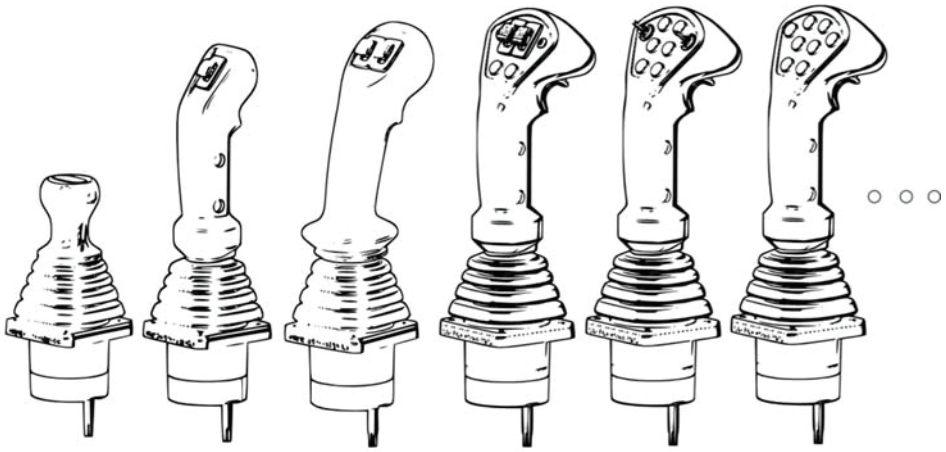
CAN JOYSTICK

SURE GRIP™ CONTROLS INC.
A Bailey Hydraulics Company

TECHNICAL INFORMATION

Description

Sure Grips flexible CAN bus control is available for all of Sure Grips standard and optional handle mounted switches allowing for a wide variety of custom configurations. Now into our second generation of the CAN control the new design incorporates many features that add to the long term reliability and serviceability of the control. The control supports the protocol SAE J1939 with the ability to map the output of the handle controls to any PGN combination shown in table 3 below.

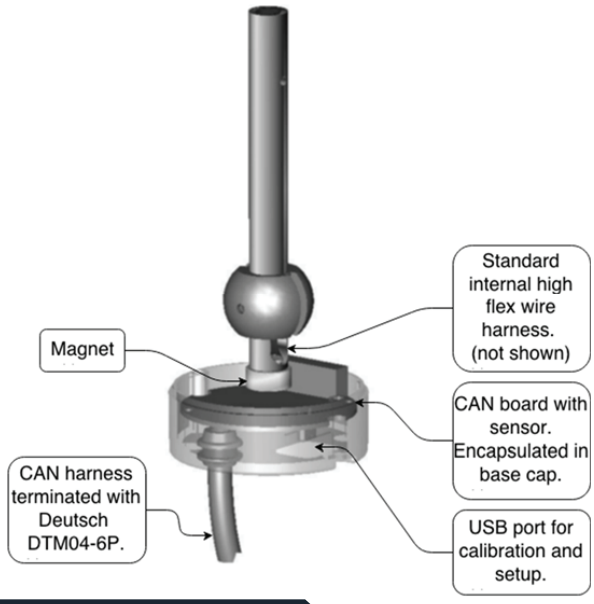


Safety Handle

Our CANbus joystick design incorporates many features that improve the safety and endurance of its operation. All input signals provided from the faceplate switches are monitored to ensure that their output is within the normal operating range. If a signal is found to be outside of the normal operating range then an error is indicated through the J1939 SPN error reporting method and any values generated by the position of the control are immediately set to a neutral state.

Joystick

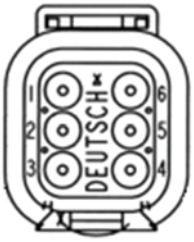
By combining the joystick position sensor and application board into a single integrated unit we have been able to create a solution that is more reliable and offers simplified options for serviceability. The basis of the positional sensing technology is a single HALL effect chip that monitors the pendulum motion of a magnet generating a linear output for both X and Y axises. This chip includes 2 independent HALL sensors in a single package which are utilized to provide a sensor redundancy system that when enabled will ensure the joystick is operating within the operating parameters indicated in Table 2. An internal wiring harness has been developed that is optimized to provide a high operational flex life expectancy and a convenient means for future serviceability.



Setup and Diagnostics

The joystick design incorporates a USB port for ease of configuration and service. Through this port the joystick can be calibrated, configured and upgraded if new features are required. To accommodate field service requirements a utility is available from our website that allows an installation technician to easily change the source address and transmit rate.

CAN bus termination and Pinout



Rear View
DTM04-6P
(Mating Part#:
DTM06-6S.)

Pin	Function	Pin	Function
1	Ground	6	n/c
2	Power 12 - 24 Vdc	5	Shield
3	CAN High	4	CAN Low

USB Termination

Mating cable: USB ‘A’ to USB ‘Micro-B’

Specifications

Electrical.

Electrical - Parameters	Min	Max	Unit
Supply Voltage	10	34	Volts
Supply Current	20	200	mA
Reference Voltage	4.75	5.25	Volts
Reference Current	200	240	mA

Table 1.

Redundancy.

Safety - Dual Redundancy	Min	Max	Unit
Dual Sensor Monitoring Tolerance joystick	-	20	%
Out of range Monitoring	-	10	%

Table 2.

J1939 Protocol support.

J1939 Message (Default)	J1939 Message (Alternate #1)	J1939 Message (Alternate #2)	J1939 Message (Alternate #3)
BJM1 -Button 1	-	-	-
BJM1 -Button 2	-	-	-
BJM1 -Button 3	-	-	-
BJM1 -Button 4	-	-	-
BJM1 -Button 5	-	-	-
BJM1 -Button 6	-	-	-
BJM1 -Button 7	EJM1 - X-axis	-	BJM2 -Button 1 & 2
BJM1 -Button 8	BJM1 - Y-axis	-	BJM2 -Button 3 & 4
BJM1 -Button 9	BJM1 - Theta-axis	AUXIO - AuxI/O #4	BJM2 -Button 5 & 6
BJM1 -Button 10	BJM2 - X-axis	AUXIO - AuxI/O #3	BJM2 -Button 7 & 8
BJM1 -Button 11	BJM2 - Y-axis	AUXIO - AuxI/O #2	BJM2 -Button 9 & 10
BJM1 -Button 12	EJM2 - X-axis	-	BJM2 -Button 11 & 12
AUXIO - AuxI/O #1	-	-	-

Table 3.

From J1939-71	PSN
BJM1 - Basic Joystick Message 1	64982
EJM1 - Extended Joystick Message 1	64983
BJM2 - Basic Joystick Message 2	64984
EJM1 - Extended Joystick Message 2	64985
AUXIO -Auxiliary Input/Output Status	95241

Table 4.

J1939 Protocol - Adjustments	Min	Max	Unit
Source Address (see note 1)	0x00	0xFF	hex
Message Rate	100	20	mS

Table 5.
note 1. Source address also selectable via external pin with alternate being 0x34.