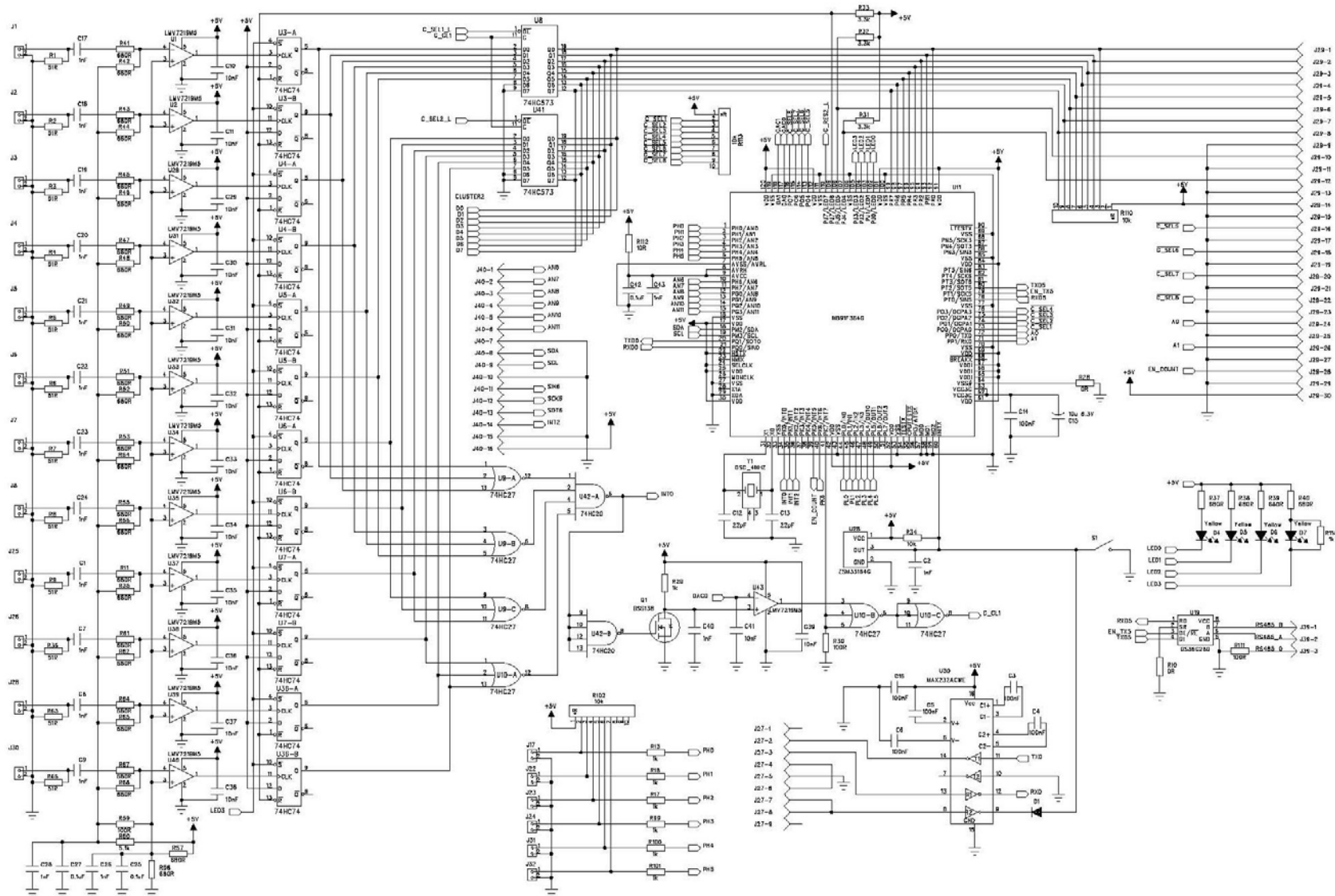


# 24 Channel Counter and Data Preprocessor Module, based on Fujitsu FR 32-bit Microcontroller



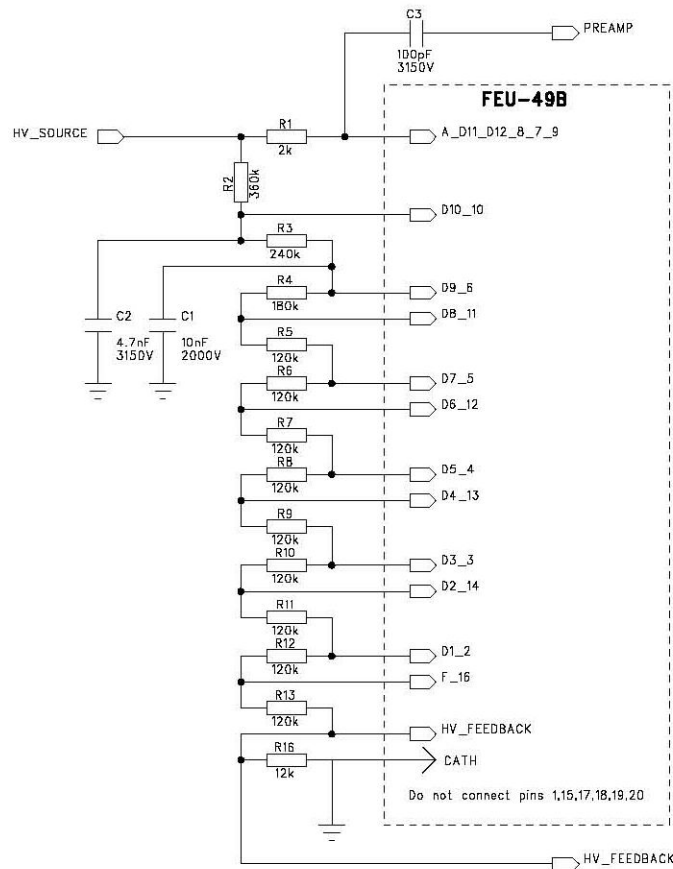
## Main features

1. Large dynamic range of input signals: both ECL and TTL with overvoltage protection
2. Possibility to use with RS-485 local net
3. Possibility to expand the module with additional inputs

## What should be added:

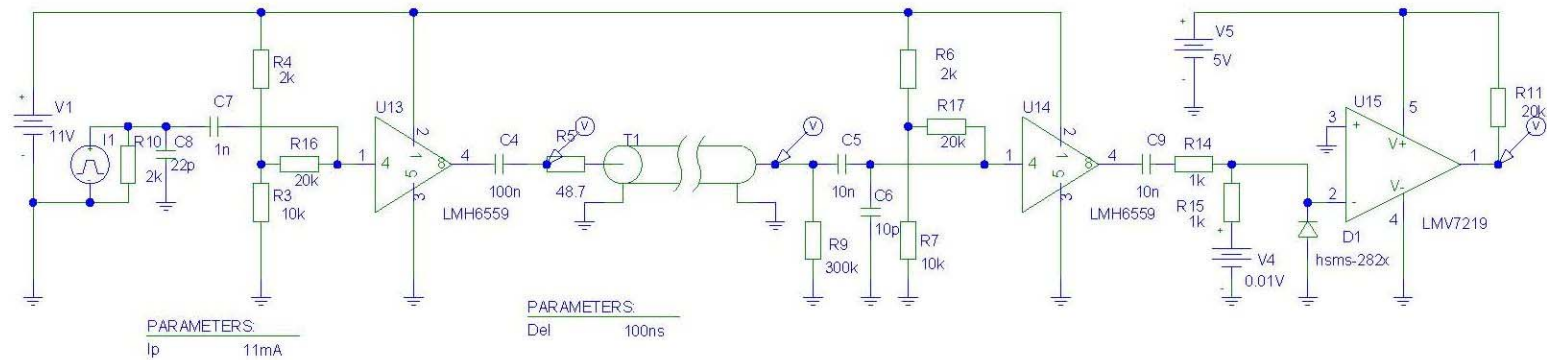
1. Individual threshold setting for each detector
2. Outputs (analog or digital) for setting of high voltage for photomultipliers
3. Nonvolatile memory for all kinds of trimmed parameters

# Photomultiplier Voltage Divider



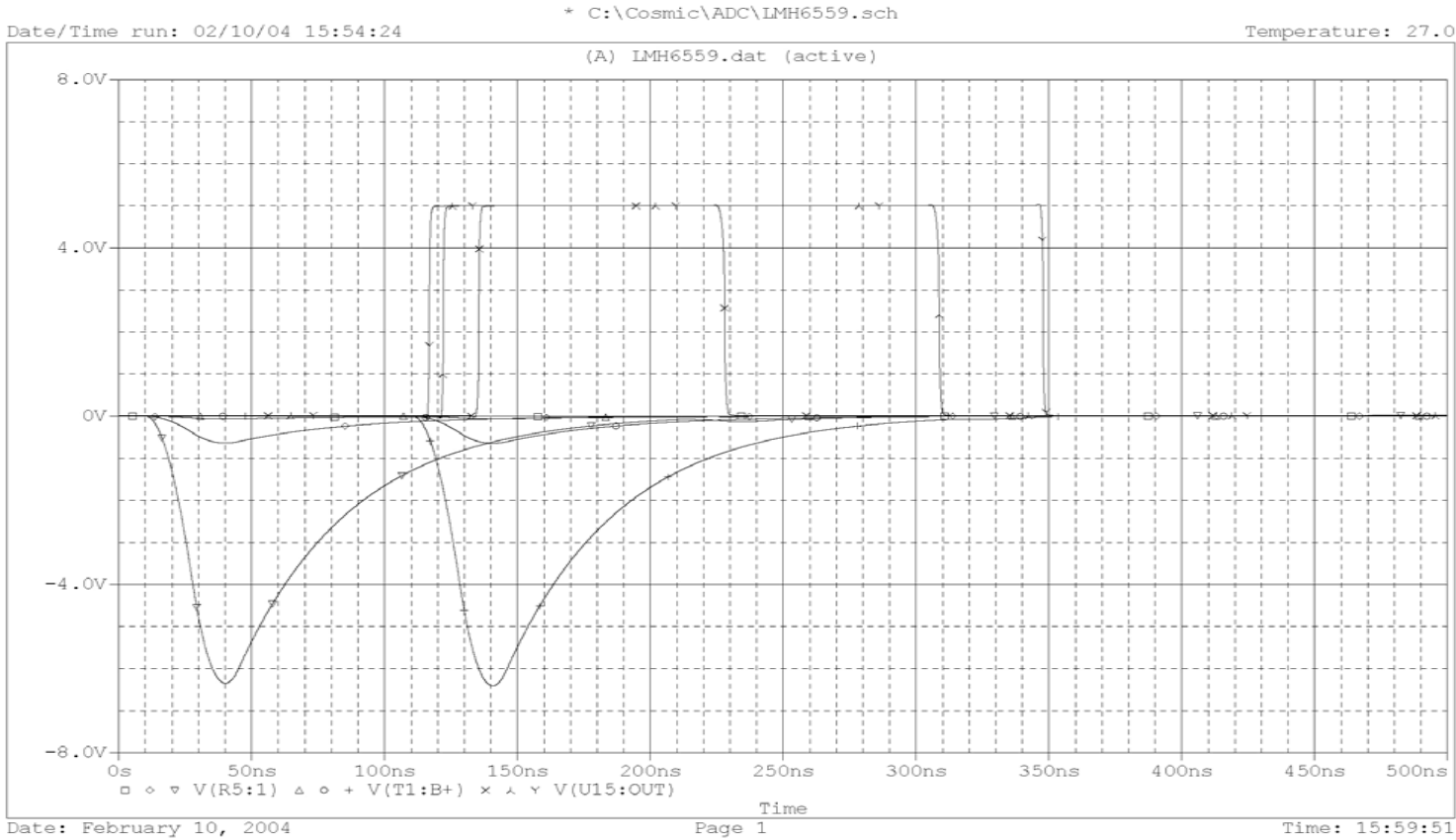
- Standard Romakhin's schematics
- New Components: more stable resistors with 1% tolerance, smaller capacitors
- Feedback output for High Voltage Measurement

# Coaxial Communication

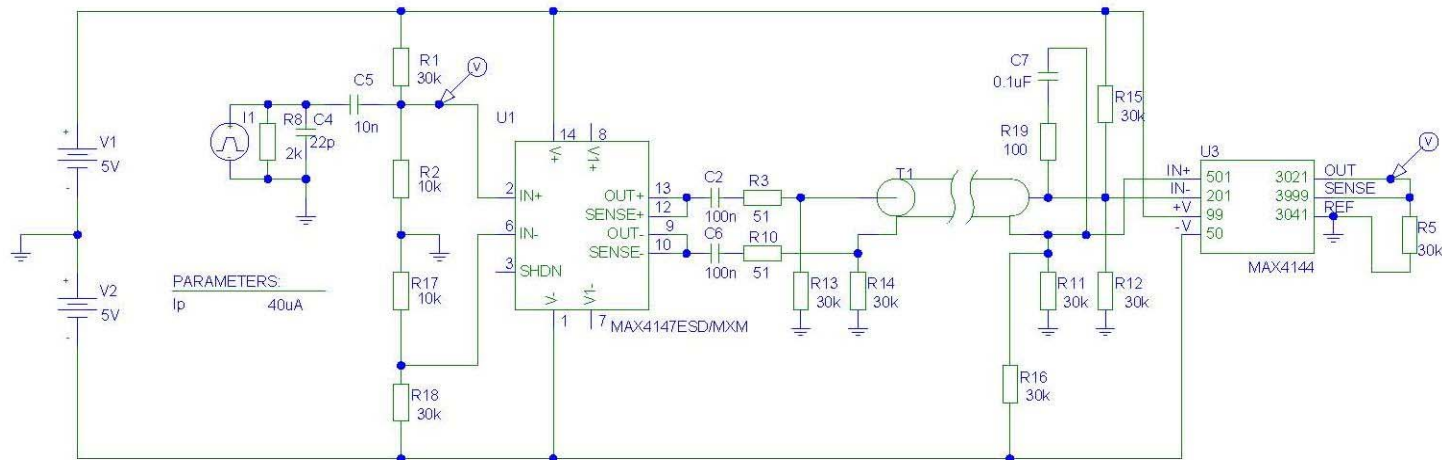


1. Preamplifier – 1 V/V gain buffer
2. 50 Ohm transmission cable
3. Receiver amplifier – 1 V/V gain buffer
4. Software programmable threshold comparator

# Coaxial communications signals

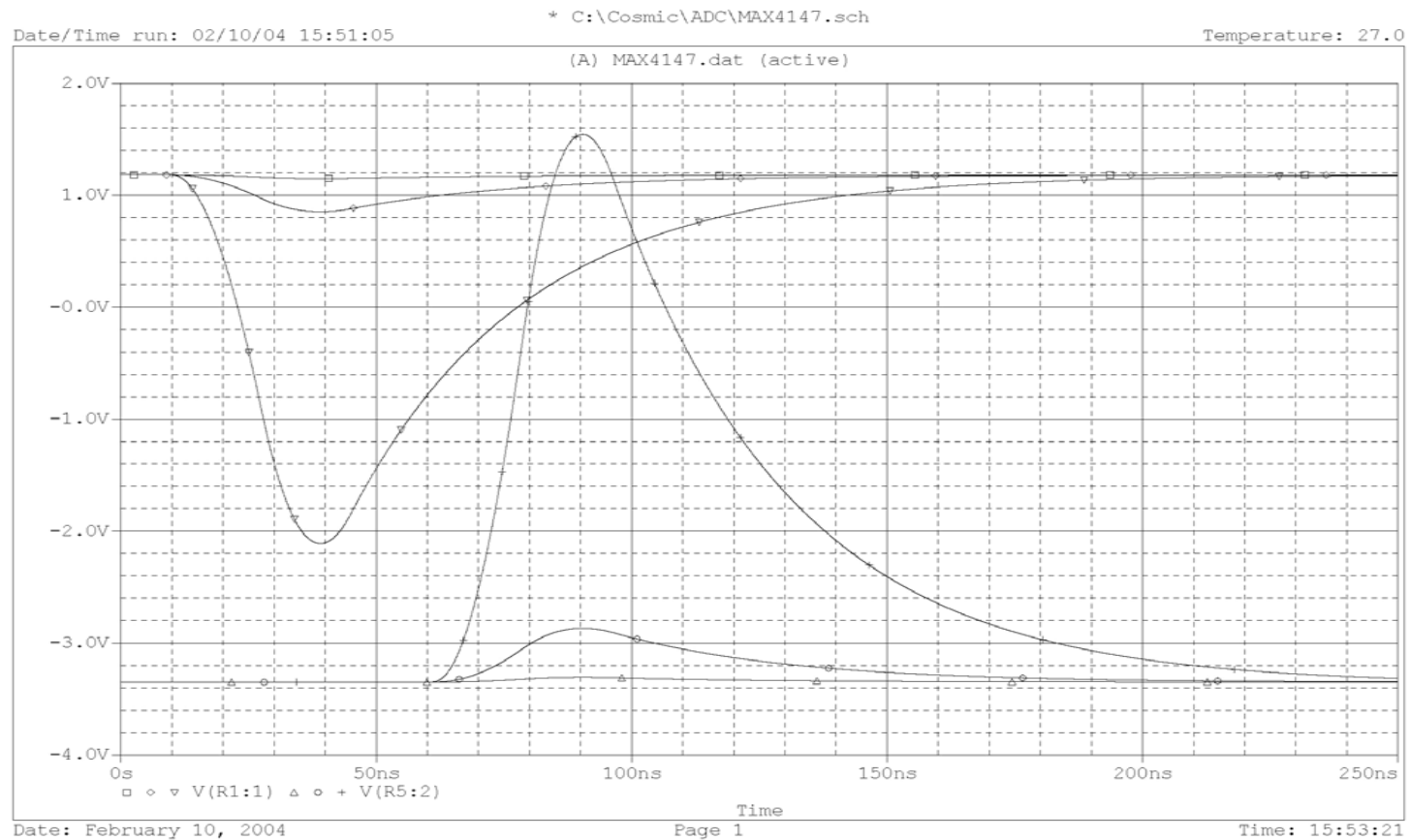


# Twisted Pair Communication

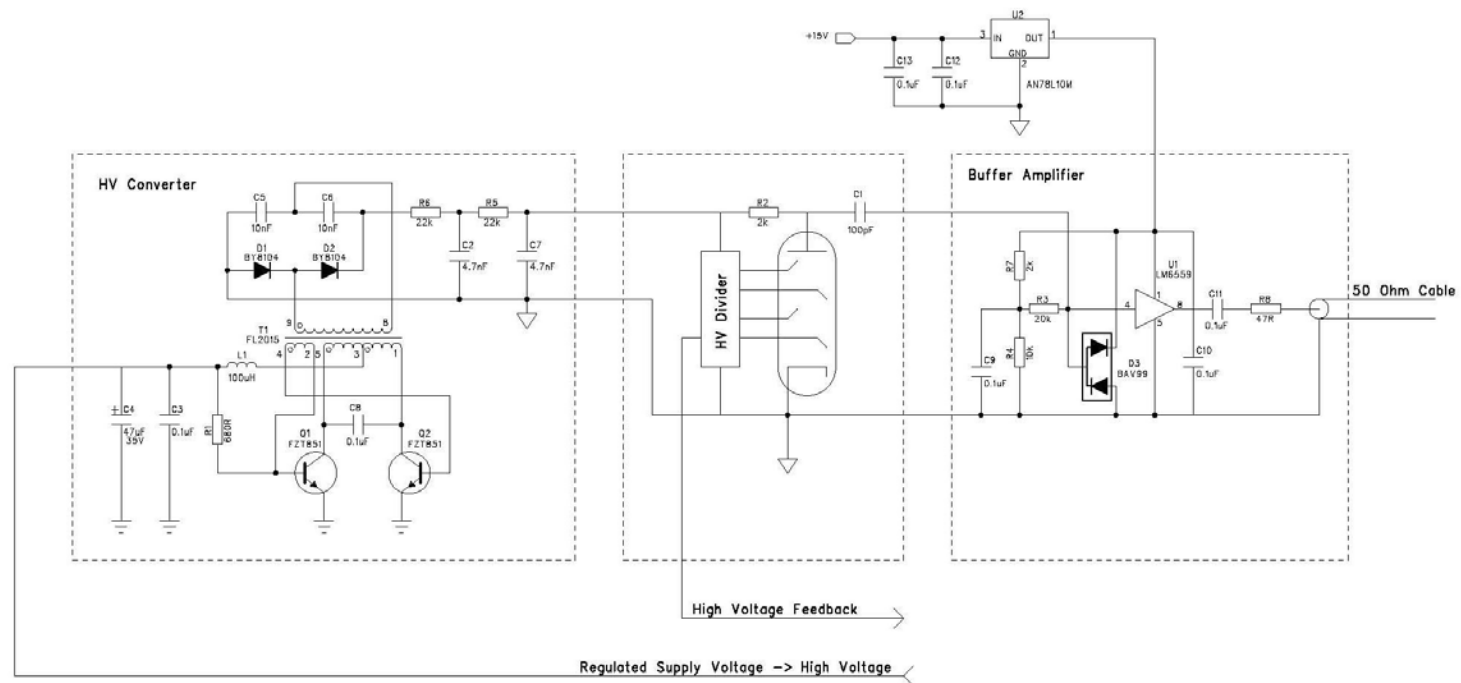


1. Differential to Differential Gain 2 Wideband Amplifier
2. Differential to Single Output Receiver

# Differential Communications Signals



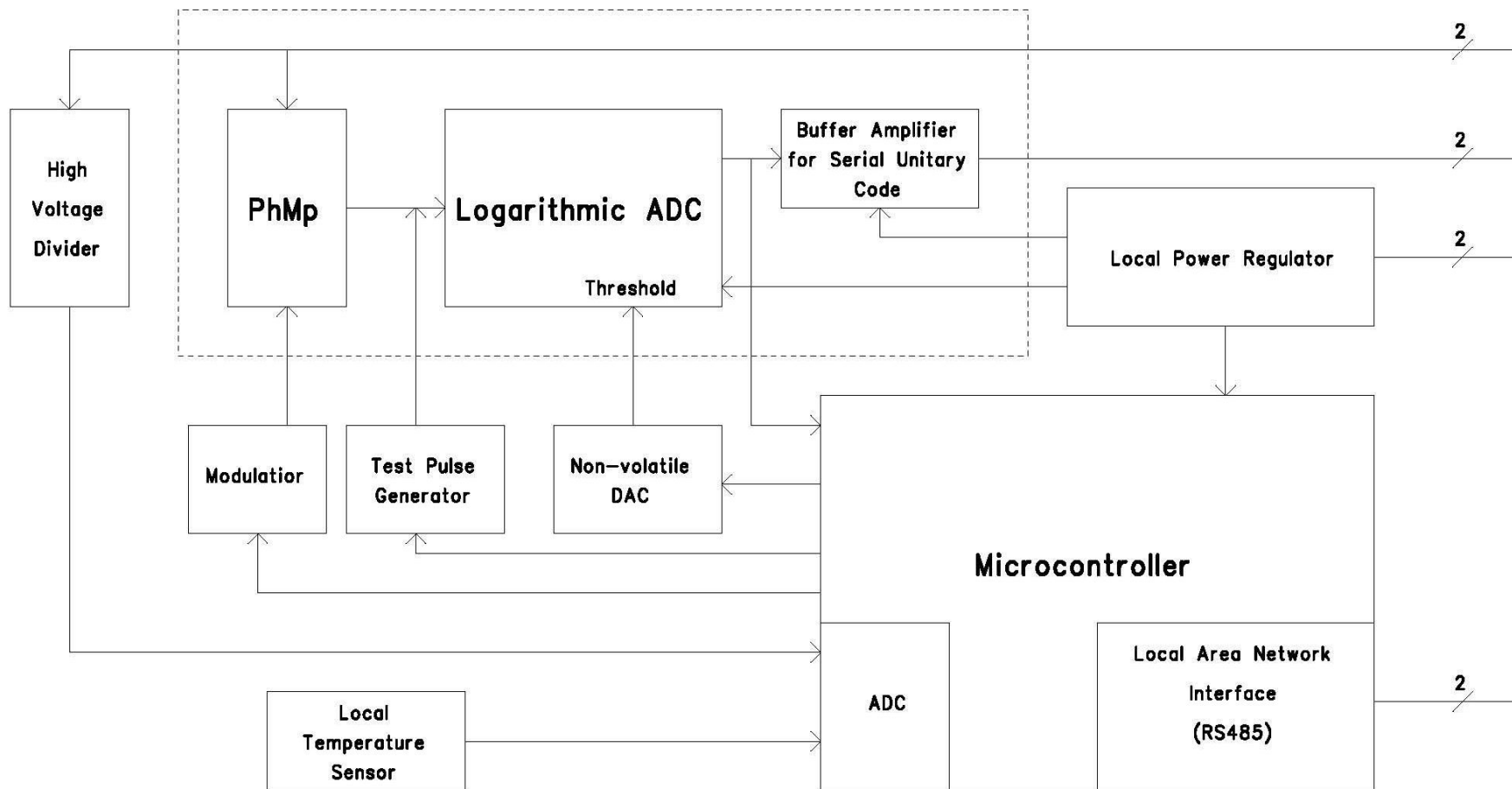
# Front End Electronics, placed inside of the photomultiplier box



To be decided where to place regulated power supply and HV feedback measuring ADC

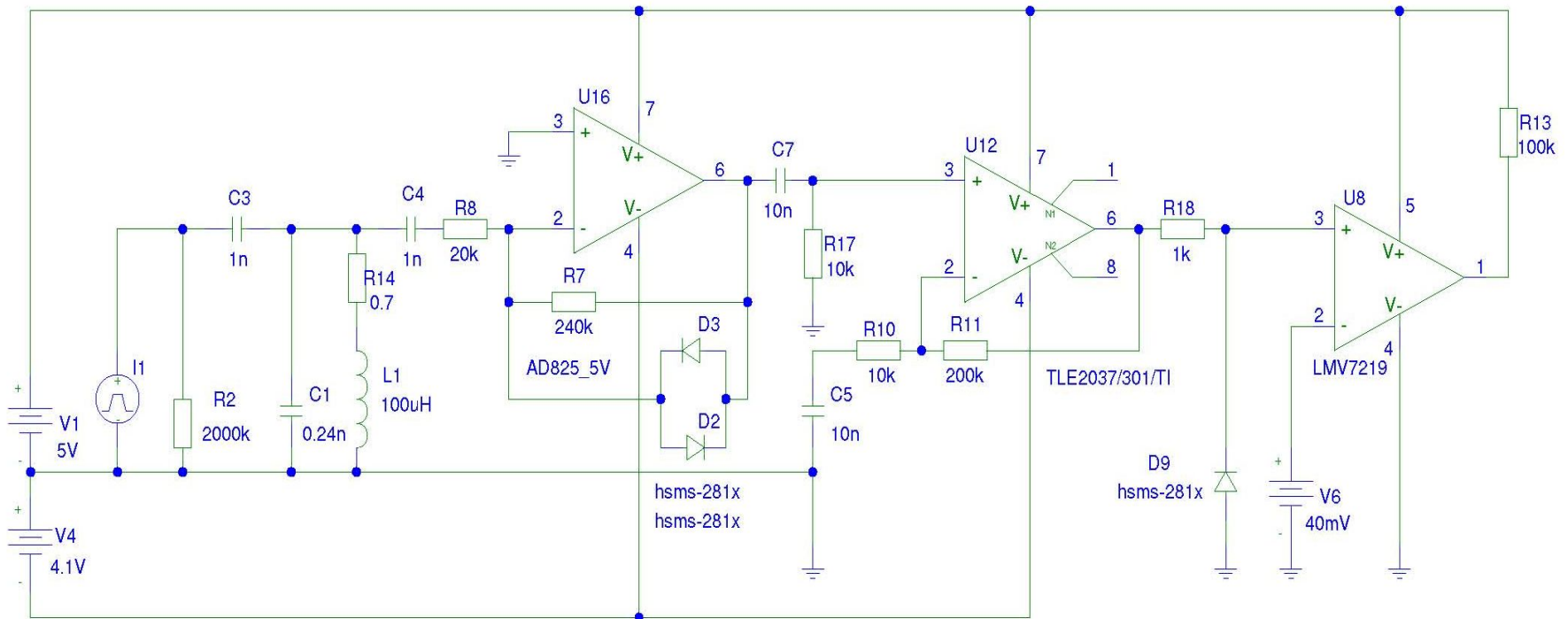


# Detector Data Acquisition and Control Module



- All electronics is mounted on one Printed Circuit Board, total cost less about 50 USD
- Can be used both as direct replacement for the old ADCs and as Local Data Acquisition and Control module for LAN-based readout, control and diagnostics system

## New design of the logarithmic ADC



- Control of the damping factor (logarithmic decrement)
- The front end chip is protected from high voltage surges
- Effective amplitude clipping in inverting amplifier
- Elimination of the positive feedback: first stage inverting, two next non inverting
- Very good temperature and long time stability and reliability due to modern components used