Travelling Merchant:_____

DATASHEET

Standard: **DP2000**

P/N: _____

Plot			The Label
Drew	Audited	Approved	
Date: 2014.01.25			Stamp, please! Thanks!

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Table of amendment

Version	Revision contents	Prepared by	Revised date
1.0	The first issued	Amway	2014.01.25

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1. Overview

DP2000 is a high precision frequency reference with a high precise GPS/Compass clock module. Using GPS/Compass receiver's timing signal lock the crystal oscillators to realize the synchronization between DP2000 output frequency and reference sources. DP2000 can automatically learn how to lock phase. Once losing the reference sources, it can automatically run PLL with a certain period of time, DP2000 can still be precise after lost the external reference source.

DP2000 interface:
1 road of GPS/Compass input;
2 roads of 10MHz frequency output interface,
2 roads of 1PPS output interface,
2 roads of 2.048MHz output interface ,
2 roads of any frequency (customer optional, selectable between 8kHz ~ 346MHz) output interface,
1 road of COM port for debugging.

Major applications

instrument and meter，Private network，

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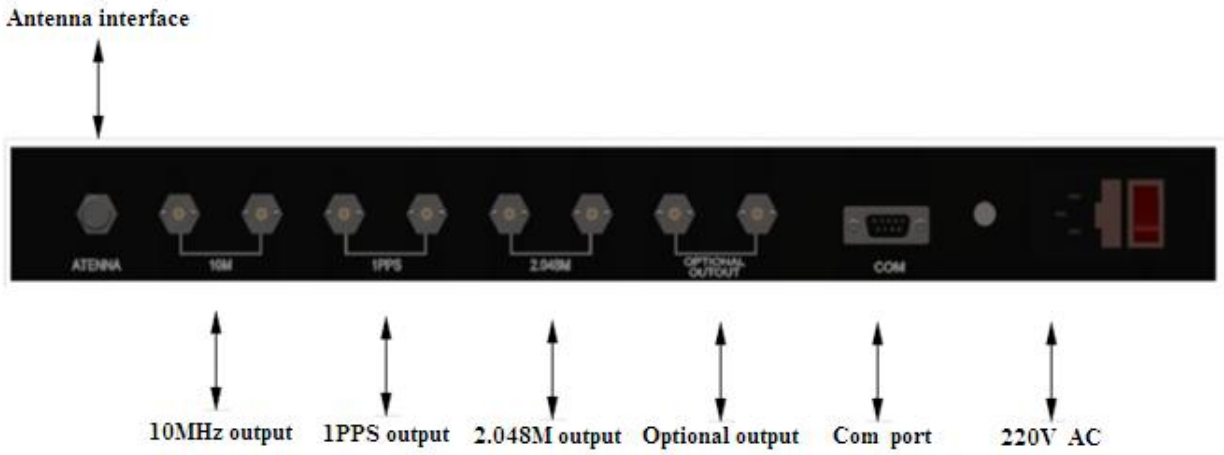
2. Feature



- "Antenna": GPS antenna input port, TNC connector ;
- "10MHz output" : 10MHz frequency reference output interface, 2 roads of 10MHz frequency reference signal output; BNC connector;
- "1PPS output": 1PPS timing mark output interface, 2 roads of 1PPS time mark signal output; BNC connector;
- "2.048MHz": 10MHz frequency reference interface, 2 roads of 2.048MHz frequency reference signal output; BNC connector (Options);
- "OPTIONAL OUTPUT": optional output frequency 8kHz ~ 346MHz, BNC connector ;
- "COM": monitoring interface; DB9-F connector;
- "GND": the connection between the device and the ground;
- "220V AC": socket can provide the device 220V AC power.
- Structure and size: 19 inch ×1U standard cabinet, 38mm*20mm*4mm (width X depth X height).

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3. Electrical Parameters

	Parameters	Min.	Typ.	Max.	Unit.	Test Condition
10M Output	Nominal Frequency		10.00		MHz	
	Waveform		HCMOS			
	High-level Output Voltage (VOH)	2.7			V	<5mA Load
	Low-level Output Voltage (VOL)			0.4	V	<5mA Load
	Rise/Fall Time			10	ns	<5mA Load
	Duty Cycle	45	50	55	%	<5mA Load
	Frequency Tolerance vs. Supply Voltage	-0.01		+0.01	$\times10^{-9}$	measurement referenced to frequency observed T_A=25℃, V_{cc} varied from 4.75V to 5.25V, and O_{Load}=15pF.
	Retrace	-5		+5	$\times10^{-9}$	@25℃, frequency variation measured after 48 hours power off and 3 hours power on, referred to stable frequency before power off.
	Accuracy	-1		+1	$\times10^{-12}$	24 hours average when locked to 1 PPS
	Short-term Stability			5	$\times10^{-12}$	Temperature stability, no EMI\EMC or other interference, test after power for 1 hour ref. to 25℃; 1s, using PN9000 equipment.
	Aging Tolerance Per Day	-0.2		+0.2	$\times10^{-9}$	V_{cc},T_A constant measurement referenced to frequency observed with T_A=25℃,V_{cc}=5.0V, in FREE RUN condition and after 30 days of operation.
	Aging Tolerance 1 Year	-0.01		+0.01	$\times10^{-6}$	
	Phase Noise (All conditions)		-125	-120	dBc/Hz	10Hz
			-140	-135		100Hz
			-148	-143		1KHz
			-152	-147		10KHz
			-155	-150		100KHz
			-155	-150		1MHz
	Transmission Distance		10		m	
	Connector		BNC			

	Holdover Capability	Min.	Typ.	Max.	Unit.	Test Condition
Holdover Time	24h	-1.5		1.5	us	△T = ±5℃, holdover after turn on 7days and lock 2days.Temperature variable speed less than 1℃ per minute

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1 PPS Output Waveform Characteristics	Parameters	Min.	Typ.	Max.	Unit.	Test Condition
	Waveform	HCMOS				
	High-Level Output Voltage(V_{OH})	2.7			V	15pF
	Low-level Output voltage (V_{OL})			0.4	V	
	Pulse Width		100		ms	
	Phase Accuracy	-200		+200	ns	Initial lock status (the first 30mins after the first time locked to the 1PP)
		-80		+80	ns	lock status (locked time ≥ 30mins, under the condition of 1PPS reference RMS ≤ 30ns)
	Phase Accuracy（RMS）			25	ns	Steady lock status (locked time≥ 24hours, under the condition of 1PPS reference RMS ≤ 30ns)
	Transmission Distance	10			m	
	Connector	BNC				

2.048MHz Output	Parameters	Min.	Typ.	Max.	Unit.	Test Condition
	Nominal Frequency	2.048			MHz	<5mA Load
	Waveform	HCMOS				<5mA Load
	High-level Output Voltage (VOH)	2.5			V	<5mA Load
	Low-level Output Voltage (VOL)			0.4	V	<5mA Load
	Rise/Fall Time			10	ns	<5mA Load
	Transmission Distance	10m				
	Connector	BNC				

Optional Output	Parameters	Min.	Typ.	Max.	Unit.	Test Condition
	Nominal Frequency	8K		346M	HZ	
	Waveform	HCMOS				
	High-level Output Voltage (VOH)	2.7			V	
	Low-level Output Voltage (VOL)			0.4	V	
	Rise/Fall Time			15	ns	
	Transmission Distance	10m				
	Connector	BNC				

Environmental Conditions	Parameter	Conditions
	Operating temperature	-0℃ to +60℃
	Storage Temperature	-40℃ to +85℃

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	Storage humidity	30%~80%
	ESD Level	Human Body Model,class2: 2000V to 4000V; ANSI/ESDA/JEDEC JS-001-2010.
		Machine Model, class B: 200V to 400V; ANSI/ESDA/JEDEC JS-001-2010.
	Moisture Sensitivity Level	Not humidity sensitive.