

The Official Newsletter of the
Auckland VHF Group Inc.
Spectrum 2008



**KiwiSAT Linear Transponders complete with preamp
Mode US (Transmit 70 cm, receive on 2 m)**



Auckland VHF Group Inc.

Branch 66 NZART

PO Box 10138, Dominion Rd, Auckland 1446

Clubrooms: Hazel Ave, Mt Roskill

<http://www.qsl.net/zl1bq>

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ATV Interest Group					http://www.qsl.net/zl1qf/atvug/ATVusers.html

Club News and Net:

The combined Auckland VHF Group and Auckland Regional Branch News and Net are held on 146.625 MHz and 439.875 MHz at 8.15 pm each Sunday or after the ZL6A National Broadcast on the last Sunday of the month.

Club meetings are held at the Clubrooms at Hazel Avenue, on the second Monday of each month at 7.30 pm. For other details, listen to the News and Net each Sunday evening.

Membership of the Auckland VHF Group is via subscription; \$30 within the Auckland free dialling area, and \$25 outside. It is expected that members of the Auckland VHF Group Inc. are also members of NZART, as we are branch number 66 of NZART.

SPECTRUM is the official journal of the Auckland VHF Group Inc.

Opinions expressed are those of the authors and do not necessarily reflect club points of view. The closing date for SPECTRUM articles is the Monday 7 days before the following General Meeting. Articles may be submitted to the Editor.

Coming Events:

NOTE the change to the SECOND MONDAY of the month.

March 10th at 19:30: General Meeting followed by a presentation on the Tait Digital Radios and digital systems.

Refer to Page 10 for more details.

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From the Chair – March 2008

Last Meeting

The last meeting was very well attended by over 30 people. A very pleasing result given the short notice that was necessary due to a change in the program. All brochures available went out the door.

The core of the presentation was really asking the question as to what Civil Defence organisations need in today’s world especially during an emergency, and can Amateur Radio provide that service over the “Broken Mile”.

The “broken mile” was defined as the disaster zone where power, telephone, network and general infrastructure services have been disrupted or destroyed. What is needed by Civil Emergency Organisations is to transfer large amounts of Data and information to many places at the same time, so that strategic

planning and coordinated efforts can be rapidly put into action, based on the information coming out of the disaster area. The idea is that teams go into these zones equipped with lap-top computers, all having standard type IP based browsers and software, and they want interconnection to the outside world quickly.



The message was simple. The old style of message handling by voice, AX25 packet, and any other of the traditional Amateur Radio methods just does not hack-it. The thing to remember is that when the Balloon goes up, “it’s their party and we want to be invited!” If we don’t have the means available, the use of Amateur Radio in emergency scenarios is very limited. So how do we make it happen?

Fortunately, in 1999, JARL in association with ICOM came up with a solution using Digital Radio Techniques. Called D-Star, the system has the very solution we have been looking for. It provides for an IP Based digital Data network that can be connected into the Internet via a port. Data speeds are good provided the higher frequencies are used. Links between repeater sites can be accomplished in the 10 GHz band, providing a back bone network capable of 10MBs. Normally this back bone would be coupled into the Internet.

The repeaters can be on 1296, 430 or 144 MHz. They link into the back bone network. Our option is to initially use the 1296 band because this gives us the faster base to repeater

link speed of 128kBs, - and also helps populate the band! The system allows us to have a VPN (Very Private Network) as we do now with our traditional Amateur Radio system, and also allows us to connect to other D-Star systems via the internet, (a bit like IRLP) with station to station calling and a whole heap of other useful features. More importantly, it allows us Amateurs to provide the all important Data connection for the Civil Defence and Emergency services, over the “broken mile”.

The committee had recommended to the members at the meeting that we proceed with a fund raising campaign of \$50,000 for the purposes of purchasing and installing an initial 10 GHz backbone network within the Auckland Region, and for the purchase of a quantity of ID-1 sets and repeaters to work into that network, with the aim that over time the network would be expanded as funds allowed. The motion was supported from the floor with a motion that the committee investigate ways to raise the necessary funds. The vote was in favour unanimously. The committee have started work.

690 Replacement.

As most of you would be aware, the original 690 repeater was lost in a fire at the site on Bombay Hills, Puketutu. The site has not been restored as yet and the future is still an unknown. Meanwhile a temporary unit is running, but has limited coverage and sensitivity.

The good news is that our insurance company has responded with an offer of finance that will go towards the replacement of the original repeater. Costs have been investigated by the committee, and the intention is to replace with a brand new repeater unit and aerial system. The approval for the expenditure for this equipment will be put to the next General meeting.

The cost figures being used are as follows:

(1) Tait Model TB7100 Repeater, 50 watt version, complete with Diplexer, with AC Power supply with Auto AC/DC changeover in case of power failure. Rack mounted ready to

install and aligned on Frequency:

\$5723.16

(2) Hi-Tec Aerial System Complete with mounting hardware. 6db Collinear covering 140 to 180MHz.

\$670.00

Total Cost (Inclusive GST) \$6393.16

(3) Less Insurers offer (which is based on \$3,222.11, Minus policy Excess \$250 = \$2972.11. Note: the Insurance policy is for Indemnity Value) Minus \$2972.11

(4) Therefore the balance the Group has to pay is: \$3421.05

Repeater failures:

The usual summer hot weather has taken its toll on our equipment recently (along with everybody else’s!)

6625. Lost power level on the South facing antennas due to a fault in the power amplifier that feeds those aerials. The fault has been rectified

670. Microcomputer locked up, causing the transmitter to stay on for a few days. It could not be reset by remote control so a trip had to be made up the hill to reset the unit. Now all OK.

Ch39 ATV Transmitter failed in the past few days. Cause at time of writing was not known.



Tait TB7100 Repeater

Our thanks must once again go to the Volunteers and Trustees who give of their spare time to fix these faults in the interest of keeping the services going. Considering the age of some of our equipment we do rather well really.

Trading Table.

A mammoth stock-take / re-stocking is about to be undertaken, and the current stock list

brought up to date. It is also planned to change the way that stock can be purchased, by making more use of the internet and the Website, thus freeing up access to the stock itself.

The purpose is to hopefully make it easier for people to keep up to date with what is available, and streamline the purchasing arrangements. You will see a progressive change occur as fresh items appear in Spectrum over the coming months.

This work is going to require some man hours of labour, so don't expect things to happen overnight. However, every endeavour will be made to fulfil any requests that come in during this time.

New Stock has already arrived!

"T" Connectors are now back in stock and available for purchase. The new price of \$2.00 for a set of Male and Female connectors is pretty good value, so be in quick. See the ad elsewhere in this issue. (Back cover. Ed.)

This Months Meeting:

An invitation to members of the NZ Electronics Institute has been extended for our March the 10th meeting. The subject has general interest and appeal to all involved in the electronics industry and the hobby.

For some time now, the VHF Group (and other Amateur Branches and Conferences) have been discussing Software Defined Radio (SDR), Digital Radio Techniques, IQ Modulators and Demodulators, IBOC, DAB and the like. While most of these discussions have been about the theory and practise of these types of transmissions, the question has arisen, "what is the modern manufacturer of communication equipment doing in this field of Digital Communications"?

TAIT Communications are competing on the world market and we thought we would ask them the question. Their answer is being discussed and demonstrated at the meeting on Monday the 10th March.

This meeting looks like it also is going to be one not to be missed. We look forward to seeing you all there.

ZL1JD

Minutes of the General Meeting of the Auckland VHF Group Inc., held at the Clubrooms, Hazel Avenue, Mt. Roskill, on 10 December 2007

Apologies: ZL2BHF

Present: As per the Attendance Book

MINUTES : Previous general meeting 12th November 2007.

The minutes were read.

Moved by ZL1TGC that these be a true and correct record.

Seconded, ZL1ICU. Passed.

CORRESPONDENCE:

IN : Mercury Energy invoice 3/12/07.
Break In, Western Suburbs Radio Club newsletter. The 29-ER
Suburban Amateur Radio Club Newsletter.
Papakura Radio Club Newsletter.

OUT : Letter of thanks to Papakura Radio club for donation.

MATTERS ARISING :

John ZL1JD advised that a 690 repeater was on the air, from a temporary site. It is running low power, but signal reports are welcomed.

Notice was given of a special meeting at the VHF Group Clubrooms on Tuesday 11th of December.

The topic is FM low power broadcasting, and the future in Digital Radio.

The January meeting of the Auckland VHF Group is to be January 21st 2008
Traditionally a BBQ, it is the 3rd Monday for this month only.

An interesting variety of topics for meetings is planned and to be announced.

GENERAL BUSINESS

Selwyn ZL1BRC brought to our attention recent activity in the 10 meter band and the most favourable time to be looking for propagation. He described the different types of propagation, happening.

Quentin ZL1QF spoke of Beacon frequencies and contesting.

Michael ZL1ABS Enquired about summer maintenance times at Klondyke.

There being no further business,
The meeting closed at 20.00 hrs

ZL1TD Secretary.

Contest Calendar:

**April 5th and 6th: Low Band Contest.
50 MHz to 440 MHz.**

The operating times are: Saturday 1700 to 2300 NZT and Sunday 0700 to 1300 NZT.

Results of the Dx Weekend Contest
2nd and 3rd February 2008

Band	Frequency	Points
Callsign	Locator	
6 m	(50 MHz)	
ZL4DK	RE54fe	212
2 m	(144 MHz)	
ZL4DK	RE54fe	374
ZL1AA	RF73ir	319
ZL1TPH	RF73fv	136
ZL1AOX	RF72mv	63
ZL1MRF	RF72jd	31
70 cm	(432 MHz)	
ZL1AA	RF73ir	296
ZL4DK	RE54fe	209
ZL1AOX	RF72mv	21
23 cm	(1296 MHz)	
ZL1AA	RF73ir	307
ZL1TPH	RF73fv	277

ZL1MRF	RF72jd	235
ZL1AOX	RF72mv	110

13 cm	(2424 MHz)	
ZL1AA	RF73ir	234
ZL1AOX	RF72mv	71

9 cm	(3399/3400 MHz)	
ZL1AA	RF73ir	689
ZL1AOX	RF72mv	282
ZL1MRF	RF72jd	211

5 cm	(5760 MHz)	
ZL1AA	RF73ir	1202
ZL1AOX	RF72mv	582
ZL1MRF	RF72jd	211

3 cm	(10368 MHz)	
ZL1AA	RF73ir	288
ZL1TPH	RF73fv	288

12 mm	(24048 MHz)	
ZL1TPH	RF73fv	162

TOTAL SCORES

ZL1AA	RF73ir	3336
ZL1AOX	RF72mv	1129
ZL1TPH	RF73fv	863
ZL4DK	RE54fe	795
ZL1MRF	RF72jd	688

BEST DX

6 m	ZL4DK – VK3DUT	2068 km
2 m	ZL2DX – ZL4DK	645 km
70 cm	ZL1AA – ZL2TAL	314 km
23 cm	ZL1AA – ZL2TAL	314 km
13 cm	ZL1AA – ZL1AOX	94 km
9 cm	ZL1AA – ZL1MRF	177 km
5 cm	ZL1AA – ZL1MRF	177 km
3 cm	ZL1AA – ZL1TPH	39 km
12 mm	ZL1AVZ – ZL1TPH	90 km

49 STATIONS ACTIVE:

ZL1AA, ZL1AKW, ZL1AMO, ZL1AOX,
ZL1AVO, ZL1AVZ, ZL1BDY, ZL1BK,
ZL1BT, ZL1GSM, ZL1HI, ZL1IU, ZL1JD,
ZL1MRF, ZL1QF, ZL1TBG, ZL1TCJ,
ZL1TPH, ZL1TWR
ZL2ALW, ZL2DX, ZL2TAL

ZL3AAN, ZL3ADC, ZL3CU, ZL3DC,
ZL3NW, ZL3TAT, ZL3TY
ZL4AH, ZL4AL, ZL4AM, ZL4AS, ZL4CG,
ZL4DG, ZL4DK, ZL4FM, ZL4IS, ZL4JH,
ZL4LV, ZL4NR, ZL4OL, ZL4PH, ZL4QD,
ZL4RC, ZL4TAE, ZL4TAQ
VK2ZDX, VK3DUT

EQUIPMENT

6 m

TS-680 + 60 W amplifier + 3-element
IC-706MkIIIG (10 W) + discone

2 m

TR-751 + 150 W amplifier + 10-element
(horizontal) or 2 x 6-element (vertical)
IC-910H (100 W) + KLM22C
IC-706Mk2 + 120 W amplifier + 7-element
TS-700A + Mirage 1030G + 6-element
FT-290 II + 25 W + 5-element (horizontal)

70 cm

IC-910H (100 W) + KLM40CX
TR-9500 + 130 W amplifier + 11-element
IC-490 + amplifier + 8-element
TR-851 + 80 W amplifier + 16-element
FT-790 II, 15 W, 2 x 10-element (horizontal)

23 cm

VK5EME transverter + 12 W amplifier + 27-
element loop
IC-910H (10 W) + 1.2 m dish
IC-202 + MMT1296 + 15 W amplifier + 23-
element
MMT1296 transverter + PA + 30-element loop

13 cm

FT-221 + HB transverter (1 W) + 60 cm dish
HB transverter (3 W) + 44-element loop
FT-290 + DB6NT transverter 1 W, 45-element
loop (horizontal)
TM-2400 + 30-element loop

9 cm

FT-221 + HB transverter (1 W) + 60 cm dish
DXR730 (5 W) + 20-element patch
FT-290 + W1VT transverter + 7 W amplifier +
45-element loop

5 cm

DXR700-768 (5 W) + 60 cm offset feed dish
IC-202 + 4 W transverter + horn
FT-290 + W1GHZ transverter + 6 W amplifier
+ 60 cm prime focus dish + DEM LNA

3 cm

DXR700-710 (5 W) + 57 cm reverse-fed prime
focus dish
IC-202 + 1 W transverter + 1.2 m dish
FT-290 + G3WDG transverter (500 mW) + 60
cm prime focus dish
IC-402 + DN6NT transverter + 5 W amplifier
+ 70 cm dish

12 mm

IC-202 + DN6NT transverter + 1 W amplifier
+ 30 cm dish

COMMENTS

ZL1AVZ and ZL1TPH achieved a 90 km one-
way contact on 47 GHz during an attempt on
the distance record.

ZL4DK. Great to work Chris, ZL2DX, and
Bob, ZL3TY on 2 metres.

Simon, ZL1SWW, operating ZL1AA, used a
converted DXR 700-730 on 3.4 GHz,
providing 5 W to a 20-element Remec patch
antenna (19 dBi gain). On 10 GHz a converted
DXR 700-710 provided 5 W to a 57 cm prime
focus dish with reverse feed.

THE NEXT CONTESTS

The next contest is the Low Band Contest, 50
MHz to 440 MHz, on Saturday the 5th and
Sunday the 6th of April 2008. The operating
times are: Saturday 1700 to 2300 NZT and
Sunday 0700 to 1300 NZT.

The following contest is the Hibernation
Contest, 50 MHz and above, on Saturday the
7th and Sunday the 8th of June 2008. The
operating times are: Saturday 1700 to 2300
NZT and Sunday 0700 to 1300 NZT.

The rules are available at:

<www.nzart.org.nz/nzart/update/contests/vhfcotestrules0606.html>

All contest logs should be sent, to arrive within two weeks, to:

zl2wa@clear.net.nz

or:

Contest Manager
Wellington VHF Group
P.O. Box 12-259
Thorndon
Wellington

DX Weekend Contest report from ZL4DK

Hi, I'm new to the group and although it's a little late I thought maybe a report from down south would be of interest.

I operated from Swampy Summit in Dunedin RE54FE on 6m, 2m and 70cm. The Gore Club (ZL4AL) operated from their contest site at RE43MV and had solid signals on all bands. Terry ZL4TAE was portable on 2m on the Old Woman Range in Central Otago (RE44MR). Conditions were very poor on the Saturday and very few stations were worked. On the Sunday however things picked up.

Highlights as follows.

6m;

Apart from a few locals no great DX worked until a brief opening to VK allowed me to work VK2ZDX (2042 km) and VK3DUT (2068 km).

2m; Disappointed at the lack of ZL3 stations on but great to work Bob ZL3TY in Greymouth over a 375 km path which includes a mountain or two although signals were way down in the noise with QSB and resorted to CW for a number of these contacts. Also managed one contact with Chris ZL2DX (645 km).

70cm; Lack of ZL3 activity meant the best DX was with a surprised ZL4DG in Invercargill over a 174 km path.

Here's one Amateurs view on the pros/cons of D-Star and P25 use in the USA. Ed.

Original Message

From: Nate Duehr

Sent: Thursday, February 21, 2008 2:35 PM

Subject: Questions on D-Star and APCO 25

Alex Whitaker wrote:

I've always wondered why Icom and others just didn't introduce P25 radios instead of the proprietary D-Star. The rest of the communications world (i.e. public safety, etc) is going P25, while amateur radio is sticking to D-Star (with what little acceptance it has). I think the two standards will end up in a war for dominance vis-à-vis Beta verses VHS, with one coming out on top. My money is on P25.

Reply:

Icom **does** make P25 radios.

P25 vs. D-Star is a non-starter... and P25 will not win. Try building what D-Star does today (international call by call routing via the Internet via callsign AUTOMATICALLY if the system has "seen" you on a particular repeater) with P25.

You can't. It doesn't exist today, and never will. P25 uses Unit ID numbers per radio. It's **designed** for closed, someone else programs your radio, Public Safety systems.

(And it's doing a GREAT job in that market.)

But the back-end interfaces out of the repeaters are all currently proprietary, the standards for interfaces are NOT yet set even by the P25 committees (maybe this year), and the interconnect features aren't even defined yet.

Interconnect is done via a whole lot of vendor-specific 'stuff' today... and the infrastructure for a particular network (trunked) MUST almost always be single-vendor... the exact thing the standard was supposed to avoid.

On-air interface was standardized, but system interconnect wasn't. That was their planning mistake. The vendors just moved the "my brand is better than your brand" battle to the back-end network, and let any radio use the system.

(Well there's one exception... Motorola needs to be slapped for their FSK add-on to the

standard that allows their radios, through Quantar repeaters, to send/receive more data for tagging and other features than the other manufacturers... so they break the standard, but get away with it.)

Basically there won't be any serious "battle" between P25 and D-Star in Amateur service for a long time... see my notes about "You don't find \$40,000 software lying in a dumpster behind the Public Safety building."

Digital systems mean that the interesting features, expandability, internetworking, etc. are going to be done in a server, in SOFTWARE.

Companies selling that software to Public Safety want to charge a LOT of money and make that software seem very valuable. They're not going to let it out the door lightly.

We hams will find rigs, repeaters, and other infrastructure hardware relatively inexpensively from P25 government users... but we WON'T find the software. And it'll be a VERY difficult engineering effort to create it ourselves within the ham community.

Unless some uber-geek-heroes build something that works between ALL of the manufacturer's proprietary interconnect interfaces on the repeaters... which I don't think is going to happen... P25 is a non-starter in Amateur Radio, when D-Star can do a laundry list of things P25 can't.

I used to be in the P25 camp. On first glance, it seems to "make sense" that used public safety gear will trickle down to Amateurs like it always has... but on a hard cold look at the real interesting technology needs that digital radios bring to the table for everyone... D-Star has a working network today, soon to be even better with the release of their Version 2 Gateway software, and P25 hams haven't even figured out how to link the things across town yet without proprietary gear like Motorola Astro Modems, etc. which aren't cheap -- and they're just "dumb" devices.

P25: No routing, no centralized routing authority servers, no authentication (any UID

can be used by anyone), no easy interconnect between manufacturer's gear (let's say you have an EFJ VHF and a Moto Quantar UHF and you'd like to link them, good luck with that)... there's NOTHING done or being done to add features and functionality needed for hams.

D-Star: Done. And getting better.

This isn't a "fan-boy" post... its reality. P25 is dead in Ham Radio and probably will be until the used market is completely flooded with gear so hams have a big enough pool to tinker with. By then, D-Star will be at version 5 or 6.

Nate WY0X

NZART HQIL Special 19
22 FEBRUARY 2008

ZL1-Prefix QSL Sub-bureau Closed

The NZART QSL Bureau informs that the ZL1-Prefix QSL Sub-bureau is closed until further notice. Mr Jack Small, ZL1KQ, has retired from the position of Sub-manager. Jack was first appointed to that position in 1980. I have been informed that a last posting of 2007 cards was recently carried out and only a few unclaimed cards are on hand.

Approximately each six weeks, a parcel of incoming QSL Cards is forwarded to the ZL1 Sub-manager for sorting and distribution to those ZL1s who have supplied Self Addressed Stamped Envelopes. All SASEs and QSL Cards on hand and posting instructions etc will be forwarded to the next appointee to this position.

New ZL1 QSL manager.

The new QSL Sub-Bureau manager has been announced.

Mr Ian Walker ZL1BFB
PO Box 163 060
Lynfield
Auckland 1443

It will be a little while before Ian is up and running.

AUCKLAND VHF GROUP (INC) BRANCH 66

MEETING NOTICE

MARCH 10th 7.30 PM HAZEL AVENUE CLUB ROOMS

(Located behind the Scout Den at the end of Hazel Avenue)

Software Defined Radio

I and Q Modulators / Demodulators

IBOC

DAB

D-Star

All this discussion about Digital Techniques!

But what are the Manufacturers of Communication Equipment doing about

DIGITAL?

Come and hear the answer to that question from the makers themselves.

Tait Communications - who are right in the forefront of this technology - have agreed to come along to our next meeting and not only provide the answer, but also demonstrate some of the equipment now available.

EVERYBODY WELCOME

The Auckland VHF Group has also invited the NZ Electronics Institute to join us at this meeting.

Handy Microwave site with links

<http://www.microwaves101.com/index.cfm>

73 Vaughan ZL1TGC

Trading Table Specials – March 2008

MGF1302	Low noise GaAs FET Nf = 1.4dB @ 4GHz, 4dB @ 12Hz. [S.case]	\$15.00 each
BFR91	NS RF Amp. 5GHz 1.9dBnf @ 500MHz [S.case]	\$2.00 each
MPS5179	NS TO92 12V 50mA 200mW ft 2000MHz Nf 5.0dB [S.5.7] RF Transistor. Use in UHF/VHF amplifiers with collector currents in the 100 μ A to 30 mA range, and in low frequency drift, high output UHF oscillators.	\$0.50 each
MRF237	NS RF Pwr. VHF 4.0W 12V TO39 [S.5.8]	\$3.00 each
3SK73GR	Dual-Gate FET N-channel 30V 7mA [S.6.7]	\$1.50 each

SMD RESISTORS – 10 per pack. Most are 1206 Format.

Values in stock: 22, 33, 49, 100, 270, 330, 390, 510, 1k, 2k2, 68k 100k Ohms.

10 per
packet.
50c per
packet
10 per
packet.
50c per
packet

SMD CAPACITORS – 10 per pack. Most are 1206 Format

NPO 50V working: 2.2pF, 6.8pF, 47pF, 68pF, 82pF, 270pF, 470pF
63V working: 10pF, 100pF, 1nF, 10nF, 100nF
10uF 25V electrolytic

Kitsets:

VHF/UHF Preamplifier Kit.

Parts, pcb and instructions to build a preamp for 2m, 70cm,
Now includes instructions for using a SMD package transistor, e.g. the BFG67 in place of the BFR91A supplied with the kit.

\$18.00 each

Available soon: T connectors as recommended for AREC equipment.

Moving Coil Meters - 500 μ A movement with back lighting via separate terminals.

Two scales 0 – 30 and 0 – 100, plus a battery “replace/good” indication.
Scale can be removed/reversed for different uses. A very versatile meter.

\$3.00 each

Integrated Circuits

ZSM560 under voltage monitor IC's.	4.6 volt threshold for 5 volt systems. Spec sheet available on request.	Packet of 5	\$2.00 per packet
HEF4060B SMD IC's. and HEF4060BT	14-stage ripple-carry binary counter/divider and oscillator. Spec sheets available on request.		\$1.00 each
74HC74D SMD IC's	Dual D-type flip-flop with set and reset; positive-edge trigger. Spec sheets available on request.		\$1.00 each
LM393D IC's (SO8 package) and LM393DT	Low Power Dual Voltage Comparators. Wide single supply voltage range or dual supplies: +2V to +36V or +/- 1V to +/- 18V. Spec sheets available on request.		\$0.50 each
74LS38N IC's	Quad 2-Input NAND Buffer with Open-Collector Outputs. Still in original RS packets.		\$1.00 each

- GPS Receivers** – 12 channel GPS receivers in plastic dome mounting with DB9 Connector. RS232 output on pins 2,3 and 5 and power +ve 6-12V on pin 6. NMEA output sentences. \$120.00 each
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