Minimal Connection (12V for Motor/Valves - logic is USB-powered)
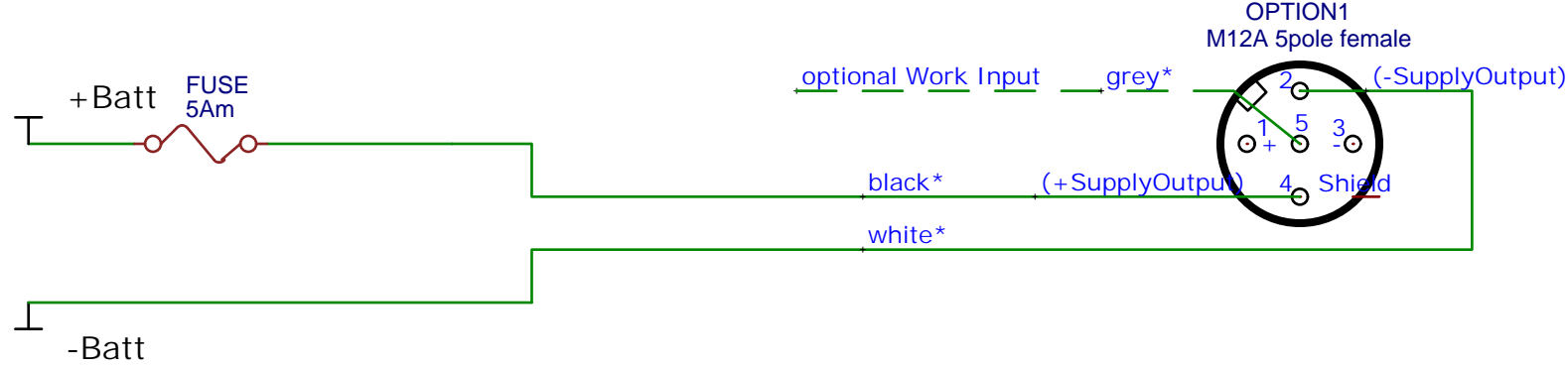
OPTION1
M12A 5pole female

+Batt FUSE 5Am

optional Work Input   grey*   2   (-SupplyOutput)

black*   (+SupplyOutput)   4   Shield

white*

-Batt

Minimal Connection (12V for Motor/Valves - Ethernet/Wifi)

OPTION2
M12A 5pole female

+Batt FUSE1 5Am

POWER1
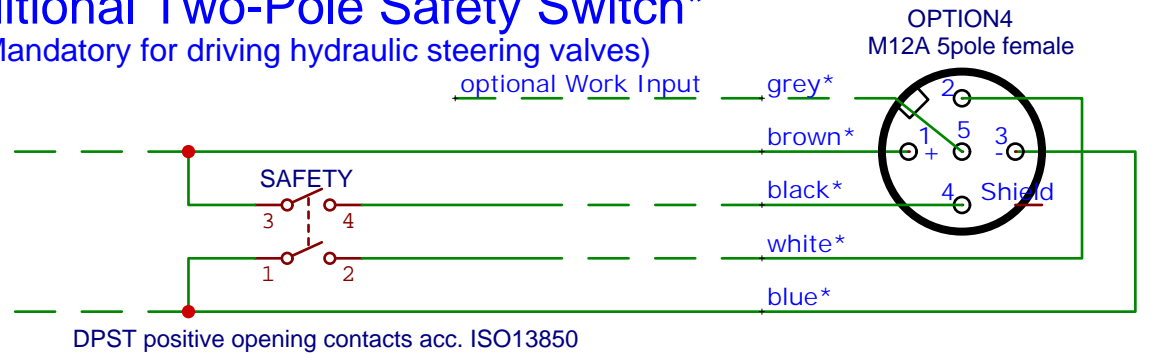(SPST 1A)

optional Work Input   grey*   2   (-SupplyOutput)

brown*   (Battery+)   3   (Battery-)

black*   (+SupplyOutput)   4   Shield

white*

blue*

-Batt
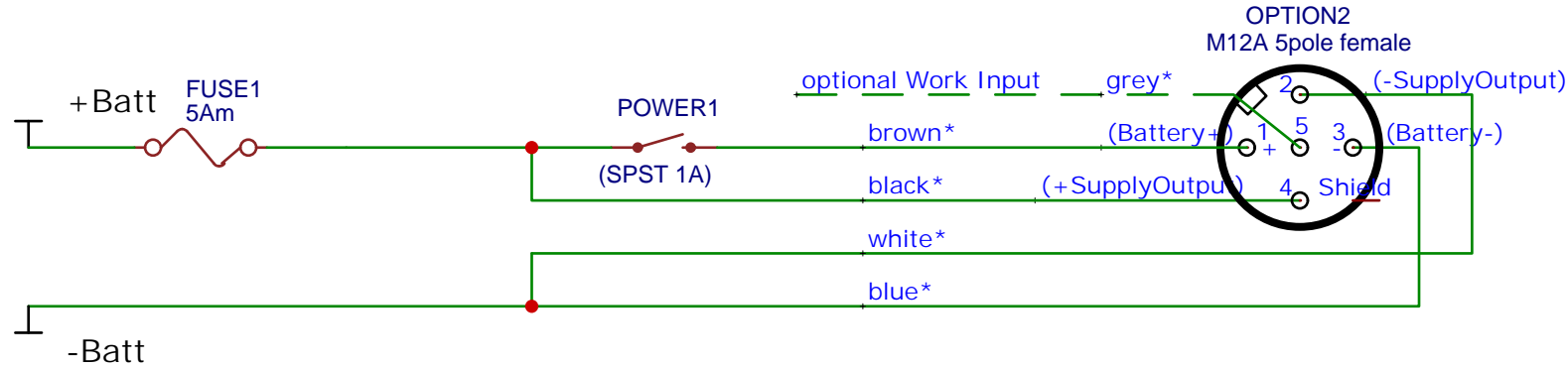
Step-Up converter for 24V motor supply

OPTION3
M12A 5pole female

+Batt

optional Work Input   grey*   2

EXTERNAL_STEP-UP_TO_24V

1   +Vin   +Vout   3   black*   4   Shield

2   -Vin   -Vout   5

-Batt

e. g. https://www.aliexpress.com/item/32837363835.html
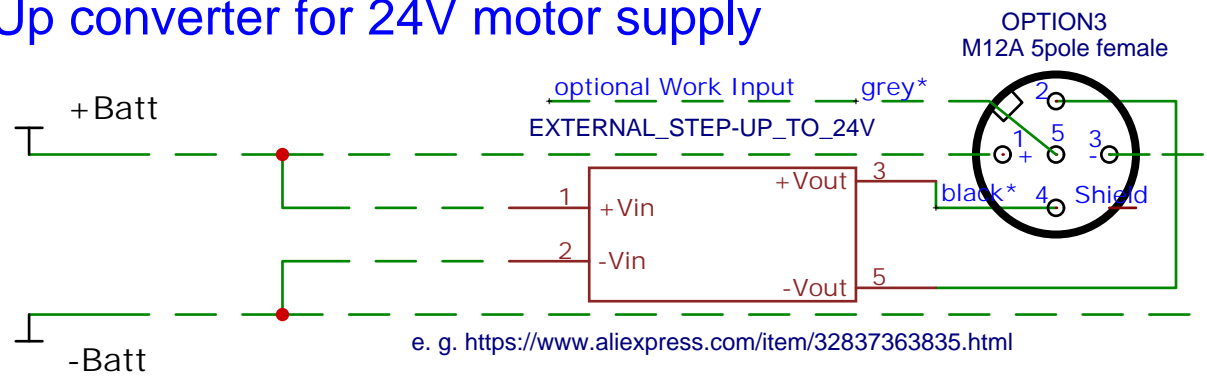
Additional Two-Pole Safety Switch*
(* Mandatory for driving hydraulic steering valves)

OPTION4
M12A 5pole female

optional Work Input   grey*   2

brown*   3

SAFETY
3   4
1   2

black*   4   Shield

white*

blue*

DPST positive opening contacts acc. ISO13850

(Safety Advice: Protect cable against crushing)

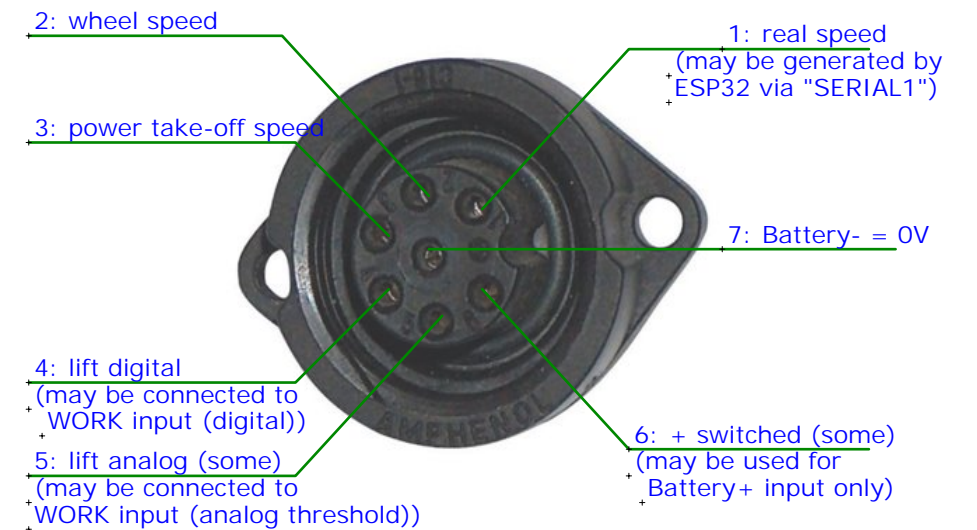* = Weidmü ller cable colors

M12 female cable

Cable M12-A female 4/5pole, e. g. weidmueller.com
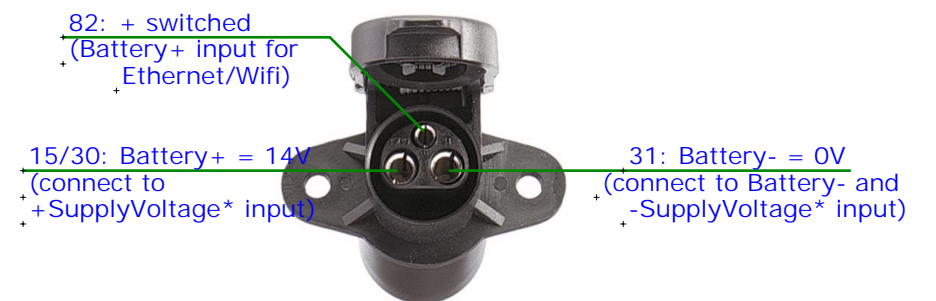
SAIL-M12BG-5-1.5U   (9457910150)

5 pole   1.5m unshielded = 0150cm
(available in different lengths and further options)

ISO 11786 (DIN 9684-1) Socket

Socket DIN 9681-1 ISO 11786 e. g. Fendt X007 plug / Steyr, etc:
pin 4 => WorkSwitch digital (low = lower end, high = higher end pos)
pin 5 (Fendt, if connected) => WorkSwitch analog instead of pin 4 (0V = lower en
pin 6 (Fendt) => +Battery and via Stopp switch (5A max for ISO plug!)
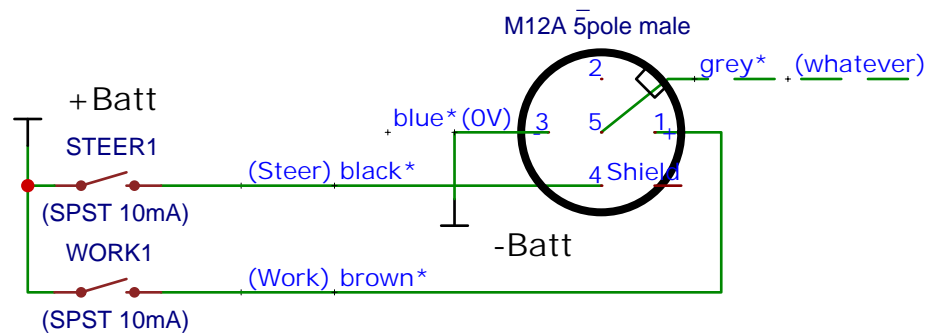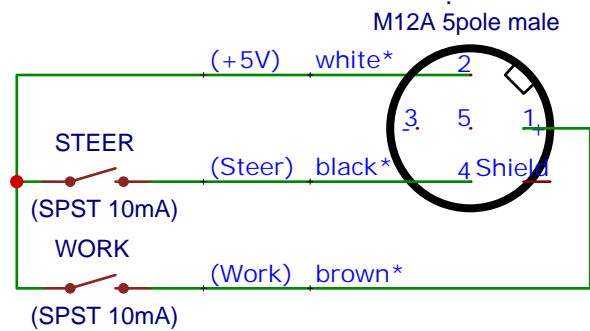pin 7 (Fendt) => -Battery

2: wheel speed

3: power take-off speed

1: real speed
(may be generated by ESP32 via "SERIAL1")

7: Battery- = 0V

4: lift digital
(may be connected to WORK input (digital))

5: lift analog (some)
(may be connected to WORK input (analog threshold))

6: + switched (some)
(may be used for Battery+ input only)

DIN 9680 Socket

82: + switched
(Battery+ input for Ethernet/Wifi)

15/30: Battery+ = 14V
(connect to +SupplyVoltage* input)

31: Battery- = 0V
(connect to Battery- and -SupplyVoltage* input)

TITLE: Connecting Power Socket

REV: 2.0

Company: https://discourse.agopengps.com   Sheet: 1/6

Date: 2021-09-18   Drawn By: GoRoNb

EasyEDA

Connection for Control Signals

M12A 5pole male

(+5V) white*   2

3   5   1

STEER
(Steer) black*   4 Shield
(SPST 10mA)

WORK
(Work) brown*
(SPST 10mA)

M12 male cable
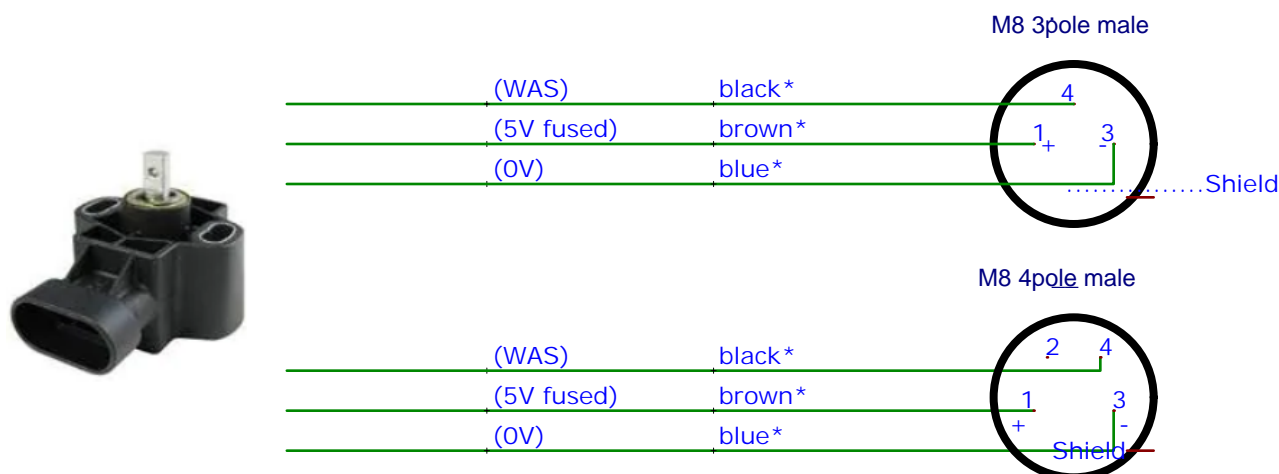
Cable M12-A male 4/5pole, e. g. weidmueller.com

SAIL-M12G-5-1.5U   (9457610150)

5 pole   1.5m unshielded = 0150cm
(available in different lengths and further options)

M12A 5pole male

2   grey*   (whatever)

blue*(0V) 3   5   1

+Batt
STEER1
(Steer) black*   4 Shield
(SPST 10mA)
-Batt

WORK1
(Work) brown*
(SPST 10mA)

(work signal may be analog or digital)

* = Weidmü ller cable colors

Connection to (new) WAS

M8 3pole male

(WAS)	black*
(5V fused)	brown*
(0V)	blue*

4
1 + 3 -
...............Shield

M8 4pole male

(WAS)	black*
(5V fused)	brown*
(0V)	blue*

2 4
1 + 3 -
Shield

Connection to OEM WAS

M8 4pole male

(Batt- differential)	white*
(WAS)	black*

2 4
1 + 3 -
blue*___ (Battery-)
Shield

(Battery-)
(WAS)
(+)

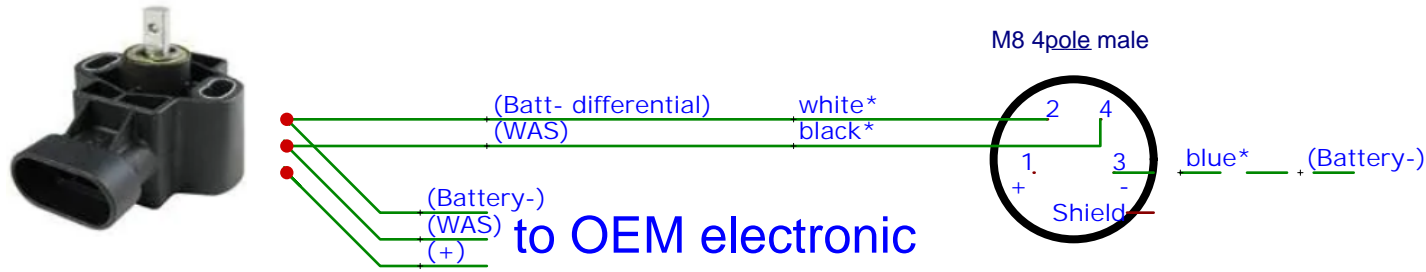### to OEM electronic

M8 male cable

Cable M8 male 3/4pole, e. g. weidmueller.com

SAIL-M8G-3-3.0U   (1824590300)

SAIL-M8G-4-3.0U   (1906270300)
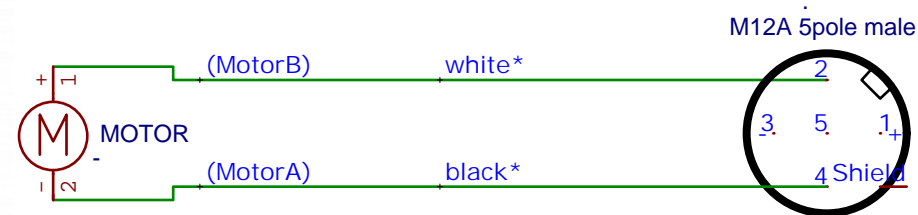
4 pole   3m unshielded = 0300cm
(available in different lengths and further options)

* = Weidmü ller cable colors

Connection to Steering Motor

M12A 5pole male

MOTOR

(MotorB)   white*

(MotorA)   black*

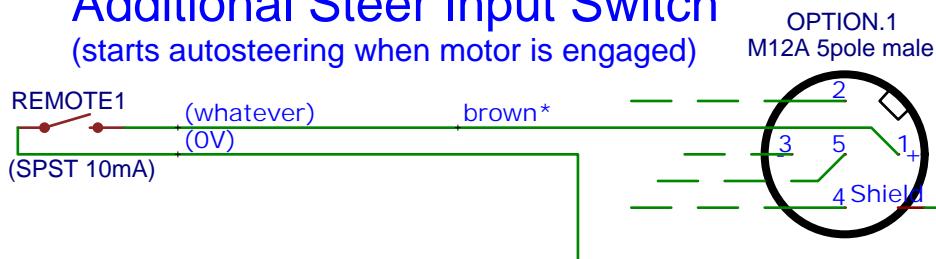2   3   5   1   4 Shield

M12 male cable

Cable M12-A male 4/5pole, e. g. weidmueller.com

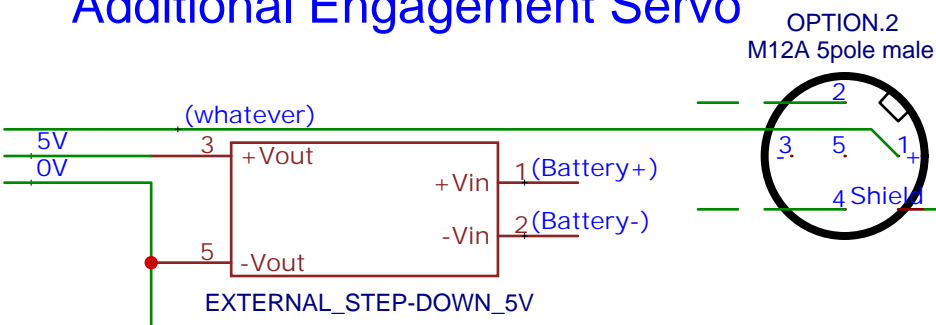SAIL-M12G-5-1.5U   (9457610150)

5 pole   1.5m unshielded = 0150cm
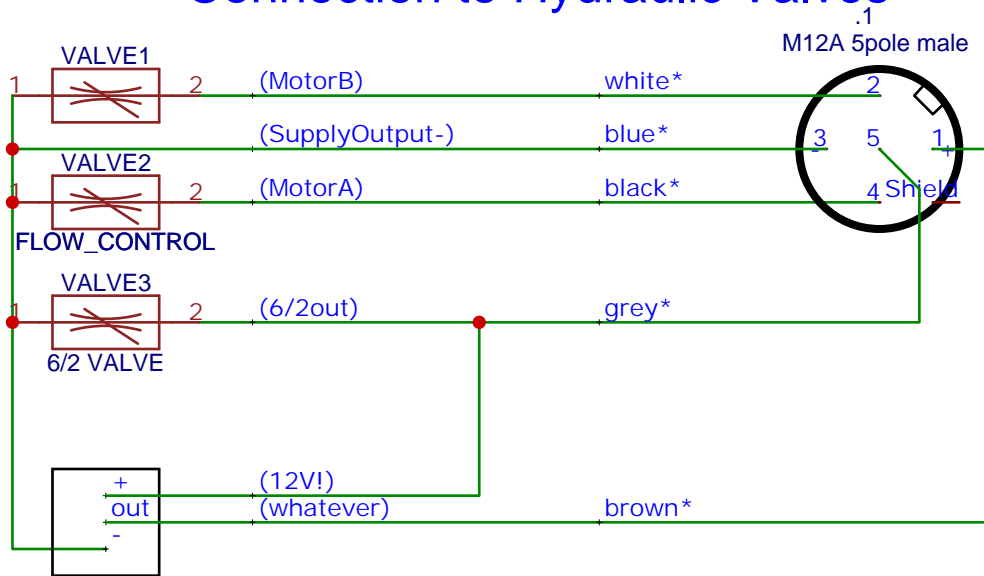(available in different lengths and further options)

Additional Steer Input Switch

(starts autosteering when motor is engaged)

OPTION.1
M12A 5pole male

REMOTE1

(whatever)   brown*

(0V)

(SPST 10mA)

2   3   5   1   4 Shield

Additional Engagement Servo

OPTION.2
M12A 5pole male

Signal
Vcc
GND

5V
0V

3   +Vout

5   -Vout

+Vin   1 (Battery+)

-Vin   2 (Battery-)

(whatever)

2   3   5   1   4 Shield

EXTERNAL_STEP-DOWN_5V

Connection to Hydraulic Valves

M12A 5pole male

VALVE1   1 ... 2   (MotorB)   white*

(SupplyOutput-)   blue*

VALVE2   1 ... 2   (MotorA)   black*

FLOW_CONTROL

VALVE3   1 ... 2   (6/2out)   grey*

6/2 VALVE

+ out -   (12V!)

(whatever)   brown*

2   3   5   1   4 Shield

Turn Sensor or Pressure Switch for disengaging

* = Weidmü ller cable colors

IMU via I² C
(OPTION)

(SDA) 2 4 (SCL)
(+5V) 1 3 (0V)
+ Shield −

brown*
white*
black*

blue*

CMPS14
robot-electronics.co.uk

OR

BNO08x 9-DoF
BT P0 P1 RST DI CS
3Vo GND SCL SDA INT

(SDA) 2 4 (SCL)
(+5V) 1 3 (0V)
+ Shield −

blue*
black*
brown*
white*

https://learn.adafruit.com/adafruit-9-dof-orientation-imu-fusion-breakout-bno085
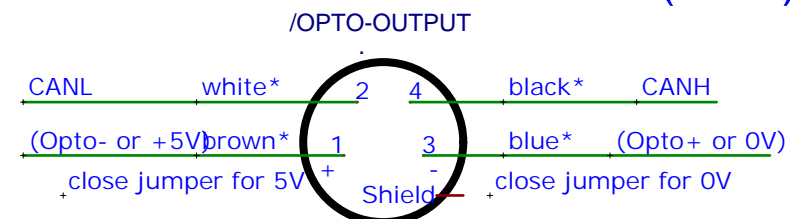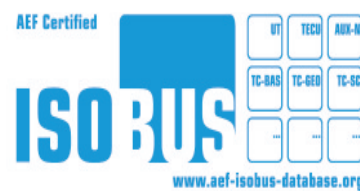
M8 male cable

Cable M8 male 4pole, e. g. weidmueller.com

SAIL-M8G-4-3.0U   (1906270300)
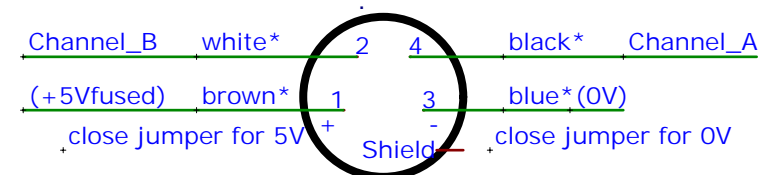
4 pole   3m unshielded = 0300cm
(available in different lengths and further options)
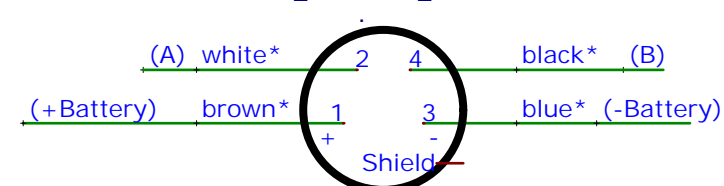
Controller Area Network (CAN)
/OPTO-OUTPUT

AEF Certified
ISOBUS
UT TECU AUX-N
TC-BAS TC-GEO TC-SC
www.aef-isobus-database.org

CANL white* 2 4 black* CANH
(Opto- or +5V)brown* 1 3 blue* (Opto+ or 0V)
close jumper for 5V + Shield − close jumper for 0V

Alternative: Rotary Encoder
(EXPERIMENTAL)

Channel_B white* 2 4 black* Channel_A
(+5Vfused) brown* 1 3 blue*(0V)
close jumper for 5V + Shield − close jumper for 0V

RS485 / ModbusRTU
EG_MACHINE_CONTROL

(A) white* 2 4 black* (B)
(+Battery) brown* 1 3 blue* (-Battery)
+ Shield −

* = Weidmüller cable colors

PushIn Connector Option

instead of M12/M8

Pin2

Pin1

P1

	I2C:SCL	1	2	I2C:SDA	
	CAN:H	3	4	CAN:L	
	RS485:A	5	6	RS485:B	
	Opto+/0V	7	8	5Vfused	
	WorkSwitch	9	10	SteerSwitch	
	WAS	11	12	5Vfused	
	WAS_N	13	14	0V	
	Opto-/5V	15	16	whatever	
	+Battery	17	18	0V	
	+SupplyOutput'	19	20	-SupplyOutput'	
	6/2Out	21	22	-SupplyOutput'	
	Valve/MotorA	23	24	Valve/MotorB	

S2C-SMT 3.50/24/90LF 3.2SN BK BX

P1: Weidmuller 1289550000 + 1372870000
S2C-SMT 3.50/24/90LF 3.2SN BK BX + B2CF 3.50/24/180LH SN BK BX

TITLE:

PushIn Connector Option

REV: 2.0