

MODBUS Address-table MMI7000 – V4.0
Function code 3 (Register 3000)

Address			Register name	Info / Range of values														
DEC	HEX	H/L																
2996	0B B4	W	L1	Unsigned 16bit integer. Valid values: 0..1000. Unit ‰ $\frac{I_{MAX}}{I_{eff}} \cdot 1000$ (per measuring interval of 1s)														
2997	0B B5	W	L2 Current difference															
2998	0B B6	W	L3															
2999	0B B7	W	Record interval	Unsigned 16bit integer. Valid values 0, 1, 10, 60, 900 . Unit sec 0= Stopped, > 0 recording interval in sec														
3000	0B B8	H	Software version	Divide by 10 to get software version. exp: 10 = V1.0														
		L	Device type		70 = MC7000 / BR7000													
3001	0B B9	W	Power-Scaling-Factor (PSF)	Multiplier for values of address 3002 .. 3017 Valid values: 1, 10, 100, 1000														
3002	0B BA	W	L1	Unsigned 16bit integer. Unit var Exp.: 1000 * PSF = 10000var (If PSF = 10)														
3003	0B BB	W	L2 Reactive power															
3004	0B BC	W	L3															
3005	0B BD	W	SUM															
3006	0B BE	W	L1															
3007	0B BF	W	L2 Active power	Signed 16bit integer. Unit W Exp.: 1000 * PSF = 10000W (If PSF = 10) Negative values: supply (4-quadrant-mode)														
3008	0B C0	W	L3															
3009	0B C1	W	SUM															
3010	0B C2	W	L1															
3011	0B C3	W	L2 Apparent power	Unsigned 16bit integer. Unit VA Exp.: 1000 * PSF = 10000VA (If PSF = 10)														
3012	0B C4	W	L3															
3013	0B C5	W	SUM															
3014	0B C6	W	L1															
3015	0B C7	W	L2 Differential reactive power	Unsigned 16bit integer. Unit var Exp.: 1000 * PSF = 10000var (If PSF = 10)														
3016	0B C8	W	L3															
3017	0B C9	W	SUM															
3018	0B CA	W	L1	Unsigned 16bit integer. Unit V Exp.: 230 = 230V														
3019	0B CB	W	L2 Measuring voltage															
3020	0B CC	W	L3															
3021	0B CD	W	L1	Unsigned 16bit integer. Unit A Exp.: 1000 = 1000A														
3022	0B CE	W	L2 Measuring current															
3023	0B CF	W	L3															
3024	0B D0	W	L1	signed 16bit integer. Unit 1. Examples: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">Value</th> <th rowspan="2">Value of powerfactor / Cos-phi</th> </tr> <tr> <th>Hex</th> <th>Decimal</th> </tr> </thead> <tbody> <tr> <td>0h0320</td> <td>800</td> <td>0.800 ind</td> </tr> <tr> <td>0h03E8</td> <td>1000</td> <td>1.000</td> </tr> <tr> <td>0hFCE0</td> <td>-800</td> <td>0.800 cap</td> </tr> </tbody> </table> Valid decimal range -999 .. 0 .. 1000	Value		Value of powerfactor / Cos-phi	Hex	Decimal	0h0320	800	0.800 ind	0h03E8	1000	1.000	0hFCE0	-800	0.800 cap
Value		Value of powerfactor / Cos-phi																
Hex	Decimal																	
0h0320	800	0.800 ind																
0h03E8	1000	1.000																
0hFCE0	-800	0.800 cap																
3025	0B D1	W	L2 Powerfactor															
3026	0B D2	W	L3 Cos-phi															
3027	0B D3	W	SUM															

3028	0B D4	L	L1	Unsigned 8bit byte. Unit Hz Exp: 50 = 50Hz																											
3029	0B D5	L	L2 Frequency																												
3030	0B D6	L	L3																												
3031	0B D7	W	Temperature in °C	signed 16bit integer. Unit °C. Examples: <table border="1"> <thead> <tr> <th>Hex value</th> <th>Temp.</th> <th>Hex value</th> <th>Temp.</th> </tr> </thead> <tbody> <tr> <td>0h000A</td> <td>10°C</td> <td>0hFFFF</td> <td>-1°C</td> </tr> <tr> <td>0h0001</td> <td>1°C</td> <td>0hFFF6</td> <td>-10°C</td> </tr> </tbody> </table>	Hex value	Temp.	Hex value	Temp.	0h000A	10°C	0hFFFF	-1°C	0h0001	1°C	0hFFF6	-10°C															
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3032	0B D8																														
3033	0B D9																														
3034	0B DA																														
3035	0B DB	L	Output relays	<table border="1"> <thead> <tr> <th>Bit</th> <th>7</th> <th>6</th> <th>5</th> <th>4</th> <th>3</th> <th>2</th> <th>1</th> <th>0</th> </tr> </thead> <tbody> <tr> <td>Stage</td> <td>-</td> <td>-</td> <td>-</td> <td>4</td> <td>3</td> <td>2</td> <td>1</td> <td>-</td> </tr> </tbody> </table> 0 = Relay off / 1 = Relay on	Bit	7	6	5	4	3	2	1	0	Stage	-	-	-	4	3	2	1	-									
Bit	7	6	5	4	3	2	1	0																							
Stage	-	-	-	4	3	2	1	-																							
3036	0B DC																														
3037	0B DD	H L	L2 Error L1	<table border="1"> <thead> <tr> <th>Decimal value</th> <th>Bit</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0</td> <td>No measuring voltage</td> </tr> <tr> <td>2</td> <td>1</td> <td>Over voltage</td> </tr> <tr> <td>4</td> <td>2</td> <td></td> </tr> <tr> <td>8</td> <td>3</td> <td></td> </tr> <tr> <td>16</td> <td>4</td> <td></td> </tr> <tr> <td>32</td> <td>5</td> <td></td> </tr> <tr> <td>64</td> <td>6</td> <td>Over current</td> </tr> <tr> <td>128</td> <td>7</td> <td>Under voltage</td> </tr> </tbody> </table>	Decimal value	Bit	Description	1	0	No measuring voltage	2	1	Over voltage	4	2		8	3		16	4		32	5		64	6	Over current	128	7	Under voltage
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3038	0B DE	H L	SUM Error L3																												
3039	0B DF																														
3040	0B E0																														
3041	0B E1																														
3042	0B E2																														
3043	0B E3	H L	Internal Clock - Minute Internal Clock - Second	Unsigned 8bit byte. Valid values: 1 .. 59 – Unit min Unsigned 8bit byte. Valid values: 1 .. 59 – Unit sec																											
3044	0B E4	H L	Intern. Calendar - Day Internal Clock - Hour	Unsigned 8bit byte. Valid values: 1 .. 31 – Unit d Unsigned 8bit byte. Valid values: 0 .. 24 – Unit hr																											
3045	0B E5	H L	Intern. Calendar - Year Intern. Calendar - Month	Unsigned 8bit byte. Valid values: 00 .. 99 – Unit yr Add 2000 to get real Year. exp: 10 = 2010 Unsigned 8bit byte. Valid values: 1 .. 12 – Unit mm																											
3046	0B E6	W	Last pressed key -1-	<table border="1"> <thead> <tr> <th>Value</th> <th>Key</th> </tr> </thead> <tbody> <tr> <td>1234</td> <td>AUTO</td> </tr> <tr> <td>2345</td> <td>ENTER</td> </tr> <tr> <td>3456</td> <td>HELP</td> </tr> <tr> <td>4567</td> <td>ESC</td> </tr> </tbody> </table>	Value	Key	1234	AUTO	2345	ENTER	3456	HELP	4567	ESC																	
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3047	0B E7	L	Last pressed key -2-	<table border="1"> <thead> <tr> <th>Value</th> <th>Key</th> </tr> </thead> <tbody> <tr> <td>Reg.Value +1</td> <td>PLUS</td> </tr> <tr> <td>Reg.Value -1</td> <td>MINUS</td> </tr> </tbody> </table>	Value	Key	Reg.Value +1	PLUS	Reg.Value -1	MINUS																					
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3048	0B E8	L	Test state	<table border="1"> <thead> <tr> <th>Bit</th> <th>Taste</th> </tr> </thead> <tbody> <tr> <td>6</td> <td>After manual-calibration</td> </tr> <tr> <td>7</td> <td>After calibration at test stand</td> </tr> </tbody> </table> <p>Register value 0 = main-reset executed</p>	Bit	Taste	6	After manual-calibration	7	After calibration at test stand				
Bit	Taste													
6	After manual-calibration													
7	After calibration at test stand													
3073.. 3087	0C 01 0C 0F	W	L1 Voltage	Unsigned 16bit integer * 0.1 . Unit % Exp.: 100 * 0.1 = 10.0%										
3088.. 3102	0C 10 0C 1E	W	L2 3 rd .. 31 st											
3103.. 3117	0C 1F 0C 2D	W	L3 Harmonics											
3118.. 3132	0C 2E 0C 3C	W	L1 Current											
3133.. 3147	0C 3D 0C 4B	W	L2 3 rd .. 31 st	Unsigned 16bit integer * 0.1 . Unit % Exp.: 100 * 0.1 = 10.0%										
3148.. 3162	0C 4C 0C 5A	W	L3 Harmonics											
3163	0C 5B	W	L1											
3164	0C 5C	W	L2 Voltage THD	Unsigned 16bit integer * 0.1 . Unit % Exp.: 100 * 0.1 = 10.0%										
3165	0C 5D	W	L3											
3166	0C 5E	W	L1	Unsigned 16bit integer * 0.1 . Unit % Exp.: 100 * 0.1 = 10.0%										
3167	0C 5F	W	L2 Current THD											
3168	0C 60	W	L3											
3169.. 3213	0C 61 0C 8D		Controller Settings											
3214	0C 8E	L	Start-up picture	<table border="1"> <thead> <tr> <th>Value</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>EPC</td> </tr> <tr> <td>1</td> <td>EBE</td> </tr> <tr> <td>2</td> <td>MDL</td> </tr> <tr> <td>3</td> <td>ESK</td> </tr> </tbody> </table>	Value	Name	0	EPC	1	EBE	2	MDL	3	ESK
Value	Name													
0	EPC													
1	EBE													
2	MDL													
3	ESK													
3215.. 3217	0C 8F 0C 91													
3218	0C 92	W	Number of Harmonics	Unsigned 16bit integer * 2 + 1 . Unit 1 Exp.: 7 * 2 + 1 = 15 → Measuring 3..15 Harmonic										
3219.. 3226	0C 93 0C 9A													
3226	0C 9A	WW	L1 Timestamp	<table border="1"> <thead> <tr> <th>Bit</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0 .. 16</td> <td>Time in seconds per Day (0 .. 86399)</td> </tr> <tr> <td>17 .. 21</td> <td>Day</td> </tr> <tr> <td>22 .. 25</td> <td>Month</td> </tr> <tr> <td>26 .. 31</td> <td>Year + 2000 (Exp: 10 → 2010)</td> </tr> </tbody> </table>	Bit	Description	0 .. 16	Time in seconds per Day (0 .. 86399)	17 .. 21	Day	22 .. 25	Month	26 .. 31	Year + 2000 (Exp: 10 → 2010)
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0 .. 16	Time in seconds per Day (0 .. 86399)													
17 .. 21	Day													
22 .. 25	Month													
26 .. 31	Year + 2000 (Exp: 10 → 2010)													
3228	0C 9C	WW	L2 Maximum											
3230	0C 9E	WW	L3 Voltage											
3232	0C A0	WW	L1 Timestamp											
3234	0C A2	WW	L2 Maximum											
3236	0C A4	WW	L3 Current											
3238	0C A6	WW	L1 Timestamp											
3240	0C A8	WW	L2 Maximum											
3242	0C AA	WW	L3 Reactive power											
3244	0C AC	WW	L1 Timestamp											
3246	0C AE	WW	L2 Maximum											
3248	0C B0	WW	L3 Active power											

3299	0C	E3	W	L1		
3300	0C	E4	W	L2	Maximum Voltage THD	Unsigned 16bit integer * 0.1 . Unit % Exp.: 100 * 0.1 = 10.0%
3301	0C	E5	W	L3		
3302	0C	E6	W	L1		
3303	0C	E7	W	L2	Maximum Current THD	Unsigned 16bit integer * 0.1 . Unit % Exp.: 100 * 0.1 = 10.0%
3304	0C	E8	W	L3		
3305	0C	E9	WW	IND	Reactive Energy	Unsigned 32bit long. Unit kvarh Exp.: 100 = 100kvarh
3307	0C	EB	WW	CAP		
3309	0C	ED	WW	+	Energy	Unsigned 32bit long. Unit kWh Exp.: 100 = 100kWh
3311	0C	EF	WW	-		
3841..	0F	01	W	L1	Voltage	Unsigned 16bit integer * 0.1 . Unit % Exp.: 100 * 0.1 = 10.0%
3850	0F	0A	W	L2		
3851..	0F	0B	W	L2	33 rd .. 51 st Harmonics	
3860	0F	14	W	L2		
3861	0F	15	W	L3		
3870	0F	1E	W	L3		
3871..	0F	1F	W	L1	Current	
3880	0F	28	W	L1		
3881..	0F	29	W	L2	33 rd .. 51 st Harmonics	
3890	0F	32	W	L2		
3891	0F	33	W	L3		
3900	0F	3C	W	L3		

Function code 3 (Register 6000)

Address			Register name	Info / Range of values
DEC	HEX	H/L		
6021	17 85	WW	+	Unsigned 32bit long. Unit kvarh Exp.: 100 = 100kvarh Unsigned 32bit long. Unit kWh Exp.: 100 = 100kWh
6023	17 87	WW	- Energy	
6025	17 89	WW	IND	
6027	17 8B	WW	CAP	
6029	17 8D	WW	+	Unsigned 32bit long. Unit vars Exp.: 100 = 100vars Unsigned 32bit long. Unit Ws Exp.: 100 = 100Ws
6031	17 8F	WW	- Rest Energy	
6033	17 91	WW	IND	
6035	17 93	WW	CAP	

Function code 3 (Register 8000)

Address			Register name	Info / Range of values
DEC	HEX	H/L		
8000	1F 40	WW	L1	32bit single Unit var
8002	1F 42	WW	L2 Reactive power (floating point)	
8004	1F 44	WW	L3	
8006	1F 46	WW	L1	32bit single Unit W
8008	1F 48	WW	L2 Active power (floating point)	
8010	1F 4A	WW	L3	
8012	1F 4C	WW	L1	32bit single Unit VA
8014	1F 4E	WW	L2 Apparent power (floating point)	
8016	1F 50	WW	L3	
8018	1F 52	WW	L1	32bit single Unit V
8020	1F 54	WW	L2 Voltage (floating point)	
8022	1F 56	WW	L3	
8024	1F 58	WW	L1	32bit single Unit A
8026	1F 5A	WW	L2 Current (floating point)	
8028	1F 5C	WW	L3	
8030	1F 5E	WW	L1 Powerfactor	32bit single Unit 1 Range: 0... 1, positive values → ind, negative values → cap
8032	1F 60	WW	L2 Cos-phi (floating point)	
8034	1F 62	WW	L3	
8036	1F 64	WW	SUM Cos phi (float)	32bit single, Unit 1, Range: 0...1, pos. → ind, neg. → cap
8038	1F 66	WW	SUM Reactive pwr (float)	32bit single, Unit var
8040	1F 68	WW	SUM Active pwr (float)	32bit single, Unit W
8042	1F 6A	WW	SUM Apparent pwr (float)	32bit single, Unit VA

Controller settings (read / write)

Address	Register name	Description / Range of values / Examples			
101	Language	0= German, 1= English, 2= Spanish, 3= Turkish, 4= Russian			
102	L1	<u>Valid values</u>	<u>Start</u>	<u>End</u>	<u>Step width</u>
		1 .. 50	5A	250A	5A
103	L2 Primary current converter	51 .. 175	260A	1.5kA	10A
		176 .. 185	1.55kA	2kA	50A
104	L3	186 .. 245	2.1kA	8kA	100A
		246 .. 255	8.5kA	13kA	500A
105	Secondary current conv.	Valid values: 0 = 1A / 1 = 5A			
106	Measuring voltage L-L	Byte, valid range: 10 .. 152 - Unit 5V Range: 50V .. 760V E.g.: Byte * 5V = Measuring voltage → 100 * 5V = 500V			
		<u>Valid values</u>	<u>Start</u>	<u>End</u>	<u>Step width</u>
		0	not used		
		1 .. 59	410	1kV	10V
		60 .. 189	1.1kV	14kV	100V
		190 .. 252	15kV	79kV	1000V
		253	110kV		
		254	220kV		
		255	380kV		
107	Voltage converter				
108	Frequency	0= 40..90Hz; 1= 50Hz; 2= 60Hz; 3= 16,7Hz; 4= 10..60Hz			
109	Measured Harmonics	0: 3. 5. 7 ... 33 Order 1: 3. 5. 7 ... 51 Order 2: 2. 3. 4. ... 26 Order			
110	Clock: Hours	1 ... 24h			
111	Clock: Minutes	0 ... 59min			
112	Calendar: Day	0 ... 31			
113	Calendar: Month	1 ... 12			
114	Calendar; Year	16 ... 99 →2016 ... 2099			

Address	Register name	Description / Range of values / Examples				
121	Function					
122	Trigger Level On	K1	<u>Byte</u>	<u>Function</u>	<u>Byte</u>	<u>Function</u>
123	Trigger Level Off		0	OFF	25	Active power L1
124	Delay		1	Voltage L1-N	26	Active power L2
125	Function		2	Voltage L2-N	27	Active power L3
126	Trigger Level On	K2	3	Voltage L3-N	28	Active power Sum
127	Trigger Level Off		4	Volt. L1 L2 L3	29	Act. L1 L2 L3
128	Delay		5	Volt. L1 & L2 & L3	30	Act. L1 & L2 & L3
129	Function		6	Volt. asymmetrical	31	Apparent power L1
130	Trigger Level On	K3	7	Current L1	32	Apparent power L2
131	Trigger Level Off		8	Current L2	33	Apparent power L3
132	Delay		9	Current L3	34	Apparent power Sum
133	Function		10	Cur. L1 L2 L3	35	App. L1 L2 L3
134	Trigger Level On	K4	11	Cur. L1 & L2 & L3	36	App. L1 & L2 & L3
135	Trigger Level Off		12	Cur. asymmetrical	37	THD-V L1
136	Delay		13	cos phi L1	38	THD-V L2
			14	cos phi L2	39	THD-V L3
			15	cos phi L3	40	THD-V L1 L2 L3
			16	cos phi Sum	41	THD-I L1
			17	cos phi L1 L2 L3	42	THD-I L2
			18	cos phi L1 & L2 & L3	43	THD-I L3
			19	Reactive power L1	44	THD-I L1 L2 L3
			20	Reactive power L2	45	ON
			21	Reactive power L3	46	Modbus
			22	Reactive power Sum	47	Temperature 1
			23	Reac. L1 L2 L3	48	Temperature 2
			24	Reac. L1 & L2 & L3	49	Temperature 3
					50	Temperature 4

Trigger ON / OFF:
Byte, valid range: 0..200, Unit: 0.5%, +/-1% of max. value

Delay:
Byte, valid range: 1..255, Unit: 1sec, E.g.: Byte = 10 → 10 sec

History

V1.0

- Initial Version

V1.1

- Update read-register 3177... 3182

- Update write-register 105...1110

V1.2

- Add new register range (8000) with floating point numbers

V1.3

- Add new register range (6000) with Energy in kW/Kvar and ws/vars

V4.0

- Adapt write registers to MMI7000 V4. Documentation is valid for MMI7000 V4 only!