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REVALCO RANM8 registers
(firmware ver.433e -> G433R8.src )
(firmware ver.413e -> G413R3.src )
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GENERAL

reg.addr. (word)	description	modbus		data type
		RD cmd.	WR cmd.	

0000	config.flags/enr.rec.pointer	03	06	1A
0001	dig.in mode/config.	03	06	1B
0002	dig.out.config.	03	06	1C
0003	dig.out1 alarm mode/delay	03	06	1D
0004	dig.out2 alarm mode/delay	03	06	1D
0005	dig.I/O status	03	06	1E
0006	command reg.	03	06	1F
0010	voltage transf.factor (VTF)	03	06	2A
0011	current transf.factor (CTF)	03	06	2B
0012	dig.in1 increment factor (CIF)	03	06	2C
0013	dig.in2 increment factor (CIF)	03	06	2C
0014	dig.out1 threshold	03	06	2D
0015	dig.out2 threshold	03	06	2D
0080	U1 scaling factor	04	-	2E
0081	I1 scaling factor	04	-	2E
0082	PQS1 scaling factor	04	-	2E
0083	U2 scaling factor	04	-	2E
0084	I2 scaling factor	04	-	2E
0085	PQS2 scaling factor	04	-	2E
0086	U3 scaling factor	04	-	2E
0087	I3 scaling factor	04	-	2E
0088	PQ3 scaling factor	04	-	2E
0089	Ptot scaling factor	04	-	2E
008A	PSQTF transform factor	04	-	2E
0090	ser.number (8 ASCII chr.)	04	-	
00A0	model (12 ASCII chr.)	04	-	
00B0	version (4 ASCII chr.)	04	-	

L1

reg.addr. (word)	description	modbus		data
		RD cmd.	WR cmd.	type

0100	frequency	04	-	3
0101	voltage L1	04	-	4A
0102	" " scan.peak	04	-	4A
0103	-			
0104	-			
0105	current L1	04	-	4B
0106	" " scan.peak	04	-	4A
0107	-			
0108	-			
0109	activ.power L1 (lo)	04	-	5A
010A	activ.power L1 (hi)			
010B	appar.power L1 (lo)	04	-	5A
010C	appar.power L1 (hi)			
010D	react.power L1 (lo)	04	-	5A
010E	react.power L1 (hi)			
010F	power factor L1	04	-	6
0110	(L1-L2) voltage	04	-	4A
	voltage L1 harmonics			
0120	harm.no. 1	04	-	9A

0121	harm.no. 2
0122	harm.no. 3
0123	harm.no. 4
0124	harm.no. 5
0125	harm.no. 6
0126	harm.no. 7
0127	harm.no. 8
0128	harm.no. 9
0129	harm.no. 10
012A	harm.no. 11
012B	harm.no. 12
012C	harm.no. 13
012D	harm.no. 14
012E	harm.no. 15
012F	harm.no. 16
0130	harm.no. 17
0131	harm.no. 18
0132	harm.no. 19
0133	harm.no. 20
0134	harm.no. 21
0135	harm.no. 22
0136	harm.no. 23
0137	harm.no. 24
0138	harm.no. 25
0139	harm.no. 26
013A	harm.no. 27
013B	harm.no. 28
013C	harm.no. 29
013D	harm.no. 30
013E	harm.no. 31
013F	harm.no. 32

current L1 harmonics

0150	harm.no. 1
0151	harm.no. 2
0152	harm.no. 3
0153	harm.no. 4
0154	harm.no. 5
0155	harm.no. 6
0156	harm.no. 7
0157	harm.no. 8
0158	harm.no. 9
0159	harm.no. 10
015A	harm.no. 11
015B	harm.no. 12
015C	harm.no. 13
015D	harm.no. 14
015E	harm.no. 15
015F	harm.no. 16
0160	harm.no. 17
0161	harm.no. 18
0162	harm.no. 19
0163	harm.no. 20
0164	harm.no. 21
0165	harm.no. 22
0166	harm.no. 23
0167	harm.no. 24
0168	harm.no. 25
0169	harm.no. 26
016A	harm.no. 27
016B	harm.no. 28
016C	harm.no. 29
016D	harm.no. 30
016E	harm.no. 31
016F	harm.no. 32

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L2

reg.addr. (word)	description	modbus		data type
		RD cmd.	WR cmd.	

0200	frequency	04	-	3
0201	voltage L2	04	-	4A
0202	" " scan.peak	04	-	4A
0203	-			
0204	-			
0205	current L2	04	-	4B
0206	" " scan.peak	04	-	4A
0207	-			
0208	-			
0209	activ.power L2 (lo)	04	-	5A
020A	activ.power L2 (hi)			
020B	appar.power L2 (lo)	04	-	5A
020C	appar.power L2 (hi)			
020D	react.power L2 (lo)	04	-	5A
020E	react.power L2 (hi)			
020F	power factor L2	04	-	6
0210	(L2-L3) voltage	04	-	4A

voltage L2 harmonics

0220	harm.no. 1	04	-	9A
0221	harm.no. 2			
0222	harm.no. 3			
0223	harm.no. 4			
0224	harm.no. 5			
0225	harm.no. 6			
0226	harm.no. 7			
0227	harm.no. 8			
0228	harm.no. 9			
0229	harm.no. 10			
022A	harm.no. 11			
022B	harm.no. 12			
022C	harm.no. 13			
022D	harm.no. 14			
022E	harm.no. 15			
022F	harm.no. 16			
0230	harm.no. 17			
0231	harm.no. 18			
0232	harm.no. 19			
0233	harm.no. 20			
0234	harm.no. 21			
0235	harm.no. 22			
0236	harm.no. 23			
0237	harm.no. 24			
0238	harm.no. 25			
0239	harm.no. 26			
023A	harm.no. 27			
023B	harm.no. 28			
023C	harm.no. 29			
023D	harm.no. 30			
023E	harm.no. 31			
023F	harm.no. 32			

current L2 harmonics

0250	harm.no. 1
0251	harm.no. 2
0252	harm.no. 3
0253	harm.no. 4
0254	harm.no. 5
0255	harm.no. 6
0256	harm.no. 7
0257	harm.no. 8
0258	harm.no. 9
0259	harm.no. 10
025A	harm.no. 11
025B	harm.no. 12
025C	harm.no. 13
025D	harm.no. 14
025E	harm.no. 15
025F	harm.no. 16
0260	harm.no. 17
0261	harm.no. 18
0262	harm.no. 19
0263	harm.no. 20
0264	harm.no. 21

0265 harm.no. 22
 0266 harm.no. 23
 0267 harm.no. 24
 0268 harm.no. 25
 0269 harm.no. 26
 026A harm.no. 27
 026B harm.no. 28
 026C harm.no. 29
 026D harm.no. 30
 026E harm.no. 31
 026F harm.no. 32

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L3

reg.addr. (word)	description	modbus		data type
		RD cmd.	WR cmd.	

0300	frequency	04	-	3
0301	voltage L3	04	-	4A
0302	" " scan.peak	04	-	4A
0303	-			
0304	-			
0305	current L3	04	-	4B
0306	" " scan.peak	04	-	4A
0307	-			
0308	-			
0309	activ.power L3 (lo)	04	-	5A
030A	activ.power L3 (hi)			
030B	appar.power L3 (lo)	04	-	5A
030C	appar.power L3 (hi)			
030D	react.power L3 (lo)	04	-	5A
030E	react.power L3 (hi)			
030F	power factor L3	04	-	6
0310	(L3-L1) voltage	04	-	4A
voltage L3 harmonics				
0320	harm.no. 1	04	-	9A
0321	harm.no. 2			
0322	harm.no. 3			
0323	harm.no. 4			
0324	harm.no. 5			
0325	harm.no. 6			
0326	harm.no. 7			
0327	harm.no. 8			
0328	harm.no. 9			
0329	harm.no. 10			
032A	harm.no. 11			
032B	harm.no. 12			
032C	harm.no. 13			
032D	harm.no. 14			
032E	harm.no. 15			
032F	harm.no. 16			
0330	harm.no. 17			
0331	harm.no. 18			
0332	harm.no. 19			
0333	harm.no. 20			
0334	harm.no. 21			
0335	harm.no. 22			
0336	harm.no. 23			
0337	harm.no. 24			
0338	harm.no. 25			
0339	harm.no. 26			
033A	harm.no. 27			
033B	harm.no. 28			
033C	harm.no. 29			
033D	harm.no. 30			
033E	harm.no. 31			
033F	harm.no. 32			
current L3 harmonics				
0350	harm.no. 1			

0351 harm.no. 2
 0352 harm.no. 3
 0353 harm.no. 4
 0354 harm.no. 5
 0355 harm.no. 6
 0356 harm.no. 7
 0357 harm.no. 8
 0358 harm.no. 9
 0359 harm.no. 10
 035A harm.no. 11
 035B harm.no. 12
 035C harm.no. 13
 035D harm.no. 14
 035E harm.no. 15
 035F harm.no. 16
 0360 harm.no. 17
 0361 harm.no. 18
 0362 harm.no. 19
 0363 harm.no. 20
 0364 harm.no. 21
 0365 harm.no. 22
 0366 harm.no. 23
 0367 harm.no. 24
 0368 harm.no. 25
 0369 harm.no. 26
 036A harm.no. 27
 036B harm.no. 28
 036C harm.no. 29
 036D harm.no. 30
 036E harm.no. 31
 036F harm.no. 32

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TOTALS

reg.addr. (word)	description	modbus RD cmd.	WR cmd.	data type	

0400	total activ power (lo)	04	-	5B	
0401	" " " (hi)				
0402	total react.power (lo)	04	-	5B	
0403	" " " (hi)				
0404	total appar.power (lo)	04	-	5B	
0405	" " " (hi)				
0406	total power factor	04	-	6	
0407	frequency	04	-	3	(ver.433E)
0408	-				
0409	total positive activ.energy (lo)	04	-	7A	
040A	" " " (mid)				
040B	" " " (hi)				
040C	total negative activ.energy (lo)	04	-	7A	
040D	" " " (mid)				
040E	" " " (hi)				
040F	total positive react.energy (lo)	04	-	7A	
0410	" " " (mid)				
0411	" " " (hi)				
0412	total negative react.energy (lo)	04	-	7A	
0413	" " " (mid)				
0414	" " " (hi)				
0415	tarif1 positive activ.energy (lo)	04	-	7A	
0416	" " " (mid)				
0417	" " " (hi)				
0418	tarif1 negative activ.energy (lo)	04	-	7A	
0419	" " " (mid)				
041A	" " " (hi)				
041B	tarif1 positive react.energy (lo)	04	-	7A	
041C	" " " (mid)				
041D	" " " (hi)				
041E	tarif1 negative react.energy (lo)	04	-	7A	

041F	"	"	"	(mid)			
0420	"	"	"	(hi)			
0421	tarif2	positive	activ.energy	(lo)	04	-	7A
0422	"	"	"	(mid)			
0423	"	"	"	(hi)			
0424	tarif2	negative	activ.energy	(lo)	04	-	7A
0425	"	"	"	(mid)			
0426	"	"	"	(hi)			
0427	tarif2	positive	react.energy	(lo)	04	-	7A
0428	"	"	"	(mid)			
0429	"	"	"	(hi)			
042A	tarif2	negative	react.energy	(lo)	04	-	7A
042B	"	"	"	(mid)			
042C	"	"	"	(hi)			
042D	tarif3	positive	activ.energy	(lo)	04	-	7A
042E	"	"	"	(mid)			
042F	"	"	"	(hi)			
0430	tarif3	negative	activ.energy	(lo)	04	-	7A
0431	"	"	"	(mid)			
0432	"	"	"	(hi)			
0433	tarif3	positive	react.energy	(lo)	04	-	7A
0434	"	"	"	(mid)			
0435	"	"	"	(hi)			
0436	tarif3	negative	react.energy	(lo)	04	-	7A
0437	"	"	"	(mid)			
0438	"	"	"	(hi)			
0439	tarif4	positive	activ.energy	(lo)	04	-	7A
043A	"	"	"	(mid)			
043B	"	"	"	(hi)			
043C	tarif4	negative	activ.energy	(lo)	04	-	7A
043D	"	"	"	(mid)			
043E	"	"	"	(hi)			
043F	tarif4	positive	react.energy	(lo)	04	-	7A
0440	"	"	"	(mid)			
0441	"	"	"	(hi)			
0442	tarif4	negative	react.energy	(lo)	04	-	7A
0443	"	"	"	(mid)			
0444	"	"	"	(hi)			
0445	input	counter1	(lo)		04	-	8
0446	"	"	(mid)				
0447	"	"	(hi)				
0448	input	counter2	(lo)		04	-	8
0449	"	"	(mid)				
044A	"	"	(hi)				
044B	activ	energy (absolute IP max)	(lo)		04	-	7B
044C			(mid)				
044D			(hi)				
044E	reactiv	energy(absolute IP max)	(lo)		04	-	7B
044F			(mid)				
0450			(hi)				
0451	activ	energy (last IP)	(lo)		04	-	7B
0452			(mid)				
0453			(hi)				
0454	reactiv	energy (last IP)	(lo)		04	-	7B
0455			(mid)				
0456			(hi)				

0600 0CD7

=====

Total Harmonics distorsion

reg.addr. (word)	description	modbus		data type
		RD cmd.	WR cmd.	

0500	voltage thd L1	04	-	9B
0501	current thd L1	04	-	9B
0502	voltage thd L2	04	-	9B
0503	current thd L2	04	-	9B
0504	voltage thd L3	04	-	9B
0505	current thd L3	04	-	9B

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Energy recorder
(note description for config.flags/energy recorder pointer ,reg.addr. 0)

reg.addr. (word)	description	modbus		data type
		RD cmd.	WR cmd.	
0600	activ.energy (lo)	04	-	7A
0601	" (mid)			
0602	" (hi)			
0603	react.energy (lo)	04	-	7A
0604	" (mid)			
0605	" (hi)			
.				
.				
.				
.				
.				
0966	activ.energy (lo)	04	-	7A
0967	" (mid)			
0968	" (hi)			
0969	react.energy (lo)	04	-	7A
096A	" (mid)			
096B	" (hi)			

===== Data types =====

1A config.flags/energy recorder pointer
(flags)

low byt:

bit 7	6	5	4	3	2	1	0
						0 - 0	- 500V range
						0 - 1	- 300V range
						1 - 0	- 150V range
						0	- two energy tariffs
						1	- four energy tariffs

high byt: (bits 8...15)

Energy recorder actually pointer (ERP)

FFh = no records

00h ... 91h = no.of last records

(real modbus reg.addr. for read = ERP * 6 + 600h)

(reg.addr.range = 0600h ... 0966h)

Description:

Energy (active and reactive in last IP) are stored in circular buffer on the end of every energy IP and use 6 words (first 3 are active and second 3 are reactive enr.). Calculated reg.addr. give address of last IP stored.
example: if reg_0(hi_byt) hold 22h last recordered energy are stored in reg_06cch ... 06d2h


```

note 4:  value= voltage[V] * 10240 /Uscale / VTF
          (voltage: 0 .... Urange*VTF)

note 5:  freq*100 ,min.freq=45Hz ,max.freq.=65Hz
          (range: 4500 .... 6500)

note 6:  power factor * 100
          (range: 0...100)

```

2. digital output threshold (for power demand mode)

```

value= 10485760 * power / PSQscale / PSQT
      (power: 0 .... Urange*VTF*5*CTF)      [W] or [VAr]
      !!! USE ONLY HI-WORD OF CALCULATED VALUED

```

```

2E      scales
(bin)

```

```

3      frequency (step 0.01 Hz)
(bin)      (real data = reg.value / 100)

```

```

4A      voltage = reg.data * Uscale / 1024 * VTF /10      [V]

```

```

4B      current = reg.data * Iscale / 1024 * CTF /1000      [A]
          ( note: CTF=curr.range/5)

```

```

5A      power = reg.data * PSQscale / 1048576 * PSQT /10      [W] [VA] [VAr]
(bin 2words)

```

```

5b      power (step 0.1 [W],[VA],[VAr])
(bin 2words)

```

```

6      low byt = Pf (real data = reg.value / 100)
          (if reg.value is FFh , Pf=undefined)

```

```

high byt = power attributes

```

bit 7	6	5	4	3	2	1	0
			P				Pf
if 1			0 - posit.				0 - inductive
Pf=1			1 - negat.				1 - capacitive
						Q	
		if 1				0 - negative	
		P=S=Q=0				1 - positive	
		(Pf=undefined)					

```

7A      energy (step 0.01 [kWh],[VArh])
(bin 3words)

```

msb word			lsb word		
msb	lsb
byt	byt	byt	byt	byt	byt
0			32 bit bin		
			mantisa		
multiplier					
(0...100)					

```

real data = mantisa + multiplier * 100000000

```


slave	04	no.of	lo	hi	lo	hi	lo	hi
addr.		bytes	data	reg.1	data	reg.n	crc	

command 06 preset holding register (max. 1 reg.)

MASTER:	byt	1.	2.	3.	4.	5.	6.	7.	8.
---------	-----	----	----	----	----	----	----	----	----

	slave	06	hi	lo	lo	hi	lo	hi
	addr.		reg.addr.		reg.data(wr)		crc	

SLAVE:	byt	1.	2.	3.	4.	5.	6.	7.	8.
--------	-----	----	----	----	----	----	----	----	----

	slave	06	hi	lo	lo	hi	lo	hi
	addr.		reg.addr.		reg.data(rd)		crc	
