MFA Loop Controller for a Cleaner Earth

What's New	What's the Big Deal	What's the Benefit
MFA Loop Controller for controlling small processes and equipment with difficult control loops.	A great OEM product for its all-in-one design, powerful control, HMI, and communication capabilities, ease of use features, and affordable price.	Saves energy, chemicals, and manpower. Quick return-on-investment (ROI) within weeks. A no risk investment.

7 Inch Aluminum Panel.
32bit RISC 200MHz CPU.
64MB SDRAM, 64MB Flash.
800x480 resolution.
64K color touch screen.
8 AI (4-20mA, 0-10V).
4 AO (4-20mA).
8 DI (24V optical isolated).
4 DO (220VAC, 30VDC).
1 Ethernet, 2 Serial, 2 USB.

Model-Free Adaptive Control

MFA controls the processes that are too difficult for PID controllers to handle. MFA is the only "NoModel" advanced controller on the market that can control complex systems without the use of first-principle mathematical models or dynamic modeling based models. Once installed, no controller parameter tuning is required.

Better control means improved process stability, higher production efficiency and yield, consistent product quality, and reduced material and energy waste.

MFA Controllers at a Glance

- SISO MFA to replace PID to eliminate manual tuning,
- Nonlinear MFA to control extremely nonlinear processes,
- Anti-delay MFA to control processes with large time delays,
- MFA pH to control pH processes,
- Anti-delay MFA pH controller for a pH process with large time delays,
- Robust MFA to force PV to stay within defined bounds,
- Feedforward MFA to compensate for measurable disturbances, and
- Time-varying MFA to control time-varying processes.

Features and Specifications

- Configurable MFA and PID control.
- Dynamic, logic, calculation blocks.
- Trends, faceplates, historical data.
- Optional HMI software.
- Size: $222 \times 160 \times 47$mm, WT: 1.42Kg.
- Cutout dimension: 208x150mm.
- Working Temp: 0 to 50 deg C.
- Storage Temp: -20 to 70 deg C.

Suitable Control Applications:

- Water pH, ORP, and Turbidity,
- Combustion and temp of small boilers, ovens, furnaces, and HE,
- Density, temp, moisture and level of food processing equipment, etc.

The Inside of Model-Free Adaptive (MFA) Control

MFA Features	MFA Inside Story	Key Points	Description
Controls complex systems		Adaptive	Adaptive weighting factors are updated in every sample interval to minimize e(t).
Requires no precise process knowledge		Robust	Provides a wider robust range than PID and many other controllers.
Requires no process identification		Speed	No time consuming model training; controls process immediately.
Requires no controller design		Stability	Guarantees closed-loop stability for passive processes.
Requires no complicated manual tuning		Ease of Use	Easy to configure, launch, and maintain.