MeteoBridge
Variables and Alarms

Contents

MeteoBridge provides a very flexible mechanism to pass sensor data of different kinds into strings to be used by MeteoBridge push services like Twitter, HTTP GET uploads or MSQL database insert requests.

Simply type the text you want to upload into the push service body and where you would like to display data enter the appropriate variable. When the push service is activated the MeteoBridge will pass the data, determined by the variable, into the text to be displayed.

For example the text `Outdoor temperature is [th0temp-act=F.1:--]°F` will be converted into `Outdoor temperature is 3.4°F`

The following gives an introduction into constructing variables and defining alarm conditions. For a complete list of available variable components please visit:

http:/wiki.meteobridge.com/wiki/index.php/Templates

For more information on configuring push services and alarms please visit:

http:/wiki.meteobridge.com/wiki/index.php/Push_Services

Basic Variables

The basic template for variables is

[sensor-selector=converter.decimals:replacement]

"sensor" defines which sensor to take data from.

"selector" defines which time period data should be taken from.

"converter" changes units from their defaults to user defined ones (optional).

"decimals" changes the resolution of data returned. Default is one decimal place (optional).

"replacement" is the text to display if the variable cannot be successfully created (optional).

For Example:

`[th0temp-act.0:--]`   Displays outside temperature at current time, in °C, with no decimal places. If sensor not readable it will display "--"

`[th0temp-hmax=F.1:00]`   Displays outside temperature max in the last hour, in F, to one decimal place. If sensor not readable it will display "00"

A selection of the most useful variable components is listed in the appendix.

Note: Not all combinations of variable components make sense. There is no error checking apart from passing the replacement value. Hence it is possible to make errors such as asking for instantaneous rainfall rather than accumulated rain fall and temperatures in km/h.

Time Stamps

Time Stamps return the times at which maximum or minimum values occur. These are used in place of a "selector" in the variable statement. Time Stamps return strings in the form "YYYYMMDDhhmmss"

By utilising the 'decimals' component you can specify the range of digits from the Time Stamp to display.

Time Stamp	Y	Y	Y	Y	M	M	D	D	h	h	m	m	s	s
'decimals'	a	b	c	d	e	f	g	h	i	j	k	l	m	n

For example:

`[th0temp-dmintime]` returns 20141005121055

`[th0temp-dmintime.ah]` returns 20141005

`[th0temp-dmintime.ad]` returns 2014

`[th0temp-dmintime.ij]`:`[th0temp-dmintime.kl]` returns 12:10

A list of all Time Stamp variables can be found in the appendix.

Time Variables

Variables representing date and time don't come as "sensor-selector=converter" chains but have a distinct meaning by themselves.

For example:

The text *Local time is* `[hh]`:`[mm]` will be converted into *Local time is* 09:27

A list of all Time variables can be found in the appendix.

Alarm Conditions

Alarms are 'Raised' using variables and operators to create mathematical alarm conditions. If these alarm conditions return a value of 0 or less, the alarm is 'FALSE' and not triggered. If the condition returns a value over 0, the alarm is 'TRUE' and triggered.

The following are the main operators that can be used in alarm conditions

Operator / Function	Description
&&, **||**	logical "and", "or" operators working on value range: 1=true, 0=false
=, !=, >, >=, <, <=	comparison operations working on value range: 1=true, 0=false
+, -	arithmetic operators "plus" and "minus"
*, /, %	arithmetic operators "multiply", "divide" and "modulus" (which rounds the operands to integers first)

A simple alarm condition example:

```
([rain0total-sumday=mm:0] - 10)
```

If [rain0total-sumday=mm:0] = 8 then the alarm condition gives 8 - 10 = -2 so alarm is FALSE

If [rain0total-sumday=mm:0] = 14 then the alarm condition gives 12-10 = 4 so alarm is TRUE

The alarm will only trigger if there is more than 10mm total daily rain fall.

Multiple conditions can be declared, using parentheses around expressions, such as:

```
((([wind0wind-act=kmh.1:0] > 20) && ((([wind0dir-act:180] >= 315 )||( [wind0dir-act:180] <= 45)))
```

((wind > 20Km/h)   AND   ((from above 315 deg)   OR   (from below 45 deg)))

The alarm will only trigger if gusts are above 20 Km/h and mainly northerly (NW-NNW-N-NNE-NE).

Alarm Types

You are able to define alarms as 'One-Time Alarm' or 'Incremental Alarm'.

A 'One-Time Alarm' will trigger when its 'Raise' conditions are met and will not trigger again until after it's corresponding 'Clear' conditions are met.

For Example:

Raise: ([th0temp-act=.0:--] > 25)

Clear: ([th0temp-act=.0:--] < 20)

Alarm will trigger at 26°C and will not trigger again until the temperature drops below 20°C

An 'Incremental Alarm' will trigger when 'Raise' conditions are met and will trigger again if the raise conditions are exceeded by a greater value. When the 'Clear' conditions are met the threshold for triggering the alarm is reset.

For Example:

Raise: ([th0temp-act=.0:--] > 25)

Clear: ([th0temp-act=.0:--] < 20)

Alarm will trigger at 26°C and for every additional degree above. It will keep sending an alarm for each new highest temperature until the temperature drops below 20°C

Appendix: Available Variable Components

Sensors	
th0temp	outdoor temperature in degrees Celsius
th0hum	relative outdoor humidity as percentage
th0dew	outdoor dew point in degrees Celsius
th0heatindex	outdoor heat index in degrees Celsius
thb0temp	indoor temperature in degrees Celsius
thb0hum	indoor humidity as percentage
thb0dew	indoor dewpoint in degrees Celsius
thb0press	station pressure in hPa
thb0seapress	normalized pressure (computed to sea level) in hPa
wind0wind	wind speed in m/s
wind0avgwind	average wind speed in m/s (*time used for average depends on station*)
wind0dir	wind direction in degrees (0° is North)
wind0chill	wind chill temperature in degrees Celsius
rain0rate	rain rate in mm/h
rain0total	rain fall in mm (*Cumulative Value*)
uv0index	UV index
sol0rad	solar radiation in W/m^2 (*Cumulative Value*)
sol0evo	evapotranspiration in mm (*only supported on Davis Vantage stations*)
th10temp - th13temp	Soil temperature probes in degrees Celsius
th10hum - th13hum	Soil Moisture probes in Cbar
th14hum - th18hum	Leaf Wetness Sensors

Selectors	
act	most recent data
hmin	minimum value of this hour
hmax	maximum value of this hour
dmin	minimum value of today
dmax	maximum value of today
ydmin	minimum value of yesterday
ydmax	maximum value of yesterday
mmin	minimum value of this month
mmax	maximum value of this month
ymin	minimum value of this year
ymax	maximum value of this year
amin	minimum value of all time
amax	maximum value of all time

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val2, val5, val10, val15, val30, val60	selects the value the sensor has shown 2, 5, 10, 15, 30 or 60 minutes ago
max2, max5, max10, max15, max30, max60	selects the maximum value from the last 2, 5, 10, 15, 30 or 60 minutes
min2, min5, min10, min15, min30, min60	selects the minimum value from the last 2, 5, 10, 15, 30 or 60 minutes
avg2, avg5, avg10, avg15, avg30, avg60	selects average value from the last 2, 5, 10, 15, 30 or 60 minutes
Cumulative Selectors	
sum2, sum5, sum10, sum15, sum30, sum60, sum1h, sum3h, sum6h, sum12h, sum24h	Selects summarised delta values from the last 2, 5, 10, 15, 30, 60 minutes or 1, 3, 6, 12, 24 hours. This is useful to get amount of total rain in a certain time frame: "rain0total-sum60" is rainfall in mm in the last 60 minutes
daysum, monthsum, yearsum, allsum, ydaysum	Selects summarised delta values from today, this month, this year, all time or yesterday. Example: "rain0total-sumday" is today's rain fall.

Converters	
F	Converts temperature from Celsius to Fahrenheit.
psi	Converts pressure from hPa (equivalent to mbar) to psi.
mmHg	Converts pressure from hPa to millimeters of mercury.
inHg	Converts pressure from hPa to inches of mercury.
kmh	Converts wind speed from meters per second to kilometers per hour.
mph	Converts wind speed from meters per second to miles per hour.
kn	Converts wind speed from meters per second to knots.
bft	Converts wind speed from meters per second to Beaufort scale.
in	Converts millimeters to inches.
ft	Converts meters to feet.

Time Stamps	
hmintime	timestamp of minimum value of this hour
hmaxtime	timestamp of maximum value of this hour
dmintime	timestamp of minimum value of today
dmaxtime	timestamp of maximum value of today
ydmintime	timestamp of minimum value of yesterday
ydmaxtime	timestamp of maximum value of yesterday
mmintime	timestamp of minimum value of this month
mmaxtime	timestamp of maximum value of this month

ymintime	timestamp of minimum value of this year
ymaxtime	timestamp of maximum value of this year
amintime	timestamp of minimum value of all time
amaxtime	timestamp of maximum value of all time
starttime	timestamp of first recorded value

Time Variables	
YYYY	year as four digit number
YY	year as two digit number
MM	month as two digit number, with leading zeros
M	month as one or two digit number, no leading zeros
DD	day of month as two digit number, with leading zeros
D	day of month as one or two digit number, no leading zeros
hh	hour in 24h notation as two digit number, with leading zeros
h	hour in 24h notation as one or two digit number, no leading zeros
HH	hour in 12h notation as two digit number, with leading zeros
H	hour in 12h notation as one or two digit number, no leading zeros
apm	returns "am" or "pm" to be added to 12h time notations
APM	returns "AM" or "PM" to be added to 12h time notations
mm	minute as two digit number, with leading zeros
m	minute as one or two digit number, no leading zeros
ss	seconds as two digit number, with leading zeros
s	seconds as one or two digit number, no leading zeros