

# Connectors and LED Information

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## Overview

The following diagram shows an overview of all connectors and LEDs.

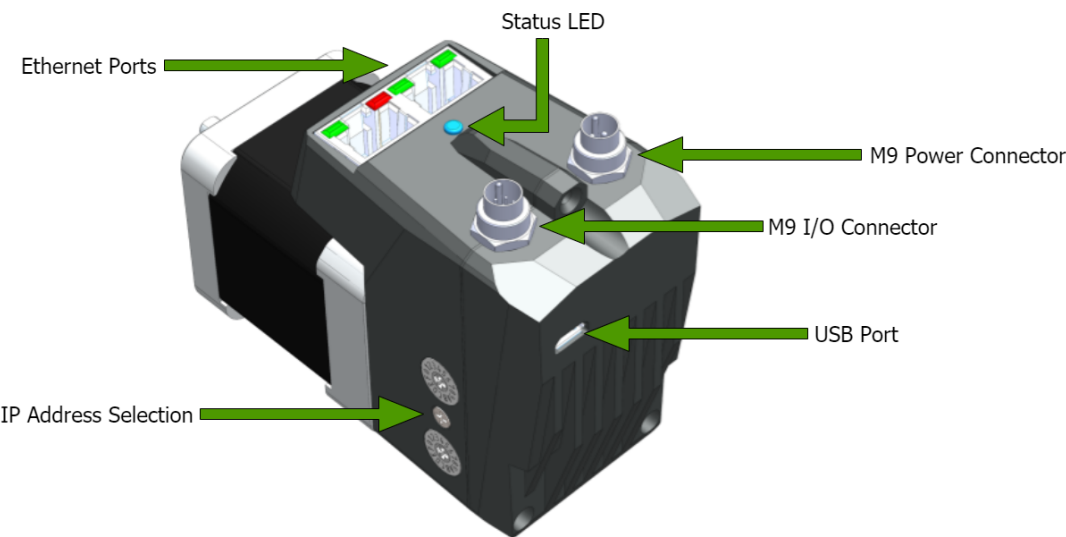
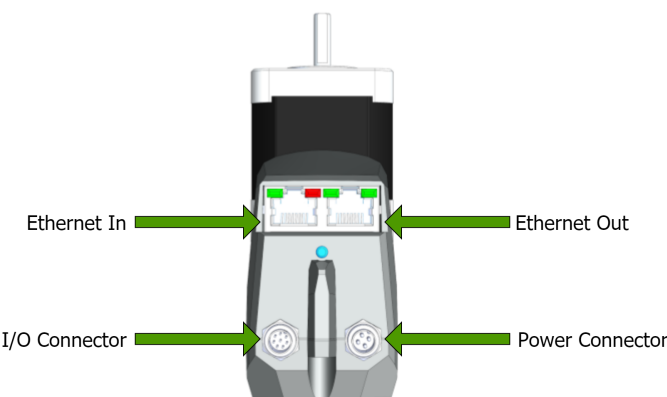


Figure: Overview of Connections and status LEDs

## Motor Connections

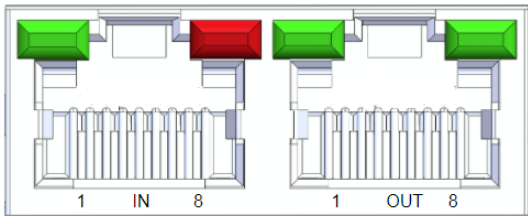


## Ethernet Connectors

The Ethernet ports use standard Ethernet RJ45 CAT5e, M8-A or M8-D connectors depending on the motor variant. They are labeled IN and OUT but either port may be used. The CM1-T Ethernet connections will act as a TCP/IP switch. Multiple motors or other devices can be connected in a daisy chain configuration without the need to run back to a central switch for each ethernet device.

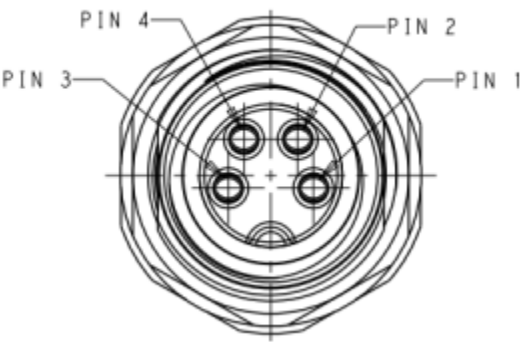
Connector Options

- RJ45



- Amphenol - [RJHSE538B02](#)

- M8-A Female



- TE Connectivity - [T4041017041-000](#)

- M8-D Female


Pinout



	RJ45 <sup>(1)</sup>	M8-A	M8-D
Tx+	1	1	1
Rx+	3	2	2
Rx-	6	3	4
Tx-	2	4	3

(1) Pins 4,5,7 and 8 are connected to GND.

Example Cables

All ethernet cables are standard pinouts and are available from a variety of online suppliers or cable houses. Here are a few example cables from the Phoenix Contact NBC series

Image	Part Number	Description	Digikey Link
	1407353	M8-A male to RJ45 <a href="#">Phoenix Contact - 1407353</a>	<a href="#">Digikey - 1407353</a>

	1407349	M8-A male to M8A male <a href="#">Phoenix Contact - 1407349</a>	<a href="#">Digikey - 1407349</a>
	1227562	RJ45 to RJ45 <a href="#">Phoenix Contact - 1227562</a>	<a href="#">Digikey - 1227562</a>

## Power Connector

The power connector supplies 24V to the TCP/IP slave and the motor separately. These two can be tied together so both are off the same power supply.

The power connector is an M9 circular connector from Binder. The relevant parts numbers are

Connector	Part Number	Supplier
Motor connector	09 0081 20 04	Binder
Female cable side mating connector	99 0080 102 04	Binder
4m power cable	CM1M9-4F-4000	Myostat

- The CM1M9-4F-4000 is 24AWG with conductor resistance of 97.5/km
- The HF version with EXT-3D cable has a resistance of 91.1/km



Pin #	Description	Voltage	Current
1 - yellow	Motor Control Power	24V $\pm$ 10%	125mA max
2 - white	0V	-	
3 - grey	0V	-	
4 - orange	Motor Drive Power	24V $\pm$ 10%	See individual <a href="#">motor ratings</a>

Colors indicated are for the standard **CM1M9-4F-4000** power cable.



There is no reverse polarity protection. Ensure the 24V power is connected correctly before powering the unit.



Maintaining Control power and switching off motor drive power will

- retain motor position
- remove any ability for the motor to be driven (as power to the motor drive has been removed).

## I/O Connector

 Connecting a digital input to GND will produce a logical high on the device.



Connector	Part Number	Supplier
Motor connector	09 0481 22 08	Binder
Female cable side mating connector	99 0480 102 08	Binder
4m I/O cable	CM1M9-8F-4000	Myostat
Custom length I/O Cable	CM1M9-8F-xxxxS <ul style="list-style-type: none"> <li>• xxxx = length in mm</li> </ul>	Myostat

## Pin Functions

Pin #	Name	Function	Specifications			
<i>Digital Inputs - Sourcing (supply 0V to trigger)</i>			Parameter	Min	Max	Unit
1 - orange	IN1	Digital input 1	Voltage Range	0	36	V
2 - brown	IN2	Digital input 2	Input ON level	0	1.4	V
3 - green	IN3	Digital input 3	Input OFF level	1.4	36	V
4 - yellow	IN4	Digital input 4	Continuous Current	-	30	mA
			Peak Current	-	0.5	A
			Pulse Width	-	1	ms
<i>Analog Input (0-5V)</i>			Parameter	Min	Max	Unit
5 - purple	A-IN5	Analog Input	Voltage Range	0	5	V
			Resolution	10 bit		
<i>Digital Outputs - Sinking (output supplies 0V when asserted)</i>			Parameter	Min	Max	Unit
6 - blue	OUT1	Digital Output 1	Voltage Range	0	-	V
7 - black	OUT2	Digital Output 2	Continuous Current	-	1	A
			Inductive Load	-	0.2	A
			Peak Rev Current			
			Inductive Load	-	70	V
			Peak Rev Voltage			
<i>Signal Ground (0V)</i>			Parameter	Min	Max	Unit
8 - red	0V	0V	Voltage Range	0	0	V

- Colors indicated are for the standard **CM1M9-8F-4000** I/O cable.
- For custom cable length pin-out and colors see [CM1M9-8F-xxxxS.PDF](#)

## CM1M9-8F-4000 Specifications

Specification	Value
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Length	4.0m
Wire Gauge	26 AWG
Colour Code	1 - orange 2 - brown 3 - green 4 - yellow 5 - purple 6 - blue 7 - black 8 - red

## CM1M9-8F-xxxxS Specifications

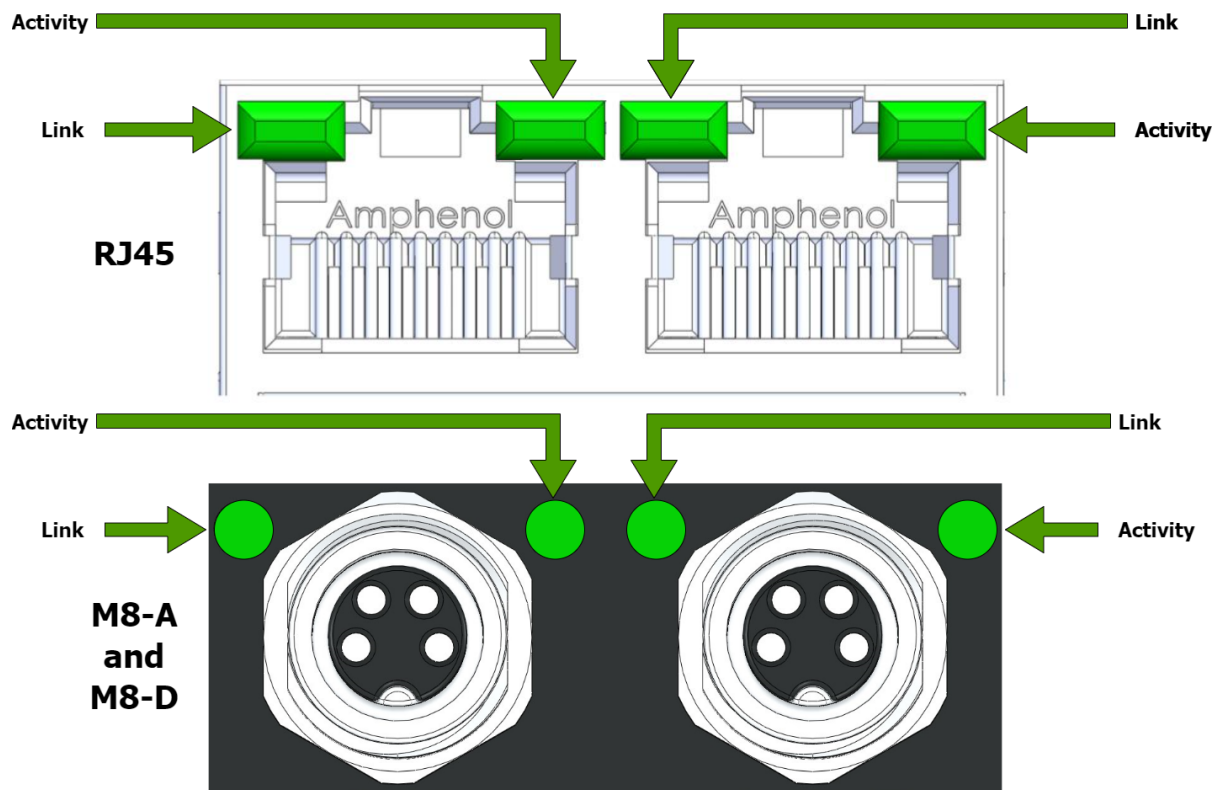
Specification	Value
Length	Defined by value in xxxx in millimeters (mm)
Wire Gauge	24 AWG
Colour Code	1 - orange/Black 2 - orange 3 - Grey/Black 4 - Grey/Red 5 - White/Black 6 - White/Red 7 - Yellow 8 - Yellow/Red
Drawing	<a href="#">CM1M9-8F-xxxxS.PDF</a>

## USB Connection

The USB connector is a standard micro USB and is used to update firmware. When it is plugged into a computer it will create a virtual serial port.

## LEDs

### Link and Activity LEDs



The Link LED will be lit as long as there is a network connection. The activity LED will blink when there is data transfer to/from the motor.

## System and Motor Status LED

The system status LED provides feedback to the user on overall system status. The following states exist

GREEN	State	Resolution
Solid	No Error	N/A
Blinking	No IP Address given	<ul style="list-style-type: none"> <li>Investigate why no DHCP server found</li> <li>Program a static IP</li> </ul>
YELLOW	State	Resolution
Solid	Motor in disabled state (no torque)	Enable motor
RED	State	Resolution
Solid	24V motor drive power not present	Apply 24V drive power
Blinking	Module error	Unrecoverable - cycle power
Flashing	1 - Position error 2 - Over speed error 3 - Over temperature error 4 - Over torque error	Clear error/fault

## IP Address Selector

The IP address selector switches will only be active if not using DHCP. If a static IP is programmed with the final value as 0, the rotary selectors will choose the final octet of the IP address.

For example:

Static IP	x10 Value	x1 Value	IP Address used
192.168.1.10	2	3	192.168.1.10
192.168.1.10	0	0	192.168.1.10
192.168.1.0	2	3	192.168.1.35
192.168.1.0	A	5	192.168.1.165
192.168.1.0	E	3	192.168.1.227

