

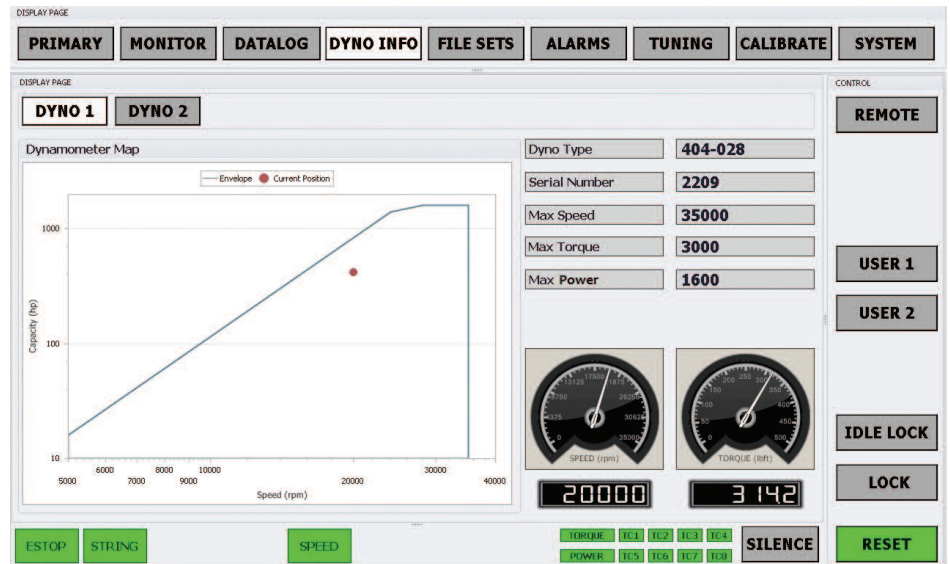
# KAHN



## Series 555 Dynamometer Control System

## Backed by over 50 years of experience in aerospace engine testing, the Kahn Series 555 dynamometer controller meets and exceeds the requirements of the most demanding turbine and engine test operations.

- Five control modes: open-loop valve position, closed-loop speed, torque, torque as a function of speed (power/propeller law) and torque as a function of speed and external input/collective pitch (integrated mode)
- Simultaneous inlet and outlet valve control for fast response
- Fully bumpless transfer between control modes
- Graphical display of operating point
- Advanced tuning capabilities
- Capability to utilize real-time remote tuning assistance via Internet from Kahn
- Remote control via Ethernet and RS232
- External data storage and file transfer via USB port
- Internal data storage on SSD



- Fast-response electro-hydraulic control valves
- Ethernet, RS232 and analog speed and torque outputs for data acquisition purposes
- Multiple configuration files
- Eight Type K thermocouple and five 0-10VDC inputs
- Nine digital outputs for alarms and relays

### The Series 555 design philosophy emphasizes intuitive ease of use.

This state of the art dynamometer system digital controller allows the operator to easily set the desired load, speed or torque while automatically handling all the required decision making about valve position coordination. The Series 555 control modes have been developed utilizing Kahn's long proven proprietary hydraulic dynamometer control algorithms.



The clean, modern front panel operator interface consists of:

- 12 inch flat panel color touch screen
- Single panel-mounted rotary encoder for dynamometer setpoint adjustment only

The Series 555 graphical user interface includes functionality for:

- Real-time, bumpless control mode transfer
- Dynamic data displays
- On-screen tuning
- Multiple standard and advanced control modes
- On-screen valve position display
- Real-time dynamometer power curve
- Thermocouple/sensor input monitoring and other functions



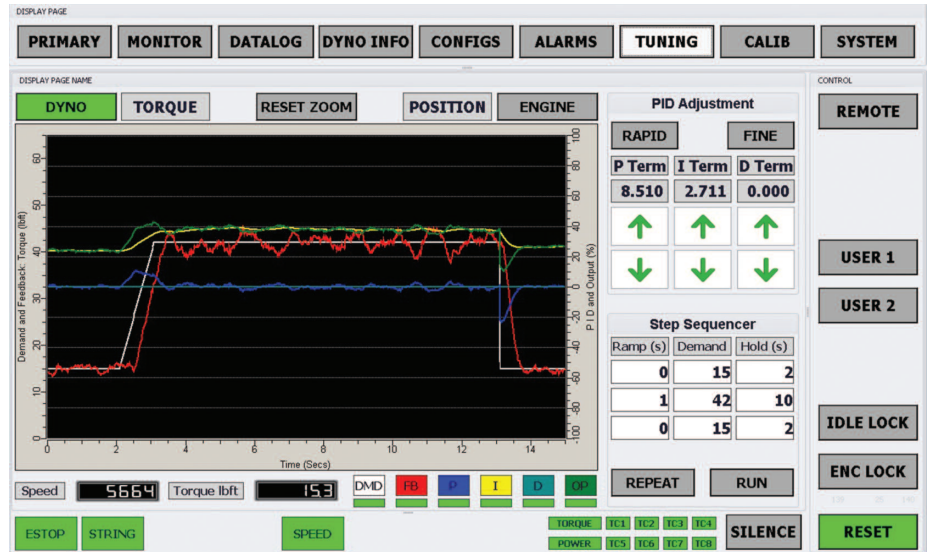
## Advanced Control Capabilities

- Software based, full featured digital controller.
- Overall control loop speed 10 milliseconds.
- Open-loop valve position, closed loop speed, torque and power law control modes.
- Multivariable user configurable control mode easily adaptable to specific applications (for example, torque as a function of power lever angle and speed, used to simulate helicopter operation).
- Independent PID settings for torque and speed-based control modes.
- Capable of controlling two dynamometers in tandem configuration. Independent and combined torque displays are provided in the tandem case.
- Inlet and outlet valves are controlled simultaneously, providing optimum control response in steady state condition, as well as for transient tests.

## The Series 555 features the easiest, fastest PID controller tuning available today.

This tuning capability includes the following:

- Real-time graphical display of controller internal parameters (individual PID contributions to output as well as actual controller output) and speed or torque feedback
- Disturber function (step, ramp or square waveform) with easily selected amplitude and frequency
- Adjustable filters
- Capable of remote real-time tuning assistance by Kahn via Internet so precise tuning support can be quickly and easily provided while tuning is being performed

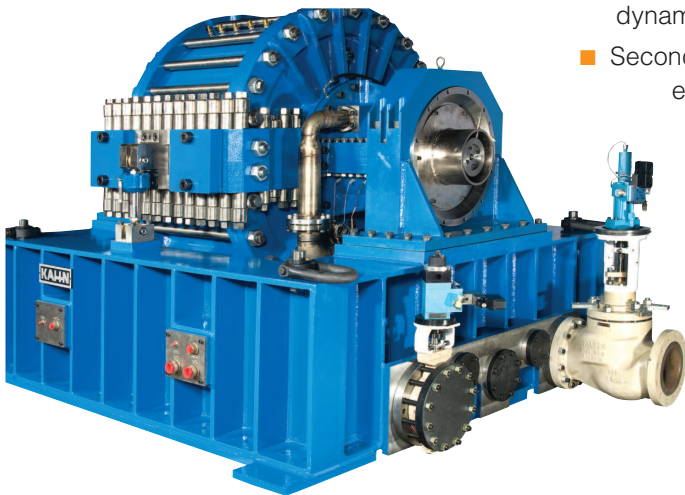


## Fast-Response Control Valves

- Dynamometer load and water flow rate controlled simultaneously with high-performance electro-hydraulic control valves for fastest possible dynamic response
- Secondary position control loop ensures precise open and closed-loop control action

## Precision Torque and Speed Measurement

- Bi-directional strain gage load cell or a hollow strain gage torque reaction sensor
- Temperature compensated to obtain best torque measurement accuracy over a wide range of operating conditions
- Torque Measurement Accuracy  $\pm 0.2\%$  full scale (F.S.) ( $\pm 0.3\%$  F.S. including mechanical errors)
- Magnetic speed sensor operating in conjunction with a multi-tooth gear.
- Speed Measurement Accuracy  $\pm 1$  rpm
- Calibration traceable to the U.S. National Institute of Standards and Technology (NIST)
- Built-in torque calibration verification and automatic speed calibration using built-in frequency reference



**WITH ALL OF THE FEATURES NECESSARY FOR THE MOST DEMANDING HIGH-PERFORMANCE TURBINE TEST APPLICATIONS, THE KAHN SERIES 555 IS THE MOST ADVANCED DYNAMOMETER CONTROL SYSTEM AVAILABLE.**



## ENGINE TEST APPLICATIONS

Typical applications include development, production and post-overhaul testing of turboshaft and turboprop engines, experimental turbines, industrial and marine gas turbines such as (but not limited to):

- Honeywell ASE8, ASE40, ASE50, ASE120, LTP101, LTS101, T53, T55, TF40, TF50A, TPE331
- General Electric CT7, LM500, LM1600, LM2500, LM5000, LM6000, T58, T64, T700, GE38/T408
- LHTEC T800, CTP800, CTS800
- Klimov/Motor Sich TV2-117A, TV3-117
- MTU/Turbomeca/Rolls Royce MTR 390
- Pratt & Whitney FT4, FT8, FT9, PT6A, PT6C, PT6T, PW100, PW200, ST6
- Rolls-Royce Avon, Gem, Gnome, RB211, Spey, Trent, Tyne, WR-21, 250, 501, 601, AE2100, T406, T56, T63, AE1107C
- Solar Centaur, Mars, Mercury, Saturn, Taurus, Titan
- Turbomeca Ardiden, Arriel, Arrius, Artouste, Astazou, Makila, RTM 322, Turmo

## SPECIFICATIONS

Electrical Power Requirements  
85 to 265 VAC 50/60Hz  
1 phase 1000 W

Operating Temperature Range  
0°C—50°C

Dimensions  
485 x 270 x 370 mm  
(19 x 10.5 x 14.5 inches)

Console Weight  
14 kg (30 lb)

NOTE:  
The information included herein was correct at the time of publication and supersedes all previously published data. However, it is our policy to continually improve our products to ensure ever better performance. Consequently, current Kahn products may incorporate modifications not shown or described on these pages.

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