



XPERT BASIC ENHANCEMENTS IN FIRMWARE VERSION

3.4



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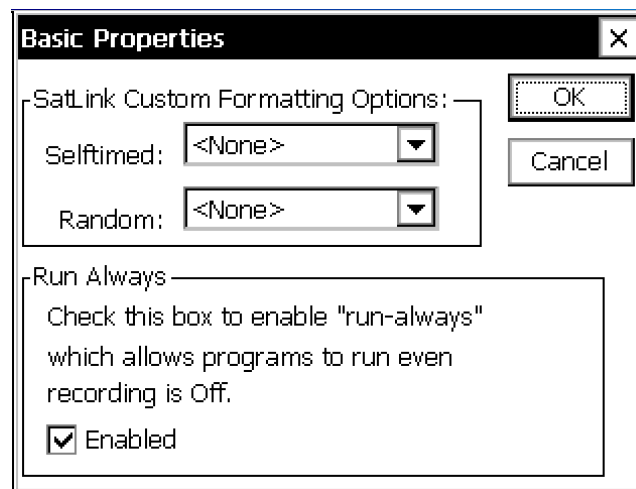
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Introduction

Firmware version 3.4 of the Xpert2 and 9210B data loggers makes several enhancements to Xpert Basic. This application note provides brief descriptions of those enhancements. For more information regarding how to take advantage of these enhancements, please refer to the Xpert2 and 9210B user manuals, available for download from <http://www.sutron.com/downloads/manuals.htm>.

- Run Always mode has been added to allow Basic programs to run even when recording is turned off. This option is enabled/disabled using the Basic Properties dialog, which is available by selecting the Basic entry on the Setup tab and pressing Edit.



- Sysstat(31) now provides the Run Always mode state (-1: On, 0:Off)
- “Readings” are a new type of variable containing all the sub fields typically used to represent a sensor, log, or note reading in the system. This provides a more concise way to deal with sensor blocks, processing blocks, and to deal with log data.
- The Log statement has been enhanced to allow logging directly to a file, and to log one or more Readings.
- The LogReading function has been added to make accessing data in the log much simpler.
- Tron & Troff statements have been enhanced to support the ability to trace a single global variable and report any changes to the variable. This is very useful when you know that somehow a global variable got changed, but can’t figure out where or why. Line tracing now continues in to local subroutines.
- To aid in debugging, the status tab and the “info” command prompt command have been enhanced to display the Run Always status, the overall state (running or stopped), and for each currently running subroutine or function: which program the subroutine or function is contained in, the state (running, sleeping, waiting, or performing I/O), and the line number currently being executed. If your program isn’t working as you expect, check the status and see if the program is executing the code you expect it should be.



- Basic Blocks and Basic Sensors now have a more complete set of input/output functions with the addition of: GetInputDigits, GetInputName, GetInputTime, GetInputUnits, SetOutputTime. In addition, it's now simpler to set all the various input & output fields all at once with the GetInput function and the SetOutput statement.
- Multi-threading support has been enhanced with the addition of the StartTask and StopTask functions. These allow subroutines to be scheduled to run at a specific time and interval. When in Run Always mode, these tasks or threads will continue to run even when recording is turned off, as opposed to GUI scheduled subroutines that will always stop when recording is turned off regardless of the Run Always mode.
- The Lock and UnLock statements are no longer limited to a single global lock, allowing resources and global data to be managed more intelligently
- Events may be used to synchronize different Basic threads. The WaitEvent function, and the SetEvent and ResetEvent statements allow threads to signal each other when there is work to be done.
- GetAbortEvent and GetStopEvent are new functions that allow a Basic program to detect when the program has been shut down, or recording has been turned off.
- Support for deeper nested and/or recursive functions has been improved.