Hydrant Pressure Monitoring

Five of the most popular uses of Telog’s HPR-31, hydrant pressure recorder, are:

- Customer Pressure Complaint
- Hydrant Capacity
- Fire Flow Testing
- Calibrate Hydraulic Models
- C-factor Testing

Everything You Need is Included in These Two Convenient Kits

For more information on these applications or other remote data needs, call us at 585.742.3000, email TelogSales@telog.com, or visit us at www.telog.com.
**Application**

**Customer Pressure Complaint**

**Benefits**
- One person can do it all
- More accurate and reliable than chart recorders
- No exposed electronics — collect data in the rain
- Electronically documented test results
- Easy to use kits available

**Overview**

One of the most popular uses for the Telog Hydrant Pressure Recorders (HPRs) is to monitor and analyze customer pressure complaints. The HPR is ideally suited for this application because it is rugged, highly portable and can give a complete, time stamped picture of the pressure differential between the customer’s water pressure and the water pressure being delivered by the local utility.

![Customer Pressure Complaint Image]

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**Application**

**Fire Flow Testing**

**Benefits**
- One person can do it all
- Based on NFPA 14 and the AWWA M17 guidelines
- More accurate & reliable method than pitot gauges
- No exposed electronics — perform test in the rain

**Overview**

Using Telog’s HPR-31 units for fire flow testing provides you with more accurate information than conventional, manual methods of testing. Because the HPR is always recording and time stamping data, the testing can be performed and completed by one person. The testing procedure is based on guidelines in the NFPA 14 and the AWWA M17 manuals, so you will be sure to meet regulation requirements.

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**Customer Pressure Complaint**

- Data may be collected and viewed on-the-spot or back in your office.

- Once the data has been collected from both HPRs, it can be easily graphed in Telogers software.

- In the example to the left, it is clear that there is approximately a 20 psi difference between the pressure at the customer’s house and the water pressure being supplied by the water utility.

- A graph of the data can be shown to the customer so that they clearly see the pressure differential and that the utility has more than adequate water pressure in the main.

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**Fire Flow Testing**

- Pressure and flow data may be collected with your Telog DTU and transferred to your computer for viewing and analysis in Telogers for Windows.

- You can also download data directly from your HPRs to your computer. Both the residual hydrant and the flow hydrant data can be displayed simultaneously in Telogers software. You will be able to view a clear picture of the entire flow test.

- The Telog DTU can also display the current pressure or flow data from an HPR.
C-factor Testing

**APPLICATION**

C-factor testing with HPR units will measure discharge and head loss. By using HPRs, a task which normally requires three or more people becomes a one-person job. There is no need to station a person at each hydrant. The HPR automatically records and time stamps the data. This information can then be used to calculate pipe roughness in terms of Hazen-Williams C-factor.

**OVERVIEW**

- One person can do it all
- More accurate and reliable than pitot gauges
- No exposed electronics — perform test in the rain

**BENEFITS**

1. **One person can do it all**
2. **More accurate and reliable than pitot gauges**
3. **No exposed electronics — perform test in the rain**

Use your Telog DTU to observe the static pressure at the upstream and downstream hydrants.

Attach HPRs to the Upstream and Downstream hydrants and close valve(s). Collected data will give you what is needed for C-factor calculations and can be read from a graph such as the one on the left.

\[ C = \frac{C_L Q^{1.852}}{h^{1.87}} \]

C-factor Testing

Use your Telog DTU to observe the static pressure at the upstream and downstream hydrants.

**Unaccounted for Water**

When you use Telog’s Hydrant Flow System to flush your hydrants, the total gallons flowed during a hydrant flush are automatically recorded. This reduces the amount of unaccounted for water in your distribution system.

**Add to Your Flushing Program**

Numerous water authorities have instituted flushing programs to help maintain the health of their distribution system. In many mains, water moves through at less than two miles per hour. Flushing removes built up sediment that restrict the water. When you use the Telog Hydrant Flow System you can simultaneously accomplish two other important functions — hydrant capacity testing and reduce unaccounted for water.

**APPLICATION**

**BENEFITS**

- **Hydrant capacity testing**
- **Capture peak flow rate for color coding**
- **Reduce the amount of unaccounted for water**
- **One person can do it all**

**OVERVIEW**

Hydrant Capacity Testing

The peak flow rate of the hydrant can be read from your Telog DTU. Using this information, you can determine the appropriate color-coding of the hydrant.

Bonnet and Cap Color-code

- **RED** — Less than 500 GPM
- **ORANGE** — 500 to 999 GPM
- **GREEN** — 1000 to 1499 GPM
- **LIGHT BLUE** — 1500 or more GPM

This hydrant flowed less than 500 gpm, therefore, it’s caps and bonnet are painted RED.
Calibrating Hydraulic Models

Use exported HPR data in your modeling software for:

- Model calibration data
- Steady-state analysis
- Extended-period analysis
- Data is stamped with time and date
- More accurate, reliable and flexible than pitot gauge

Fire flow testing and C-factor testing are two of the most common field tests used for model calibration. Using Telog HPRs can greatly simplify that testing (see Telog’s application notes on fire flow & C-factor testing) and the data from Telogers software can be exported to many of today’s software modeling packages.

In time series analysis you can study your system over an extended period of time. Fill and drain cycles of tanks, pump and valve response, as well as daily fluctuations in usage, can all be simulated using time-series analysis. The HPR easily collects and exports these data to your modeling software package.

All HPR data are date and time stamped. The combination of HPRs and Telogers software is well suited to collecting, displaying and exporting time-series data. The pressure data in the graph to the left was stored in 1 minute intervals, but for our time-series analysis we wanted 15 minute averages from 3 pm to 6 pm. As you can see, the tabular data is displayed in 15 minute averages and the desired period is highlighted.

There are several ways to export data from Telogers software. Data can easily be exported to 3rd party software packages such as Microsoft Excel, Microsoft Word, various HMI and Modeling packages.

Telog has an ongoing commitment to continuously work with hydraulic modeling software manufacturers to further simplify data transfer between software applications.

Typical Applications Using Telog Recorders

- SSQ/CSO Event Monitoring
  - Wireless communication or direct connect options
  - Alarm notification
  - Time stamped events
  - Record level and duration of events

- Inflow & Infiltration Alarm Notification
  - Rainfall data and wastewater flow data are sent to the host computer via wireless communication.
  - Data is correlated at the host computer to provide alarm notification.
  - Wireless communication or direct connect options
  - Alarm notification
  - Time stamped events
  - Record level and duration of events

- Water Level Recording
  - Wireless communication or direct connect options
  - Alarm notification
  - Time stamped events
  - Record level and duration of events

- Tank Monitoring
  - Chemical, fuel, or water level and transaction monitoring
  - Inventory management
  - Level alarm notification
  - Refill scheduling
  - Wireless and solar power options

- PRV Monitoring
  - Flow
  - Pressure
  - Water quality
  - Wireless communication via埋able antenna

- Environmental
  - Rainfall
  - pH
  - Windspeed
  - Temperature
  - Humidity

Environmental

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Anatomy of HPR-31 Kits

- HPR Kit II-D
  - Chemical, fuel, or water level and transaction monitoring
  - Inventory management
  - Level alarm notification
  - Refill scheduling
  - Wireless and solar power options

- PRV Monitoring
  - Flow
  - Pressure
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HPR-31 Specifications

**Input**

- **Type**: Strain gauge, isolated pressure sensor
- **Range (psi)**: 100, 200, 300 (contact Telog for other ranges)
- **Over Pressure (psi)**: 300, 600, 1000
- **Burst Pressure (psi)**: 850, 1000, 1000
- **Resolution**: 0.025% of full scale, 12-bit
- **Accuracy**: +0.25% of full scale at constant temperature
- **Temperature Effect**: +0.01% of full scale per °C

**Recording**

- **Sample rate**: Programmable from 4/sec up to 8 hours
- **Data interval**: Programmable from 1/sec up to 8 hours
- **Values saved**: Selectable min, avg & max per interval
- **Memory**: 128 Kbytes (~80,000 data values)

**Interface**

- **Type**: RS-232; 300 to 19.2 Kbaud
- **Connector**: Circular 4 pin watertight

**Battery**

- **Type**: Single AA Lithium (Saft LS 14500 or equal)
- **Life**: 5 years typical

**Environmental and Mechanical**

- **Temperature**:
  - **Operating**: -10° to 65°
  - **Storage**: -40° to 65° C
- **Humidity**: 0-100% relative humidity
- **Enclosure**: NEMA 4x / IEC IP65
- **Size**: 12.70 cm diameter x 8.89 cm (5" diameter x 3.5")
- **Thread**:
  - **Hydrant mount**: 2.50" NHT standard,
  - **Internal mount**: 1/4 NPT

**Support Software**

- **S-3PC**: Telogers for Windows
- **S-3PCL**: Telogers for Windows Lite
- **Telog Model DTU-R**: Data Transfer Unit; IP-67 rated PDA running Palm OS and Telog application program

**Computer Requirements**

For S-3 PC or S-3PCL:

IBM compatible computer with a 586/133 MHz or higher processor
running on Microsoft Windows 95/98/NT/2000/XP
at least 32 MB of RAM, a hard disk with at least 200 MB of free space and a pointing device.