

史上小北斗GPS定位模块YX1010MK

产品名称	史上小北斗GPS定位模块YX1010MK
公司名称	深圳市逸协电子有限公司
价格	45.00/PCS
规格参数	品牌:逸协 型号:YX1010MK 尺寸:10mm*10mm*3mm
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产品详情

淘宝直营：<http://730063119.taobao.com>

specificationofapproval

规格承认书

customer /客户	
productname/产品类别	gps module
customer productno./客户产品编号	
modelno./产品型号	yx-1010mk
date/日期	2011.10.21
edition/版本	

supplier/供应者签署

acceptance/承认者签署

深圳市逸协电子有限公司

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2011.10.21

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functionaloverview

the yx-1010mkdesignedby dragon basingon themt3339is anew generationofgps receiving module. it ' sup to 66 acquisitionand 22simultaneouslytrackingchannel,ultra-high sensitive gps receiving module. based on new highlyintegrated mtkchipsand meticulouslyintegration keyparts ofdragon. in the same chip specifications,this producthas fastergpssignals abilityto capture, lowerpowerconsumption, more stronganti-jamming performance and more wide working voltage range.

yx-1010mk module designed with industrial requirements, using stamps package, can adapt to wet high temperature, electromagnetic interference etc. odiously working environment. it is widely used in monitoring, positioning, mapping, navigation, security applications.

applications

automotive navigation

personal positioning

fleet management

mobile phone navigation

marine navigation

product features

mtk3339 high performance gps chip set

very high sensitivity (tracking sensitivity: -165dbm)

extremely fast ttf (time to first fix) at low signal level

support uart interface

built-in lna (with in chip)

compact size (10mm x 10mm x 2.6mm) suitable for space-sensitive application

one size component, easy to mount on another pcb board

support nmea 0183v3.0 (gga, gsa, gsv, rmc)

support ospprotocol

mems support: 3-axis magnetometer for compass heading for "point and tell" feature

micropower mode (mpm) : reduce mpm current consumption from <500 ua

support sbas (wass, egnos, msas, gagan)

pin assignment

pin description

electrical characteristics

absolute maximum rating

parameter	symbol	min	max	units
powersupply				
powersupply volt.	vcc	3.0	3.63	
backup battery volt	vbat	3.0	3.63	
input pins				

inputpinvoltagei/o	reset	-0.3	3.63	v
inputpinvoltagei/o	txa	-0.3	3.63	
antennabiasdcvoltage	rf_in	-0.3	5.0	
environment				
storage temperature	tstg	-40	125	
peak reflow soldering temperature	tpeak		260	
humidity			95	

note: absolute maximum ratings are stress ratings only, and functional operation at the maximums is not guaranteed. stress beyond the limits specified in this table may affect device reliability or cause permanent damage to the device. for functional operating conditions, refer to the operating condition tables as follow.

operating condition

parameter	symbol	condition	min	typ	max
power supply voltage	vcc	relative to gnd	3.0	3.3	3.6
power supply voltage ripple	vcc_pp	vcc=3.0v			30
consumption current	icc	vcc=3.0v		15	18
backup battery voltage	vbat	relative to gnd	3.0	3.3	3.6
input high voltage	vih		2.0		3.6
input low voltage	vil		-0.3		0.8

outputhighvoltage	voh	2.4	3.15
outputlowvoltage	vol	-0.3	0.4
operatingtemperature	topr	-35	80

productspecifications

parameter	specification
chip	mtk3339
receivertype	1frequencyband1575.42mhz,c/acode,12channels
sensitivity	tracking -165dbm acquisition -148dbm(cold)/-163dbm(hot)
accuracy	position<5m(typicalopensky) velocity 0.1m/s
acquisitiontime	coldstart 28s(typicalopensky) warmstart 28s hotstart 1s
powerconsumption	tracking 18ma@3.3vtypical acquisition 25ma@3.3v
navigatordataupdaterate	1hz
	altitude max18,000m

operationallimits

velocity

max515m/s

acceleration

lessthan4g

protocolsupport

nmea0183ver.3.0

default:9600bps

1hz:gga,gsa,gsv,rmc

mechanicalspecification

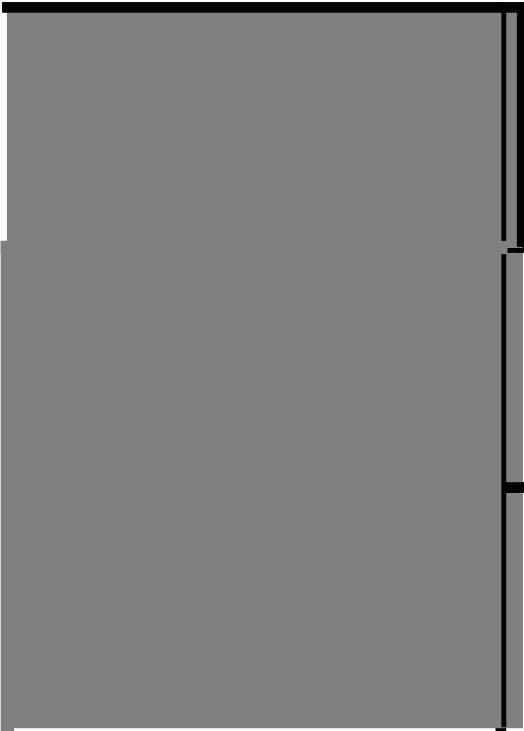


figure 3:yx-1010mkdimensions unit: mm

recommended layoutpad

figure 4:yx-1010mkpadstyle&dimensions

application

application circuit

gpsactiveantenna specifications (recommendation)



frequency:	1575.42 ± 2mhz	amplifier gain:	18~22db typi
axialratio:	3db typical	output vswr:	2.0max.
output impedance:	50	noise figure:	2.0db max
polarization:	rhcp	antennainput voltage:	3.3v(typ.)

operatingdescription

timemark

this pin provides onepulse-per-second

outputfrom the board, which is synchronized to gpstime. this is notavailable in trickle power mode.if do not useit, just nc.

wakeup

system powercontroller,whenyx-1010mk power on, this pin will output3.3vdc.

rf_in

this pin receives signal of gpsanalogvia externalactive antenna.it has to bea controlled impedancetrace at 50ohm. do not

havefrtracesclosed theothersignal pathand routingit on the top layer. keep the rf traces as short as possible.

tx

this isthe main transmits channel for outputtingnavigationand measurement data to user ' s navigation softwareor userwritten software.output is ttllevel, 0v ~3.3v.

rx

this is the main channel for receiving

software commands from mtkdemo software or from your proprietary software.

vbat

this is the battery backup power input for the sram and rtc when main power is off. without the external backup battery, yx-1010mk

will always execute a cold start after turning on. to achieve the faster start-up offered by a hot or warm start, a battery backup must be connected. the battery voltage should be between 2.5v and 3.6v.

vcc

this is the main power supply to the engine board. (3.1vdc to 3.6vdc)

software command

nmea output command

nmea0183 protocol

the nmea protocol is an ascii-based protocol, records start with a \$ and with carriage return/line feed. gps specific messages all start with \$gpxxx where xxx is a three-letter identifier of the message data that follows. nmea messages have a checksum, which allows detection of corrupted data transfers.

the yx-1010mk supports the following nmea-0183 messages: gga, gsa, rmc. the module default

nmea-0183 output is setup gga, gsa, gsv, rmc and default baud rate is setup 9600bps. table 1: nmea-0183 output messages

nmea record	description
gga	global positioning system fixed data
gsa	gnss dop and active satellites
gsv	gnss satellites in view

rmc recommendedminimumspecificgnssdata

gga-globalpositioningsystemfixeddata

table2contains thevaluesofthefollowingexample:

\$gpgga,025438.000,2232.8557,n,11355.7438,e,1,04,1.0, 65.5,m,,m,,0000*75

table2:ggaformat

name	example	units	description
messageid	\$gpgga		gga protocol header
utctime	025438.000		hhmmss.sss
latitude	2232.8557		ddmm.mmmm
n/sindicator	n		n=northors=south
longitude	11355.7438		ddmm.mmmm
e/windicator	e		e=eastorw=west
positionfixindicator	1		seetable2-1
satellitesused	04		range00to12
hdop	1.0		horizontaldilutionofprecision
mslaltitude	65.5	meters	altitudeabovemeanseallevel
units	m	meters	
geoidsseparation		meters	separationfromgeoidscanbebank
units	m	meters	
ageofdiff.corr.		second	nullfieldswhendgpsisnotused
diff.ref.stationid	0000		nullfieldswhendgpsisnot used
checksum	*75		
<cr><lf>			endofmessagetermination(ascii13,ascii10)

table2-1:positionfixindicators

value	description
0	fixnotavailableorinvalid
1	gpspsmode,fixvalid
2	differentialgps,spsmode,fixvalid
3	gpspsmode,fixvalid

gsa-gnssdop andactivesatellites

table4containsthevaluesofthefollowingexample:

name	example	units	description
message	\$gpgsa		gsaprotocolheader
mode1	a		seetable4-2
mode2	3		seetable4-1
satelliteused	07		svonchannel1
satelliteused	02		svonchannel2

...
satelliteused		svonchannel12
pdop	1.8	positiondilationofprecision
hdop	1.0	horizontaldilationofprecision
vdop	1.5	verticaldilationofprecision
checksum	*33	
<cr><lf>		endofmessagetermination(ascii13,ascii10)

\$gpgsa,a,3,07,02,26,27,09,04,15,,,,, ,1.8,1.0,1.5*33. table 4:gsadataformat

table4-1:mode1

value	description
1	fixnotavailable
2	2d
3	3d

table4-2:mode2

value	description
m	manual-forcedtooperatein2dor3dmode
a	automatic-allowedtoautomaticallyswitch2d/3d

gsv-gnsssatellitesinview

table5containsthevaluesofthefollowingexample:

```
$gpgsv,2, 1,07,07,79,048,42,02,51,062,43,26,36,256,42,27,27,138,42*71
```

```
$gpgsv,2, 2,07,09,23,313,42,04,19,159,41,15,12,041,42*41.
```

table5:gsvdataformat

--	--	--

name	example	units	description
messageid	\$gpgsv		gsvprotocolheader
numberof message	2		range1to3
messagenumber	1		range1to3
satellitesinview	07		
satelliteid	07		channel1 (range1to32)
elevation	79	degrees	channel1 (maximum90)
azimuth	048	degrees	channel1 (true,range0to359)
snr(c/no)	42	dbhz	range0to99,nullwhennottracking
...			...
satelliteid	27		channel4 (range1to32)
elevation	27	degrees	channel4 (maximum90)
azimuth	138	degrees	channel4 (true,range0to359)
snr(c/no)	42	dbhz	range0to99,nullwhennottracking
checksum	*71		
<cr><lf>			endofmessagetermination(ascii13,ascii10)

dependingonthenumberofsatellitetrackedmultiplemessagesofgsvdatamayberequired.

rmc-recommendedminimumspecificgnssdata

table6containsthevaluesofthefollowingexample:

```
$gprmc,025439.000,a,2232.8557,n,11355.7438,e,0.13,309.62,031209,,*10
```

table6:rmcdataformat

name	example	units	description
messageid	\$gprmc		rmcprotocolheader
utctime	025439.000		hhmmss.sss

status	a		a=datavalidorv=datanotvalid
latitude	2232.8557		ddmm.mmmm
n/sindicator	n		n=northors=south
longitude	11355.7438		ddmm.mmmm
e/windicator	e		e=eastorw=west
speedoverground	0.13	knots	
courseoverground	309.62	degrees	true
date	031209		dummy
magneticvariation		degrees	notused
e/windicator			notused
mode			onlynmea0183version3.00output
checksum	*10	hexadecimal	
<cr><lf>			endofmessagetermination(ascii13,ascii10)

recommendedreflowprofile:

preheatingtemperature:	150 ± 10[]	preheatingtime:	90 ± 30[sec.]
heatingtemperature:	235 ± 5[]	heatingtime:	10 ± 1[sec.]

peak temperaturemustnot exceed 240 and the duration ofover 200 should be30 ± 10

seconds.