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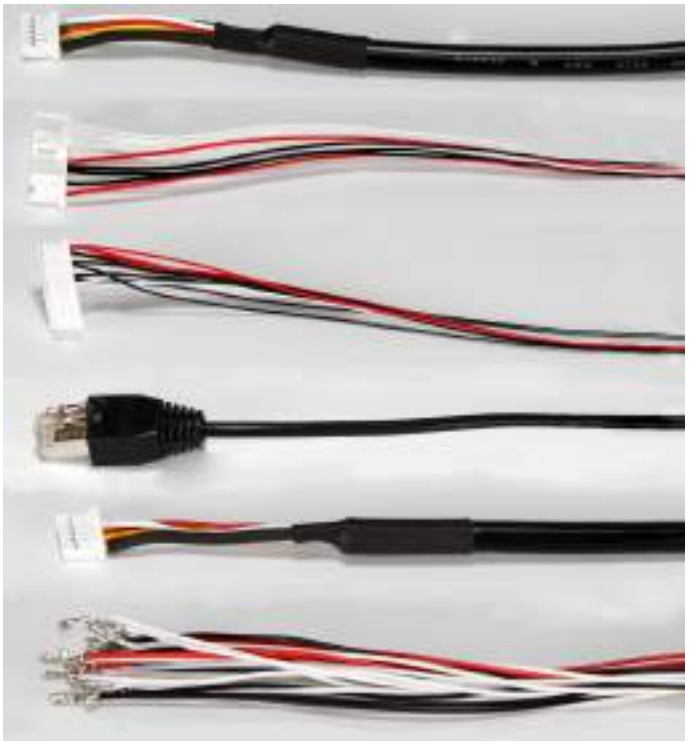
# Gold Solo Double Twitter/Bee Cable Kit



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Elmo
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## Notice

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Document no. MAN-G-SOLTWIB_160-CBLKIT (Ver. 1.001)


## Catalog Number

CBL-GSOLDTWIPOWKIT01

CBL-GSOLTWIKIT03

CBL-GSOLTWIKIT04

CBL-GSOLTWIKIT05

## Revision History

| Version | Date | Details |
|---|---|---|
| **Ver. 1.000** | Oct 2018 | Initial release |
| **Ver. 1001** | Feb 2019 | Updated: New Cable ACC-TRM-02 and EtherCAT/CAN Link Cable CBL-TWIECATLINK01 |
| | | |
| | | |

# Chapter 1: Introduction

This document provides the wiring details for the cables used to connect the Gold Solo Double Twitter/Bee with the end-user application. The servo drive-side pinouts are provided in the drive's installation guide.

The standard cables come in the following lengths:

- 1 meter (39.4 inches) for the EtherCAT/CAN cable
- 0.25 meter (9.84 inches) for the COM, I/O, STO, and Feedback wires
- 0.1 meter (3.93 inches) for the EtherCAT/CAN Link cable
- 0.03 meter (1.18 inches) for CAN Terminator cable
- 1 meter (39.4 inches) for the Power cables

For other optional lengths of cable, refer to Elmo.

## 1.1. Cable Kits and Tools

There are four optional cable kits available:

| Part Number | General Description | Cables Included | Detailed Description |
|---|---|---|---|
| CBL-GSOLTWIKIT03 | Kit cable for EtherCAT model | CBL-GTWICOMIO02 | USB, I/O, STO |
| | | CBL-GTWIECAT01-1 (x2) | EtherCAT IN/OUT |
| | | CBL-GTWIECATLINK01 | EtherCAT link cable daisy chain between G-SOLO DOUBLE TWITTER Drives |
| | | CBL-GTWIFB01 | Feedback cable for Ports A, B, C, and VL |
| | | CBL-GTWISPARE01 | 21 Spare crimping wires |
| | | JCB-131001F2 (x45) | 45 Pins |
| CBL-GSOLTWIKIT04 | Kit cable for CAN model | CBL- GTWICOMIO03 | RS-232, I/O, STO |
| | | CBL-GTWICAN01-1 | CAN IN/OUT |
| | | CBL-GTWIFB01 | Feedback cable for Ports A, B, C, and VL |
| | | CBL-GTWISPARE01 | 21 Spare crimping wires |
| | | CBL-GTWIECATLINK01 | CAN link cable daisy chain between G-SOLO DOUBLE TWITTER Drives |

| Part Number | General Description | Cables Included | Detailed Description |
|---|---|---|---|
| | | ACC-TRM-02 | CAN Terminator |
| | | JCB-131001F2 (x45) | 45 Pins |
| CBL-GSOLTWIKIT05 | Connectors and Pins Kit | JCB-131001F (x13) | 13 Pins |
| | | JCB-131001F2 (x66) | 66 Pins |
| | | JCW-131005F (x2) | Mating connectors for CAN/EtherCAT (5-Pin connector) |
| | | JCW-131030F (x2) | Mating connectors for Feedback/COM I/O (30-Pin connector) |
| CBL-GSOLDTWIPOWKIT01 | Kit Cables For Power | CBL-GSOLDTWIMTR-1 (x3) | Motor power cable |
| | | CBL-GSOLDTWIPE-1 | PE cable |
| | | CBL-GSOLDTWIPOW-1 | DC Power Cables |

## 1.2. Crimping Tool

A specific Crimping Tool (available for purchase from Elmo) is required to mount extra connecting pins on the wires. A number of wires are provided in the cable kit as pre-crimped for convenience:

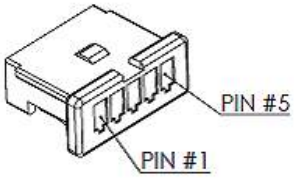

| Crimping Tool | Pins | |
|---|---|---|
| Molex P/N 63819-1500<br>Elmo P/N TOOL-P000040 | MOLEX PIN_501334-0100 | Tin plated |
| | Elmo P/N JCB-131001F | |
| | MOLEX PIN_501193-3000 | Gold plated |
| | Elmo P/N JCB-131001F2 | |

# Chapter 2: CAN Ports Communication Cable (CBL-GTWICAN01-1)

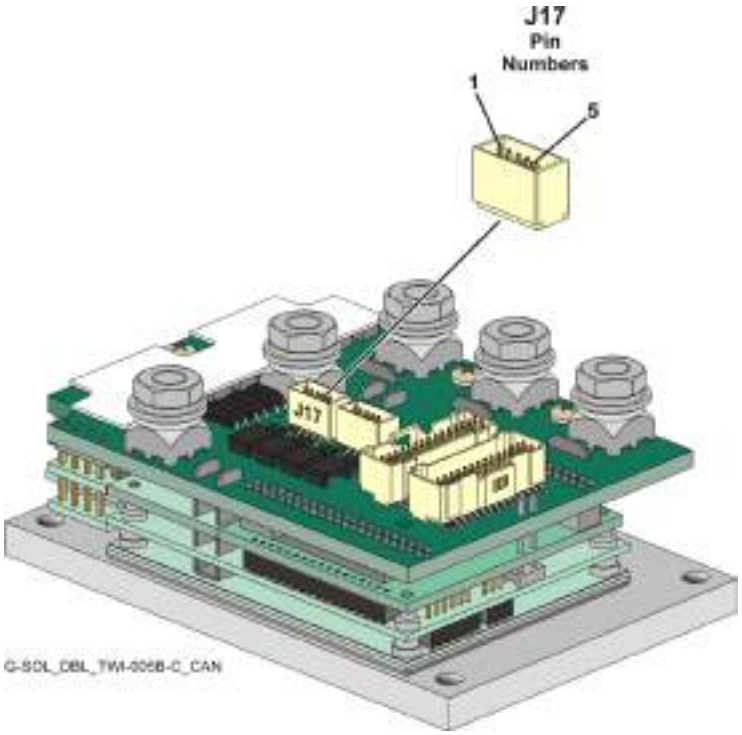
The standard CAN Ports Communication cable is supplied in 1.0 m lengths. For cable lengths larger than those supplied in this kit, refer to Elmo.

The CAN port cable consists of a double-pair 30-AWG drain and braid cable. At one end of the cable is a wire to board 5-pin, 1 mm pitch, female Molex connector, and at the other end an RJ-45 standard communication connector.

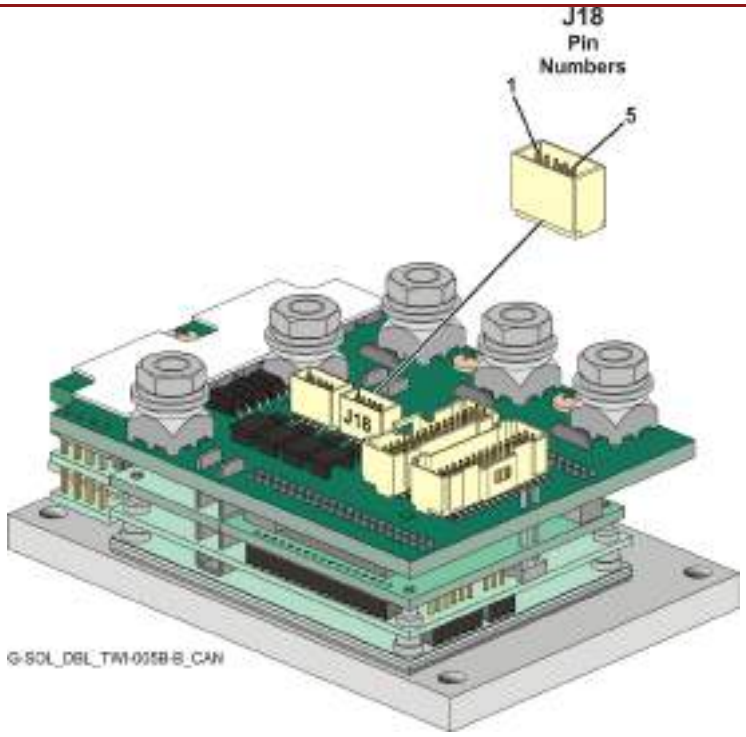
The general pinout of the CAN ports cable for either J17 or J18 connection is as follows:

| J17, J18 Pins From Molex Connector | To Pins RJ-45 Connector | Color | Function | Molex Plug |
|---|---|---|---|---|
| 2 | 3 | WHITE | COMRET |   |
| 3 | 1 | RED | CAN_H | |
| 4 | 2 | YELLOW | CAN_L | |
| 5 | RJ-45 BODY | Drain wire | Shield drain wire | |

**Pin Positions**




**J17 CAN Connector Pin Assignments**




**J18 CAN Connector Pin Assignments**

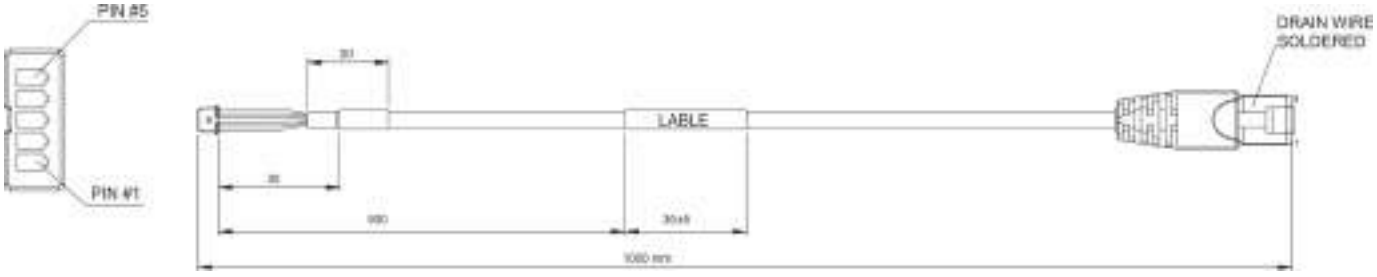


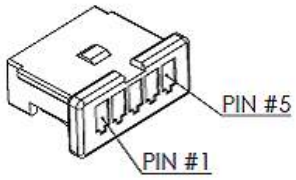

**Figure 1 CAN Cable**

# Chapter 3: EtherCAT Ports Communication Cable (CBL-GTWIECAT01-1)

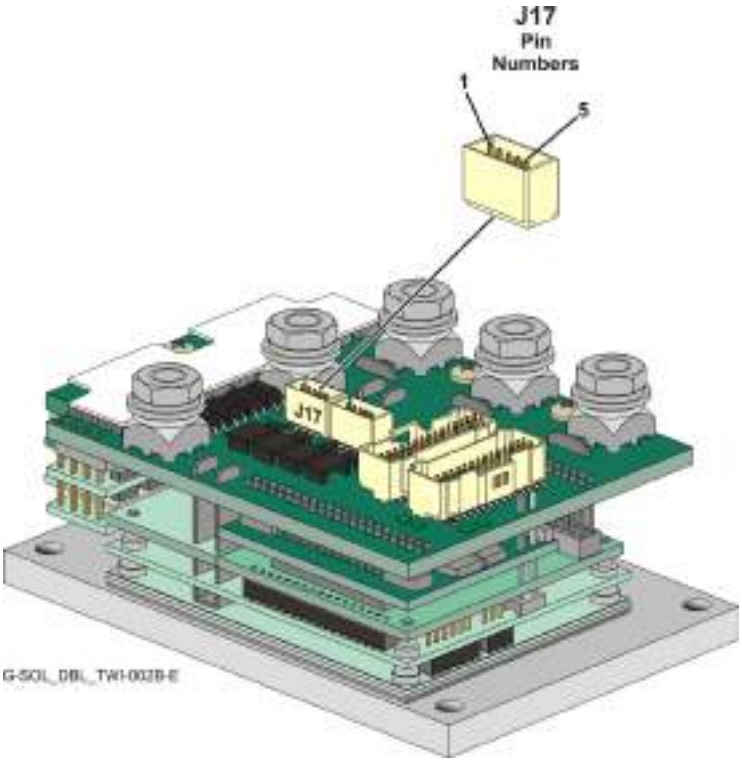
The standard EtherCAT Ports Communication cable is supplied in 1.0 m lengths. For cable lengths larger than those supplied in this kit, refer to Elmo.

The EtherCAT ports cable consists of a double-pair 30-AWG drain and braid cable. At one end of the cable is a wire to board 5-pin, 1 mm pitch, female Molex connector, and at the other end an RJ-45 standard communication connector.

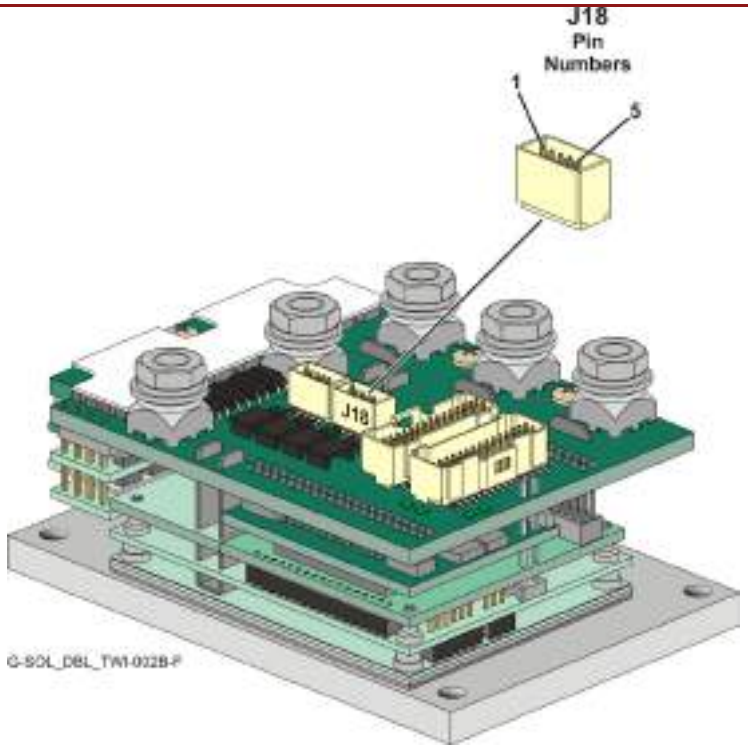
The general pinout of the EtherCAT ports cable for either J17 or J18 connection is as follows:

| J17, J18 Pins From Molex Connector | To Pins RJ-45 Connector | Color | Function | Molex Plug |
|---|---|---|---|---|
| 1 | 1 | WHITE | ECAT TX+ |   |
| 2 | 2 | GREEN | ECAT TX- | |
| 3 | 3 | RED | ECAT RX+ | |
| 4 | 6 | YELLOW | ECAT RX- | |
| 5 | RJ-45 BODY | Drain wire | Shield drain wire | |

**Pin Positions**




**EtherCAT IN / Ethernet Pin Assignments**




**EtherCAT OUT Pin Assignments**

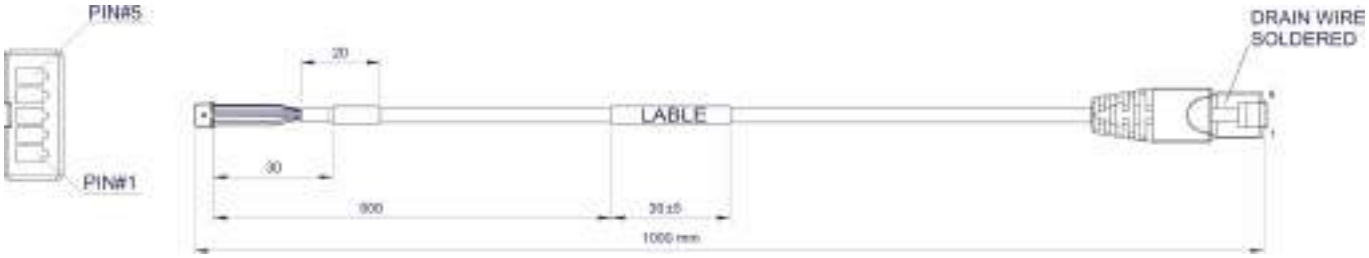



**Figure 2 EtherCAT Cable**

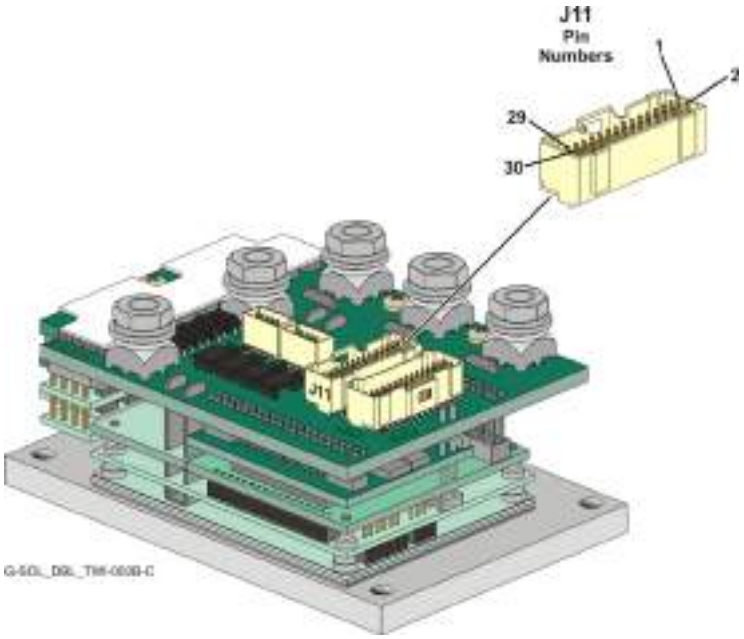
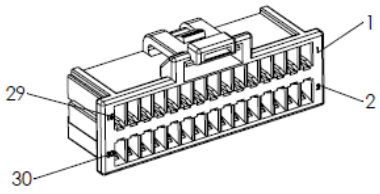
# Chapter 4: Communication, STO, and I/O Cable (CBL-GTWICOMIO02)

Note: **This cable is only relevant to the EtherCAT kit.**

The Communication, STO, and I/O cable is a 30-AWG Teflon isolation set of wires of length 250 mm. It is connected using a 1.0 mm female housing 2x15 pins Molex connector and 1.0 mm single-pin crimp terminal at one end to the J11 connector on the Gold Solo Double Twitter/Bee , with the cable open at the other end so that it can be connected to the relevant controller interface connectors.

The general pinout of the Communication, STO, and I/O cable is as follows:

| J11 Pins From Molex Connector | Signal | Color | Function |
|---|---|---|---|
| 15 | STO1 | WHITE | STO 1 input opto isolated from control COMRET |
| 16 | STO2 | WHITE | STO 2 input opto isolated from control COMRET |
| 17 | STORET | BLACK | STO signal return.<br>The two digital STO inputs are optically isolated from the other parts of the drive, and share one return line. |
| 18 | STORET | BLACK | STO signal return.<br>The two digital STO inputs are optically isolated from the other parts of the drive, and share one return line. |
| 19 | COMRET | BLACK | Common return |
| 23 | COMRET | BLACK | Common return |
| 24 | COMRET | BLACK | Common return |
| 27 | USB_VBUS | RED | USB VBUS detector |
| 28 | COMRET | BLACK | Common return |
| 29 | USBD+ | RED | USB _P line |
| 30 | USBD- | RED | USB _N line |

| Pin Positions | Cable Connector |
|---|---|
|  **J11 Communication, STO, and I/O Connector** |  **J11 Female cable 1mm housing 2x15pins Connector** |

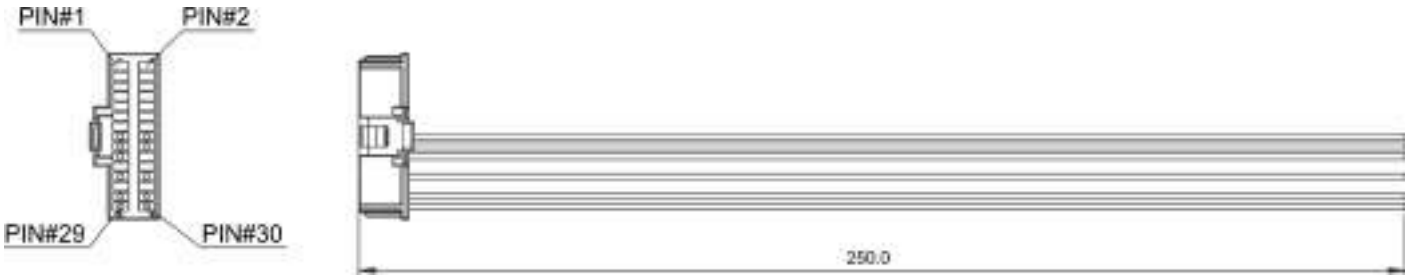



**Figure 3 Communication, STO, and I/O Cable**

# Chapter 5: Communication, STO, and I/O Cable (CBL-GTWICOMIO03)

Note: **This cable is only relevant to the CAN kit.**

The Communication, STO, and I/O cable is a 30-AWG Teflon isolation set of wires of length 250 mm. It is connected using a 1.0 mm female housing 2x15 pins Molex connector and 1.0 mm single-pin crimp terminal at one end to the J11 connector on the Gold Solo Double Twitter/Bee , with the cable open at the other end so that it can be connected to the relevant controller interface connectors.

The general pinout of the Communication, STO, and I/O cable is as follows:

| Pins From J11 Molex Connector | Signal | Color | Function |
|---|---|---|---|
| 15 | STO1 | WHITE | STO 1 input opto isolated from control COMRET |
| 16 | STO2 | WHITE | STO 2 input opto isolated from control COMRET |
| 17 | STORET | BLACK | STO signal return.<br>The two digital STO inputs are optically isolated from the other parts of the drive, and share one return line. |
| 18 | STORET | BLACK | STO signal return.<br>The two digital STO inputs are optically isolated from the other parts of the drive, and share one return line. |
| 19 | COMRET | BLACK | Common return |
| 23 | COMRET | BLACK | Common return |
| 24 | COMRET | BLACK | Common return |
| 25 | RS-232_TX | RED | RS-232 Transmit |
| 26 | RS-232_RX | RED | RS-232 Receive |

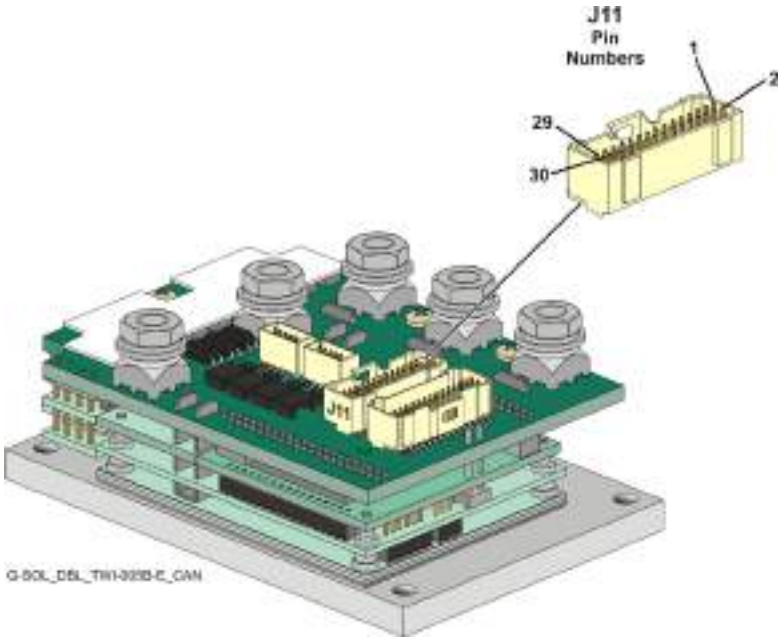
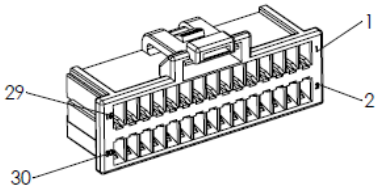
| Pin Positions | Cable Connector |
|---|---|
|  J11 Communication, STO, and I/O Connector |  J11 Female cable 1mm housing 2x15pins Connector |


Figure 4 Communication, STO, and I/O Cable

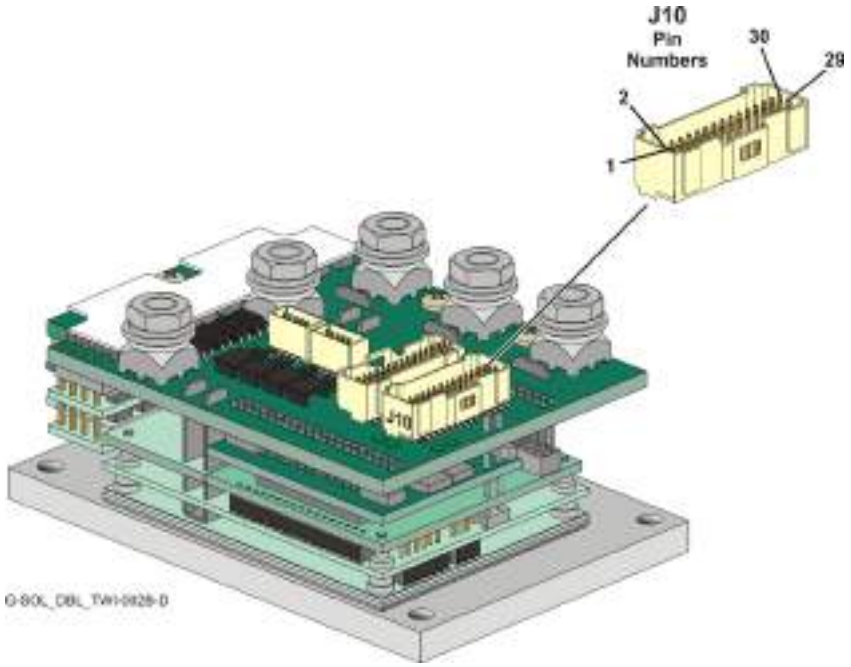
# Chapter 6: VL and Feedback Cable (CBL-GTWIFB01)

The VL and Feedback Cable is a 30-AWG Teflon isolation set of wires of length 250 mm. It is connected using a 1.0 mm female housing 2x15 pins Molex connector and 1.0 mm single-pin crimp terminal at one end to the J10 connector on the Gold Solo Double Twitter/Bee , with the cable open at the other end so that it can be connected to the relevant controller interface connectors.

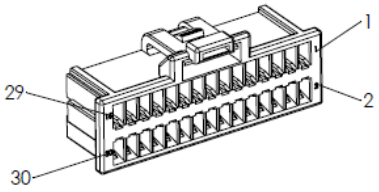
The general pinout of the VL and Feedback Cable is as follows:

| J10 Pins From Molex Connector | Signal | COLOR | Function |
|---|---|---|---|
| 1 | PortA_ENC_A+ / ABS_CLK+ | WHITE | Channel A+ / Abs encoder clock + |
| 3 | PortA_ENC_A- / ABS_CLK- | WHITE | Channel A- / Abs encoder clock - |
| 5 | PortA_ENC_B+ / ABS_DATA+ | WHITE | Channel B+ / Abs encoder data + |
| 7 | PortA_ENC_B- / ABS_DATA- | WHITE | Channel B- / Abs encoder data - |
| 9 | PortA_ENC_INDEX+ | WHITE | Index+ |
| 11 | PortA_ENC_INDEX- | WHITE | Index- |
| 13 | HA | WHITE | Hall sensor A |
| 15 | HB | WHITE | Hall sensor B |
| 17 | HC | WHITE | Hall sensor C |
| 19 | +5V | RED | Encoder +5V supply with a total allowable maximum consumption of 200mA using Pins 19 or 26. |
| 21 | COMRET | BLACK | Common return |
| 23 | COMRET | BLACK | Common return |
| 29 | VL- | BLACK | Control 24V supply return |
| 30 | VL+ | RED | Control 24V supply |

## Pin Positions




**J10 VL and Feedback Connector**




**1mm housing Female 2x15pins Connector**

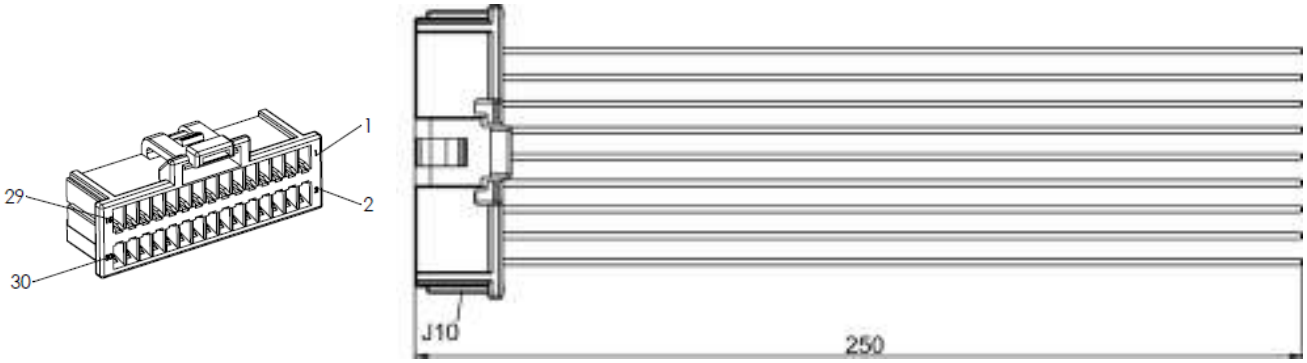



**Figure 5 VL and Feedback Cable**

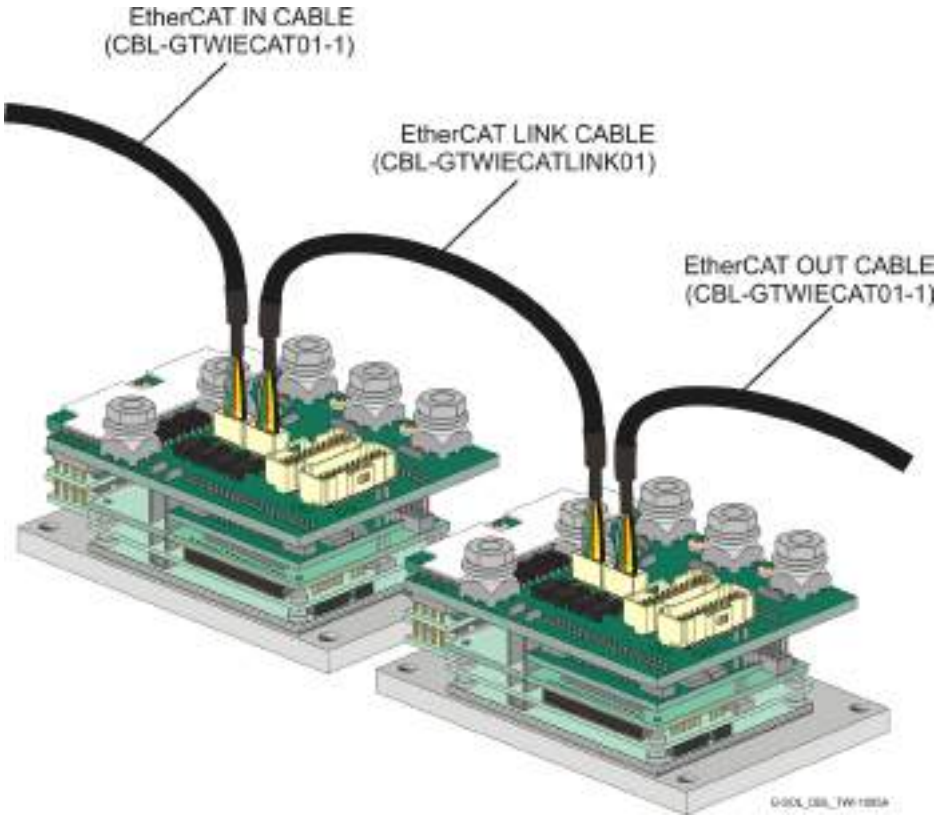
# Chapter 7: EtherCAT/CAN LINK Cable (CBL-GTWIECATLINK01)

The EtherCAT/CAN LINK Cable is a double-pair 30-AWG drain and braid cable of 100 mm. It is connected at both ends with wire-to-board 5 Pins 1 mm Pitch female Molex connectors.

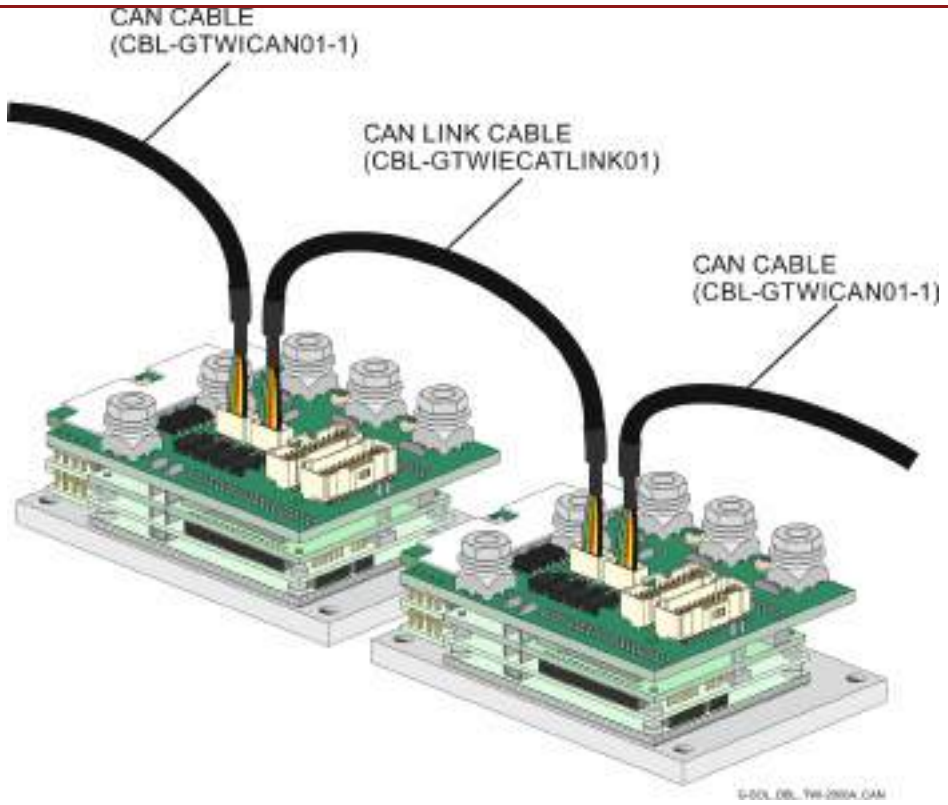
The general pinout of the EtherCAT/CAN LINK Cable as a daisy chain is as follows:

| Molex 1 | Molex 2 | COLOR | Function For EtherCAT | Function For CAN |
|---|---|---|---|---|
| 1 | 1 | WHITE | ECAT TX+ | ---------- |
| 2 | 2 | GREEN | ECAT TX- | COMRET |
| 3 | 3 | RED | ECAT RX+ | CAN_H |
| 4 | 4 | YELLOW | ECAT RX- | CAN_L |
| 5 | 5 | Drain wire | Shield Drain wires | Shield Drain wires |

**Pin Positions**




**EtherCAT Link Cable**




**CAN Link Cable**

# Chapter 8: CAN Terminator Cable (ACC-TRM-02)

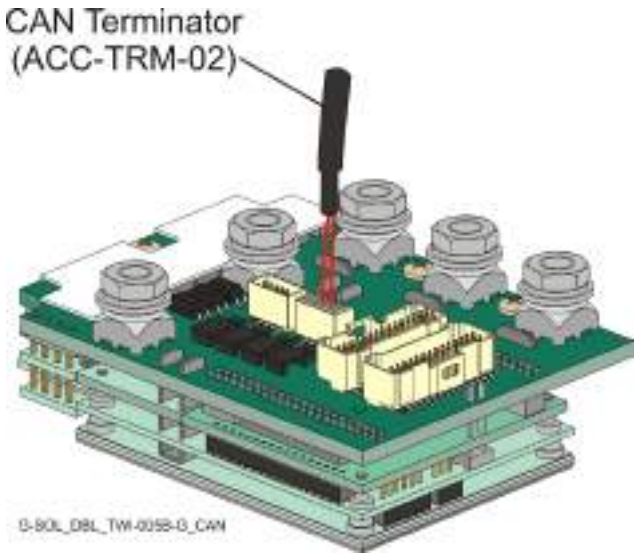
The CAN Terminator Cable is a 30-AWG Teflon isolation 2 wires 30mm length with 121Ω resistor as termination. It is connected at both ends with wire-to-board 5 Pins 1 mm Pitch female Molex connector.

The general pinout of the CAN Terminator Cable is as follows:

| Molex 1 | COLOR | Function |
|---|---|---|
| 1 | ------ | ------ |
| 2 | ------ | ------ |
| 3 | RED | CAN_H |
| 4 | RED | CAN_L |
| 5 | ------ | ------ |

**Pin Positions**

121Ω resistor is connected between CAN_H and CAN_L internally in cable.




**CAN Terminator Cable**

# Chapter 9: Spare Wires (CBL-GTWISPARE01)

The Spare Wires assembly consists of 21 variously colored 30-AWG wires of length 250 mm, each with a 1 mm single-pin crimped terminal at one end, to be inserted to any of the connectors as required.

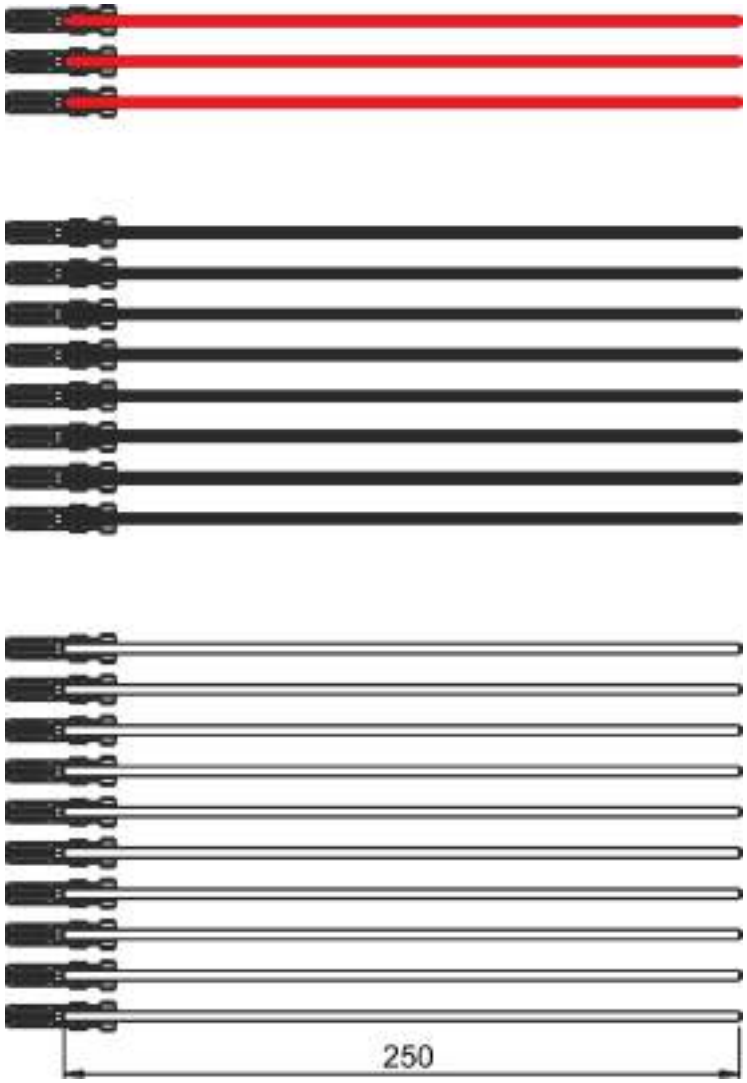



**Figure 6 Spare Wires Assembly**

# Chapter 10: Motor Power Cables (CBL-GSOLDTWIMTR-1)

The Motor Power Cables are supplied in 1.0 m lengths. They are each a 6-AWG thickness, Superflex-Silicon white color sheathed cable. At one end of the cable is a single hole copper lug, standard flex barrel, M4 stud size to connect to M1 to M3 on the Gold Solo Double Twitter/Bee . The cables are open at the other end so that they can be connected to the relevant user motor connectors.

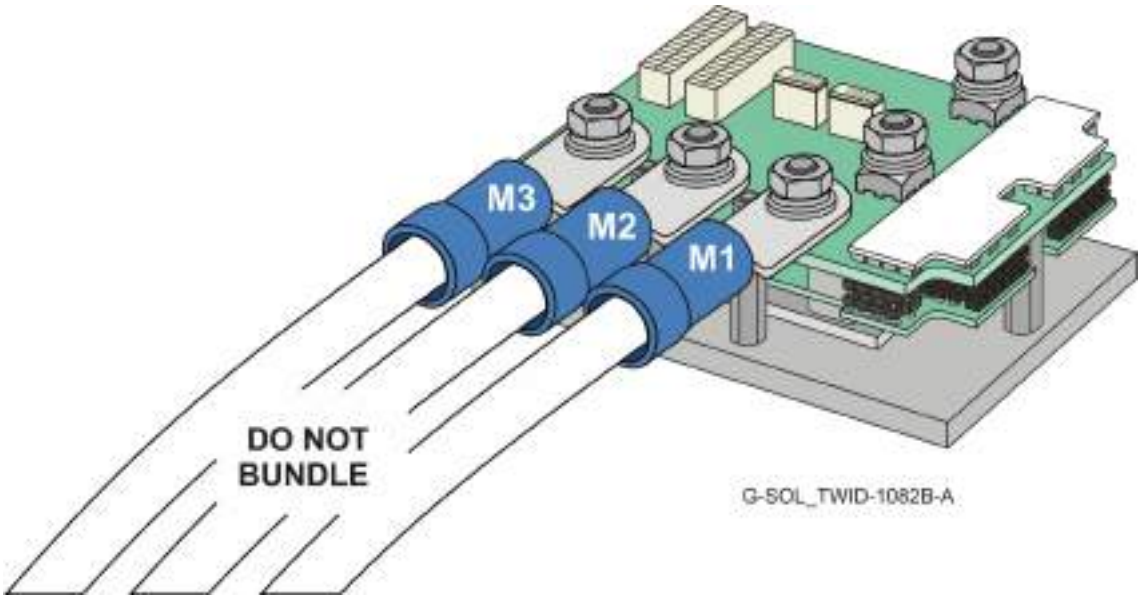



**Figure 7 Motor Power Cables Conection to Drive**

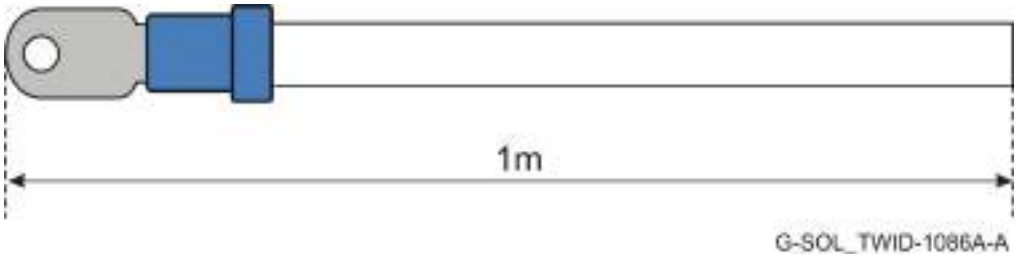



**Figure 8 Motor Power Cable**

# Chapter 11: PE Cable (CBL-GSOLDTWIPE-1)

The PE Cable is supplied in 1.0 m lengths. It is a 8-AWG thickness, Superflex-Silicon yellow color sheathed cable. At one end of the cable is a single hole copper lug, standard flex barrel, M4 stud size to connect to the drive PE on the Gold Solo Double Twitter/Bee . The cable is open at the other end so that it can be connected to the relevant user machine.

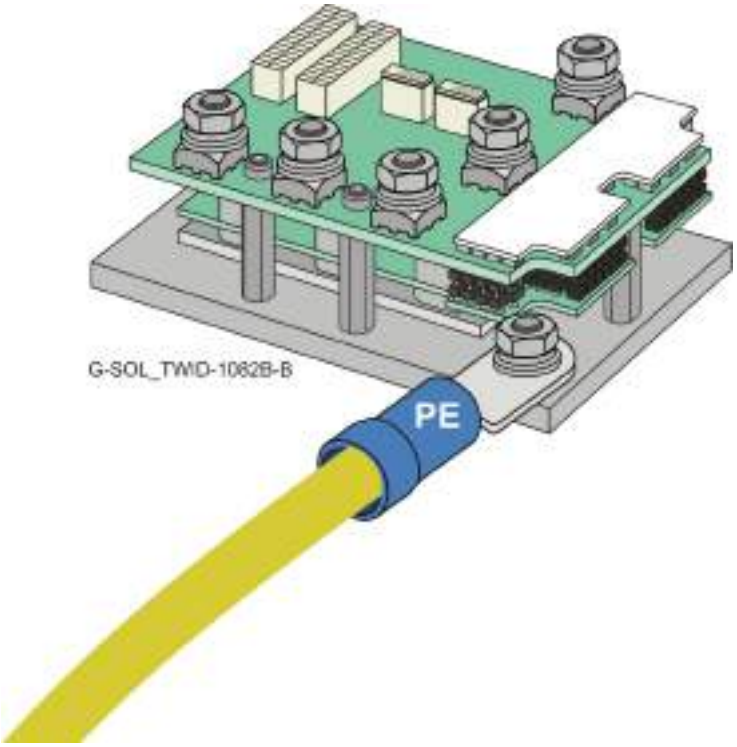



**Figure 9 PE Cable Conection to Drive**

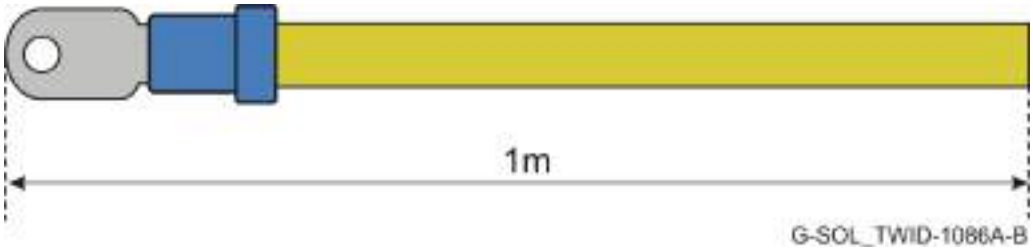



**Figure 10 PE Cable**

# Chapter 12: DC Power Cables (CBL-GSOLDTWIPOW-1)

The DC Power Cables are supplied in 1.0 m lengths. They are each a 6-AWG thickness, Superflex-Silicon red/black color sheathed cable. At one end of the cable is a single hole copper lug, standard flex barrel, M4 stud size to connect to VP+ and PR on the Gold Solo Double Twitter/Bee . The cables are open at the other end so that they can be connected to the relevant user DC power supply connectors.

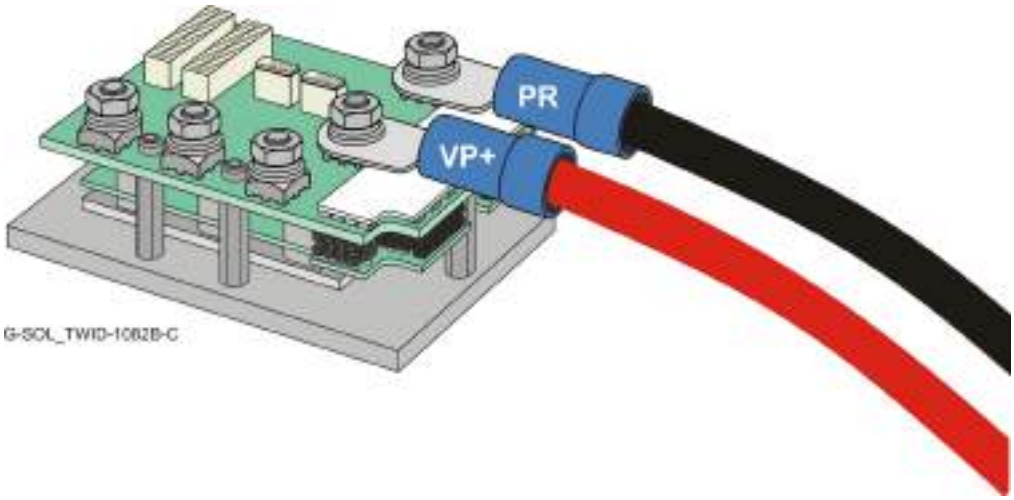



**Figure 11 DC Power Cables Conection to Drive**

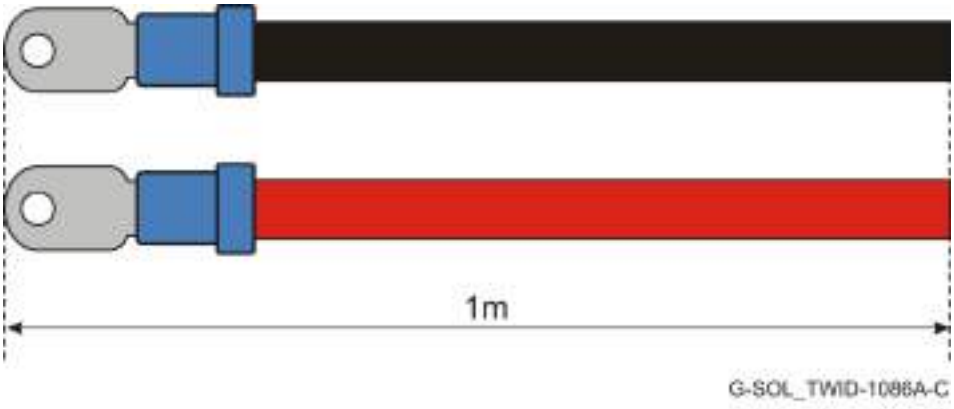
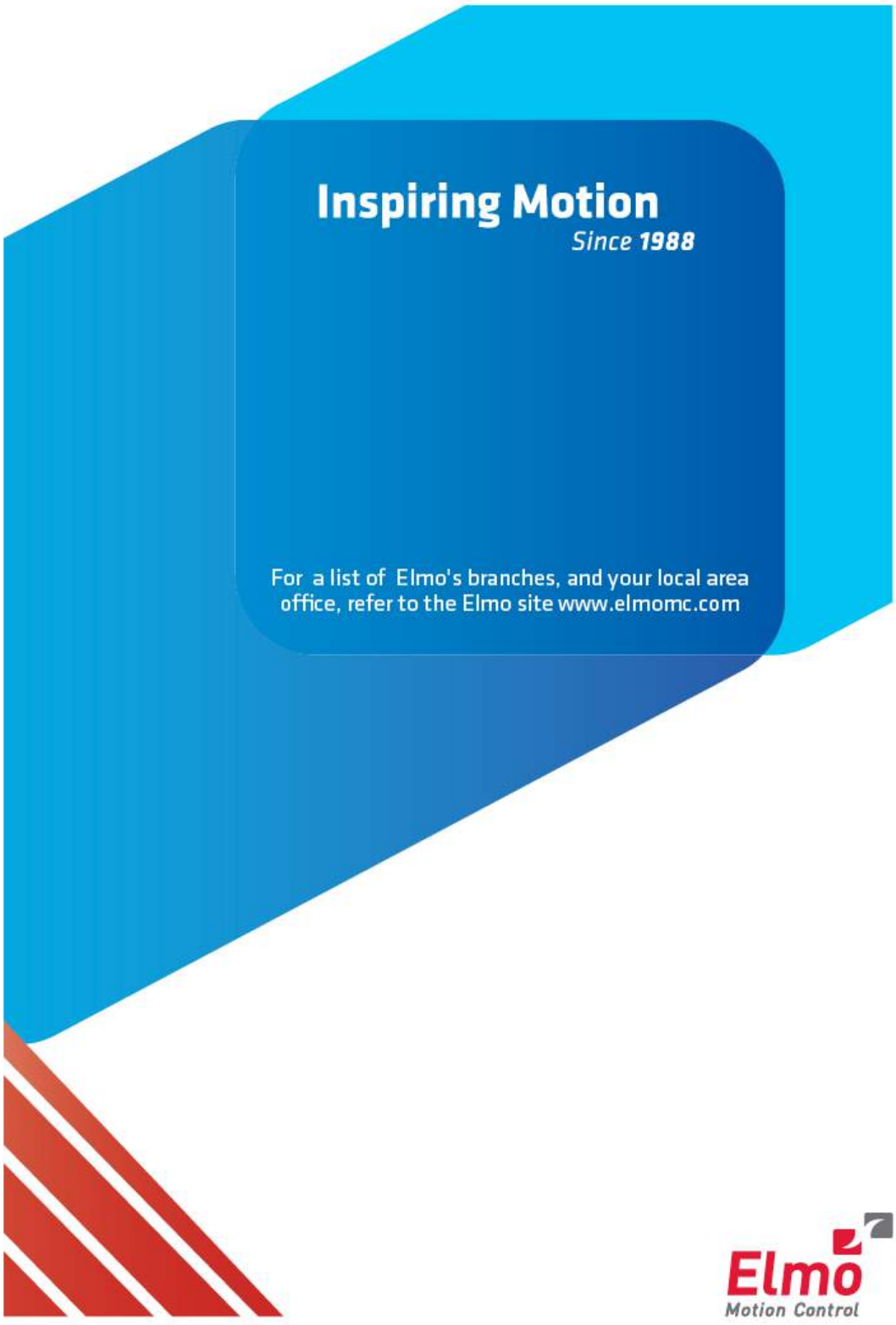



**Figure 12 DC Power Cables**


Inspiring Motion
Since 1988
For a list of Elmo's branches, and your local area office, refer to the Elmo site www.elmomc.com
Elmo
Motion Control