

# ACTIVE DRIVER



**INVERTER  
CONTROLLED**

## INTRODUCTION

The DAB ACTIVE DRIVER is an innovative integrated pump control system that utilizes a variable frequency drive controller (VFD) to provide CONSTANT PRESSUE regardless of the demand flow requirements.

### >Applications

The DAB ACTIVE DRIVER will fit to most DAB domestic pump, specifically Jet, JINOX, JECOM, EURO, EUROINOX, EUROCOM, K Series and KVCX Vertical Multistage.

The unit is available if the following configurations,

#### **ACTIVE DRIVER M/M 1.1**

Suits single phase 230v power supply, and will couple to single phase pump units up to 1.1kW, and is programmable to a maximum pressure of 6 Bar (600kPa), not exceed a flow of 300lpm.

#### **ACTIVE DRIVER M/T 1.0**

Suits single phase 230v power supply, and will couple to three phase pump units up to 1.0kW, and is programmable to a maximum pressure of 9 Bar (900kPa), not exceed a flow of 300lpm.

#### **ACTIVE DRIVER M/T 2.2**

Suits single phase 230v power supply, and will couple to three phase pump units up to 2.2kW, and is programmable to a maximum pressure of 9 Bar (600kPa), not exceed a flow of 300lpm.

### ACTIVE DRIVER T/T 3.0

Suits three phase power supply, and will couple to three phase pump units up to 3.0kW, and is programmable to a maximum pressure of 9 Bar (900kPa), not exceed a flow of 300lpm.

### ACTIVE DRIVER T/T 5.5

Suits three phase power supply, and will couple to three phase pump units up to 5.5kW, and is programmable to a maximum pressure of 9 Bar (900kPa), not exceed a flow of 300lpm.

## >Selecting the Correct Pump.

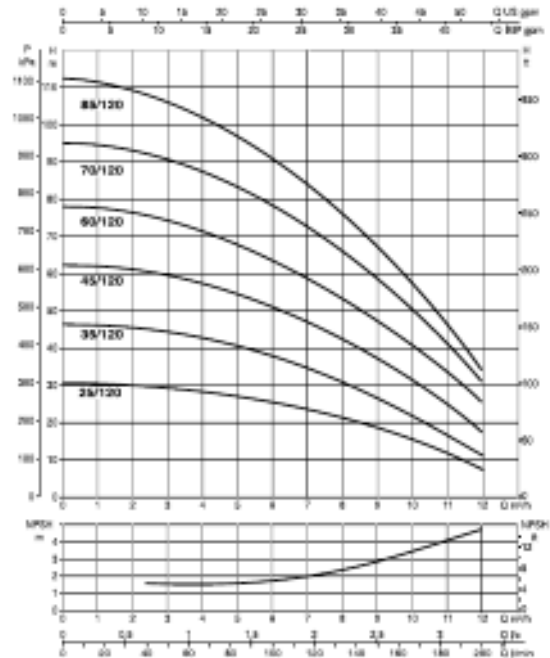
It is important to choose the correct pump when utilizing the ACTIVE DRIVER as a constant pressure control device. It is important that the pump is selected to provide the maximum potential flow at the desired demand pressure.

>>For Example,

If a duty point of 100lpm at 350kPa is required, then this should be assumed as the maximum required duty of the pump.

An ideal selection for this would be the DAB KVCX35/120, as it will provide the flow required at around 380kPa and the required pressure at a maximum flow of 115lpm.

As the ACTIVE DRIVER is controlled by required pressure, inputting a set point of 350kPa will mean that the pump will normally run at lower frequency (speed), and less likely to cavitate.



## >Installing the ACTIVE DRIVER

The ACTIVE DRIVER would normally be installed in an upright position, on the discharge side, above the main body of water in the pump.

A check valve should be installed inlet to the controller or in the suction port of the pump. Failure to install a check valve will result in the unit cycling.

The ACTIVE DRIVER is pressure sensitive and a suitable sized ENERGY SAVER should be installed on the discharge side of the controller. The pre-charge should be set to be slightly lower (15kPa min) than the restart point set in the controller, which is factory set at 0.5 Bar (50kPa) below the set point.

The AD M/T 1.0, AD M/T 2.2, AD T/T3.0 and AD T/T 5.5 can be interconnected with up to three units (total) operating as one system, allowing for alternating starts and various inputs and outputs for integrated operation.

If using the AD M/M 1.1, retain the PLUG and PLAY fly lead supplied with the pump as it will be helpful in priming the pump before attempting to set the ACTIVE DRIVER.

This allows you to use the pump in a manual mode while priming is completed.

# Programming

The DAB ACTIVE DRIVER is easy to program, it is essential that key information about the DUTY POINT and PUMP are known before attempting to program the unit.

## >ESSENTIAL INFORMATION

1. DUTY POINT (Pressure)
2. Rated Current of Pump (not required for AD M/M 1.1)
3. Pump Curve

>>Duty Point is the required pressure the system is required to run at. This is inputted in (Bar).

>>The rated current of the pump can be located on the compliance plate attached to the pump, or is listed in the DAB Factory catalogue in the ELECTRICAL DATA table.

This is only relevant when using three phase pumps.

| MODEL            | ELECTRICAL DATA |               |           |                  |      |          |           |        |       |                 |     |
|------------------|-----------------|---------------|-----------|------------------|------|----------|-----------|--------|-------|-----------------|-----|
|                  | N° IMPELLERS    | VOLTAGE 50 Hz | P1 MAX kW | P2 Nominal kW HP |      | In A     | I st. A   | 1/min. | cos φ | CAPACITOR μF Vc |     |
| KVC-KVCX25/120 M | 2               | 1x220-240 V ~ | 1,5       | 1                | 1,36 | 6,5      | 30        | 2800   | 0,96  | 25              | 450 |
| KVC-KVCX25/120 T |                 | 3x230-400 V ~ | 1,5       | 1                | 1,36 | 5-2,9    | 22,1-12,8 | 2800   | 0,79  | –               | –   |
| KVC-KVCX35/120 M | 3               | 1x220-240 V ~ | 1,9       | 1,1              | 1,5  | 7,4      | 30        | 2800   | 0,96  | 31,5            | 450 |
| KVC-KVCX35/120 T |                 | 3x230-400 V ~ | 1,9       | 1,1              | 1,5  | 6-3,5    | 31,1-18   | 2800   | 0,79  | –               | –   |
| KVC-KVCX45/120 M | 4               | 1x220-240 V ~ | 2,6       | 1,85             | 2,5  | 12       | 54        | 2800   | 0,96  | 40              | 450 |
| KVC-KVCX45/120 T |                 | 3x230-400 V ~ | 2,5       | 1,85             | 2,5  | 7,9-4,6  | 48,4-28   | 2800   | 0,79  | –               | –   |
| KVC-KVCX60/120 T | 5               | 3x230-400 V ~ | 3,1       | 2,2              | 3    | 9,3-5,4  | 53-31     | 2800   | 0,79  | –               | –   |
| KVC-KVCX70/120 T | 6               | 3x230-400 V ~ | 3,8       | 3                | 4    | 11,8-6,8 | 78-45     | 2800   | 0,79  | –               | –   |
| KVC-KVCX85/120 T | 7               | 3x230-400 V ~ | 4,3       | 3                | 4    | 13,5-7,8 | 90-53     | 2800   | 0,79  | –               | –   |

>>The Pump Curve is essential to ensure that the duty point is achievable with the pump selected.

The settings should be recorded in the ACTIVE DRIVER manual for later reference.

It is essential to READ THE MANUAL before attempting to operate the ACTIVE DRIVER.

# Programming

The ACTIVE DRIVER has a simple programming logic and is easy to program.

There is a two digit illuminated LCD screen and four input buttons.

By pressing and holding these buttons in sequence will allow the programmer to access different parts of the programming matrix.

The display also shows information as to the status of the pump, and faults if present.



## >>Normal Display Indications

During normal operation the following indication will be present.

- ZF** = Zero Flow & General Reset (appears on startup and when leaving reset)
- Go** = Pump Operating
- Sb** = Pump waiting (Standby)
- bL** = No Flow

A full list of display indications is listed at the back of this guide.

## >>Displays of the Main Values

It is also possible to access operational information of the system by pressing the [mode] key, these indications are,

- Fr** = Displays the current frequency (speed) of the pump
- UP** = Displays the Upstream Pressure of the system
- C1** = Displays the phase current of the pump in Amps
- UE** = Displays the version of the software installed in the ACTIVE DRIVER

## >>Other Displays

It is also possible to access other operational information of the system by pressing the [set] and [-] key for two seconds, these indications are,

- UF** = Displays the flow
- ZF** = Displays of zero flow
- FM** = Displays the maximum operation frequency of the pump
- tE** = Displays the temperature of the power stages (in C')
- bt** = Displays the temperature of the electronic card (in C')
- GS** = Displays the running status
- FF** = Displays the log of errors and blockages

# Programming > Pump Start Up

Once you have installed the ACTIVE DRIVER and the pump is primed and ready to start, these are the simple steps to programming the controller.

After switching the power supply on, the following indication should be present,

**ZF** = Zero Flow & General Reset

Shortly after, the ACTIVE DRIVER should switch to the following condition and the pump should start.

**Go** = Pump Operating

It should then stop after demand has ceased and now display,

**Sb** = Pump Waiting (Standby)

The pump is now idle and waiting for demand pressure to drop in order to start.

# Programming > Inputting Data

The ACTIVE DRIVER is pre programmed and will operate the pump with out any additional programming, but for most efficient operation, settable parameters are offered to optimal performance of the system.

The AD M/T and AD T/T will need information about the pump to be inputted before safe operation can begin.

The settable parameters are as follows,

**SP > SET POINT**, is the desired operating pressure of the system.

To access this setting, press [mode] and [set] simultaneously for two seconds, the display should indicate **SP**, and then flash to **3.0** which is the pre set of 3.0 Bar. This can be changed in Bar from a minimum setting of 1.0 up to 6.0 in the AD M/M 1.1, and 9.0 in all other models. Using the [+] or [-] keys will lift or lower the setting.

Once the setting has been made, pressing [set] will return the indication to the operating mode of the system (Go or Sb)

**rC > RATED CURRENT**, is specific to the pump being used (not applicable to AD M/M 1.1).

To access this setting, press [mode], [set] and [-] simultaneously for five seconds, the display should indicate **rC**, and then flash to **0.0** which is the pre set. This should be changed to reflect the correct current of the pump being used. (Check compliance plate or call 1300783601 if unsure). Inputting the wrong information here can damage the pump. This setting will not appear when programming the AD M/M 1.1.

Once the setting has been made, pressing the [mode] key will move the display to the next settable parameter, pressing [set] will return the indication to the operating mode of the system (Go or Sb)

**rt > ROTATION**, direction of rotation of the motor, (not applicable to AD M/M 1.1).

This allows you to change the direction of rotation without rewiring the power supply to the motor.

To access this setting, press [mode], [set] and [-] simultaneously for five seconds,

press [mode] until the display indicates **rt**, and then flashes to **00** which is the pre

set. The rotation can be changed by altering this parameter to **01**, which will reverse the rotation. This setting will not appear when programming the AD M/M 1.1.

Once the setting has been made, pressing the [mode] key will move the display to the next settable parameter, pressing [set] will return the indication to the operating mode of the system (Go or Sb)

**Fn > FREQUENCY**, Sets the frequency of the motor.

This is pre set to **50** and should not be changed.

Once the setting has been made, pressing the [mode] key will move the display to the next settable parameter, pressing [set] will return the indication to the operating mode of the system (Go or Sb)

**od > OPERATING MODE**, this refers to the presence of a pressure cell.

To access this setting, press [mode], [set] and [-] simultaneously for five seconds,

press [mode] until the display indicates **od**, and then flashes to **00** which is the pre

set. This condition can be changed by altering this parameter to **01**.

Once the setting has been made, pressing the [mode] key will move the display to the next settable parameter, pressing [set] will return the indication to the operating mode of the system (Go or Sb)

**rP > RESTART PRESSURE**, this to the allowable pressure drop before the ACTIVE DRIVER restarts, and it much like the differential setting in a pressure switch.

To access this setting, press [mode], [set] and [-] simultaneously for five seconds,

press [mode] until the display indicates **rP**, and then flashes to **0.5** which is the pre set and is 0.5 Bar. This condition can be changed by altering this parameter up to

**1.5**. A higher setting can prevent cycling due to leaks in the system.

Once the setting has been made, pressing the [mode] key will move the display to the next settable parameter, pressing [set] will return the indication to the operating mode of the system (Go or Sb)

**Ad>INTERCONNECTION ADDRESS**, refers to the name given to each of the ACTIVE DRIVER units when they are connected in a multiple pump system. A cable connection needs to be made in order to achieve this condition. (Not applicable to the AD M/M 1.1)

To access this setting, press [mode], [set] and [-] simultaneously for five seconds, press [mode] until the display indicates **Ad**, and then flashes to **\_\_.** which is the default setting and is used when the unit is operating as a

STAND ALONE system. This condition can be changed by altering this parameter to **0.1** for Pump 1, **0.2** for Pump 2 etc.

Once the setting has been made, pressing the [mode] key will move the display to the next settable parameter, pressing [set] will return the indication to the operating mode of the system (Go or Sb)

**Eb>ENABLING THE BOOSTER**, turn the alternating function on in a multiple pumps system. (Not applicable to the AD M/M 1.1)

To access this setting, press [mode], [set] and [-] simultaneously for five seconds, press [mode] until the display indicates **Eb**, and then flashes to **02** which is the default setting. This condition can be changed by altering this parameter to **03**. This will identify the order in which the pumps will start.

Once the setting has been made, pressing the [mode] key will move the display to the next settable parameter, pressing [set] will return the indication to the operating mode of the system (Go or Sb)

These are the main parameters that need to be set by the installer.

The system is now ready for operation. Ensure there is not an open flow condition present, as this will make the AD device ineffectual.

## Programming > Resetting Error Conditions

For some malfunctions and shutdowns the AD makes a certain number of attempts to automatically reset the system.

| AUTOMATIC RESETS OF ERROR CONDITIONS |   |   |
|--------------------------------------|---|---|
| DISPLAY INDICATION                   | DESCRIPTION   | SEQUENCE OF AUTOMATIC RESET   |
| bL                                   | Blockage due to water lack  | - An attempt every 10 minutes for a total of 6 attempts<br>- An attempt every 1 hour for a total of 24 attempts<br>- An attempt every 24 hours for a total of 30 attempts |
| bP                                   | Blockage due to fault of the pressure sensor  | - Reset 10 seconds after correct conditions return  |
| LP                                   | Blockage due to low supply voltage  | - Reset when voltage returns to a value in the range 220V - 20% + 10%   |
| HP                                   | Blockage due to high voltage  | - Reset when the internal voltage returns in acceptable conditions  |
| Ot                                   | Blockage due to overheating of the power stages   | - Reset when the temperature of the power stages falls below 70°C again   |
| OC                                   | Blockage due to current overload  | - An attempt every 10 minutes for a total of 6 attempts   |
| oF                                   | Blockage due to current overload in the output stages   | - An attempt every 10 minutes for a total of 6 attempts   |
| oF/ot                                | Blockage due to current overload in the output stages with temperature of the stages higher than 45°C | - An attempt every 10 minutes or when the temperature has fallen by 10°C  |

# Programming > Resetting Factory Settings

It is possible to restore the default settings by pressing [set] an [+] for two seconds whilst restoring the power supply (switching on).

| Identifying s. | Description  | Factory parameters |                 |                 |                 |                 |
|----------------|--|--------------------|-----------------|-----------------|-----------------|-----------------|
|                |  | A.D.<br>M/M 1.1    | A.D.<br>M/T 1.0 | A.D.<br>M/T 2.2 | A.D.<br>T/T 3.0 | A.D.<br>T/T 5.5 |
|                | Restoring the factory settings<br>(keys SET and + for 2 seconds when switching on)                       |                    |                 |                 |                 |                 |
| EE             | Saving and reading the factory settings on the EEPROM  |                    |                 |                 |                 |                 |
|                | <b>Error and status conditions</b>   |                    |                 |                 |                 |                 |
| bL             | Blockage due to water lack   |                    |                 |                 |                 |                 |
| bP             | Blockage due to absence of pressure sensor   |                    |                 |                 |                 |                 |
| LP             | Blockage due to low supply voltage   |                    |                 |                 |                 |                 |
| HP             | Blockage due to high supply voltage  |                    |                 |                 |                 |                 |
| ot             | Blockage due to overheating of the power stages  |                    |                 |                 |                 |                 |
| oC             | Blockage due to current overload in the electropump motor  |                    |                 |                 |                 |                 |
| oF             | Blockage due to current overload in the output stages  |                    |                 |                 |                 |                 |
| oF/ot          | Blockage due to current overload in the output stages<br>with temperature of the stages higher than 45°C |                    |                 |                 |                 |                 |
| SC             | Blockage due to short circuit in the output stages   |                    |                 |                 |                 |                 |
| EC             | Blockage due to non setting of the rated current (rC) or of the rated<br>frequency (Fn)                  |                    |                 |                 |                 |                 |
| E0...E7        | Internal error 0...7   |                    |                 |                 |                 |                 |
| F1             | Status / Alarm input 1   |                    |                 |                 |                 |                 |
| F3             | Status / Alarm input 3   |                    |                 |                 |                 |                 |



# Programming > Quick Set Up




The following is a quick set up procedure for basic operation, for all settable parameters refer to the complete input list on the last page.

## SYNTHETIC START-UP PROCEDURE

### - Setting the pump current:

To set the current, enter the installer menu by pressing the following key for 5 seconds:   

The text rC is displayed 

The value rC is read on the dataplate of the electric pump as the rated current in Ampere (A) and is entered using the keys  and . Press the  key.

### - Setting the direction of rotation:

The text rT , is displayed, after which use keys  and  to invert the direction of pump rotation. Press the  key.





### - Setting the nominal frequency:

The text Fn , is displayed, after which use keys  and  to set the nominal frequency of the pump in Hz according to the pump dataplate specifications; e.g. 50Hz for the European market. Press the  key.

### - Setting the pressure Setpoint:

The factory-set value is 3.0 bar.

To change it, press the buttons   at the same time for 2 seconds.

 appears on the display. Set the desired pressure in bar by pressing the buttons  and . Press the  button to confirm and exit the menu.

| Identifying s. | Description  | Factory parameters |                 |                 |                 |                 |
|----------------|--|--------------------|-----------------|-----------------|-----------------|-----------------|
|                |  | A.D.<br>M/M 1.1    | A.D.<br>M/T 1.0 | A.D.<br>M/T 2.2 | A.D.<br>T/T 3.0 | A.D.<br>T/T 5.5 |
|                | <b>Indications on the display in normal operation</b>  |                    |                 |                 |                 |                 |
| Go             | Electropump operating  |                    |                 |                 |                 |                 |
| Sb             | Electropump waiting  |                    |                 |                 |                 |                 |
|                | <b>User displays and settings<br/>(keys MODE and SET 2 seconds )</b>                             |                    |                 |                 |                 |                 |
| SP             | Setting the set-point pressure ( in bar ). Default : 3 bar                                       | 3.0 bar            | 3.0 bar         | 3.0 bar         | 3.0 bar         | 3.0 bar         |
|                | <b>Installer displays and settings<br/>(keys MODE and SET and – 5 seconds )</b>                  |                    |                 |                 |                 |                 |
| rC             | Setting the rated current of the electropump ( in A )  |                    | 0.0 A           | 0.0 A           | 0.0 A           | 0.0 A           |
| rt             | Setting the direction of rotation  |                    | 00              | 00              | 00              | 00              |
| Fn             | Setting the rated rotation frequency of the electropump.<br>( in Hz )                            | 50                 | 50              | 50              | 50              | 50              |
| od             | Setting the operating mode   | 01                 | 01              | 01              | 01              | 01              |
| rP             | Setting the pressure drop for restarting ( in bar )  | 0.5 bar            | 0.5 bar         | 0.5 bar         | 0.5 bar         | 0.5 bar         |
| Ad             | Setting the interconnection address<br>(necessary on sets of several electropumps with exchange) |                    | “_ _”           | “_ _”           | “_ _”           | “_ _”           |
| Eb             | Enabling the booster   |                    | 02              | 02              | 02              | 02              |
|                | <b>Technical assistance displays and settings<br/>(keys MODE and SET and + 5 seconds )</b>       |                    |                 |                 |                 |                 |
| tb             | Setting the reaction time of the water lack blockage ( in s. )                                   | 10 s               | 10 s            | 10 s            | 10 s            | 10 s            |
| GP             | Setting the gain of the proportional coefficient of the PI                                       | 1.0                | 1.0             | 1.0             | 1.0             | 1.0             |
| GI             | Setting the gain of the integral coefficient of the PI   | 1.0                | 1.0             | 1.0             | 1.0             | 1.0             |
| FS             | Setting the maximum rotation frequency of the electropump<br>( in Hz )                           | 50                 | 50              | 50              | 50              | 50              |
| FL             | Setting the minimum rotation frequency of the electropump.<br>( in Hz )                          | 0                  | 0               | 0               | 0               | 0               |
| Ft             | Setting the low flow rate threshold  | 15                 | 15              | 15              | 15              | 15              |
| CM             | Exchange method on sets of 2 electropumps  |                    | 01              | 01              | 01              | 01              |
| AE             | Setting the enabling of the anti-block/anti-frost function                                       | 01                 | 01              | 01              | 01              | 01              |
| SF             | Setting the starting frequency   | 45                 |                 |                 |                 |                 |
| Sr             | Setting the starting time  | 1.0                |                 |                 |                 |                 |
| i 1            | Setting the function of input 1 (float)  |                    |                 | 01              | 01              | 01              |
| i 2            | Setting the function of input 2 (set point selection)  |                    |                 | 01              | 01              | 01              |
| i 3            | Setting the function of input 3 (enable )  |                    |                 | 01              | 01              | 01              |
| P1             | Setting the auxiliary setpoint pressure (in bar)<br>- in function of input 2 -                   |                    |                 | 2.5 bar         | 2.5 bar         | 2.5 bar         |
| o1             | Setting the function of output 1 (default value: 2; function: ON alarm )                         |                    |                 | 02              | 02              | 02              |
| o2             | Setting the function of output 2 (default value: 2; function: ON operating )                     |                    |                 | 02              | 02              | 02              |
|                | <b>Displays of the main values<br/>(MODE key)</b>  |                    |                 |                 |                 |                 |
| Fr             | Display of the current rotation frequency (in Hz)  |                    |                 |                 |                 |                 |
| UP             | Display of pressure (in bar)   |                    |                 |                 |                 |                 |
| C1             | Display of the phase current of the electropump (in A)   |                    |                 |                 |                 |                 |
| UE             | Display of the version of the software with which the appliance is equipped                      |                    |                 |                 |                 |                 |
|                | <b>DISPLAY (keys SET and – for 2 seconds )</b>   |                    |                 |                 |                 |                 |
| UF             | Display of the flow  |                    |                 |                 |                 |                 |
| ZF             | Display of zero flow   |                    |                 |                 |                 |                 |
| FM             | Display of the maximum rotation frequency (in Hz)  |                    |                 |                 |                 |                 |
| tE             | Display of the temperature of the power stages (in °C)   |                    |                 |                 |                 |                 |
| bt             | Display of the temperature of the electronic card (in °C)  |                    |                 |                 |                 |                 |
| GS             | Display of running status  |                    |                 |                 |                 |                 |
| FF             | Display of the log of errors and blockages   |                    |                 |                 |                 |                 |
|                | <b>Access to manual mode<br/>(keys SET and + and – 5 seconds )</b>                               |                    |                 |                 |                 |                 |
| FP             | Setting the test frequency in manual mode (in Hz)<br>≤ the set value FS                          | 40                 | 40              | 40              | 40              | 40              |
| UP             | Pressure display (in bar)  |                    |                 |                 |                 |                 |
| C1             | Display of electropump phase current (in A)  |                    |                 |                 |                 |                 |
| rt             | Setting the direction of rotation  |                    |                 |                 |                 |                 |
| UF             | Display of flow  |                    |                 |                 |                 |                 |
| ZF             | Display of zero flow   |                    |                 |                 |                 |                 |
|                | <b>System reset<br/>(keys MODE and SET and + and – )</b>   |                    |                 |                 |                 |                 |
| ZF             | General reset ( ZF appears when leaving reset and restarting )                                   |                    |                 |                 |                 |                 |