

XAP-SPC-001-D-E-Shift2_LV



Gear box actuator E-Shift 2-LV

Instruction manual

17/10/2016

Modifications

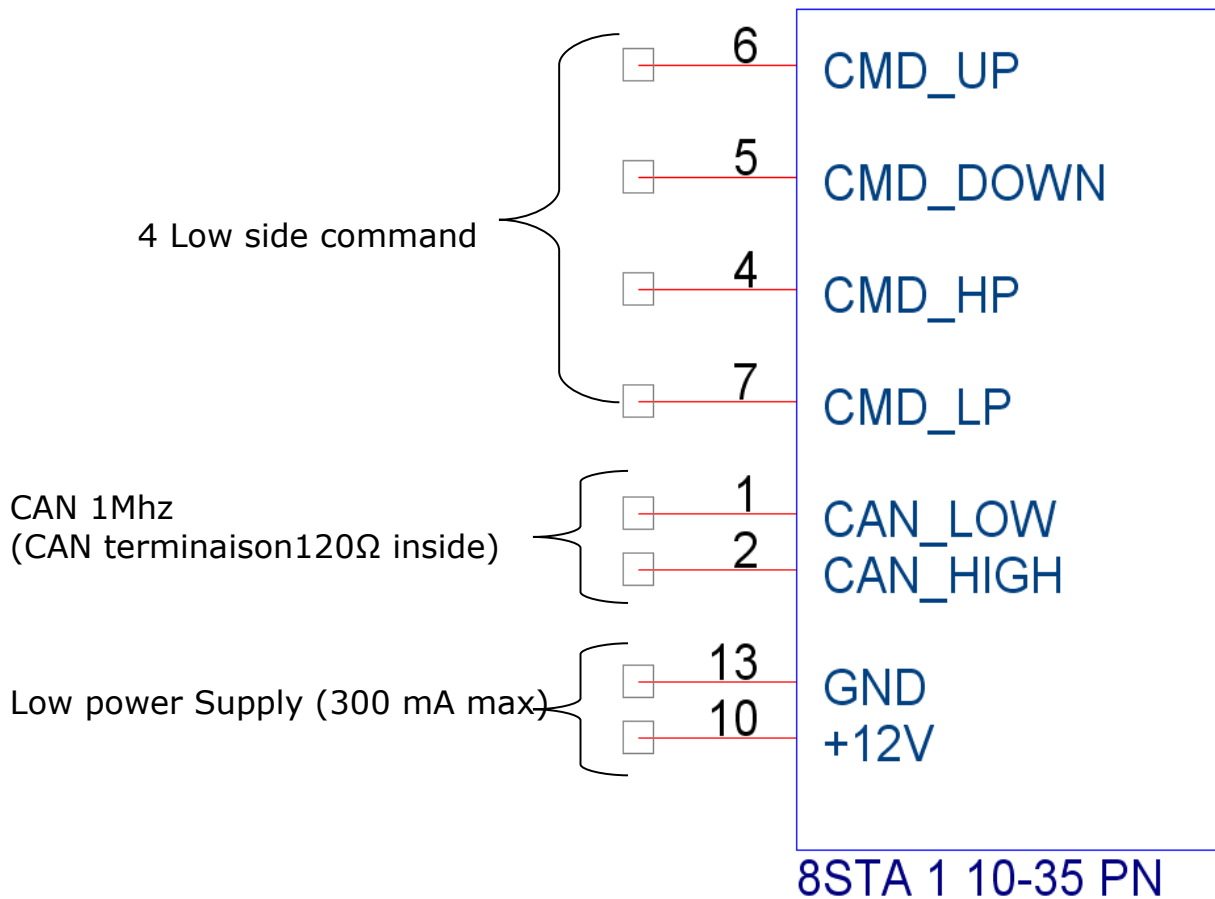
Vers.	Date	Description	Auteur
A	19/02/2015	Création du document	BS
B	23/03/2015	Ajout trame commande	BC
C	27/01/2017	Modification trame CANs	FH
D	10/10/2016	Synthèse document	FH

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1 Connector pinout

The loom connector is an 8STA-6-10-35-SN and an 8STA-2-10-35-PN on the actuator side.



Four low side command (2 mA) drive the actuator :

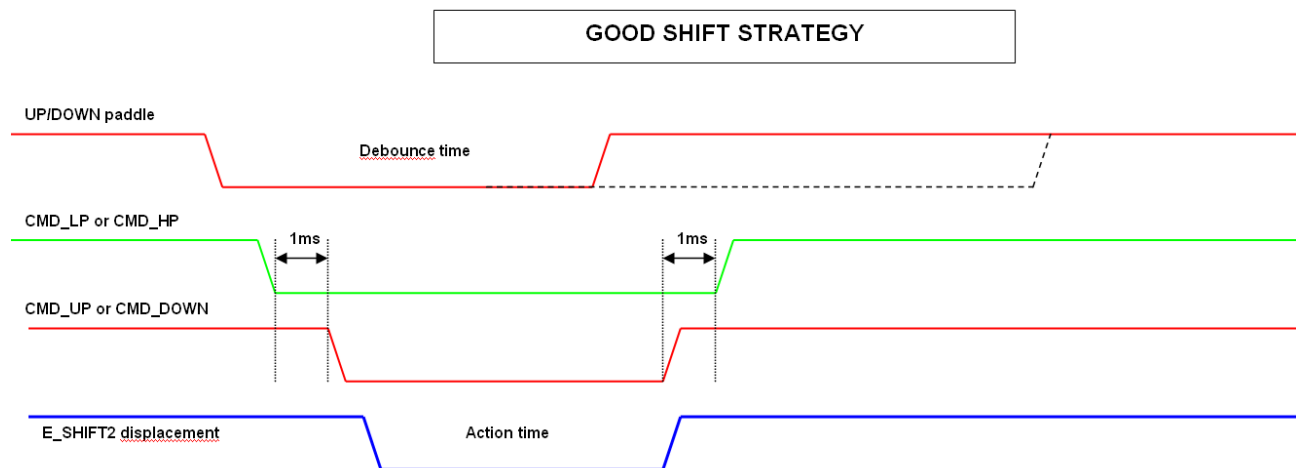
- CMD_DOWN : push the support (see draw page 5).
- CMD_UP : pull the support (see draw page 5).
- CMD_LP : Command low power. To put the gearbox actuator in low power mode.
- CMD_HP : Command high power. To put the gearbox actuator in high power mode.

2 Shift strategy

Timing :

- Activate CMD_HP or CMD_LP (only one) to select which power you want. The low power is only used for the R, N and 1 gear change to prevent too many force on the gearbox, if dog to dog situation. So 98% of time, you activate CMD_HP.
- Wait 1 mS (Can be included on the paddle debounce time).
- Activate CMD_UP or CMD_DOWN (only one) to activate the actuator in one way.
- Release CMD_UP or CMD_DOWN when the gear had changed.
- Wait 1 mS (not obligatory).
- Release CMD_HP or CMD_LP.

For example see the graph below :

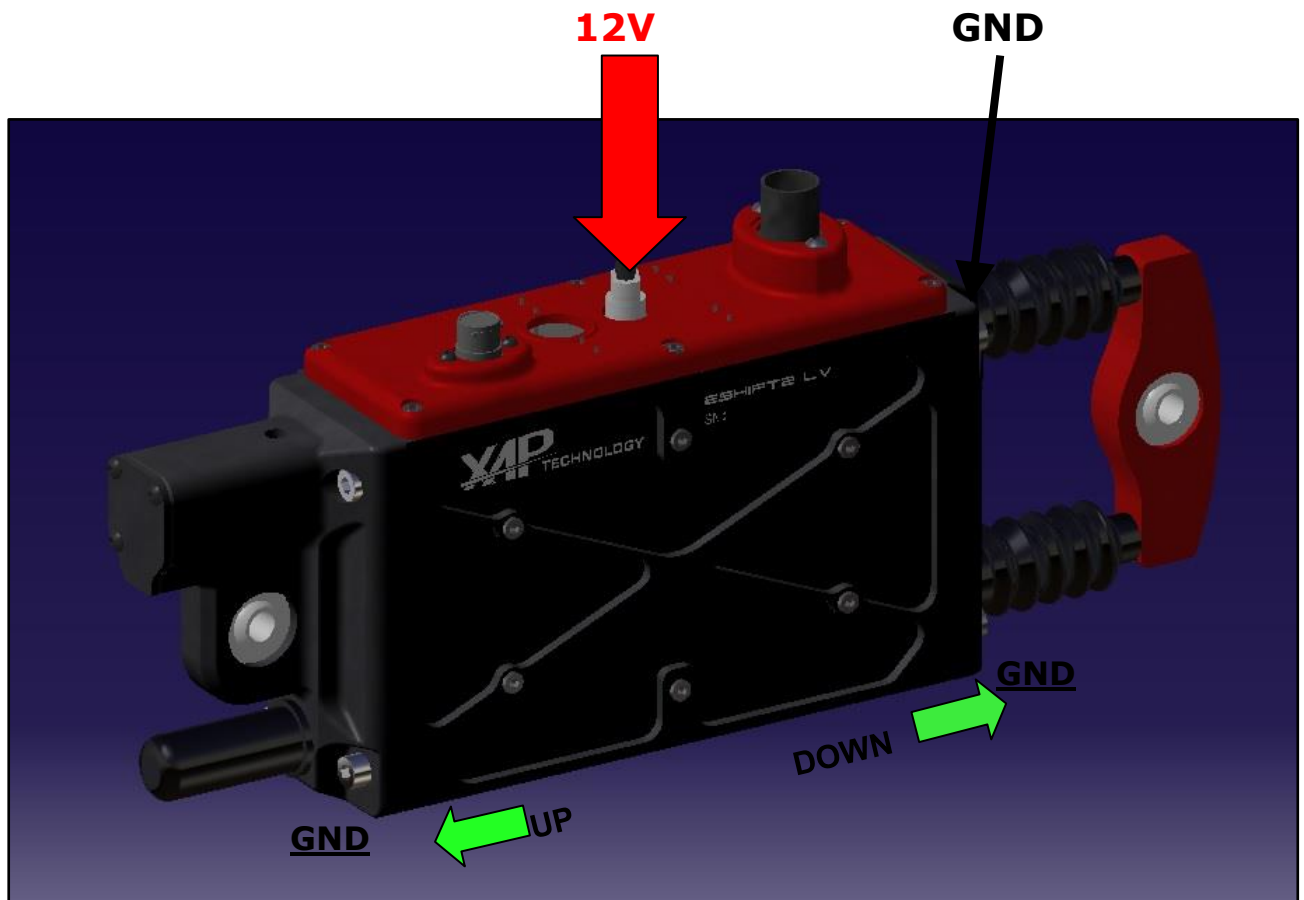


The displacement delay after received the CMD_UP or CMD_DOWN is 5 ms.

3 Power supply

For the E_Shift2LV with bearing option, to power the actuator you need to connect the 12V and GND cable with 12mm², minimum cable diameter.

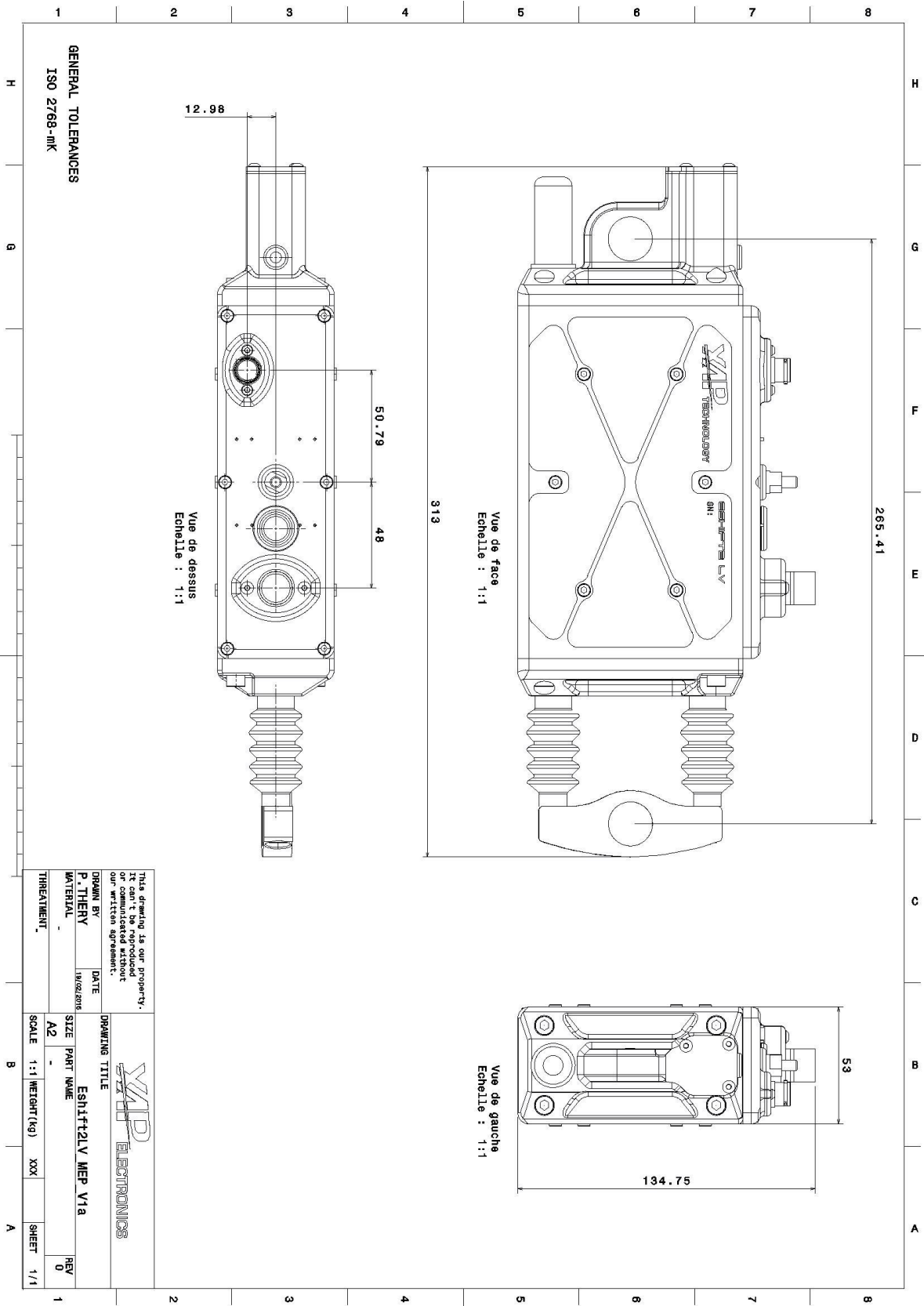
For the standard E_Shift2LV, only the 12V cable is necessary, the ground is done by the fixation through the gearbox/engine.



The maximum current on the power supply is 100 A during the gear shift (40 ms typical).

Always check to have a good ground and 12V contact. A bad contact can damage the electronic board inside.

4 Dimension



5 Can protocol

- CAN 2.0B
- 1 Mbit/s rate
- 11 bit identifiers
- Big endian
- 120 ohms resistor terminaison included

5.1 Frame 0x400: Actuator measure

ID Hex (Dec)	Rate
0x440 (1088)	100Hz

Detailed Payload Description

Byte	Name	External Name	Calibration	Notes
0	Sensor position	ACT_POS	U16 [1/bit]	
1				
2	Filtered Sensor position	ACT_POS_FILTERED	U16 [1/bit]	
3				
4	Power supply	ACT_12VMEAS	U16 [0.0205/bit + 0.556] V	
5				
6	Actuator current	ACT_CURRENT	U16 [0.191 /bit + 5.2] A	
7				

5.2 Frame 0x441: Actuator state

ID Hex (Dec)	Rate
0x441 (1089)	100Hz

Detailed Payload Description

Byte	Name	External Name	Calibration	Notes
0	Actuator state	ACT_STATE	U8 [bitmap]	See table below
1	Input command	ACT_COMMAND	U8 [bitmap]	See table below
2	Running counter	ACT_COUNT	U16 [1 /bit]	
3				
4	Temperature sensor	ACT_TP	U16 [1 /bit] °C	
5				
6	Software version	ACT_VERSION	U16 [1 /bit]	
7				

ACT_STATE bitmap

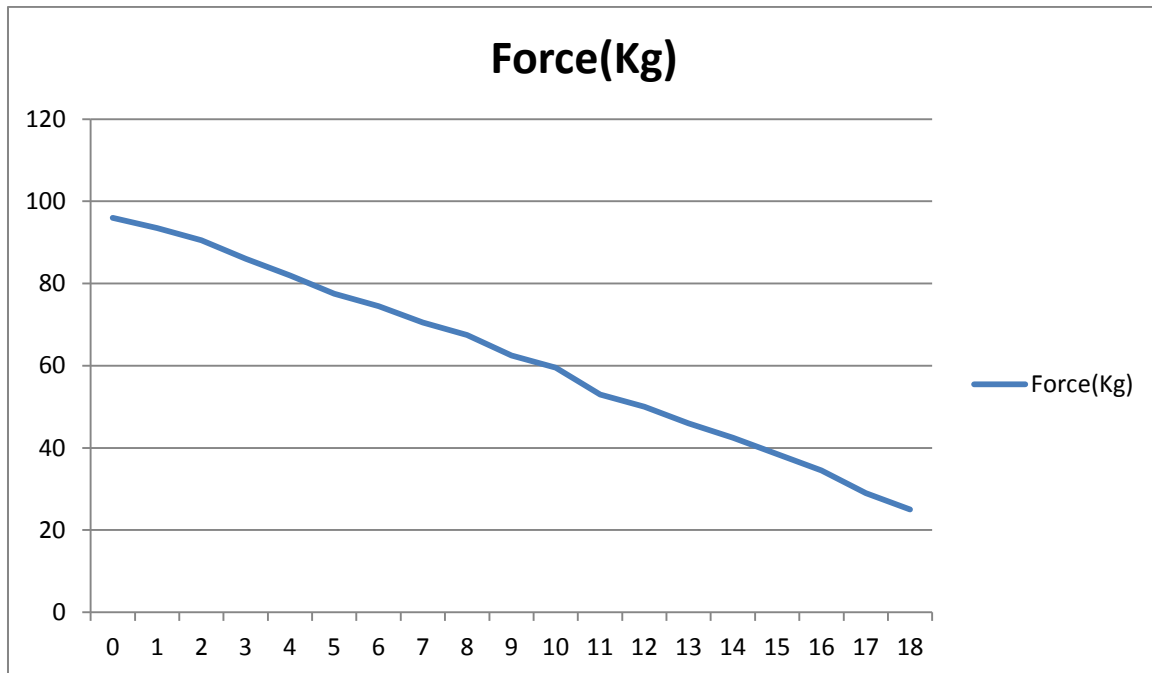
Bit	Description	Note
0		
1		
2	Ready for a new command	
3	Command active	
4	Safety mode (Time_out)	
5	Safety mode (Over-current)	
6	Return mode	
7		

AC_COMMAND bitmap

Bit	Description	Note
0	CMD_HP_UP active	
1	CMD_HP_DOWN active	
2	CMD_LP_UP active	
3	CMD_LP_DOWN active	
4	Input CMD_UP state	
5	Input CMD_DOWN state	
6	Input CMD_LP state	
7	Input CMD_HP state	

6 Force/stroke feature

Stroke	Force (Kg)
0	96
1	93,5
2	90,5
3	86
4	82
5	77,5
6	74,5
7	70,5
8	67,5
9	62,5
10	59,5
11	53
12	50
13	46
14	42,5
15	38,5
16	34,5
17	29
18	25



7 Recommendations

For the long life of your actuator we recommend a revision every 10 000Km to check wear ring.

Clean axes and apply WD-40.

If you have a doubt on the axis (marking and alignment or twisted) all of this can cause significant damage and premature wear! .

Always check to have a good ground and 12V contact. A bad contact can damage the electronic board inside.