## smartbedded

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## **Meteobridge NANO SD – Datasheet**



During the last years smartbedded GmbH has released a couple of devices that upgrade your weather station by making more versatile use of the collected data. The most recent development is the Meteobridge NANO SD, which is a tiny plug-in device that dramatically extends the features of your Davis Instruments<sup>®</sup> Vantage Pro2<sup>™</sup> or Vue<sup>™</sup> weather station. The NANO SD is simply plugged in the expansion connector underneath the battery cover on the back of the console. NANO SD gets plugged in to the expansion port and it hides invisible when you close the

back cover again.

From a hardware perspective NANO SD is a NANO with an industrial grade SLC microSD card added that allows to store data locally, which the regular NANOs can't do. From a SW perspective this adds functions like data export, generation of interactive JavaScript weather graphs and more. You will be amazed how much this little companion can do with your weather data while consuming inly about 1 watt of of your precious electricity.

**Connectivity** – The NANO connects as a WiFi client to your WLAN at home and can be administrated by a web browser. That makes it very convenient to work with it, you just sit in front of your browser and do all the settings. Initial setup is done by connecting with a

NiFi Client			J
Wireless LAN			
SSID:		 Known SSIDs	\$
WLAN Region:	00 - World	\$	
Encryption:	WPA2-PSK	\$	
Mode:	auto (2.4 GHz)	\$	
Passphrase:			show passphrase

mobile device to the WiFi established by NANO itself. Here you do all the network settings to have the NANO included into your own WiFi. Current encryption standards like WPA2 are fully supported. NANO operates on 2.4 GHz band and supports WiFi modes 802.11 b/g/n.

When being attached into your WiFi network at home you can decide to receive all of its network IP settings dynamically from your router (DHCP) or to define credentials manually by a static setup. The NANO can even reach out to the Internet through proxies, if those don't require authentication. The NANO shares with the other Meteobridge products that you can even login for administration when you are away from home. This is simply done by setting the "allow remote login" switch and storing the URL for external access as a bookmark on your traveling browser. You don't need to fiddle with your firewall or to setup any dynamic DNS service for that.

In case your router might give the NANO spontaneously a new IP and you will not be able to reach it in your home network with the IP you have used so far, you just browse to "<u>http://magicip.meteobridge.com</u>" and you will be redirected to the current IP in your home network. These advanced network features are making it as convenient as it can be for you to operate the NANO in your home network and even when being away from home.

Weather Networks – The NANO supports all weather networks supported by the other Meteobridge solutions. Data uploads to the networks listed below can be selected in parallel and can be timed down to every few

Ì	Network Y Weather Station Y	Weather Network Services System License Live Data	
	Weather Network Status		
	Meteoplug Cloud:	2018-06-09 22:19:37 Success!	
	V Meteoplug Cloud (Live):	2018-06-09 22:20:12 Success!	
	Veather Underground:	2018-06-09 22:20:17 Success!	

seconds, if the weather network supports that (like rapid-fire with Weather Underground). Apart

from silently uploading data to these networks you also get status information how the uploads were doing. This helps a lot in getting an idea how well your station does feed the networks. NANO does tell you the recent sensor data as received from the Davis weather station and gives you the log when data was uploaded fine or with errors.

- Weather Underground
- Weather Underground Camera
- AWEKAS
- CWOP / APRS
- WeatherForYou
- UK MetOffice WOW / WOW NL
- Teere-Net
- Open Weather Map

- Weather Cloud
- Windfinder
- Windguru
- Idokep
- Weatherflow
- Wetter.com
- Previmeteo
- Anything Weather

- Meteonews
- Meteoplug Cloud Graphing
- Meteobridge Weather CAM
- Wetterring
- Weathercloud
- Ambientweather Network
- Agroclima
  - Meteoagro Net

**Uploads** / **Sending** – Beside feeding standard weather networks Meteobridge NANO allows you to push your weather data in short intervals to your own server in the Internet. This can be done by Twitter, FTP, SFTP, HTTP, HTTPS or even by mySQL requests, where you can upload data in an individual way. You can freely define the uploaded content by using template variables. Doing so the NANO does not just provide you current data for upload. You can also make use of min, max or

N	etwork	Weather Station W	eather Network Servic	xes System
(	-Event De	finition		
	New	Select Service 🔹	Select Event Type 💌 🗛	dd Service Event
	- Services	Select Service Email		
		Twitter		
	Iwitter	FTP Upload		
	Email	SFTP Upload	starttis 💌	
		MYSQL Request	ssl.mymail.com	Port:
		Script Execution	myuser	Password:
		SMS Notification	my@email.com	From-Addr.:

average data of the hour, today, yesterday, month and year. Data can be converted to different units (as often needed for temperature, wind speed, pressure). Timestamps for min/max values are provided as well. All this allows you to upload data in any format you like to your specific post processing platform. You also can send weather data by email or can twitter your data.

You also control when data is sent or uploaded. You can send on fixed times, or fixed periodic intervals, or triggered by individually defined events (i.e. when temp or wind is reaching limits defined by you).

**Conditions** – Meteobridge NANO SD can react on user-defined sensor data conditions and initiate any of the actions mentioned above (like email). Conditions are made up of arithmetic expressions on the available template variables. Having

Event Def	inition ———	
#01 🔻	Email	One-Time Alarm 🚽 🚺 🗆 HTML
Test	Raise:	[wind0wind-act=mph:0] > 30
	Clear:	[wind0wind-act=mph:0] < 10
	Subj # Body:	Wind Alert! #high gust of [wind0wind-act:] mph at [hh]:[mm] from [wind0dir-act=endir]
	To-Addr.:	my@email.com

multiple ways to upload and send data, controlled by user-defined conditions gives you an extremely flexible tool to make things happen based on sensor data.

**Personal Weather Pages –** The NANO SD can feed the popular personal weather templates WD-Live, Leuven Template, Saratoga Template, Meteo Template and Home Weather Station with default scripts. This makes it very easy to setup your personal weather page by using one of the mentioned solutions. Many user prefer to have their data presented in the most efficient and versatile way instead of relying on the standard visualization the main Internet weather networks provide as a give-back for uploading weather data. All mentioned solutions actively support NANO SD and the other Meteobridge platforms.



**Remote Access** – Meteobridge NANO SD offers the ability to be reached from the Internet by simply setting a mark on the web interface. Doing so you are provided with an Internet URL where you

- Security	
New HTTP Password:	
Confirm New HTTP Password:	
Internet Remote Login:	Allow login from the Internet via this URL

can reach your Meteobridge NANO SD. No changes at your firewall and router are needed. It just works, unless you are in a company-grade LAN where packet filtering is applied or other special measures are taken. This feature is extremely helpful when you are on travel or the Meteobridge is located in a remote location and you want to check things or change settings. Your Meteobridge remains protected by the password you gave it.

**SMS / Twitter –** Meteobridge NANO SD can send individual SMS via service provider "messagebird". This can be done in regular intervals or triggered by



user-defined events. Content of the SMS can be individually composed. Weather data is included by template variables. The NANO SD is not limited to SMS but also can twitter weather information.

**Data Logger –** Meteobridge NANO SD connects to your console via serial communication and is handling the authentication needed by the newer versions of the console firmware (aka "green dot" logger). The NANO SD allows for some calibration of sensor

-Local Settings			
Station Altitude:	27 meters 💌	Pressure Correction:	0.000 mbar/hPa 💌
Tolerated age of data:	10 minutes 💌	Temperature Offset:	0.0 °C 🗾 🛛 no windchill
Save historical data:	every 10 minutes 💌	Rain Multiplier:	1.00
Wind Direction Adder:	0 °	Humidity Stretch:	<mark>0.0</mark> →0% 100.0 →100%
Serial USB Switch:	none 🗾	Indoor Temp Offset:	0.0 °C 🔽
(			

data on an easy to understand settings page. While the NANO SD is directly making use of the data, your PC program can also connect to console on port 22222. When doing so the NANO SD hands over control to the PC and passes through all data. In this mode the NANO SD looks to your PC program like a standard Davis logger, but while passing through the data to the PC the NANO SD also picks the needed pieces of information to continue to feed the services defined in the NANO SD.

**Console Configuration –** Meteobridge NANO SD allows to configure the main settings of your Davis Console or Envoy via the web interface. This renders initial station setup to a very simple task, by just doing some mouse clicks. Setup includes definition of the transmitters to listen to, use of repeaters, wind cup and rain bucket sizes, geographical data (timezone, position, altitude), and more. Date and time settings of the console can also be synchronized with the NANO SD date/time, which is kept in sync with time from the Internet via NTP protocol.

<ul> <li>Sync station's date</li> <li>Apply longitude/lati</li> </ul>	/time with the Internet		
Apply longitude/lati			
	itude/altitude/timezone/rain seaso	on settings of Meter	obridge
Transfer rain totals	for day, month and year from co	nsole to Meteobridg	je
Transfer sensor mi	n/max data from console to Mete	obridge (Recomme	ended for initial setup only!)
Configure console	logging interval, rain collector, wi	nd cup, date and tir	me format
Logger interval of the	he console: every minute 💌	no impact on Mete	obridge operation)
Rain collector size:	0.2 mm 💌		
Wind cup size (Van	itage Pro2 only): 🛛 large 💌		
Time mode for cons	sole display: 24-Hour Mode 💌		
Date mode for cons	sole display: Day/Month		
Configure sensors	and mapping to transmitter IDs		
Transmitter #1:	none	direct 🗾	Temp ID #1 🗾
Transmitter #2:	none	direct 💌	Temp ID #8 💌
Transmitter #3:	Integrated Sensor Suite (ISS)	direct 💌	Temp ID #3 💌
Transmitter #4:	none	direct 🗾	Temp ID #4 💌
Transmitter #5:	none	direct 🗾	Temp ID #5 🗾
Transmitter #6:	none	direct 💌	Temp ID #6 💌
Transmitter #7:	none	direct 🗾	Temp ID #7 🗾
Transmitter #8:	Temperature/Humidity (not Vue) 💌	🔹 via repeater A 💌	Temp ID #8 💌

**Storage -** Meteobridge NANO SD comes with an internal database that can store up to 2 GB of weather station data, which allows to hold data of more than a decade. Data can be inspected, edited and deleted via the Meteobridge NANO SD web interface, which also gives a graphical overview about data of a specified sensor in a year's, month's or day's time range. Meteobridge NANO SD can directly make use of stored data when uploading information, so this can feed your web server with any kind of sensor data for any period in

3611501.	thb0seapress 1008
Year:	2015 * - 1006 + +
Month:	November * 1004
Day:	17* - 1002
Hour:	Select Hour
Go To:	Now << >> 996
Delete One:	Hour Day Month 994
Delete ALL:	Hour         Day         Month         992         1           992         8 방송 방송 방송 방송 대 대 대 대 대 대 대 대 대 대 대 대 대 대
Export Data –	
	standard-iso 💌
Template:	
Template: Export Year:	2015 in months 2015 in days 2015 in hours

time. Therefore, you are not stuck to predefined templates but can design your internet weather presence as you like.

**Sharing** - Meteobridge NANO SD allows to export stored weather data in a CSV like notation. Which data to export and for what period in time is user-defined. This allows you to export data for various follow-on processes. Meteobridge NANO SD makes data exports accessible by providing a samba share (windows network folder) that every PC in your LAN can easily mount as a network folder.

**Graphs** – Meteobridge NANO SD can show line graphs of the recorded weather data. Engine used for this is the class-leading chart engine from "amcharts". This graphs are fully interactive. You can touch the timeline to expand or shrink the time period to be displayed. When the cursor moves over the graph textual data pops up. Data can be shown or hidden by clicking on the items in the legend. Different kind of information can be shown in vertically stacked panels that share the



same time line. You can inspect the graphs from within the Meteobridge NANO SD web interface or you can upload the graphs via FTP to your web server. Integration into your home page is most easy as the graphs are self-contained, you don't have to install additional libs on your web server. Furthermore you can also reach out to the graphs on your Meteobridge NANO SD from the Internet, when you have remote access enabled on your Meteobridge NANO SD. Graphs are not password protected, so you don't have to compromise your password for Meteobridge NANO SD administration to allow access to the graphs. While Meteobridge NANO SD comes with a set of standard graph definitions (both, with ISO and imperial units) you can also define new graph definitions based on the "amchart" chart engine capabilities. This way Meteobridge NANO SD gives more options to visualize weather data than most PC programs while having an unmatched small form factor and asking for an extremely small amount of energy.





## **Hardware Specification**

- size: 35mm x 30mm x 10mm (width x height x depth), fits in to the expansion module compartment at the back of the console under the back cover
- weight: 10g
- up to 300 mA power demand (at 5 V)
- operating temperatures: 0 50°C, non-condensing
- WiFi 2.4 GHz, 802.11g/n, internal chip antenna
- VoCore2 CPU board
  - Mediatek 7628 AN SOC
  - 580 MHz, 128 MB RAM / 16 MB flash
- 2GB industrial grad SLC microSD card
- status LED, reset button, 6-pin header maintenance port
- CE and RoHS conform
- FCC compliant (contains FCC ID 2AC4R-VOCOREV2)