Motor connectors:

	plug	cable	conduit box	cable to to motor	
	A →	yellow	→	yellow	B-
	B →	red	→	red	B+
	C →	brown	→	brown	A-
	D →	pink	→	orange	A+
	E →	white	→	white	
	F →	green	→	black	
	G →	grey	→	grey	
	H →	blue	→	blue	

coils

limit switches
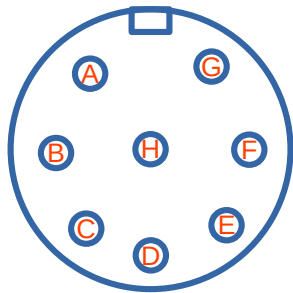
MOT-X (pins G+H) → CRYRING Inside Limit
MOT-X (pins E+F) → CRYRING outside limit

MOT-Z (pins G+H) → Upstream limit (minus)
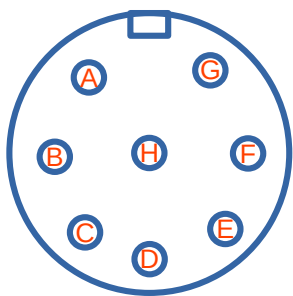MOT-Z (pins E+F) → Downstream limit (plus)

Potentiometers:

Color code

3.3V

Yellow

Brown
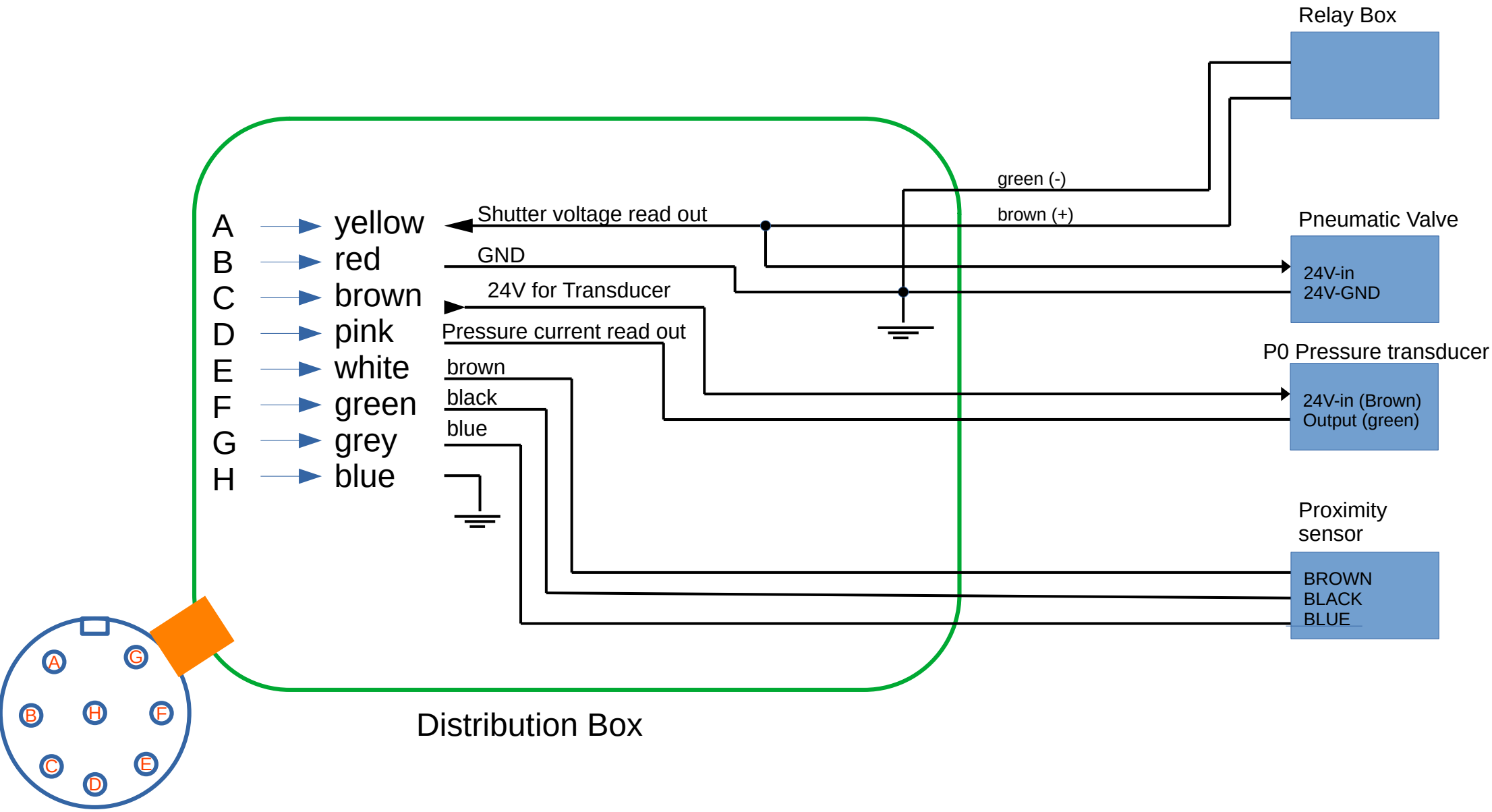
Blue

GND
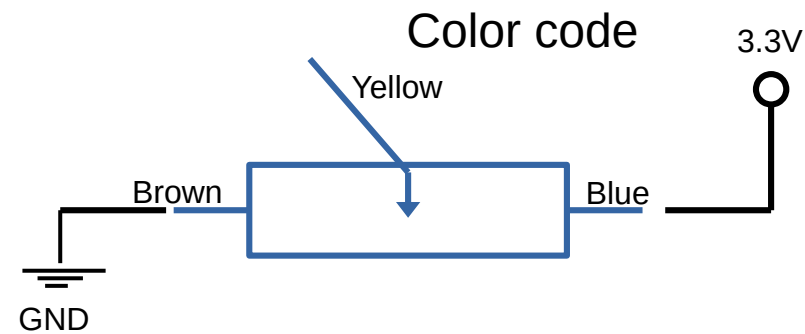
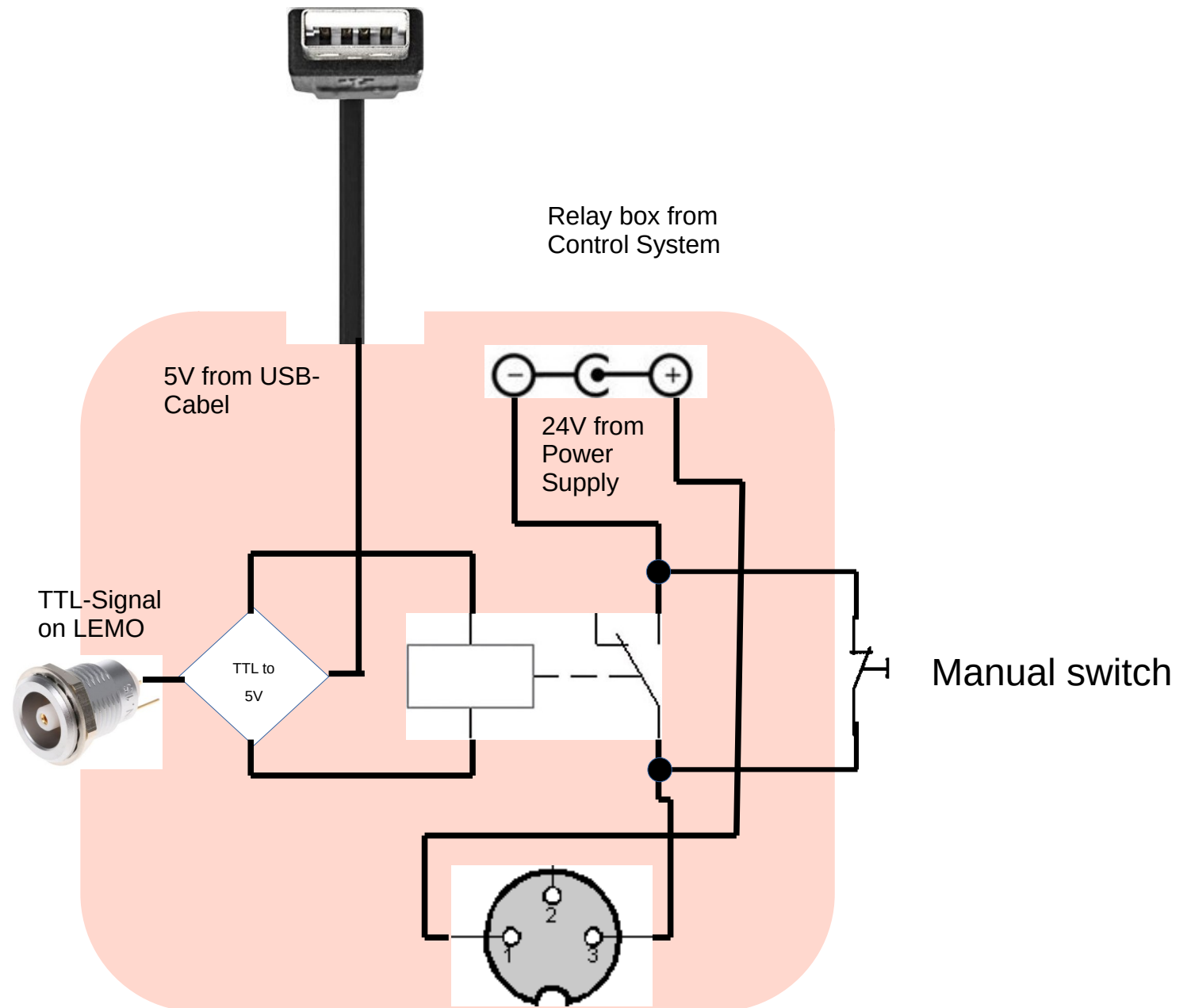| Plug		cable	conduit box	cable to poti	
A	→	yellow	→	blue	⎫
B	→	red	→	yellow	⎬ X
C	→	brown	→	brown	⎭
D	→	pink	→	blue	⎫
E	→	white	→	yellow	⎬ Z
F	→	green	→	brown	⎭

Directions:

Poti value grows between yellow pin and brown (GND), if poti shaft is pulled out. Min: 17 Ohm, Max: 2070 Ohms

Distribution Box:

Relay Box

green (-)
brown (+)

Pneumatic Valve
24V-in
24V-GND

P0 Pressure transducer
24V-in (Brown)
Output (green)

Proximity sensor
BROWN
BLACK
BLUE

A yellow   Shutter voltage read out
B red   GND
C brown   24V for Transducer
D pink   Pressure current read out
E white   brown
F green   black
G grey   blue
H blue

Distribution Box

Relay Box:

Relay box from
Control System

5V from USB-
Cabel

24V from
Power
Supply

TTL-Signal
on LEMO

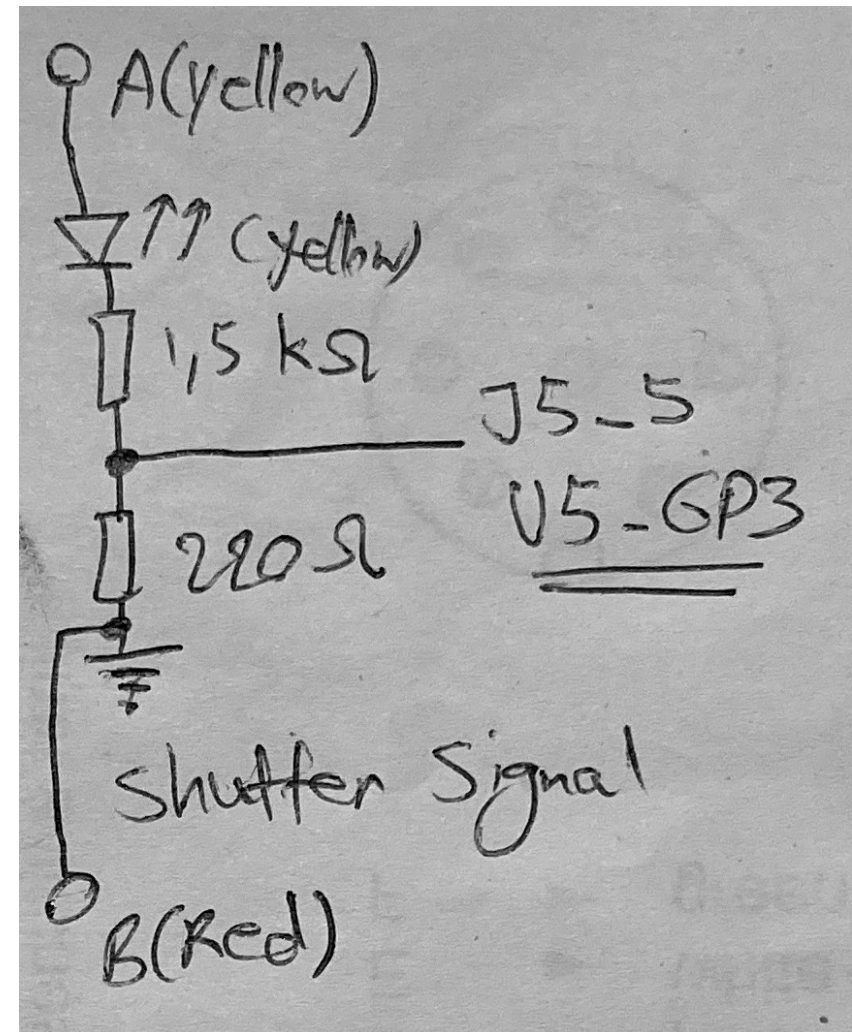TTL to
5V

Manual switch

2

1 3

Shutter signal:

Pneumatic Valve

Model: CPE10-M1B-H-5L-QS-6
Requirements: 24 V DC: 1,28 W

End switches:

End switches
=========

normally closed

+5V

green/blue ← NC

white/gray

4K7
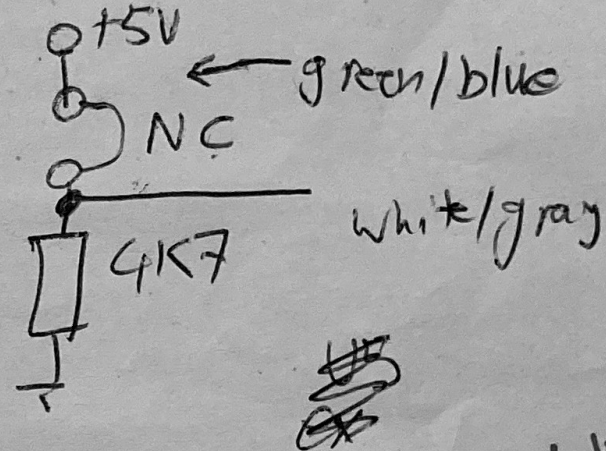
MoT-X

End { white → J5-9 (GP7)   *Ring outside lim*

gray → J5-8 (GP6)   *Ring inside*

Mot-Z

End { white → J5-7 (GP5)   *Downstr.*

gray → J5-6 (GP4)

Potentiometers calibration values:

Poti Zero values:

Pot-X
yellow (B) and brown (C):
1.1197 kOhm

Pot-Z
yellow (E) and brown (F):
1.0624 kOhm

X direction:

1.197 kOhm → 182.5 mm → ADC: 2313 → 1,867 V (zero point)
1.953 kOhm → 201.5 mm → ADC: 3793 → 3.057 V (Δ)

Z direction:

1.0624 kOhm → 180 mm → ADC: 2045 → 1.648 V (zero point)
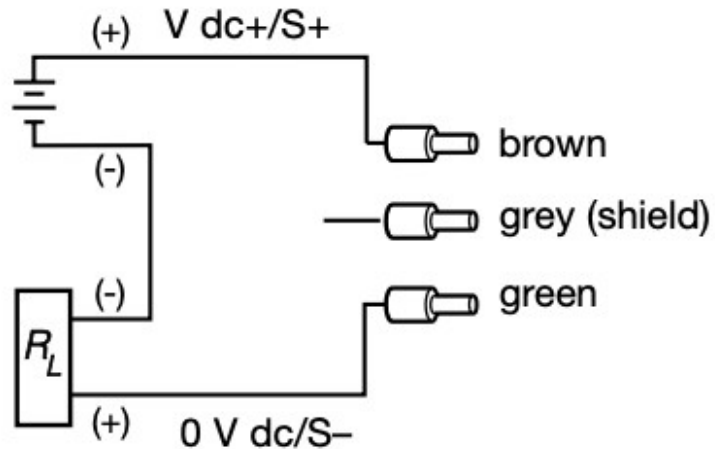1.875 kOhm → 199 mm → ADC: 3675 → 2.962 V (Δ)

Potis

B (Pot X
        Schleifer)
J9 - Pin 5
ADC-U3
channel Ø

E (POT-Z)
J9 - Pin 4
ADC -U3
channel 1

Pressure transducer:

Pressure Transducer

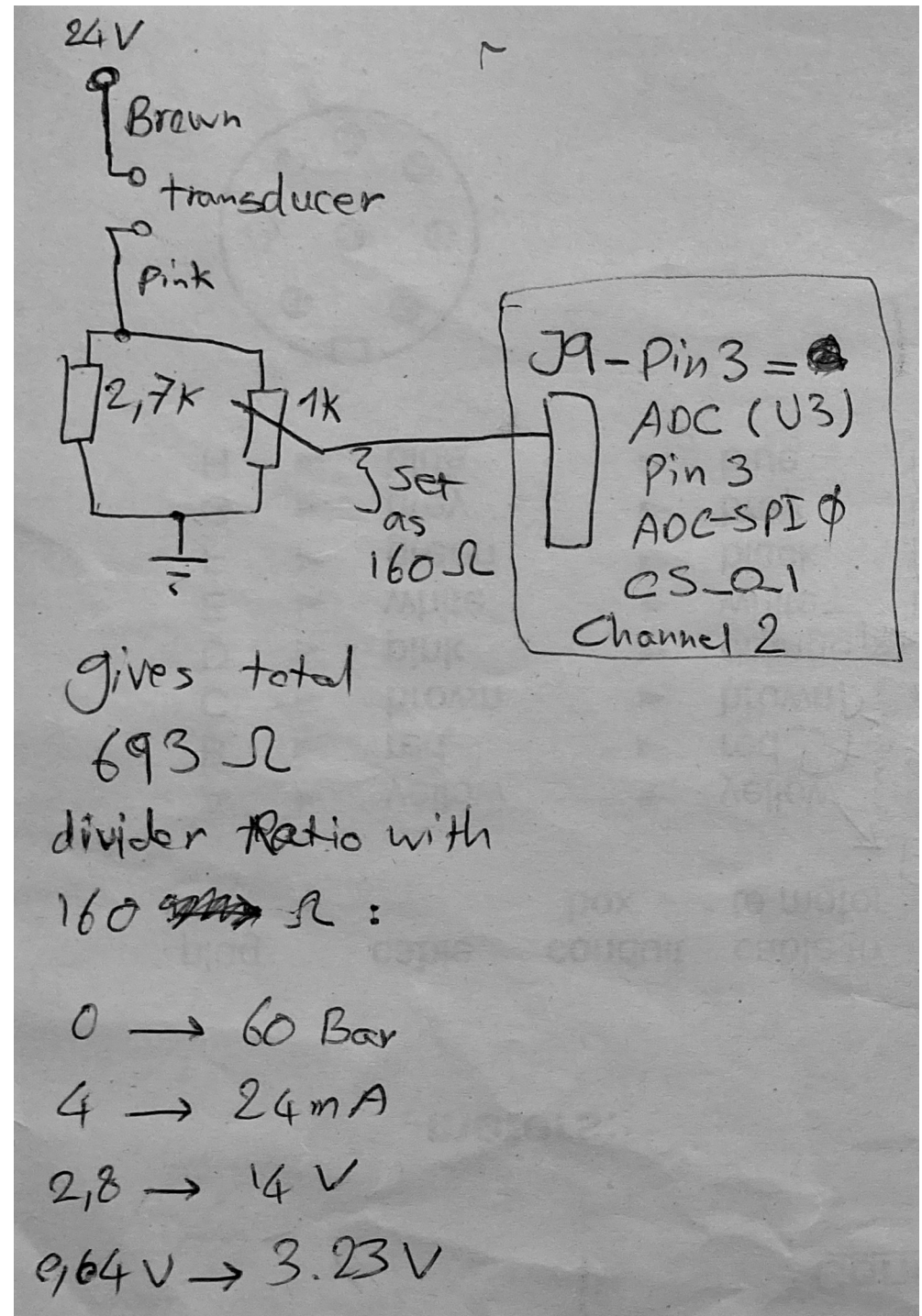Model: PTI-S-AG60-12AS-T

Direct wire, flying lead

(+) V dc+/S+

brown

grey (shield)

green

(-)

(-)

R_L

(+) 0 V dc/S−

Maximum Load Equations

Milliampere output signal, 2 wire

Output	4 to 20 mA
Supply	V dc = 10 to 30 V
Max. Load	$R_L = (V\,dc - 10) / 0.02$

24 V

Brown

transducer

Pink

2,7k   1k

Set as 160 Ω

J9 - Pin 3 = ⏚
ADC (U3)
Pin 3
ADC-SPI Ø
CS_Q1
Channel 2

gives total

693 Ω

divider Ratio with

160 Ω :

0 → 60 Bar

4 → 24 mA

2,8 → 14 V

0,64 V → 3.23 V

Proximity Sensor:

Proximity sensor is installed at beginning of the the shaft. So it only gives a HI when the shutter is out. So the signal is inverted in software in order to match the table.

Shutter	In (Jet off)	Out (Jet on)
GENESYS	HI	LOW
Signal	TRUE	FALSE
Sensor	TRUE	FALSE

+5V

BN

NPN

BK

R_L

4.7k Ohm

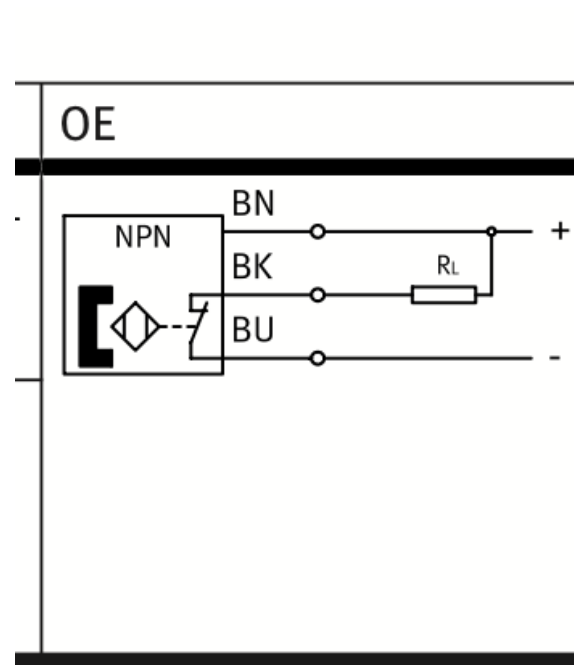→ green jumper cable → J19-pin 1 → Raspi pin 37

BU

GND
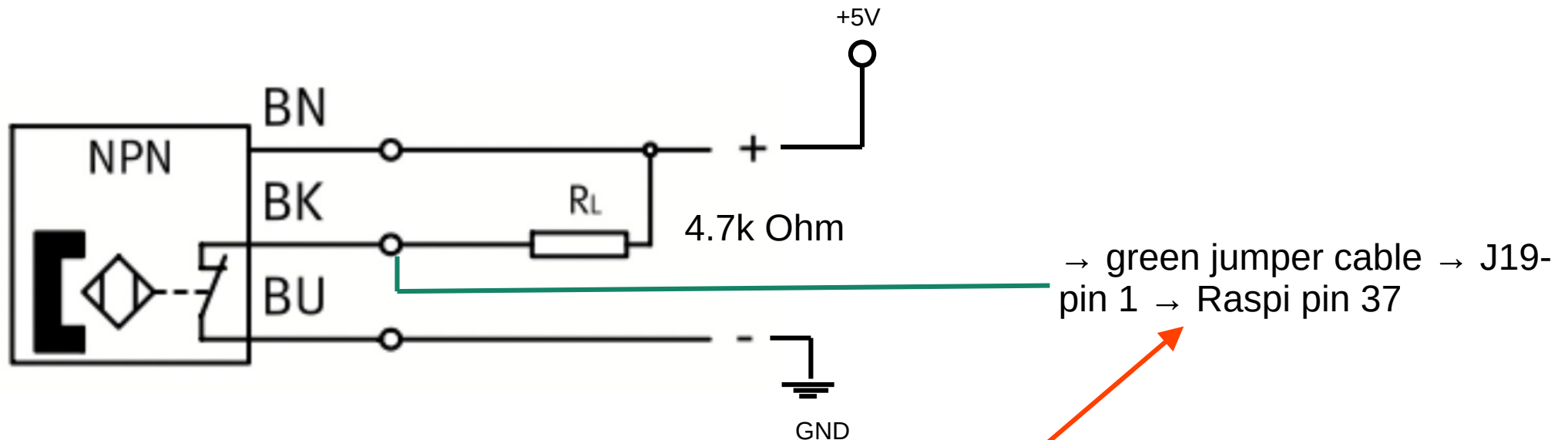
Brown (sensor) → E (connector) → white (cable) → +5V
Black (sensor) → F (connector) → green (cable) → signal
Blue (sensor) → G (connector) → gray (cable) → GND

Proximity Sensor:

Proximity Sensor

Model: SMT-8M-A-NO-24V-E-7,5-OE

Betriebsspannungsbereich	[V AC/DC]	5 ... 30
Max. Ausgangsstrom	[mA]	100
Max. Schaltleistung	[W]	2,8

Wire connections:

Round connectors	Round connector wire	Arriving connector	Jumper-wire color	Connector on Board	Raspberry Pin	Description
E	MOT-X end white	J5-9	yellow	J6-1	16	Ring outside limit X
G	MOT-X end gray	J5-8	blue	J6-2	18	Ring inside limit X
E	MOT-Z end white	J5-7	orange	J6-3	22	Downstream limit Z
G	MOT-Z end gray	J5-6	red	J17-2	32	Upstream limit Z
A	shutter set signal	J5-5	white	J19-2	33	Command from GENESYS
F	shutter sensor signal	direct from side board	green	J19-1	37	HI when shutter out