



Manufacturers of Engineering and Production Test Equipment

**257xR v6.0.0
Firmware Release Notes**

257xR Firmware Changes, v6.0.0 03 April 2006

XiTRON Technologies has just released new v6.0.0 firmware for the 257xR ballast analyzer family, the industry-leading system for engineering and production ballast testing. These new features add to the already extensive capabilities of this analyzer. Designed specifically for the lighting industry, the 257xR ballast test system provides designers as well as production managers with more information about their ballasts, more accurately, and quicker, than any other system available today.

257xR version v6.0.0 firmware adds additional features for testing strike characteristics, particularly for some HID ballasts and non-symmetrical strike/ignition characteristics. This version of firmware also adds additional check capabilities when running user-defined automated test sequences. Beyond the strike Vpk(hi) and Vpk(lo) levels, users can also now check the 3rd and 5th harmonic content of the line current. As with all other test sequence check parameters, these can automatically be tested to limits.

Lastly, the v6.0.0 firmware adds control for some newly released variable resistive loads. The existing model 1560 (0 to 2046 ohms) and model 1561 (0 to 65024 ohms) variable loads can now be ordered with up to 8 user-defined, programmable EOL values.

New 257xR Ballast Analyzer Features

- **Extended Tube/Lamp Vpk Measurements**
- **Extended Strike Vpk Measurements**
- **Extended Strike Vpk Check Capability**
- **Extended Line Current Harmonic Check Capability**
- **New End of Life (EOL) Load Control**

This document describes the firmware changes implemented in v6.0.0 of the 257xR ballast analyzer. It does not include firmware changes implemented in earlier versions. The component versions contained in this release are as follows:

Main v6.0.0
Measurement v4.0
Line v3.0
Tube v3.0

This firmware may be uploaded into any 257xR presently having v5.0 or higher firmware. If used with a 1500 load chassis, the 1510 or 1512 controller should have version v4.0 or higher firmware installed.

NOTE: Installing this firmware upgrade will erase all internally stored configurations, and test limits storage data, both in the default configuration and in the configuration stores of the 257xR. The user should read the previous data out of the instrument using the updated LabView configuration application prior to upgrading the firmware, and then restore the configuration(s) after the upgrade. If this is not performed, after applying the upgrade, the previous test limits will be lost and cannot be retrieved.

The v6.0.0(beta) firmware package for the 257xR is the latest upgrade for this analyzer. Version v6.0.0(beta) adds the following additional features.



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Extended Tube Vpk measurements

Previously, only the highest peak measurement (either polarity) was available. This has been extended as follows:

The 257xR now measures the highest positive peak and the highest negative peak. **Please note:** the pin 12 end is the “low” terminal and the pin 34 end is the “high” terminal. The highest polarity peak (as previously displayed) is thus the higher of these two results. This is referred to as PEAK. A new result, the opposite polarity peak, is also available now, which is the lower of the positive and negative peaks. This is referred to as LOPEAK. The actual measured positive and negative peaks are also available. These are referred to as POSPK and NEGPK respectively.

The actual measured values can be read by the IEEE488 interface at any time by means of the regular VOLTS read command syntax, changing the previous syntax to PEAK, LOPEAK, POSPK, or NEGPK.

A couple of operational notes –

1. All peak results are always returned by the 257xR and displayed by the 257xR, without any polarity notation.
2. Because of the definition of the two base peak results, a signal which is always of a single polarity (i.e. has sufficient DC offset such that it never crosses zero) will yield one of the two peak results as zero. In other words, if the signal never goes above zero (is always negative) then POSPK is exactly zero, while if the signal never goes below zero (is always positive) then NEGPK is exactly zero.

Extended Strike Vpk measurements

Similar to above, the strike Vpk results (PEAK) have been extended with the addition of the highest LOPEAK result during the pre-strike period. The detection of strike is unchanged and continues to use the highest polarity peak voltage.

There are two calculated results obtained from these results at the completion of each measurement cycle.

1. The PEAK result – the largest of POSPK and NEGPK (this ends up being the same as that previously returned for PEAK).
2. The LOPEAK result – the smaller of POSPK and NEGPK.

As part of the strike detection system, the highest value of PEAK and the highest value of LOPEAK are separately collected. The highest value of PEAK is the Strike Pk result (i.e. the same as previously reported), and the highest value of LOPEAK is the Strike Vpk (lo) result. If configured for resistive loads, then the Strike Pk result is used for detecting strike as was done previously. With other types of loads, the current or power is used for detecting strike.

The actual measured value can be read by the IEEE488 interface at any time by means of the regular STRIKE-V read command syntax, changing the previous syntax to PEAK or LOPEAK.

Extended Strike Vpk Check Capability

The new lower polarity strike Vpk result can now be checked by means of the addition to the STRIKE CHECK step of a “Strike Vpk lo” check. For clarity, the previously named “Strike Vpk” has been renamed “Strike Vpk hi”, but is otherwise unchanged.

The new check result has result codes 315 through 318 (for tubes A through D respectively) and the check is configured by the following codes.



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ID#	Data
310	Tube A Strike Vpk hi voltage
311	Tube B Strike Vpk hi voltage
312	Tube C Strike Vpk hi voltage
313	Tube D Strike Vpk hi voltage
315	Tube A Strike Vpk lo voltage
316	Tube B Strike Vpk lo voltage
317	Tube C Strike Vpk lo voltage
318	Tube D Strike Vpk lo voltage

Extended Line Current Harmonic Check Capability

The LINE CHECK has now been extended to add the ability to check the 3rd and 5th harmonic content of line current. Note that the absolute current (i.e. in Arms) is checked.

The new check result codes are 180-183 (3rd harmonic, ballast 1 through 4) and 190-193 (5th harmonic, ballast 1 through 4).

The check is configured by the following codes.

ID#	Data
180	RMS line current, 3 rd harmonic (Ballast #1)
181	RMS line current, 3 rd harmonic (Ballast #2)
182	RMS line current, 3 rd harmonic (Ballast #3)
183	RMS line current, 3 rd harmonic (Ballast #4)
190	RMS line current, 5 th harmonic (Ballast #1)
191	RMS line current, 5 th harmonic (Ballast #2)
192	RMS line current, 5 th harmonic (Ballast #3)
193	RMS line current, 5 th harmonic (Ballast #4)

New End of Life (EOL) Load Control

257xR v6.0.0(beta) and higher firmware allows for the use of 1560 and 1561 variable loads with the selectable EOL option. An EOL option has been added to the 1560 and 1561 variable loads that allows the user to select from one of 8 EOL values. The v6.0.0(beta) firmware adds a 5th digit to the load codes. A leading zero (0), bypasses the EOL value, while a leading 1 through 8 will select one of 8 user-defined values.

When using a 1500 load chassis, the 1510 or 1512 controller should have version v4.0 or higher firmware installed. If a v6.0.0(beta) analyzer is used with a 1500 load chassis containing a controller with firmware prior to v4.0, errors may be received if sending new load codes. If an analyzer with firmware prior to v6.0.0(beta) is used with a load chassis with v4.0 firmware, there is no issue, but there will be no control of EOL values on variable loads with that option.

Summary

This new firmware may be uploaded into any 257xR presently having v5.0 or higher firmware. Firmware upgrades are easily accomplished in the field via the GPIB port using the XiTRON 2574R_1500_Upload utility. This utility can be found on our web site at http://www.xitrontech.com/images/support/2574R_1500_Upload.zip. If used with a 1500 load chassis, the 1510 or 1512 controller should have version v4.0 or higher firmware installed.