Electronic Control of a Variable as a Function of Another Variable

This control method is suitable for those applications that require dynamic control of a dependent variable as a programmable function of a governing variable. It is required, for example in a Model 718-03 Electronic Control Valve, a dedicated electronic controller (optional BERMAD 800), and two transducers (one for each variable). The controller receives continuous inputs from both transducers and combines the value opening in response to a comparison with the set value according to a programmed function.

This system can be used for a wide range of applications including:

- **Leakage control** - Pressure control as a function of flow (see below)
- **Reservoir applications** - inlet or outlet flow control as a function of reservoir level
- **Heating and cooling systems** - Flow control as a function of temperature or AF

**Leakage Control**

Optimum network design requires active adjustment of the system set pressure to the minimum possible level.

**Pressures**

Constant pressures are set to keep the downstream pressure constant, ensuring sufficient pressure at the system critical point during "peak" demand when the friction loss is highest.

- **Downstream**:
  - Normally Open (N.O.)
  - Normally Closed (N.C.)
  - Last Position (L.P.)

**Features & Benefits**

- Low pressure drop - Independent operation
- Low electrical consumption
- Wide range of pressures and voltages
- Normally Open, Normally Closed or Last Position
- Electronic controller compatible
- Local & remote modification of set values
- Suitable for conventional PLC methods
- Data logging
- In-line serviceable - Easy maintenance

**Double chamber**

- Full power opening (option "F") and closing
- Non-linear closing characteristic
- Protected diaphragm

- **Screwed flow - Smooth flow characteristics**
- **Stainless Steel coated seat - Cavitation damage resistant**
- **V-Port Throttling Plug - Low flow stability**
- Flexible design - Easy addition of features

**Electronic Control Valve**

- Pressure control
- Flow control
- Leakage control
- Level control
- Temperature control
- Mixture control at mixing junction

**Features**

- Electronic controller
- Designed for use in Sanitary applications

**Flow Rate**

- **m3/h**
- **gpm**

**Voltage & Current**

- **220VAC/50-60Hz N.O.**
- **220VAC/50-60Hz N.C.**
- **24VDC - N.C.**
- **24VAC/50Hz - L.P.**
- **24VAC/50Hz - N.O.**
- **24VAC/50Hz - N.C.**

- **220VAC/50-60Hz N.O. 2AO**
- **220VAC/50-60Hz N.C. 2AC**
- **24VDC - N.C. 4DC**
- **24VAC/50Hz - L.P. 4AP**
- **24VAC/50Hz - N.O. 4AO**
- **24VAC/50Hz - N.C. 4AC**

**Pressure Loss**

- **bar**

**Flow Rate - m3/h**

- **Flow Rate - gpm**

**Flow Rate**

- **700 Series**

**Model Selection**

- **Model 718-03**

**Fittings**

- Brass or Stainless Steel

**Tubing**

- Plastic Tubing & Brass Fittings PB

**Control System**

- Electronic control. This valve responds to signals from the electronic controller BERMAD 800, by changing its opening position according to the set values programmed into the controller.

For very low pressure applications, refer to the full powered opening and closing Model 718-03 B.
Main Valve: characteristic (pressure, flow, level, salinity, temperature and others). The Electronic Control Valve shall respond to electric commands by changing its opening position to control a measurable
controller (optional BERMAD BE)

The Model 718-03 is an Electronic Control Valve equipped with two 2-Way solenoid pilots.

The actuator assembly shall be double chambered with an inherent separating partition between the lower surface and a critical point. The entire actuator assembly (seal disk to top cover) shall be removable from the valve as an integral unit. The stainless steel valve
body shall have a replaceable, raised, non-threaded, stainless steel seat ring. The valve shall have an unobstructed
seal and shall be capable of accepting a V-Port Throttling Plug by bolting.

The actuator shaft shall be centrally guided by a bearing in the separating partition. The replaceable radial seal disk shall include a resilient
ring and a filter. All fittings shall be forged brass or stainless steel.

Operation

The Model 718-03 is an Electronic Control Valve equipped with two 2-Way solenoid pilots. The interaction between the two solenoids determines the required opening position as signaled by the dedicated electronic controller (optional BERMAD BE®). The upstream solenoid applies pressure to the upper control chamber diminishing valve differential pressure to power the diaphragm actuator to a more closed position. The downstream solenoid exerts upper control chamber pressure resulting in a more open main valve. Needle valves at the control the closing and opening speed of the valve. Valve position can be provided by either an optional limit switch (g) or an analog transducer. In cases where pipeline water is contaminated (corrosive, debris laden) external control fluid is often used.

Engineer Specifications

The Electronic Control Valve shall respond to electric commands by changing its opening position to control a measurable characteristic (pressure, flow, level, salinity, temperature and others).

Main Valve: The main valve shall be a center guided, diaphragm actuated globe valve of either oblique (T) or angle pattern design. The body shall have a replaceable, raised, non-threaded, stainless steel seal ring. The valve shall have an unobstructed flow path, with no stagnant guides, bearings or support ribs. The body and cover shall be ductile iron. All external bolts, nuts, and studs shall be Duplex® coated. All valve components shall be accessible and serviceable without removing the valve from the pipeline.

Actuator: The actuator assembly shall be double chambered with an inherent separating partition between the lower surface of the diaphragms and the main valve. The actuator assembly shall not contain any costly spooling nor springing device. The entire actuator assembly (lead disk to top cover) shall be removable from the valve as an integral unit. The stainless steel valve shaft shall be centrally guided by a bearing in the separating partition. The replaceable radial seal disc shall include a resilient seal and shall be capable of accepting a V-Port Throttling Plug by bolting.

Control System: The control system shall consist of two 2-Way solenoid pilot valves, isolating check valves, two needle valves and a filter. All fittings shall be forged brass or stainless steel.

The assembled valve shall be hydraulically tested to customer requirements.

Quality Assurance: The valve manufacturer shall be certified according to the ISO 9001 Quality Assurance Standard. The main valve shall be certified as a complete drinking water valve according to the standards of NSF, WWAAS and others.

Electronic Control of a Single Variable

This method is suited for those applications where dynamic control of a variable is required. The system includes a Model 718-03 Electronic Control Valve, a dedicated electronic controller (optional BERMAD BE®), and an analog transducer. This system can be used in a wide range of applications including:

• Pressure control (see below)
• Flow control
• Level control

Pressure Reducing

Installing the pressure transducer downstream from the valve provides a pressure reducing function. Either of two methods can be applied:

• Local pressure control is transmitted by pressure transducer.
• Remote pressure control is transmitted by critical point pressure transducer.

Pressure Sustaining

Installing the pressure transducer upstream from the valve provides a pressure sustaining feature. Either of two methods can be applied:

• Sustaining pump discharge pressure
• Sustaining circulated discharge pressure
• Sustaining pump suction pressure
• Sustaining reservoir or canal level

Electronic Control of Mixing Juncions

The controller receives continuous inputs from the analog transducer (conductivity, salinity, temperature etc.) and corrects, in real-time, the opening of each valve in comparison with the programmed value.

Type A - Sampling the Mixture

These systems include two Model 718-03 Electronic Control Valves, and a dedicated electronic controller (optional BERMAD BE®). Two types of systems are used.

Type A - Sampling the Mixture

This method is suited for dynamic control of parallel valves controlling the two separate sources of a mixing junction. The controller receives continuous inputs from the analog transducer (conductivity, salinity, temperature etc.) and corrects, in real-time, the opening of each valve in comparison with the programmed value.

Type B - Sampling the Sources

The controller receives continuous inputs from both flow transducers and corrects, in real-time, the opening of each valve, thus maintaining constant flow ratio between the two sources to achieve the desired result.

Combination of both Types A and B is available also.
Electronic Control of a Variable as a Function of Another Variable

This control method is suitable for those applications that require dynamic control of a dependent variable as a programmable function of a governing variable. It is required, in systems like a Model 718-03 Electronic Control Valve, a dedicated electronic controller (optional BERMAD BE), and two transducers (one for each variable).

The controller receives continuous inputs from both transducers and corrects the valve opening in response to a comparison with the set value according to a programmed function.

This system can be used for a wide range of applications including:

- Leakage control
- Pressure control
- Flow control
- Level control
- Temperature control
- Mixture control at mixing junction

Features and Benefits:

- Low pressure drop – Independent operation
- Steady-state control
- Full range of pressures and voltages
- Normally Open, Normally Closed or Full Position
- Electronic controller compatible
- Local or remote modulation of set values
- Suitable for conventional PLC methods
- Data logging
- In-line serviceable – Easy maintenance
- Double chamber
- Fast powered opening (option “F”) and closing
- Non-slam closing characteristics
- Protected diaphragm
- Zero flow stability
- Stainless Steel rated seat – Corrosion damage resistant
- V-Port Throttling Plug – Low flow stability
- Flexible design – Easy addition of features

The Model 718-03 Electronic Control Valve combines the advantages of an excellent modulating, line pressure driven, hydraulic control valve with the advantages of electronic control. This valve responds to signals from the electronic controller BERMAD BE (optional), by changing its opening position according to the set value programmed into the controller.

For very low pressure applications, refer to the fall powered opening and closing Model 718-03-B.

For more options, refer to Ordering Guide.

Leakage Control Installation

Heating and cooling systems
Reservoir applications
Leakage control

Electronic Control Valve

- Pressure control
- Flow control
- Leakage control
- Level control
- Temperature control
- Mixture control at mixing junction

Features and Benefits:

- Low pressure drop – Independent operation
- Steady-state control
- Full range of pressures and voltages
- Normally Open, Normally Closed or Full Position
- Electronic controller compatible
- Local or remote modulation of set values
- Suitable for conventional PLC methods
- Data logging
- In-line serviceable – Easy maintenance
- Double chamber
- Fast powered opening (option “F”) and closing
- Non-slam closing characteristics
- Protected diaphragm
- Zero flow stability
- Stainless Steel rated seat – Corrosion damage resistant
- V-Port Throttling Plug – Low flow stability
- Flexible design – Easy addition of features

The Model 718-03 Electronic Control Valve combines the advantages of an excellent modulating, line pressure driven, hydraulic control valve with the advantages of electronic control. This valve responds to signals from the electronic controller BERMAD BE (optional), by changing its opening position according to the set value programmed into the controller.

For very low pressure applications, refer to the fall powered opening and closing Model 718-03-B.

For more options, refer to Ordering Guide.
**Electronic Control of a Single Variable**

This method is suited for those applications where dynamic control of a variable is required. The system includes a Model 718-03 Electronic Control Valve, a dedicated electronic controller (optional BERMAD BE), and an analog transducer. The controller receives continuous inputs from the analog transducer and corrects the valve opening in response to a comparison with the programmable set value. The set value can be changed either manually on the controller keyboard or remotely through PC, SMS or any other communication methods. This system can be used in a wide range of applications including:

- Pressure control (see below)
- Flow control
- Level control

**Pressure Reducing**

Installing the pressure transducer downstream from the valve provides a pressure reducing feature. Either of two methods can be applied:

- **Local pressure control** as transmitted by pressure transducer
- **Remote pressure control** as transmitted by critical point pressure transducer

**Pressure Sustaining**

Installing the pressure transducer upstream from the valve provides a pressure sustaining feature:

- Sustaining pump discharge pressure
- Sustaining circulated discharge pressure
- Sustaining pump suction pressure
- Sustaining reservoir or canal level

**Electronic Control of Mixing Juctions**

The controller receives continuous inputs from the analog transducer (conductivity, salinity, temperature etc.) and, correcting, in real-time, the opening of each valve in comparison with the programmed value.

**Type A - Sampling the Mixture**

These systems include two Model 718-03 Electronic Control Valves, a dedicated electronic controller (optional BERMAD BE). Two types of systems are used.

- **Type A - Sampling the Mixture**
  - Combination of both Types A and B is available also

**Type B - Sampling the Sources**

- Sustaining pump suction pressure
- Sustaining circulated discharge pressure
- Sustaining pump suction pressure
- Sustaining reservoir or canal level

**Engineer Specifications**

The Electronic Control Valve shall respond to electric commands by changing its opening position to control a measurable characteristic (pressure, flow, level, salinity, temperature and others).

**Main Valve**

The main valve shall be a center guided, diaphragm actuated globe valve of either oblique (Y) or angle pattern design. The body shall have a replaceable, caulked, non-threaded, stainless steel seat ring. The valve shall have an unrestricted flow path, with no stem guides, bearings or support ribs. The body and cover shall be ductile iron. All external bolts, nuts, and studs shall be Duplex® coated. All valve components shall be accessible and serviceable without removing the valve from the pipeline.

**Actuator**

The actuator assembly shall be double chambered with an inherent separating partition between the lower surface of the diaphragm and the main valve. The actuator assembly shall not contain any closing springs or spring-like devices. The entire actuator assembly (leak disk to top cover) shall be removable from the valve as an integral unit. The stainless steel valve seat shall be centrally guided by a sleeve in the separating partition. The replaceable nozzle seat shall include a resilient seal and shall be capable of accepting a 2 Port Throttling Plug by bolting.

**Control System**

The control system shall consist of two 2-way solenoid pilot valves, installing cocks valves, two needle valves and a filter. All fittings shall be forged brass or stainless steel. The assembled valve shall be hydraulically tested to customer requirements.

**Quality Assurance**

The valve manufacturer shall be certified according to the ISO 9001 Quality Assurance Standard. The main valve shall be certified as a complete drinking water valve according to the standards of NSF, WRAS and others.
**Electronic Control of a Single Variable**

This method is suited for those applications where dynamic control of a variable is required. The system includes a Model 718-03 Electronic Control Valve, a dedicated electronic controller (optional BERMAD BE), and an analog transducer. The controller receives continuous inputs from the analog transducer and corrects the valve opening in response to a comparison with the programmable set value. The set value can be changed either manually on the controller keyboard or remotely through PC, SMS or any other communication methods. The system can be used in a wide range of applications including:

- **Pressure control** (see below)
- **Flow control**
- **Level control**

**Pressure Reducing**

Installing the pressure transducer downstream from the valve provides a pressure reducing feature. Either of two methods can be applied:

- Local pressure control as transmitted by pressure transducer
- Remote pressure control transmitted by critical point pressure transducer

**Pressure Sustaining**

Installing the pressure transducer upstream from the valve provides a pressure sustaining feature:

- Sustaining pump discharge pressure
- Sustaining circulate discharge pressure
- Sustaining pump suction pressure
- Sustaining reservoir or canal level

**Electronic Control of Mixing Junctions**

This method is suited for dynamic control of parallel valves controlling the two separate sources of a mixing junction. These systems include two Model 718-03 Electronic Control Valves, and a dedicated electronic controller (optional BERMAD BE). Two types of systems are used.

**Type A - Sampling the Mixture**

The controller receives continuous inputs from the analog transducer (conductivity, salinity, temperature etc.) and controls, in real-time, the opening of each valve in comparison with the programmed value.

**Type B - Sampling the Sources**

The controller receives continuous inputs from both flow transducers and corrects, in real-time, the opening of each valve in comparison with the programmed value.

**Combination of both Types A and B is available also**
Electronic Control of a Variable as a Function of Another Variable

This control method is suitable for those applications that require dynamic control of a dependent variable as a programmable function of a governing variable. It is required. The system includes a Model 718-03 Electronic Control Valve, a dedicated electronic controller (optional BERMAD BE), and two transducers (one for each variable). The controller receives continuous inputs from both transducers and converts the valve opening in response to a comparison with the set value according to a pre-programmed function.

This system can be used for a wide range of applications including:

- **Leakage control** - Pressure control as a function of flow (see table).
- **Reservoir applications** - Inlet or outlet flow control as a function of reservoir level.
- **Heating and cooling systems** - Flow control as a function of temperature or flow rate.

---

**Technical Data**

<table>
<thead>
<tr>
<th>Dimensions and Weights</th>
<th>( 100 )</th>
<th>( 150 )</th>
<th>( 200 )</th>
<th>( 300 )</th>
<th>( 400 )</th>
<th>( 500 )</th>
<th>( 600 )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process Connection</strong></td>
<td>( 3/4 )</td>
<td>( 1 )</td>
<td>( 1 )</td>
<td>( 1 )</td>
<td>( 1 )</td>
<td>( 1 )</td>
<td>( 1 )</td>
</tr>
<tr>
<td><strong>Body</strong></td>
<td>( 3/4 )</td>
<td>( 1 )</td>
<td>( 1 )</td>
<td>( 1 )</td>
<td>( 1 )</td>
<td>( 1 )</td>
<td>( 1 )</td>
</tr>
<tr>
<td><strong>Internal Trim</strong></td>
<td>( 3/4 )</td>
<td>( 1 )</td>
<td>( 1 )</td>
<td>( 1 )</td>
<td>( 1 )</td>
<td>( 1 )</td>
<td>( 1 )</td>
</tr>
<tr>
<td><strong>Actuator</strong></td>
<td>( 3/4 )</td>
<td>( 1 )</td>
<td>( 1 )</td>
<td>( 1 )</td>
<td>( 1 )</td>
<td>( 1 )</td>
<td>( 1 )</td>
</tr>
</tbody>
</table>

---

**Main Valve**

- \( 3/4 \) - \( 1 \) \( 1 \) \( 1 \) \( 1 \) \( 1 \) \( 1 \) \( 1 \)
- \( 3/4 \) - \( 1 \) \( 1 \) \( 1 \) \( 1 \) \( 1 \) \( 1 \) \( 1 \)
- \( 3/4 \) - \( 1 \) \( 1 \) \( 1 \) \( 1 \) \( 1 \) \( 1 \) \( 1 \)
- \( 3/4 \) - \( 1 \) \( 1 \) \( 1 \) \( 1 \) \( 1 \) \( 1 \) \( 1 \)

---

**System Control**

- **System Control**
- **System Control**
- **System Control**
- **System Control**
- **System Control**
- **System Control**
- **System Control**

---

**Features and Benefits**

- **Low pressure drop** - Independent operation.
- **Independent control**
- **Low power consumption**
- **Wide range of pressures and voltages**
- **Normally Open, Normally Closed or Last Position**
- **Electronic controller compatibility**
- **Local & remote modification of set values**
- **Suitable for conventional PLC methods**
- **Data logging**

---

**Information Sources**

- **Customer Warnings**
- **Customer Warnings**
- **Customer Warnings**
- **Customer Warnings**
- **Customer Warnings**
- **Customer Warnings**
- **Customer Warnings**
- **Customer Warnings**

---

**Ordering Information**

- **Ordering Information**
- **Ordering Information**
- **Ordering Information**
- **Ordering Information**
- **Ordering Information**
- **Ordering Information**
- **Ordering Information**
- **Ordering Information**

---

**Additional Features**

- **Full powered opening & closing**
- **Solenoid valve is standard**
- **Check feature**
- **Flow-over-the-seat**

---

**Contact Information**

- **info@bermad.com**
- **www.bermad.com**
- **BERMAD Waterworks**
- **BERMAD Waterworks**
- **BERMAD Waterworks**
- **BERMAD Waterworks**
- **BERMAD Waterworks**
- **BERMAD Waterworks**

---

**Technical Specifications**

- **Technical Specifications**
- **Technical Specifications**
- **Technical Specifications**
- **Technical Specifications**
- **Technical Specifications**
- **Technical Specifications**
- **Technical Specifications**
- **Technical Specifications**