

DynaCheck

Digital Event Logger for Fuel Systems



DynaCheck

DynaCheck is a truck mounted device that minimizes tampering with the truck's cargo by continuous monitoring of multiple cargo access points such as vents, gates, manholes, lids, side doors, etc.

The system stores the last two thousand (2000) truck events providing a comprehensive audit trail. This has multiple advantages including an increase in accountability, discouragement of cargo theft and automatic truck location when used in conjunction with GPS systems, among others.

Background

Dynamic Flow Computers, Inc. has over 20 years of experience in the measurement and data acquisition for the Oil and Gas industry. We found our competitive advantage on designing innovative equipment to fulfill the needs of the oil and gas markets.

Our responsiveness to the market's needs is unmatched. Our devices are simple to use, but at the same time are able to perform the most complicated of jobs under the harshest environments. The accuracy and reliability of our products is always set to the highest industry standards.

Dynamic products are designed to operate in various fields such as petrochemical and refining, wellhead, liquid pipeline and storage, gas pipeline, gathering and product loading.

As a solution provider, our engineers designed one of the first explosion proof liquid and gas flow computers to be placed on the meter run rather than the control



room. These field mounted computers not only reduce wiring costs dramatically but they also provide more accurate data while saving the field operators' time and effort in maintenance.

Security

To increase the security of the system, DynaCheck associates a random numbers each time an event occurs. This number is unique for each record in the event log and can be used by a supervisor to know if any tamper has occurred should the number at delivery point differs from the shipping point.



The system also generated a System Sealed event when all the inputs being monitored are in the closed state allowing supervisors to know when the system was closed last.

Simple Local Operation

The operator only has to press a single button to see the last event code and its relevant information in a clear 32 characters display with illuminated background so there is no need for operator training.

Data Availability



All the events, random codes and access points opened can be retrieved wirelessly from a Handheld running Windows® Mobile. The data is downloaded into a plain text file that can be easily integrated into any database or accounting system.

Besides the event information, the file also contains the Truck ID number as well as the DynaCheck ID number for clear identification of the source of the information.

All the event information is stored in a flash memory so even if both power supplies are disconnected the data remains safe.



System Openness

It is our distinctive characteristic to provide systems that use open and industry standard practices that allow seamless integration of our equipment with other systems.

For instance:

- The monitored electrical inputs are totally universal and are not tied to a particular brand of sensor. They can be normally open or normally closed as the system detects both states.



MODBUS[®]
PROTOCOL

- We use Modbus™ as the protocol for digital communications which is the most common protocol in the Oil and Gas Industry and allows the DynaCheck for interconnection with other systems such as SCADA or PLC.
- The wireless link uses industry standard encryption to maximize the safety of the information.
- The handheld software runs in any Windows® Mobile PDA instead of tying the customer into a particular handheld brand.

Expandability

The system is configured to register three (3) digital inputs and one (1) digital output but it has an additional four (4) digital inputs/outputs that can be used in case more access points need to be monitored or additional output signals be generated.

The system also has an additional serial port that supports RS-232 and RS-485 protocols, allowing wired communications with other equipment via Modbus™.

As an additional option the software in the system can be customized for particular applications and the units can be reprogrammed in the field.



Ruggedness and Quality

Our extensive experience in the Oil and Gas industry has helped us to develop products that withstand the roughness of the environment. Among the product ruggedness features we can mention:

- All aluminum NEMA4X Explosion proof housing.
- 100% Industrial rating electronic components
- All the vital electronic parts are conformal coated to protect against moisture and accidental arching.
- Rugged pluggable wiring terminals.
- Over current, over voltage and reverse polarity protection on the power system.
- Field replaceable fuse.
- Mounting screws with anti-vibration thread lock for truck and compressor applications.
- Backlit Display for easy read out.



In addition, all our units are manufactured and assembled in the United States and go to an extensive quality control that includes temperature testing at extreme conditions, two-week burn in test, pre-assembly and post-assembly quality test and One (1) year warranty for every unit that we manufacture.

A Three (3) year warranty is available upon request at extra cost.

Summary of Benefits

- Stores up to two thousand (2000) events.
- Random code for each event and unrepeatable in the event log.
- Monitors 3 access points expandable up to 5.
- System records when the system is SEALED as a separate event.
- Serial port can be RS-232 or RS-485
- Events are stored in Flash memory so even if both power supplies are disconnected the data is safe.
- Digital output can be used to alert any GPS system.
- Rugged construction for harsh environments
- Industrial grade electronic components.
- Electronics are protected by epoxy coating.
- Easy local and remote operation.
- Complete audit trail is downloaded wirelessly in seconds.
- Audit trail generated in CSV format easy to import into any database.
- Runs on internal concealed battery for up to 6 years or can be run with external battery and internal as backup.
- Clear 32 Characters backlit Display for easy read out
- Uses industry standard Modbus™ Protocol.
- Firmware on units can be customized to fit a particular application and the unit can be upgraded on the field.
- Handheld software works on any Windows® Mobile PDA.
- Handheld software available in Spanish.

Technical Data Sheet

Operating Conditions

- Power Consumption: 25mW
- Temperature: -40°F to 185°F
- Humidity: 100%
- Environment: NEMA 4X Class 1 Div. 1

CPU

- Low Power 8-Bit CPU operating at 40Mhz
- Independent Battery backed Real Time Clock

I/O

- Internal Battery Monitor
- 5V and 12V Power Output for external sensor power
- 8 Digital IN/OUTS (configurable, OUT are open collector style) with Over voltage protection.
- One Push Button for user interface

Display

- 2 Line x 16 Characters Alphanumeric
- LED Backlight
- Operating Temperature: -20°C to 70°C

Housing

- Rugged Aluminum Class 1 Div 1 Housing with UL and FM Approvals
- Two 3/4 NPT side openings for incoming connections.
- One 3/4 NPT Bottom opening for mounting or additional wiring.

Power System

Dual Power System:

- 6 years Internal Rechargeable Lithium-Ion Battery. (Main power or backup for external supply)
- External Power (12 to 30 VDC). Includes reverse polarity, over current and over voltage protection.

Wireless Communication

- Option 1: Industrial Bluetooth (Class 1)
- Option 2: Ultra low power 2.4 GHz Band Radio for short distance operation.
- Option 3: Generic TTL interface for 900 MHz or 2.4 GHz long distance radio.

Communications

- One (1) RS232/RS485 Serial Port for local Modbus™ communications.
- One (1) TTL Level serial port for radio module.
- Serial Communication Protocol: Modbus™
- Bluetooth Communication with Handheld running Windows® Mobile 5.0 or later.