E²PRECON-M

E²PRECON-M processes signals of pressure sensors from up to 24 cylinders in rough conditions and provides real-time combustion characteristics for closed-loop control and monitoring.

With the E²PRECON family AVAT has pioneered cylinder pressure based engine control since 2006.

The M-series offers comprehensive real-time cylinder pressure analysis in a robust design.

E²PRECON-M supports a wide range of cylinder pressure sensors from various manufacturers. Using well-proven digital signal processing algorithms E²PRECON-M computes combustion characteristics for each cylinder and every combustion cycle. These are the key parameters engine builders need to implement advanced combustion control, monitoring and diagnosis.

Incorporating thermodynamic models, E²PRECON-M calculates the net heat release rate (netHRR). From this, important combustion parameters such as heat release (HR), start, duration and center of combustion (SoC / DoC / CoC) are computed. Indicated mean effective pressures (IMEP), peak pressures and knock levels are also provided.

Since cylinder pressure sensors have a limited life time, sensor health monitoring and signal plausibility checks are included.

E²PRECON-M is easily integrated into engine control systems and PLCs via CAN bus.

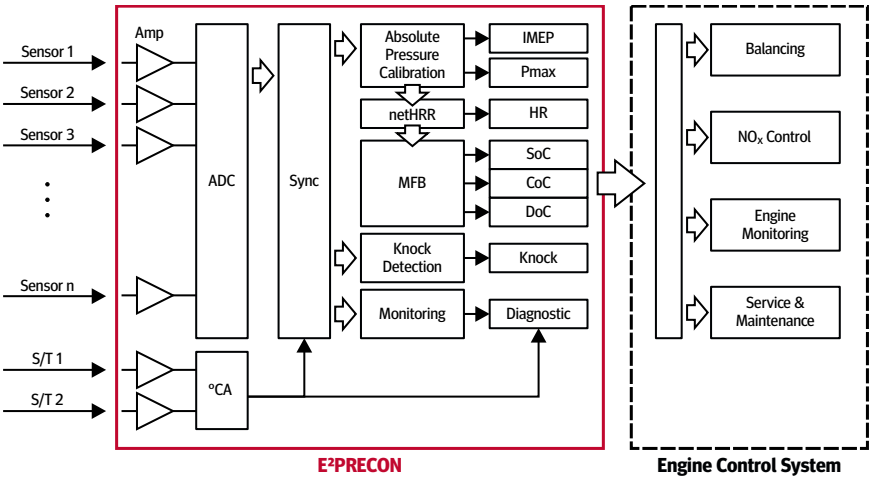
HIGHLIGHTS

- Your key to cylinder pressure based combustion control
- On-engine mounting
- Consistent shielding, via M12 plug incl. sensor supply
- Marine type approvals ABS, BV, DNV GL, LR
- Enables balancing, misfire and knock detection
- Service tool assists in engine diagnostics and data export
- Interface to condition monitoring systems
- Library for Bachmann PLC included (others on request)

APPLICATION AREA

DESIGNATION	E²PRECON-M	
Part number	3 000 200	
AMBIENT CONDITIONS		
Operating temperature	-25 ... +85 °C	
Storage temperature	-25 ... +85 °C	
Humidity	0 ... 95 % relative humidity	
Vibration resistance	IACS UR E10.7 vibration, IEC 60068-2-6 2 ... 25 Hz: s = ±1.6 mm; 25 ... 100 Hz: a = ±4 g	
Protection class	IP66 (EN 60529)	
ELECTRICAL DATA		
Supply voltage	DC 24 V	
Range of supply voltage	DC 18 ... 32 V	
Typical current consumption	1.25 A / 24 V	
Typical power consumption	30 W	
EMC limit values	EN 61326-1[a], DIN EN 61000-6-2 and DIN EN 61000-6-4	
Cylinder pressure sensors 4 ... 20 mA (0 ... 5 V)[b]	12 sensors	24 sensors (2 modules)
Connection speed / timing sensors	Passive 2-wire sensors: signal threshold 2 ... 70 V_{PP} or active sensors: input voltage range DC ±35 V	
DATA INTERFACES		
Data link to ECS	CAN SAE-J1939 standard protocol	
Connection to service PC	Ethernet	
MECHANICAL DATA		
Dimensions in mm (H×W×D)	321 × 320 × 47.3	
Installation	Mountable on-engine or nearby.	

a) Impulse voltages >0.5 kV (line / line) or >1 kV (line / earth) require an external protective circuit.
b) On request.



E²PRECON-M computes IMEP, peak pressure, heat release, combustion timings and knock levels for each cylinder and every engine working cycle. This data is transmitted synchronously to the engine control system where it is used for various purposes.