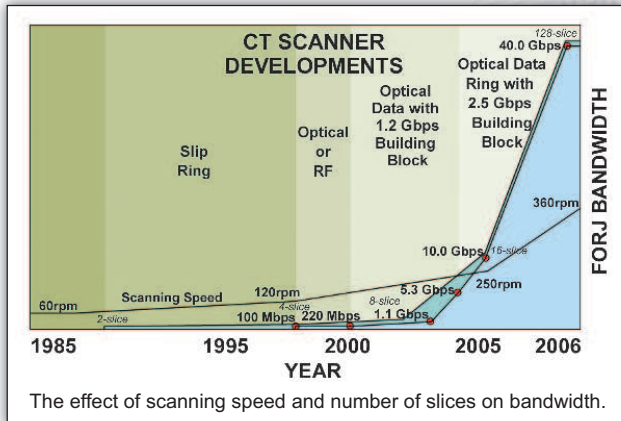


Optical DataLink™ For CT Scanners

Computed tomography (CT) scanners place rigorous demands on all of their subsystems and components. The dramatic increase in the functionality of CT, including cardiology, oncology and acute care, places requirements of robust, artifact-free imaging on all elements of the data generation, transmission and processing system.

One of the primary challenges within a CT scanner is the requirement to transmit image data from the rotating x-ray detector array to the stationary data processing computer. In the earliest CT scanners, this data transmission task was accomplished with a slip ring, i.e., sliding electrical contacts. With the ever increasing data speed requirements of multi-slice machines, an alternative method of handling data across the rotating interface is required.

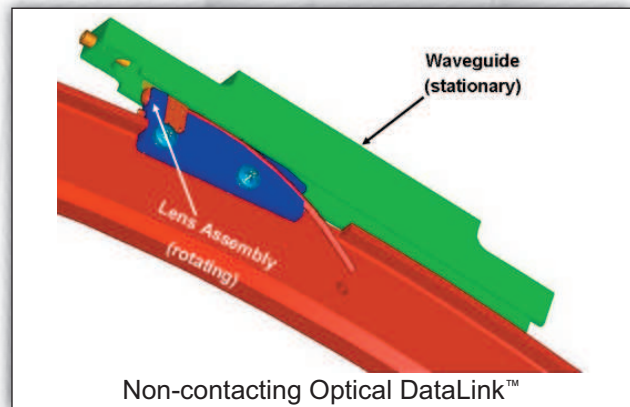


Over the past 10 years, Moog has developed its patented Optical DataLink™ to transmit the high rate image data from the Detector Array (DAS) across the rotational interface of the CT gantry. As the data rate has increased from around 200 Mbit/sec in year 2000 to as much as 10 Gbps in 2006, continual improvements to the technology have been required. The newest Moog Optical DataLink™ is capable of data speeds from 2.5 Gigabits/sec (Gbps) - the fundamental building block - up to 40 Gbps at a bit error rate (BER) of less than 10⁻¹³.

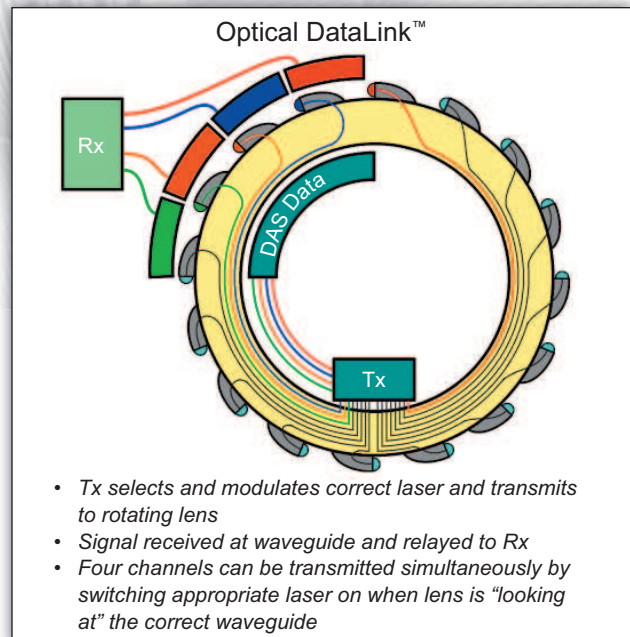
The Moog 40 Gbps Optical DataLink™ will be updated to an 80 Gbps design by the year 2008. The ability to transmit image data from the rotating detector at aggregate data rates of up to 80 Gbps will be sufficient to support continued demands on CT error-free high speed data transmission.

Operation

The key element of the Optical DataLink™ is a broadband, non-contacting optical link between a rotating lens and a stationary waveguide. This optical link is capable of supporting optical data transfer in excess of 100 Gbps per waveguide, however, current laser technology limits the data speed to 2.5 Gbps per optical link.



The key to proper operation of the entire optical system is spacing of the optical links around the rotor and providing switching technology to sequence the optical links correctly. The illustration below shows 4 independent optical links for an aggregate data rate of 10 Gbps (4 x 2.5 Gbps) but 40 Gbps is achievable with 16 optical links.



Motion Components for Medical Applications

Motors







The Silencer™ series of DC brushless motors offers diameters from 1.2 inches to 4.1 inches and lengths from 1.3 inches to 5.5 inches. Continuous torques range from 2.4 to 519 oz-in and speeds up to 20,000 rpm.

Slip Rings

Used in electromechanical systems that require unrestrained, continuous rotation while transferring power and data from a stationary structure to a rotating device.

Actuators

For applications requiring the motion necessary in lifting, turning, positioning or indexing, Moog Components Group offers a wide range of high quality electromechanical actuators to meet virtually any motion requirement. Linear actuators range from basic motor driven actuators to complete "closed loop" servo systems with feedback and integral intelligence on board.

Motors	Size	Volts (VDC)	Rated Torque	Speed	Power
BSS09 	2.18 in - 2.80 in L x 0.866 in Dia.	24	To 5.0 oz-in	To 40000 RPM	To 144 watts
BN-23 	1.91 in - 2.91 in L x 2.3 in Dia.	24/36/48	To 50 oz-in	To 9000 RPM	To 200 watts
BN-34 High Speed 	2.5 in - 3.5 in L x 3.4 in Dia.	24/50/100	To 78 oz-in	To 14000 RPM	To 591 watts
Slip Rings	Circuits	Through Bore	Current	Voltage	Operational Speed
AC-4598 	6, 12, 18, 24	1.5 in	10 amps	600 VAC	250 RPM or higher
AC-6373 	6 and 12	None	2 amps	120 VAC	100 RPM
Actuators	Linear Axial Thrust	Volts	Stroke	Temperature Range	Speed
890-01 	100 to 2,000 lbs	22 to 32 VDC	< 1 in up to 12 in	-40°C to 70°C Ambient	0.046 to 0.187 in/sec

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