


Name: TR 800 Web	Type: Universal Relais	
Edited: (date / name) 29.04.2009 Fu	Modbus protocol description	Drawing no.: 12280-1605-00
	EA-Nr.: 1451 Replace for:	Page: 1 von 9

MODBUS TCP/IP

TCP Port: 502

Max. TCP connections): 5


MODBUS RTU

Supported function codes


Function code	Name	Utilization
3 (03H)	Read Holding Registers	Read data from registers

Register of function code 3 (03H) - Read data from the registers


Address		Data type	Description	Affects
Dez	Hex			
0	0000	Signed Int16	Current value sensor 1	Current data and alarms
1	0001	Signed Int16	Current value sensor 2	
2	0002	Signed Int16	Current value sensor 3	
3	0003	Signed Int16	Current value sensor 4	
4	0004	Signed Int16	Current value sensor 5	
5	0005	Signed Int16	Current value sensor 6	
6	0006	Signed Int16	Current value sensor 7	
7	0007	Signed Int16	Current value sensor 8	
8	0008	Unsigned Int16	Sensor error sensor 1	
9	0009	Unsigned Int16	Sensor error sensor 2	
10	000A	Unsigned Int16	Sensor error sensor 3	
11	000B	Unsigned Int16	Sensor error sensor 4	
12	000C	Unsigned Int16	Sensor error sensor 5	
13	000D	Unsigned Int16	Sensor error sensor 6	
14	000E	Unsigned Int16	Sensor error sensor 7	
15	000F	Unsigned Int16	Sensor error sensor 8	
16	0010	Unsigned Int16	Error code	
17	0011	Unsigned Int16	Status alarm 1	
18	0012	Unsigned Int16	Status alarm 2	
19	0013	Unsigned Int16	Status alarm 3	
20	0014	Unsigned Int16	Status alarm 4	
21	0015	Unsigned Int16	Status delay alarm on 1	
22	0016	Unsigned Int16	Status delay alarm on 2	
23	0017	Unsigned Int16	Status delay alarm on 3	
24	0018	Unsigned Int16	Status delay alarm on 4	
25	0019	Unsigned Int16	Status delay alarm off 1	
26	001A	Unsigned Int16	Status delay alarm off 2	
27	001B	Unsigned Int16	Status delay alarm off 3	
28	001C	Unsigned Int16	Status delay alarm off 4	
29	001D	Unsigned Int16	Status locked alarm 1	
30	001E	Unsigned Int16	Status locked alarm 2	
31	001F	Unsigned Int16	Status locked alarm 3	
32	0020	Unsigned Int16	Status locked alarm 4	
33	0021	Unsigned Int16	Status relay K1	
34	0022	Unsigned Int16	Status relay K2	
35	0023	Unsigned Int16	Status relay K3	

Name: TR 800 Web	Type: Universal Relais	
Edited: (date / name) 29.04.2009 Fu	Modbus protocol description	Drawing no.: 12280-1605-00
	EA-Nr.: 1451 Replace for:	Page: 2 von 9


36	0024	Unsigned Int16	Status relay K4	
37	0025	Signed Int16	Sensor 1 - Data (not scaled value)	
38	0026	Signed Int16	Sensor 2 - Data (not scaled value)	
39	0027	Signed Int16	Sensor 3 - Data (not scaled value)	
40	0028	Signed Int16	Sensor 4 - Data (not scaled value)	
41	0029	Signed Int16	Sensor 5 - Data (not scaled value)	
42	002A	Signed Int16	Sensor 6 - Data (not scaled value)	
43	002B	Signed Int16	Sensor 7 - Data (not scaled value)	
44	002C	Signed Int16	Sensor 8 - Data (not scaled value)	
255	00FF	Unsigned Int16	Sensor type sensor 1	Configuration
256	0100	Unsigned Int16	Sensor type sensor 2	
257	0101	Unsigned Int16	Sensor type sensor 3	
258	0102	Unsigned Int16	Sensor type sensor 4	
259	0103	Unsigned Int16	Sensor type sensor 5	
260	0104	Unsigned Int16	Sensor type sensor 6	
261	0105	Unsigned Int16	Sensor type sensor 7	
262	0106	Unsigned Int16	Sensor type sensor 8	
263	0107	Signed Int16	Wire compensation sensor 1	
264	0108	Signed Int16	Wire compensation sensor 2	
265	0109	Signed Int16	Wire compensation sensor 3	
266	010A	Signed Int16	Wire compensation sensor 4	
267	010B	Signed Int16	Wire compensation sensor 5	
268	010C	Signed Int16	Wire compensation sensor 6	
269	010D	Signed Int16	Wire compensation sensor 7	
270	010E	Signed Int16	Wire compensation sensor 8	
271	010F	Signed Int16	Unit sensor 1	
272	0110	Signed Int16	Unit sensor 2	
273	0111	Signed Int16	Unit sensor 3	
274	0112	Signed Int16	Unit sensor 4	
275	0113	Signed Int16	Unit sensor 5	
276	0114	Signed Int16	Unit sensor 6	
277	0115	Signed Int16	Unit sensor 7	
278	0116	Signed Int16	Unit sensor 8	
279	0117	Unsigned Int16	Scaling active sensor 1	
280	0118	Unsigned Int16	Scaling active sensor 2	
281	0119	Unsigned Int16	Scaling active sensor 3	
282	011A	Unsigned Int16	Scaling active sensor 4	
283	011B	Unsigned Int16	Scaling active sensor 5	
284	011C	Unsigned Int16	Scaling active sensor 6	
285	011D	Unsigned Int16	Scaling active sensor 7	
286	011E	Unsigned Int16	Scaling active sensor 8	
287	011F	Signed Int16	Scaling zero point sensor 1	
288	0120	Signed Int16	Scaling zero point sensor 2	
289	0121	Signed Int16	Scaling zero point sensor 3	
290	0122	Signed Int16	Scaling zero point sensor 4	
291	0123	Signed Int16	Scaling zero point sensor 5	
292	0124	Signed Int16	Scaling zero point sensor 6	
293	0125	Signed Int16	Scaling zero point sensor 7	
294	0126	Signed Int16	Scaling zero point sensor 8	
295	0127	Signed Int16	Scaling full-scale sensor 1	
296	0128	Signed Int16	Scaling full-scale sensor 2	

Name: TR 800 Web	Type: Universal Relais	
Edited: (date / name) 29.04.2009 Fu	Modbus protocol description	Drawing no.: 12280-1605-00
	EA-Nr.: 1451 Replace for:	Page: 3 von 9


297	0129	Signed Int16	Scaling full-scale sensor 3
298	012A	Signed Int16	Scaling full-scale sensor 4
299	012B	Signed Int16	Scaling full-scale sensor 5
300	012C	Signed Int16	Scaling full-scale sensor 6
301	012D	Signed Int16	Scaling full-scale sensor 7
302	012E	Signed Int16	Scaling full-scale sensor 8
303	012F	Unsigned Int16	Scaling decimal point sensor 1
304	0130	Unsigned Int16	Scaling decimal point sensor 2
305	0131	Unsigned Int16	Scaling decimal point sensor 3
306	0132	Unsigned Int16	Scaling decimal point sensor 4
307	0133	Unsigned Int16	Scaling decimal point sensor 5
308	0134	Unsigned Int16	Scaling decimal point sensor 6
309	0135	Unsigned Int16	Scaling decimal point sensor 7
310	0136	Unsigned Int16	Scaling decimal point sensor 8
311	0137	Unsigned Int16	Alarm 1 active sensor 1
312	0138	Unsigned Int16	Alarm 1 active sensor 2
313	0139	Unsigned Int16	Alarm 1 active sensor 3
314	013A	Unsigned Int16	Alarm 1 active sensor 4
315	013B	Unsigned Int16	Alarm 1 active sensor 5
316	013C	Unsigned Int16	Alarm 1 active sensor 6
317	013D	Unsigned Int16	Alarm 1 active sensor 7
318	013E	Unsigned Int16	Alarm 1 active sensor 8
319	013F	Signed Int16	Value - alarm 1 on sensor 1
320	0140	Signed Int16	Value - alarm 1 on sensor 2
321	0141	Signed Int16	Value - alarm 1 on sensor 3
322	0142	Signed Int16	Value - alarm 1 on sensor 4
323	0143	Signed Int16	Value - alarm 1 on sensor 5
324	0144	Signed Int16	Value - alarm 1 on sensor 6
325	0145	Signed Int16	Value - alarm 1 on sensor 7
326	0146	Signed Int16	Value - alarm 1 on sensor 8
327	0147	Signed Int16	Value - alarm 1 off sensor 1
328	0148	Signed Int16	Value - alarm 1 off sensor 2
329	0149	Signed Int16	Value - alarm 1 off sensor 3
330	014A	Signed Int16	Value - alarm 1 off sensor 4
331	014B	Signed Int16	Value - alarm 1 off sensor 5
332	014C	Signed Int16	Value - alarm 1 off sensor 6
333	014D	Signed Int16	Value - alarm 1 off sensor 7
334	014E	Signed Int16	Value - alarm 1 off sensor 8
335	014F	Signed Int16	Value - alarm 1 on (Night) sensor 1
336	0150	Signed Int16	Value - alarm 1 on (Night) sensor 2
337	0151	Signed Int16	Value - alarm 1 on (Night) sensor 3
338	0152	Signed Int16	Value - alarm 1 on (Night) sensor 4
339	0153	Signed Int16	Value - alarm 1 on (Night) sensor 5
340	0154	Signed Int16	Value - alarm 1 on (Night) sensor 6
341	0155	Signed Int16	Value - alarm 1 on (Night) sensor 7
342	0156	Signed Int16	Value - alarm 1 on (Night) sensor 8
343	0157	Signed Int16	Value - alarm 1 off (Night) sensor 1
344	0158	Signed Int16	Value - alarm 1 off (Night) sensor 2
345	0159	Signed Int16	Value - alarm 1 off (Night) sensor 3
346	015A	Signed Int16	Value - alarm 1 off (Night) sensor 4
347	015B	Signed Int16	Value - alarm 1 off (Night) sensor 5
348	015C	Signed Int16	Value - alarm 1 off (Night) sensor 6

Name: TR 800 Web	Type: Universal Relais	
Edited: (date / name) 29.04.2009 Fu	Modbus protocol description	Drawing no.: 12280-1605-00
	EA-Nr.: 1451 Replace for:	Page: 4 von 9


349	015D	Signed Int16	Value - alarm 1 off (Night) sensor 7
350	015E	Signed Int16	Value - alarm 1 off (Night) sensor 8
351	015F	Unsigned Int16	Alarm 2 active sensor 1
352	0160	Unsigned Int16	Alarm 2 active sensor 2
353	0161	Unsigned Int16	Alarm 2 active sensor 3
354	0162	Unsigned Int16	Alarm 2 active sensor 4
355	0163	Unsigned Int16	Alarm 2 active sensor 5
356	0164	Unsigned Int16	Alarm 2 active sensor 6
357	0165	Unsigned Int16	Alarm 2 active sensor 7
358	0166	Unsigned Int16	Alarm 2 active sensor 8
359	0167	Signed Int16	Value - alarm 2 on sensor 1
360	0168	Signed Int16	Value - alarm 2 on sensor 2
361	0169	Signed Int16	Value - alarm 2 on sensor 3
362	016A	Signed Int16	Value - alarm 2 on sensor 4
363	016B	Signed Int16	Value - alarm 2 on sensor 5
364	016C	Signed Int16	Value - alarm 2 on sensor 6
365	016D	Signed Int16	Value - alarm 2 on sensor 7
366	016E	Signed Int16	Value - alarm 2 on sensor 8
367	016F	Signed Int16	Value - alarm 2 off sensor 1
368	0170	Signed Int16	Value - alarm 2 off sensor 2
369	0171	Signed Int16	Value - alarm 2 off sensor 3
370	0172	Signed Int16	Value - alarm 2 off sensor 4
371	0173	Signed Int16	Value - alarm 2 off sensor 5
372	0174	Signed Int16	Value - alarm 2 off sensor 6
373	0175	Signed Int16	Value - alarm 2 off sensor 7
374	0176	Signed Int16	Value - alarm 2 off sensor 8
375	0177	Signed Int16	Value - alarm 2 on (Night) sensor 1
376	0178	Signed Int16	Value - alarm 2 on (Night) sensor 2
377	0179	Signed Int16	Value - alarm 2 on (Night) sensor 3
378	017A	Signed Int16	Value - alarm 2 on (Night) sensor 4
379	017B	Signed Int16	Value - alarm 2 on (Night) sensor 5
380	017C	Signed Int16	Value - alarm 2 on (Night) sensor 6
381	017D	Signed Int16	Value - alarm 2 on (Night) sensor 7
382	017E	Signed Int16	Value - alarm 2 on (Night) sensor 8
383	017F	Signed Int16	Value - alarm 2 off (Night) sensor 1
384	0180	Signed Int16	Value - alarm 2 off (Night) sensor 2
385	0181	Signed Int16	Value - alarm 2 off (Night) sensor 3
386	0182	Signed Int16	Value - alarm 2 off (Night) sensor 4
387	0183	Signed Int16	Value - alarm 2 off (Night) sensor 5
388	0184	Signed Int16	Value - alarm 2 off (Night) sensor 6
389	0185	Signed Int16	Value - alarm 2 off (Night) sensor 7
390	0186	Signed Int16	Value - alarm 2 off (Night) sensor 8
391	0187	Unsigned Int16	Alarm 3 active sensor 1
392	0188	Unsigned Int16	Alarm 3 active sensor 2
393	0189	Unsigned Int16	Alarm 3 active sensor 3
394	018A	Unsigned Int16	Alarm 3 active sensor 4
395	018B	Unsigned Int16	Alarm 3 active sensor 5
396	018C	Unsigned Int16	Alarm 3 active sensor 6
397	018D	Unsigned Int16	Alarm 3 active sensor 7
398	018E	Unsigned Int16	Alarm 3 active sensor 8
399	018F	Signed Int16	Value - alarm 3 on sensor 1
400	0190	Signed Int16	Value - alarm 3 on sensor 2

Name: TR 800 Web	Type: Universal Relais		
Edited: (date / name) 29.04.2009 Fu	Modbus protocol description		Drawing no.: 12280-1605-00
	EA-Nr.: 1451	Replace for:	Page: 5 von 9

401	0191	Signed Int16	Value - alarm 3 on sensor 3
402	0192	Signed Int16	Value - alarm 3 on sensor 4
403	0193	Signed Int16	Value - alarm 3 on sensor 5
404	0194	Signed Int16	Value - alarm 3 on sensor 6
405	0195	Signed Int16	Value - alarm 3 on sensor 7
406	0196	Signed Int16	Value - alarm 3 on sensor 8
407	0197	Signed Int16	Value - alarm 3 off sensor 1
408	0198	Signed Int16	Value - alarm 3 off sensor 2
409	0199	Signed Int16	Value - alarm 3 off sensor 3
410	019A	Signed Int16	Value - alarm 3 off sensor 4
411	019B	Signed Int16	Value - alarm 3 off sensor 5
412	019C	Signed Int16	Value - alarm 3 off sensor 6
413	019D	Signed Int16	Value - alarm 3 off sensor 7
414	019E	Signed Int16	Value - alarm 3 off sensor 8
415	019F	Signed Int16	Value - alarm 3 on (Night) sensor 1
416	01A0	Signed Int16	Value - alarm 3 on (Night) sensor 2
417	01A1	Signed Int16	Value - alarm 3 on (Night) sensor 3
418	01A2	Signed Int16	Value - alarm 3 on (Night) sensor 4
419	01A3	Signed Int16	Value - alarm 3 on (Night) sensor 5
420	01A4	Signed Int16	Value - alarm 3 on (Night) sensor 6
421	01A5	Signed Int16	Value - alarm 3 on (Night) sensor 7
422	01A6	Signed Int16	Value - alarm 3 on (Night) sensor 8
423	01A7	Signed Int16	Value - alarm 3 off (Night) sensor 1
424	01A8	Signed Int16	Value - alarm 3 off (Night) sensor 2
425	01A9	Signed Int16	Value - alarm 3 off (Night) sensor 3
426	01AA	Signed Int16	Value - alarm 3 off (Night) sensor 4
427	01AB	Signed Int16	Value - alarm 3 off (Night) sensor 5
428	01AC	Signed Int16	Value - alarm 3 off (Night) sensor 6
429	01AD	Signed Int16	Value - alarm 3 off (Night) sensor 7
430	01AE	Signed Int16	Value - alarm 3 off (Night) sensor 8
431	01AF	Unsigned Int16	Alarm 4 active sensor 1
432	01B0	Unsigned Int16	Alarm 4 active sensor 2
433	01B1	Unsigned Int16	Alarm 4 active sensor 3
434	01B2	Unsigned Int16	Alarm 4 active sensor 4
435	01B3	Unsigned Int16	Alarm 4 active sensor 5
436	01B4	Unsigned Int16	Alarm 4 active sensor 6
437	01B5	Unsigned Int16	Alarm 4 active sensor 7
438	01B6	Unsigned Int16	Alarm 4 active sensor 8
439	01B7	Signed Int16	Value - alarm 4 on sensor 1
440	01B8	Signed Int16	Value - alarm 4 on sensor 2
441	01B9	Signed Int16	Value - alarm 4 on sensor 3
442	01BA	Signed Int16	Value - alarm 4 on sensor 4
443	01BB	Signed Int16	Value - alarm 4 on sensor 5
444	01BC	Signed Int16	Value - alarm 4 on sensor 6
445	01BD	Signed Int16	Value - alarm 4 on sensor 7
446	01BE	Signed Int16	Value - alarm 4 on sensor 8
447	01BF	Signed Int16	Value - alarm 4 off sensor 1
448	01C0	Signed Int16	Value - alarm 4 off sensor 2
449	01C1	Signed Int16	Value - alarm 4 off sensor 3
450	01C2	Signed Int16	Value - alarm 4 off sensor 4
451	01C3	Signed Int16	Value - alarm 4 off sensor 5
452	01C4	Signed Int16	Value - alarm 4 off sensor 6

Name: TR 800 Web	Type: Universal Relais	
Edited: (date / name) 29.04.2009 Fu	Modbus protocol description	Drawing no.: 12280-1605-00
	EA-Nr.: 1451 Replace for:	Page: 6 von 9

453	01C5	Signed Int16	Value - alarm 4 off sensor 7	
454	01C6	Signed Int16	Value - alarm 4 off sensor 8	
455	01C7	Signed Int16	Value - alarm 4 on (Night) sensor 1	
456	01C8	Signed Int16	Value - alarm 4 on (Night) sensor 2	
457	01C9	Signed Int16	Value - alarm 4 on (Night) sensor 3	
458	01CA	Signed Int16	Value - alarm 4 on (Night) sensor 4	
459	01CB	Signed Int16	Value - alarm 4 on (Night) sensor 5	
460	01CC	Signed Int16	Value - alarm 4 on (Night) sensor 6	
461	01CD	Signed Int16	Value - alarm 4 on (Night) sensor 7	
462	01CE	Signed Int16	Value - alarm 4 on (Night) sensor 8	
463	01CF	Signed Int16	Value - alarm 4 off (Night) sensor 1	
464	01D0	Signed Int16	Value - alarm 4 off (Night) sensor 2	
465	01D1	Signed Int16	Value - alarm 4 off (Night) sensor 3	
466	01D2	Signed Int16	Value - alarm 4 off (Night) sensor 4	
467	01D3	Signed Int16	Value - alarm 4 off (Night) sensor 5	
468	01D4	Signed Int16	Value - alarm 4 off (Night) sensor 6	
469	01D5	Signed Int16	Value - alarm 4 off (Night) sensor 7	
470	01D6	Signed Int16	Value - alarm 4 off (Night) sensor 8	
471	01D7	Unsigned Int16	Delay Alarm on alarm 1	
472	01D8	Unsigned Int16	Delay Alarm on alarm 2	
473	01D9	Unsigned Int16	Delay Alarm on alarm 3	
474	01DA	Unsigned Int16	Delay Alarm on alarm 4	
475	01DB	Unsigned Int16	Delay Alarm off alarm 1	
476	01DC	Unsigned Int16	Delay Alarm off alarm 2	
477	01DD	Unsigned Int16	Delay Alarm off alarm 3	
478	01DE	Unsigned Int16	Delay Alarm off alarm 4	
479	01DF	Unsigned Int16	alarm on error alarm 1	
480	01E0	Unsigned Int16	alarm on error alarm 2	
481	01E1	Unsigned Int16	alarm on error alarm 3	
482	01E2	Unsigned Int16	alarm on error alarm 4	
483	01E3	Unsigned Int16	alarm locked alarm 1	
484	01E4	Unsigned Int16	alarm locked alarm 2	
485	01E5	Unsigned Int16	alarm locked alarm 3	
486	01E6	Unsigned Int16	alarm locked alarm 4	
487	01E7	Unsigned Int16	relay on alarm 1	
488	01E8	Unsigned Int16	relay on alarm 2	
489	01E9	Unsigned Int16	relay on alarm 3	
490	01EA	Unsigned Int16	relay on alarm 4	
491	01EB	Unsigned Int16	simulated sensor	Other
492	01EC	Unsigned Int16	Data- counter	

Name: TR 800 Web	Type: Universal Relais	
Edited: (date / name) 29.04.2009 Fu	Modbus protocol description	Drawing no.: 12280-1605-00
	EA-Nr.: 1451	Replace for:
		Page: 7 von 9

Values of the register

Sensor Type	
Value	meaning
0	nc
1	Pt 100
2	Pt 1000
3	KTY 83
4	KTY 84
5	Thermocouple B
6	Thermocouple E
7	Thermocouple J
8	Thermocouple K
9	Thermocouple L
10	Thermocouple N
11	Thermocouple R
12	Thermocouple S
13	Thermocouple T
14	Voltage 0 .. 10V
15	Current 0 .. 20mA
16	Current 4 .. 20mA
17	Resistor 500 Ohm
18	Resistor 30 kOhm
19	Difference of two inputs

Wire compensation	
Value	meaning
-1	3-wire
0	0 Ohm
1	0,1 Ohm
:	:
1000	100,0 Ohm

Unit	
Value	meaning
0	°C
1	°F
2	V
3	mA
4	Ohm
5	kOhm
6	%
7	User

Scaling on	
Value	meaning
0	inactive
1	active

Scaling zero point	
Scaling full-scale	
Value	meaning
-1999	
:	
9999	

Scaling Decimal point	
Value	meaning
0	xxxx
1	xxx.x
2	xx.xx
3	x.xxx


Alarm active	
Value	meaning
0	off
1	on
Value -	Alarm x on Alarm x off Alarm x on (night) Alarm x off (night)
-9999	
:	
30000	

delay alarm on delay alarm off	
Value	meaning
0	[s]
:	:
9999	[s]

Alarm on error	
Value	meaning
0	off
1	on

Alarm locked	
Value	meaning
0	off
1	on

Relay on alarm	
Value	meaning
0	de-energized
1	energized

Name: TR 800 Web	Type: Universal Relais	
Edited: (date / name) 29.04.2009 Fu	Modbus protocol description	Drawing no.: 12280-1605-00
	EA-Nr.: 1451 Replace for:	Page: 8 von 9

Data- sensor 1 .. 8

Data (scaled value)	
Data (not scaled value)	
Value	meaning
-9999	
:	
30000	
32767	Sensor short-circuit:
32766	Sensor break:
32765	Thermocouple poled wrong:
32750	Overflow:
32749	Underflow:
32748	Sensor nc:


Sensor error	
Value	meaning
0	OK
1	Sensor short-circuit
2	Sensor break:
3	
4	Thermocouple connected wrong:

Sensor Simulation

Simulated sensor	
Value	meaning
bit 0	Sensor 1
:	:
bit 7	Sensor 8

Status

Status alarm on	
Status delay alarm on	
Status delay alarm off	
Status locked alarm	
Value	meaning
0	off
bit0	Alarm sensor 1
bit1	Alarm sensor 2
bit2	Alarm sensor 3
bit3	Alarm sensor 4
bit4	Alarm sensor 5
bit5	Alarm sensor 6
bit6	Alarm sensor 7
bit7	Alarm sensor 8
bit8	Device error

Name: TR 800 Web	Type: Universal Relais	
Edited: (date / name) 29.04.2009 Fu	Modbus protocol description	Drawing no.: 12280-1605-00
	EA-Nr.: 1451 Replace for:	Page: 9 von 9

Other

Status relay	
Value	meaning
0	de-energized
1	energized

Data- counter	
Value	meaning
0	is incremented at each measurement
:	
65535	

Error code	
Value	meaning
0	No error
bit 0	AD-error (Er 8)
bit 1	Internal communication error (Er 5)
bit 2	Internal communication error (Er 6)
bit 3	EEPROM error (Er 9)