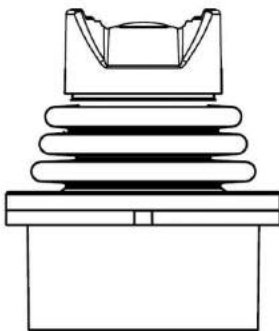




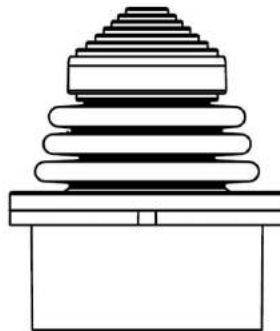
Omc25 series

Hall effect miniature proportional joystick

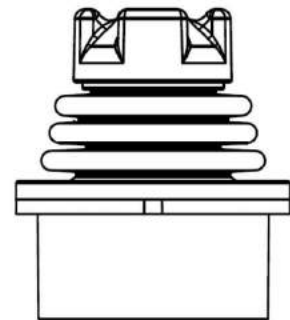
2 Axis Hall Joystick



OMC25A-



OMC25B-



OMC25C-

The OMC25 Series Thumbstick is a proportional two axes joystick in a miniature package. Featuring non-contacting Hall effect technology for long life performance, the OMC25 Series Thumbstick is available with multiple linear output options including single and dual (redundant) outputs. It is similar in size and operation to "gamepad" controls, but in a rugged industrial package. Typical applications include pendant and remote controls as well as joystick handle and arm rest integration

KEY FEATURES

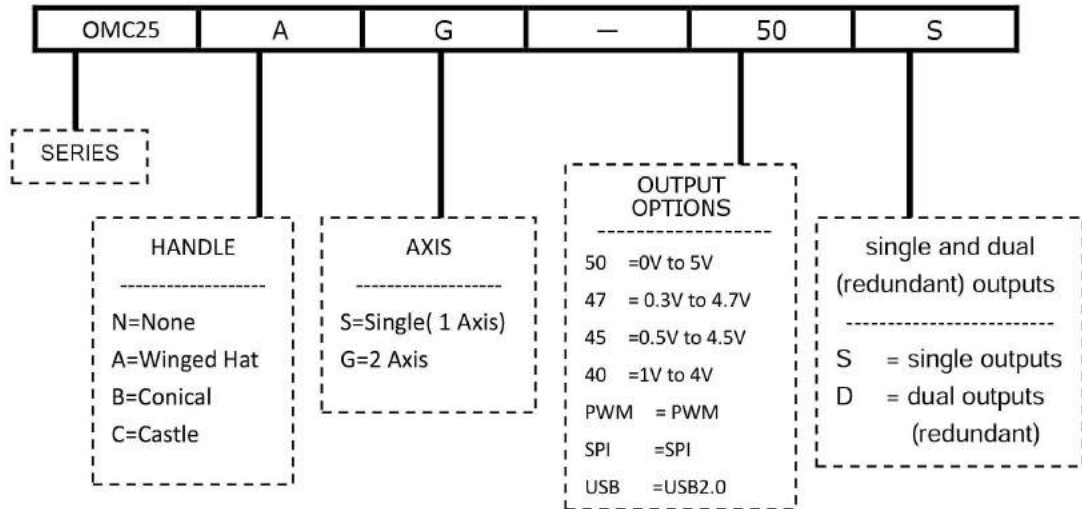
- ✧ 2 axes
- ✧ 3D Hall sensors (contactless)
- ✧ Non-contact Hall effect technology
- ✧ Submersible to 1m (3.28ft) per IP68
- ✧ Pressure washable to IP69K
- ✧ Redundant outputs available
- ✧ Rear or drop-in mounting available
- ✧ Interface: analog (0-5V)、USB、PWM



Omc25 series

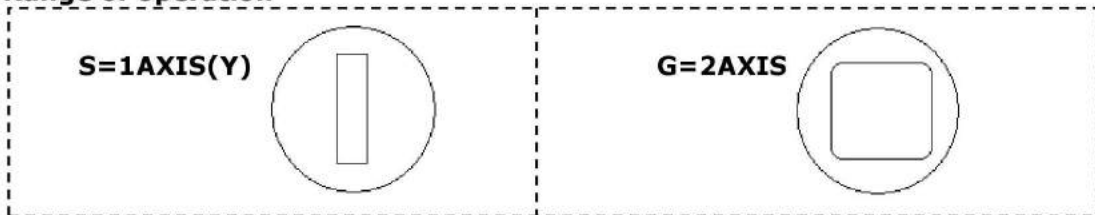
Hall effect miniature proportional joystick

OPTION SELECTION

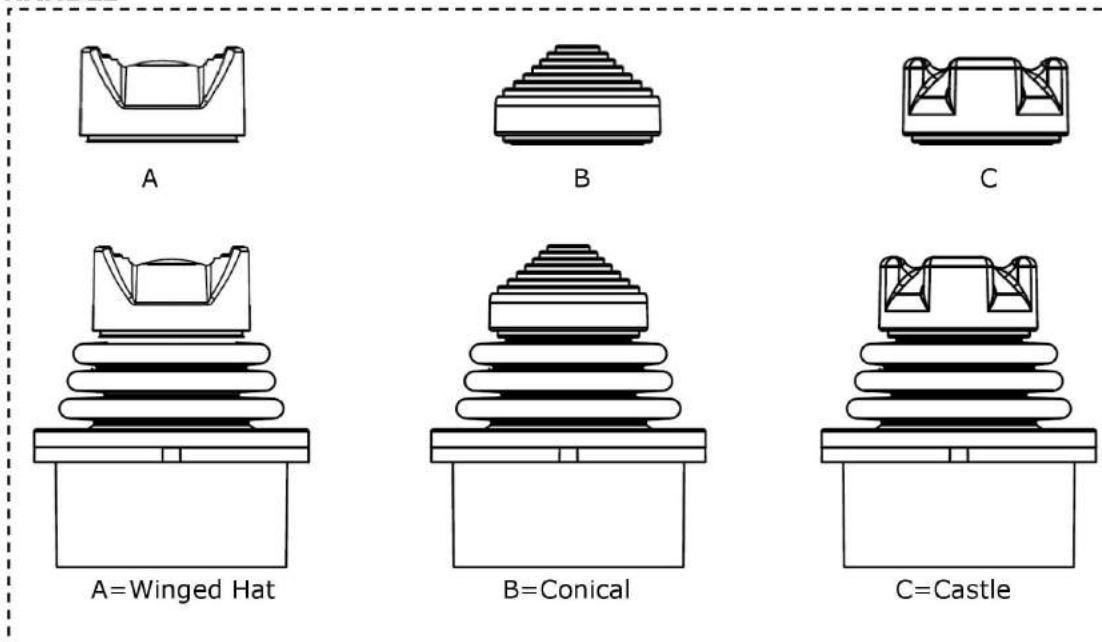


Contact factory for PWM configuration.
SPI 3line (SDO,SCK,SS),Contact factory for SPI Protocol.

Range of operation



HANDLE





Omc25 series

Hall effect miniature proportional joystick

MECHANICAL (FOR X, Y AXES)

Operating Force	3.1N±0.5N (0.70lbf±0.11lbf)
Maximum Vertical Load	200N (45lbf)
Maximum Horizontal Load	150N (33.7lbf)*
Mechanical Angle of Movement	±25° (50° total)
Life Cycles	>1 million
Mass/weight	18.25g ± 3.0g (0.64oz±0.11oz)
Lever Action (Centering)	Spring Centering

ENVIRONMENTAL

Operating Temperature	-40°C to +85°C (-40°F to +185°F)
Storage Temperature	-40°C to +85°C (-40°F to +185°F)
Sealing	IP68, IP69K**
EMC Immunity Level	EN61000-4-3
EMC Emissions Level	EN61000-6-3:2001
ESD	EN61000-4-2

ELECTRICAL SENSOR

Resolution	1.22mV
Supply Voltage Range	5.00V±0.01V
Reverse Polarity Max	-10V
Overvoltage Max	20V
Output Impedance	2Ω
Return to Center Voltage Tolerance	±250mV
Error Signal	1.0%

* Force applied to the top of the cap at full displacement.

** All options are IP68 and IP69K rated, however Drop-in mounting does not prevent panel ingress.

Note: The company reserves the right to change specifications without notice.



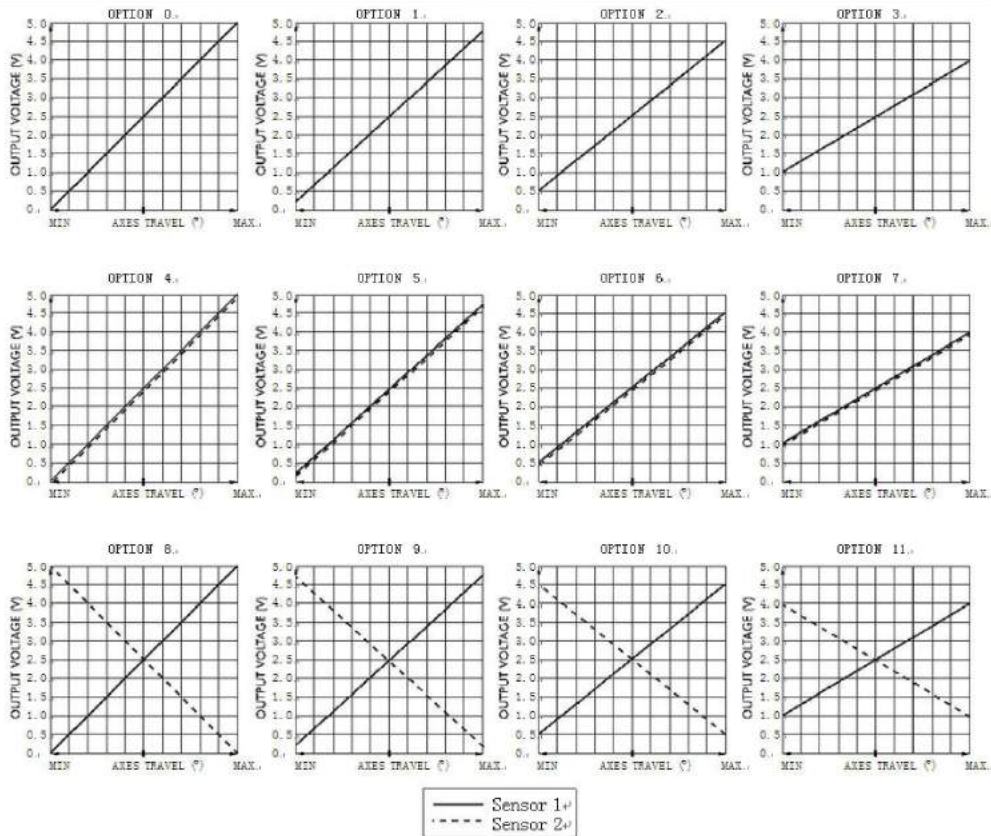


Omc25 series

Hall effect miniature proportional joystick

Analog signal output:

LINEAR OUTPUT OPTIONS^①



PWM Output Mode

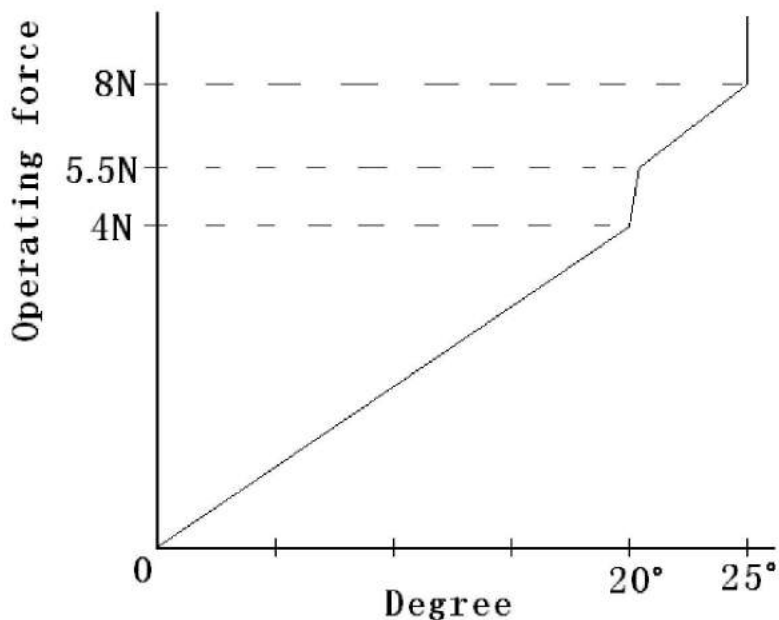
- ✧ The output signal is a digital signal with Pulse Width Modulation (PWM).
- ✧ the output stage is an open drain NMOS transistor (low side), to be used with a pull-up resistor to VDD.
- ✧ PWM level : high level at 100%
- ✧ The PWM frequency is 20KHZ ,The other frequency Contact factory



Omc25 series

Hall effect miniature proportional joystick

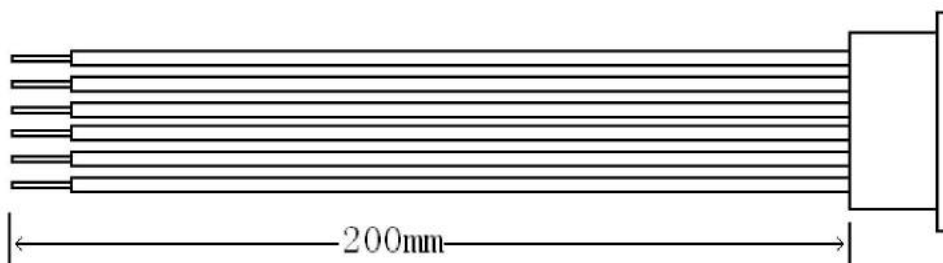
Operating force and angle drawing



Connector

Dual (redundant) output :Analog Voltage/PWM

- | | |
|-----------|------------|
| 1. Red | +5V |
| 2. Black | GND |
| 3. Yellow | X Signal 1 |
| 4. Green | Y Signal 1 |
| 5. Blue | X Signal 2 |
| 6. Brown | Y Signal 2 |



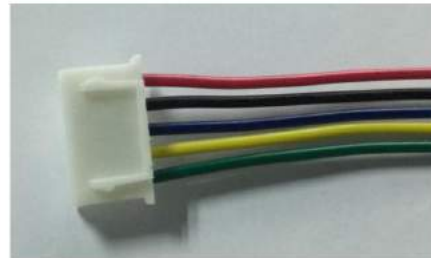
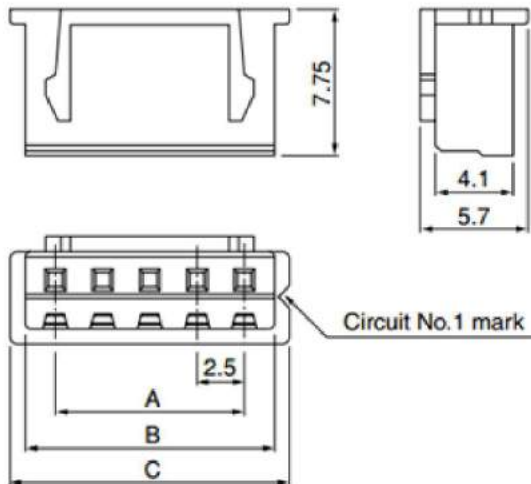


Omc25 series

Hall effect miniature proportional joystick

Connector: Single output

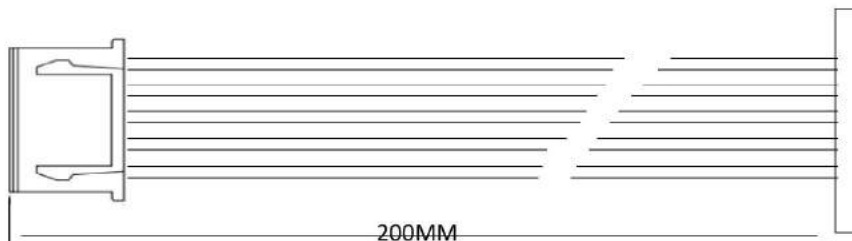
Model No:XHP-5



A=10.0 B=13.2 C=14.8 Q'ty/bag=1000

Analog Voltage/PWM

- | | |
|------------|----------|
| 1. Red | +5V |
| 2. Black B | GND |
| 3. Blue | NC |
| 4. Yellow | X Signal |
| 5. Green | Y Signal |



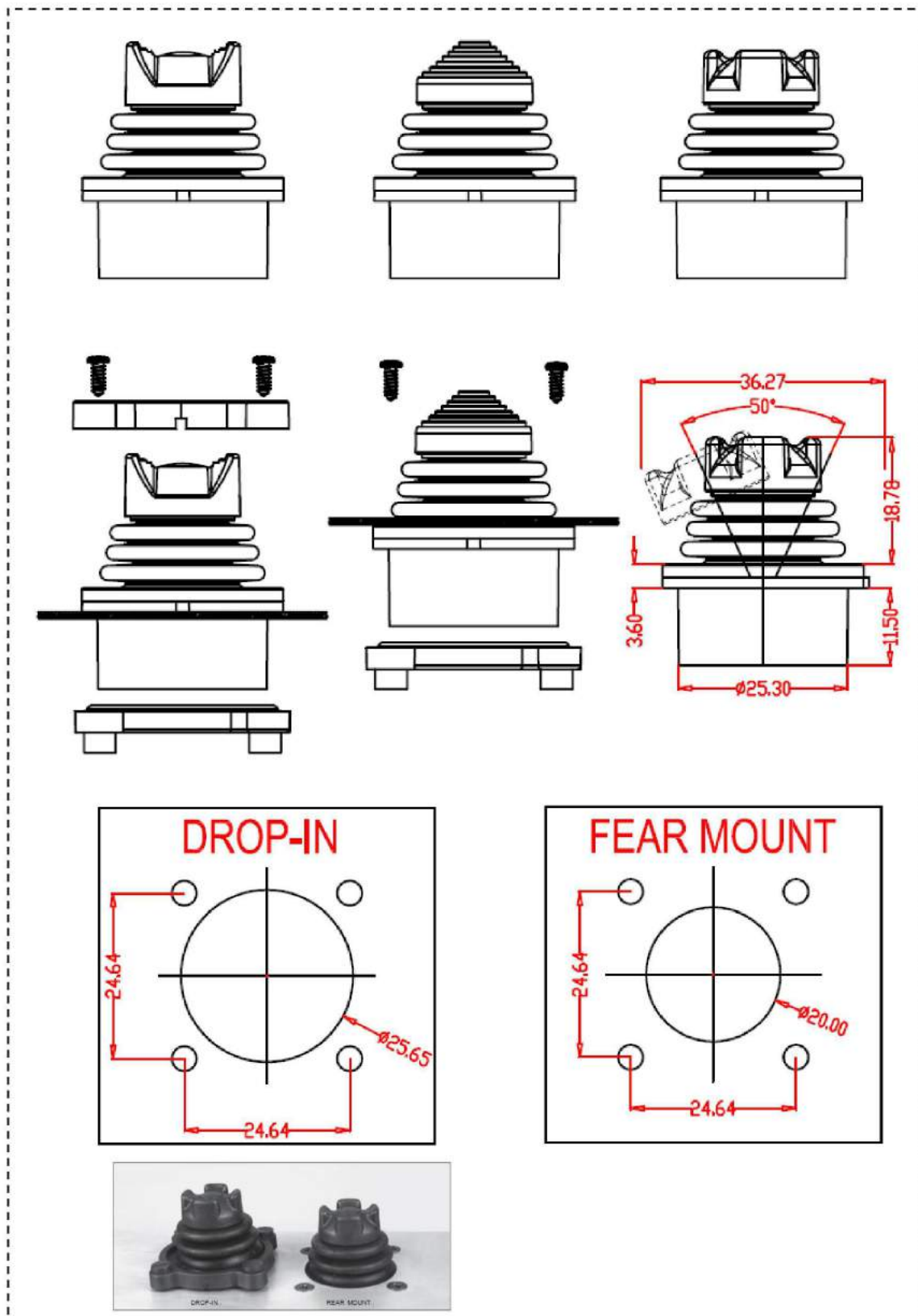
USB interface (Single output)

- | | |
|------------|-----|
| 1. Red | V+ |
| 2. Black B | GND |
| 3. Blue | D- |
| 4. Yellow | D+ |
| 5. Green | NC |



Omc25 series

Hall effect miniature proportional joystick





Omc25 series

Hall effect miniature proportional joystick

SPI Serial Protocol SPI

1. Introduction

The OMC25-SPI features a digital Serial Protocol mode. The OMC25-SPI is considered as a Slave node.

The serial protocol of the OMC25-SPI is a three wires protocol (/SS, SCLK, MOSI):

- /SS pin is a 5 V tolerant digital input
- SCLK pin is a 5 V tolerant digital input
- MOSI pin is a 5 V tolerant open drain digital input/output

The basic knowledge of the standard SPI specification is required for the good understanding of the present section.

2. SERIAL PROTOCOL Mode

the Joystick work in Slave mode

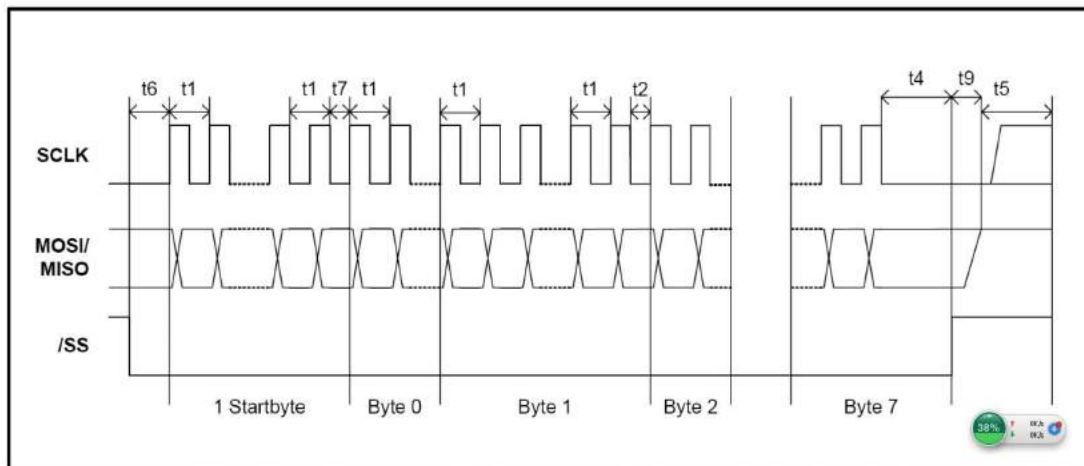
5. /SS (Slave Select)

- /SS pin is a 5 V tolerant digital input, Low level is enable.
- SCLK pin is a 5 V tolerant digital input
- MOSI-MISO pin is a 5 V tolerant open drain digital input/output

16.8. Timing

To synchronize communication, the Master deactivates /SS high for at least t_5 (1.5 ms). In this case, the Slave will be ready to receive a new frame. The Master can re-synchronize at any time, even in the middle of a byte transfer.

Note: Any time shorter than t_5 leads to an undefined frame state, because the Slave may or may not have seen /SS inactive.





Omc25 series

Hall effect miniature proportional joystick

Timings	Min ⁽³¹⁾	Max	Remarks
t1	- 2.3 μs / 6.9 μs	-	No capacitive load on MISO. t1 is the minimum clock period for any bits within a byte.
t2	- 12.5 μs / 37.5 μs	-	t2 the minimum time between any other byte
t4	- 2.3 μs / 6.9 μs	-	Time between last clock and /SS=high=chip de-selection
t5	- 300 μs / 1500 μs	-	Minimum /SS = Hi time where it's guaranteed that a frame re-synchronizations will be started.
t5	0 μs	-	Maximum /SS = Hi time where it's guaranteed that NO frame re-synchronizations will be started.
t6	- 2.3 μs / 6.9 μs	-	The time t6 defines the minimum time between /SS = Lo and the first clock edge
t7	- 15 μs / 45 μs	-	t7 is the minimum time between the StartByte and the Byte0
t9	-	< 1 μs	Maximum time between /SS = Hi and MISO Bus High-Impedance
T _{StartUp}	-	< 10 ms / 16 ms	Minimum time between reset-inactive and any master signal change

.9. Slave Reset

On internal soft failures the Slave resets after 1 second or after an (error) frame is sent. On internal hard failures the Slave resets itself. In that case, the Serial Protocol will not come up. The serial protocol link is enabled only after the completion of the first synchronization

10. Frame Layer

The Figure 17 gives the timing diagram for the SPI Frame. The latch point for the angle measurement is at the last clock before the first data frame byte.

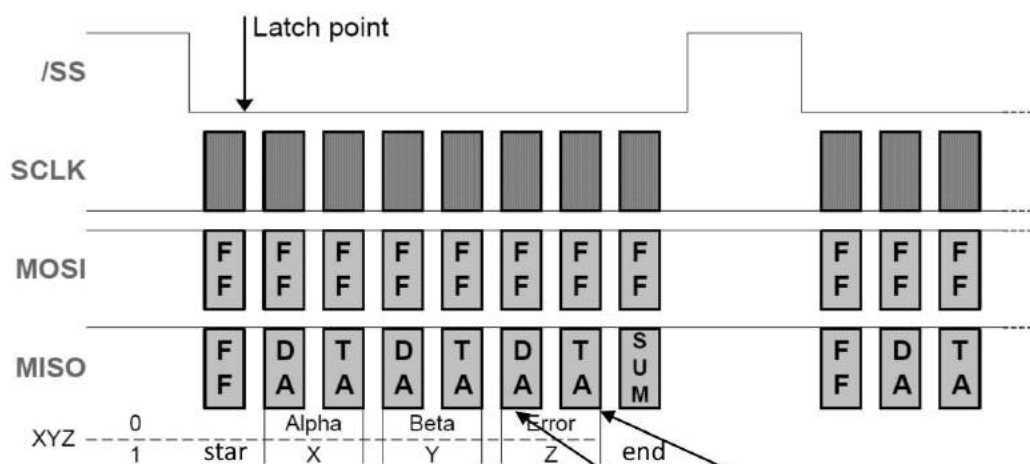


Figure 17 - Timing Diagram for the SPI Frame

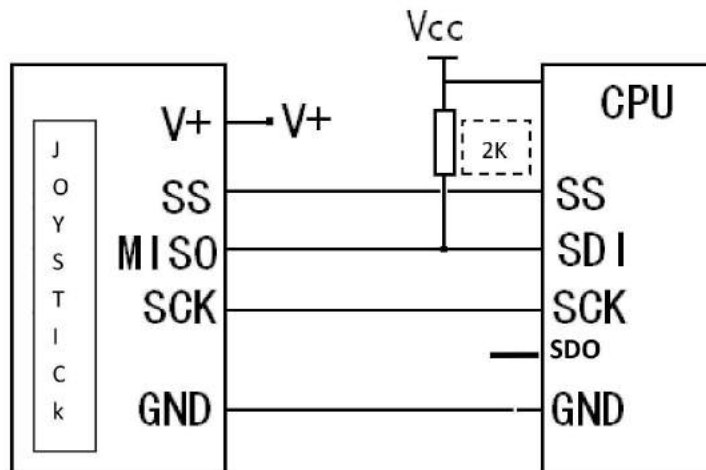
X,Y = 0X0000-0XFFFF , Z=0X0000 SCLK ≤ 1Mhz (low byte) (high byte)
 SUM=XXL+XXH+YYL+YYH+ZZL+ZZH (low byte)
 Example : FF 00 80 01 80 00 00 01



Omc25 series

Hall effect miniature proportional joystick

SPI Connection diagram

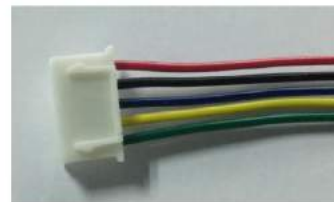


Connector Model No:XHP-5

SPI interface (Single output)

Connector Model No:XHP-5

- | | |
|-----------|------|
| 1. Red | V+ |
| 2. Black | GND |
| 3. Blue | SS |
| 4. Yellow | SCK |
| 5. Green | MISO |



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