

# INCREASE IN THE ARRAY TELEVISION CAMERA SENSITIVITY

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**ABSTRACT.** A simple adder circuit for successive television frames that enables to considerably increase the sensitivity of such radiation detectors is suggested by the example of array television camera QN902K.

Due to its high sensitivity of 0.00015 lx, the array television camera QN902K has become widespread both among amateur astronomers and professional astrophysicists. Other similar high-sensitivity cameras are popular as well. It is possible to considerably improve the sensitivity by increasing the signal storage time for the array. Due to an increase in measured thermal background, it is impossible to set the storage time of several seconds and longer for cameras without proper cooling. When the storage time is less than 1 second, the thermal background effect is not substantial.

A simple circuit of the device that regulates the storage time is presented here below. The camera sensitivity increases non-linearly with the storage time. That results from the more effective charge-packet transfer (the

charge-packet transfer losses that form a considerable part of the instrument errors decrease proportionally with the storage time).

The designed device enables to store images of up to 16 television frames. The number of frames can be set using binary code in signal inputs D1-D4 of the external control device. Array television cameras are intermediate between television cameras and cooled CCD cameras. The image processing can be performed by the methods that have been already in use in the television astronomy.

### References

- Pratt W. Digital image processing, Moscow, Mir, 1982, **2**, 480 p.
- Prokofieva-Mikhaylovskaya V.V., Strygin N.Z., Sukhov P.P., Karpenko G.F.: 2007, *Bull. of the Crimean Astrophysical Observatory* 103, **3**, p. 238-245.

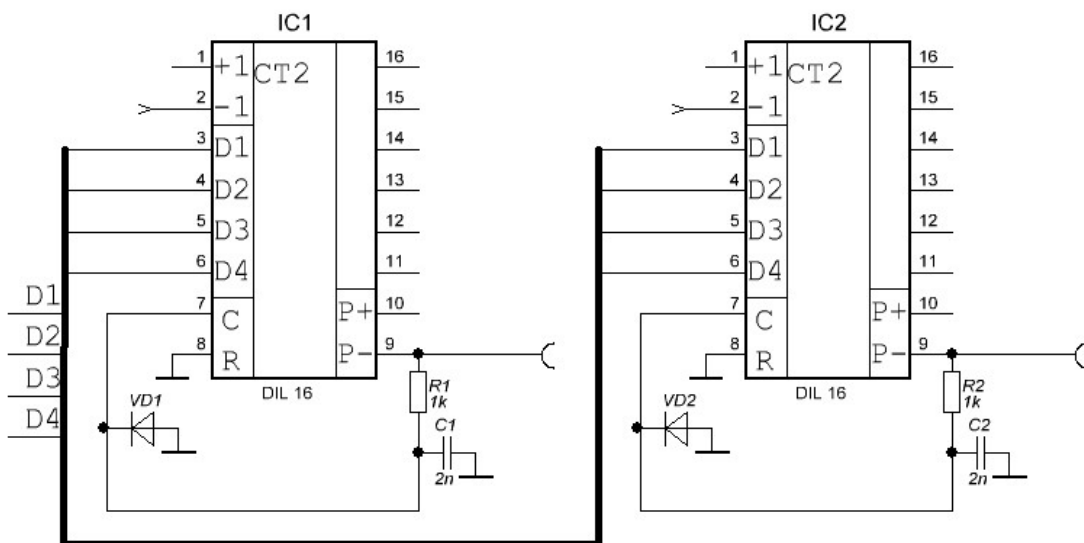


Figure 1