analog inputs (12-bit resolution) configurable as: - 0...10 V voltage - 0...20 mA/4...20 mA current Connection via screw terminal block	TMCR2AI2	0.025 0.055
	2 analog inputs (12-bit resolution) 0...10V/ 0...5V/ 0...20mA/ 4...20mA 1 analog output (12-bit resolution) 0...10V/ 0...5V/ 0...20mA/ 4...20mA Connection via screw terminal block	TMCR2AM3	0.024 0.053
	2 temperature inputs (12 or 14-bit resolution depending on input signal) type K, J, R, S, B, E, T, N, C, PT100, PT1000, NI100, NI1000 Connection via screw terminal block	TMCR2TI2	0.025 0.055
	2 analog outputs (12-bit resolution) 0...10 V voltage Connection via screw terminal block	TMCR2AQ2V	0.025 0.055
	2 analog outputs (12-bit resolution) 4...20 mA current Connection via screw terminal block	TMCR2AQ2C	0.025 0.055
Communication cartridges	1 additional RS485 serial link on screw terminal block	TMCR2SL1	0.025 0.055
	1 additional isolated RS485 serial link on screw terminal block	TMCR2SL1A	0.014 0.031



TMARCOVER

### Separate parts for Modicon Easy M200 logic controllers

Description	Details	Sold in lots of	Unit reference	Weight kg lb
Cartridge cover	Allows IP 20 protection	4	TMARCOVER	–
RTC battery	–	1	TMARBAT1	–



TMARTB3

### Replacements parts for Modicon Easy M200 logic controllers

Description	Details	Sold in lots of	Unit reference	Weight kg lb
Set of terminal blocks for connecting the I/O on M200 controllers	3-way terminal block for power supply connection	5	TMARTB3	–
	4-way terminal block for serial link connection	5	TMARTB4	–

### Expansion modules



Description	For use with	Reference
Modicon TM3 expansion modules	Modicon Easy M200 logic controllers	(3)
Modicon TM2 expansion modules	Modicon Easy M200 logic controllers	(3)

(1) One cartridge for controllers with 16 and 24 I/O. Two cartridges maximum for controllers with 32, 40 and 60 I/O, only one of which can be a communication cartridge.


(2) To download this software, visit our web site [www.schneider-electric.com](http://www.schneider-electric.com).

(3) See our list of compatible expansion modules on pages 14 and 15.

Compatibility															
Expansion options		Number and type of I/O		M200 logic controllers		M200 logic controllers									
				TM200C16R	TM200C16U	TM200C16T	TM200C24R TM200CE24R	TM200C24U TM200CE24U	TM200C24T TM200CE24T	TM200C32R TM200CE32R	TM200C40R TM200CE40R	TM200C40U TM200CE40U	TM200C40T TM200CE40T	TM200C60R	
Cartridge	Digital I/O cartridge	TMCR2DM4U	2 digital inputs + 2 transistor sink outputs												
	Analog I/O cartridge	TMCR2AI2	2 voltage/current inputs												
		TMCR2AM3	2 voltage/current inputs + 1 voltage/current output												
		TMCR2TI2	2 temperature inputs												
		TMCR2AQ2V	2 voltage outputs												
		TMCR2AQ2C	2 current outputs												
	Communication cartridge	TMCR2SL1	1 RS485 serial link												
TMCR2SL1A		1 isolated RS485 serial link													
Modicon TM2	Digital modules	TM2DAI8DT	8 x 120 V ~ inputs												
		TM2DDI8DT	8 x 24 V ~ inputs												
		TM2DDI16DT	16 x 24 V ~ inputs												
		TM2DDI16DK	16 x 24 V ~ inputs (by HE10 connector)												
		TM2DDI32DK	32 x 24 V ~ inputs (by HE10 connector)												
		TM2DDO8TT	8 x 24 V ~ outputs												
		TM2DDO8UT	8 x 24 V ~ outputs												
		TM2DRA8RT	8 relay outputs												
		TM2DDO16TK	16 x 24 V ~ source transistor outputs												
		TM2DDO16UK	16 x 24 V ~ sink transistor outputs												
		TM2DRA16RT	16 relay outputs												
		TM2DDO32TK	32 x 24 V ~ source transistor outputs												
		TM2DDO32UK	32 x 24 V ~ sink transistor outputs												
		TM2DMM8DRT	4 x 24 V ~ inputs + 4 relay outputs												
		TM2DMM24DRF	16 x 24 V ~ inputs (spring type) + 8 relay outputs												
		Analog modules	TM2AMI2HT	2 voltage/current inputs											
			TM2AMI2LT	2 thermocouple inputs											
	TM2AMI4LT		4 voltage/current + temperature probe inputs												
	TM2AMI8HT		8 voltage/current inputs												
	TM2ARI8LRJ		8 temperature probe inputs												
	TM2ARI8LT		8 temperature probe inputs												
	TM2ARI8HT		8 temperature probe inputs												
	TM2AMO1HT		1 voltage/current output												
	TM2AVO2HT		2 voltage outputs												
	TM2AMM3HT		2 voltage/current inputs + 1 voltage/current output												
	TM2ALM3LT	2 thermocouple/temperature probe inputs + 1 voltage/current output													
	TM2AMM6HT	4 voltage/current inputs + 2 voltage/current outputs													

 Possible to insert 2 cartridge/up to 4 modules  
 Possible to insert 1 cartridge/up to 4 modules

Compatibility														
Expansion options		Number and type of I/O		M200 logic controllers		M200 logic controllers								
				TM200C16R	TM200C16U	TM200C16T	TM200C24R TM200CE24R	TM200C24U TM200CE24U	TM200C24T TM200CE24T	TM200C32R TM200CE32R	TM200C40R TM200CE40R	TM200C40U TM200CE40U	TM200C40T TM200CE40T	TM200C60R
Modicon TM3	Digital modules	TM3DI8	8 x 24 V ∓ sink/source inputs											
		TM3DI16	16 x 24 V ∓ sink/source inputs											
		TM3DI32K	32 x 24 V ∓ sink/source inputs											
		TM3DQ8R	8 x 24 V ∓ /240 V a relay outputs											
		TM3DQ8T	8 x 24 V ∓ source transistor outputs											
		TM3DQ8U	8 x 24 V ∓ sink transistor outputs											
		TM3DQ16R	16 x 24 V ∓ /240 V ~ relay outputs											
		TM3DQ16T	16 x 24 V ∓ source transistor outputs											
		TM3DQ16U	16 x 24 V ∓ sink transistor outputs											
		TM3DQ32TK	32 x 24 V ∓ source transistor outputs											
		TM3DQ32UK	32 x 24 V ∓ sink transistor outputs											
		TM3DM8R	4 x 24 V ∓ sink/source inputs + 4 x 24 V ∓ /240 V ~ relay outputs											
		TM3DM24R	16 x 24 V ∓ sink/source inputs + 8 x 24 V ∓ /240 V ~ relay outputs											
		TM3RDM16R	8 x 24 V ∓ sink/source inputs + 8 x 24 V ∓ /240 V ~ relay outputs											
		TM3RDM32R	16 x 24 V ∓ sink/source inputs + 16 x 24 V ∓ /240 V ~ relay outputs											
	Analog modules	TM3AI2H	2 voltage/current inputs											
		TM3AI4	4 voltage/current inputs											
		TM3TI4	4 voltage/current or temperature inputs											
		TM3AI8	8 voltage/current inputs											
		TM3TI8T	8 temperature inputs											
		TM3AQ2	2 voltage/current outputs											
		TM3AQ4	4 voltage/current outputs											
		TM3TM3	2 voltage/current or temperature inputs + 1 voltage/current outputs											
TM3AM6		4 voltage/current inputs + 2 voltage/current outputs												

 Possible to combine, up to 4 modules

### Configuration

Modicon TM3 or TM2 digital I/O modules connect to Modicon M200 logic controllers with a maximum of 4 local I/O modules.

**Note:**  
The maximum number of Modicon TM3/TM2 expansion modules can be reduced by the number of transistor outputs or relay outputs used (see the table below).  
For more information on TM3/TM2 expansion modules, please visit our website [www.schneider-electric.com](http://www.schneider-electric.com).

Configuration limits	Logic controllers										
	TM200 C16R	TM200 C16T	TM200 C16U	TM200 C24R CE24R	TM200 C24T CE24T	TM200 C24U CE24U	TM200 C32R CE32R	TM200 C40R CE40R	TM200 C40T CE40T	TM200 C40U CE40U	TM200 C60R
Maximum number of transistor outputs directly connected to the logic controller	132	139	139	132	142	142	132	132	148	148	132
Maximum number of relay outputs directly connected to the logic controller	71	64	64	74	64	64	76	80	64	64	88

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T	
TM200C16R	12
TM200C16T	12
TM200C16U	12
TM200C24R	12
TM200C24T	12
TM200C24U	12
TM200C32R	12
TM200C40R	12
TM200C40T	12
TM200C40U	12
TM200C60R	12
TM200CE24R	12
TM200CE24T	12
TM200CE24U	12
TM200CE32R	12
TM200CE40R	12
TM200CE40T	12
TM200CE40U	12
TM3RDM16R	10
TM3RDM32R	10
TMARBAT1	13
TMARCOVER	13
TMARTB3	13
TMARTB4	13
TMCR2AI2	13
TMCR2AM3	13
TMCR2AQ2C	13
TMCR2AQ2V	13
TMCR2DM4U	13
TMCR2SL1	13
TMCR2SL1A	13
TMCR2TI2	13



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