



USER MANUAL

**1 Channel Controller:
SDP-CH1-A1-M12**

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REV	Date	Author	Remark
1.0	2018-10-18	Initial version	KF Lam
1.1	2018-11-19	Second version	KOKWAH
1.2	2021-01-26	Third version	KOKWAH

INTRODUCTION

The SDP-CH1-A1-M12 controller provides intensity control of LED lighting for machine vision applications. The SDP-CH1-A1-M12 automatically detects the operating current of the LED light and can generate output pulses at as high as 3 times of the operating current.



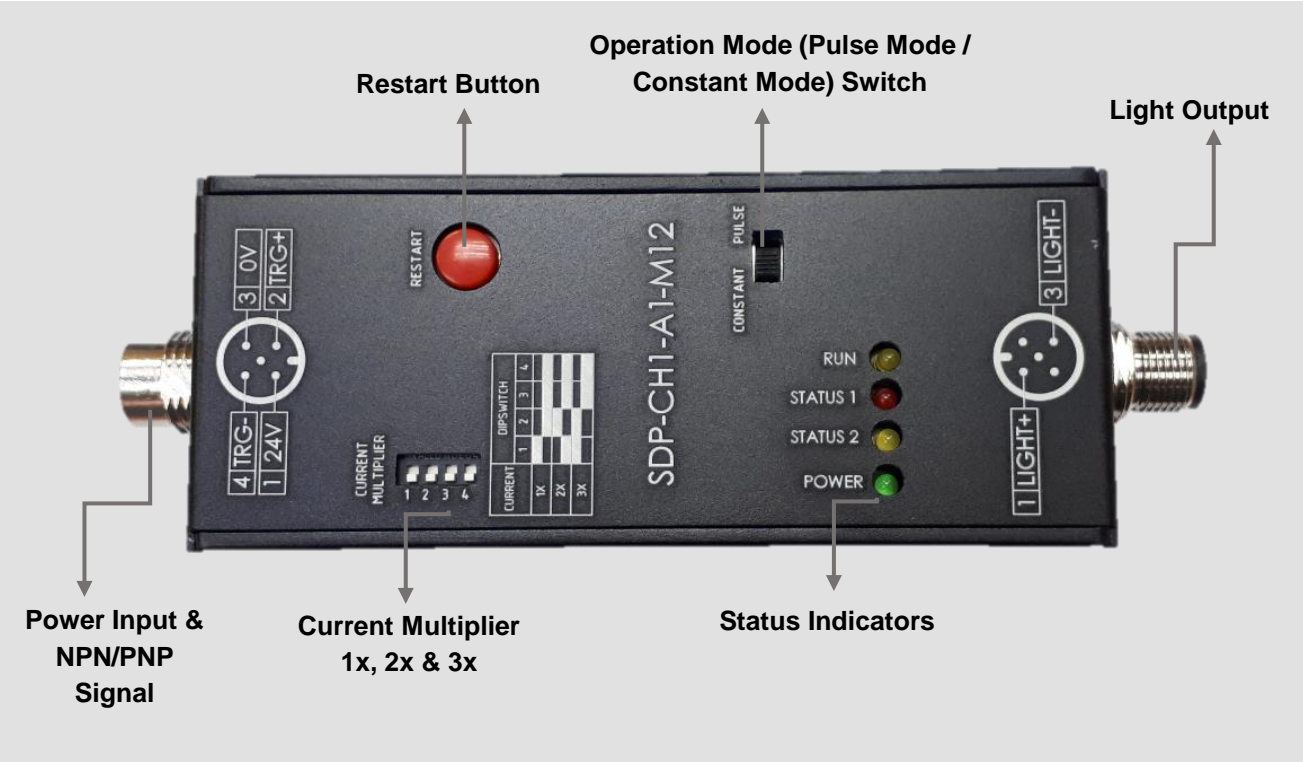
SPECIFICATION FOR SDP-CH1-A1-M12

Lighting Output	No. of lighting output	1 per channel	
	Min. current output	50mA	
	Voltage	Continuous Mode : 24V Pulse Mode: 50V Max	
	Output current	Continuous Mode: 1.5A Max Pulse Mode : 4A Max	
Input Power Supply	Power rating	24V	
	Input Current	Mminimum 2.5x LED Light	
Operation Mode	Continuous Mode	Output Voltage : 24V Output Current : 30mA~1500mA	
	Pulse Mode	Trigger Input Voltage	: 3.3V~24V
		Overdrive Output Voltage	: 24V~50V
		Overdrive Output Current	: 50mA~4000mA
		Pulse Width	≤10ms
		Duty Cycle	≤10%
		Response Time	≤10μs

- REMARK:** * Maximum lighting rating can be applied is $1.5A \pm 10\%$. Fail to do so may cause the controller malfunction.

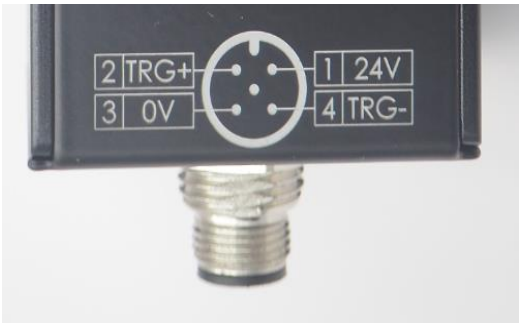
General Description

PANEL LABEL



CONNECTIONS

M12 Male (Light Input Connector)



Pin	Description	Colour
1	24V	Brown
2	TRIG+	White
3	0V	Blue
4	TRIG-	Black
5	-	Grey

M12 Female (Light Output Connector)



Pin	Description	Colour
1	LIGHT+	Brown
2	-	White
3	LIGHT-	Blue
4	-	Black
5	-	Grey

SDA-CH1-A1-M12 OPERATION MODE

SDP can operate in 2 different modes: continuous mode and pulse mode. The operation mode can be set by the Operation Mode Switch in the front panel. (Figure - 1.0)



(Figure - 1.0)

AUTO CURRENT DETECTION

The SDP-CH1-A1-M12 Controller detects the LED current automatically while power-up (Power Green LED Fig - 1.2). Users can use the Restart Button (Fig-1.1) to restart the detection process.

The RUN LED (Fig - 1.2) in the front panel will blink at a higher rate to indicate the controller is performing the current detection process. When the detection process is finished, the "RUN LED" will blink at a lower rate. If there is any error, the red LED status 1, will be turned on

The Status 2 Led turns on while Input Pulse Signal is active, the duration of the turn on period is the same as the input signal.



(Figure - 1.1)



(Figure - 1.2)

CONTINUOUS MODE

Continuous mode offers continuous lighting intensity to fully ON (100%), the output voltage of the controller is 24V and the maximum output current is 1.5A.

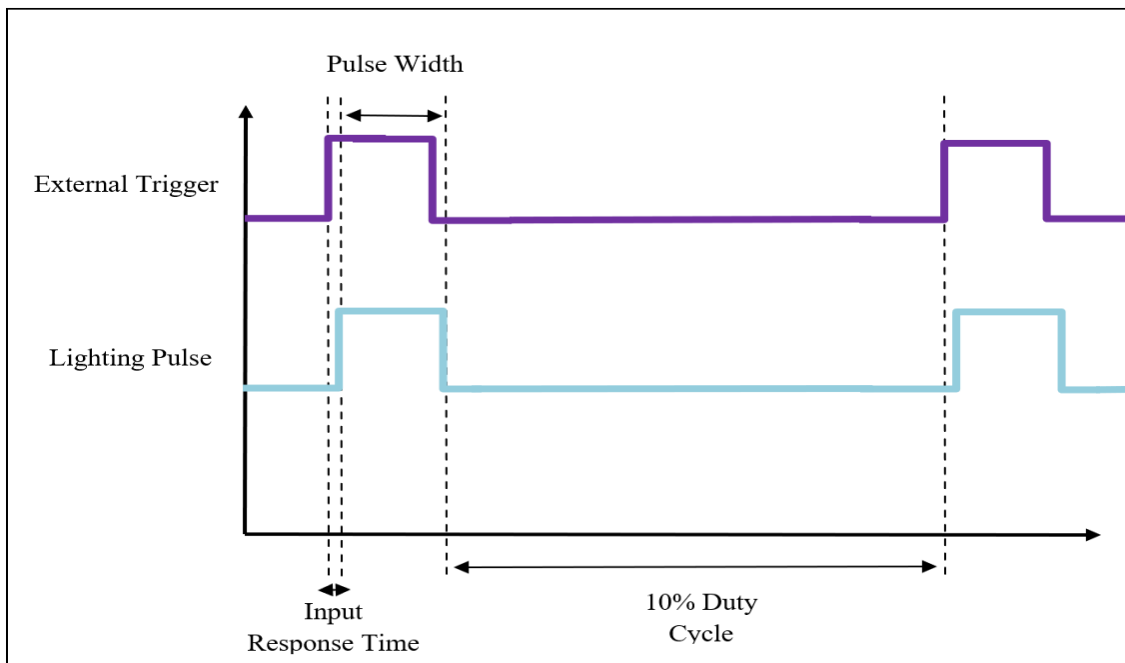
PULSE MODE

In the pulse mode, the controller outputs a pulse to the LED when received a trigger signal. The duration of the output pulse is the same as the duration of the trigger pulse. The maximum pulse width is 10ms

Pulsing provides high current and short interval triggering for applications that require high intensity and high precision.

As the overdrive percentage increases, the brightness of the lighting also increases.

Pulse width is the duration of the lighting ON time.



Remark:

- Maximum pulse width is 10mS and maximum duty cycle for lighting pulse is 10%. Fail to do so may cause the controller malfunction.
- Input response time is $\leq 10\mu s$
- The Output Width follows the same pattern as the Lighting Pulse Width (Pulse width depends on Input signal, E.g. Input 1ms= Pulse width 1ms)

PULSE MODE CURRENT MULTIPLIER

The current of the output pulse can be set via the Current Multiplier Switch.



DIP SWITCH NO	1	2	3	4	Multiplier
CURRENT PULSE 1x	0	0	0	0	1
CURRENT PULSE 1x	1	0	0	0	1
CURRENT PULSE 2x	0	1	0	0	2
CURRENT PULSE 3x	1	1	0	0	3

Limitations*

In order to protect the SDP-CH1-A1-M12 and LED light from overloading, the maximum current, the duration and the duty cycle of the output pulses are limited. The maximum current of a pulse is 4A. The maximum pulse duration is 10ms. The maximum duty cycle is 10%.

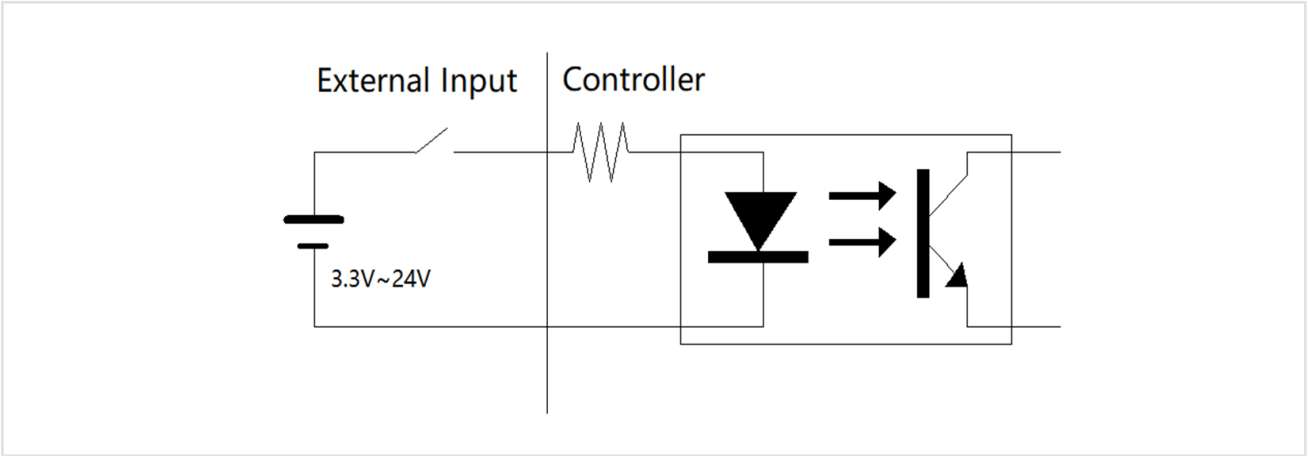
INPUT SIGNAL

Input signal is optional and used to turn on the lighting based frequency/duty cycle of input signal. The turn on time of lighting is adjustable and depending on the value of pulse width.

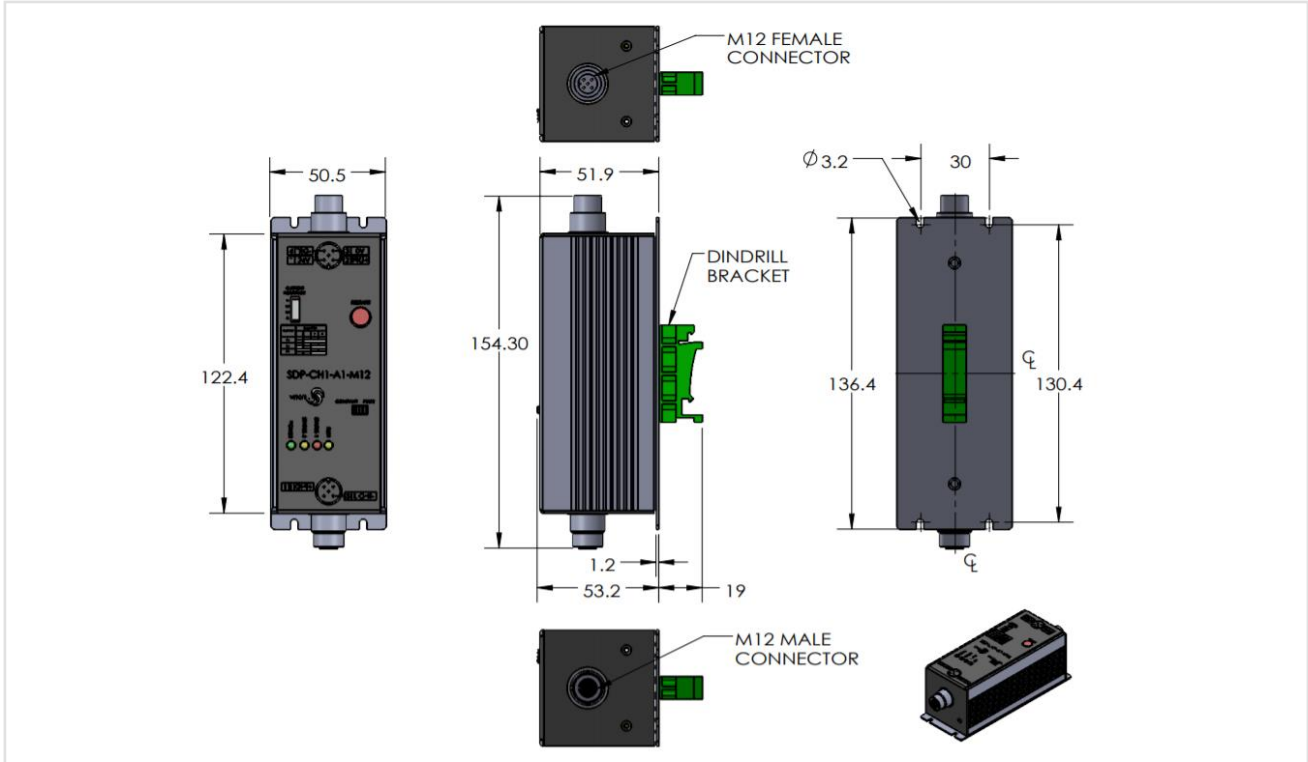
Note: Pulse width adjustment from 0s to 10ms.

IN(+) is common positive input. Acceptable voltage is from 3.3-24VDC.

IN(-) is common negative input. Should be connected to GND.




DRAWING LAYOUT



ACCESSORIES

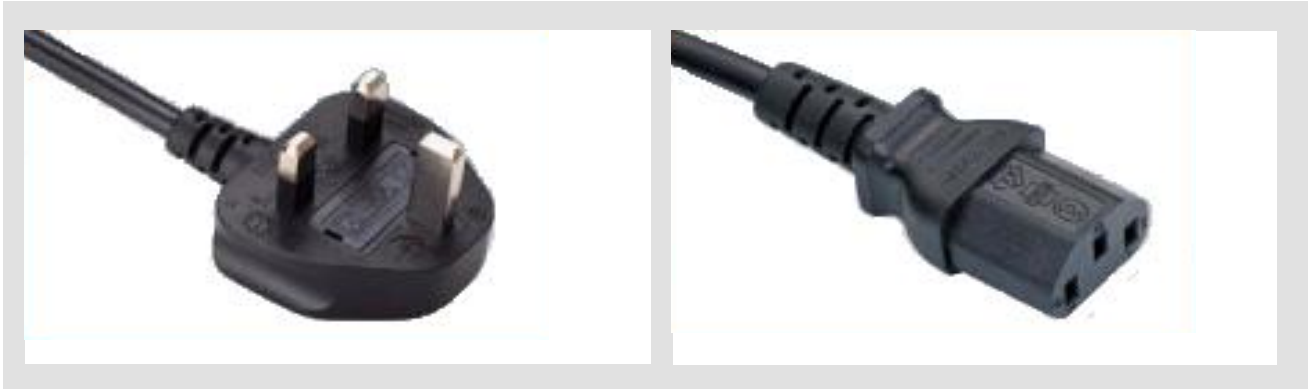
Additional accessories that can be used with SDP-CH1-A1-M12 controllers.

- 24V Adaptor power supply
- Choose one Power Cord UK, US or EU

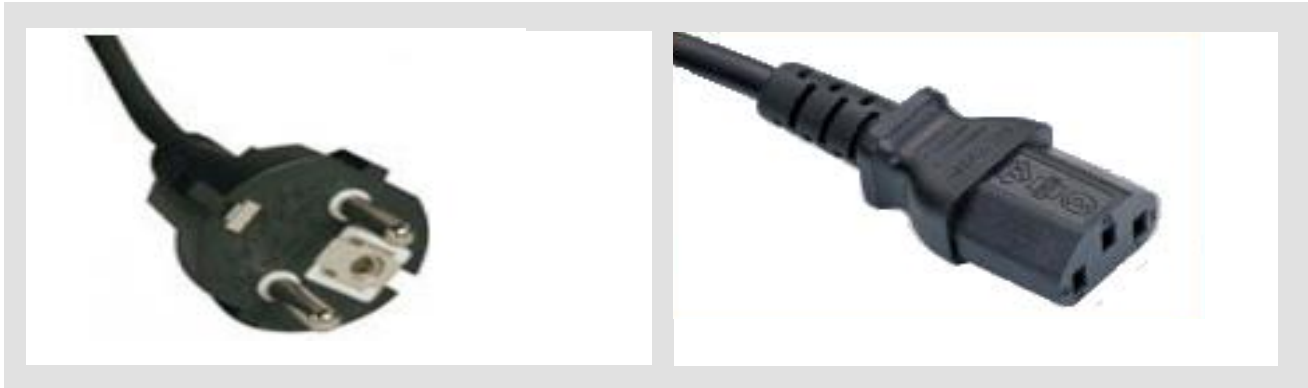
Model	Specification
 <p>24V ADAPTOR POWER SUPPLY WITH POWER CORD</p>	<ul style="list-style-type: none">• SDP-CH1-A1-M12-PS5.0A-UK (CONTROLLER WITH 24V ADAPTOR AND UK POWER CORD)• SDP-CH1-A1-M12-PS5.0A-US (CONTROLLER WITH 24V ADAPTOR AND US POWER CORD)• SDP-CH1-A1-M12-PS5.0A-EU (CONTROLLER WITH 24V ADAPTOR AND EU POWER CORD)

POWER CORD INFORMATION

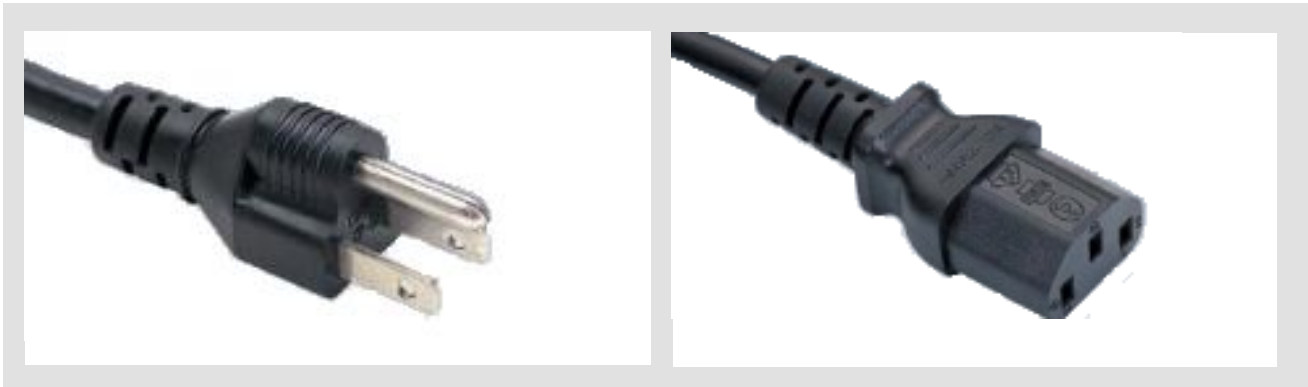
The cable length is 1.8 Meter length of power cord.



240VAC Power Cord (UK)

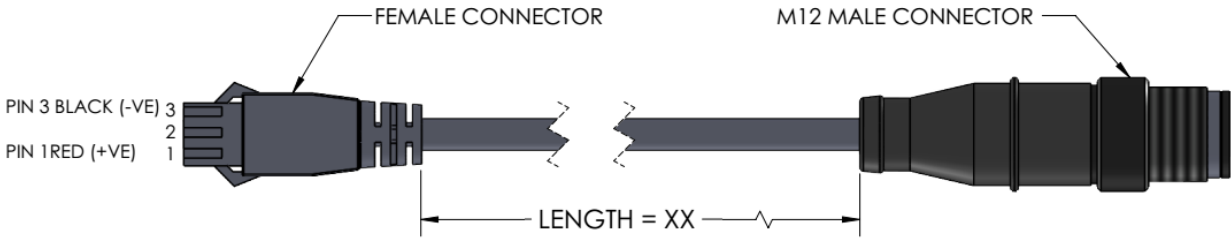


220VAC Power Cord (EU)



110VAC Power Cord (US)

CABLE SELECTION



FEMALE CONNECTOR

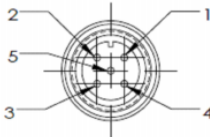
M12 MALE CONNECTOR

PIN 3 BLACK (-VE) 3

PIN 1 RED (+VE) 1

LENGTH = XX

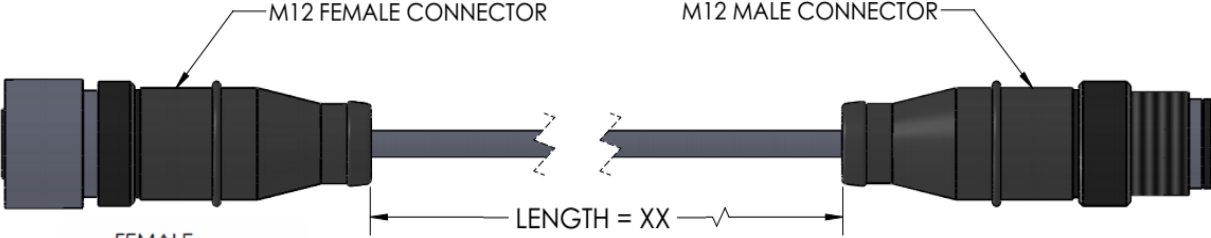
MALE



PIN	COLOR	VOLTAGE
PIN 1	BROWN	24V
PIN 2	WHITE	-
PIN 3	BLUE	GND
PIN 4	BLACK	-
PIN 5	GRAY	-

MODEL	POWER	LENGTH
EXT-SM-M12F-XX*	24V	3M
		5M

Remark: * XX= Length

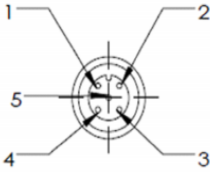


M12 FEMALE CONNECTOR

M12 MALE CONNECTOR

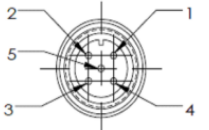
LENGTH = XX

FEMALE



PIN	COLOR	VOLTAGE
PIN 1	BROWN	24V
PIN 2	WHITE	-
PIN 3	BLUE	GND
PIN 4	BLACK	-
PIN 5	GRAY	-

MALE



PIN	COLOR	VOLTAGE
PIN 1	BROWN	24V
PIN 2	WHITE	-
PIN 3	BLUE	GND
PIN 4	BLACK	-
PIN 5	GRAY	-

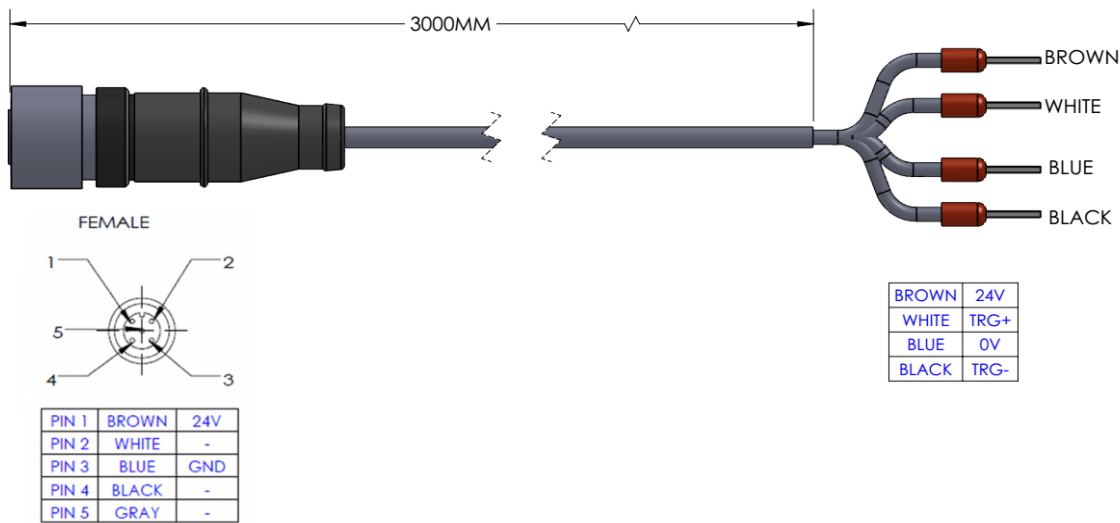
MODEL	POWER	LENGTH
EXT-CS-M12F-XX*	24V	3M
		5M

Remark: * XX= Length

CABLE INFORMATION

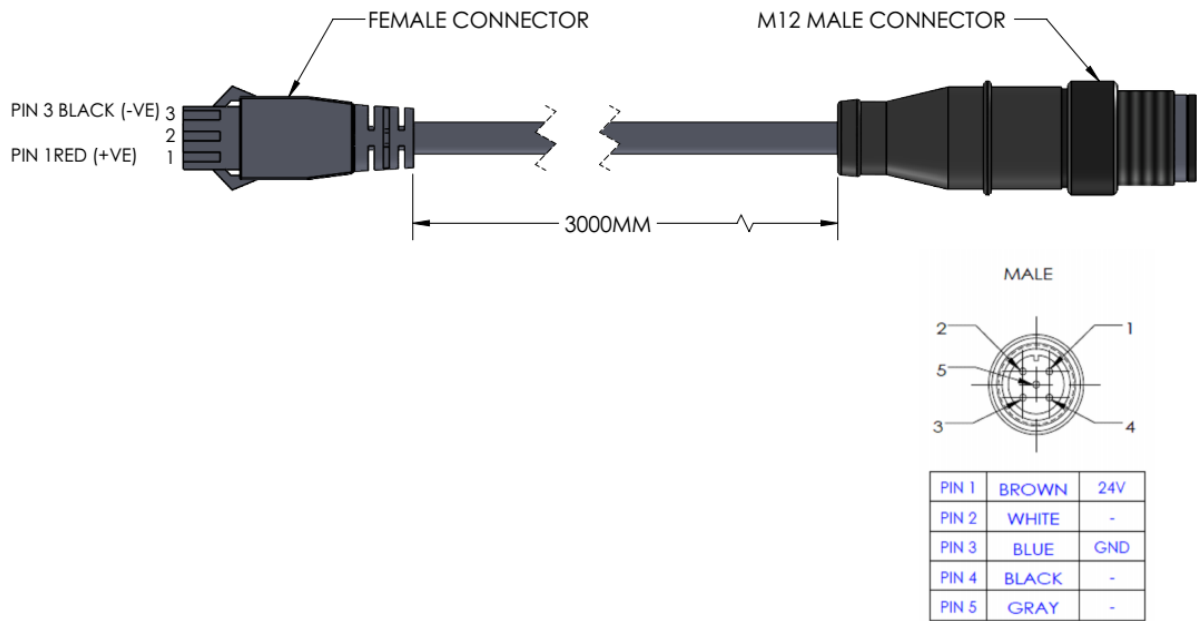
I) EXT-FL-M12F-4P-3M-24V

Extension Cable of 3 Meter with M12F connector



II) EXT-SM-M12F-3M-24V

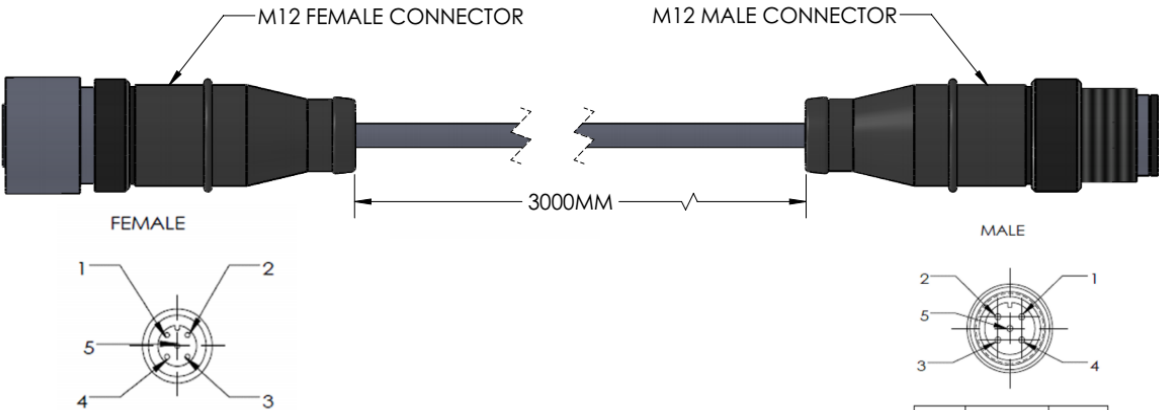
Extension Cable of 3 Meter with SM & M12F connector



CABLE INFORMATION

III) EXT-CS-M12F-3M-24V

Extension Cable of 3 Meter with M12F & M12M connector



PIN 1	BROWN	24V
PIN 2	WHITE	-
PIN 3	BLUE	GND
PIN 4	BLACK	-
PIN 5	GRAY	-

PIN 1	BROWN	24V
PIN 2	WHITE	-
PIN 3	BLUE	GND
PIN 4	BLACK	-
PIN 5	GRAY	-



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