## USER GUIDE FOR AVA SMART ACTUATORS SERIES 20-110 FOR ON OFF, FAILSAFE AND HI SPEED FUNCTIONALITY

### VERSION NUMBER 11.4 (AUGUST 2020)

The following guide is a screen by screen user guide for our Smart Series actuators, covering all models from 20Nm through to 110Nm and all functionality including ON OFF, Failsafe and Hi Speed variations. The guide will represent what you are seeing in your hand and is the latest version. All of our Smart actuators have onboard, pre loaded Firmware which is updated by our engineers. Note that from time to time, we may release an updated revision of the Firmware which may contain fixes to any reported bugs or issues with the software, or more commonly, improvements that we are making to the actuators through development of the firmware. Should you have any questions or queries relating to your actuator, please do not hesitate to contact your AVA Reseller or our Technical Support team. Let's get started…

### OUR SMART ACTUATOR OLED SCREEN AND TOUCH BUTTONS

All of our Smart actuators have a colour OLED screen and 3 x touch buttons. The screen will typically tell you all you need to know about your actuator, from the input command to the actual position, any problems with the actuator such as loss of power (if failsafe) or flash ALERT if the actuator as an alarm condition such as an over torque situation or valve jam. As standard, all of our actuators have Local Control as explained below. The touch buttons are used to navigate our onboard firmware to adapt and change the actuator settings to enable you, the user to customise our Smart actuators to your application and own specific requirements. Need to change the working angle, no problem. Need to change the speed, no problem. Need to setup a 3 position configuration, no problem. It's all possible using our Smart actuator series.
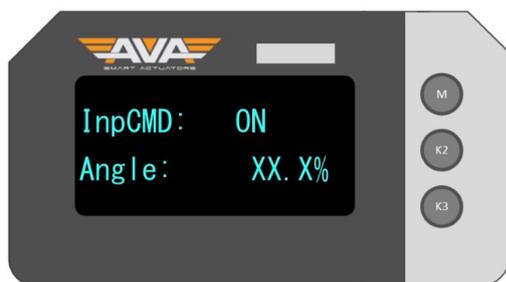


| | |
|---|---|
| M | M Button is used to select next screen |
| K2 <> | K2 Navigates left and right in menus |
| K3 ^∨ | K3 Navigates up and down in menus |

### GETTING STARTED

To get started from the default screen, (shown above) you can either enter the main menu or enter local control. Note that Local Control is our electronic manual override. This can allow you to open and close the actuator using the K2 and K3 buttons. Note after around 120 seconds of inactivity, the actuator will automatically exit the menu without saving. This applies to the main menu and Local Control function.

| | | |
|---|---|---|
| **MAIN MENU** | M | Hold M for 2-3 seconds and enter 333 |
| **LOCAL CONTROL** | K3 ^∨ | Hold K3 for 2-3 seconds and enter 111 |

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### DEAD ZONE

Dead zone setting is to adjust the accuracy and sensitivity of the actuator. The unit measurement is deviation degree. The bigger the dead zone the less accurate and sensitive the actuator is and the smaller the dead zone the more accurate and sensitive the actuator will be. Note this can cause system oscillation. The range is 0.1 to 9.9%. Note the system default is 1.0%

K2 will increase setting by 1 and K3 will decrease by 1. Press M for next step.

```
UserSET
DeadZone:   1.0
```

### MECHANICAL HYSTERESIS

This setting is relating to the differential between valve rotating as clockwise direction to 50% position and rotating as anticlockwise to 50% position. Range is 0.0 to 12.0%.

K3 will increase 0.1% by holding down button, K2 will decrease by 0.1% by holding down button. Press M for next step.

```
UserSET
Hysteres:     0.0%
```

### SLIGHT ADJUSTMENT TO VALVE CLOSE POSITION

Note that within our actuators, the Open position will be referred to as ON and the Close position will be referred to as OFF.

You can adjust the value to change the 'valve off' position if there is adjustment needed through intolerance between valve stem and actuator output drive. Example being that the tolerance is not good and the actuator can move the output drive by a few degrees before it engages with the valve stem. You are effectively setting the actuator to under travel or over travel the standard set 0-90 degree movement.

Valve Opening is anticlockwise and Valve Closing is clockwise. K3 will decrease 0.1˚by holding down button it will display 'Offset Open' there is a limit that will show as 'This is Maximum', K2 will increase by 0.1˚by holding down button, it will display as 'Offset Close' this can set the minimum position. Press M for next step.

```
UserSET
ClPos_Adj:     0.0%
```

```
UserSET
ClPos_Adj:    25.0%
        DIR_Off Max
```

```
UserSET
ClPos_Adj:   -25.0%
        DIR_ON Max
```

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### SETTING RUN SPEED (PULSE)

We have two methods of speed control for our smart actuators. The first is PULSE model (PUL) the bigger the setting is the slower the working time is, the smaller the setting is the faster the working time is. Note that this cannot increase the standard set working time, it can only slow it down. For Hi Speed series this is the quickest working time available which can also be slowed down. The range is 5% to 100%, system default is 100% and this is the quickest the actuator can open/close. Note that the PULSE mode will achieve the slower working time through the motor start-stop-start-stop.

K2 will decrease by 5% and K3 will increase by 5%. M for next step.

```
UserSET
Speed_PUL:100.0%
```

### PWM SPEED ADJUSTMENT

PWM is our alternative method of speed control. The bigger the value the faster the actuator will operate, the lower the value the slower the actuator will work. PWM is a continuous movement rather than a stop start stop start method Pulse above gives you. Range is 20% to 100% with the default being 100% which is again the quickest working time. 20% is the slowest. Note that PWM is controlling the speed of the motor, slowing the motor down does effect torque output. As good practice we would recommend that at 20% you allow for a 25% reduction of the maximum torque rating.

K2 will decrease by 5% and K3 will increase by 5%. M for next step.

```
UserSET
Speed_PWM:100.0%
```

### STALL TIME

Stall time is referring to the time in which the actuator will delay outputting an alarm/alert condition. This could be for example where there is high or excessive torque and the actuator has detected this, the actuator will go into an alarm/alert condition and you will see on screen the words ALERT flashing.

The smaller the number the sensitivity is higher and the bigger the number the lower the sensitivity will be. Range is 1-20X, the system default is 3X. Press K3 to increase by 0.1 and K2 to decrease by 0.1. Press M for next step.

```
UserSET
StallTime:10
```

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### B33 SETTING FOR 3 POSITION SETUP

B33 is our terminology for 3 position setup, this can be 0-45-90° or could be 0-90-180° for example. B33 is the mid position, so ON OFF B33 is the setup. Default is 50% which would be half of the standard 0-90° so this would allow a 0-45-90° configuration. The range is 10% to 220%.

K2 will decrease by % and K3 will increase by %. M for next step.

```
UserSET
B33 Posi:  50%
```

### COMMAND SWAP

Command swap is to reverse the input command from the standard. You can reverse the signal so that the standard ON command would be OFF and OFF would be ON.

Note that B33 setting above is not effected by the changing of this setting. The default setting is NO.

Please check wiring diagram for further details. This typically relates to the input voltage terminals which are BLACK and RED.

```
UserSET
CMD_Swap:NO
```

```
UserSET
CMD_Swap:Yes
```

### BOTH IN ON / OFF SETTING

This setting allows you to set how you want the actuator to respond on receiving input voltage to both the ON and OFF command. Usually you will operate the actuator by either powering ON (open) or powering OFF (closed) but if you apply power to both ON and OFF at the same time, we can allow certain the following functionality. Both ON and OFF:

KEEP:       this will keep the current position of the actuator.
ON:         this will go to the ON (open) position of the actuator.
OFF:        this will go to the OFF (close) position of the actuator.
B33:        this will go to the B33 (see top of page) position.

Press M to go to the next stage.

```
UserSET
BothIN_ON:    KEEP
```

```
UserSET
BothIN_OFF:   KEEP
```

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### PD CHECK TIME

PDChk_Time is the time it takes to detect the power off exactly. The actuator will test the supply power signal again after a set time. Adjusting this setting will change the interval time. It is not necessary to adjust this value for normal / typical use of our actuator. The default is 50%.

K3 will change between options available. Press M for next screen.

```
UserSET
PDCheck_Time:  50%
```

### POWER DOWN COMMAND (FAILSAFE ACTUATORS)

This relates to our actuators with our KT32 capacitors installed. Our failsafe actuators allow the actuator to go to a preset position on losing power. This setting is used to select if the actuator should keep its current position or fail to the open or closed position.

Press K3 to make your selection and press M for the next screen.

```
UserSET
PDAction:     NOCK
```

### BATTERY CHARGE (SOON TO CHANGE TO CAP CHARGE)

This relates to FAILSAFE actuators only and shows the % of charge required prior to the actuator operating initially under power. When you first charge the actuator you will see the Capacitor charging. This setting is for setting the acceptable level for which the actuator can accept the power signal whilst having sufficient charge. The range is 60-99% with 60% charge being the minimum required. Its recommend to leave as the default of 95%. The higher the % the longer it will take for the actuator to work on initially powering.

```
UserSET
BatCharge:95%
```

### MOTOR SELF-LOCK

This setting is for when the capacitor within the actuator is working. It means that the motor can be locked when the power is not applied. Default is UNLOCK but can be changed to LOCK using K3. Press M to proceed to the next screen.

```
UserSET
MotLock:      LOCK
```

## Join the orange and grey revolution

## USER GUIDE FOR AVA SMART ACTUATORS SERIES 20-110 FOR ON OFF, FAILSAFE AND HI SPEED FUNCTIONALITY

### DISPLAY MODE

This refers to the language used within our firmware. The default is English with the option of Chinese also available. Overtime we will look to add to this option to allow Spanish, French, German and Italian to be added. Note that the if your actuator does for any reason default to Chinese or when powered you see Chinese characters. Enter the menu by holding M, enter 333, tab across to this screen and select English.

K3 will change between options available. Press M for next screen.

```
UserSET
DisMode: Chinese
```

```
UserSET
DisMode: English
```

### TEST ALARM - FOR ACTUATOR WITH ALARM OUTPUT

We have an option available for ALARM OUTPUT RELAYS to be installed within our smart actuators. This allows the actuator to replicate an alarm condition to operate internal relays that will show your PLC the alarm output. Very good for monitoring the actuator status back at your PLC.

Press K3 to make your selection and press M for the next screen.

```
UserSET
TestAlarm:     OFF
```

```
UserSET
TestAlarm:      ON
```

### BREAK DELAY

This final setting relates to the stability of the motor. The actuator will delay the movement from one position to another. Note that there is no need to edit this setting under normal conditions.

Default value is 1Ms. Press M to proceed to the Save & Exit Screen.

```
UserSET
BrkDelay:      1Ms
```

### EXIT SETTING

Once you have made any of the necessary changes, please press K3 to save and exit. You will see the message 'SaveOK' appear and the actuator will display a 'Thank you for your use' message and default back to the default screen that displays actuator input and actual position. If you want to go back through the menu, simply press M.

```
UserSET
ExitSET:  Push K3
```

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### ADDITIONAL SCREENS OF INTEREST:

### USER SET PASSWORD

The screen to the right is the default screen when you Hold M. Enter 333 to enter the main menu.

Hold K3 to enter local control and enter 111.

Hold all three buttons for AllK this will allow a HARD RESET. Enter 6666 to default settings to factory default.

```
UserSET
PassWord: XXX
```

### CHECK NUMBER OF CYCLES AND NUMBER OF LOGGED ERRORS

When you initially power on, or exit a menu, you will see this screen. This screen confirms the number of cycles / operations of OPEN/CLOSE that the actuator has recorded and the total number of Errors recorded.

Check our Technical Datasheets and Installation, Operation and Maintenance documents for actuator warranty.
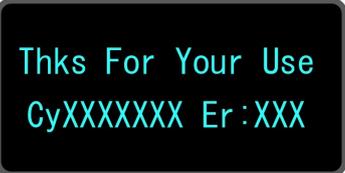
```
Thks For Your Use
 CyXXXXXXX Er:XXX
```

### FIRMWARE VERSION CHECK

When you initially power on, or exit a menu, you will see this screen. The current firmware for these actuators should be 11.4.

```
    SysSet OK
CopyRight V: 11.4
```

### DEFAULT SCREEN

This is the default screen you will see. It shows InpCMD which will be ON or OFF. The Angle is showing the % that the actuator is open. 0% is OFF or CLOSED (as default) and 100% is ON or OPEN (as default).
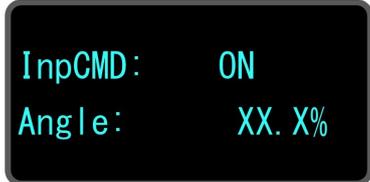
```
InpCMD:     ON
Angle:      XX.X%
```

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