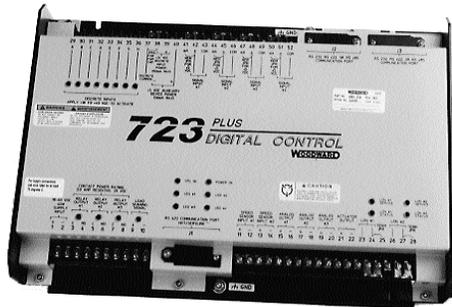


723MP™

Manual Positioner For Hydro Turbines With Optional Backup Control



APPLICATIONS

The 723MP™ (Manual Positioner) package utilizes Woodward's 723PLUS control, a robust digital hardware platform. Using a standard field configurable software package, the 723MP package was designed to function as a manual positioner for Hydro turbines. The 723MP unit is capable of manual setpoint control of two independent control loops (gate/blade, needle/deflector). This will allow the 723MP package to be used on Francis (one actuator), Kaplan (two actuator), and single needle impulse (two actuator) turbines. (For more information on the 723PLUS hardware platform, reference product specification 02759.)

DESCRIPTION

The 723MP package is designed to function as a completely independent manual control with the option of providing a 'backup' device to a primary unit control (automatic governor).

When the backup option is selected, the 723MP system will track the output of the primary unit control through auto-follow algorithms. Upon a critical failure of the primary unit control, an alarm algorithm will cause the auto/manual transfer device to change state. The 723MP unit will assume control of the set signal to the hydraulic control valve using a 'capture and hold' of the current servomotor position. After the 723MP unit has assumed control through a near bumpless transfer, the servo-motor

position can be manually controlled via external raise/lower contacts or Modbus commands.

The 723MP system uses a dedicated position feedback device which mounts in parallel with the primary position feedback device (if the backup function is used).

FLEXIBILITY

The 723MP system is field configurable, allowing site engineers to configure the control to their specific application, and to make future control configuration changes. On-line tunables are available to allow set point adjustments while a unit is running. Inputs and outputs are programmable as required by the application or interface. Additional outputs from LinkNet® modules (8 total) are also available to provide speed, gate position, or blade position switches.

CALIBRATION MODE

This version of the 723 MP system has a built in calibration mode. The calibration mode will decrease the setup/ calibration time and decrease the amount of time spent troubleshooting problems. The primary functions of the calibration mode are as follows:

- Bias servo control valve in the open/closing directions. This is primarily used to calibrate the servo feedback and diagnose proportional valve problems.
- Step the servo between two independent setpoints. This is primarily used for gate timing or maintenance situations.
- Input setpoint step values. This is primarily used to test the hydraulic valve response.
- Independent control of all output I/O points. This is used to verify field wiring and tune analog indicators.
- Monitoring of all input I/O points. This is used to verify all input signals to the control.

- Independent Manual Control
- Optional Functions
- 32-Bit Microprocessor Based Digital Control
- Field-Configurable
- User-Friendly Menu Format
- View Program and Change Dynamics While Running
- ModBus® Communications
- Calibration Mode
- Auto-Follow Algorithms

CONTROL SPECIFICATIONS

INPUTS

Power

Low Voltage Model.....	18-40 Vdc (24 or 32 Vdc nominal)
High Voltage Model.....	90-150 Vdc (125 Vdc nominal)
Power Consumption.....	40 W nominal
Inrush Current.....	(LV) 7 A for 0.1 ms
Inrush Current	(HV) 22 A for 15 ms

Discrete Inputs 8 contact inputs (7 dedicated, 1 configurable)

Analog Inputs 4 (4-20 mA) (2 dedicated, 2 configurable)

OUTPUTS

Valve/Actuator Drivers..... 2 actuator outputs (4-20 mA or 20-160 mA)

Discrete Outputs 3 relay outputs, 5 A at 28 Vdc, resistive/0.5 A at 115 Vac, resistive,
(1 dedicated, 2 configurable)

Analog Outputs /Actuator Outputs 2(0-1mA) (2 dedicated, 2 configurable) 2(0-20 mA)
..... (2 dedicated, 2 configurable)

COMMUNICATION 2 Modbus® (ASCII or RTU) Comm Ports (RS232, RS422, or RS485
compatible)
..... LonWorks®

DIMENSIONS

..... 416 (length) x 286 (height) x 56 (depth) mm (16.7 x 11.25 x 2.2 in)

FUNCTIONALITY

- Independent manual control backup for automatic unit control (optional);
- Gate positioning and indication;
- Dual actuator for gate/blade or single needle/ deflector;
- Alarm output;
- Shutdown on trip input;
- Hardware Status LEDs.

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature -40 to +70 °C (-40 to +158 °F)

Storage Temperature -55 to +105 °C (-67 to +221 °F)

Humidity..... 95% at +20 to +55 °C (+68 to +131 °F)

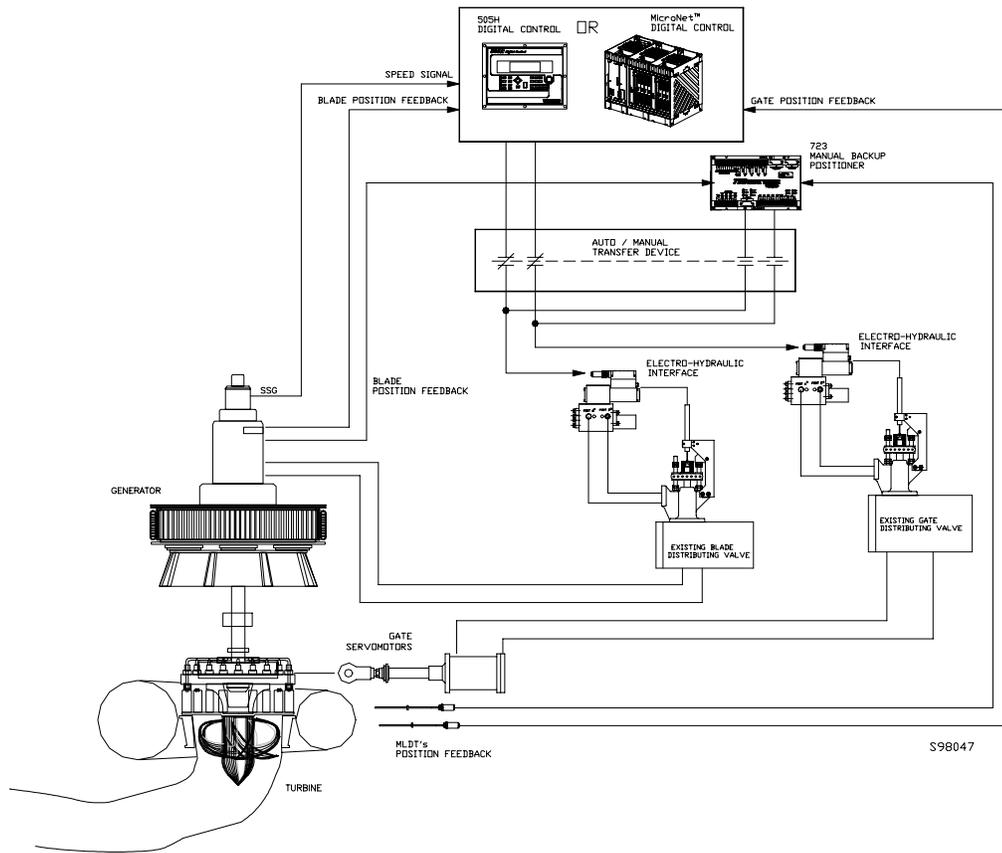
..... Lloyd's Register of Shipping Specification Humidity Test

Mechanical Vibration Lloyd's Register of Shipping Specification Vibration Test

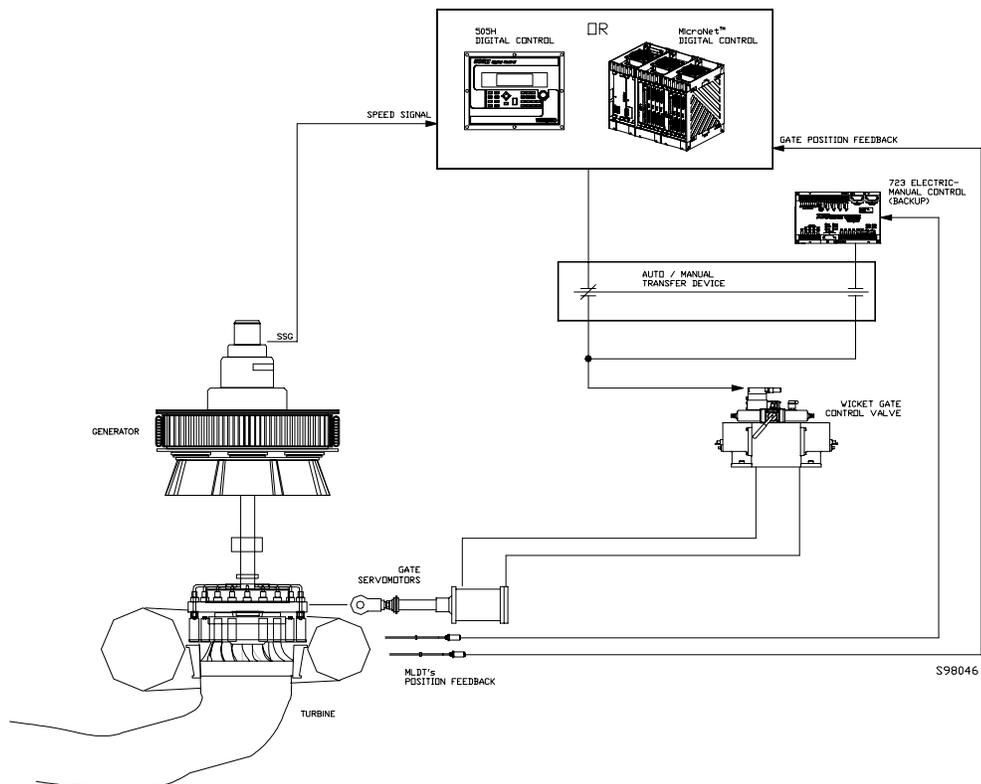
Mechanical Shock..... US MIL-STD 801C Method 516.2, Proc. I, II, V

EMI/RFI Specification Lloyd's Register of Shipping Specification

..... EN 50081-2 and EN 50082-2



Typical Kaplan Unit (Retrofit)



Typical Francis Unit (New)

PO Box 1519
1000 East Drake Road
Fort Collins CO, USA
80522-1519
Ph: (1)(970) 482-5811
Fax: (1)(970) 498-3058

**Plants, Subsidiaries,
Branch/Regional Offices**

Australia
Brazil
China
Czech Republic
England
Germany
India
Japan
Korea
Mexico
Netherlands
New Zealand
Poland
Scotland
Singapore
United Arab Emirates
United States

Distributors & Service

Woodward has an international network of distributors and service facilities. For your nearest representative call (1)(800) 835-5182 or see the Worldwide Directory on our web site (<http://www.woodward.com/industrial/address.htm>).

Corporate Headquarters

Rockford IL, USA
Ph: (1)(815) 877-7441

www.woodward.com

LinkNet® is a registered trademark of Woodward Governor Company

MicroNet™ is a trademark of Woodward Governor Company

This document is distributed for informational purposes only. It is not to be construed as creating or becoming part of any Woodward Governor Company contractual or warranty obligation unless expressly stated in a written sales contract.

© Woodward Governor Company, 1998
All Rights Reserved

723MP I/O DEFINITION	
<p>Discrete Inputs (8) 1 Discrete input for Run/Stop 4 Discrete inputs (gates/blades) for raise/lower commands. 1 Discrete input for Auto/Follow (contact open = 723MP in control) 1 Discrete input for shutdown 1 Discrete input for reset</p> <p><i>Configurable</i> 2 Discrete input for Creep Detection (Optional)</p> <p>Analog Inputs (4) 2 Analog inputs for position feedback. 2 Analog inputs for analog setpoints</p> <p>Discrete Outputs (3) 1 Contact output for run/shutdown</p> <p><i>Configurable</i> 1 Contact output for general alarm 2 Contact outputs for gate position, blade position, or speed switches (8 additional gate position or 8 additional speed switches available with LinkNet® Module option)</p> <p>Analog Outputs (4) 2 Analog outputs for proportional valve control (4-20 mA)</p> <p><i>Configurable</i> 2 Analog outputs for gate/blade position indication or speed indication.</p>	<p>Modbus® (1) Modbus is currently configured for control and telemetry. The 723MP is configured and intended to be used as a Modbus slave only. The position setpoint can be changed via Modbus raise/lower commands. The following telemetry points are available:</p> <p>All I/O points. Servo Position Setpoints. Servo Feedback.</p> <p>Additional Woodward Hardware Required Additional hardware is required when the 723MP is used as an independent backup controller in parallel with a master controller.</p> <p>Typical hardware includes: 1 Relay for each valve set signal 1 Woodward Proportional valve for each two stage valve being controlled (FC /Distributing) 1 Feedback Amplifier for each two stage valve being controlled</p> <p>A contact to define which device is in control (Auto /Manual)</p> <p>Speed Inputs (2) Speed Probe 1 (MPU or ZVPU or PTs) Speed Probe 2 (MPU or ZVPU or PTs)</p> <p>Optional LinkNet relay output mode--For use with position (8) (gate/needle, blade/deflector) or speed (8) switches</p>

For more information contact: