

TeleRecorder ACCOL Loads

**Bristol Babcock
D4091 Issue: August, 2002**

The information in this document is subject to change without notice. Every effort has been made to supply complete and accurate information. However, Bristol Babcock assumes no responsibility for any errors that may appear in this document.

Bristol Babcock does not guarantee the accuracy, sufficiency or suitability of the software delivered herewith. The Customer shall inspect and test such software and other materials to his/her satisfaction before using them with important data.

There are no warranties, expressed or implied, including those of merchantability and fitness for a particular purpose, concerning the software and other materials delivered herewith.

Request for Additional Instructions

Additional copies of instruction manuals may be ordered from the address below per attention of the Sales Order Processing Department. List the instruction book numbers or give the complete model, serial or software version number. Furnish a return address that includes the name of the person who will receive the material. Billing for extra copies will be according to current pricing schedules.

ACCOL is a trademark and Bristol is a registered trademark of Bristol Babcock. Other trademarks or copyrighted products mentioned in this document are for information only, and belong to their respective companies, or trademark holders.

Copyright (c) 2002, Bristol Babcock, 1100 Buckingham St., Watertown, CT 06795. No part of this manual may be reproduced in any form without the express written permission of Bristol Babcock.

A Few Words About Bristol Babcock

For over 100 years, Bristol has been providing innovative solutions for the measurement and control industry. Our product lines range from simple analog chart recorders, to sophisticated digital remote process controllers and flow computers, all the way to turnkey SCADA systems. Over the years, we have become a leading supplier to the electronic gas measurement, water purification, and wastewater treatment industries.

On off-shore oil platforms, on natural gas pipelines, and maybe even at your local water company, there are Bristol Babcock instruments, controllers, and systems running year-in and year-out to provide accurate and timely data to our customers.

Getting Additional Information

In addition to the information contained in this manual, you may receive additional assistance in using this product from the following sources:

Contacting Bristol Babcock Directly

Bristol Babcock's world headquarters are located at 1100 Buckingham Street, Watertown, Connecticut 06795 USA.

Our main phone numbers are:

(860) 945-2200
(860) 945-2213 (FAX)

Regular office hours are Monday through Friday, 8:00AM to 4:30PM Eastern Time, excluding holidays, and scheduled factory shutdowns. During other hours, callers may leave messages using Bristol's voice mail system.

Telephone Support - Technical Questions

During regular business hours, Bristol Babcock's Application Support Group can provide telephone support for your technical questions.

For technical questions about the **TeleRecorder** or **TeleFlow** products call **(860) 945-8604**.

For technical questions about **ControlWave** call **(860) 945-2244** or **(860) 945-2286**.

For technical questions regarding Bristol's **OpenEnterprise** product, call **(860) 945-2501** or e-mail: **openenterprise@bristolbabcock.com**

For technical questions regarding **ACCOL** products, **Open BSI Utilities**, as well as Bristol's **Enterprise Server**[®] / **Enterprise Workstation**[®] products, call **(860) 945-2286**.

For technical questions about **Network 3000 hardware** call **(860) 945-2502**.

You can e-mail the Application Support Group at: **bsupport@bristolbabcock.com**

The Application Support Group also maintains an area on our web site for software updates and other technical information. Go to: **www.bristolbabcock.com/services/techsupport/**

For assistance in interfacing Bristol Babcock hardware to radios, contact **Communication Technologies** in Orlando, FL at **(407) 629-9463** or **(407) 629-9464**.

Telephone Support - Non-Technical Questions, Product Orders, etc.

Questions of a non-technical nature (product orders, literature requests, price and delivery information, etc.) should be directed to the nearest sales office (listed below) or to your Bristol-authorized sales representative.

Major U.S. Sales Offices:

Watertown, CT (860) 945-2262
Birmingham, AL (205) 980-2010
Ontario, CA (909) 923-8488
Farmington, NM (505) 327-3271
Houston, TX (713) 685-6200
Richardson, TX (972) 238-8935

Major International Sales Offices:

Bristol Babcock Ltd (UK): (441) 562-820-001
Bristol Babcock, Canada: (416) 675-3820
Bristol Babcock Asia Pacific 61-8-9791-3654
BBI, S.A. de C.V. (Mexico) 52555-254-5281

Please call the main Bristol Babcock number (860-945-2200) if you are unsure which office covers your particular area.

Visit our Site on the World Wide Web

For general information about Bristol Babcock and its products, please visit our site on the World Wide Web at: **www.bristolbabcock.com**

Training Courses

Bristol Babcock's Training Department offers a wide variety of courses in Bristol hardware and software at our Watertown, Connecticut headquarters, and at selected Bristol regional offices, throughout the year. Contact our Training Department at **(860) 945-2269** for course information, enrollment, pricing, and schedules.

Who Should Read This Document?

This document is intended to be read by 3530-45B or 3530-55B TeleRecorder users who are using the standard TeleRecorder ACCOL load suite.

It assumes that the TeleRecorder has been properly installed, and that all network cabling has been connected and tested.

NOTE

Signals in the TeleRecorder may be accessed (read and/or changed) from a PC using a browser, or using DataView. In order for the browser to work properly the PC must have the Open BSI Tools installed.

Either LocalView or NetView must be used to establish communications with the TeleRecorder.

EQUIPMENT APPLICATION WARNING

The user should note that a failure of this instrument or system, for whatever reason, may leave an operating process without protection. Depending upon the application, this could result in possible damage to property or injury to persons. It is suggested that the purchaser review the need for additional backup equipment or provide alternate means of protection such as alarm devices, output limiting, fail-safe valves, relief valves, emergency shutoffs, emergency switches, etc. If additional information is required, the purchaser is advised to contact Bristol Babcock.

This document assumes familiarity with the following subjects:

- . The requirements of their particular process or application.
- . ACCOL programming. Anyone modifying the TeleRecorder standard ACCOL loads should be an *experienced* ACCOL programmer. For more information, consider attending an ACCOL training class. Also see *An Introduction to ACCOL* (document# D4056), the *ACCOL Workbench User Manual* (document# D4051), and the *ACCOL II Reference Manual* (document# D4044).

Table of Contents

- Introduction 1
- Analog Input Processing 3
 - Input Scaling..... 3
 - Input Unit Conversion..... 4
 - Input Alarms..... 4
- Discrete Inputs and Outputs 4
 - Discrete Outputs..... 4
 - Discrete Inputs..... 4
- Communications Port Assignments..... 5
 - Communications Port Usage..... 5
- Alarms..... 5
 - Alarm dial out..... 6
- Archive Files 6
 - Periodic Archives..... 8
 - Trend Archive..... 9
- Radio Control..... 9
- Modem Dial-out 10
- Battery Charge Control 11
- Power and Load Status Alarms..... 11
- Audit/Event Log..... 11
- LCD Display update 11
- Signal Data Lists for internal use and remote Access..... 12

Introduction

The TeleRecorder Standard ACCOL load suite is a set of two ACCOL loads (*.ACL files) intended for use in a 3530 TeleRecorder Model –45B or –55B. A TeleRecorder can be ordered with from one to four pressure sensors; the load installed at the factory will depend on the number of sensors ordered – either a two-sensor load or a four-sensor load. Each sensor can be any one of 11 pressure ranges depending on customer requirements; after the appropriate load is installed it is factory configured to specify the pressure range of each sensor as specified in the Model number.

The TeleRecorder Standard ACCOL Load(s) provide the following:

- pressure recording for up to 4 inputs
- selection of engineering units for each pressure input
- establishment of pressure input alarm limits
- intrusion detection and pit-level alarms
- dial-out alarm reporting for specified alarms
- Pulse Duration Output for valve control
- 15 minute, 1 hour, and 24 hour Archives for each pressure input, battery voltage and system status
- 1 minute Archive for each pressure input and battery voltage instantaneous values
- alarm and event audit trail
- Network Port support for Radio/Modem/CDPD

The TeleRecorder ACCOL load performs an input scan every 15 seconds. All four analog inputs and the 2 discrete inputs will be read on each scan. Each analog input value is then converted to psig if it has been configured as having a pressure sensor connected. A sensor can have one of the following pressure ranges (also called the Sensor URL (upper range limit)).

Low ranges: 1, 15, 30, 60 psig

High ranges: 100, 150, 300, 500, 1000, 2000, 3000 psig

The raw Analog input values are scaled, according to scaling factors set by the user, to provide a pressure reading in units of psig (pounds per square inch – gauge). Each pressure reading is then either left in units of psig or converted to another engineering unit (as configured by the user). Converted pressure readings are then archived in the 15 Minute, Hourly, and Daily Archives. A Trend archive records the instantaneous input pressure readings and battery voltage once per minute.

The TeleRecorder also provides 2 Discrete Inputs, and 2 Discrete Outputs. The DI's are used as Pit Level and Intrusion alarms; the DO's are used for local Raise/Lower valve control using Pulse Duration Output.

The following features are supplied:

- An input calibration mode that will allow users to adjust for sensor drift using precision pressure sources. During calibration a zero factor (offset) and span factor (slope) value will be set for the input being calibrated.
- Trend Log: Store instantaneous sample values of each sensor (1 to 4) and the battery voltage input once every minute.
- Periodic Logs: Calculate running averages of each sensor input and monitor the minimum and maximum value of each input and store them in a Periodic Log at intervals of 15 minutes and 1 hour. Data will be stored for each sensor, the battery voltage, and a system status value that indicates the state of discrete inputs DI1 and DI2. The following information will be stored for each sensor:
 - Average value over the time interval
 - Maximum input sample value during the interval
 - Minimum input sample value during the interval
- Daily Log: Calculate running averages of each sensor input. The daily log will have a capacity of 35 days and store the following information for each Periodic Log input:
 - Average value over the day
 - Maximum input sample value during the day
 - Minimum input sample value during the day
- Detect high, high-high, low and low-low alarms for each pressure sensor input.
- Detect 'ON' state alarms for pit-level alarm (DI1) and intrusion alarm (DI2). These alarms will not occur unless the ON state has existed for two consecutive 15 second scans.
- Set alarms on the following operational conditions: System Voltage, RAM Battery.
- Store alarm and event messages in the Audit Trail, which will have a capacity of 200 alarms and 200 events. Signals that qualify as events are named in the Event List.
- Provide Dial-out upon User-Selectable alarm conditions.
- Provide radio scheduler operation per the CI-3530.
- Provide support for Radio/Modem/CDPD options on the Network Port.
- Provide a PDO option that allows DO1 and DO2 to be used for Raise/Lower control of a local valve controller. Raise or lower is requested by turning on request signals via the Network port; these requests are turned off after a raise or lower pulse has been issued. Use of this option disconnects the DI's from the DO's.

NOTE

The 3530 supports a subset of the ACCOL module library thus some ACCOL modules will not operate. In addition the 3530 will not provide some functions that are common in Bristol products; among these are Communication Statistics, Crash Blocks, On-line Diagnostics, Task slip information, and Task rate information.

The two loads support either two or four pressure sensors. There are two rate-tasks. Task 1 performs all the required processing for AI Input conversion to Engineering Units, data archiving, PDO processing, and pressure sensor calibration.

Task 2 executes every second and tests for alarm conditions; if alarms are present that have been configured to cause an alarm dial out then a dial out will occur. Dialing rate is limited i.e., multiple conditions may exist but dialing can only be initiated every minute.

Configuration

The load is configured at the factory according to the order number. Each sensor input is configured with one of eleven sensor codes - the code establishes the sensor URL in PSIG for the input.

Each sensor has a default units code of 1 indicating units of PSIG. Other units codes can be configured at the factory, based on the order, or in the field later on.

Analog Input Processing

Pressure sensors are wired to one or more of the analog inputs. Every 15 seconds, input values are acquired from each of the sensors using an ANIN module that is defaulted with a Zero of 0.00 and a Span of 1.00 to generate input readings in the range of -.05 to +1.05. With an input voltage of 3.0 the ANIN module output will be 0.500.

Input Scaling

Because of normal sensor variation and the effects of local atmospheric pressure a sensor input will not read zero when no pressure is applied. Each AI input has Zero Offset factor that is added to the input to compensate for this offset. A sensor may also exhibit a slope that causes an incorrect (slightly high or low) reading when a test pressure is applied. Each input has Span factor that corrects the slope. These Offset and Span factors are established during a calibration procedure performed by the user using precision pressure sources. The resulting scaled AI value is then converted to a pressure input value, in units of psig, using URL factors for the sensor ID code for that input.

Input Unit Conversion

Each pressure input value can be converted to another engineering unit using conversion factors configured by the user. The default unit is psig. Users can select inches of H₂O, mmHg, kg/cm², Pa, kPa, bar, or feet of H₂O.

Input Alarms

The converted pressure inputs (Pn) are defined as alarm signals with the following default alarm limits in percent of sensor span:

	<u>Low</u>	<u>High</u>	<u>LowLow</u>	<u>HighHigh</u>	<u>LDb</u>	<u>HDb</u>
Pn	-5%	105%	-10%	110%	1	1

Users can configure alarm limits as needed in percent of span; percent of span is used because eliminates unit conversions. For convenience, the browser page shows the limits in percent and engineering units.

Discrete Inputs and Outputs

There are 2 discrete input points DI1 and DI2 and 2 discrete output points DO1 and DO2 on the main board.

Discrete Outputs

Discrete outputs 1 and 2 are dedicated to a PDO module. The pulses generated by the PDO can be user-configured from 1 to 14 seconds in duration. These outputs can be used to adjust a local raise/lower type valve via commands from a remote host.

Discrete Inputs

Discrete inputs DI1 and DI2 are assigned for use as pit-level and intrusion alarm respectively.

The discrete inputs are combined into a floating point system status code which is calculated as the analog value of the DI (zero or 1.0) multiplied by a weighting factor. For DI.1 the factor is 10000, for DI.2 it is 1000. The system status code will appear as follows in the archive.

DI.1	DI.1	Status
----	----	-----
0	0	0.0
1	0	10000.0
0	1	1000.0

1 1 11000.0

See the 'Archive Files' section for a full description of the status code.

Communications Port Assignments

PORT A - Pseudo-slave local port, 19200 bps.

PORT B - BSAP Slave network port, 9600 bps.

These ports differ from typical ACCOL load port usage in that their baud rate can be changed on-line. The Network port RTS/CTS mode and delay time can also be changed on-line.

Communications Port Usage

The Local port is used for local configuration and data collection. It typically connects to a PC or Laptop that is running a user-interface software package such as the Universal Operator Interface (UOI) or OpenBSI's Dataview.

The Network port is generally used for data collection via standard BSAP Remote Database Access (RDB) requests or Bristol Peer-to-peer messages coming from another Bristol device such as a Data Concentrator. For Bristol Peer-to-peer data collection, a number of defined lists are provided (see section 10.0) as well as Slave modules for each list. This port can also be used for data collection or configuration by software such as OpenBSI, UOI, or other 3rd party BSAP protocol based communication systems. It can also be used for Local or Remote download of ACL files.

Alarms

The following signals are alarm signals; they are alarm inhibited by default:

DI.1	Pit
DI.2	Intrusion
P1	Sensor 1
P2	Sensor 2
P3	Sensor 3
P4	Sensor 4
Battery	System Power
RAM battery	RAM Backup battery

Alarm dial out

An alarm condition will cause a dial-out to occur if the condition has been dial enabled. Dial-out enables must be configured by the user; signals that are not dial-enabled remain alarm inhibited. Alarm dial-out on return-to-normal will occur. The following enables are provided.

DI.1	Pit
DI.2	Intrusion
P1	Sensor 1
P2	Sensor 2
P3	Sensor 3
P4	Sensor 4
Battery	System Power
RAM battery	RAM Backup battery

Dial out will NOT occur if the System Power (main battery) is too low.

When dial-out starts the Auxiliary Output is turned on. The RTU then dials the DIAL.NUMBER.1 or DIAL.NUMBER.2 depending on the DIAL.NUMSEL. setting. If a good connection is made alarms will be reported and 130 seconds later the RTU will 'hang-up'.

If a good connection is made and alarms are not requested by the host within 1 minute (perhaps the host alarm buffer is full) the RTU will 'hang up'.

If a good connection is NOT made the RTU will 'hang up' and retry the call in 10 to 30 minutes if DIAL.RETRY5 is not zero.

The retry limit can be configured as high as 6, i.e. retries per hour at 10 minute intervals for a total of six attempts per hour. The low limit is 2 per hour.

The Auxiliary Output is shut off within 1 minute of hang-up to reduce power drain.

Archive Files

Archive files vary in size and content depending on the number of sensors installed. Common signals such as Battery voltage and System Status Code are kept at the beginning of the Archive so that the latter portion of the Archive always contains pressure readings.

System Status Code

The System Status Code is an analog signal that is the arithmetic sum of place-weighted status signal states.

Status signals are place-weighted as follows:

Pit alarm	*	100000
Intrude alarm	*	10000
P1 alarm	*	1000
P2 alarm	*	100
P3 alarm	*	10
P4 alarm	*	1

Place-weighting allows six statuses to be contained in one entry in the Archive log. The status bits are set when a signal is in an alarm state. For example, if the pit alarm and P2 alarm are on the status value is 100100.0. If the pit alarm and intrude alarm are on the value is 110000.0. The P3 and P4 alarm status values are only valid in the TTREC4 load.

Periodic Archives

There are three periodic archives with 15 minute, 1 hour and 24 hour intervals. At the end of the interval the information shown below is written into the archive file. An archive entry is shown for four sensors.

```

DATE/TIME
LOCAL SEQUENCE NUMBER
GLOBAL SEQUENCE NUMBER
BATTERY VOLTAGE      (average)
SYSTEM STATUS    instantaneous
PRESSURE 1        PSIG (average)
PRESSURE 1        PSIG (minimum)
PRESSURE 1        PSIG (maximum)
PRESSURE 2        PSIG (average)
PRESSURE 2        PSIG (minimum)
PRESSURE 2        PSIG (maximum)

```

The following entries are available only in the four-sensor load:

```

PRESSURE 3        PSIG (average)
PRESSURE 3        PSIG (minimum)
PRESSURE 3        PSIG (maximum)
PRESSURE 4        PSIG (average)
PRESSURE 4        PSIG (minimum)
PRESSURE 4        PSIG (maximum)

```

The Periodic Archive capacity varies with the type of TeleRecorder ordered (and the ACCOL load required) as follows.

15 minute archive:

Sensors	entries	days
-----	-----	-----
1 or 2	1120	23.0
3 or 4	840	17.5

1 hour archive:

Sensors	entries	days
-----	-----	-----
1 to 4	840	35

24 hour archive:

Sensors	entries	days
-----	-----	-----
1 to 4	35	35

Trend Archive

Every 1 minute the live (instantaneous) input values are written to a trend archive as shown below.

DATE/TIME
LOCAL SEQUENCE NUMBER
GLOBAL SEQUENCE NUMBER
BATTERY VOLTAGE
PRESSURE 1
PRESSURE 2

The following entries are available only in the four-sensor load:

PRESSURE 3
PRESSURE 4

The Trend Archive capacity varies with the type of TeleRecorder ordered as follows.

Trend archive:

Sensors	entries	days
-----	-----	-----
1 or 2	2730	1.9
3 or 4	2048	1.42

Radio Control

Radio control, available in the 3530-55B only, is accomplished using a SYS_3530 module to gain access to the Teleflow intrinsic radio control functions, i.e., it is not done using ACCOL modules.

Two radio control functions are available; Scheduling and Sensing (also call 'Fast radio'). Radio Scheduling is used to conserve battery power by allowing the radio to be powered up for a short time every day in expectation of receiving a message from a remote 'host' during that time.

If Radio Scheduling is enabled the system will turn on the radio at a defined time (an hour of the day) and keep it on for a defined length of time, usually in the order of minutes. A user-configured 'listen' timer is also started so that if no messages are received while the timer is running the radio

will turn off to save power. The radio can also be activated manually for testing via the local port. Radio power is controlled using a system signal that turns an auxiliary power output on or off.

If Radio Sensing is enabled the system will turn the radio on at a defined time (an hour of the day) and begin a sequence in which the radio is turned on every so many seconds but for 'listen' time intervals less than 1 second. It continues this sequence until the defined 'stop' hour is reached. If a message is received while the radio is on the system will keep the radio on, process the message and respond. After every response the radio remains on for one more 'listen' time, after which it is shut off.

Both radio control functions can be active simultaneously.

Modem Dial-out on Alarms

This feature makes use of the ACCOL Slave Auto-dial function. When a signal is dial-enabled and enters an alarm condition the load will automatically dial a phone number (the modem option must be installed) held in the Dial List. The number of the Dial list is held in system signal #DIAL.001.

Each dial-enabled alarm signal entering an alarm state will cause a dial-out. Once per minute the Dial-requests are tested and a valid request triggers dialing. Simultaneous alarms occurring during a 1 minute interval cause only one call. The dial commands sent to the modem (i.e. initialization, phone number) are defined by signals in the Dial list.

The use of the modem dial out function implies that the called device has been set up to 'know' that it should poll for alarms after it answers the call and then hang-up. The TeleRecorder uses the Enhanced Slave Dialing mode to make this occur quickly.

Dial out will NOT occur when battery voltage is less than 11.0 volts.

When dialing starts the Auxiliary Output is turned on to supply power to a radio or CDPD modem. The on-time will vary as needed to reduce power consumption.

When dialing occurs and a good connection has been made, a 3-minute connection timer is started. If no alarms have been collected in 3 minutes the connection will be dropped. If a good connection has been made and alarms are reported before the 3 minutes expires, the connection will be dropped 130 seconds after all alarms have been sent. The Auxiliary Output will shut off shortly afterward – this allows power to remain on for a host 'call back' or poll for more information after alarms are reported.

Battery Charge Control

The SYS_3530 module is used to access the intrinsic Battery Charger control functions. Signals are provided to allow charge regulator setup and control for either a 6 or 12 volt battery. Should the charge regulator detect battery overcharge an alarm occurs and the shunt output is set ON to connect the solar panel output to ground (if one is connected) and prevent the battery from charging further.

Power and Load Status Alarms

The SYS_3530 module is used to access the intrinsic TeleRecorder power monitoring signals. The main voltage value will be held in an alarm signal with default limits (in Volts) as follows:

Low	11.5
High	16.0
Lo-lo	11.0
Hi-hi	16.5
LDb	.5
HDb	.5

A number of 'load status' logical alarms are provided as follows:

Backup battery	low RAM backup battery
External battery overcharge	excess voltage into the external battery
System self-check	firmware checksum, stack overflow, RAM

Audit/Event Log

An EAUDIT module (in Task 0) is set up to collect both alarms and events, with event signals defined by the signals in list 13. The Event list contains mainly configuration-related signals so that changes to the configuration are recorded in the Event log, The module is defined with enough space for 400 alarms and events total, partitioned as 200 alarms and 200 events. This separation prevents a toggling alarm or event from filling the entire alarm/event log buffer to the exclusion of all other entries.

LCD Display update

A KEYBOARD module in Task 0 references List 50. When the Local communications cable is connected and the system is 'awake' the signals in that list will scroll by, each remaining on display for the configured 'display time', default is 5 seconds. Scrolling begins with display of the Date and Time followed by the Local ID and Group number followed by signals that are in an

Alarm state followed by the signals in list 50. Alarm signals will only appear if LCD Alarm display has been enabled.

When the Local cable is disconnected and the system is 'asleep' the display will be off. Signals will appear in the display when the 'Activate Display' button is pressed and they will 'scroll' to the end of list 50, then the display will go off after about 1 minute. The Activate button must be pressed to display the signals again.

When the Network port has been activated by a Carrier Detect assertion from a modem the display will be active but will only display the message "Network Comm Active".

Signal Data Lists for internal use and remote Access

There is one list provided to support the gathering of live data by a Bristol master node using Peer-to-peer messages via the Network port. The system Task 0 (non-rate task) contains a SLAVE module dedicated to the Network-accessible lists, number 20.

LIST 4 Dial List – Enhanced Slave Dialing

- Enable
- Status
- Select signal
- Empty queue time
- Dial-up ACK enable
- Number select
- Number 1
- Number 2

LIST 10 Full Configuration

- Firmware revision (progrev)
- Unit ID
- Meter ID
- Alarm report format
- Alarm report format 1
- Alarm display enable
- PDO enable
- PDO width
- PDO max
- PDO min
- Network Port baud rate

Network Port RTS mode
Network Port RTS delay
Radio power default
Radio Scheduling enable
Radio Time
Radio Listen Timeout
Radio Start Hour
Radio End Hour
Radio local comm. time
Radio local timeout
Radio time per node
Radio time per group
Radio minute offset into hour
Demand enable
Demand interval
Demand duration
Demand start hour
Demand end hour
P1 sensor range code
P1 sensor pressure URL
P1 pressure span factor
P1 pressure zero
P1 conversion factor
P1 lo alarm % of span
P1 lo-lo alarm % of span
P1 hi alarm % of span
P1 hi-hi alarm % of span
P1 hi deadband
P1 lo deadband
P1 Unit code
P1 Unit string
P2 sensor range code
P2 sensor pressure URL
P2 Pressure span factor
P2 Pressure zero
P2 Conversion factor
P2 lo alarm % of span
P2 lo-lo alarm % of span
P2 hi alarm % of span
P2 hi-hi alarm % of span
P2 hi deadband
P2 lo deadband
P2 Unit code
P2 Unit string

Note - the following are only in the 4-sensor load:

P3 sensor range code
P3 sensor pressure URL
P3 Pressure span factor
P3 Pressure zero
P3 conversion factor
P3 lo alarm % of span
P3 lo-lo alarm % of span
P3 hi alarm % of span
P3 hi-hi alarm % of span
P3 hi deadband
P3 lo deadband
P3 Unit code
P3 Unit string
P4 sensor range code
P4 sensor pressure URL
P4 Pressure span factor
P4 Pressure zero
P4 conversion factor
P4 lo alarm % of span
P4 lo-lo alarm % of span
P4 hi alarm % of span
P4 hi-hi alarm % of span
P4 hi deadband
P4 lo deadband
P4 Unit code
P4 Unit string

LIST 11 Communication configuration

Network baud rate
Network CTS/RTS mode
Network RTS delay
Aux power default
Radio sched enable
Radio on-time
Radio listen time
Radio start hour
Radio end hour
Local on-time
Local listen time
Node time
Group time
Offset into hour
Demand enable

Demand interval
Demand duration
Demand start hour
Demand end hour

LIST 12 Dialout configuration

Dial if Backup battery low enable
Dial if Battery alarm enable
Dial if Discrete 1 alarm (PIT)
Dial if Discrete 2 alarm (INTRUSION)
Dial if P1 alarm enable
Dial if P2 alarm enable
Dial if P3 alarm enable*
Dial if P4 alarm enable*

LIST 20 Live Data

Battery voltage
Discrete Input 1 (PIT)
Discrete Input 2 (INTRUSION)
P1 pressure
P2 pressure
P3 pressure*
P4 pressure*

LIST 50 LCD Display list

Product ID
Battery Voltage
Pit Detect
Intrusion Detect
Pressure 1
Pressure 1 unit
Pressure 2
Pressure 2 unit
Pressure 3*
Pressure 3 unit*
Pressure 4*
Pressure 4 unit*

* *Only available in the four-sensor load.*

Bristol Babcock Inc.

an FKI company

1100 Buckingham Street
Watertown, CT 06795
Telephone: (860) 945-2200

[Return to the Table of Contents](#)

[Return to the List of Manuals](#)