



**Weather MicroServer with Modbus TCP/IP Slave Interface or Modbus/RTU over COM2 (RS-485)**

All units are U.S. Customary; Temperature - °F, Barometric Pressure - InHg, Wind Speed - MPH, Rain - inches

**32-Bit Registers**

**All data accessed via (read only) Input Registers**

Data type **Long** = Signed 32 bit value

Data type **Float** = 32 bit floating point value

Byte Order: Little Endian

Node 1

For each of the available measurements, the two registers immediately following the value contain the posix time value of the time that value was last updated. For example:

the wind speed value is stored in registers 5 and 6. The last update timestamp is stored in registers 7 and 8 and is a 32-bit integer value.

The posix time values are 32-bit integers; All the values are Modbus input registers.

Measurement	Description	Starting Modbus Offset	Columbia data type	Modbus Address	OPC data type	Dnp3 index
umtLastMeasTime	Time of last measurement	1	posix time	30001	Long	1
		3	posix time	30003	Long	
umtWindSpeed	Wind speed	5	float	30005	Float	2
		7	posix time	30007	Long	
umtRawWindDir	Wind direction - unadjusted	9	float	30009	Float	3
		11	posix time	30011	Long	
umtAdjWindDir	Wind direction	13	float	30013	Float	4
		15	posix time	30015	Long	
umtRelHumidity	Relative humidity	17	float	30017	Float	5
		19	posix time	30019	Long	
umtRawBaromPress	Barometric pressure - unadjusted	21	float	30021	Float	6
		23	posix time	30023	Long	
umtAdjBaromPress	Barometric pressure	25	float	30025	Float	7
		27	posix time	30027	Long	
umtTrueNorthOffset	Electronics Compass wind direction offset	29	float	30029	Float	8
		31	posix time	30031	Long	
umtLastRain	Last reported time of rainfall	33	float	30033	Float	9

umtTemp1	Air temperature	35	posix time	30035	Long	
		37	float	30037	Float	10
		39	posix time	30039	Long	
umtWindChill	Wind chill	41	float	30041	Float	11
		43	posix time	30043	Long	
umtHeatIndex	Heat index	45	float	30045	Float	12
		47	posix time	30047	Long	
umtDewPoint	Dew Point	49	float	30049	Float	13
		51	posix time	30051	Long	
umtDensityAltitude	Density Altitude	53	float	30053	Float	14
		55	posix time	30055	Long	
umt3SecRollAvgWindSpeed	3-sec avg of wind speed	57	float	30057	Float	15
		59	posix time	30059	Long	
umt3SecRollAvgWindDir	3-sec avg of wind direction	61	float	30061	Float	16
		63	posix time	30063	Long	
umt2MinRollAvgWindSpeed	2-min avg of wind speed	65	float	30065	Float	17
		67	posix time	30067	Long	
umt2MinRollAvgWindDir	2-min avg of adjusted wind direction	69	float	30069	Float	18
		71	posix time	30071	Long	
umt10MinRollAvgWindSpeed	10-min avg of wind speed	73	float	30073	Float	19
		75	posix time	30075	Long	
umt10MinRollAvgWindDir	10-min avg of adjusted wind direction	77	float	30077	Float	20
		79	posix time	30079	Long	
umt10MinWindGustDir	10-min wind direction at max wind speed	81	float	30081	Float	21
		83	posix time	30083	Long	
umt10MinWindGustSpeed	10-min max wind speed	85	float	30085	Float	22
		87	posix time	30087	Long	
umt10MinWindGustTime	Time of 10-min max wind speed	89	posix time	30089	Long	23
		91	posix time	30091	Long	
umt60MinWindGustDir	60-min wind direction at max wind speed	93	float	30093	Float	24
		95	posix time	30095	Long	
umt60MinWindGustSpeed	60-min max wind speed	97	float	30097	Float	25
		99	posix time	30099	Long	
umt60MinWindGustTime	Gust time stamp during the last 60 min	101	posix time	30101	Long	26
		103	posix time	30103	Long	
umtRainToday	Rain for the day	105	float	30105	Float	27
		107	posix time	30107	Long	
umtRainThisWeek	Rain for the week	109	float	30109	Float	28
		111	posix time	30111	Long	
umtRainThisMonth	Rain for the month	113	float	30113	Float	29

umtRainThisYear	Rain for the year	115	posix time	30115	Long	
		117	float	30117	Float	30
		119	posix time	30119	Long	
umtRainRate	Rain rate	121	float	30121	Float	31
		123	posix time	30123	Long	
umtHailToday	Hail today	125	float	30125	Float	32
		127	posix time	30127	Long	
umtLastHail	Last hail	129	float	30129	Float	33
		131	posix time	30131	Long	
umtHailRate	Hail rate	133	float	30133	Float	34
		135	posix time	30135	Long	
umtWetBulbGlobeTemp	Wet bulb globe temperataure	137	float	30137	Float	35
		139	posix time	30139	Long	
umtSaturatedVaporPressure	Saturated vapor pressure	141	float	30141	Float	36
		143	posix time	30143	Long	
umtVaporPressure	Vapor pressure	145	float	30145	Float	37
		147	posix time	30147	Long	
umtDryAirPressure	Dry air pressure	149	float	30149	Float	38
		151	posix time	30151	Long	
umtDryAirDensity	Dry air density	153	float	30153	Float	39
		155	posix time	30155	Long	
umtAbsoluteHumidity	Absolute humidity	157	float	30157	Float	40
		159	posix time	30159	Long	
umtAirDensityRatio	Air density ratio	161	float	30161	Float	41
		163	posix time	30163	Long	
umtAdjustedAltitude	Adjusted altitude	165	float	30165	Float	42
		167	posix time	30167	Long	
umtSAECorrectionFactor	SAE correction factor	169	float	30169	Float	43
		171	posix time	30171	Long	
umtWetAirDensity	Wet air density	173	float	30173	Float	44
		175	posix time	30175	Long	
umtWetBulbTemp	Wet bulb temperature	177	float	30177	Float	45
		179	posix time	30179	Long	
umtExtinctionCoefficient	Visibility extinction coefficient	181	float	30181	Float	46
		183	posix time	30183	Long	
umtVisibility	Visibility in miles	185	float	30185	Float	47
		187	posix time	30187	Long	
umtLux	Visibility sensor light meter reading	189	float	30189	Float	48
		191	posix time	30191	Long	
umtDayNight	Visibility sensor day/night indicator	193	float	30193	Float	49

umtWindSpeed_2	Wind speed - 2nd sensor	195	posix time	30195	Long	
		197	float	30197	Float	50
umtRawWindDir_2	Wind direction - 2nd sensor	199	posix time	30199	Long	
		201	float	30201	Float	51
umt3SecRollAvgWindSpeed_2	3-sec avg of wind speed - 2nd sensor	203	posix time	30203	Long	
		205	float	30205	Float	52
umt3SecRollAvgWindDir_2	3-sec avg of wind direction - 2nd sensor	207	posix time	30207	Long	
		209	float	30209	Float	53
umt2MinRollAvgWindSpeed_2	2-min avg of wind speed - 2nd sensor	211	posix time	30211	Long	
		213	float	30213	Float	54
umt2MinRollAvgWindDir_2	2-min avg of wind direction - 2nd sensor	215	posix time	30215	Long	
		217	float	30217	Float	55
umt10MinRollAvgWindSpeed_2	10-min avg of wind speed - 2nd sensor	219	posix time	30219	Long	
		221	float	30221	Float	56
umt10MinRollAvgWindDir_2	10-min avg of wind direction - 2nd sensor	223	posix time	30223	Long	
		225	float	30225	Float	57
umt60MinWindGustDir_2	60-min wind direction at max wind speed - 2nd sensor	227	posix time	30227	Long	
		229	float	30229	Float	58
umt60MinWindGustSpeed_2	60-min max wind speed - 2nd sensor	231	posix time	30231	Long	
		233	float	30233	Float	59
umt60MinWindGustTime_2	Gust time stamp during the last 60 min - 2nd sensor	235	posix time	30235	Long	
		237	float	30237	Float	60
umt10MinWindGustDir_2	10-min wind direction at max wind speed - 2nd sensor	239	posix time	30239	Long	
		241	float	30241	Float	61
umt10MinWindGustSpeed_2	10-min max wind speed - 2nd sensor	243	posix time	30243	Long	
		245	float	30245	Float	62
umt10MinWindGustTime_2	Gust time stamp during the last 10 min - 2nd sensor	247	posix time	30247	Long	
		249	float	30249	Float	63
umtTemp2	Temperature 2	251	posix time	30251	Long	
		253	float	30253	Float	64
umtTemp3	Temperature 3	255	posix time	30255	Long	
		257	float	30257	Float	65
umtTemp4	Temperature 4	259	posix time	30259	Long	
		261	float	30261	Float	66
umtSolarRadiation	Solar Radiation	263	posix time	30263	Long	
		265	float	30265	Float	67
umtSolarRadiation_2	Solar Radiation 2	267	posix time	30267	Long	
		269	float	30269	Float	68
umtSolarRadiation_3	Solar Radiation 3	271	posix time	30271	Long	
		273	float	30273	Float	69

umtSolarRadiation_4	Solar Radiation 4	275	posix time	30275	Long	
		277	float	30277	Float	70
		279	posix time	30279	Long	
umtRainLastHr	Rain Last Hour	281	float	30281	Float	71
		283	posix time	30283	Long	
umtRainLastHr_2	Rain Last Hour - 2nd sensor	285	float	30285	Float	72
		287	posix time	30287	Long	
umtRainToday_2	Rain for the day - 2nd sensor	289	float	30289	Float	73
		291	posix time	30291	Long	
umtRainThisWeek_2	Rain for the week - 2nd sensor	293	float	30293	Float	74
		295	posix time	30295	Long	
umtRainThisMonth_2	Rain for the month - 2nd sensor	297	float	30297	Float	75
		299	posix time	30299	Long	
umtRainThisYear_2	Rain for the year - 2nd sensor	301	float	30301	Float	76
		303	posix time	30303	Long	
umtRainRate_2	Rain rate - 2nd sensor	305	float	30305	Float	77
		307	posix time	30307	Long	
umtPAR	PAR	309	float	30309	Float	78
		311	posix time	30311	Long	
umtPAR_2	PAR - 2nd sensor	313	float	30313	Float	79
		315	posix time	30315	Long	
umtRelHumidity_2	Relative Humidity - 2nd sensor	317	float	30317	Float	80
		319	posix time	30319	Long	
umtRawBaromPress_2	Raw Barometric Pressure - 2nd sensor	321	float	30321	Float	81
		323	posix time	30323	Long	
umtPrecipType	Precipitation Type	325	float	30325	Float	82
		327	posix time	30327	Long	
umtPressureTendency	Pressure Tendency	329	float	30329	Float	83
		331	posix time	30331	Long	
umtSnowDepth	Snow Depth	333	float	30333	Float	84
		335	posix time	30335	Long	
umtEvapotranspiration	Evapotranspiration	337	float	30337	Float	85
		339	posix time	30339	Long	
umt2MinWindGustDir	2-min wind direction at max wind speed	341	float	30341	Float	86
		343	posix time	30343	Long	
umt2MinWindGustSpeed	2-min max wind speed	345	float	30345	Float	87
		347	posix time	30347	Long	
umt2MinWindGustTime	Gust time stamp during the last 2 min	349	posix time	30349	Long	88
		351	posix time	30351	Long	
umt2MinWindGustDir_2	2-min wind direction at max wind speed - 2nd sensor	353	float	30353	Float	89

umt2MinWindGustSpeed_2	2-min max wind speed - 2nd sensor	355	posix time	30355	Long	
		357	float	30357	Float	90
umt2MinWindGustTime_2	Gust time stamp during the last 2 min - 2nd sensor	359	posix time	30359	Long	
		361	posix time	30361	Long	91
umtVolts	Raw voltage (0-5)	363	posix time	30363	Long	
		365	float	30365	Float	92
		367	posix time	30367	Long	
umtVolts_2	Raw voltage (0-5) – 2 <sup>nd</sup> Sensor	369	float	30369	Float	93
		371	posix time	30371	Long	
umtUVRadiation	UV Radiation	373	float	30373	Float	94
		375	posix time	30375	Long	
umtUVRadiation_2	UV Radiation – 2 <sup>nd</sup> Sensor	377	float	30377	Float	95
		379	posix time	30379	long	
umtParticleConc	Particle Concentration	381	float	30381	Float	96
		383	posix time	30383	long	
umtWaterLevel	Water Level	385	float	30385	Float	97
		387	posix time	30387	long	
umtLongitude	Longitude	389	float	30389	Float	98
		391	posix time	30391	long	
umtLongitude	Latitude	393	float	30393	Float	99
		395	posix time	30395	long	
umtGpsElevation	GPS Elevation	397	float	30397	Float	100
		399	posix time	30399	long	
umtGpsSpeed	GPS Speed	401	float	30401	Float	101
		403	posix time	30403	long	
umtGpsHeading	GPS Heading	405	float	30405	Float	102
		407	posix time	30407	long	
umtCO2Concentration	CO2 Concentration	409	float	30409	Float	103
		411	posix time	30411	long	
umtEvaporatorEff	Evaporator Efficiency	413	float	30413	Float	104
		415	posix time	30415	long	
umtCompressorInletTemp	Compressor Inlet Temp	417	float	30417	Float	105
		419	posix time	30419	long	
umtPredictedGeneration	Predicted Generation	421	float	30421	Float	106
		423	posix time	30423	long	
umt1MinLightningEventCount	1 Minute Lightning Event Count	425	float	30425	Float	
		427	posix time	30427	long	
umt30MinLightningEventCount	30 Minute Lightning Event Count	429	float	30429	Float	
		431	posix time	30431	long	
umtUVIndex	UV Index	433	float	30433	Float	

umtNitrogenDioxide	Nitrogen Dioxide	435	posix time	30435	long
		437	float	30437	Float
		439	posix time	30439	long
umtSulfurDioxide	Sulfur Dioxide	441	float	30441	Float
		443	posix time	30443	long
umtCarbonMonoxide	Carbon Monoxide	445	float	30445	Float
		447	posix time	30447	long
umtOzone	Ozone	449	float	30449	Float
		451	posix time	30451	long
umtPM2pt5	PM 2.5	453	float	30453	Float
		455	posix time	30455	long
umtPM10	PM 10	457	float	30457	Float
		459	posix time	30459	long
umtSensorUptime	Sensor Uptime	461	float	30461	Float
		463	posix time	30463	long
umtSensorStatus	Sensor Status	465	float	30465	Float
		467	posix time	30467	long
umtOverallAQI	Overall AQI	469	float	30469	Float
		471	posix time	30471	long
umtPM2pt5-24hrAvg	PM 2.5 24 Hour Average	473	float	30473	Float
		475	posix time	30475	long
umtPM10-24hrAvg	PM 10 24 Hour Average	477	float	30477	Float
		479	posix time	30479	long
umtCarbonMonoxide-8hrAvg	Carbon Monoxide 8 Hour Average	481	float	30481	Float
		483	posix time	30483	long
umtSulfurDioxide-1hrAvg	Sulfur Dioxide 1 Hour Average	485	float	30485	Float
		487	posix time	30487	long
umtSulfurDioxide-24hrAvg	Sulfur Dioxide 24 Hour Average	489	float	30489	Float
		491	posix time	30491	long
umtOzone-8hrAvg	Ozone 8 Hour Average	493	float	30493	Float
		495	posix time	30495	long
umtOzone-1hrAvg	Ozone 1 Hour Average	497	float	30497	Float
		499	posix time	30499	long
umtNitrogenDioxide-1hrAvg	Nitrogen Dioxide 1 Hour Average	501	float	30501	Float
		503	posix time	30503	long
umtMainPollutant	Main Pollutant	505	float	30505	Float
		507	posix time	30507	long

## 16-Bit Registers

### The 16-bit unsigned scaled integer registers

Data type: Unsigned scaled integers

Parameter value = (unsigned 16-bit integer + Offset)/Factor

If the register value is negative, you must convert it to an unsigned value using the following formula: unsigned value = 65536 + register value.

If the register value is positive, the unsigned value is the same as the register value.

Measurement	Description	Register	Min	Max	factor	Offset
umtLastMeasTime		32001	na			
umtWindSpeed	Wind speed	32002	0	160	368	0
umtRawWindDir	Raw wind direction	32003	0	360	163	0
umtAdjWindDir	Adjusted wind direction	32004	0	360	163	0
umtRelHumidity	Relative humidity	32005	0	100	590	0
umtRawBaromPress	Raw barometric pressure	32006	15	35	2950	44250
umtAdjBaromPress,	Adjusted barometric pressure	32007	15	35	2950	44250
umtTrueNorthOffset		32008	na			
umtLastRain		32009	na			
umtTemp1	Temperature 1	32010	-70	160	256	-17920
umtWindChill	Wind chill	32011	-70	160	256	-17920
umtHeatIndex	Heat index	32012	-70	160	256	-17920
umtDewPoint	Dew point	32013	-70	160	256	-17920
umtDensityAltitude		32014	na			
umt3SecRollAvgWindSpeed	3-sec avg of wind speed	32015	0	160	368	0
umt3SecRollAvgWindDir	3-sec avg of wind direction	32016	0	360	163	0
umt2MinRollAvgWindSpeed	2-min avg of wind speed	32017	0	160	368	0
umt2MinRollAvgWindDir	2-min avg of adjusted wind direction	32018	0	360	163	0
umt10MinRollAvgWindSpeed	10-min avg of wind speed	32019	0	160	368	0
umt10MinRollAvgWindDir	10-min avg of adjusted wind direction	32020	0	360	163	0
umt10MinWindGustDir	10-min wind direction at max wind speed	32021	0	360	163	0
umt10MinWindGustSpeed	10-min max wind speed	32022	0	160	368	0
umt10MinWindGustTime		32023	na			
umt60MinWindGustDir	60-min wind direction at max wind speed	32024	0	360	163	0
umt60MinWindGustSpeed	60-min max wind speed	32025	0	160	368	0
umt60MinWindGustTime		32026	na			
umtRainToday	Rain for the day	32027	0	500	118	0
umtRainThisWeek	Rain for the week	32028	0	500	118	0
umtRainThisMonth	Rain for the month	32029	0	500	118	0
umtRainThisYear	Rain for the year	32030	0	500	118	0
umtRainRate	Rain rate	32031	0	20	2950	0
umtHailToday		32032	na			



umtLastHail		32033	na				
umtHailRate		32034	na				
umtWetBulbGlobeTemp	Wet bulb globe temperature	32035	-70	160	256	-17920	
umtSaturatedVaporPressure		32036	na				
umtVaporPressure		32037	na				
umtDryAirPressure		32038	na				
umtDryAirDensity		32039	na				
umtAbsoluteHumidity		32040	na				
umtAirDensityRatio		32041	na				
umtAdjustedAltitude		32042	na				
umtSAECorrectionFactor		32043	na				
umtWetAirDensity		32044	na				
umtWetBulbTemp	Wet bulb Temperature	32045	-70	160	256	-17920	
umtExtinctionCoefficient		32046	na				
umtVisibility		32047	na				
umtLux		32048	na				
umtDayNight		32049	na				
umtWindSpeed_2	Wind speed - 2nd sensor	32050	0	160	368	0	
umtRawWindDir_2		32051	0	360	163	0	
umt3SecRollAvgWindSpeed_2	3-sec avg of wind speed - 2nd sensor	32052	0	160	368	0	
umt3SecRollAvgWindDir_2	3-sec avg of wind direction - 2nd sensor	32053	0	360	163	0	
umt2MinRollAvgWindSpeed_2	2-min avg of wind speed - 2nd sensor	32054	0	160	368	0	
umt2MinRollAvgWindDir_2	2-min avg of wind direction - 2nd sensor	32055	0	360	163	0	
umt10MinRollAvgWindSpeed_2	10-min avg of wind speed - 2nd sensor	32056	0	160	368	0	
umt10MinRollAvgWindDir_2	10-min avg of wind direction - 2nd sensor	32057	0	360	163	0	
umt60MinWindGustDir_2	60-min wind direction at max wind speed - 2nd sensor	32058	0	360	163	0	
umt60MinWindGustSpeed_2	60-min max wind speed - 2nd sensor	32059	0	160	368	0	
umt60MinWindGustTime_2	Gust time stamp during the last 60 min - 2nd sensor	32060	na				
umt10MinWindGustDir_2	10-min wind direction at max wind speed - 2nd sensor	32061	0	360	163	0	
umt10MinWindGustSpeed_2	10-min max wind speed - 2nd sensor	32062	0	160	368	0	
umt10MinWindGustTime_2	Gust time stamp during the last 10 min - 2nd sensor	32063	na				
umtTemp2	Temperature 2	32064	-70	160	256	-17920	
umtTemp3	Temperature 3	32065	-70	160	256	-17920	
umtTemp4	Temperature 4	32066	-70	160	256	-17920	
umtSolarRadiation	Solar Radiation	32067	0	2000	29	0	
umtSolarRadiation_2	Solar Radiation 2	32068	0	2000	29	0	
umtSolarRadiation_3	Solar Radiation 3	32069	0	2000	29	0	
umtSolarRadiation_4	Solar Radiation 4	32070	0	2000	29	0	
umtRainLastHr	Rain Last Hour	32071	0	40	1475	0	
umtRainLastHr_2	Rain Last Hour - 2nd sensor	32072	0	40	1475	0	

umtRainToday_2	Rain for the day - 2nd sensor	32073	0	500	118	0
umtRainThisWeek_2	Rain for the week - 2nd sensor	32074	0	500	118	0
umtRainThisMonth_2	Rain for the month - 2nd sensor	32075	0	500	118	0
umtRainThisYear_2	Rain for the year - 2nd sensor	32076	0	500	118	0
umtRainRate_2	Rain rate - 2nd sensor	32077	0	20	2950	0
umtPAR	PAR	32078	0	3000	19	0
umtPAR_2	PAR - 2nd sensor	32079	0	3000	19	0
umtRelHumidity_2	Relative Humidity - 2nd sensor	32080	0	100	590	0
umtRawBaromPress_2	Raw Barometric Pressure - 2nd sensor	32081	15	35	2950	44250
umtPrecipType	Precipitation Type	32082			1	0
umtPressureTendency	Pressure Tendency	32083	1	-1	1	0
umtSnowDepth	Snow Depth	32084	0	240	245	0
umtEvapotranspiration	Evaoptranspiration	32085	0	5	11800	5
umt2MinWindGustDir	2-min wind direction at max wind speed	32086	0	360	163	0
umt2MinWindGustSpeed	2-min max wind speed	32087	0	160	368	0
umt2MinWindGustTime	Gust time stamp during the last 2 min	32088	na			
umt2MinWindGustDir_2	2-min wind direction at max wind speed - 2nd sensor	32089	0	360	163	0
umt2MinWindGustSpeed_2	2-min max wind speed - 2nd sensor	32090	0	160	368	0
umt2MinWindGustTime_2	Gust time stamp during the last 2 min - 2nd sensor	32091	na			
umtVolts	Raw voltage	32092	0	5	11800	0
UmtVolts_2	Voltage 2	32093	0	5	11800	0
umtUVRadiation	UV Radiation	32094	0	3000	19	0
umtUVRadiation_2	UV Radiation – 2 <sup>nd</sup> Sensor	32095	0	3000	19	0
umtParticleConc	Particle Concentration	32096	0	120	491	0
umtWaterLevel	Water Level	32097	-1000	1000	29	-29000
umtLatitude	Latitude	32098	-90	90	327	-29430
umtLongitude	Longitude	32099	-180	180	163	-29340
umtGpsElevation	GPS Elevation	32100	-1000	40000	1	-1000
umtGpsSpeed	GPS Speed	32101	0	160	368	0
umtGpsHeading	GPS Heading	32102	0	360	163	0
umtCO2Concentration	CO2 Concentration	32103	0	10000	5	0
umtEvaporatorEff	Evaporator Efficiency	32104	0	1	59000	0
umtCompressorInletTemp	Compressor Inlet Temp	32105	-70	160	256	-17920
umtPredictedGeneration	Predicted Generation	32106	0	100	590	0