Emerson A6312

01 Function and selected configuration

Product function

Emerson A6312 turns timing between shaft-trigger pulses into speed and phase information. The two channels may operate independently, compare two speeds or support a configured redundant reference arrangement.

Selected configuration

A6312 is the 6TE speed/key monitor identified for IMR 6000/10 and IMR 6000/30; A6312-8 is the separate AMS 6500 rack version. The monitor accepts appropriate eddy-current measuring chains using 6422, 6423, 6424 or 6425 probes and CON 011/91, 021/91 or 041/91 drivers.

Functional path

Shaft trigger marks	Probe / driver signals	Two-channel timing	Speed, key and alarms

Input channels	Two independent differential channels
Signal processing	Up to 20 kHz, with configured trigger count
Rack identity	A6312 for IMR 6000/10 and IMR 6000/30

A channel can measure speed from 1–255 trigger marks, detect a once-per-revolution key reference or supervise zero speed by timing the interval between pulses. The configurable zero-speed timing range is 1–1700 seconds. Combined-channel processing can determine rotational direction from phase-shifted marks or compare the speeds of two trigger wheels.

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02 Technical operating envelope

Input channels	2 independent differential inputs
Input voltage	0 to ±27.3 VDC
Input impedance	>100 kΩ
Input frequency	0–20 kHz
Speed range	Up to 65,535 rpm
Trigger marks	1–255 per wheel

Zero-speed timing	1–1700 s configurable
Sensor supply	-26.75 VDC nominal; 20 mA nominal / 35 mA max.
Current outputs	0/4–20 mA per channel; load <500 Ω
Current accuracy	±1% of full scale
Pulse-output frequency	0–20 kHz
Operating temperature	0 to +65 °C

The 20 kHz input limit and 65,535 rpm speed range are separate constraints; the configured marks per revolution link them. Use the once-per-turn geometry for a stable phase reference.

Signal interpretation

Speed uses the configured number of trigger marks, whereas stable key-phase measurement requires a once-per-revolution reference. Multiple key marks can change phase reference after startup.

Interface boundary

Redundant main and backup sensors need a common axial measurement plane for phase continuity. Test transfer and output behaviour rather than assuming two healthy sensors establish a valid redundant reference.

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03 System integration and applications

Shaft speed

Convert pulse frequency using the installed 1–255 trigger-mark count.

Once-per-turn reference

Provide a stable phase/key event from one reference mark per shaft revolution.

Zero-speed supervision

Time the interval between pulses with the configured 1–1700 second threshold.

Dual-channel comparison

Use phase-shifted inputs for direction or compare two wheel speeds in the configured combined mode.

System and supply context

Use the A6312 rack version in IMR 6000/10 or IMR 6000/30 with appropriate probe/driver inputs. Match the full card identity before considering an A6312-8 or other rack variant.

Application boundary

Speed, zero-speed, direction and phase functions depend on trigger count and geometry. The configured two-channel combination defines which function is available to the machine.

Why should the phase target for A6312 have one mark per revolution?

One mark provides an unambiguous once-per-revolution reference. Multiple marks may permit key detection but can change the phase reference at each startup.

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04 Engineering selection decisions

Which rack identity must be retained when replacing A6312?

The A6312 ordering entry specifies IMR 6000/10 and IMR 6000/30. A6312-8 is the separate version for AMS 6500 systems; the suffix cannot be ignored.

How does A6312 determine that a shaft has stopped?

It measures the time between trigger pulses. The zero-speed timing range is configurable from 1 to 1700 seconds and must suit the target count and required minimum speed.

What is the difference between A6312 front buffered and rear pulse signals?

The front buffered signal is a reduced version of the input, with factor 0.15 and a 0–16 kHz bandwidth. Rear pulse outputs operate over 0–20 kHz for the processed pulse path.

What receiving load is needed for the A6312 pulse output?

The specified permissible pulse-output load is greater than 10 kΩ. The 0/4–20 mA output has a different requirement, below 500 Ω, so these interfaces must not be treated alike.

Check slow-speed timing	Set zero-speed timing for the real pulse spacing at the lowest required speed.
Separate output roles	Use pulse outputs for timing and current outputs for scaled characteristic values.

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05 Configuration boundary and references

Lifecycle and support

The current manufacturing and factory-support phase of A6312 is not confirmed. Product availability alone does not establish its lifecycle status.

Replacement assessment

Retain A6312 rather than substituting the A6312-8 rack version without verification. Preserve target count, key geometry, zero-speed time and any redundant transfer settings.

Document roles

The separate technical reference organizes manufacturer specifications by function and interface. This product brief explains selection and system context. The independent installation guide covers preparation, connection, tests and handover. All three are Apter Power-authored and do not replace manufacturer instructions.

Technical basis

Emerson Protection Cards for AMS 6500 Classic Systems, A6312 specifications, November 2017.

Related product navigation

- Emerson PR6423/00R-101 CON031
- Emerson PR6423-002-030

These are related references, not confirmed substitutes or an automatically approved assembly.

Product enquiries