



Electronic components



AJW analog joystick

- Hall effect contactless double axis joysticks
- The contactless technology guarantees long life and precise comfortable control
- Robust mechanical design; specifically tailored to off-highway operating machines
- Handles with additional proportional axis

Working conditions

Electrical specifications

AJW

Supply voltage		from 8 to 32 V regulated 5±0.1V
Current consumption	without grip	max. 20 mA at 32 V
Output signal	full range	from 0.5 to 4.5 V - 2.5 V in neutral
	tolerance (in neutral and full stroke)	±0.15 V both sides per axis
	redundancy signal (crossed)	from 4.5 to 0.5 V - 2.5 V in neutral
	max. load	< 1 mA

Mechanical specifications

Lever angle	operation	± 20° both axis
	tolerance	±1
Lever force (X,Y axis)	stroke end	6±1N (fully actuated 190 mm - 7.48 in above flange)
	on each axis (full stroke cycles)	>10 ⁶
Weight	without grip	0.50 Kg (1.10 lb)

Environmental specifications

Working temperature		from -40° C to +85° C (from -40° F to 185° F)
Storage temperature		from -40° C to +85° C (from -40° F to 185° F)
Weather protection	above fixing plan	IP65
EMC compatibility		100 V/m - ISO13766, ISO14982

"Dead man" switch features

Contact type		NA
Current rating (24 VDC)		200 mA resistive load
Mechanical life (nr. of operations)		10 ⁶
Electric life (nr. of operations)		3x10 ⁴
Operating force		3.4 N
Weather protection		IP67

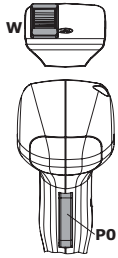
Test specifications

Mechanical vibration	random	from 5 to 500 Hz, 5,4x10 ⁴ to 0,56 g ² /Hz, 100 h each axis
	sinusoidal	40 m/s ² from 10 to 2000 Hz
	bumps	100 applications - 400 m/s ² x 6 ms
Humidity	96%	240 h
Thermal shock		100 cycles, from -40° C to 85° C and back, 50° C/min (100 cycles, from -40° F to 212° F and back, 122° F/min)
Salt spray	exposure	100 h

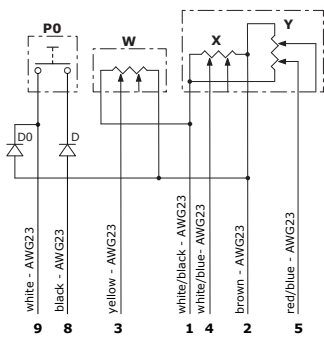
Control components

AJW and AJW-IP analog joystick

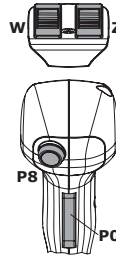
Configurations



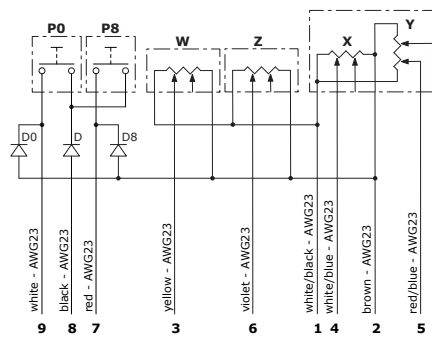
Code	183540027
Description	AJW2000A-PZA0100DQ-ORD-WN140/(D2F12035)-(TC-PROT)
Plate	1 ARW* type proportional roller (W)
Front zone	"dead man" switch (P0)



Pin	Function
1	VJ+
2	VJ-
3	W axis
4	X axis
5	Y axis
6	plugged
7	plugged
8	VJ+
9	P0 dead man
10	plugged
11	plugged
12	plugged



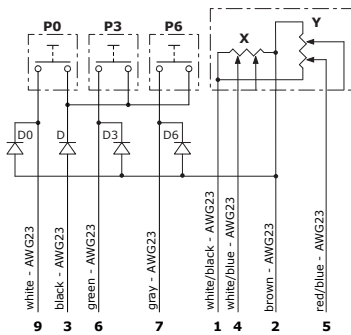
Code	183540028
Description	AJW2000A-PZTM0200BQ-ORD-8R2D-WN140-ZN140/(D2F12035)-(TC-PROT)
Plate	2 ARW* type proportional rollers (W-Z)
Front zone	1 T* type push-button with spring return (P8), "dead man" switch (P0)



Pin	Function
1	VJ+
2	VJ-
3	W axis
4	X axis
5	Y axis
6	Z axis
7	P8 push-button
8	VJ+
9	P0 dead man
10	plugged
11	plugged
12	plugged



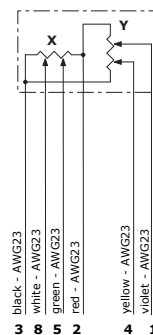
Code	183540029
Description	AJW2000A-PTA2000CQ-ORD-3R2D-6R2D/(D2F12035)-(TC-PROT)
Plate	2 T* type push-buttons with spring return (P3-P6)
Front zone	"dead man" switch (P0)



Pin	Function
1	VJ+
2	VJ-
3	P3 push-button
4	X axis
5	Y axis
6	P6 push-button
7	plugged
8	VJ+
9	P0 dead man
10	plugged
11	plugged
12	plugged



AJW-IP	
Code	183540058
Description	AJW2027A-S/D2F08050



Pin	Function
1	Yr
2	Vcc (5V)
3	GND
4	Y axis
5	Xr
6	plugged
7	plugged
8	X axis

NOTE (*): for component features see next page

Electric device features

ARW type proportional roller

Supply voltage	from 8 to 32 VDC
Max. current consumption	< 24 mA
Max. output current	1 mA
Output signal (range)	0,5 - 4,5 V
Output signal (central position)	2,5V
Signal tolerance (central position and stroke end)	±100 mV
Minimum load	10 KΩ
Actuator deflection angle	± 35° (±1°)
Mechanical life (nr. of operations)	10 ⁶
Operating force	2 N
Mechanical vibration	IEC 68-2
Mechanical shock	EN 60068-2-29 (pulse 400m/s ² x 6 ms, 100 times)
Weather protection	IP67-IP69K
EMC compatibility	ISO 13766 ISO 14982

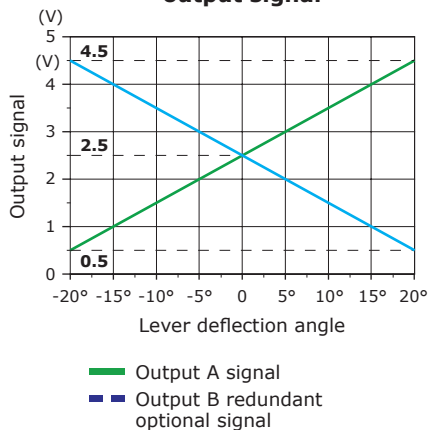


T type ON/OFF push-button

Execution	spring return
Contact type	normally open
Current rating	200 mA resistive load @ 12 VDC
Mechanical life (nr. of operations)	10 ⁶
Electric life (nr. of operations)	20x10 ⁴
Weather protection	IP64



**Proportional roller
output signal**

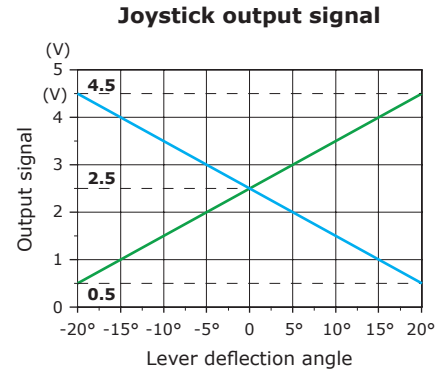
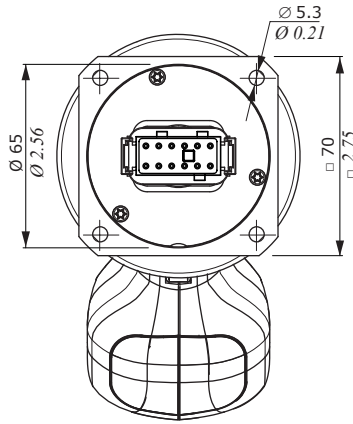
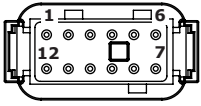


Control components

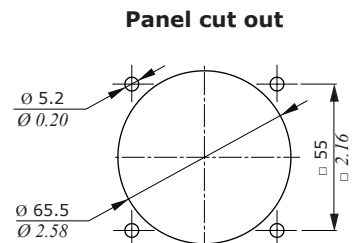
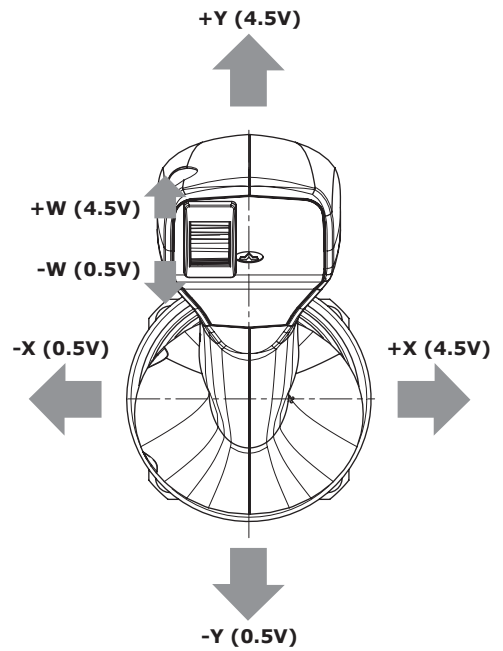
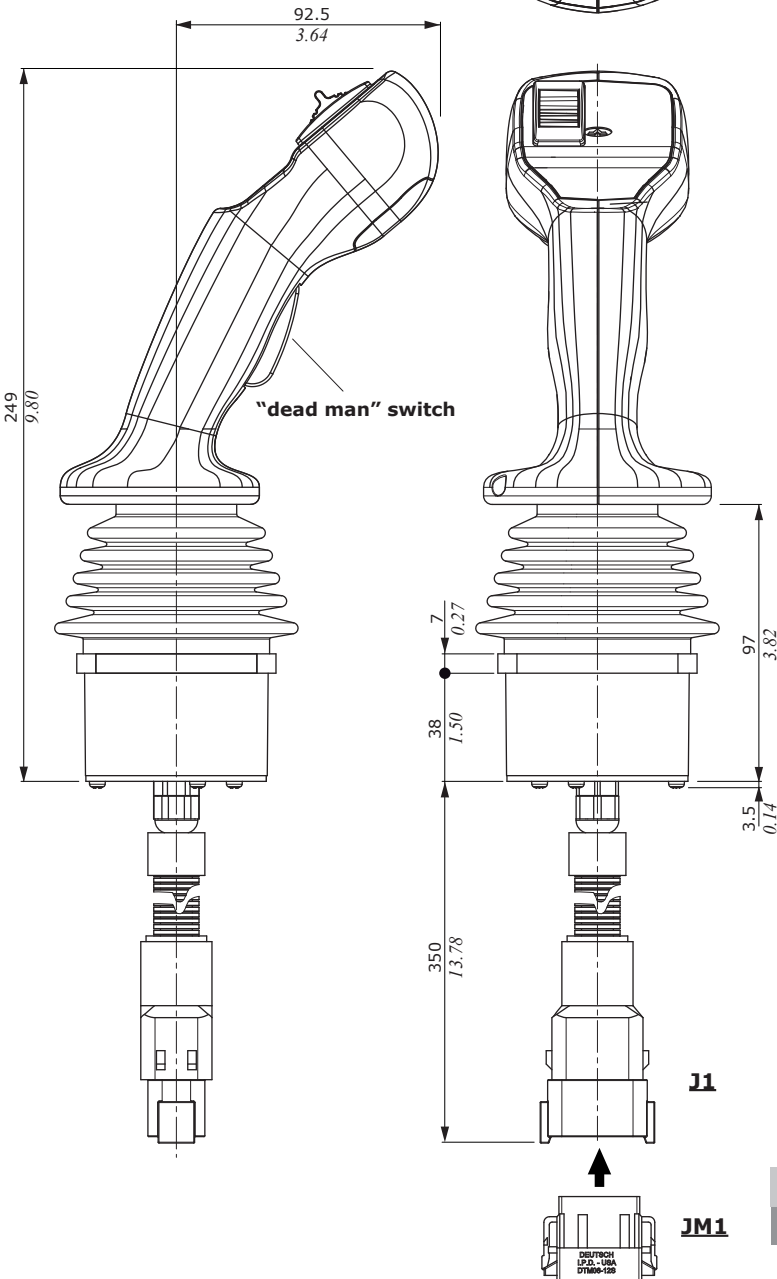
AJW analog joystick

Dimensions and features

DTM04-12PA
Deutsch connector



— Output A signal
— Output B redundant optional signal

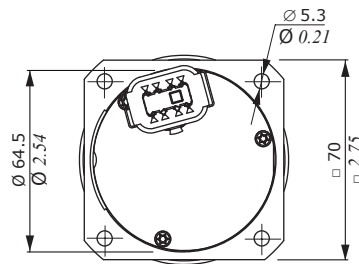
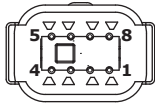


Mating connector

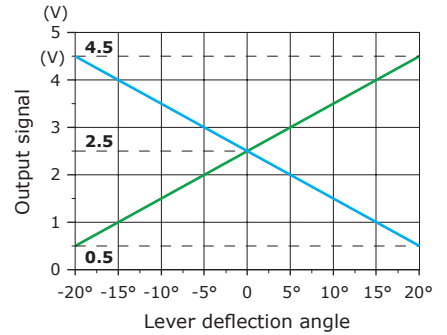
Name	Type
JM1	DTM06-12SA Deutsch

Dimensions and features

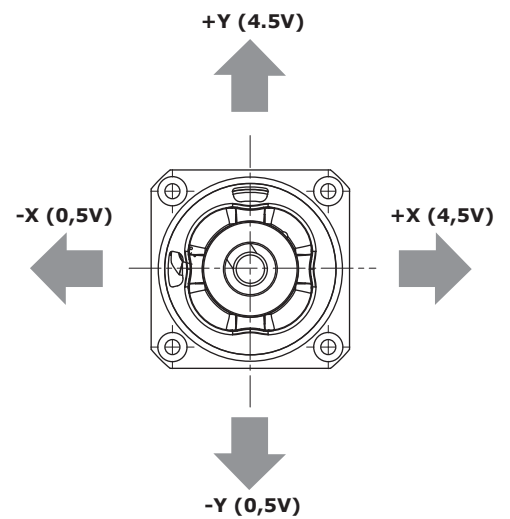
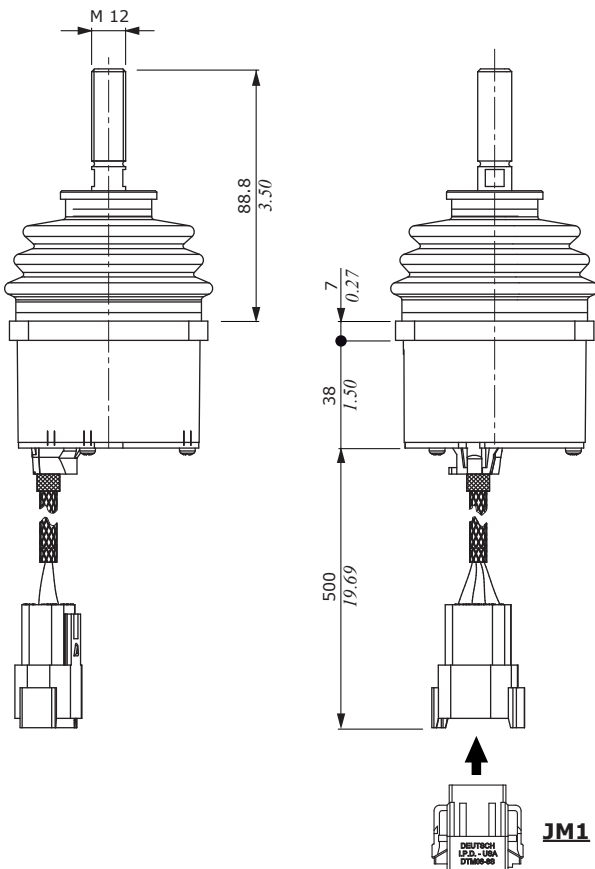
DTM04-8P
Deutsch connector



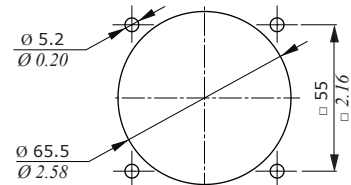
Joystick output signal



- Output A signal
- Output B redundant optional signal



Panel cut out



Mating connector

Name	Type
JM1	Deutsch DTM06-8S

NOTE (*): Weather protection IP67-IPX9K above the panel, IP57-IPX9K below the panel



CJW CAN bus joystick

- Contactless single or double axis joysticks
- CAN bus models
- The contactless technology guarantees long life and precise comfortable control
- Robust mechanical design; specifically tailored to off-highway operating machines
- Handles with additional proportional axis

Working conditions

Electrical specifications

CJW

Supply voltage		from 8 to 31 V
Current consumption	without grip	max. 100 mA @ 31 V
Output CAN protocols		CANopen Safety, SAE J1939, CANopen, CAN 2.0A and 2.0B, ISOBUS (AUX-N compliant)

Mechanical specifications

Lever angle	operation	$\pm 20^\circ$ both axis
	tolerance	± 1
Lever force (X,Y axis)	stroke end	$6 \pm 1\text{N}$ (fully actuated 190 mm - 7.48 in above flange)
Operating life	on each axis (full stroke cycles)	$> 10^6$
Weight	without grip	0.50 Kg (1.10 lb)

Environmental specifications

Working temperature		from -40°C to $+85^\circ\text{C}$ (from -40°F to 185°F)
Storage temperature		from -40°C to $+85^\circ\text{C}$ (from -40°F to 185°F)
Weather protection	on the fixing plan	IP65
EMC compatibility		100 V/m - ISO13766, ISO14982

"Dead man" switch features

Contact type		NA
Current rating (24 VDC)		200 mA resistive load
Mechanical life (nr. of operations)		10^6
Electric life (nr. of operations)		3×10^4
Operating force		3.4 N
Weather protection		IP67

Test specifications

Mechanical vibration	random	from 5 to 500 Hz, $5,4 \times 10^4$ to $0,56\text{ g}^2/\text{Hz}$, 100 h each axis
	sinusoidal	40 m/s^2 from 10 to 2000 Hz
	bumps	100 applications - $400\text{ m/s}^2 \times 6\text{ ms}$
Humidity	96%	240 h
Thermal shock		100 cycles, from -40°C to 85°C and back, $50^\circ\text{C}/\text{min}$ (100 cycles, from -40°F to 212°F and back, $122^\circ\text{F}/\text{min}$)
Salt spray	exposure	100 h

Control components

CJW CAN bus joystick

Configurations

	Code	183530011
	Protocol	CANopen
	Description	CJW2010A-PZTM0200BQ-0R-8R2-WN140-ZN140/A8F12
	Plate	2 ARW* type proportional rollers (W-Z)
Front zone	"dead man" switch (P0), 1 push-button with spring return (P8)	

See page 16

	Code	183530012
	Protocol	CANopen
	Description	CJW2010A-PZTA2101BQ-0R-1R2-2R2-URL-ZN140/A8F12-<JOYSTICK SX>
	Plate	1 ARW* type proportional roller (Z), 2 T* type push-buttons with spring return (P1-P2), 1 LED (LU); left configuration
Front zone	"dead man" switch (P0)	

See page 16

	Code	183530057
	Protocol	SAE J1939
	Description	CJW2010A-PZTM0200BQ-0R-8R2-WN140-ZN140/A8F12
	Plate	2 ARW* type proportional rollers (W-Z)
Front zone	"dead man" switch (P0), 1 push-button with spring return (P8)	

See page 16

	Code	183530013
	Protocol	CANopen
	Description	CJW2010A-PZTA2101CQ-0R-4R2-5R2-URL-WN140/A8F12-<JOYSTICK DX>
	Plate	1 ARW* type proportional roller (W), 2 T* type push-buttons with spring return (P1-P2), 1 LED (LU); right configuration
Front zone	"dead man" switch (P0)	

See page 16

	Code	183530058
	Protocol	CANopen Safety
	Description	CJW2010A-PZTM0200BQ-0R-8R2-WN140-ZN140/A8F12
	Plate	2 ARW* type proportional rollers (W-Z)
Front zone	"dead man" switch (P0), 1 push-button with spring return (P8)	

See page 16

	Code	183530045
	Protocol	SAE J1939
	Description	CJW2034A-AMH0402AQ-0R3(A)-6N5(K)-7RB(A)-8N5(K)-ALV-CLR/D2F08035(TC)
	Plate	2 LED (L1-L3) 1M type push-button with detent (P0)
Front zone	2M type push-button (P6-P8), 1K type push-button with spring return (P9)	

See page 17

	Code	183530044
	Protocol	SAE J1939
	Description	CJW2034A-AMH0703AQ-0R3(A)-4RB(A)-5RB(A)-6RB(A)-7RB(A)-8RB(A)-9RB(A)-ALV-BLY-CLR/F1F05150(TC)
	Plate	3 LED (L1-L2-L3), 1M type pushbutton with detent (P0)
Front zone	4M type pushbutton with spring return (P6-P7-P8-P9)	
Lateral zone	2M type pushbutton with spring return (P4-P5)	

See page 18

	Code	183530043
	Protocol	ISOBUS
	Description	CJW2044A-AMH1003AQ-0R3(A)-1RB(A)-2RB(A)-3RB(A)-4RB(A)-5RB(A)-6RB(A)-7RB(A)-8RB(A)-9RB(A)-ALV-BLY-CLR/A3M09030(TC)
	Plate	3 LED (L1-L2-L3), 1M type push-button with detent (P0)
Front zone	4M type push-button with spring return (P6-P7-P8-P9)	
Lateral zone	5M type push-button with spring return (P1-P2-P3-P4-P5)	

See page 19

NOTE (*): for component features see next page

Electric device features

ARW type proportional roller

Supply voltage	from 8 to 32 VDC
Max. current consumption	< 24 mA
Max. output current	1 mA
Output signal (range)	0,5 - 4,5 V
Output signal (central position)	2,5V
Signal tolerance (central position and stroke end)	±100 mV
Minimum load	10 KΩ
Actuator deflection angle	± 35° (±1°)
Mechanical life (nr. of operations)	10 ⁶
Operating force	2 N
Mechanical vibration	IEC 68-2
Mechanical shock	EN 60068-2-29 (pulse 400m/s ² x 6 ms, 100 times)
Weather protection	IP67-IP69K
EMC compatibility	ISO 13766 ISO 14982



T type ON/OFF push-button

Execution	spring return
Contact type	normally open
Current rating	200 mA resistive load @ 12 VDC
Mechanical life (nr. of operations)	10 ⁶
Electric life (nr. of operations)	20x10 ⁴
Weather protection	IP64



M type ON/OFF push-button

Execution	spring return, with detent
Contact type	normally open
Current rating	200 mA @ 12 VDC resistive load
Mechanical life (nr. of operations)	10 ⁶
Electric life (nr. of operations)	5x10 ⁵
Mechanical life (nr. of operations)	IP67
Electric life (nr. of operations)	10 mA

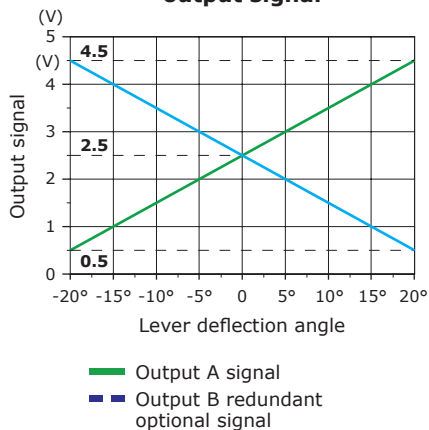


K type ON/OFF push-button

Execution	spring return
Contact type	normally open
Current rating	5 A resistive load @ 12 VDC
Mechanical life (nr. of operations)	10 ⁵
Electric life (nr. of operations)	25x10 ³
Weather protection	IP64



**Proportional roller
output signal**



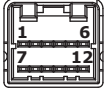
Control components

CJW CAN bus joystick

Dimensions and features

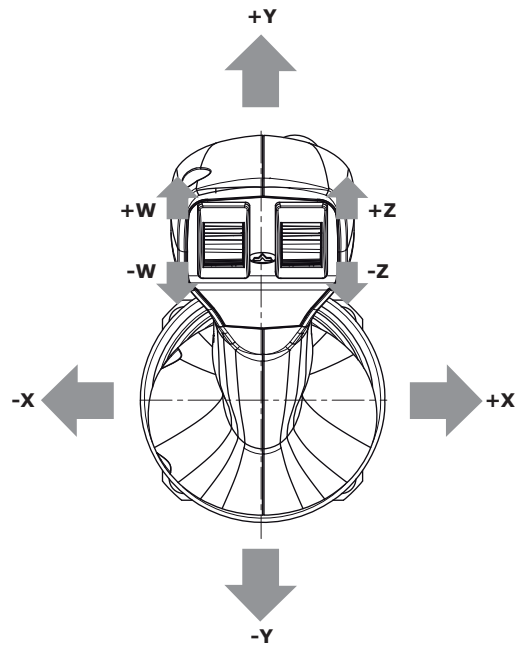
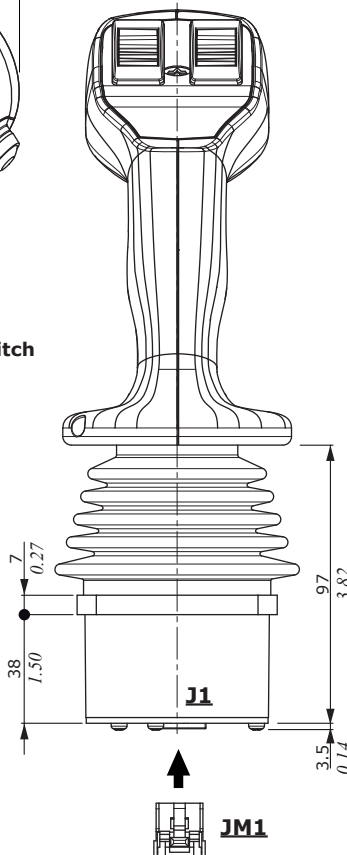
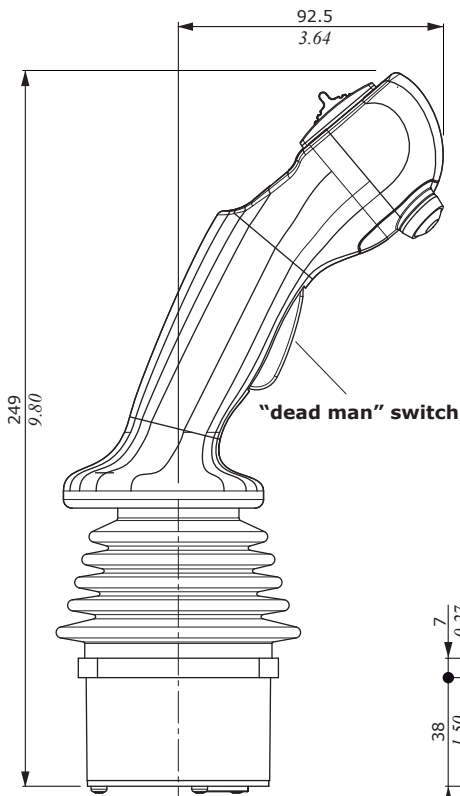
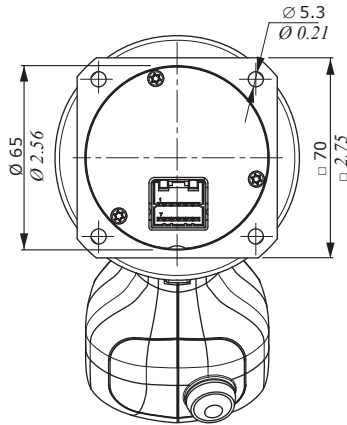
For configuration see page 14.

Multi-lock 040 series
Tyco connector
 (tin plated contacts)

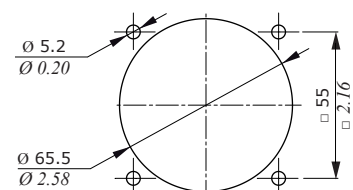


J1 connector PIN-OUT

Pin	Function	Pin	Function
1	not conn.	7	not conn.
2	not conn.	8	not conn.
3	CAN_L	9	not conn.
4	CAN_H	10	not conn.
5	VJ-	11	VJ+
6	not conn.	12	not conn.



Panel cut out



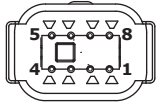
Mating connector

Name	Type
JM1	Multilock series 040 Tyco

Dimensions and features

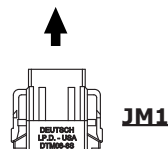
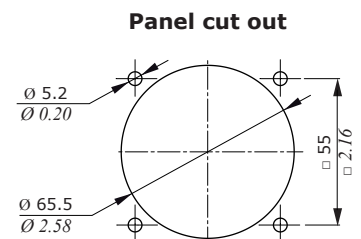
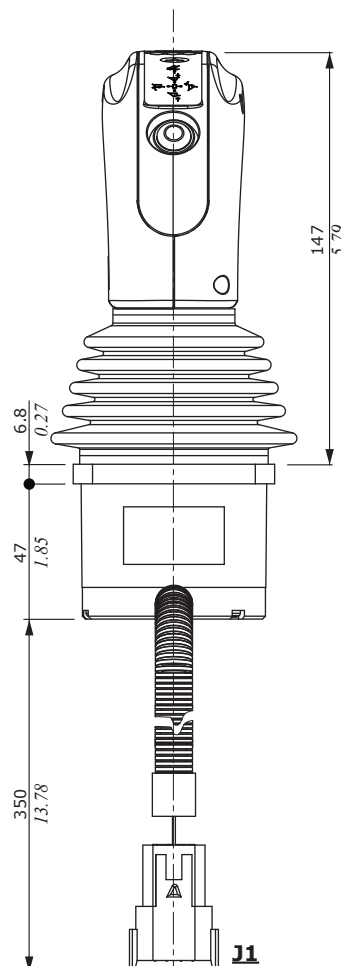
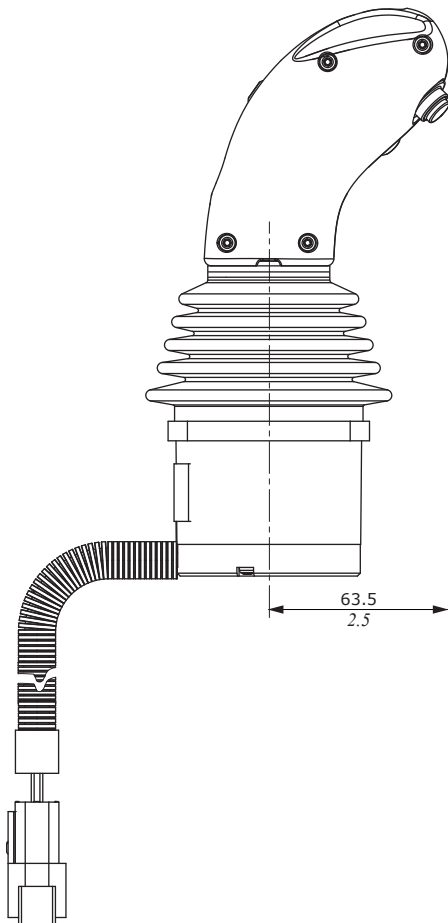
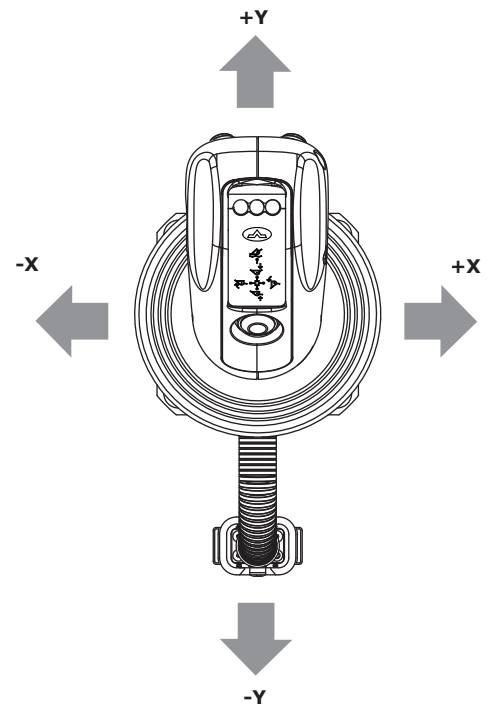
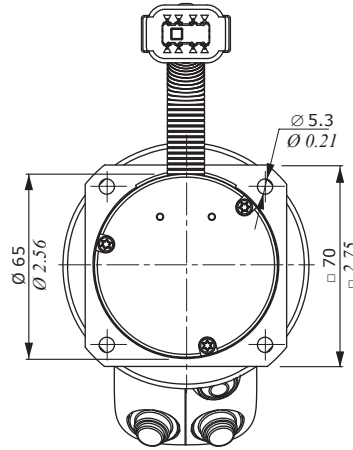
For configuration see page 14.

DTM04-8P
Deutsch connector
 (nichel plated contacts)



J1 connector PIN-OUT

Pin	Function	Pin	Function
1	VJ+	5	Push-button P8
2	CAN_L	6	Push-button P6
3	CAN_H	7	VJ+
4	VJ-	8	plugged



Mating connector

Name	Type
JM1	DTM06-8S Deutsch

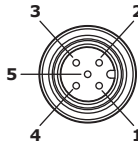
Control components

CJW CAN bus joystick

Dimensions and features

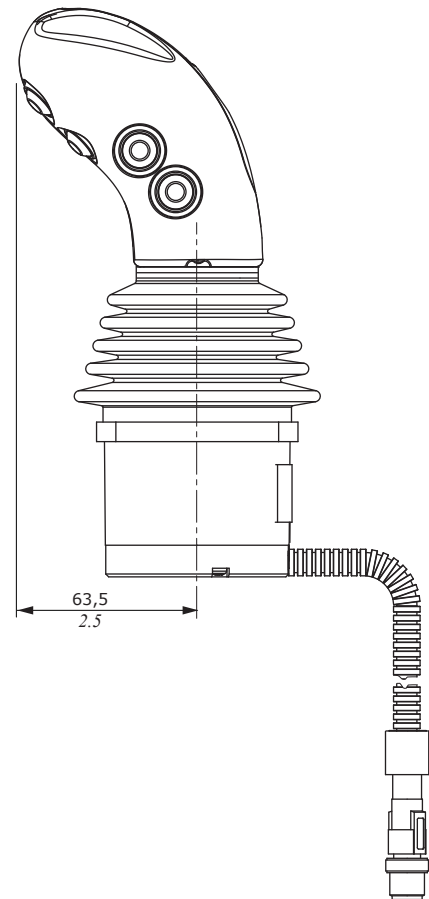
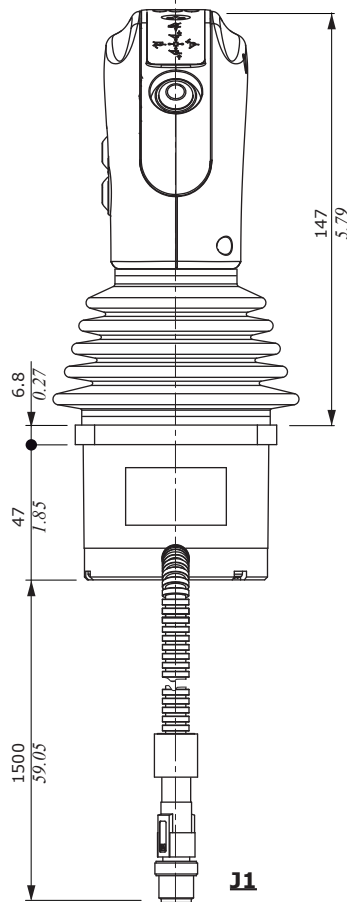
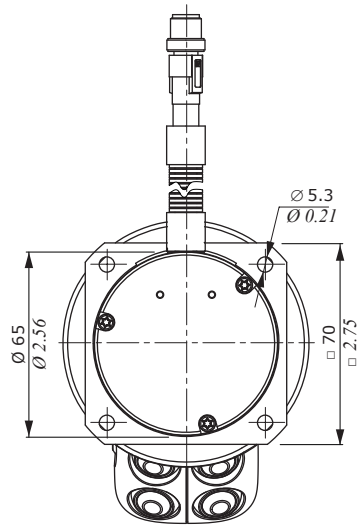
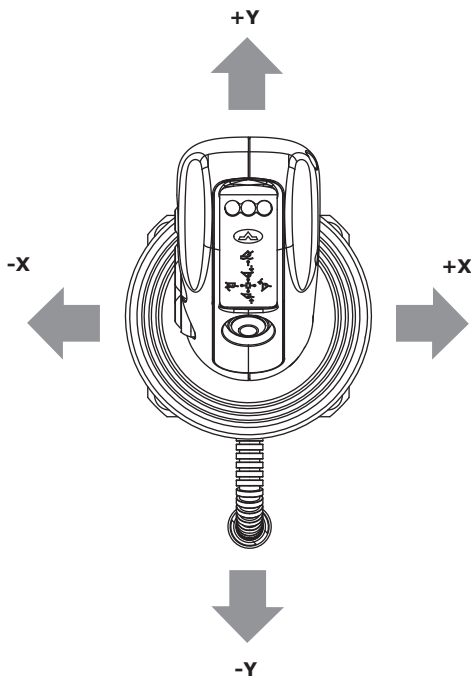
For configuration see page 14.

**M12-5P
male connector**

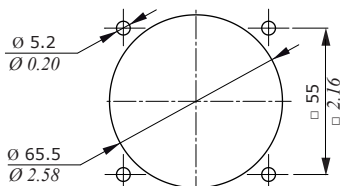


**J1 connector
PIN-OUT**

Pin	Function
1	CAN_H
2	CAN_L
3	VJ+
4	VJ-
5	VK+



Panel cut out



J1

JM1

Mating connector

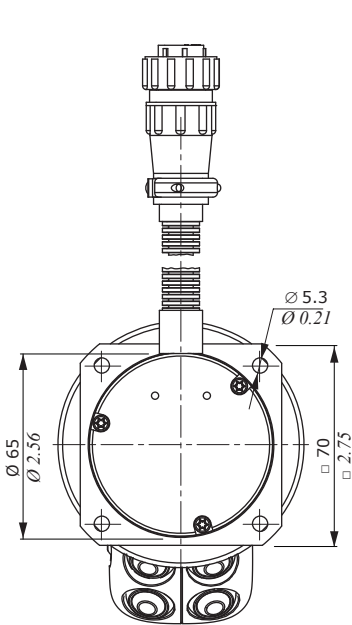
Name Type

JM1 5 poles - M12 female

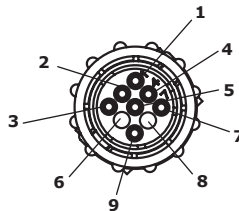
CJW CAN bus joystick

Dimensions and features

For configuration see page 14.

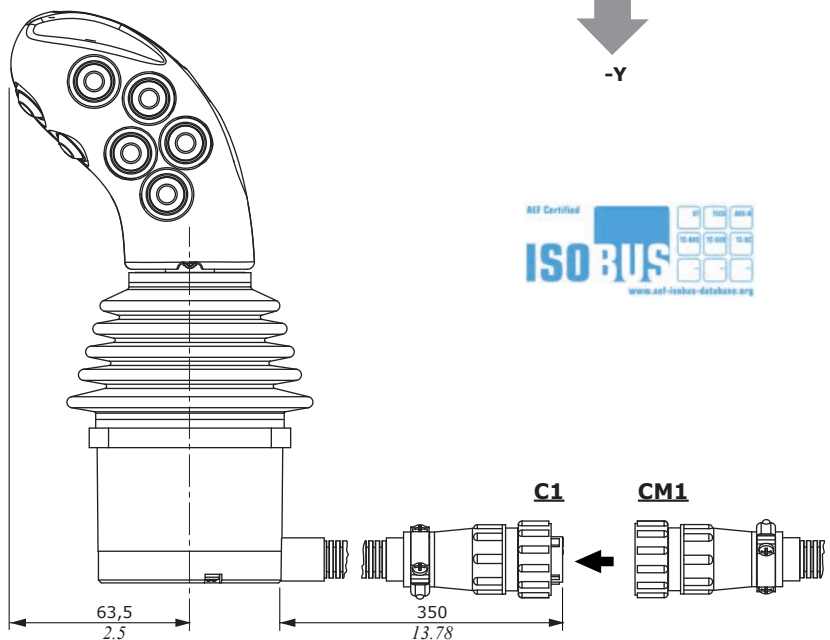
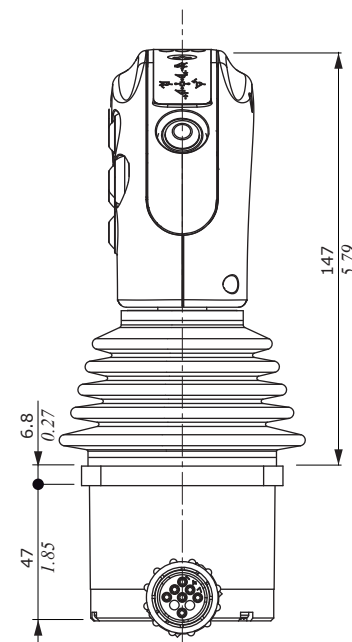
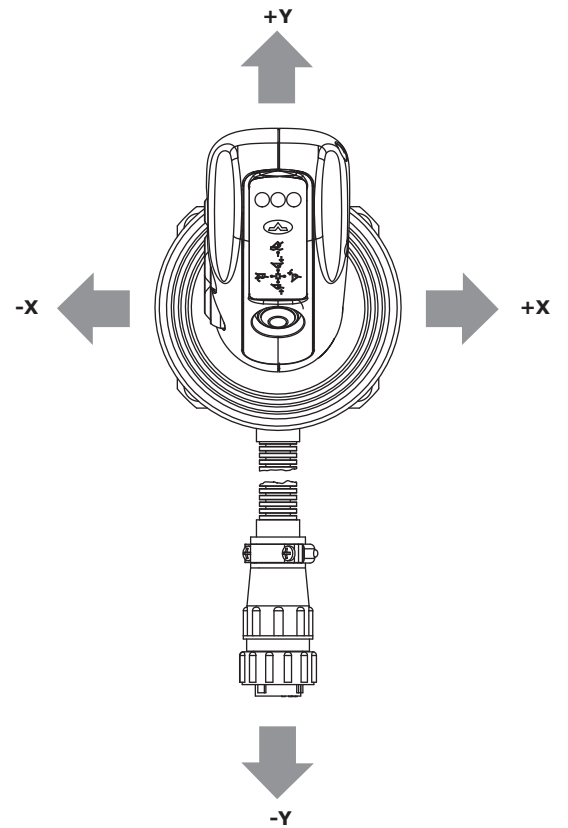


CPC-9P
AMP MPF connector
(selective gold plated contacts)

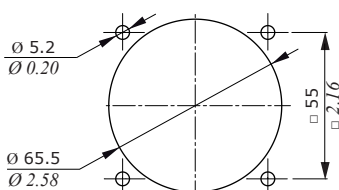


C1 connector PIN-OUT

Pin	Function	Pin	Function
1	VJ+	6	not conn.
2	CAN_L	7	VJ+
3	CAN_L	8	not conn.
4	CAN_H	9	VJ-
5	CAN_H		



Panel cut out



Mating connector

Name	Type
CM1	AMP CPC - 9 FPM



Potentiometric joysticks

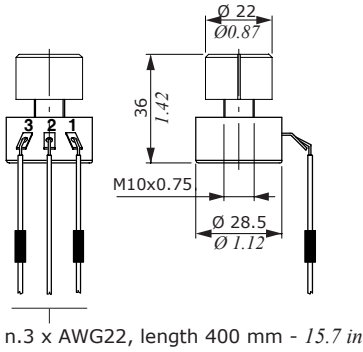
- Potentiometric/ratiometric signal
- Analog proportional signal
- On/off redundant, or neutral, signal
- Robust construction

Working conditions		
General features	PTM104	MDN142
Type	rotative potentiometer	single axis joystick
Max. supply voltage (V _{in})	35VDC	35VDC
Power absorption	0.4 W @ 40°C (104°F)	0.25W @ 25°C (77°F)
Connector	flying leads	Dupont Dubox
Lever deflection - Working angle	300° ± 5°	±30°
Average lifetime (nr. of operations)	10 ⁴	>5x10 ⁶
Working temperature	from -40° C to +70° C (from -40° F to 158° F)	from -25° C to +70° C (from -13° F to 158° F)
Weather protection (on the fixing plan)	nd	IP66
Analog track		
Total resistance	5KΩ ±20%	5KΩ ±20%
Output signal range (V _{out} /V _{in} %)	from 50% to 75%	from 25% to 75%
Central position signal (V _{out} /V _{in} %)	50% ACKW	50%
Directional and center switch off		
Switch center gap	/	2.5° either directions
Max. load current	nd	2mA

Control components

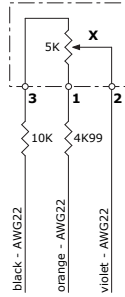
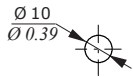
PTM104 rotative potentiometer

Dimensions and features



n.3 x AWG22, length 400 mm - 15.7 in

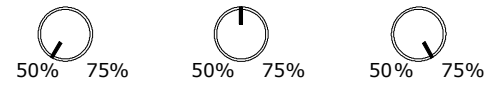
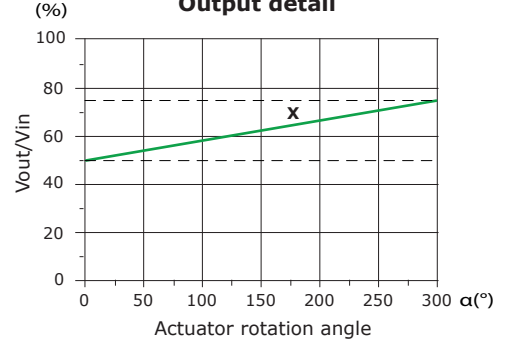
Panel cut out



Pin	Wire	Description
1	orange	Supply + (VJ+)
2	violet	Proportional signal (X)
3	black	Supply - (VJ-)

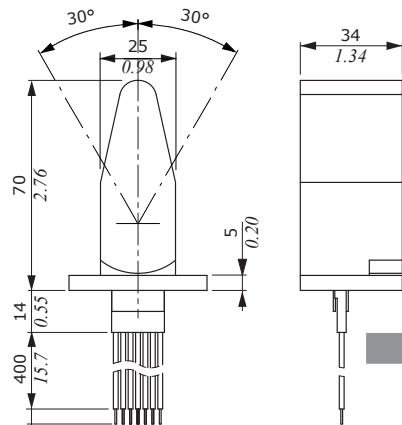
Ordering codes	
Description	Code
PTM104 potentiometer	5POT100005

Output detail



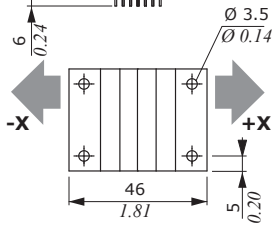
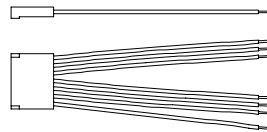
MDN142 potentiometric joystick

Dimensions and features

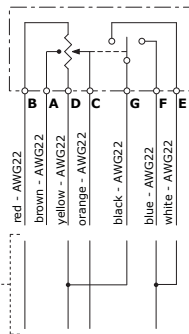
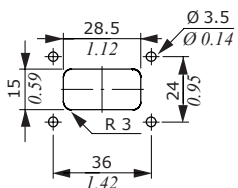


Connecting cable

7 poles cable included in the joystick, with Dubox Housing 65240-007 type female connector and AWG22 wires with tin-plate terminals.

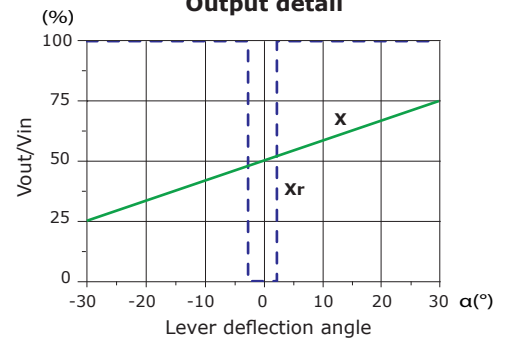


Panel cut out



Interface: to use the joystick redundancy option, this wiring is required

Output detail



— Output X signal
 - - - Output Xr redundant signal

Ordering codes	
Description	Code
MDN142 complete joystick	VJOY200001
7 poles cable, as spare part	W0450003

Pin	Wire	Description
A	brown	Center proportional signal
B	red	Supply - (VJ-)
C	yellow	Supply + (VJ+)
D	orange	Proportional signal (X)
E	white	Signal redundancy - (Xr)
F	blue	Signal redundancy + (Xr)
G	black	Common redundancy