

UniPi Neuron M20x

Registers – group 1

Register Number		R/W	DataType	Content	Bit Nr.
Unit 0	Unit × Reg. NR				
0	1 × 0	R	MixedBits	Digital inputs of group 1	
				Digital input 1.1	0
				Digital input 1.2	1
				Digital input 1.3	2
				Digital input 1.4	3
1	1 × 1	RW	MixedBits	Digital outputs of group 1	
				Digital output 1.1	0
				Digital output 1.2	1
				Digital output 1.3	2
				Digital output 1.4	3
2	1 × 2	RW	Word	Analog output 1	
3	1 × 3	R	Word	Analog input 1	
4	1 × 4	R	Word	Analog Output/Input 1	
5	1 × 5	R	Word	VrefInt	
6	1 × 6	RW	MixedBits	MasterWatchDog (MWD) status of group 1	
				MWD enable	0
				MWD reboot detected	1
7	1 × 7	R	Word	Length of TX queue	
8 – 9	1 × 8 – 9	RW	DWord	Counter of Digital input 1.1	
10 – 11	1 × 10 – 11	RW	DWord	Counter of Digital input 1.2	
12 – 13	1 × 12 – 13	RW	DWord	Counter of Digital input 1.3	
14 – 15	1 × 14 – 15	RW	DWord	Counter of Digital input 1.4	
16	1 × 16	RW	Word	PWM of DO1.1	
17	1 × 17	RW	Word	PWM of DO1.2	
18	1 × 18	RW	Word	PWM of DO1.3	
19	1 × 19	RW	Word	PWM of DO1.4	
20	1 × 20	RW	MixedBits	User programmable LED settings	
				User LED X1	0
				User LED X2	1
				User LED X3	2
				User LED X4	3
1000	1 × 1000	R		Firmware version of group 1	
1001	1 × 1001	R	MixedBits	Number of DI/Dos	
				Number of Dos	0 – 7
				Number of Dis	8 – 15
1002	1 × 1002	R	MixedBits	Number of AI/Ao/Serials of group 1	
				Number of serial lines	0 – 3
				Number of AOs	4 – 7
				Number of AIs	8 – 15
1003	1 × 1003	R		HW Version of group 1	
1004	1 × 1004	R	Word	Board HW version of group 1	
1005 – 1006	1 × 1005 – 1006	R	DWord	Board serial number of group 1	
1007	1 × 1007	R	MixedBits	Interrupt mask of group 1	
				Serial line RX queue not empty	0
				Sending on serial line finished	1
				Receiving Modbus RTU frame finished	2
				Digital input changed state	3

1008	1 × 1008	RW	word	MWD timeout of group 1	
1009	1 × 1009	R	word	Vref	
1010	1 × 1010	RW	word	Debounce time of DI1.1 [100µs]	
1011	1 × 1011	RW	word	Debounce time of DI1.2 [100µs]	
1012	1 × 1012	RW	word	Debounce time of DI1.3 [100µs]	
1013	1 × 1013	RW	word	Debounce time of DI1.4 [100µs]	
1014	1 × 1014	RW	MixedBits	Direct Switch function of group 1	
				Enable DS on DI1.1	0
				Enable DS on DI1.2	1
				Enable DS on DI1.3	2
1015	1 × 1015	RW	MixedBits	Enable DS on DI1.4	3
				Enable DS polarity function of group 1	
				Enable DS polarity on DI1.1	0
				Enable DS polarity on DI1.2	1
1016	1 × 1016	RW	MixedBits	Enable DS polarity on DI1.3	2
				Enable DS polarity on DI1.4	3
				Enable DS toggle function of group 1	
				Enable DS toggle on DI1.1	0
1017	1 × 1017	RW	MixedBits	Enable DS toggle on DI1.2	1
				Enable DS toggle on DI1.3	2
				Enable DS toggle on DI1.4	3
1018	1 × 1018	RW	word	PWM prescale of group 1	
1019	1 × 1019	RW	word	PWM cycle of group 1	
1020	1 × 1020	RW	MixedBits	AO 1 settings of	
				Enable current output	0
1021	1 × 1021	R	Word	AO 1 Voltage deviation	
1022	1 × 1022	R	Word	AO 1 Voltage offset	
1023	1 × 1023	R	Word	AO 1 Current deviation	
1024	1 × 1024	R	Word	AO 1 Current offset	
1025	1 × 1025	RW	MixedBits	AI 1 settings	
				Enable current input	0
1026	1 × 1026	R	Word	AI 1 Voltage deviation	
1027	1 × 1027	R	Word	AI 1 Voltage offset	
1028	1 × 1028	R	Word	AI 1 Current deviation	
1029	1 × 1029	R	Word	AI 1 Current offset	
1030	1 × 1030	R	Word	AI 2 Voltage deviation (on AO1)	
1031	1 × 1031	R	Word	AI 2 Voltage offset (on AO1)	
1032	1 × 1032	RW	MixedBits	Configuration of RS485 serial line	
				Baud rate	0 – 12
				Parity enable	13
				Parity – 0=Even, 1=Odd	14
				Modbus RTU support enabled (interrupt)	15

Baud rate configuration

Value	Speed [bps]
11	2 400
12	4 800
13	9 600
14	19 200
15	38 400
4097	57 600
4098	115 200

Registers – group 2

Register Number		R/W	DataType	Content	Bit Nr.
Unit 0	Unit × Reg. NR				
100	2 × 0	R	MixedBits	Digital inputs of group 2	
				Digital input 2.1	0
				Digital input 2.2	1
				Digital input 2.3	2
				Digital input 2.4	3
				Digital input 2.5	4
				Digital input 2.6	5
				Digital input 2.7	6
				Digital input 2.8	7
				Digital input 2.9	8
				Digital input 2.10	9
				Digital input 2.11	10
				Digital input 2.12	11
				Digital input 2.13	12
				Digital input 2.14	13
				Digital input 2.15	14
				Digital input 2.16	15
101	2 × 1	RW	MixedBits	Digital outputs of group 2	
				Digital (Relay) output 2.1	0
				Digital (Relay) output 2.2	1
				Digital (Relay) output 2.3	2
				Digital (Relay) output 2.4	3
				Digital (Relay) output 2.5	4
				Digital (Relay) output 2.6	5
				Digital (Relay) output 2.7	6
				Digital (Relay) output 2.8	7
				Digital (Relay) output 2.9	8
				Digital (Relay) output 2.10	9
				Digital (Relay) output 2.11	10
				Digital (Relay) output 2.12	11
				Digital (Relay) output 2.13	12
				Digital (Relay) output 2.14	13
102	2 × 2	RW	MixedBits	MasterWatchDog (MWD) status of group 2	
				MWD enable	0
				MWD reboot detected	1
103 – 104	2 × 3 – 4	RW	DWord	Counter of Digital input 2.1	
105 – 106	2 × 5 – 6	RW	DWord	Counter of Digital input 2.2	
107 – 108	2 × 7 – 8	RW	DWord	Counter of Digital input 2.3	
109 – 110	2 × 9 – 10	RW	DWord	Counter of Digital input 2.4	
111 – 112	2 × 11 – 12	RW	DWord	Counter of Digital input 2.5	
113 – 114	2 × 13 – 14	RW	DWord	Counter of Digital input 2.6	
115 – 116	2 × 15 – 16	RW	DWord	Counter of Digital input 2.7	
117 – 118	2 × 17 – 18	RW	DWord	Counter of Digital input 2.8	
119 – 120	2 × 19 – 20	RW	DWord	Counter of Digital input 2.9	
121 – 122	2 × 21 – 22	RW	DWord	Counter of Digital input 2.10	
123 – 124	2 × 23 – 24	RW	DWord	Counter of Digital input 2.11	
125 – 126	2 × 25 – 26	RW	DWord	Counter of Digital input 2.12	
127 – 128	2 × 27 – 28	RW	DWord	Counter of Digital input 2.13	
129 – 130	2 × 29 – 30	RW	DWord	Counter of Digital input 2.14	
131 – 132	2 × 31 – 32	RW	DWord	Counter of Digital input 2.15	

133 – 134	2 × 33 – 34	RW	DWord	Counter of Digital input 2.16	
1100	2 × 1000	R		Firmware version of group 2	
1101	2 × 1001	R	MixedBits	Number of DI/Dos of group 2	
				Number of Dos	0 – 7
				Number of Dis	8 – 15
1102	2 × 1002	R	MixedBits	Number of AI/Ao/Serials of group 2	
				Number of serial lines	0 – 3
				Number of AOs	4 – 7
				Number of AIs	8 – 15
1103	2 × 1003	R		HW Version of group 2	
1104	2 × 1004	R	Word	Board HW version of group 2	
1105 – 1106	2 × 1005 – 1006	R	DWord	Board serial number of group 2	
1107	2 × 1007	R	MixedBits	Interrupt mask of group 2	
				Serial line RX queue not empty	0
				Sending on serial line finished	1
				Receiving Modbus RTU frame finished	2
				Digital input changed state	3
1108	2 × 1008	RW	word	MWD timeout of group 2	
1109	2 × 1009	R	word	Vref of group 2	
1110	2 × 1010	RW	word	Debounce time of DI2.1 [100µs]	
1111	2 × 1011	RW	word	Debounce time of DI2.2 [100µs]	
1112	2 × 1012	RW	word	Debounce time of DI2.3 [100µs]	
1113	2 × 1013	RW	word	Debounce time of DI2.4 [100µs]	
1114	2 × 1014	RW	word	Debounce time of DI2.5 [100µs]	
1115	2 × 1015	RW	word	Debounce time of DI2.6 [100µs]	
1116	2 × 1016	RW	word	Debounce time of DI2.7 [100µs]	
1117	2 × 1017	RW	word	Debounce time of DI2.8 [100µs]	
1118	2 × 1018	RW	word	Debounce time of DI2.9 [100µs]	
1119	2 × 1019	RW	word	Debounce time of DI2.10 [100µs]	
1120	2 × 1020	RW	word	Debounce time of DI2.11 [100µs]	
1121	2 × 1021	RW	word	Debounce time of DI2.12 [100µs]	
1122	2 × 1022	RW	word	Debounce time of DI2.13 [100µs]	
1123	2 × 1023	RW	word	Debounce time of DI2.14 [100µs]	
1124	2 × 1024	RW	word	Debounce time of DI2.15 [100µs]	
1125	2 × 1025	RW	word	Debounce time of DI2.16 [100µs]	
1126	2 × 1026	RW	MixedBits	Enable Direct Switch function	
				Enable DS on DI2.1	0
				Enable DS on DI2.2	1
				Enable DS on DI2.3	2
				Enable DS on DI2.4	3
				Enable DS on DI2.5	4
				Enable DS on DI2.6	5
				Enable DS on DI2.7	6
				Enable DS on DI2.8	7
				Enable DS on DI2.9	8
				Enable DS on DI2.10	9
				Enable DS on DI2.11	10
				Enable DS on DI2.12	11
				Enable DS on DI2.13	12
				Enable DS on DI2.14	13
1127	2 × 1027	RW	MixedBits	Enable DS polarity function	
				Enable DS polarity on DI2.1	0
				Enable DS polarity on DI2.2	1

				Enable DS polarity on DI2.3	2
				Enable DS polarity on DI2.4	3
				Enable DS polarity on DI2.5	4
				Enable DS polarity on DI2.6	5
				Enable DS polarity on DI2.7	6
				Enable DS polarity on DI2.8	7
				Enable DS polarity on DI2.9	8
				Enable DS polarity on DI2.10	9
				Enable DS polarity on DI2.11	10
				Enable DS polarity on DI2.12	11
				Enable DS polarity on DI2.13	12
				Enable DS polarity on DI2.14	13
1128	2 × 1028	RW	MixedBits	Enable DS toggle function	
				Enable DS toggle on DI2.1	0
				Enable DS toggle on DI2.2	1
				Enable DS toggle on DI2.3	2
				Enable DS toggle on DI2.4	3
				Enable DS toggle on DI2.5	4
				Enable DS toggle on DI2.6	5
				Enable DS toggle on DI2.7	6
				Enable DS toggle on DI2.8	7
				Enable DS toggle on DI2.9	8
				Enable DS toggle on DI2.10	9
				Enable DS toggle on DI2.11	10
				Enable DS toggle on DI2.12	11
				Enable DS toggle on DI2.13	12
				Enable DS toggle on DI2.14	13

Coils – group 1

Coil Number		R/W	Content
Unit 0	Unit × Coil		
0	1 × 0	RW	Digital Output 1.1
1	1 × 1	RW	Digital Output 1.2
2	1 × 2	RW	Digital Output 1.3
3	1 × 3	RW	Digital Output 1.4
4	1 × 4	RW	Digital Input 1.1
5	1 × 5	RW	Digital Input 1.2
6	1 × 6	RW	Digital Input 1.3
7	1 × 7	RW	Digital Input 1.4
8	1 × 8	RW	User programmable LED X1
9	1 × 9	RW	User programmable LED X2
10	1 × 10	RW	User programmable LED X3
11	1 × 11	RW	User programmable LED X4
1000	1 × 1000	RW	MWD reset indication/reset of group 1
1001	1 × 1001	RW	Disable 1-Wire bus
1002	1 × 1002	RW	Reset CPU of group 1
1003	1 × 1003	RW	Save current configuration as default to NV RAM of group 1
1016	1 × 1016	RW	Enable DS on DI 1.1
1017	1 × 1017	RW	Enable DS on DI 1.2
1018	1 × 1018	RW	Enable DS on DI 1.3
1019	1 × 1019	RW	Enable DS on DI 1.4
1020	1 × 1020	RW	Enable DS polarity on DI 1.1

1021	1 × 1021	RW	Enable DS polarity on DI 1.2
1022	1 × 1022	RW	Enable DS polarity on DI 1.3
1023	1 × 1023	RW	Enable DS polarity on DI 1.4
1024	1 × 1024	RW	Enable DS toggle on DI 1.1
1025	1 × 1025	RW	Enable DS toggle on DI 1.2
1026	1 × 1026	RW	Enable DS toggle on DI 1.3
1027	1 × 1027	RW	Enable DS toggle on DI 1.4

Coils – group 2

Coil Number		R/W	Content
Unit 0	Unit × Coil		
100	2 × 0	RW	Digital (Relay) output 2.1
101	2 × 1	RW	Digital (Relay) output 2.2
102	2 × 2	RW	Digital (Relay) output 2.3
103	2 × 3	RW	Digital (Relay) output 2.4
104	2 × 4	RW	Digital (Relay) output 2.5
105	2 × 5	RW	Digital (Relay) output 2.6
106	2 × 6	RW	Digital (Relay) output 2.7
107	2 × 7	RW	Digital (Relay) output 2.8
108	2 × 8	RW	Digital (Relay) output 2.9
109	2 × 9	RW	Digital (Relay) output 2.10
110	2 × 10	RW	Digital (Relay) output 2.11
111	2 × 11	RW	Digital (Relay) output 2.12
112	2 × 12	RW	Digital (Relay) output 2.13
113	2 × 13	RW	Digital (Relay) output 2.14
114	2 × 14	RW	Digital input 2.1
115	2 × 15	RW	Digital input 2.2
116	2 × 16	RW	Digital input 2.3
117	2 × 17	RW	Digital input 2.4
118	2 × 18	RW	Digital input 2.5
119	2 × 19	RW	Digital input 2.6
120	2 × 20	RW	Digital input 2.7
121	2 × 21	RW	Digital input 2.8
122	2 × 22	RW	Digital input 2.9
123	2 × 23	RW	Digital input 2.10
124	2 × 24	RW	Digital input 2.11
125	2 × 25	RW	Digital input 2.12
126	2 × 26	RW	Digital input 2.13
127	2 × 27	RW	Digital input 2.14
128	2 × 28	RW	Digital input 2.15
129	2 × 29	RW	Digital input 2.16
1100	2 × 1000	RW	MWD reset indication/reset of group 2
1102	2 × 1002	RW	Reset CPU of group 2
1103	2 × 1003	RW	Save current configuration as default to NV RAM of group 2
1116	2 × 1016	RW	Enable DS on DI 2.1
1117	2 × 1017	RW	Enable DS on DI 2.2
1118	2 × 1018	RW	Enable DS on DI 2.3
1119	2 × 1019	RW	Enable DS on DI 2.4
1120	2 × 1020	RW	Enable DS on DI 2.5
1121	2 × 1021	RW	Enable DS on DI 2.6
1122	2 × 1022	RW	Enable DS on DI 2.7
1123	2 × 1023	RW	Enable DS on DI 2.8

1124	2 × 1024	RW	Enable DS on DI 2.9
1125	2 × 1025	RW	Enable DS on DI 2.10
1126	2 × 1026	RW	Enable DS on DI 2.11
1127	2 × 1027	RW	Enable DS on DI 2.12
1128	2 × 1028	RW	Enable DS on DI 2.13
1129	2 × 1029	RW	Enable DS on DI 2.14
1130	2 × 1030	RW	Enable DS polarity on DI 2.1
1131	2 × 1031	RW	Enable DS polarity on DI 2.2
1132	2 × 1032	RW	Enable DS polarity on DI 2.3
1133	2 × 1033	RW	Enable DS polarity on DI 2.4
1134	2 × 1034	RW	Enable DS polarity on DI 2.5
1135	2 × 1035	RW	Enable DS polarity on DI 2.6
1136	2 × 1036	RW	Enable DS polarity on DI 2.7
1137	2 × 1037	RW	Enable DS polarity on DI 2.8
1138	2 × 1038	RW	Enable DS polarity on DI 2.9
1139	2 × 1039	RW	Enable DS polarity on DI 2.10
1140	2 × 1040	RW	Enable DS polarity on DI 2.11
1141	2 × 1041	RW	Enable DS polarity on DI 2.12
1142	2 × 1042	RW	Enable DS polarity on DI 2.13
1143	2 × 1043	RW	Enable DS polarity on DI 2.14
1144	2 × 1044	RW	Enable DS toggle on DI 2.1
1145	2 × 1045	RW	Enable DS toggle on DI 2.2
1146	2 × 1046	RW	Enable DS toggle on DI 2.3
1147	2 × 1047	RW	Enable DS toggle on DI 2.4
1148	2 × 1048	RW	Enable DS toggle on DI 2.5
1149	2 × 1049	RW	Enable DS toggle on DI 2.6
1150	2 × 1050	RW	Enable DS toggle on DI 2.7
1151	2 × 1051	RW	Enable DS toggle on DI 2.8
1152	2 × 1052	RW	Enable DS toggle on DI 2.9
1153	2 × 1053	RW	Enable DS toggle on DI 2.10
1154	2 × 1054	RW	Enable DS toggle on DI 2.11
1155	2 × 1055	RW	Enable DS toggle on DI 2.12
1156	2 × 1056	RW	Enable DS toggle on DI 2.13
1157	2 × 1057	RW	Enable DS toggle on DI 2.14