

Megacon KCM16x/KPM16x AC and DC insulation guards

Modbus protocol

Details of function 03- Read-holding registers (16b). Main part:

2.9.2024

Register Hex	Reg. Decimal	Description	Value
0x000 and 0x001	0 and 1	Measurement, real Ohm value, signed Int32 (lsb/msb). Format specified in instrument type in table 1.	* Table 1
0x002	2	Status register 1: B0-B7: Measurement trip statuses, B8-15: Modes. Status reg. 1, Lsb B0: 1 = Measurement active (0 = start-up delay counting or disable) B1: 1 = Warning trip timed out B2: 1 = Alarm trip timed out B3: 1 = Negative measurement (only apply DC earth fault) B4: 1 = Missing or swapped DC voltage on target (only apply DC earth fault) B5: 1 = Missing (external) shunt trip (if apply) B6: 1 = DC protection function active (if apply) B7: - Status reg. 1, Msb B8: - B9: - B10: - B11: 1 = Digital input state (1 = Closed) B12: Relay 1 active (1 = Relay engaged, if failsafe, relay disengaged) B13: Relay 2 active (1 = Relay engaged, if failsafe, relay disengaged) B14: Relay 3 active (1 = Relay engaged, if failsafe, relay disengaged) B15: 1 = Testmode active (outputs controlled by test program)	
0x003	3	B0-B7, B8-15: Error/Event reg. Clear-able by user: Event reg. 1, Lsb (all latching alarm flags, auto-clear) B0: 1 = Alarm: ISO ADC fail, 2 sec. (1 = measurement stopped !) B1: 1 = Alarm: Temperature sensor fault, 2 sec. (not critical) B2: 1 = Alarm: I/O chip fault (LEDs and/or dig. I/O, 2 sec. (not critical) B3: - B4: - B5: - B6: - B7: - Event reg. 1, Msb (all latching alarm flags, user clear) B8: 1 = External (hardware) reset flag B9: 1 = Burn-out reset flag (low controller voltage) B10: 1 = Watch-dog reset flag (Will be set when engaging boot-loader) B11: - B12: - B13: - B14: - B15: -	
0x004	4	Current loop output, x1000 (0 to 20000, 0.000mA to 20.000mA)	0-20000
0x005	5	Systems temperature sensor, range -55 to +125°C/±0.5°C	-55 to +125
0x006	6	Target DC voltage (KxM169 DC insulation guards only), 0.1V/DIV	0-32000
0x007	7	System power, main DC, min. 8VDC, Max., 0.1V/DIV. On AC powered unit this is rectified output of transformer, on DC powered unit, this is output of DC/DC, 12V or 15V	0-500
0x008 and 0x009	8 and 9	Warning trip, potmeter set, Ohm-value, Int32 (Format as reg. 0/1, table 1)	* Table 1
0x00A	10	Warning trip delay, potmeter set, sec. x10.	0-300
0x00B and 0x00C	11 and 12	Alarm trip, potmeter set, Ohm-value, Int32 (Format as reg. 0/1, table 1)	* Table 1
0x00D	13	Alarm trip delay, potmeter set, sec. x10.	0-300

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Details of function 03- Read-holding registers, continue:

Register Hex	Reg. Decimal	Description	Value
0x00E	14	Programmed start-up delay (0 to 250 seconds) (Green LED flash) Writeable : User can change value with function 6	0-250
0x00F	15	Baud Rate, all formats 1 stop bit, no parity : 0 = Auto 1 = 9600 bps 2 = 19200 bps 3 = 38400 bps (All KCM169 and KPM169 only have this Baud Rate) 4 = 56700 bps 5= 115200 bps	0-5
0x010	16	Node Address, default = 1 (1 to 250) Writeable : User can change value with function 6.	1-250

Details of function 03- Read-holding registers, Instrument information :

Register Hex	Reg. Decimal	Description	Value
0x100 to 0x10F	256-271, 16 reg.	Instrument Model, string UTF-8	String, 16 chars
0x110 to 0x117	272-279, 8 reg.	Serial number, string UTF-8	String, 8 chars
0x118 to 0x127	280-295, 16 reg.	Firmware version, string UTF-8	String, 16 chars

Details of Function 6: **Write** Single Registers, 16 bits:

Register Hex	Reg. Decimal	Description	Value
0x003	3	Writing any value will clear latched fault flags, Reg. 7, bit 8-15 Note that DC protection lock will be cleared and unit try to measure ISO value again.	Any
0x00E	14	Write new start-up delay (0 to 250 seconds)	0-250
0x00F	15	Write selected Baud Rate. (Not available in KCM169 and KPM169 that have fixed baud rate 3, 38400)	0-5
0x010	16	Node Address, default = 1 (1 to 250) Warning : Never change node to a node number that already existing on Modbus.	1-250

Note that function 6: Write Single Registers only have a few registers in protocol that can be written to. These registers numbers correspond to function 03- Read-holding registers numbers.

Writing (or reading) any other register than in this description will result in Modbus standard error message.

Details on using Modbus can be found on this site : <http://www.modbus.org/>
Select "Technical Resources" to download Modbus specification.

Table 1:

Instrument Model	Instrument description	Ranges	Unit/range/resolution	Format
KCM169 KPM169	DC insulation guard, 9-60VDC, Measures up to 65VDC.	0..±33kOhm 0..±110kOhm 0..±1.1MOhm	Ohm 0..±5.000.000 0.1k	Int32 (lsb/msb) signed
KCM169x KPM169x	DC insulation guard, 9-60VDC, Measures up to 65VDC.	0..±33kOhm 0..±110kOhm	Ohm 0..±33.000 0..±110.000 0.1k	Int32 (lsb/msb) signed
KCM169x2x KPM169x2x	DC insulation guard, 60-200VDC (+5%) with RH-2	0..±5MOhm ±10k..±30MOhm	Ohm ±10.000-±5.000.000 ±10.000-±30.000.000 0.1k	Int32 (lsb/msb) signed
KCM169x4x KPM169x4x	DC insulation guard, 200-400VDC (+5%) with RH-4	0..±5MOhm ±10k..±30MOhm	Ohm ±10.000-±5.000.000 ±10.000-±30.000.000 0.1k	Int32 (lsb/msb) signed
KCM169x8x KPM169x8x	DC insulation guard, 400-800VDC (+5%) with RH-8	0..±5MOhm ±10k..±30MOhm	Ohm ±10.000-±5.000.000 ±10.000-±30.000.000 0.1k	Int32 (lsb/msb) signed
KCM169x12x KPM169x12x	DC insulation guard, 800-1200VDC (+5%) with RH-12	0..±5MOhm ±10k..±30MOhm	Ohm ±10.000-±5.000.000 ±10.000-±30.000.000 0.1k	Int32 (lsb/msb) signed
KCM169x16x KPM169x16x	DC insulation guard, 1200-1600VDC (+5%) with RH-16	0..±5MOhm ±10k..±30MOhm	Ohm ±10.000-±5.000.000 ±10.000-±30.000.000 0.1k	Int32 (lsb/msb) signed.
KCM161x KPM161x	AC insulation guard, multiple AC voltage adapters as option	0-10MOhm	Ohm 0-10.000.000 1k	Int32 (lsb/msb)
KCM261x KPM261x	AC insulation guard with 80 MOhm loop detector resistor. Multiple AC voltage adapters as option	0-10MOhm	Ohm 0-10.000.000 1k	Int32 (lsb/msb)
KCM163x KPM163x	AC insulation guard, multiple AC voltage adapters as option	0-100MOhm	Ohm 0-100.000.000 1k	Int32 (lsb/msb)
KCM263x KPM263x	AC insulation guard with 80 MOhm loop detector resistor. Multiple AC voltage adapters as option	0-100MOhm	Ohm 0-100.000.000 1k	Int32 (lsb/msb)
KCM165Hx KPM165Hx	AC insulation guard, multiple AC voltage adapters as option	10k-500MOhm	kOhm 10.000- 500.000.000 1k*	Int32 (lsb/msb)
KCM165Gx KPM165Gx KCM165Lx KPM165Lx	AC insulation guard, multiple AC voltage adapters as option	500k-5GOhm	kOhm 500.000- 5.000.000.000 1k*	Int32 (lsb/msb)
KCM165Ex KPM165Ex KCM165Fx KPM165Fx KCM165Nx KPM165Nx	AC insulation guard, multiple AC voltage adapters as option	15M-10GOhm	kOhm/ 15.000.000- 10.000.000.000 1k*	Int32 (lsb/msb)