

Optical PARTicle Size and fall VELOCITY distribution Parsivel – PARSIVEL

ATM4 data format

Measured value No.	Description	Digits	Form	Units
01	Rain intensity (32 bit*)	8	0000.000	mm/h
02	Rain amount accumulated (32 bit*)	7	0000.00	mm
03	Weather code according to SYNOP w _a w _a Table 4680	2	00	1
04	Weather code according to SYNOP ww Table 4677	2	00	1
05	Weather code METAR/SPECI w'w' Table 4678	5	+RASN	1
06	Weather code according to NWS Code	4	RLS+	1
07	Radar reflectivity (32 bit*)	6	00.000	dBz
08	MOR visibility in the precipitation	4	0000	m
09	Sample interval	5	00000	s
10	Signal amplitude of the laser strip	5	00000	1
11	Number of detected particles	5	00000	1
12	Temperature in the sensor	3	000	°C
13	Sensor serial number	6	123456	1
14	Firmware IOP version number	4	V1.01	1
15	Firmware DSP version number	4	V1.01	1
16	Current through the heating system	3	0.0	A
17	Power supply voltage in the sensor	4	00.0	V
18	Sensor status	1	0	1
19	Date/ time measurement begins	20	01.01.2000 _00:00:00_	
20	Sensor time	8	00:00:00	
21	Sensor date	10	00.00.0000	
22	Station name	10	XXXXXXXXXX	
23	Station number	4	XXXX	
24	Rain amount absolute (32 bit*)	7	000.000	mm
25	Error code	3	000	
30	Rain intensity (16 bit*)	6	00.000	mm/h
31	Rain intensity (12 bit*)	6	0000.0	mm/h
32	Rain amount accumulated (16 bit*)	7	0000.00	mm
33	Radar reflectivity (16 bit*)	5	00.00	dBz
90	Field N (d)	223	00.000x	1/m ³ * mm
91	Field v (d)	223	00.000x	
93	Raw data	4095	000x	

Appendix B: Classification of precipitation types

After determining the volume equivalent diameter (D) and the particle speed (V) Parsivel subdivides the particles into appropriate classes. The scale of this classification is smaller for small, slow particles than for large and fast particles.

B.1 Class limits

The measured particles are subdivided into D and V classes in a two-dimensional field, wherein there are 32 different D and V classes so that there are a total of $32 \times 32 = 1024$ classes.

Classification according to volume-equivalent diameter

Class Number	Class Average in mm	Class Spread in mm
1	0.062	0.125
2	0.187	0.125
3	0.312	0.125
4	0.437	0.125
5	0.562	0.125
6	0.687	0.125
7	0.812	0.125
8	0.937	0.125
9	1.062	0.125
10	1.187	0.125
11	1.375	0.250
12	1.625	0.250
13	1.875	0.250
14	2.125	0.250
15	2.375	0.250
16	2.750	0.500
17	3.250	0.500
18	3.750	0.500
19	4.250	0.500
20	4.750	0.500
21	5.500	1.000
22	6.500	1.000
23	7.500	1.000
24	8.500	1.000
25	9.500	1.000
26	11.000	2.000
27	13.000	2.000
28	15.000	2.000
29	17.000	2.000
30	19.000	2.000
31	21.500	3.000
32	24.500	3.000

Note:

Class 1 and Class 2 are limits and are not evaluated at the current time in measurements using the Parsivel since they are outside the measurement range of the device.

Classification according to speed

Class Number	Class average in m/s	Class spread in m/s
1	0.050	0.100
2	0.150	0.100
3	0.250	0.100
4	0.350	0.100
5	0.450	0.100
6	0.550	0.100
7	0.650	0.100
8	0.750	0.100
9	0.850	0.100
10	0.950	0.100
11	1.100	0.200
12	1.300	0.200
13	1.500	0.200
14	1.700	0.200
15	1.900	0.200
16	2.200	0.400
17	2.600	0.400
18	3.000	0.400
19	3.400	0.400
20	3.800	0.400
21	4.400	0.800
22	5.200	0.800
23	6.000	0.800
24	6.800	0.800
25	7.600	0.800
26	8.800	1.600
27	10.400	1.600
28	12.000	1.600
29	13.600	1.600
30	15.200	1.600
31	17.600	3.200
32	20.800	3.200