CAMERON

TECHNICAL SPECIFICATIONS

BARTON CryoScan 60 Telemetry System

When cryogenic product availability is critical, Cameron's BARTON® CryoScan® 60 (CS60) Telemetry System can be trusted to provide up-to-the-minute tank level measurement. Level data are transmitted directly to an operator's computer, optimizing inventory management and product delivery cycles.

The CS60's continuous monitoring and alarm system helps eliminate product shortage and reduces the need for extra product deliveries that ensure that tank levels do not become critically low. For companies managing multiple chemicals and/or multiple storage sites, and applications such as healthcare services where a constant supply of cryogenic gas is critical, the CS60 is highly practical, easy to install and cost-efficient.

The system calculates product level using pressure measurements from its integral or remote sensor(s) and/or 4 to 20 mA inputs and stores the information in data logs. Remote sensors expand installation options, since the sensor and CS60 now can be mounted in separate areas. The sensor can be installed near the point of measurement and the CS60 can be installed in a location that provides the best view of the display.

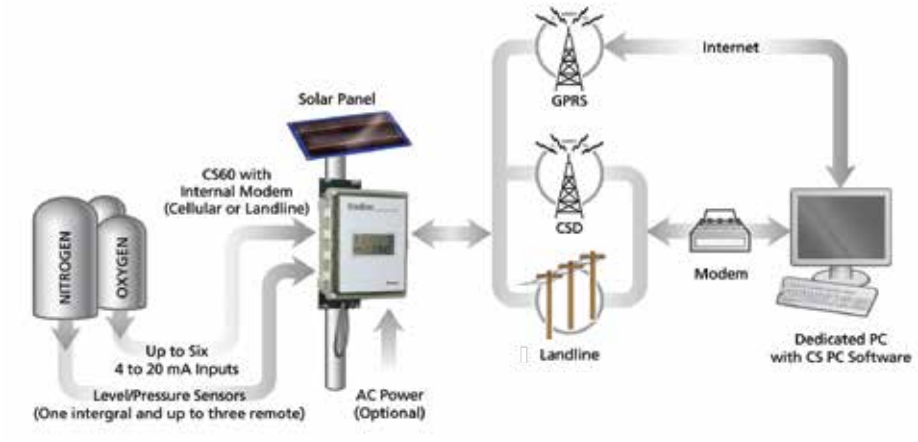
Viewing data has never been easier. CS60 users view data logs directly from their computer, so there is no need to download files from a website or third-party data host. Built-in alarms alert the operator when a parameter drops to a user-specified setpoint. An operator also can run a status report on demand for instantaneous data monitoring.

Features

- Monitors up to four tanks with optional remote sensors
- Two configurable alarms for each input (high or low, with output alert on alarm and alarm clear)
- Six 4 to 20 mA inputs, two 4 to 20 mA outputs, two contact inputs and two latching relay outputs are available with option board
- Solar and AC power options (24 V loop power available with AC-powered units)
- Landline or cellular data modem (external antenna available)
- LCD is user-configurable and easy to read with 0.7" characters

Data Communications

The CS60 telemetry system is actuated by a multivariable sensor for accurate tank level and pressure measurement and transmits data via landline or cellular communications (both CSD and GPRS communications are supported). The CryoScan PC software provides a comprehensive set of controls for configuring the system, customizing data management functions and generating reports from a single host computer.



CryoScan PC Interface Software

The 32-bit Windows®-based CryoScan PC interface software package supports a wide range of user functions. A lite version of the software provides all of the functions and features of the standard version, except the ability to configure RTU parameters.

Standard user functions include:

- Configure remote telemetry unit ß (RTU) parameters such as alarm setpoints, datalog intervals, etc. (standard software version required)
- View and graph measurement data stored on a PC hard drive (e.g., level, pressure, ambient temperature, values of 4 to 20 mA and contact inputs, or 4 to 20 mA output values)
- Establish and maintain an RTU/customer database of user, product, RTU/tank, customer and input/output information
- Manually poll an RTU (via modem or Internet) or configure automatic polling of RTUs
- Configure instrument for GPRS communications
- View and print RTU status information
- View and acknowledge alarms and print alarm history
- Send alarm notifications by SMS text message or email

Level and pressure alarms are easily configured.

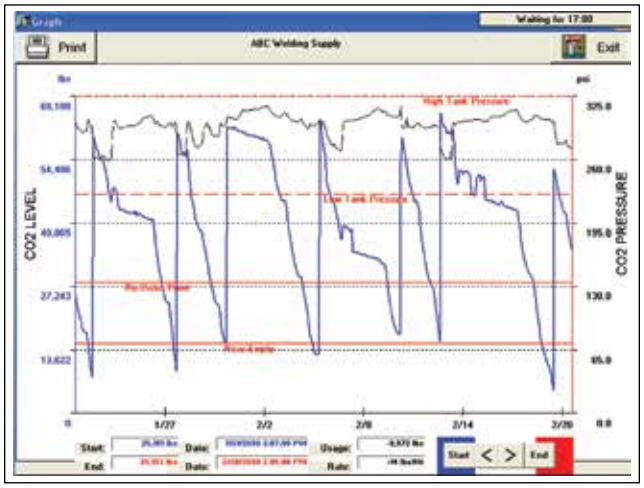
Polling

The CryoScan PC supports polling communications to and from a CS60 system. A user can poll a selected instrument manually or poll a group of instruments automatically at prescheduled times.

Upon connecting to a CS60 RTU, the software sends any pending configuration changes to the RTU and receives alarm status, captured measurements and other information stored in the RTU since the last polling. Measurement data received are stored in individual RTU log files on the host PC hard drive; their size is limited only by the hard drive space available.

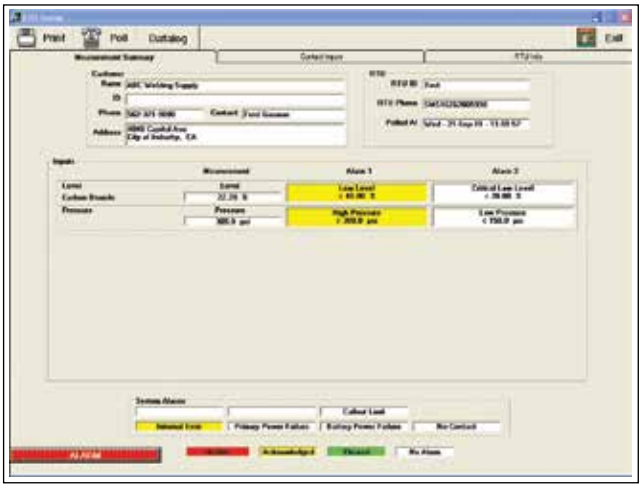
Viewing Data Logs

RTU data files can be viewed in tables or graphs. Graphs allow the user to view data trends in relation to setpoints and to quickly calculate usage and rate totals for data points in a specified measurement period.



Monitoring CS60 Status

The RTU status screen displays information gathered from the latest polling, including alarm status, level and pressure data, and 4 to 20 mA input data.



The RTU status screen displays real-time RTU parameters and alarm status info.

Security Specifications

A three-level security system helps prevent unauthorized changes to RTU parameters and settings.

System administrators (Level A) have full access and can set up and change users and user passwords.

Senior operators (Level B) can add/configure RTUs, acknowledge alarms and change commonly used parameters.

Basic operators (Level C) can view screens and current measurements, poll an RTU and acknowledge alarms only.

Customer-Supplied Hardware

External PC modems are suggested for landline and CSD cellular communications.

The Hayes Accura 56K external modem has been tested and approved for use with the CS60 telemetry system.

GPRS communications do not require a PC modem (data are provided via an Internet connection).

System Requirements

- Dedicated PC running Windows 2000 SP3, Windows XP or Windows 7
- 500 MHz Pentium-based CPU
- 512 MB RAM
- 15" or larger SVGA 800 x 600
- 100 MB available hard drive space for software, plus 0.5 MB per RTU (typical setup is 500 MB for up to 500 RTUs)
- Consult Cameron for approved modems
- Internet connection (required for GPRS communications or email alarm notification)
- Printer (supported by Windows); color printer is recommended for alarm status reports and graphs

Specifications

Measurement Accuracy	± 0.25% of full scale
Temperature Effect	± 0.25% of full scale over operating temperature range
Sensor	Integral pressure/differential pressure sensor; standard remote sensors are optional; a CS60 can support up to four of our sensors for multitank monitoring 316 stainless steel, brass, copper, or anodized aluminum wetted parts; Fluorinert fill fluid 1/4" NPT process connections on 2-1/8" centers
Calibrated Sensor Ranges	Level: 1000 In H2O (2.5 bar) Pressure: 575 psig (40 bar) Maximum working pressure: 575 psig (40 bar)
Operating Temperature	-40° F to 158° F (-40° C to 70° C)
Inputs with Optional I/O Board	Six 4 to 20 mA inputs I/O Board (external supply required for solar version) Two contact closure (status) inputs
Outputs with Optional I/O Board	Two 4 to 20 mA (external supply required for solar version) Two latching relay outputs
Measurement Interval	AC-powered unit: five seconds Solar-powered unit: one minute
Datalog Capacity	800 entries (each entry contains all inputs); user-selectable intervals (one-minute minimum)
Alarms	Two user-selectable alarm setpoints for tank level and pressure inputs (DP, SP and 4 to 20 mA); contact closure alarms; system status alarms
Reporting Interval	User-selectable daily call out/in times for receiving RTU status reports Poll on-demand reports for instantaneous RTU status checks
Communications	Includes landline (V.90) or cellular modem (CSD or GPRS with internal antenna); external antennas optional USB (local configuration) RS-232 or RS-485 (host interface)
Display	Configurable LCD; 0.7" characters; supports up to eight inputs; backlight on AC version
Power	12 V, 10 watt solar panel with rechargeable battery AC power (100 to 240 VAC, 50/60 Hz) with backup battery; heater optional Autonomous battery power without recharge: seven days, minimum
Enclosure	7.7" (width) x 9.8" (height) x 5.77" (depth); NEMA 4X/IP66, mounting hardware included
Approvals	CE approved; C-tick and A-tick approved AC power supply: UL, TUV and CB Landline modem: FCC Parts 15 and 68, IC-CS03, CTR21 and UL GSM modem; R&TTE, FCC, UL, IC, GCF and PTCRB

Multitank Monitoring

Up to four Cameron sensors can be added to a CS60 for monitoring multiple tanks. Remote sensors can be added to a solar-powered or an AC-powered unit.

Existing sensors also can be used to provide measurement inputs to the CS60 by adding an optional I/O board and customer-supplied 4 to 20 mA transmitters. For solar installations, the 4 to 20 mA transmitters must have an external power source.

When an I/O board is used with remote sensors, the number of analog inputs available on the I/O board is reduced by two per sensor.

The integral sensor mounts to the back of the CS60. Remote sensors can be daisy-chained to allow monitoring of up to four tanks.

MODEL	ORDER CODE							
CryoScan	**9A-CS60**	—	—	—	—	—	—	—
Integral Sensor*								
Standard		A						
None		B						
* Remote sensors and sensor cables are ordered separately. See accessories below for details.								
Cleaning								
None			0					
Oxygen cleaning			1					
Supply Voltage								
AC power with backup battery and backlit LCD (no heater)				A				
AC power with backup battery, backlit LCD and heater				B				
Remote solar panel: 10 watt with rechargeable battery (10-ft cable)				C				
Remote solar panel: 10 watt with rechargeable battery (35-ft cable)				D				
Rechargeable battery only (no solar panel)				E				
Communications Module								
No modem					0			
Landline modem (available only with AC power)					1			
CSD quad-band cellular modem**					2			
GPRS quad-band cellular modem**					3			
** Check with cellular service provider for correct wireless service type and ensure that two-way communication is supported.								
Front Panel Overlay								
Standard						A		
Custom (per customer specification)						***		
*** Customer-specific code is assigned. Contact Cameron for details.								
Firmware								
Standard							0	
Custom (per customer specification)							***	
*** Customer-specific code is assigned. Contact Cameron for details.								
I/O Board Option								
None (standard)								A
I/O board								B
Inputs: Six 4 to 20 mA and two contact closures Outputs: Two 4 to 20 mA and two latching relays								

Accessories

Remote sensors

Up to four sensors (including an integral sensor) can be connected to a CS60. When an I/O board is used with remote sensors, the number of analog inputs available on the I/O board is reduced by two per sensor.

Remote sensor mounting kit (mounting plate, screws, U-bolt/nuts and gland seal)

Bulk sensor cable (100-ft and 500-ft lengths) for wiring multiple sensors

CryoScan PC Software – Standard

CryoScan PC Software – Lite (view only; no RTU configuration)

External directional antenna and antenna adapter

Antenna extender cable (25-ft, 50-ft and 100-ft lengths)

Engineering unit label set (for customizing the display)

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