



ANALOG SIGNALLARNING AFZALLIKLARI VA KAMCHILIKLARI

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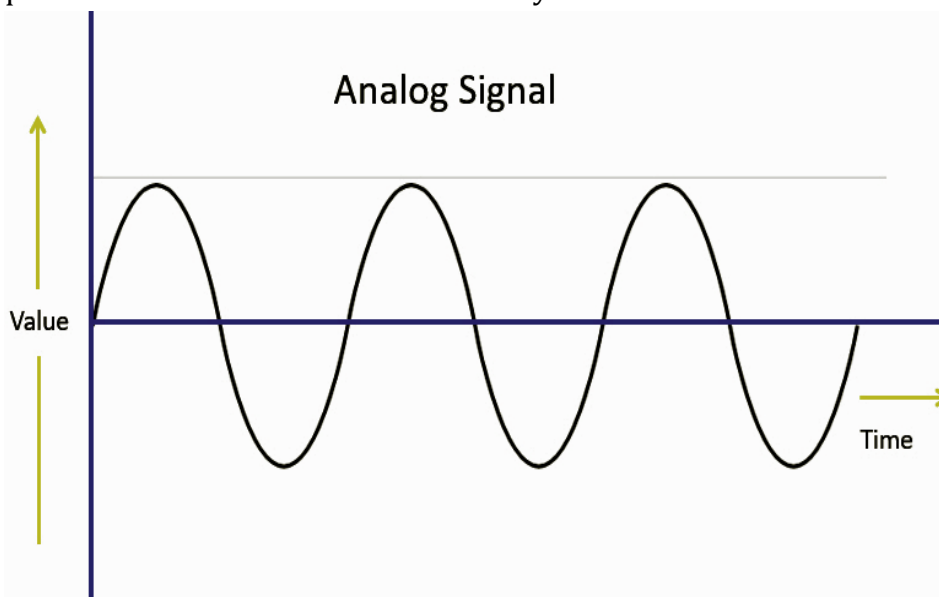
Analog, sensor, akustik, SPICE simulyator.

ABSTRACT

Ushbu maqolada avtomatik tizimlarda analog signallar haqida ma'lumotlar, ularning nazariy asoslari, tizimda qo'llanilishi, farqi haqida so'z etilgan.

Elektronika va aloqa dunyosida har xil turdagi signallar mavjud bo'lib, ularning har biri o'ziga xos xususiyatlarga va ilovalarga ega. Ana shunday turlardan biri analog signaldir. Ushbu maqolada biz analog signalning asoslari, uning afzalliklari va kamchiliklari va qo'llanilishini ko'rib chiqamiz.

Analog signal -vaqt o'tishi bilan o'zgarib turadigan va ma'lum bir diapazonda istalgan qiymatni qabul qila oladigan uzluksiz signal. U har qanday nuqtada o'lchanadigan doimiy to'lqin sifatida ifodalanishi mumkin. Analog signallar tovush, yorug'lik, harorat va boshqa jismoniy miqdorlar kabi turli manbalar tomonidan yaratilishi mumkin.



Analog signalning afzalliklari

- Analog signalni qayta ishlash osonroq.
- Ovoz va video uzatish uchun eng mos analog signal



- Analog signal aniqroq, chunki u zichligi ancha yuqari va yanada aniqroq ma'lumatlarni taqdim etishi mumkin
- Analog signal raqamli signallarga qaraganda kamroq tarmoqli kengligidan foydalaniladi;
- Tarmoq kengligi bilan moslashuvchanlik yaqshi;
- Analog signal kamroq buzilishlarga ega, chunki u elector tokiga nisbatan sezgir emas;
- Analog signalning ishlash muddati kata va atrof-muhitiga bog'liklik kam;
- Analog signalni boshqarish oson, juda qimmat bo'lmagan, o'ta sezgir marshrutizatorlar;

- Analog signal yuqari yuk sharoitida ham keng ishlashga ega;

Analog signalning kamchiliklari:

- Display ichidagi signal konvertatsiyasining yuqari narxi;
- Raqamli interfeysga o'tish mumkin emas;
- Ma'lumot uatish uchun xavfsizlik yo`q;
- Muayyan aloqa stsenarisi uchun mukammal qabul qilish v transmitter kerak;
- Agar siz yangi tizimga o'tsangiz va analog signalni o'zgartirmoqchi bo'lsangiz, qabul qiluvchini ham Transmitterni ham sozlashingiz yoki o'zgartirishingiz kerak;
- Ma'lumatlarni uzoq masofalarga uzatish signalning nomaqbul buzilishiga olib kelishi mumkin;
- Analog signal masligini yo`qatishga moyil;
- Analog signallar odatda raqamli signallarga qaraganda past sifatli signallardir;

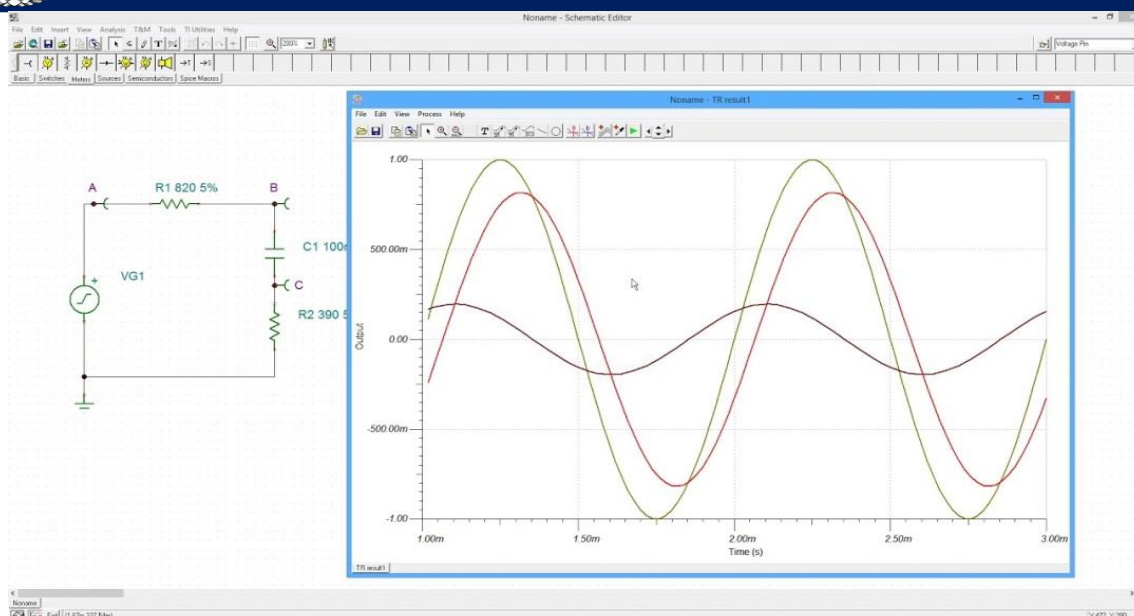
Analog signalni qo'llash:

Analog signallar turli sohalarida keng qo'llaniladi:

- Audio va video: analog signallar audio va videoni uzatish va ijro etish uchun audio yozuv tizimlari, televizor, radio va boshqa multimedia ilovalarida keng qo'llaniladi.
- Biotibbiyot muhandisligi: tibbiy diagnostika va davolashda analog signallar EKG, EEG yoki puls oksimetri kabi fiziologik parametrlarni o'lchash uchun ishlatiladi.
- Telekommunikatsiyalar: analog signallar telefon tizimlari, radiolar va boshqa aloqa tizimlarida ovoz va ma'lumotlarni uzatish uchun ishlatiladi.

Analog signal bilan qanday ishlash kerak:

Analog signallarni qayta ishlash uchun kuchaytirgichlar, filtrlar va konvertorlar kabi maxsus qurilmalar qo'llaniladi. Ushbu qurilmalar analog signalni kuchaytirishi yoki susaytirishi, uni filtrlashi yoki boshqa turdagi signalga aylantirishi mumkin. Analog signallar bilan ishlash uchun SPICE simulyatorlari va MATLAB kabi analog sxemalarni tahlil qilish va simulyatsiya vositalaridan ham foydalaniladi.



Xulosa qilib aytganda, analog signal ko'plab texnologiyalar va ilovalarning muhim elementidir. U audio, video, fiziologik o'lchovlar va telekommunikatsiyalar uchun ishlatiladi. Analog signallarning shovqin va buzilishlarga sezgirliigi kabi kamchiliklari bo'lsa-da, ular fan va texnologiyaning ko'plab sohalarida muhim vosita bo'lib qolmoqda. Analog signallarni qayta ishlash uchun kuchaytirgichlar, filtrlar va konvertorlar kabi maxsus qurilmalar qo'llaniladi. Texnologiyaning rivojlanishi va raqamli signallarga o'tish bilan analog signal hali ham elektronika va texnologiya dunyosida muhim element bo'lib qolmoqda.

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