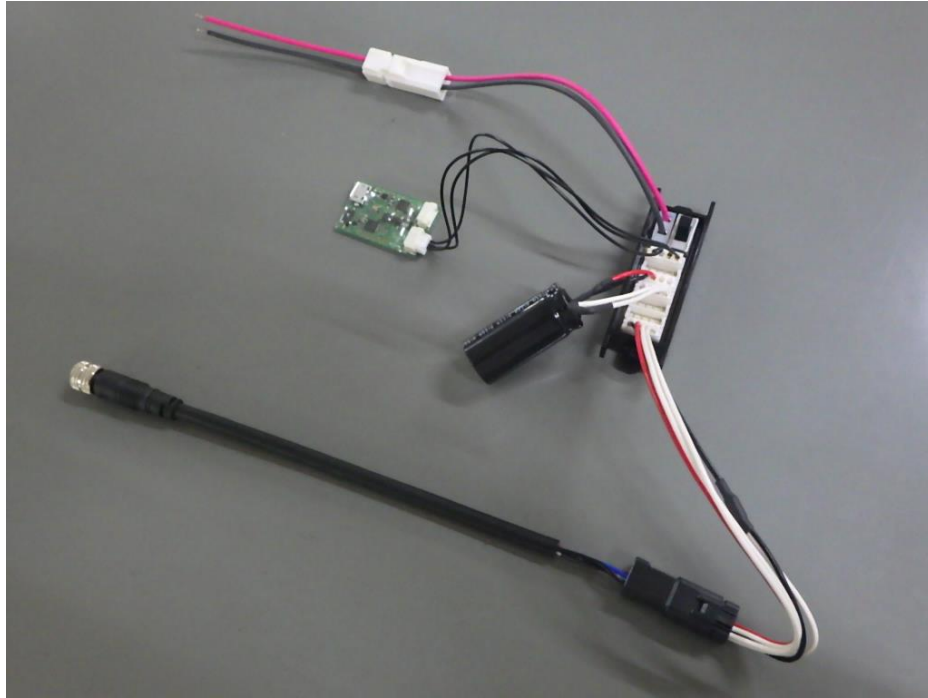

BLA21/BLA15 Series STARTER KIT



Instruction Manual

CAUTION






- Please read this manual before using the product.
- Keep this manual in a safe place for future reference.
- No part of this manual may be reproduced in any form or by any means without prior permission.
- The contents of this manual are subject to change without notice.

1. SAFETY PRECAUTIONS

To ensure safe use of the product at all times, please note the following

1.1 Warning Symbols

The warning symbols used in this text are defined as follows:

Indication	Meaning
 Danger	Indicates a hazard that will cause severe personal injury, death, or substantial property damage if the warning is ignored.
 Warning	Indicates a hazard that can cause severe personal injury, death, or substantial property damage if the warning is ignored.
 Caution	Indicates a hazard that will or can cause minor personal injury, or property damage if the warning is ignored
Symbols:  : Prohibited	 : Mandatory

1.2 Operating Precautions

WARNING

 **Do not use the product near flammable materials, where it is exposed to water, or in an atmosphere of corrosive gas, salt air, dust, or oil.**

Failure to do so may cause electric shock, fire, damage, or malfunction.

 **Do not use in areas subject to high vibration or shock.**

Failure to do so may cause fire, damage, or malfunction.

 **Do not wire or operate with wet hands.**


Failure to do so may cause electric shock, fire, damage, or malfunction.

 **Do not connect cables or harnesses other than those specified.**

This may cause damage or malfunction.

 **Install in a location free from metal shavings, dust, water, oil, etc.**

Incorrect installation may cause electric shock, fire, damage, or malfunction.

 **Wiring should be correct and secure.**

Incorrect wiring may cause electric shock, fire, damage, or malfunction.

1.2 Operating Precautions

CAUTION



Do not disassemble or modify the product.

Failure to do so may cause electric shock, fire, damage, or malfunction.



Do not drop.

This may cause damage or malfunction.



Do not place heavy objects on it.

This may cause damage or malfunction.



Do not overload connectors.

This may cause damage or malfunction.



Not for use other than for evaluation purposes.

This may cause damage or malfunction.



When operating a servo, connect only one servo and move it slowly at first.

Check the servo's movement pattern at low speed before use, as the servo may move unexpectedly.



Check the servo's range of motion before operating the servo.

The servo may move unexpectedly, so please make sure there is nothing in the servo's range of motion before moving the servo.

1.3 Storage Precautions



Do not store this product in the following places

This may cause deformation, malfunction, or accidents.

- Where it is extremely hot (60°C [140F] or higher) or cold (-20°C [-4F] or lower)
- Where the equipment will be exposed to direct sunlight
- Where the humidity is high ● Where vibration is prevalent ● Where it is very dusty
- Where static electricity tends to occur ● Where children can reach

1.4 Disposal Precautions



When disposing of the product, dispose of it as industrial waste.

Dispose of it according to the ordinance.

2. INTRODUCTION

2.1 Product Features

This starter kit is designed to facilitate the connection between the BLA21 and BLA15 series of DroneCAN compatible servos and the parameter setting software on a PC. Download the dedicated software FUTABA DroneCAN Tools and connect the included USB-CAN converter (FMP-UC1) and other connectors properly.

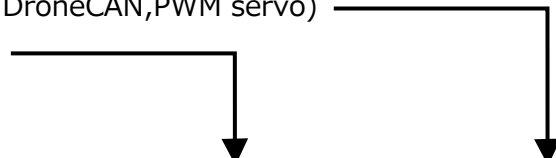
2.2 Product Configuration

The parts included in the starter kit vary depending on the type of servo. Please confirm the type of servo you are using and the contents of the included parts before using the kit.

Servo type

- BLA21-**-**U-A0*、BLA21-**-**U-AB* (DroneCAN,PWM servo)
- BLA15-**-**U-A01(DroneCAN servo)

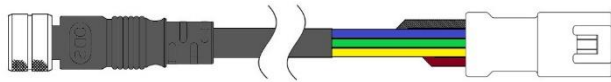
Product Configuration and Set Type



Set Contents		Product Code	
		01200151	01200149
①	Cable for BLA21-**-**U-A0* BLA21-**-**U-AB*	—	○
	Cable for BLA15-**-**U-A01	○	—
②	Conversion cable	○	○
③	Capacitor	—	○
④	Hub with power switch	○	○
⑤	Power cable	○	○
⑥	Terminator	○	○
⑦	FMP-UC1(USB-CAN Converter)	○	○
⑧	Cable for FMP-UC1	○	○
⑨	Instruction Manual	○	○

○ : Attached

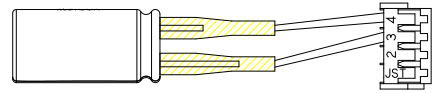
- The set for BLA21 includes capacitors for stable operation.
- USB cable (USB/Micro USB Type-B) is not included.



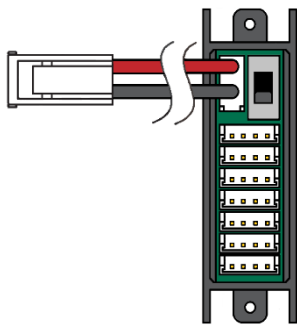
① Cable for BLA21/15 (150mm) 1 pc



② Conversion cable (150mm) 1 pc



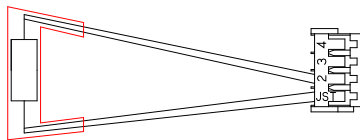
③ Capacitor (80mm) 1 pc



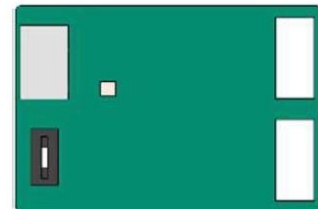
④ Hub with power switch 1 pc



⑤ Power cable (70mm) 1 pc



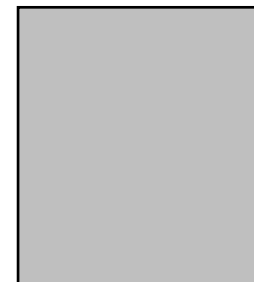
⑥ Terminator (50mm) 1 pc



⑦ FMP-UC1 (USB-CAN Converter) 1 pc



⑧ Cable for FMP-UC1 (150mm) 1 pc

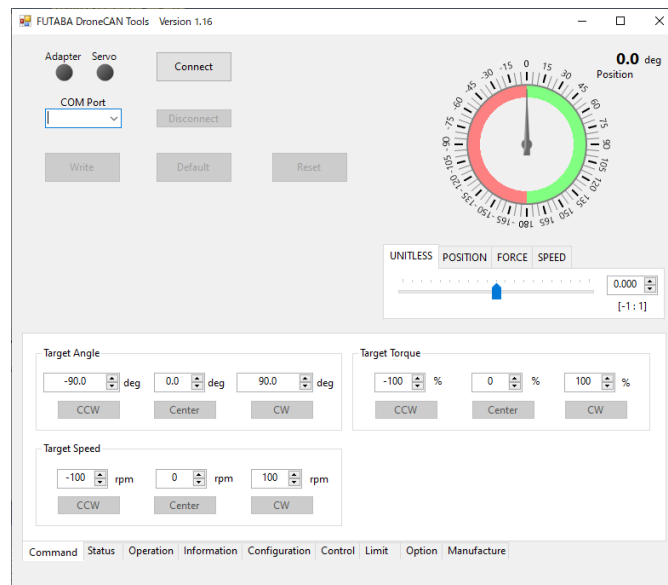


⑨ Instruction Manual 1 pc

3. Software

FUTABA DroneCAN Tools

Futaba DroneCAN servos can be easily parameterized, checked for status and operation on a Windows PC by using the dedicated FUTABA DroneCAN Tools software. Please download the software and manual from our website (<https://futabairc.com/>).



FUTABA DroneCAN Tools

- FUTABA DroneCAN Tools includes software licensed under MIT-License.

The MIT License (MIT)

Copyright (c) 2016 UAVCAN All Rights Reserved.

https://github.com/dronecan/gui_tool/blob/master/LICENSE

<https://github.com/dronecan/libcanard/blob/master/LICENSE>

4. USB-CAN Converter

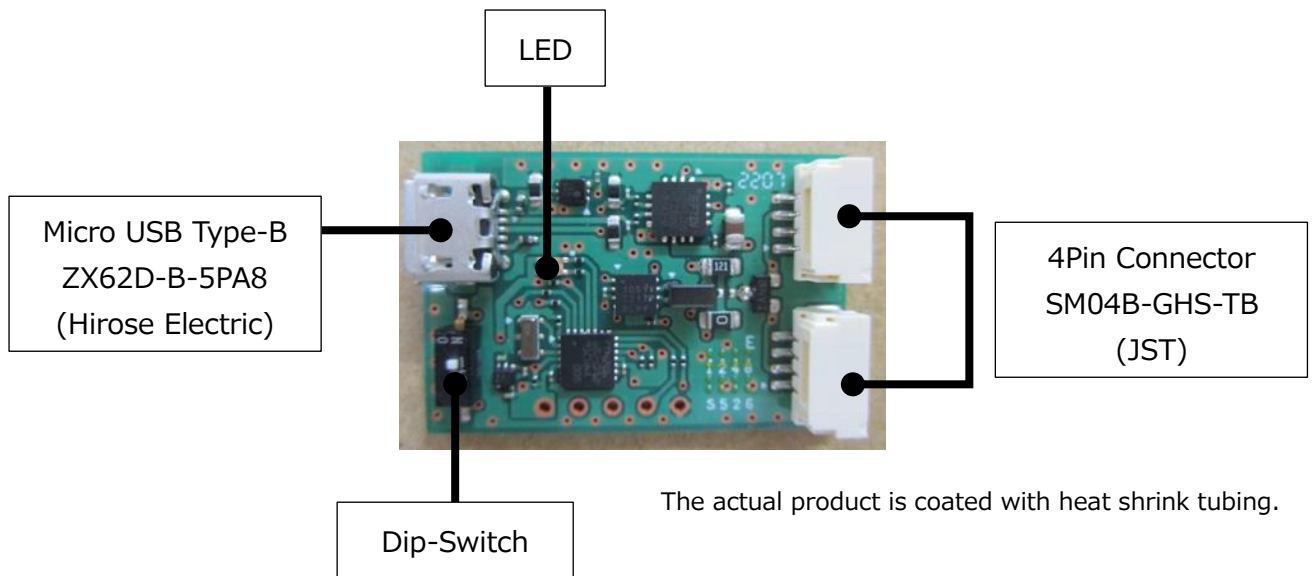
FMP-UC1

FMP-UC1 is a USB-CAN converter that allows you to configure Futaba DroneCAN servo settings with software on your PC.

Please download the dedicated software FUTABA DroneCAN Tools and use it.

FMP-UC1 Basic Specifications

Specification		Remarks
Dimensions	32mm x 21mm x 5.25mm	Tube not included.
Weight	2.3g	Tube and labels not included.
CAN transmission speed	1 Mbps	Same settings as Futaba DroneCAN servos.
Supported OS	Depends on USB-UART bridge IC driver	https://ftdichip.com/products/ft230xq/
Operating temperature range	-10°C~+45°C (14F~113F)	—
Storage temperature range	-20°C~+60°C (-4F~140F)	—



The actual product is coated with heat shrink tubing.

FMP-UC1 Layout

LED Lighting Pattern

LED	Status
Blinking (RED-GRN-GRN-GRN)	At startup
OFF	Not connected to software (FUTABA DroneCAN Tools)
Lights up green	Connected to software (FUTABA DroneCAN Tools) and in data receiving state.
Lights up red	Connected to software (FUTABA DroneCAN Tools) but not receiving data.

- Two SM04B-GHS-TB (4Pin Connector) are mounted, but the CAN communication transmission path is shared internally. It does not matter which connector is used.
- FUTABA DroneCAN Tools cannot set multiple servos at the same time. When setting multiple servos, please connect one servo at a time.
- The built-in termination resistor (120Ω) can be switched ON/OFF with the Dip-Switch, but it should be always ON for the expected use range of this product (parameter setting or operation check via FMP-UC1 for one Futaba DroneCAN servo).
- When connecting FMP-UC1 to a PC for the first time, the USB/UART bridge IC driver must be downloaded from the following site in advance. Select the driver according to your operating environment.

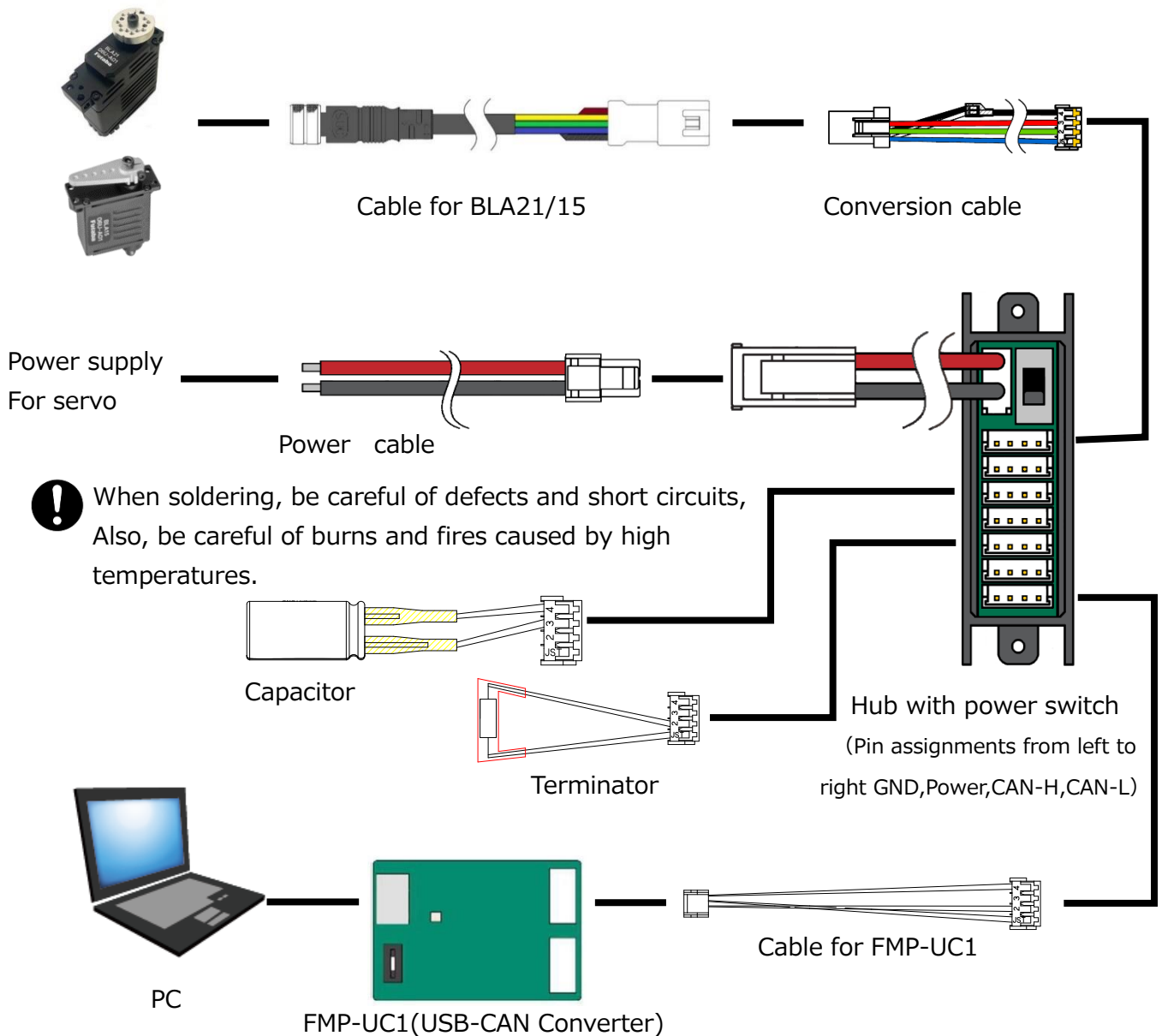
<https://ftdichip.com/drivers/vcp-drivers/>

5. Connection method

Connection

Check the following points in advance and connect each component as shown in the figure.

- Download FUTABA DroneCAN Tools and make sure it is operational on the PC screen.
- Be sure to connect all components.
- The customer must provide a power supply that is compatible with the servo.



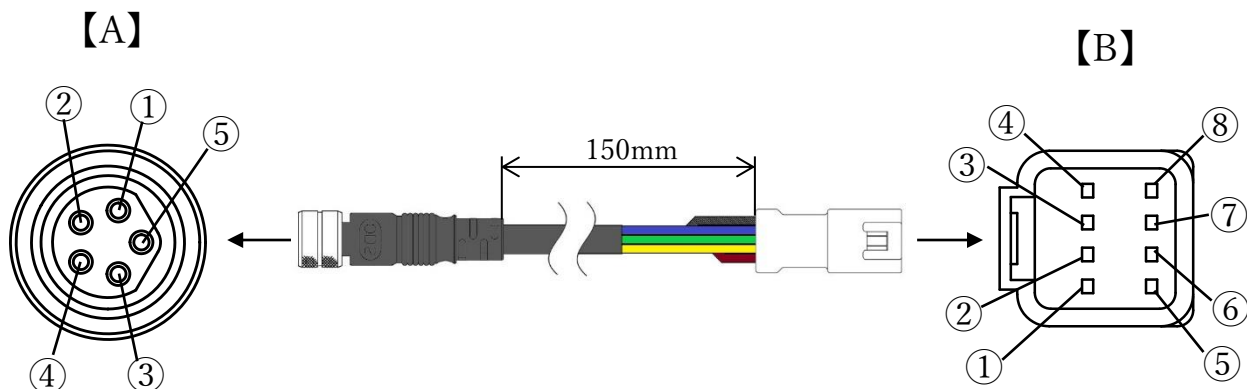
⚠ CAUTION

- Note the polarity of the connector.
- When removing parts, hold by the connector housing.
- ! Do not grab the capacitor, Stress on the wiring may cause failure.
- FUTABA DroneCAN Tools cannot set multiple servos at the same time. If you want to set multiple servos. Please connect one servo at a time.

6. Cable connector Pin Assignment

Cable for BLA21-**U-A0* , BLA21-**U-AB*

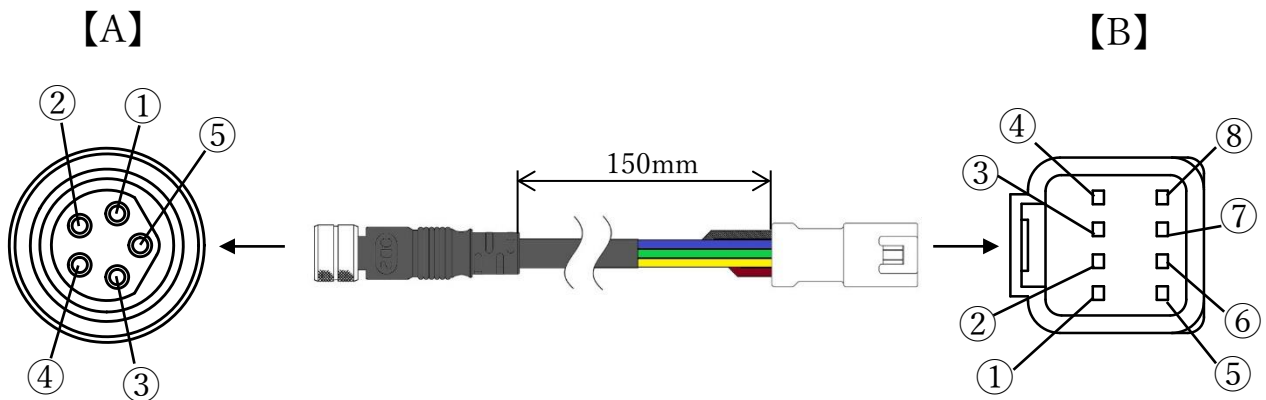
	【A】 BLA21-**U-A0*			【A】 BLA21-**U-AB*			【B】	
Manufacturer	Outdoor Solutions Electronics						J.S.T.MFG.CO.,LTD.	
Type	MAEAF05FCC-SLC7000						08T-JWPF-VKLE-D	
Mating	MMEPM05MCC-SHS7001						08R-JWPF-VKLE-D	
Pin Assignment	1	Brown	Battery(+)	1	Brown	Battery(+)	1	CAN-L
	2	White	Battery(-)	2	White	PWM	2	CAN-H
	3	Blue	CAN-H	3	Blue	CAN-H	3	(N.C.)
	4	Black	CAN-L	4	Black	CAN-L	4	(N.C.)
	5	Gray	Case Shield Line	5	Gray	Battery(-) Case Shield Line	5	Case Shield Line
							6	Battery(-)
							7	Battery(+)
							8	(N.C.)



- This cable does not support PWM communication.

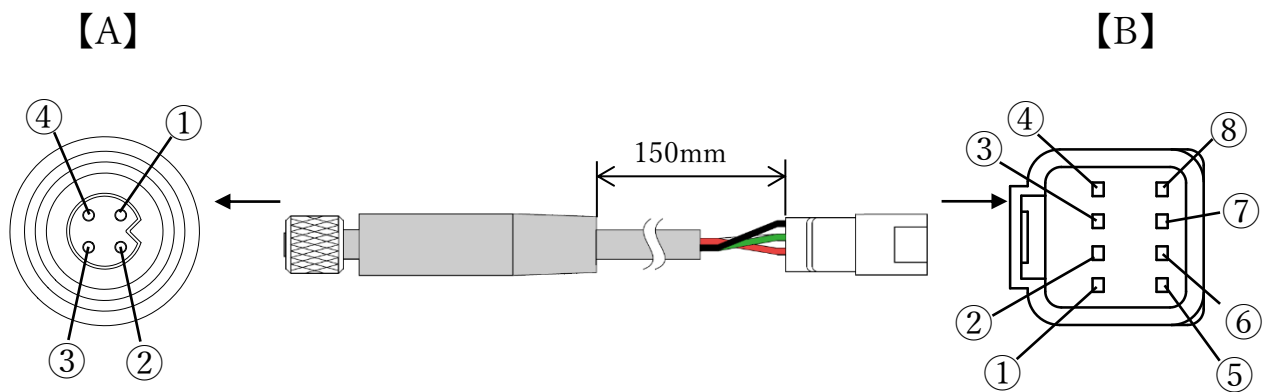
Cable for BLA21-*U-AB***

	【A】			【B】	
Manufacturer	Outdoor Solutions Electronics			J.S.T.MFG.CO.,LTD.	
Type	MAEAF05FCC-SLC7000			08T-JWPF-VKLE-D	
Mating	MMEPM05MCC-SHS7001			08R-JWPF-VKLE-D	
Pin Assignment	1	Brown	Battery(+)	1	CAN-L
	2	White	PWM	2	CAN-H
	3	Blue	CAN-H	3	(N.C.)
	4	Black	CAN-L	4	(N.C.)
	5	Gray	Battery(-) & Case Shield Line	5	(N.C.)
				6	Battery(-) & Case Shield Line
				7	Battery(+)
				8	PWM



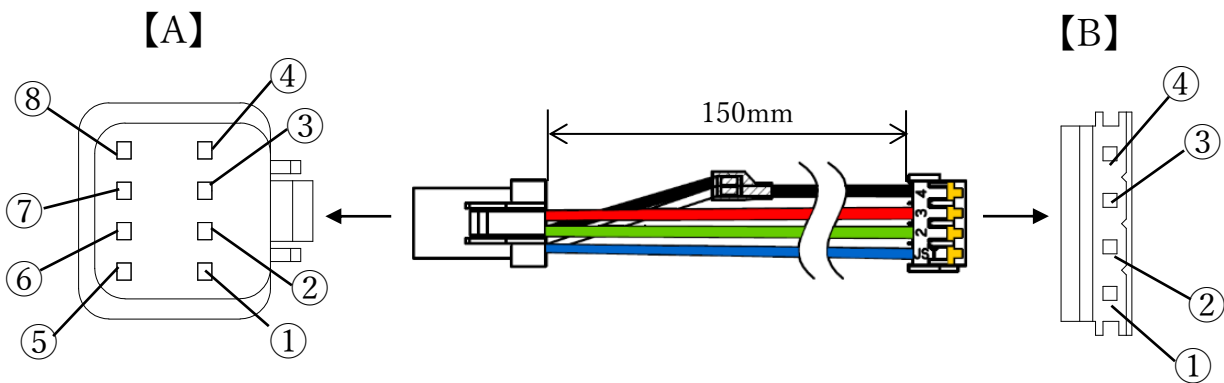
Cable for BLA15-**U-A01

	【A】			【B】	
Manufacturer	Neltron Industrial Co., Ltd.			J.S.T.MFG.CO.,LTD.	
Type	MCM05-XXSASS			08T-JWPF-VKLE-D	
Mating	120505-04P-FA-PB			08R-JWPF-VKLE-D	
Pin Assignment	1	Black	CAN-L	1	CAN-L
	2	White	Battery(+)	2	CAN-H
	3	Red	Battery(-)	3	(N.C.)
	4	Green	CAN-H	4	(N.C.)
				5	(N.C.)
				6	Battery(-)
				7	Battery(+)
				8	(N.C.)



Conversion cable

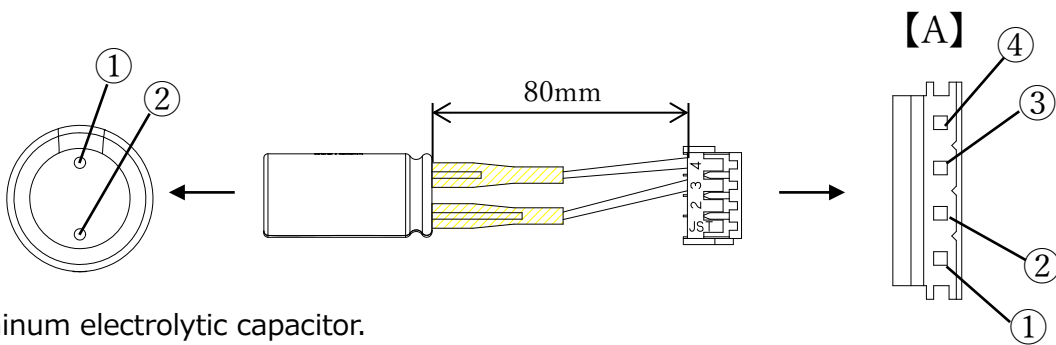
	【A】			【B】	
Manufacturer	J.S.T.MFG.CO.,LTD.			J.S.T.MFG.CO.,LTD.	
Type	08R-JWPF-VKLE-D			EHR-4	
Mating	08T-JWPF-VKLE-D			B4B-EH	
Pin Assignment	1	White	CAN-L	1	CAN-L
	2	White	CAN-H	2	CAN-H
	3		(N.C.)	3	Battery(+)
	4		(N.C.)	4	Battery(-) & Case Shield Line
	5	White	Case Shield Line		
	6	Black	Battery(-)		
	7	Red	Battery(+)		
	8		(N.C.)		



- This connector has a lock mechanism. When removing it, pull it straight out while pressing the lock part.

Capacitor

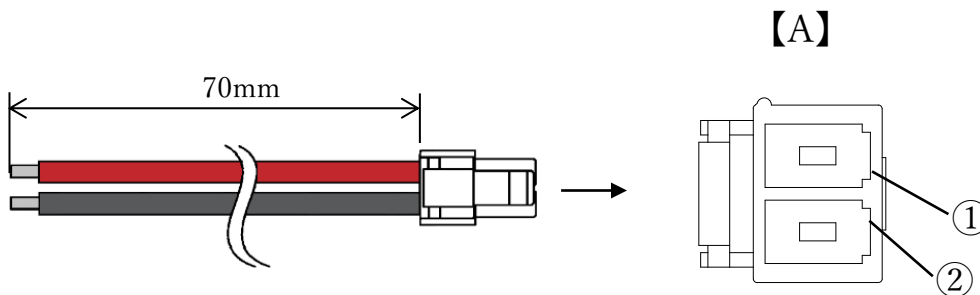
		【A】
Manufacturer	J.S.T.MFG.CO.,LTD.	
Type	HER-4	
Mating	B4B-EH	
Pin Assignment	1	(N.C.)
	2	(N.C.)
	3	Battery(+)
	4	Battery(-)



Aluminum electrolytic capacitor.
(2200 μ F, 50V)

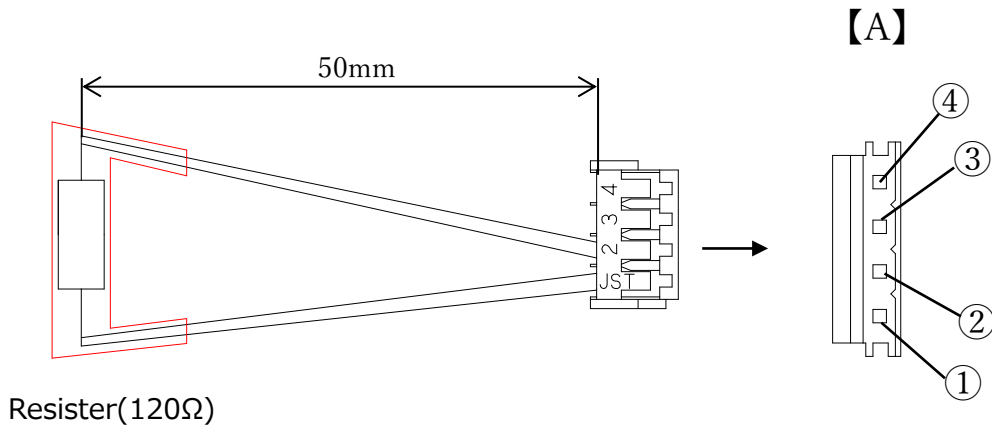
Power cable

		【A】
Manufacturer	JAPAN AUTOMATIC MACHINE CO., LTD.	
Type	RV42-02F	
Mating	RV42-02M	
Pin Assignment	1	Battery(+)
	2	Battery(-)



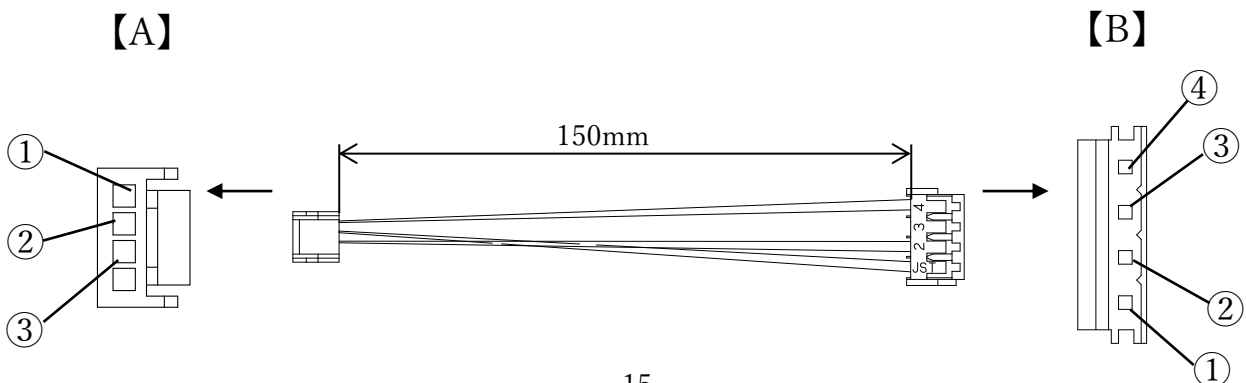
Terminator

		【A】	
Manufacturer	J.S.T.MFG.CO.,LTD.		
Type	HER-4		
Mating	B4B-EH		
Pin Assignment	1	CAN-L	
	2	CAN-H	
	3	(N.C.)	
	4	(N.C.)	



Cable for FMP-UC1

		【A】		【B】	
Manufacturer	J.S.T.MFG.CO.,LTD.			J.S.T.MFG.CO.,LTD.	
Type	GHR-04V-S			HER-4	
Mating	SM04B-GHS-TB			B4B-EH	
Pin Assignment	1	Black	Battery(-)	1	CAN-L
	2	Black	CAN-L	2	CAN-H
	3	Black	CAN-H	3	(N.C.)
				4	Battery(-)



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