SAS Overview

Rev 1.1
- Kyntronics specializes in Actuation and Actuation Motion Solutions across many industries including Medical, Aerospace & Industrial.

- The Kyntronics team has hundreds of years of Motion Control experience with Electrical, Software and Mechanical Engineers.

- Our sister company Midwest Precision was established in 1953, and manufactures components for Kyntronics along with other industries including Aerospace, Medical, Defense, Energy and Industrial.

- Our business culture is customer focused, with an innovative design team, utilizing Lean Six Sigma concepts with a continuous improvement conviction.

- AS9100C, ISO9001 Certified Quality System

- Kyntronics & Midwest Precision are located near Cleveland Ohio.

  Our mission is to help customers solve Motion Control problems more effectively, using proven technologies in innovative ways.
**SAS Summary**

**Features**

- Boeing Certified
- DO178 Certified
- Thousands of LRUs flying today
  - BA, Swiss, Saudi, Emirates...
- Versatile distributed system – simple to complex seating
- Best-in-class “silence” - - very quiet
- Best-in-class di/dt – “unique”
- Auto-addressing (no resistors)
- Auto & 2 Point Calibration
- Cloning from the Master
- Coordinated Motion
- IFE interface
- USB Flash Drive – OTG
  - Load SW, Upload
  - Diagnostics / History
- Power compensating logic
  - Slows down if power level is exceeded
- Diagnostics / Historian
- Exerciser (cycler)
- Data Acquisition
- BITE display
- Most cost effective harnesses in the SAS industry (2 wires)
- Most light weight harnesses in the SAS industry (2 wires)

*Regarding obstacle detection sensitivity - - per Boeing: “one of the best we have ever seen”*
Actuator Offering

Features

- Smart Actuation
  - Local Diagnostics / History
- Brushless Servo
- In / Out Simple (Inexpensive) Connectors
- Up to 1000lbf capacity (short period)
- Up to ~1.5in/sec speeds (short period)
- <2.3lbs (Linear without a screw)
- (4) quadrant control
- Rotary actuators
  - 155in-lbs, 19RPM
  - 60in-lbs, 49RPM
- Best-in-class “silence” -- very quiet
  - No brake clicks
- Anti-rotation (as desired)
- Common gear train
- Reliability > 100,000 cycles

Regarding obstacle detection sensitivity -- per Boeing: “one of the best we have ever seen”
SAS System Overview

- Auto Addressing – **No** Unique Resistors & **No** Terminating Resistors
- Simple Harness – easy assembly
  - Two Connectors
  - Low Cost
  - Less weight, less labor
- Auto loading, **No** PC required
- Simple USB Interface
- Scalable and Expandable
- <$100 interconnect harnesses

2-Wire System, Power and Network Communications **Combined**

½ the weight ½ the connector size, ½ the complexity & cost...
Electronic Offering

**SCM (System Control Module)**
- Powerline Communication
- (8) Digital O/Ps
- (6) Digital I/Ps
- (1) Analog I/P
- (1) RS485 (isolated)
- (1) RS485 (std)
- (2) 28Vdc O/P
- (1) 12Vdc O/P
- Modbus RTU
- USB Interface
- 3-segment BITE Display

**IOM (I/O Module)**
- Powerline Communication
- (8) Digital O/Ps
- (6) Digital I/Ps
- (1) Analog I/P
- (1) RS485 (isolated)
- (1) RS485 (std)
- (2) 28Vdc O/P
- (1) 12Vdc O/P
- Modbus RTU

**ACM (Actuator Control Module)**
- Powerline Communication
- Capable of running any Brush or Brushless motor
- 12-36Vdc
- 8amp Peak
- Feedback control
- Brake Interface
- Solenoid Control

- These modules can be used together along with any Actuator in any multiple combinations to provide a complete system.
- DO160 Aerospace Qualified
- Simple – robust – cost effective connectors minimizing harness costs
- 2 wire Powerline Interface (Communication over the DC Power)
PC Interface Software (NES)

Highlights:
- microUSB
- Auto connect
- Configurable
- Calibration
- Diagnostics / Historian
- Cloning
- Help Screens
- App Notes
Exerciser Utility

- Use for cycling the seat or for reliability
- Continue for xx cycles
- Conditional “string” stopping to capture events
- Email on Fault Condition
- Save & Recall configurations
PC Interface Software (NES)

Data Capture
- Up to 10 points per node
- Graph the data for analysis
We are Solution Oriented
- Custom applications – Engineered to fit your space requirements, and your specs.
- Differentiating Solutions – New technology keeping up with new demands.

We are Passionately Customer Focused
- Engineering support
- Collaboration: we work side by side with your team

We are Actuation and Motion Control Experts
- In-house Mechanical, Electrical, Hydraulic, and Software Engineering Expertise
- Keep your design simple, powerful, quiet
- Use cutting edge technology, stay ahead of the competition
- Easily implement your concepts, offering innovative unique products

We have a Continuous Improvement Culture
- We are always finding ways to help improve your products
- We strive every day to incorporate up to date technology while integrating our product with yours

We are Manufacturing Focused – OTD driven – Innovative
- We are a lean-based organization
- We pride ourselves on a proven track record of efficiency improvements