

Single Cylinder Research Engines/Optical Instrumentation



AVL 427 Engine Timing Unit

The AVL 427 ETU has eight separate channels that can generate a variable TTL signal with adjustable start time and pulse duration. The pulses can either be triggered individually or repeated in cycles. Any combination of working and waiting cycles can be programmed. It is also possible to generate more than one pulse group per cycle. The functions can be selected from the menu-driven user interface.

Areas of Usage

- As a substitute for engine control systems (EMS) to enable a flexible control of prototype and development engines.
- The AVL 427 ETU is an excellent tool for the manual and flexible control of research engines or prototype engines. The engine operator can change ignition and injection timing at any time during engine operation.
- As a universal signal generator for special measuring equipment
- For engine-related control or triggering of signal sources (e.g. pulse laser, strobe light) and measuring systems (e.g. LIF, PIV, TCA, camera). It precisely synchronises measuring instruments with the engine in order to ensure high repeatability of the measuring results.

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Your Benefits at a Glance

- Eight independent adjustable channels permit extreme flexibility in applications
- Pulses can be programmed for skipped engine firing (e.g. for glass research engines)
- Pulses can be programmed for single events or for cyclic repetitions
- Several pulses per cycle possible
- Adjustable pulse shut-off at predefined engine speed (safety function)
- Channel settings can be stored for repeated use

**Technical Features**

Engine simulation

Engine simulator with adjustable speed and CDM interval
Output socket for Trig and CDM

Safety mechanisms

All outputs disabled if the specified speed is exceeded or undershot
Speed threshold can be set separately for each channel

Eight memories

All settings can be stored and recalled as required

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Technical Data 1

User Interface	The unit is operated via the LCD display or can be controlled via an RS-232 interface as an option.
Outputs	8 independent output channels Option: 16 trigger modes can be selected from the user interface
Inputs	From shaft encoder: one reset pulse per rev., multiple crank angle pulses per rev. (e.g. 1800). The instrument can be controlled either from a large LCD display or via an RS-232 port.

Mains connection

Voltage	115 V (88 – 132 V AC) or 230 V (187 – 264 V AC)
Frequency	47 – 63 Hz
Current	1.5 A at 115 V AC or 0.7 A at 230 V AC

TTL inputs

Voltage for logical 0	0 – 0.5 V
Voltage for logical 1	2.1 – 5 V
Internal pullup resistor	10 k Ω

Analogue inputs

Analog In	0 – 10 V
Analog In 2..8	0 – 5 V
Input resistor	100 k Ω

TTL outputs

Circuit	Open collector with 1 k Ω pullup resistor
Current sink	max. 50 mA

V outputs

Circuit	Totem pole
Voltage	0 – 10 V
Current	250 mA max.

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Technical Data 2**Trigger/CDM output**

Circuit	Totem pole
Voltage	5 V
Current	250 mA max.

Analogue outputs

Voltage	-10 – 10 V
Current	10 mA max.

Dimensions approx. 140 x 240 x 320 mm (H x W x D)

Weight approx. 5 kg