XIAC Australia X35PSRDNP tablet detection sensors as replacement for Sparc Systems 35PSR tablet detection sensors

Similarities:

- Board dimensions
- Position of emitter and detector daughter boards
- Location and type of connectors
- Output signal
- Working voltage

Differences:

- Use of MCU (micro controller) rather than logic blocks and discrete components
- 11 rather than 8 emitter/detector combinations for consistent sensitivity.
- No need to match emitter and detector board; new boards match themselves
- Self calibrating; boards cannot be manually calibrated
- A minimum of 18dB dust compensation ("Dust No Problem" protocol)
- All signals and voltages have EMC filters
- Sensitivity selector switch for accurate and uniform sensitivity of all heads
- Not sensitive to ambient light
- Red and Green status LEDs
- Use much less current (about 35% of the old boards)

Compatibility:

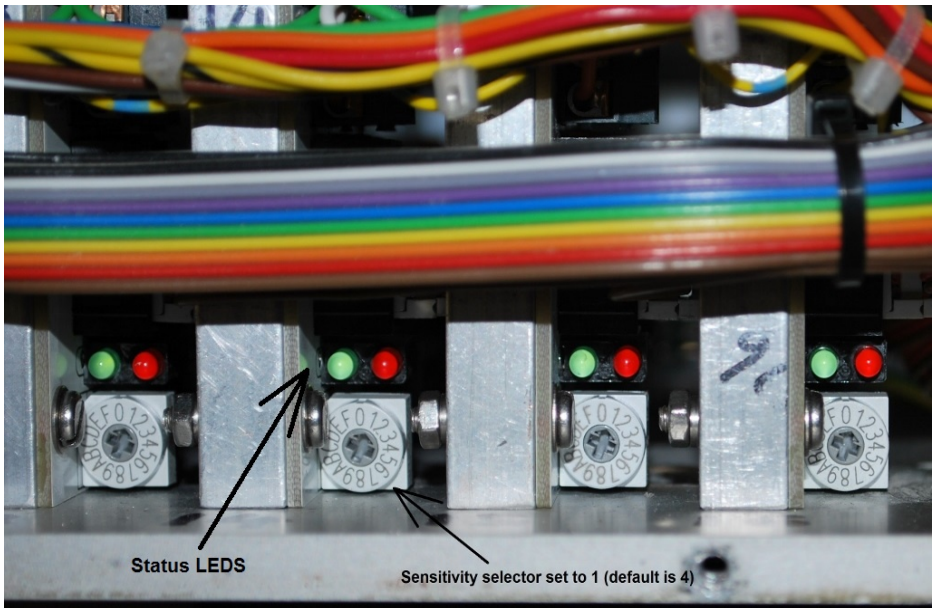
- Compatible with 35PSR boards without automatic gain control
- Compatible with 35PSRAGC board with automatic gain control
- Headbox can have a mixture of X35PSRDNP; 35PSR and 35PSRAGC boards

Quick installation:
Installation of the boards as a direct replacement for the SPARC boards can in most cases be done with the sensitivity selector set to position "3", unless you run very small products where the minimum dimension is close to 1mm.

Alternative installation:
The XIAC boards have the option to run at a lower sensitivity than the original SPARC boards. In most cases it is not necessary to have the boards set very sensitive, especially if you only run large products (vitamin tablets etc.). A reduced sensitivity may result in more accurate counts in case small particles are mixed with your products. It is therefore optional to do a validation with your smallest product after replacement of the boards and find the optimum sensitivity setting for your smallest product.

NOTE: When counting softgel capsules (or other significantly transparent products), the "minimum light time" setting may need to be increased. Setting P.02 to 15 will usually do the job.

Status LEDs:
The new boards have two status LEDs. One is red, the other green.
During the first 7 seconds of power-up, the red and green LED are both on (indicating the boards are calibrating). During this time, no products will be counted.
After the initial calibration stage, only the green LED should be on and it turns off while a product is being detected.
If at least one of the 8 photo receptors is blocked for more than 250ms, the red LED will turn on.



Validation:

- Set “Minimum dark time” (P.01) to 3
- Set “minimum light time” (P.02) to 15
- Set “Dark time” (front panel) to 0
- Drop one of your smallest products into each individual channel
- Verify that the counter increments when the product is dropped into the channel
- Take 1000 pieces of your smallest product
- Set the counter in the MT3 terminal to a large number (over 1000)
- Count the products into a box and register the counted quantity.
- Do this 2 or 3 times to see if the counted quantities match

Note 1: The 1000 pieces test is notoriously difficult as some products may overlap or smaller particles are mixed with the product. While doing this test, ensure as best as you can that the registered count represents only single and complete products.

Note 2: To find the optimum sensitivity setting for the XIAC boards, validation needs to be done every time the sensitivity is changed. For very small products (for example 1mm thick / 3mm diameter sweeteners), start with all boards set to “1”, do the validation test, then set all boards to “2”, do validation test etc.

Sensitivity:
The sensitivity of the boards can be set according to your smallest product.
Take the smallest width of the product that covers for at least 50% of the product length. These are theoretical numbers, the sensors should be set slightly more sensitive than these numbers (say 1 or 2 steps).

SWITCH	SENSITIVITY (mm)	SENSITIVITY (inch)
0	0.53	0.021
1	0.70	0.028
2	0.88	0.035
3 (DEFAULT)	1.06	0.042
4	1.41	0.056
5	1.76	0.069
6	2.11	0.083
7	2.64	0.104
8	3.17	0.125
9	3.70	0.146
A	4.58	0.180
B	5.63	0.222
C	6.86	0.270
D	8.45	0.333
E	10.38	0.409
F	13.20	0.520

Recommended “P-values”

- Minimum dark time (P.01) = 3
- Minimum light time (P.02) = 15

While doing the installation:

- Check that the top or bottom block don't have any chipped channel separators. Chipped separators will let light pass from neighbouring channels and can cause “ghost” counts. Also check that it sits perfectly flat on the bottom block. If not perfect, light from neighbouring channels might also pass through and cause “ghost” counts. Our optional “Synchronised” boards have no issues with chipped channel separators or blocks that are not perfectly flat.
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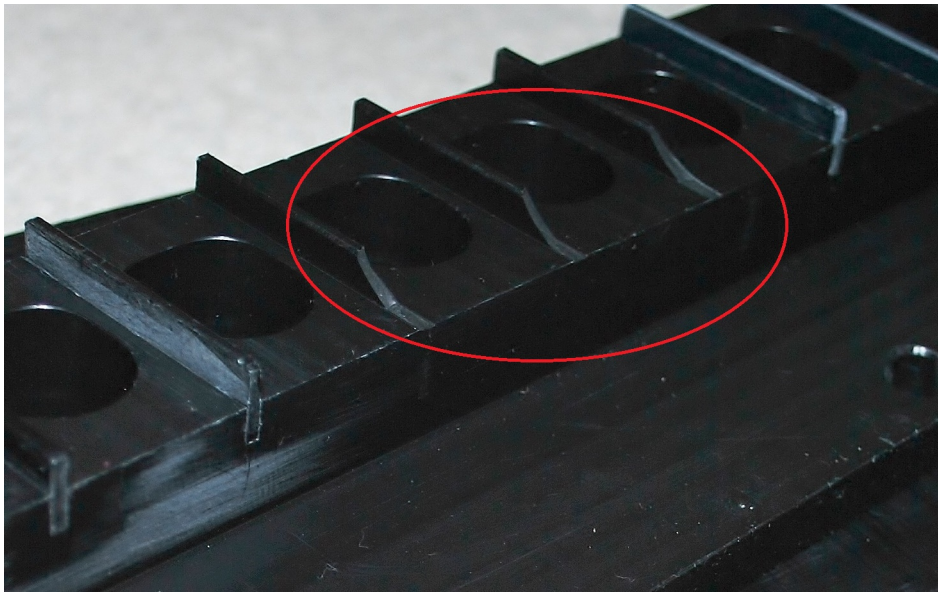
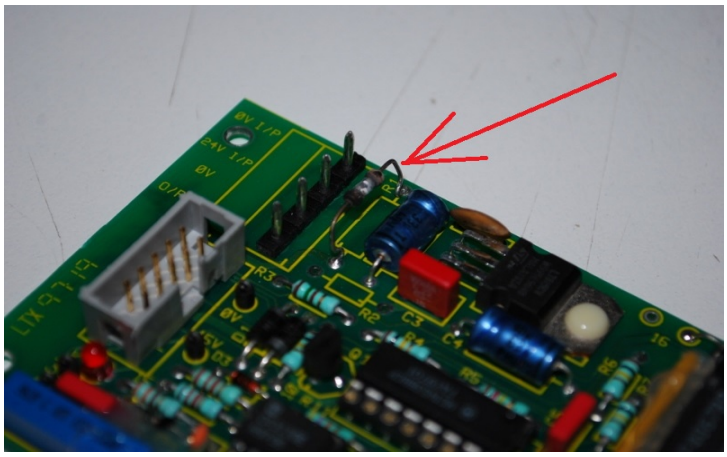


- When you find a board with a burned R1 resistor, check THE FULL LENGTH of the 10way flat IDC cable to see if there is any damaged sections. Replace or fix damaged sections. Also REPLACE the grey 4 pin power connector.



- Ensure there is no strain on the IDC cables in the corners of the head box.
- Ensure the boards sit flat against the base plate or do not lift more than 0.5mm from the base plate along the length of the boards.
- Ensure the emitter and detector boards sit in line opposite each other.