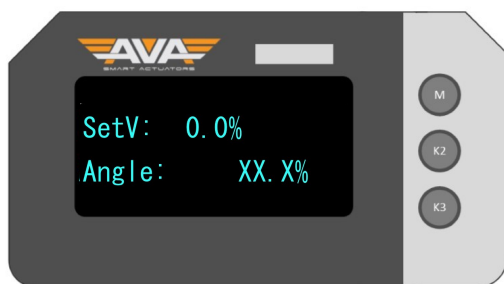## USER GUIDE FOR AVA SMART ACTUATORS SERIES 20-110 FOR MODULATING, FAILSAFE AND HI SPEED FUNCTIONALITY

### VERSION NUMBER 12.4 (OCTOBER 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 Modulating, 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 |

## Join the orange and grey revolution

## USER GUIDE FOR AVA SMART ACTUATORS SERIES 20-110 FOR MODULATING, 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
```

### CONTROL CHANNEL

This is where you can select what input you're using to modulate the actuator, you can select from 5 different options. 4 to 20mA, 0 to 20mA, 2 to 10V, 0 to 10V or 135Ω . These options are also determined by how the actuator is wired. If you have a 20 series your actuator will be prewired to mA or V depending on what you have ordered. With our 50 series and above, you will have to wire into which electrical channel your control supply outputs.

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

```
UserSET
Channel:   0To10V
```

```
UserSET
Channel:   4To20mA
```

### CONTROL DIRECTION

This is our local control to amend actuator direction, if you require the actuator to rotate a different direction for your valve, you can amend this here.

Direct Acting: 4mA would be closed and 20mA would be open

Reverse Acting: 4mA would be open and 20mA would be closed.

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

```
UserSET
Ctrl_Mode: Dir
```

```
UserSET
Ctrl_Mode: Rev
```

## Join the orange and grey revolution

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

### NO CONTROL COMMAND

When our actuator is still powered but cannot detect any control signal, we can set the actuator to move to the Open position, closed position or maintain its current position. Acting somewhat of a failsafe in case the control system fails.

KEEP = Stay in current position

ON = Actuator will OPEN

OFF = Actuator will CLOSE

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

```
UserSET
NrCtr_Act:  KEEP
```

```
UserSET
NrCtr_Act:  ON
```

```
UserSET
NrCtr_Act:  OFF
```

### 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. 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
```

### ENABLE HYSTERESIS

This is a prerequisite to the next option 'Hysteresis'. This option simply enables the Hysteresis function to work. Once the 'YES' is selected you will then be able to adjust this on the next screen.

By default this is set to 'NO'

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

```
UserSET
IsGO_Hyste:  YES
```

```
UserSET
IsGO_Hyste:  NO
```

## Join the orange and grey revolution

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

### HYSTERESIS

To begin this process you must first select 'YES' on the screen before this called 'IsGo_Hyste'. Once you have selected 'YES' on the previous screen, this option will now take effect. This option is used when your valve stem does not mate with the output drive immediately. If there is a light misalignment you can add a percentage to allow the actuator a minor amount of distance to meet the stem before beginning its full 90 degree rotation.

K3 increases the percentage and K2 degreases the percentage. The setting range is 0—9.0%.

```
UserSET
Hysteres:      0.0%
```

### POSITION 4MA

This option allows the user to set the actuator position from the default position. By default 4mA, 0mA, 2V or 0V will be set to 0%. The range for this is −50% up to 80%. Allowing for a large amount of manoeuvrability.

K3 increases percentage, K2 will reduce percentage. Press M for next screen.

```
UserSET
Posi4mA:       0.0%
```

### POSITION 20MA

This option allows the user to set the actuator position from the default position. By default 20mA and 10V will be set to 100%. The range for this is 81% up to 220%. Allowing for a large amount of manoeuvrability.

K3 increases percentage, K2 will reduce percentage. Press M for next screen

```
UserSET
POS20mA:     100.0%
```

### MANUAL SPEED

This option allows for the user to dictate the speed in which the 'Manual' operation runs.

K3 increases percentage, K2 will reduce percentage. Press M for next screen

```
UserSET
Manu_Spd:    100%
```

## Join the orange and grey revolution

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

### SPEED MAX

This setting allows the user to adjust the maximum running speed of the actuator. The max for this is 100%, standard actuators run between 10-15 seconds. Hi-speed run between 1-5 seconds.

Please note: Changing the speed can affect the torque output.

K3 increases percentage, K2 will reduce percentage. Press M for next screen.

```
UserSET
SpeedMax:   100%
```

### SPEED MIN

This setting allows the user to adjust the Minimum running speed of the actuator. The default on this is 75% and can be adjusted down to 25%.

Please note: Changing the speed can affect the torque output.

K3 increases percentage, K2 will reduce percentage. Press M for next screen.

```
UserSET
SpeedMin:    45%
```

### RANGE ADJUSTMENT

Set the actuator to reach the control range for the specified position. The system default is 10.0%

The range is 1%-20%

K3 increases percentage, K2 will reduce percentage. Press M for next screen.

```
UserSET
RangeAdj:    10.0%
```

### BREAK DELAY

This 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 for next Screen.

```
UserSET
BrkDelay:       1Ms
```

## Join the orange and grey revolution

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

### OUTPUT 4MA

If 4mA deviation value of output current is big, user can adjust it via this option. If the number increases the output current will be bigger. If the value decreases the output will be lower.

K3 increases figure, K2 will reduce figure. Press M for next screen.

```
UserSET
Out_4mA:      180_A
```

**\*Note this option was updated from 12.1 from 179_A to 180_A**

### OUTPUT 20MA

If 20mA deviation value of output current is big, user can adjust it via this option. If the number increases the output current will be bigger. If the value decreases the output will be lower.

K3 increases the figure, K2 will reduce figure. Press M for next screen.

```
UserSET
Out20mA:      903_A
```

**\*Note this option was updated from 12.1 from 909_A to 903_A**
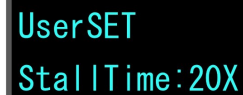
### STALL TIME

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:20X
```

**\*Note this option was updated from 12.1 from 10 to 20X**

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

### POWER DOWN 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 pre-set 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.

**\*Note this option was updated from 12.1 OFF to NOCK. Note that NOCK is No-Check, this means the actuator will not check the power down command and is the same as KEEP, the actuator will keep its current position.**

```
UserSET
PDAction:NOCK
```

```
UserSET
PDAction:ON
```

### 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:0%
```

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

### 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
```

```
UserSET
MotLock: UNLOCK
```

### 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
```

### 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.

```
FactorySET
ExitSET:  Push K3
```

## USER GUIDE FOR AVA SMART ACTUATORS SERIES 20-110 FOR MODULATING, FAILSAFE AND HI SPEED FUNCTIONALITY
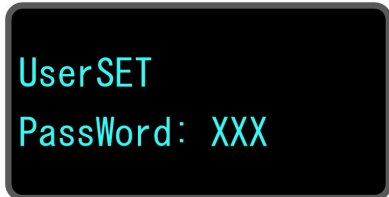
### ADDITIONAL SCREENS OF INTEREST:

### 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.
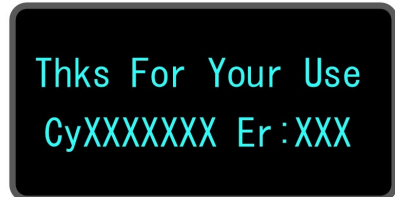
```
UserSET
PassWord: XXX
```

### 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 12.1

```
   SysSET OK
CopyRight V:  12.1
```

### DEFAULT SCREEN

This is the default screen you will see. It shows SetV: 0.0% which will be ON (Indicator is yellow). 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).

```
SetV:  0.0%
Angle:    XX.X%
```