

T500 Elite - Hotbus

BETTER BY DESIGN

T500 Elite - Hotbus™

Plant Wide Monitoring System for Bucket Elevators & Conveyors

APPLICATION

Combined belt alignment, belt speed, continuous bearing temperature, pulley alignment, level and plug condition monitor for bucket elevators and conveyors.

METHOD OF OPERATION

The T500 Elite - Hotbus™ is a serial communication system specially designed to monitor up to 256 sensors, including continuous bearing temperature and belt misalignment. With automatic machine shutdown capability and PLC / PC compatibility this advanced microprocessor based system offers low cost installation, versatility and easy system expansion. Logging and trending software is also available for historic data analysis and preventative and predictive machine maintenance.

FEATURES

- ▶ Continuous Bearing Temperature Monitoring with User Adjustable Trip Points
- ▶ RS485 Serial Communications
- ▶ Monitors up to 256 Sensors
- ▶ 1 Second Scan Time
- ▶ Local Ambient Temperature Comparison
- ▶ Alarm and Shutdown Features
- ▶ LCD Screen Message Center
- ▶ Connect to Logging and Trending Software

PART NUMBERS/ACCESSORIES

- ▶ T5004V46C T500 Elite - Hotbus Control Unit
- ▶ TS2V4C Touchswitch - Belt Alignment Sensor
- ▶ BS1V4FC Binswitch - Level/Plug
- ▶ ATS7V0FC-FP Autoset Flush Probe - Level/Plug
- ▶ ATS7V0FC Autoset RF Capacitance Point Level Indicator
- ▶ P8001V34FC P800 - Proxswitch
- ▶ RSE4VBF Rotech Encoder
- ▶ WDB20V3C NTC Bearing Temperature Sensor
- ▶ WDB70V3C Surface Mount Temperature Sensor
- ▶ ADB20V3C NTC Adjustable Depth Bearing Temp. Sensor - 4 Inch Probe
- ▶ ADB20V3C/D2 NTC Adjustable Depth Bearing Temp. Sensor - 2 Inch Probe
- ▶ ADB20V3C/D8 NTC Adjustable Depth Bearing Temp. Sensor - 8 Inch Probe
- ▶ HOTBUS-TN4 Hotbus 4 Input Node
- ▶ HOTBOXTN4C Hotbus 4 Input Node With Hotbox
- ▶ EXPENC1 Explosion Proof Enclosure
- ▶ R5004V46C R500 Alarm Relay Interface
- ▶ F5004V46C F500 Fieldbus Gateway*

* Available Gateways (Must Specify) - Ethernet, DeviceNet, Profibus, Modbus

Detailed specification, wiring diagrams and installation/operating instructions available upon request.



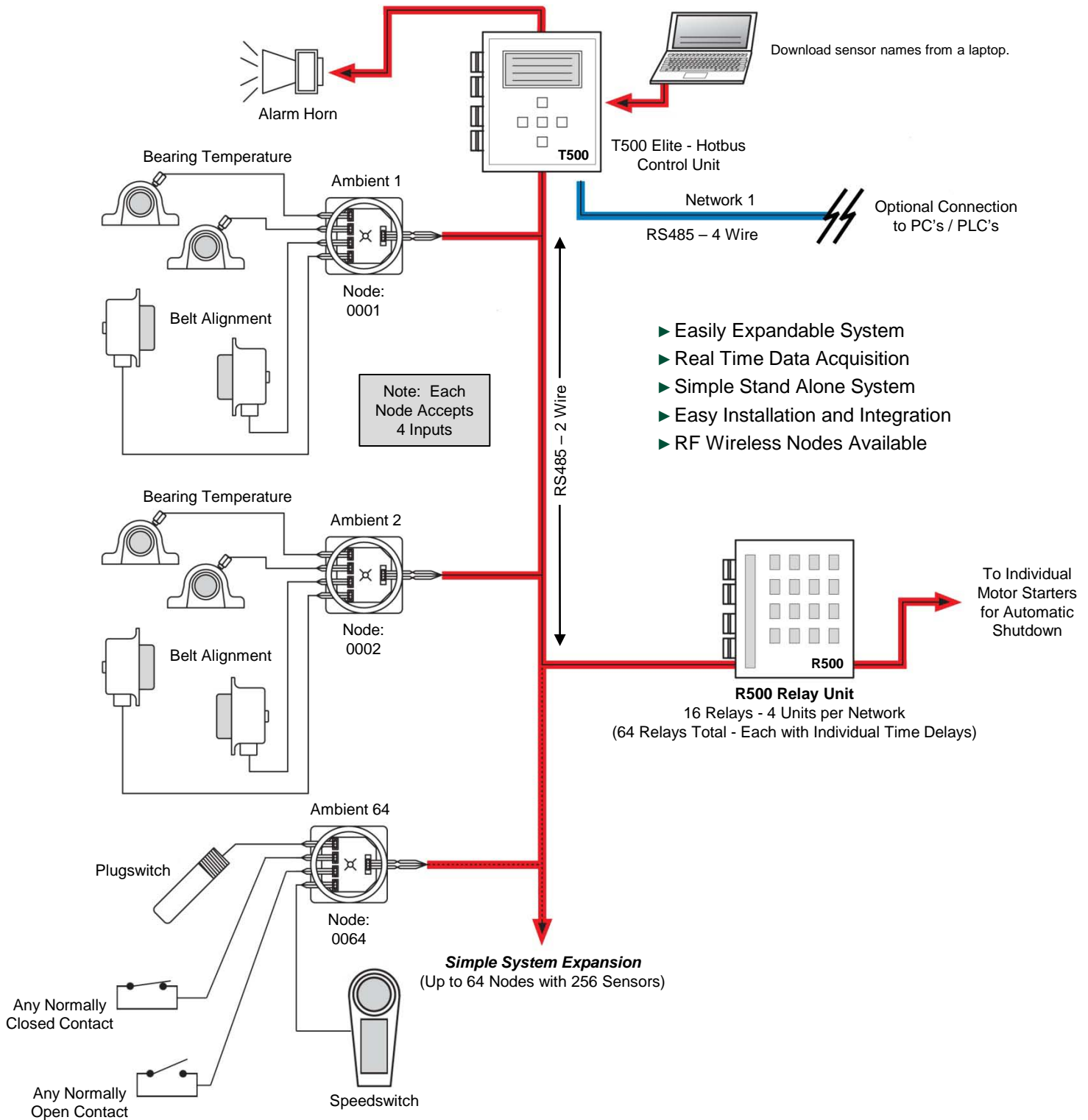
ATEX Approved
Versions Available

Please refer to instruction manual for correct installation.
Information subject to change or correction. June 2011

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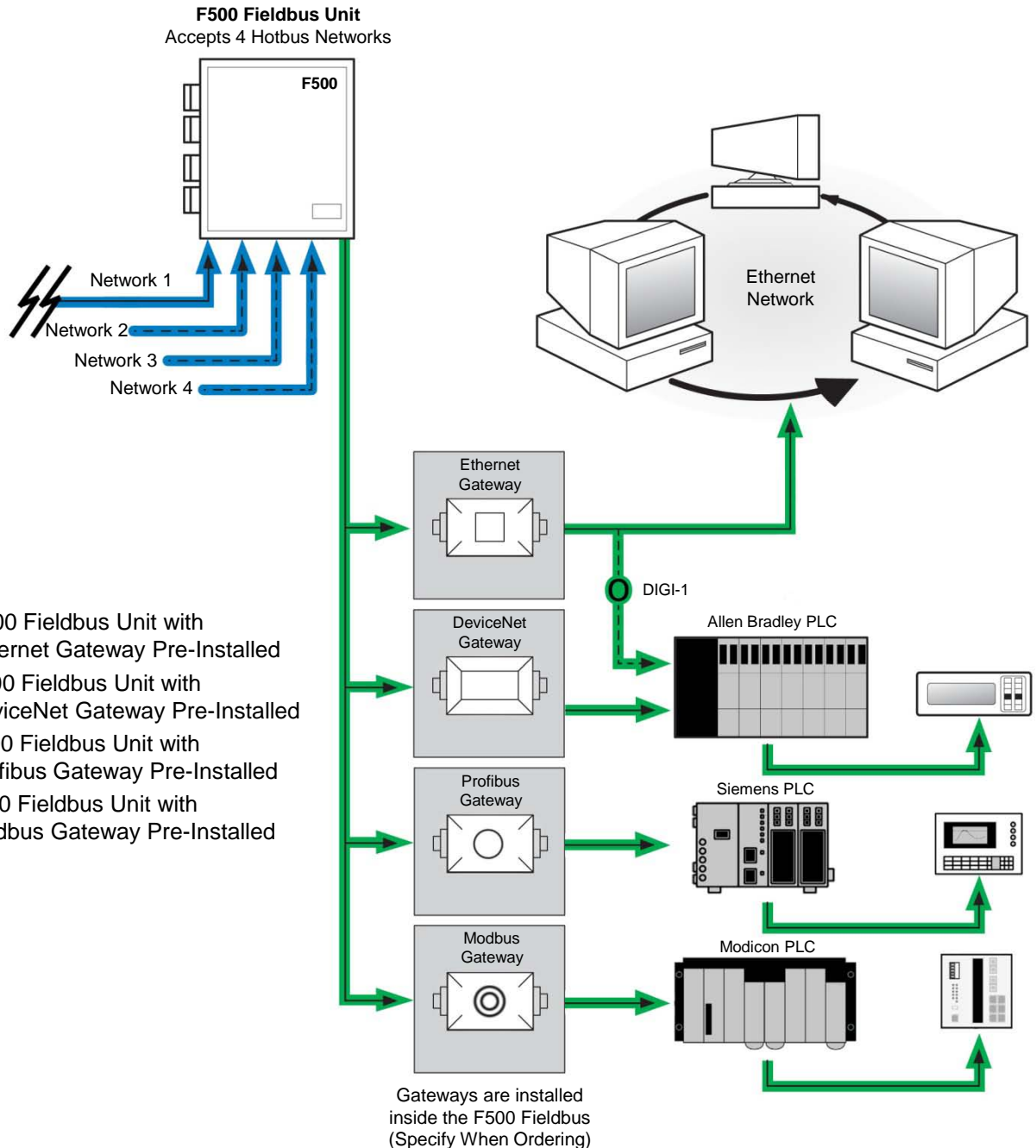
T500 - Hotbus Network Diagram (A)



T500 Elite - Hotbus

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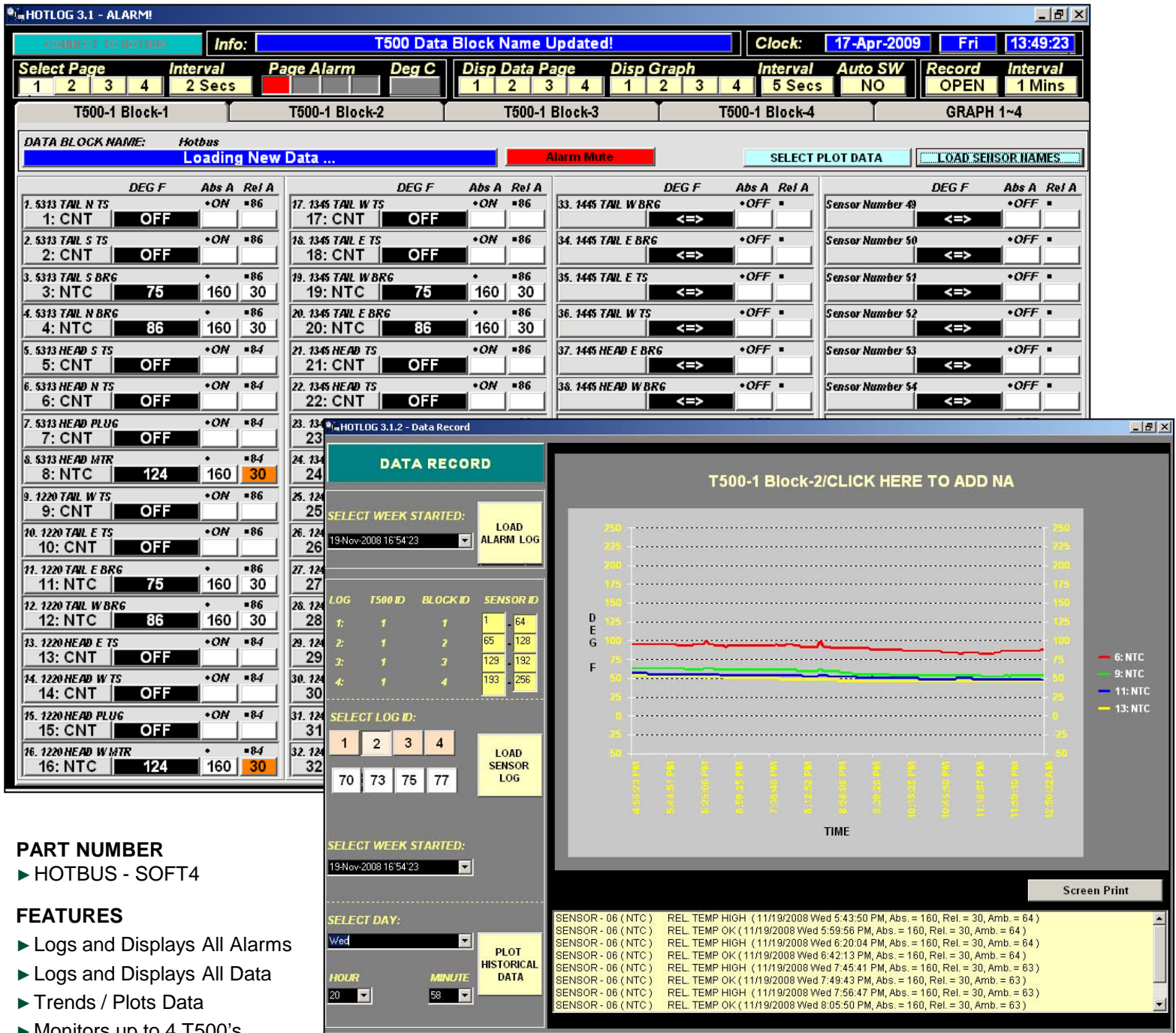
T500 - Hotbus Network Diagram (B)



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Logging & Trending Software



HOTLOG 3.1 - ALARM!

CONNECT TO HOTBUS Info: **T500 Data Block Name Updated!** Clock: **17-Apr-2009 Fri 13:49:23**

Select Page Interval Page Alarm Deg C Disp Data Page Disp Graph Interval Auto SW Record Interval

1 2 3 4 2 Secs 1 2 3 4 1 2 3 4 5 Secs NO OPEN 1 Mins

T500-1 Block-1 T500-1 Block-2 T500-1 Block-3 T500-1 Block-4 GRAPH 1~4

DATA BLOCK NAME: Hotbus Loading New Data ... Alarm Mute SELECT PLOT DATA LOAD SENSOR NAMES

DEG F	Abs A	Rel A	DEG F	Abs A	Rel A	DEG F	Abs A	Rel A	DEG F	Abs A	Rel A
5313 TAIL N TS	• ON	#86	17. 1345 TAIL W TS	• ON	#86	33. 1445 TAIL W BRG	• OFF		Sensor Number 49	• OFF	
1: CNT OFF			17: CNT OFF			34. 1445 TAIL E BRG	• OFF		Sensor Number 50	• OFF	
5313 TAIL S TS	• ON	#86	18. 1345 TAIL E TS	• ON	#86	35. 1445 TAIL E TS	• OFF		Sensor Number 51	• OFF	
2: CNT OFF			18: CNT OFF			36. 1445 TAIL W TS	• OFF		Sensor Number 52	• OFF	
5313 TAIL S BRG	•	#86	19. 1345 TAIL W BRG	•	#86	37. 1445 HEAD E BRG	• OFF		Sensor Number 53	• OFF	
3: NTC 75	160	30	19: NTC 75	160	30	38. 1445 HEAD W BRG	• OFF		Sensor Number 54	• OFF	
5313 TAIL N BRG	•	#86	20. 1345 TAIL E BRG	•	#86						
4: NTC 86	160	30	20: NTC 86	160	30						
5313 HEAD S TS	• ON	#84	21. 1345 HEAD TS	• ON	#86						
5: CNT OFF			21: CNT OFF								
5313 HEAD N TS	• ON	#84	22. 1345 HEAD TS	• ON	#86						
6: CNT OFF			22: CNT OFF								
5313 HEAD PLUG	• ON	#84									
7: CNT OFF											
5313 HEAD MTR	•	#84									
8: NTC 124	160	30									
1220 TAIL W TS	• ON	#86									
9: CNT OFF											
1220 TAIL E TS	• ON	#86									
10: CNT OFF											
1220 TAIL E BRG	•	#86									
11: NTC 75	160	30									
1220 TAIL W BRG	•	#86									
12: NTC 86	160	30									
1220 HEAD E TS	• ON	#84									
13: CNT OFF											
1220 HEAD W TS	• ON	#84									
14: CNT OFF											
1220 HEAD PLUG	• ON	#84									
15: CNT OFF											
1220 HEAD W MTR	•	#84									
16: NTC 124	160	30									

DATA RECORD

SELECT WEEK STARTED: 19-Nov-2008 16:54:23 LOAD ALARM LOG

LOG	T500 ID	BLOCK ID	SENSOR ID
1:	1	1	1 64
2:	1	2	65 128
3:	1	3	129 192
4:	1	4	193 256

SELECT LOG ID: 1 2 3 4 LOAD SENSOR LOG

70 73 75 77

SELECT WEEK STARTED: 19-Nov-2008 16:54:23

SELECT DAY: Wed PLOT HISTORICAL DATA

HOUR: 20 MINUTE: 58

T500-1 Block-2/CLICK HERE TO ADD NA

DEG F

250
225
200
175
150
125
100
75
50
25
0
-25
-50

TIME

4:55:00 PM 5:45:00 PM 6:35:00 PM 7:25:00 PM 8:15:00 PM 9:05:00 PM 9:55:00 PM 10:45:00 PM 11:35:00 PM 12:25:00 PM

6: NTC
9: NTC
11: NTC
13: NTC

Screen Print

SENSOR - 06 (NTC) REL TEMP HIGH (11/19/2008 Wed 5:43:50 PM, Abs. = 160, Rel. = 30, Amb. = 64)
 SENSOR - 06 (NTC) REL TEMP OK (11/19/2008 Wed 5:59:56 PM, Abs. = 160, Rel. = 30, Amb. = 64)
 SENSOR - 06 (NTC) REL TEMP HIGH (11/19/2008 Wed 6:20:04 PM, Abs. = 160, Rel. = 30, Amb. = 64)
 SENSOR - 06 (NTC) REL TEMP OK (11/19/2008 Wed 6:42:13 PM, Abs. = 160, Rel. = 30, Amb. = 64)
 SENSOR - 06 (NTC) REL TEMP HIGH (11/19/2008 Wed 7:45:41 PM, Abs. = 160, Rel. = 30, Amb. = 63)
 SENSOR - 06 (NTC) REL TEMP OK (11/19/2008 Wed 7:49:43 PM, Abs. = 160, Rel. = 30, Amb. = 63)
 SENSOR - 06 (NTC) REL TEMP HIGH (11/19/2008 Wed 7:56:47 PM, Abs. = 160, Rel. = 30, Amb. = 63)
 SENSOR - 06 (NTC) REL TEMP OK (11/19/2008 Wed 8:05:50 PM, Abs. = 160, Rel. = 30, Amb. = 63)

PART NUMBER
▶ HOTBUS - SOFT4

FEATURES

- ▶ Logs and Displays All Alarms
- ▶ Logs and Displays All Data
- ▶ Trends / Plots Data
- ▶ Monitors up to 4 T500's
- ▶ Can Run on Multiple PC's
- ▶ Automatically Saves and Organizes Data in Weekly Files

Detailed specification, wiring diagrams and installation/operating instructions available upon request.

T500 Elite - Hotbus

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Bucket Elevator Application

All Sensors are 24 VDC and Connect to the Hotbus Nodes

Belt Misalignment



Touchswitch -

Contact type electro-mechanical limit-switch with no moving parts, which detects tracking and misalignment problems.

6

Plug Condition



Binswitch -

Capacitance style sensor that can detect plugged spouts, inlets and outlets.

3

Autoset Flush Probe -

Heavy duty capacitance style sensor with automatic material build up compensator that can detect plugged spouts, inlets and outlets.



8

Bearing & Surface Temperature



ADB & WDB Series -

1. Grease through, positive mounting, NTC thermistor with user adjustable trip points. ADB series has adjustable depth probes.

2. Surface mount NTC thermistor designed to bolt onto a bearing or gearbox housing.

1

Speed Monitoring



Proxswitch -

Industry standard inductive sensor for detecting belt slip conditions. Shown on boot shaft with the optional Whirligig target/bracket/guard for easy installation.

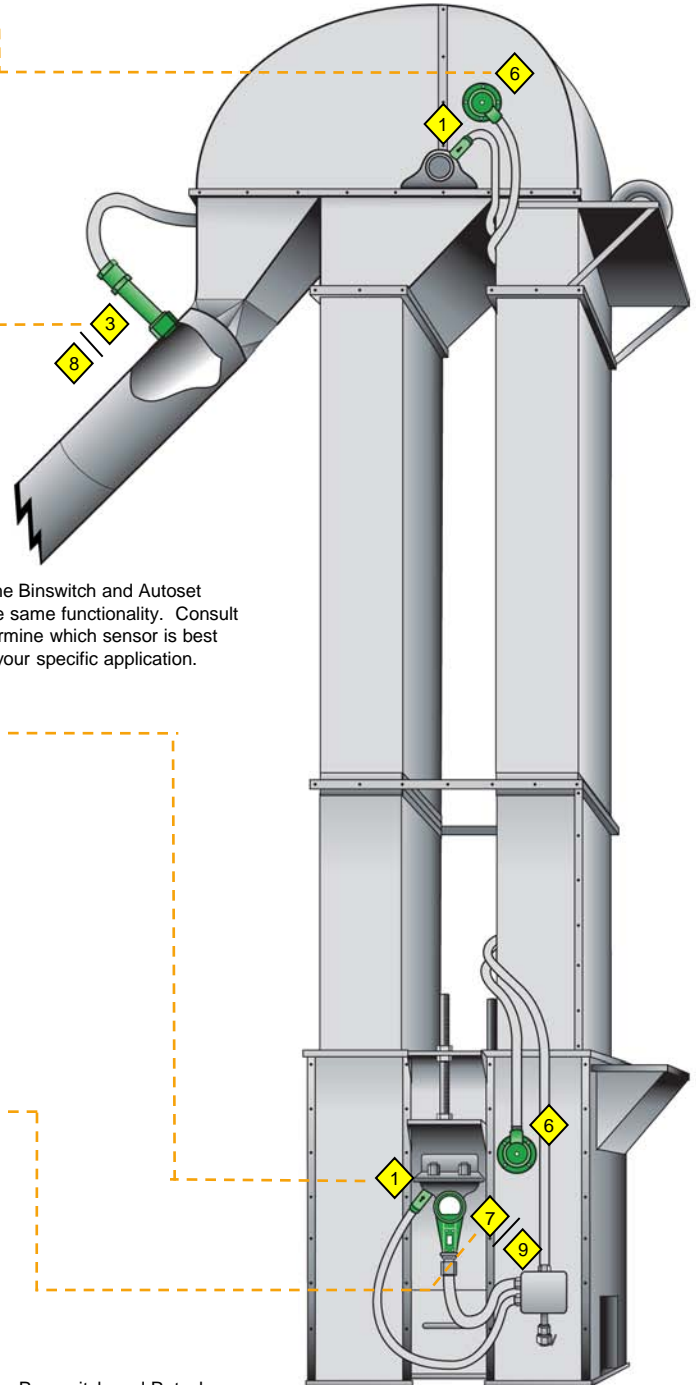
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Rotech Encoder -

Heavy duty option for monitoring underspeed and belt slip conditions. Made from cast aluminum, the Rotech is used in the most severe industrial environments.



9



NOTE: The Binswitch and Autoset provide the same functionality. Consult 4B to determine which sensor is best suited for your specific application.

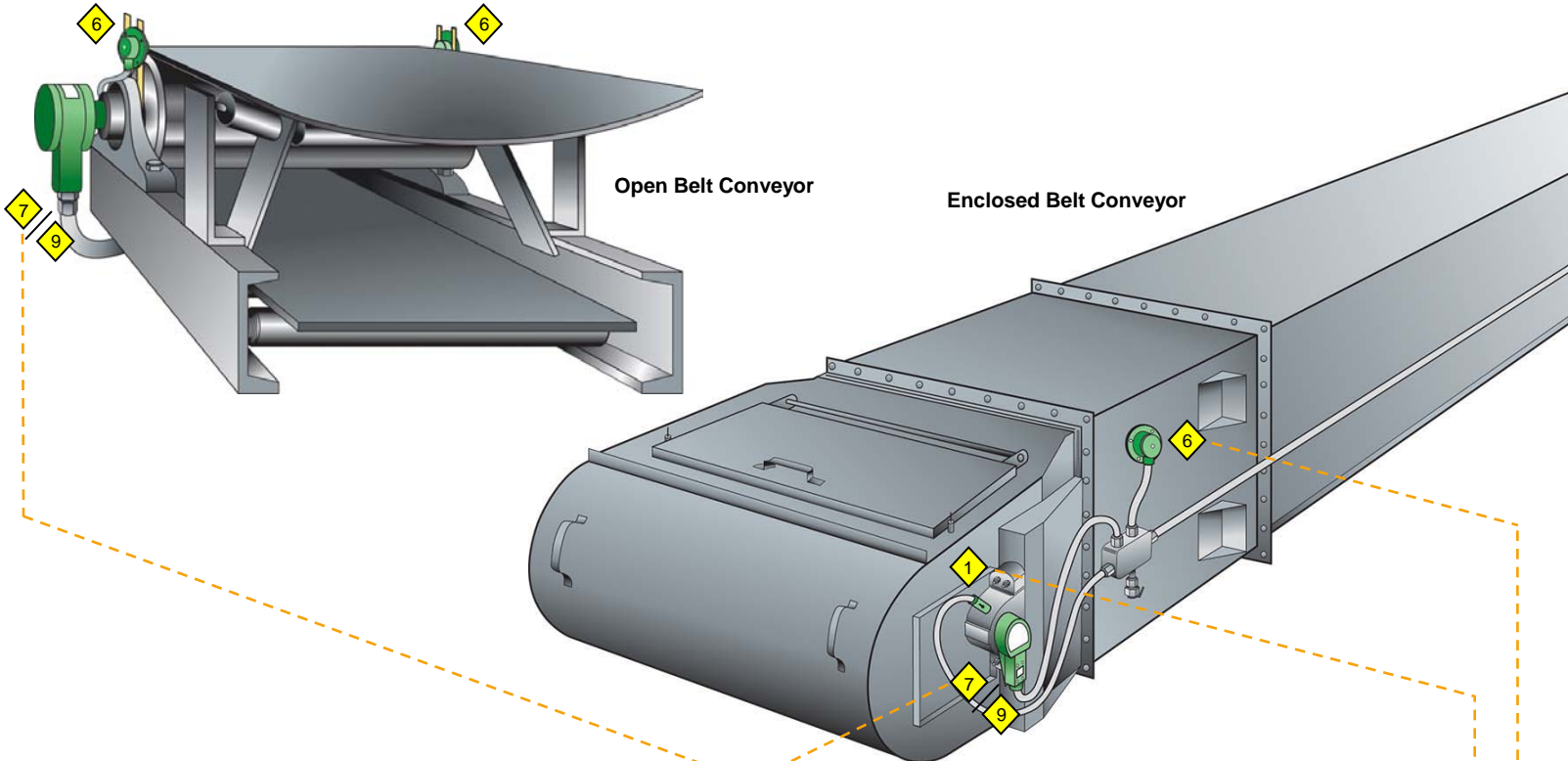
NOTE: The Proxswitch and Rotech Encoder provide the same functionality. Consult 4B to determine which sensor is best suited for your specific application.

T500 Elite - Hotbus

BETTER BY DESIGN

Standard Conveyor Application

All Sensors are 24 VDC and Connect to the Hotbus Nodes



Speed Monitoring

Rotech Encoder -

Heavy duty option for monitoring underspeed and belt slip conditions. Made from cast aluminum, the Rotech is used in the most severe industrial environments.



9



Proxswitch -

Industry standard inductive sensor for detecting belt slip conditions. Shown on boot shaft with the optional Whirligig target/bracket/guard for easy installation.

7

NOTE: The Proxswitch and Rotech Encoder provide the same functionality. Consult 4B to determine which sensor is best suited for your specific application.

Bearing & Surface Temperature

ADB & WDB Series -

1. Grease through, positive mounting, NTC thermistor with user adjustable trip points. ADB series has adjustable depth probes.

2. Surface mount NTC thermistor designed to bolt onto a bearing or gearbox housing.



1

Belt Misalignment

Touchswitch -

Contact type electro-mechanical limit-switch with no moving parts, which detects tracking and misalignment problems.



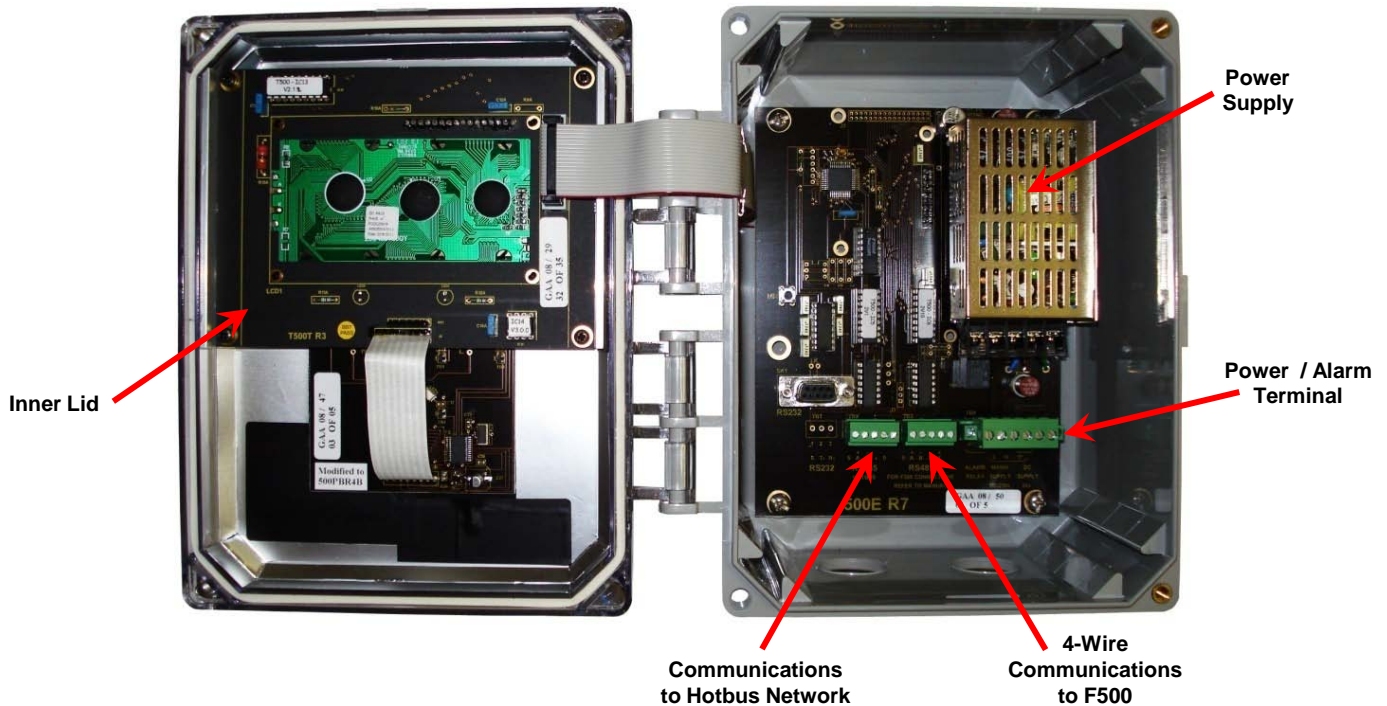
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TECHNICAL SPECIFICATIONS

T500 Elite - Hotbus



T500 Hotbus Control Unit - T5004V46C	
Power Supply:	115 to 230 VAC / 24 VDC
Power Consumption:	10VA / 10 Watts
Alarm Relay Contacts:	Voltage Free Relay Contact (N/O) Max 8A / 250 VAC
Communications:	RS485 - 2 Wire 19,200 Baud RS485 - 4 Wire 19,200 Baud
Sensor Supply:	24 VDC, 200 mA Available
Terminals:	Power - 4mm ² 14 AWG Max. Signals - 2.5mm ² 16 AWG Max.
Conduit Entries:	2 at 3/4"
Max. Connected Sensors:	256 (4 per TN4)
Max. Alarm Relays	64 (Groups of 16)
Sensing Temperature Range:	-23°F to +230°F (-31°C to +110°C)
Display:	4 Line by 20 Character LCD
Status Indicator Lamps:	Power and Alarm LED's
Dimensions:	9.7" x 7.4" x 4" (25cm x 19cm x 10cm)
Construction:	Polycarbonate Enclosure
Protection:	NEMA 12, IP55
Approval:	CSA Class II, Division 2 - F, G (USA) CSA Class II, Division 1 - E, F, G (Canada)



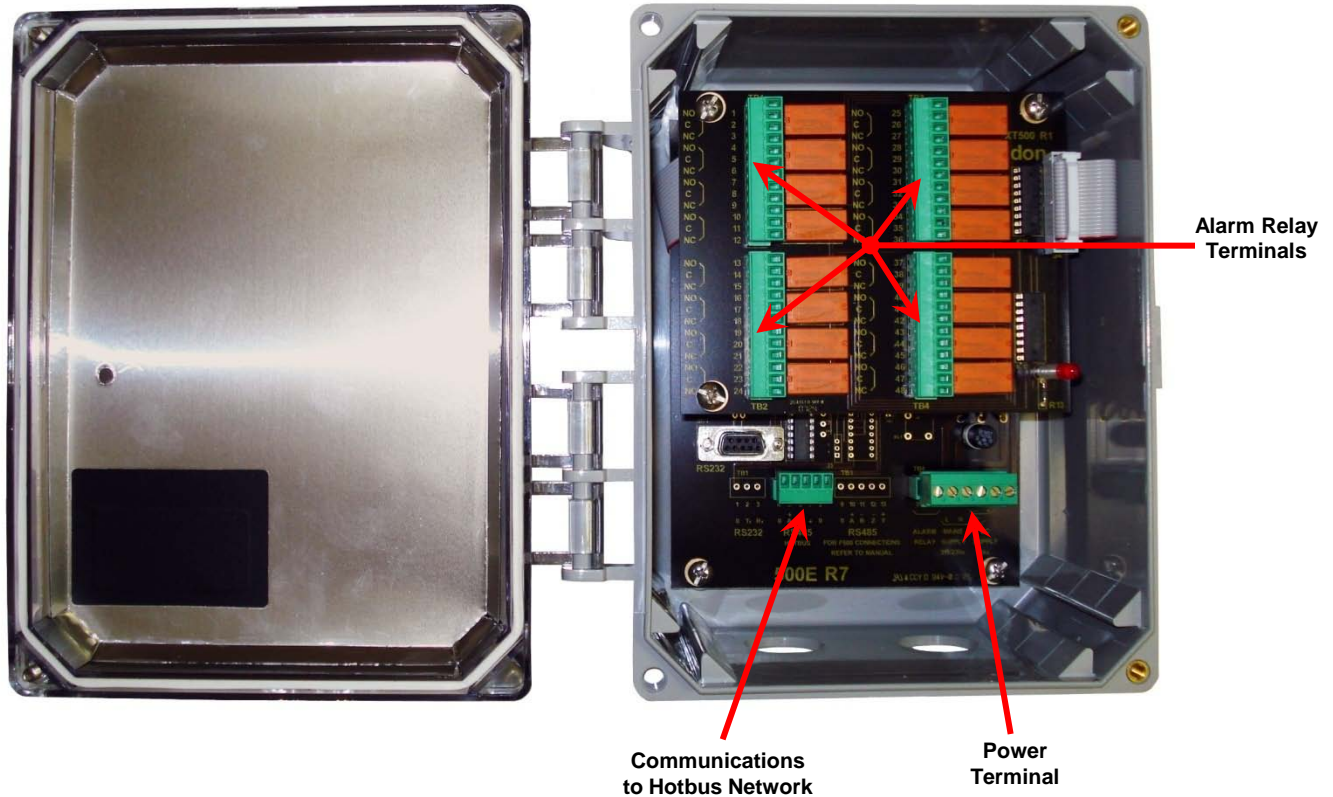
Hotbus Control Unit

Please refer to instruction manual for correct installation.
Information subject to change or correction. June 2011

T500 Elite - Hotbus

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TECHNICAL SPECIFICATIONS R500 Alarm Relay Interface



R500 Alarm Relay Interface	
Power Supply:	115 to 230 VAC / 24 VDC
Power Consumption:	10VA / 10 Watts
Relays:	16 x Voltage Free Relay Contact (Changeover) Max 5A / 240 VAC
Communications:	RS485 - 2 Wire 19,200 Baud
Conduit Entries:	2 at 3/4"
Dimensions:	9.7" x 7.4" x 4" (25cm x 19cm x 10cm)
Construction:	Polycarbonate Enclosure
Protection:	NEMA 12, IP55
Approval:	CSA Class II, Division 2 - F, G (USA) CSA Class II, Division 1 - E, F, G (Canada)



R500 Alarm Relay Interface

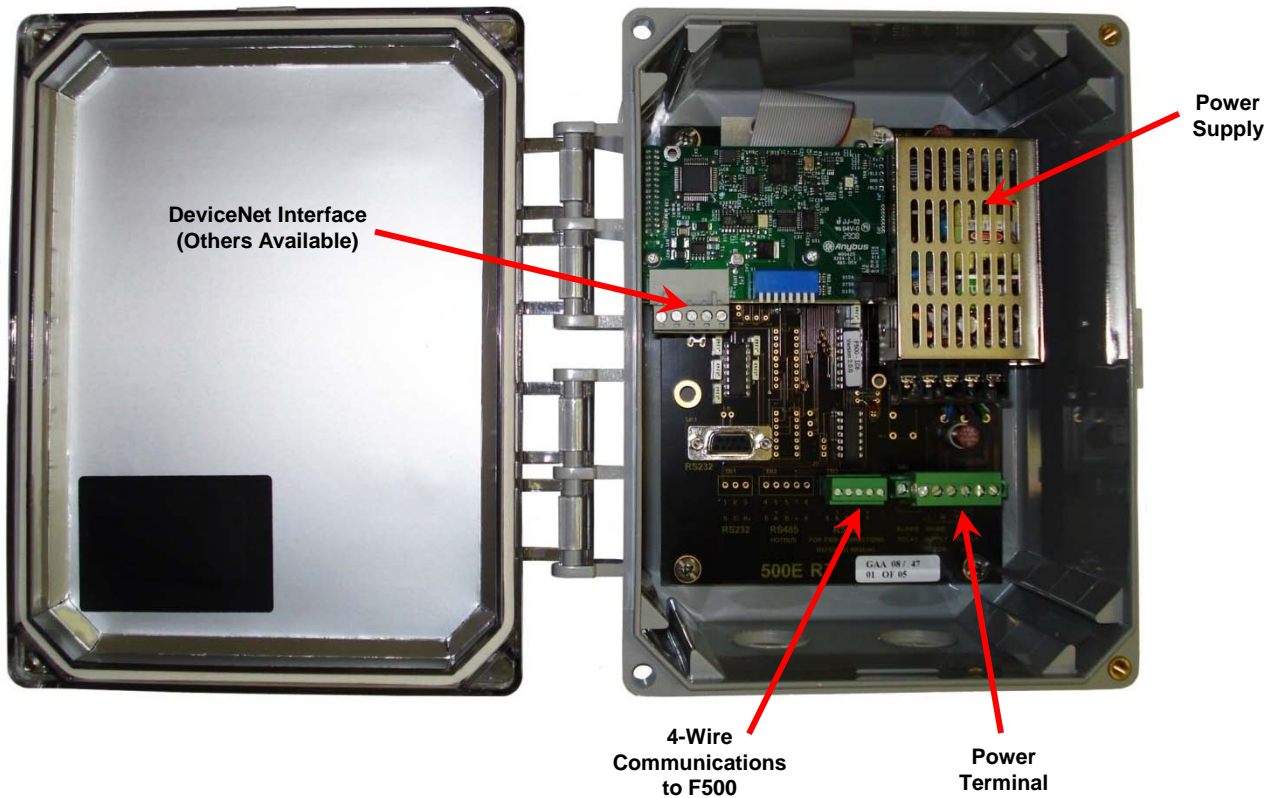
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TECHNICAL SPECIFICATIONS F500 Fieldbus



F500 Fieldbus Unit	
Power Supply:	115 to 230 VAC / 24 VDC
Power Consumption:	10VA / 10 Watts
Communications:	RS485 - 4 Wire 19,200 Baud
Terminals:	Power - 4mm ² 14 AWG Max. Signals - (Specify PLC Communications)
Gateways:	Ethernet, DeviceNet, Profibus, Modbus (Specify When Ordering)
Conduit Entries:	2 at 3/4"
Dimensions:	9.7" x 7.4" x 4" (25cm x 19cm x 10cm)
Construction:	Polycarbonate Enclosure
Protection:	NEMA 12, IP55
Approval:	CSA Class II, Division 2 - F, G (USA) CSA Class II, Division 1 - E, F, G (Canada)



F500 Fieldbus Unit

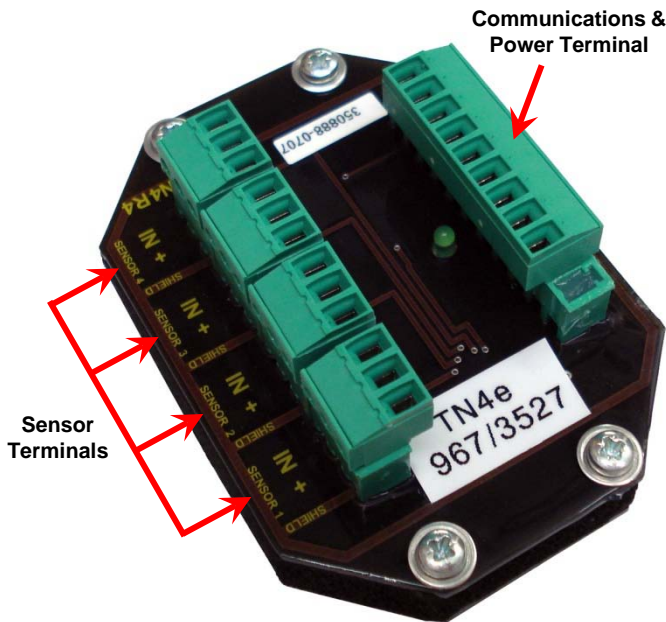
Detailed specification, wiring diagrams and installation/operating instructions available upon request.

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TECHNICAL SPECIFICATIONS Hotbus 4 Input Node



Hotbus 4 Input Node
(Part # HOTBUS-TN4)



HOTBOXTN4C
(Input Node & Enclosure)



Explosion Proof Enclosure
Class II, Division I - E, F, G
(Part # EXPENC1)

Hotbus 4 Input Node with Hotbox - HOTBOXTN4C	
Power Supply:	24 VDC
Power Consumption:	20 mA
Channels:	4 Sensor Inputs
Communications:	RS485 - 2 Wire 9,600 / 19,200 Baud
Dimensions:	5.5" x 4.5" x 3.5"
Conduit Entry:	4 at 1/2" NPT
Protection:	NEMA 4X, IP65
Approval:	CSA Class II, Division 2 - F, G (USA) CSA Class II, Division 1 - E, F, G (Canada)
Special:	On Board Ambient Temperature

Detailed specification, wiring diagrams and installation/operating instructions available upon request.

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T500 Elite - Hotbus

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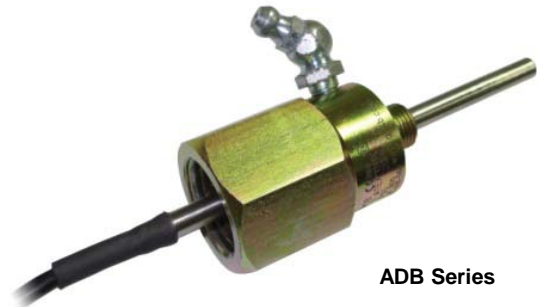
TECHNICAL SPECIFICATIONS

1 WDB Series - Bearing Temperature Sensor	
Style:	Grease Through Positive Mounting
Thread Size:	1/8" NPTF
Conduit Entry:	1/2" NPT
Resistance at 77°F:	10,000 Ohms
Resistance at 140°F:	2,487 Ohms
Resistance at 194°F:	916 Ohms
Sensing Voltage:	5 to 24 VDC
Current Draw:	1 mA
Approval:	CSA Class II, Division 1 - E, F, G



WDB Series

1 ADB Series - Bearing Temperature Sensor	
Probe Lengths:	2, 4 and 8 Inches Available
Thread Size:	1/8" NPT
Conduit Entry:	1/2" NPT
Resistance at 77°F:	10,000 Ohms
Resistance at 140°F:	2,487 Ohms
Resistance at 194°F:	916 Ohms
Sensing Voltage:	5 to 24 VDC
Current Draw:	1 ma
Approval:	CSA Class II, Division 1 - E, F, G



ADB Series

1 Surface Mount Temperature Sensor - WDB70V3C	
Style:	Surface Mount
Bolt Entry:	5/16" Factory (Can be Drilled to 1/2")
Conduit Entry:	1/2" NPT
Resistance at 77°F:	10,000 Ohms
Resistance at 140°F:	2,487 Ohms
Resistance at 194°F:	916 Ohms
Sensing Voltage:	5 to 24 VDC
Current Draw:	1 mA
Approval:	CSA Class II, Division 1 - E, F, G



Surface Mount

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TECHNICAL SPECIFICATIONS

6 Touchswitch (Belt Alignment) - TS2V4C	
Supply Voltage:	24 VDC
Power Consumption:	50 mA
LED Indication:	Power and Relay Energized
Adjustment:	Force Sensitivity Screw (1 to 12 lbs.)
Output:	Voltage Free Relay Contact (Changeover) Max 5A / 250 VAC Non-Inductive
Body Construction:	Pressed Seamless Steel
Face Construction:	Hardened and Annealed Stainless Steel
Conduit Entry:	1/2" NPT
Conductors:	6 at 22 AWG
Dimensions:	3-1/2" Dia x 1-3/4" (89mm Dia x 44.5mm)
Protection:	NEMA 4X, IP65
Approval:	CSA Class II, Division 1 - E, F, G CE and ATEX Available



Touchswitch

7 Proxswitch - P8001V34FC	
Supply Voltage:	24 VDC
Indication:	LED's for Target Detection
Output:	Voltage Free Changeover Relay
Max Input Speed:	5 Hz (300 ppm)
Sensitivity:	Detect Ferrous Object at 1/2" Detect Non-Ferrous Object at 5/16"
Temperature:	5°F to 122°F
Minimal Current:	1 mA
Conduit Entry:	1/2" NPT
Protection:	IP67
Approval:	CSA Class II, Division 1 - E, F, G CE Available



Proxswitch

9 Rotech Encoder - RSE4VBF	
Supply Voltage:	10 to 30 VDC
Speed Range:	0.03 - 1500 RPM
Pulse Rate:	4 PPR
Output:	PNP
Body Construction:	Cast Aluminum or Polymer
Weight:	4.5 lbs.
Protection:	IP65
Approval:	FM Approved Class II, Division 1 and Intrinsically Safe Approvals Available



Rotech
Encoder

Detailed specification, wiring diagrams and installation/operating instructions available upon request.

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TECHNICAL SPECIFICATIONS

3 Binswitch (Plug Switch) - BS1V4FC	
Supply Voltage:	24 VDC
Power Consumption:	30 mA
Type:	Capacitance Proximity
Operating Temp:	-22°F to +158°F
Sensor Range:	1" (25mm) Typical
Output:	Voltage Free Relay Contact (Changeover) Max 3A / 240 VAC Non-Inductive
Calibration:	Screw Potentiometer
Protection:	IP67 - NEMA 6 and 6P Dust Tight and Water Resistant
Approval:	CSA Class II, Division 1 - E, F, G



Binswitch

8 Autoset Flush Probe (Plug Switch) - ATSTV0FC-FP	
Supply Voltage:	115/230 VAC or 24 VDC
Sensitivity:	0.5 picofarad
Type:	RF Capacitance Proximity
Operating Temp:	-25°F to +160°F
Display:	LED Showing Measured Values
Output:	Voltage Free Relay Contact (Changeover) Max 3A / 240 VAC Non-Inductive
Calibration:	Push Button
Build Up:	Power Shield Automatic Compensation for Material Build Up
Protection:	IP65 - NEMA 4
Approval:	CSA Class II, Division 1 - E, F, G



Autoset Flush Probe