



## Main

Range of product	Modicon LMC078
Product or component type	Motion controller
Product specific application	Packaging Material working Material handling
Discrete I/O number	20
Battery type	3 V lithium battery

## Complementary

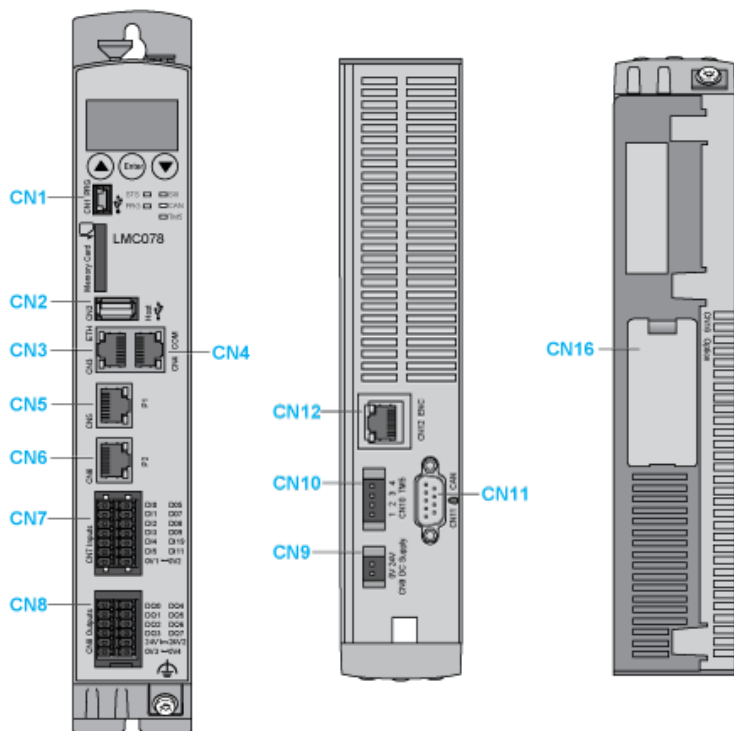
Discrete input number	4 capture input 8 regular input 12 total input
Discrete input logic	Sink
Discrete input voltage	24 V
Discrete input voltage type	DC
Voltage state 1 guaranteed	15...30 V input
Voltage state 0 guaranteed	-3...5 V input
Discrete input current	4 mA
Input impedance	6 kOhm
Configurable filtering time	0.1...4290 ms capture input 0.1...4290 ms regular input
Discrete output number	8 output
Discrete output logic	Source
Discrete output voltage	24 V DC
Output voltage limits	19.2...28.8 V
Protection type	Short-circuit protection
Input/Output number	<= 364 distributed for analog inputs and outputs <= 768 distributed for discrete inputs and outputs
[Us] rated supply voltage	24 V DC
Supply voltage limits	20.4...30 V
[In] rated current	< 2 A for all outputs 500 mA per output
Peak current	<= 2 A (duration= 1 s)
Execution time per instruction	2 ns
Memory type	512 MB RAM memory 128 MB NVRAM memory
Data storage equipment	512 MB SD card
Programming language	CFC (continuous function chart) FBD (function block diagram) IL (instruction list) LD (ladder) SFC (sequential function chart) ST (structured text)
Realtime clock	With +/- 1 s/day
Data backed up	Date and hour with battery Variables of type retain and retain persistent with battery
Battery life	10 yr

Integrated connection type	<p>1 isolated serial link with USB type A connector</p> <p>1 isolated serial link with female RJ45 connector; protocol: Ethernet Modbus TCP/IP with slave method; physical interface: 10BASE-T/100BASE-TX; transmission rate: 300...115200 bps</p> <p>1 isolated serial link with female RJ45 connector; physical interface: SERCOS III</p> <p>1 encoder with screw terminal block connector</p> <p>1 isolated serial link with mini B USB connector; transmission rate: 480 Mbit/s</p> <p>1 CAN port with male SUB-D 9 connector; protocol: CANopen with master method</p> <p>1 isolated serial link with female RJ45 connector; protocol: Modbus with master/slave method; transmission frame: RTU/ASCII or character mode ASCII; physical interface: RS232/RS485; transmission rate: 480 Mbit/s</p>
Local signalling	<p>1 LED green/red with CAN marking for CANopen bus status</p> <p>1 LED green/red with STS marking for status of the module (Mod Status)</p> <p>1 LED green, orange and red with SIII marking for SERCOS III bus status</p> <p>1 LED green with PRG marking for programming indication</p>
Marking	CE
Mounting support	Screw clamp
Width	45 mm
Height	230 mm
Depth	220 mm
Product weight	2.2 kg

## Environment

Standards	<p>CSA C22.2 No 142</p> <p>UL 508</p>
Product certifications	<p>CSA</p> <p>UL</p>
Ambient air temperature for operation	5...55 °C vertical installation
Ambient air temperature for storage	-25...70 °C
Relative humidity	5...95 % without condensation
IP degree of protection	IP20 conforming to IEC 61131-2
Pollution degree	2
Operating altitude	0...2000 m without derating
Storage altitude	0...3000 m
Vibration resistance	10 m/s <sup>2</sup>
Shock resistance	100 m/s <sup>2</sup>

Presentation

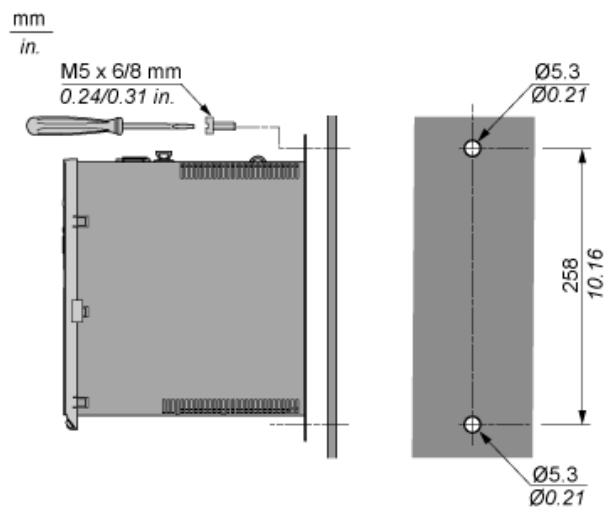


- CN1 : USB mini-B (PRG)
- CN2 : USB A port (Host)
- CN3 : Ethernet port (ETH)
- CN4 : Serial line port (COM)
- CN5 : Sercos, port 1 (P1)
- CN6 : Sercos, port 2 (P2)
- CN7 : Digital inputs
- CN8 : Digital outputs
- CN9 : 24 Vdc
- CN10 : Not used
- CN11 : CANopen port (CAN)
- CN12 : Master encoder input (ENC)
- CN16 : Slot for optional communication module

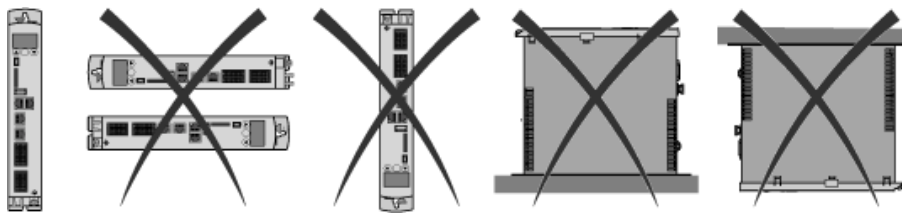


Mounting Clearance

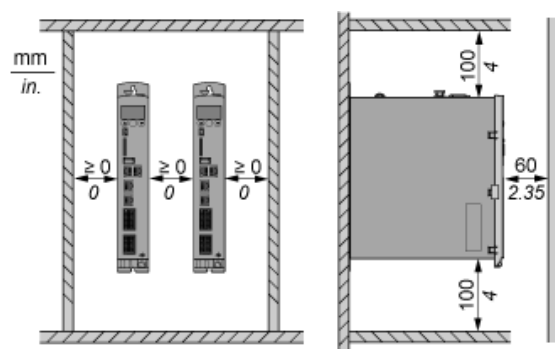
Mounting



Mounting Position

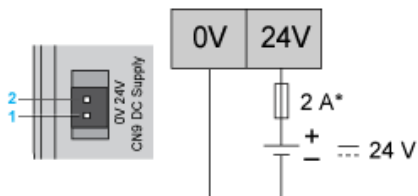


Clearance



Connections and Schema

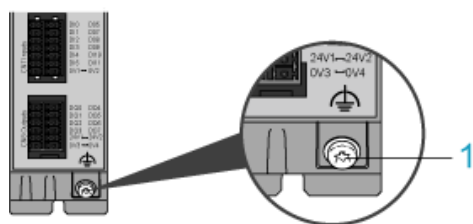
DC Power Supply



\* : Type T fuse

Pin	Description
1	0 Vdc
2	24 Vdc

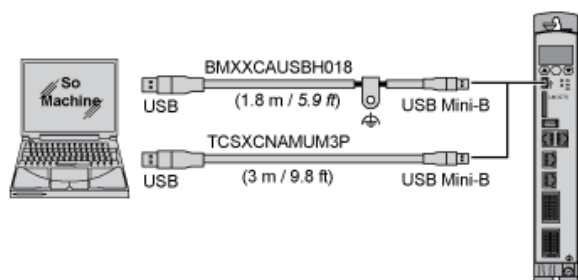
Grounding



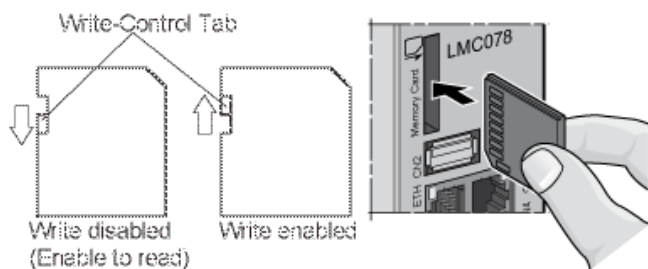
1 : Grounding terminal

mm	4.3	4.3
in.	0.17	0.17

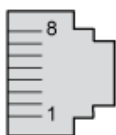
USB Mini-B Port Connection



SD Card Slot

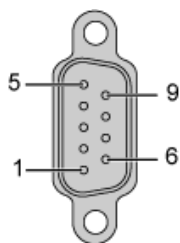


## Ethernet Port



Pin	Signal	Description
1	TD+	Transmit data+
2	TD-	Transmit data-
3	RD+	Receive data+
4	-	-
5	-	-
6	RD-	Receive data-
7	-	-
8	-	-

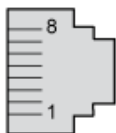
## CAN Port



This table describes the pins of the CAN port:

Pin N°	Signal	Description
1	-	Reserved
2	CAN_L	CAN_L bus line (Low)
3	CAN_GND	CAN 0 Vdc
4	-	Reserved
5	-	Reserved
6	GND	0 Vdc
7	CAN_H	CAN_H bus line (High)
8	-	Reserved
9	-	Reserved

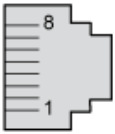
## Sercos Port



Pin	Signal	Description
1	TD+	Transmit data +
2	TD-	Transmit data -
3	RD+	Receive data +
4	-	Reserved
5	-	Reserved
6	RD-	Receive data -
7	-	Reserved

Pin	Signal	Description
8	-	Reserved

## Serial Line Port



Pin	RS-485 signal	RS-232 signal
1	-	TxD
2	-	RxD
3	-	CTS
4	D1 (A+)	-
5	D0 (B-)	-
6	-	RTS
7	-	-
8	0 Vdc	0 Vdc

TXD : Transmitted data

RXD : Received data

CTS : Clear to send

RTS : Request to send

0 Vdc : Common

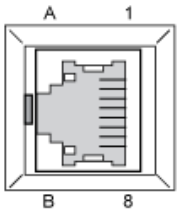
D1 (A+) : Modbus D1

D0 (B-) : Modbus D0

- : Reserved

## Encoder Interface

RJ45 with 2 additional power supply contacts (A, B)

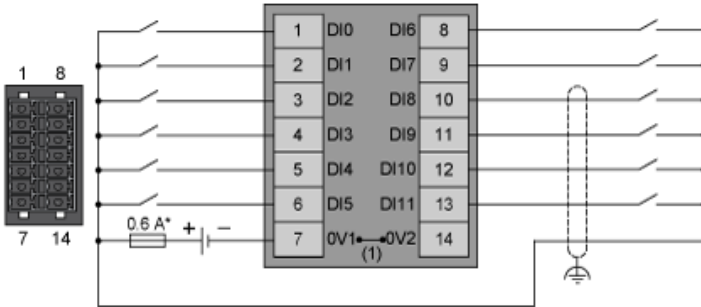


Type	Pin	Designation	Description
Hiperface encoder	1	COS	Cosine track
	2	REFCOS	Reference signal cosinus
	3	SIN	Sinusoidal trace
	4	RS485+	Parameter channel +
	5	RS485-	Parameter channel -
	6	REFSIN	Reference signal sine
	7	-	Reserved
	8	-	Reserved
	A	10 Vdc	Encoder supply
	B	GND	Ground
Incremental encoder	1	B+	Track signal B+
	2	B-	Track signal B-
	3	A+	Track signal A+
	4	Z+	Track signal Z+



Type	Pin	Designation	Description
5	Z-	Track signal Z-	
6	A-	Track signal A-	
7	-	Reserved	
8	-	Reserved	
A	5 Vdc	Encoder supply	
B	GND	Ground	

### Digital Inputs



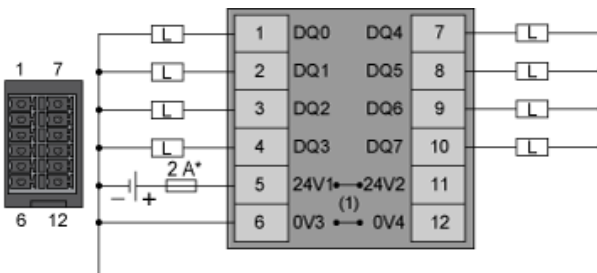
\* : Type T fuse

(1) The 0V1 and 0V2 terminals (7 and 14) are connected internally

This table describes the pin assignment of the CN7 connector:

Pin	Label	Description
1	DI0	Digital input 0
2	DI1	Digital input 1
3	DI2	Digital input 2
4	DI3	Digital input 3
5	DI4	Digital input 4
6	DI5	Digital input 5
7	0V1	0V1 Reference potential DI0...DI11
8	DI6	Digital input 6
9	DI7	Digital input 7
10	DI8	Advanced digital input 8 (touchprobe/interrupt)
11	DI9	Advanced digital input 9 (touchprobe/interrupt)
12	DI10	Advanced digital input 10 (touchprobe/interrupt)
13	DI11	Advanced digital input 11 (touchprobe/interrupt)
14	0V2	Reference potential DI0...DI11

### Digital Outputs



\* : Type T fuse

(1) The 24V1 and 24V2 terminals (5 and 11) are connected internally. The 0V3 and 0V4 terminals (6 and 12) are connected internally.

Pin	Label	Description
1	DQ0	Digital output 0
2	DQ1	Digital output 1
3	DQ2	Digital output 2

Pin	Label	Description
4	DQ3	Digital output 3
5	24V1	Supply voltage DQ0...DQ7 (24 Vdc)
6	0V3	Supply voltage DQ0...DQ7 (0 Vdc)
7	DQ4	Digital output 4
8	DQ5	Digital output 5
9	DQ6	Digital output 6
10	DQ7	Digital output 7
11	24V2	24V2 Supply voltage DQ0...DQ7 (24 Vdc)
12	0V4	Supply voltage DQ0...DQ7 (0 Vdc)