

## Technical Information & Data Reference

### HIGH VOLTAGE XEM MWD SYSTEM

HV XEM – HIGH VOLTAGE ELECTROMAGNETIC MWD

XEM MWD has revolutionized electromagnetic technology and is the most powerful EM tool on the market. The technology is specifically designed to overcome the TVD limitations inherent with EM technology due to changing formations and variations in downhole resistance. This EM system is engineered for performance drilling in deep horizontal applications including overbalanced, underbalanced, and high LCM environments.

KAMBI XEM is the ideal MWD tool for all directional drilling applications by giving precision Inclination and Azimuth, Gamma Logging, Pressure While Drilling (PWD) and Vibration While Drilling (VWD-Real-time shock and vibrations).

The XEM High Voltage (HV) tool self-regulates the output voltage and current for optimum performance. Auto-adjusting, High Voltage Transmitters automatically select the necessary power usage for the formation resistance. This results in the ability to drill deeper than previous EM tools as well as increases efficiency by decreasing time spent troubleshooting, down linking, and obtaining directional surveys. The new receiver is a major improvement featuring multiple channels and reference points for improved decoding without the need to amplify signals as well as noise cancelation.

#### Feature & Benefits

- Capability of high data rates.
- Survey On Command (SOC) applications.
- No mechanical adjustments associated with a pulser or extensions. The tool needs only to be built, programmed, loaded into the BHA.
- Real-Time shock & vibration - 3 Axis shock & RPM sensor package.
- Services - Directional Survey Service (DSS), Directional Logging Service (DLS), Perform Drilling Mechanics and others.
- Operating temperature up to 150°C (300°F).
- Command Center monitors all the activity 24/7 in real-time and ability to troubleshoot as you drill.
- Saves battery life - not transmit when no vibration is detected.
- Ability to incorporate programmable frames.
- Different downlink configurations and programming flexibility.
- No LCM restrictions.
- Real-time Pressure While Drilling Measurements.



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www.kambi.ca

XEM Specifications			
Description	4.75"	6.50"	8.00"
Gap Sub ID	2.688±- 0.005"	2.813±- 0.005"	3.500±- 0.002"
Gap Sub OD	4.750±- 0.025"	6.500±- 0.025"	8.000±- 0.025"
OD With Hard Banding	4.825±- 0.025"	6.575±- 0.025"	No Hard Banding
Available End Connections	NC 38 (3-1/2 IF)	NC 46 (4-1/2 XH)	6-5/8 Regular
Connection Makeup Torque	9,400 ft. Lbs	23,000 ft. Lbs	9,000 ft. Lbs
Rotation	Up to 200 RPM, 20-80 RPM Typical		
Shock	1000g, 1/2 msec, 1/2 Sine Shock		
Vibration	30 g, 30 – 500 Hz		
Max. Operating Pressure	15,000 psi		
Max. Operating Temperature	150°C (300°F)		
Min. Storage/Transportation Temperature	-40°C (-40°F)		
Ma. Sand Content by Volume	2%		
Max. LCM Content	No Limits		
Max. Axial Load	100,000 lbs Compression	200,000 lbs Compression	300,000 lbs Compression
	500,000 lbs Tension	1,000,000 lbs Tension	1,200,000 lbs Tension
Torsional Strength of Gap at 150°C	10,000 ft. Lbs	20,000 ft. Lbs	55,000 ft. Lbs
Max. Dogleg Severity Rotating	15°/30m Slick Collars	10°/30m Slick Collars	8°/30m Slick Collars
	25°/30m Flex Collars	15°/30m Flex Collars	13°/30m Flex Collars
Flex Collar Requirements	Ø4.00" Flex Section Min. 2/3 Total Length (20' of 31') Collars Above & Below Gap Sub	Ø5.625" Flex Section Min. 2/3 Total Length (20' of 31') Collars Above & Below Gap	Ø6.00" Flex Section Min. 2/3 Total Length (20' of 31') Collars Above & Below Gap Sub
Recommended Max. Flow Rate	1.2 m3/min (317 GPM)	2.0 m3/min (528 GPM)	4.0 m3/min (1056 GPM)
			3.4 m3/min (900 GPM)
Recommended Collar Bore(s)*	2-11/16" ID Collar	2-13/16" ID Collar	3-1/2" ID Collar
			3-1/4" ID Collar
Drilling Fluid	Water Base Mud/Oil Base Mud/Air		
Electrical Resistance	> 1 kΩ typ		
Tool Length (Probe Dependent)	Min. 235" & Max. 365"		
Max. Tool Weight (w/o collar)	270 lb	430 lb	610 lb

\*Contact Extreme Engineering for maximum Dogleg severity if a different size Flex Collar is to be used: (1) Collar ID 3-1/2", (2) Collar ID 3-1/4"

Accuracy	
Azimuth (Latitude < ±55°)	±0.3°
Tool face (Roll)	±0.1°
Inclination	±0.1°
Continuous Inclination	± 0.1 Degrees at 30° Inclination (to be confirmed)
Temperature	
Operating Temperature Range	0-150°C (32 to 300°F)
Storage Temperature Range	-55° to +160°C (-67 to 320°F)
Power	
Input Voltage Range	+11V to +30V
Current Draw	70 ma@ 15V
Physical	
Outside Diameter (O.D.)	1.375" (35mm)
Length	15.5" (394mm)
Weight	1.5 lbs. (681g)
Environmental Performance	
Shock	1000 G lms half sine wave
Vibration	20G rms 5- 1000Hz