

# **FCR05RS, FCR07RS, FCR06RS and FCR12RS**

**Modbus registers**

**FW version 6.0 and newer**

**Informative parameters**

DESCRIPTION	NAME	ADDRESS	TYPE
Number of outputs (6 or 12)	max_ch	20	16bit integer
Step flags 1	output 1	21	16bit integer
Step flags 2	output 2	22	16bit integer
Step flags 3	output 3	23	16bit integer
Step flags 4	output 4	24	16bit integer
Step flags 5	output 5	25	16bit integer
Step flags 6	output 6	26	16bit integer
Step flags 7	output 7	27	16bit integer
Step flags 8	output 8	28	16bit integer
Step flags 9	output 9	29	16bit integer
Step flags 10	output 10	30	16bit integer
Step flags 11	output 11	31	16bit integer
Step flags 12	output 12	32	16bit integer
De-compensation deceleration	SHtd	33	16bit integer
Ambient temperature	t_°C	34	16bit integer
Device firmware version	version	36	float

**Measured parameters**

DESCRIPTION	NAME	ADDRESS	TYPE
Instantaneous cosfi	CoSF	50	float
Average inductive cosfi at consumption	iCoS	52	float
Average capacitive cosfi at consumption	cCOs	54	float
Average inductive cosfi at supply	iCoS	56	float
Average capacitive cosfi at supply	cCOs	58	float
Apparent current	I_AP	60	float
Total harmonic distortion of current	tHdI	62	float
Current harmonics – 3	H03i	64	float
Current harmonics – 5	H05i	66	float
Current harmonics – 7	H07i	68	float
Current harmonics – 9	H09i	70	float
Current harmonics – 11	H11i	72	float
Current harmonics – 13	H13i	74	float
Current harmonics – 15	H15i	76	float
Current harmonics – 17	H17i	78	float
Current harmonics – 19	H19i	80	float
Effective voltage	U_EF	82	float
Total harmonic distortion of voltage	tHdU	84	float
Voltage harmonics – 3	H03u	86	float
Voltage harmonics – 5	H05u	88	float
Voltage harmonics – 7	H07u	90	float
Voltage harmonics – 9	H09u	92	float
Voltage harmonics – 11	H11u	94	float
Voltage harmonics – 13	H13u	96	float
Voltage harmonics – 15	H15u	98	float
Voltage harmonics – 17	H17u	100	float
Voltage harmonics – 19	H19u	102	float
Apparent power 3phase	P_AP	104	float
Active power 3phase	P_AC	106	float
Reactive power 3phase	P_rC	108	float
Allowed reactive power 3phase	rC_P	110	float
Operation number of step 1	C01s	112	float
Operation number of step 2	C02s	114	float
Operation number of step 3	C03s	116	float
Operation number of step 4	C04s	118	float
Operation number of step 5	C05s	120	float
Operation number of step 6	C06s	122	float
Operation number of step 7	C07s	124	float
Operation number of step 8	C08s	126	float
Operation number of step 9	C09s	128	float
Operation number of step 10	C10s	130	float
Operation number of step 11	C11s	132	float
Operation number of step 12	C12s	134	float
Connection time of step 1		136	float
Connection time of step 2		138	float
Connection time of step 3		140	float
Connection time of step 4		142	float

**Measured parameters**

DESCRIPTION	NAME	ADDRESS	TYPE
Connection time of step 5		144	float
Connection time of step 6		146	float
Connection time of step 7		148	float
Connection time of step 8		150	float
Connection time of step 9		152	float
Connection time of step 10		154	float
Connection time of step 11		156	float
Connection time of step 12		158	float
System frequency	U_Fr	160	float

**Maximum parameters**

DESCRIPTION	NAME	ADDRESS	TYPE
MAX current		162	float
MAX current THDI		164	float
MAX current 3 <sup>rd</sup> harmonic		166	float
MAX current 5 <sup>th</sup> harmonic		168	float
MAX current 7 <sup>th</sup> harmonic		170	float
MAX current 9 <sup>th</sup> harmonic		172	float
MAX current 11 <sup>th</sup> harmonic		174	float
MAX current 13 <sup>th</sup> harmonic		176	float
MAX current 15 <sup>th</sup> harmonic		178	float
MAX current 17 <sup>th</sup> harmonic		180	float
MAX current 19 <sup>th</sup> harmonic		182	float
MAX voltage		184	float
MAX voltage THDU		186	float
MAX voltage 3 <sup>rd</sup> harmonic		188	float
MAX voltage 5 <sup>th</sup> harmonic		190	float
MAX voltage 7 <sup>th</sup> harmonic		192	float
MAX voltage 9 <sup>th</sup> harmonic		194	float
MAX voltage 11 <sup>th</sup> harmonic		196	float
MAX voltage 13 <sup>th</sup> harmonic		198	float
MAX voltage 15 <sup>th</sup> harmonic		200	float
MAX voltage 17 <sup>th</sup> harmonic		202	float
MAX voltage 19 <sup>th</sup> harmonic		204	float
MAX three-phase apparent power		206	float
MAX three-phase active power		208	float
MAX three-phase reactive power		210	float
MIN three-phase reactive power		212	float
MAX frequency		214	float
MIN frequency		216	float
MAX ambient temperature		218	float

## Example request to FCR

Request to FCR [voltage]:

[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
1	41	0	82	0	2	133	212	

- [0] - ID RS485
- [1] - modbus function (supported function 41)
- [2] [3] - register address
- [4] [5] - number of registers
- [6] [7] - crc

Answer from FCR:

[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
1	41	4	67	101	224	34	54	113

- [0] - ID RS485
- [1] - modbus function
- [2] - number of returned bytes
- [3] [4] [5] [6] - float (4x bytes little endian: a[6], a+1[5], a+2[4], a+3[3] = 229.875519)
- [7] [8] - crc

CRC-16 table:

```
static const unsigned short crc16tab[] = /* CRC lookup table polynomial 0xA001 */
```

```
{
```

```
0x0000, 0xC0C1, 0xC181, 0x0140, 0xC301, 0x03C0, 0x0280, 0xC241, 0x0000, 0xC0C1, 0xC181, 0x0140,
0xC301, 0x03C0, 0x0280, 0xC241, 0xC601, 0x06C0, 0x0780, 0xC741, 0x0500, 0xC5C1, 0xC481, 0x0440,
0xC601, 0x06C0, 0x0780, 0xC741, 0x0500, 0xC5C1, 0xC481, 0x0440, 0xCC01, 0x0CC0, 0x0D80, 0xCD41,
0x0F00, 0xCFC1, 0xCE81, 0x0E40, 0xCC01, 0x0CC0, 0x0D80, 0xCD41, 0x0F00, 0xCFC1, 0xCE81, 0x0E40,
0x0A00, 0xCAC1, 0xCB81, 0x0B40, 0xC901, 0x09C0, 0x0880, 0xC841, 0x0A00, 0xCAC1, 0xCB81, 0x0B40,
0xC901, 0x09C0, 0x0880, 0xC841, 0xD801, 0x18C0, 0x1980, 0xD941, 0x1B00, 0xDB01, 0xDA81, 0x1A40,
0xD801, 0x18C0, 0x1980, 0xD941, 0x1B00, 0xDB01, 0xDA81, 0x1A40, 0x1E00, 0xDEC1, 0xDF81, 0x1F40,
0xDD01, 0x1DC0, 0x1C80, 0xDC41, 0x1E00, 0xDEC1, 0xDF81, 0x1F40, 0xDD01, 0x1DC0, 0x1C80, 0xDC41,
0x1400, 0xD4C1, 0xD581, 0x1540, 0xD701, 0x17C0, 0xD641, 0x1400, 0xD4C1, 0xD581, 0x1540,
0xD701, 0x17C0, 0x1680, 0xD641, 0xD201, 0x12C0, 0x1380, 0xD341, 0x1100, 0xD1C1, 0xD081, 0x1040,
0xD201, 0x12C0, 0x1380, 0xD341, 0x1100, 0xD1C1, 0xD081, 0x1040, 0xF001, 0x30C0, 0x3180, 0xF141,
0x3300, 0xF3C1, 0xF281, 0x3240, 0xF001, 0x30C0, 0x3180, 0xF141, 0x3300, 0xF3C1, 0xF281, 0x3240,
0x3600, 0xF6C1, 0xF781, 0x3740, 0xF501, 0x35C0, 0x3480, 0xF441, 0x3600, 0xF6C1, 0xF781, 0x3740,
0xF501, 0x35C0, 0x3480, 0xF441, 0x3C00, 0xFCC1, 0xFD81, 0x3D40, 0xFF01, 0x3FC0, 0x3E80, 0xFE41,
0x3C00, 0xFCC1, 0xFD81, 0x3D40, 0xFF01, 0x3FC0, 0x3E80, 0xFE41, 0xFA01, 0x3AC0, 0x3B80, 0xFB41,
0x3900, 0xF9C1, 0xF881, 0x3840, 0xFA01, 0x3AC0, 0x3B80, 0xFB41, 0x3900, 0xF9C1, 0xF881, 0x3840,
0x2800, 0xE8C1, 0xE981, 0x2940, 0xEB01, 0x2BC0, 0x2A80, 0xEA41, 0x2800, 0xE8C1, 0xE981, 0x2940,
0xEB01, 0x2BC0, 0x2A80, 0xEA41, 0xEE01, 0x2EC0, 0x2F80, 0xEF41, 0x2D00, 0xEDC1, 0xEC81, 0x2C40,
0xEE01, 0x2EC0, 0x2F80, 0xEF41, 0x2D00, 0xEDC1, 0xEC81, 0x2C40, 0xE401, 0x24C0, 0x2580, 0xE541,
0x2700, 0xE7C1, 0xE681, 0x2640, 0xE401, 0x24C0, 0x2580, 0xE541, 0x2700, 0xE7C1, 0xE681, 0x2640,
0x2200, 0xE2C1, 0xE381, 0x2340, 0xE101, 0x21C0, 0x2080, 0xE041, 0x2200, 0xE2C1, 0xE381, 0x2340,
0xE101, 0x21C0, 0x2080, 0xE041, 0xA001, 0x60C0, 0x6180, 0xA141, 0x6300, 0xA3C1, 0xA281, 0x6240,
0xA001, 0x60C0, 0x6180, 0xA141, 0x6300, 0xA3C1, 0xA281, 0x6240, 0x6600, 0xA6C1, 0xA781, 0x6740,
0xA501, 0x65C0, 0x6480, 0xA441, 0x6600, 0xA6C1, 0xA781, 0x6740, 0xA501, 0x65C0, 0x6480, 0xA441,
0x6C00, 0xACC1, 0xAD81, 0x6D40, 0xAF01, 0x6FC0, 0x6E80, 0xAE41, 0x6C00, 0xACC1, 0xAD81, 0x6D40,
0xAF01, 0x6FC0, 0x6E80, 0xAE41, 0xAA01, 0x6AC0, 0x6B80, 0xAB41, 0x6900, 0xA9C1, 0xA881, 0x6840,
0xAA01, 0x6AC0, 0x6B80, 0xAB41, 0x6900, 0xA9C1, 0xA881, 0x6840, 0x7800, 0xB8C1, 0xB981, 0x7940,
0xBB01, 0x7BC0, 0x7A80, 0xBA41, 0x7800, 0xB8C1, 0xB981, 0x7940, 0xBB01, 0x7BC0, 0x7A80, 0xBA41,
0xBE01, 0x7EC0, 0x7F80, 0xBF41, 0x7D00, 0xBDC1, 0xBC81, 0x7C40, 0xBE01, 0x7EC0, 0x7F80, 0xBF41,
0x7D00, 0xBDC1, 0xBC81, 0x7C40, 0xB401, 0x74C0, 0x7580, 0xB541, 0x7700, 0xB7C1, 0xB681, 0x7640,
0xB401, 0x74C0, 0x7580, 0xB541, 0x7700, 0xB7C1, 0xB681, 0x7640, 0x7200, 0xB2C1, 0xB381, 0x7340,
0xB101, 0x71C0, 0x7080, 0xB041, 0x7200, 0xB2C1, 0xB381, 0x7340, 0xB101, 0x71C0, 0x7080, 0xB041,
0x5000, 0x90C1, 0x9181, 0x5140, 0x9301, 0x53C0, 0x5280, 0x9241, 0x5000, 0x90C1, 0x9181, 0x5140,
0x9301, 0x53C0, 0x5280, 0x9241, 0x9601, 0x56C0, 0x5780, 0x9741, 0x5500, 0x95C1, 0x9481, 0x5440,
0x9601, 0x56C0, 0x5780, 0x9741, 0x5500, 0x95C1, 0x9481, 0x5440, 0x9C01, 0x5CC0, 0x5D80, 0x9D41,
0x5F00, 0x9FC1, 0x9E81, 0x5E40, 0x9C01, 0x5CC0, 0x5D80, 0x9D41, 0x5F00, 0x9FC1, 0x9E81, 0x5E40,
0x5A00, 0x9AC1, 0x9B81, 0x5B40, 0x9901, 0x59C0, 0x5880, 0x9841, 0x5A00, 0x9AC1, 0x9B81, 0x5B40,
0x9901, 0x59C0, 0x5880, 0x9841, 0x8801, 0x48C0, 0x4980, 0x8941, 0x4B00, 0x4BC1, 0x4A81, 0x4A40,
0x8801, 0x48C0, 0x4980, 0x8941, 0x4B00, 0x4BC1, 0x4A81, 0x4A40, 0x4E00, 0x4EC1, 0x4F81, 0x4F40,
0x8D01, 0x4DC0, 0x4C80, 0x4C41, 0x4E00, 0x4EC1, 0x4F81, 0x4F40, 0x8D01, 0x4DC0, 0x4C80, 0x4C41,
0x4400, 0x84C1, 0x8581, 0x4540, 0x8701, 0x47C0, 0x4680, 0x8641, 0x4400, 0x84C1, 0x8581, 0x4540,
0x8701, 0x47C0, 0x4680, 0x8641, 0x8201, 0x42C0, 0x4380, 0x8341, 0x4100, 0x81C1, 0x8081, 0x4040,
0x8201, 0x42C0, 0x4380, 0x8341, 0x4100, 0x81C1, 0x8081, 0x4040
```

```
};
```

