Homebuilder reports on Mode C encoders condensed, collated, and
alphabetized for future reference:

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Been flying with a Narco AT150 (bought new) for 21+ years (1700 hrs.)
and it's never missed a beat – zero service. I added an Aero Mechanisms
AM250-20 encoder in July '83 and it hasn¹t missed a beat either. It's
never failed a static system check or needed adjustment. Once the shop
accidentally checked it to 30,000 ft rather than it's 20,000 ft. limit
and it was in spec. up there too. :-)

ACK encoder. They had some initial connector problems when they first
came out 10 years ago or so, but they fixed that free. After that it
worked flawlessly.

I have installed ACK A-30 blind encoders in two different airframes.
They are light, cheap and they work.

ACK encoder Nice package, reasonable footprint, and reasonable price.
If it dies, ACK will overhaul it for a fixed price of $55. trans-cal
they wanted almost as much to fix it as it cost and they would not
quote a firm price to repair until they had it. No problems with the
ACK for at least 5 years now.

Happy ACK user. I have had both Narco and Transcal units
go bad and fixing them were either not possible, or nearly the cost of
a new
unit. My ACK has worked for at least 6 years now and if it does go bad,
ACK
will overhaul it for $55 fixed rate.

I use an ACK Technologies A-30.I liked the small size and profile
(6" by 2.65" x 1.7") and light weight (7.1 oz) as it velcro'ed to the
top of my Becker transponder. It came with wiring diagrams and pin-outs
for about a dozen transponders including the Narco AT-150.

I used that one too (ACK A-30). The manual was very good and has all
the pinouts you will ever need.

I have used an ACK blind encoder for 4 years 400 hours hooked up to a
King KT96 It just was recertified early this year.

I selected mine based on weight. The lightest I could find was the ACK
A-30.

I to have been using an ACK for about 8 years with no problems.

Ameriking Works perfect and is small

My AR850 has been going strong for 15 years
have the same transponder and used the ameritech or something like
that, The cheaper one that ACS sells. It passed the certification test
and seems to work great.

I'm now using a Garmin GTX 320, but I'm told that any encoder will work
with

any transponder.

Narco AT150. The encoder failed. I was told that they can't be repaired, so I bought another rebuild which took 3 years. Guess what? The encoder wouldn't work, and it was now out of warranty even though it hadn't been anywhere. Avionics guy said "I'm a Narco dealer, but I won't fit their stuff anymore because its failure rate is excessively high in my experience"

Rocky Mountain Instrument Micro Encoder for primary flight instrument (Air speed, Rate of Climb, Altimeter and altitude encoder and it all fits into a 3 1/2 inch hole. One of the reasons I like this is because after it has been calibrated, you can be assured that the altitude you are flying is the same altitude that is being reported to the controllers. Another reason for this unit is the fact that since I built it, I am the manufacturer and can do the encoder check that is required every couple of years.

Mode S not far away and with all the extra communication facilities that will enable, a one box solution looks much overdue. Probably with a serial output of course! Now the nitty gritty, most of the new equipment does not except gray code inputs which the majority of encoders provide out, they instead require serial or icarus info. The exception to this rule is Garmin, they take either in because although serial data is better faster more reliable with no warm up time, the FAA says you have to have the ability to use gray code. The 430/530 takes both in and then allows you to configure it in the menu to use only serial.... imagine that the FAA behind the times, some one should write a letter. So the morel of this story....if you are only going to use gray code the AK-350 is a great encoder, it is as others have told you inexpensive and very reliable however; if you ever intend on upgrading anything in your panel to something that has been made in the last 24 months spend the few extra dollars and buy one that has a serial out. I always recommend the SAE-5-35 made by Sandia, it has proven itself time and time again and it is what I use.

Gray code was invented to be used in lieu of binary code in some applications. The great advantage of Gray Code is that only one bit changes at a time when moving through sequential values. In binary, we count (using four 'bits') 0000, 0001, 0010, 0011, 0100, etc. Notice that when we move from 0011 to 0100 that three bits are switching at once. Well, we HOPE at once. In Real Life each bit changes a little ahead or a little behind the next bit. This means that at one instant we could have 0000 or 0111 when incrementing between 0011 and 0100. Depending on how your electronics works, that could freak it out (in lay terms).

The solution was to map all the 16 combinations from 0000 to 1111 using combinations wherein only one bit has to change for each step change in value (from 0 to 15, for 4 bits). It isn't nearly as easy to sort out 'by eye', but you avoid the jitter. In Gray Code one would count (from zero) 0000, 0001, 0011, 0010, 0110, and so on. Look at http://www.mcmanis.com/chuck/robotics/projects/encoders/enc_gray.htm>\ if this topic is still of interest to you. It shows a Gray Code angle encoder.

Had Terra AT3000 encoder for about 7 years and 700 hrs. Thought that it was giving me problems, gave it to my bud who is still using it apx. 2 yrs later. It's working fine. Problem was my antenna connection to the transponder unit. For the last 3 years and 400 hrs I am using Ameri-KingAK-350 without a glitch.

Add another 100 trouble free hours onto the AT3000 that my buddy gave me. I just wired it into my Bendix TR611 transponder without having to make any adjustments to it. If one did have to make an adjustment, there are two small pot screws labeled for thousands and hundreds of feet.

TPX antenna plans, design, wiring and tuning info.

http://www.seqair.com/skunkworks/Antennas/TpxAntProbs/TpxAntProbs.html