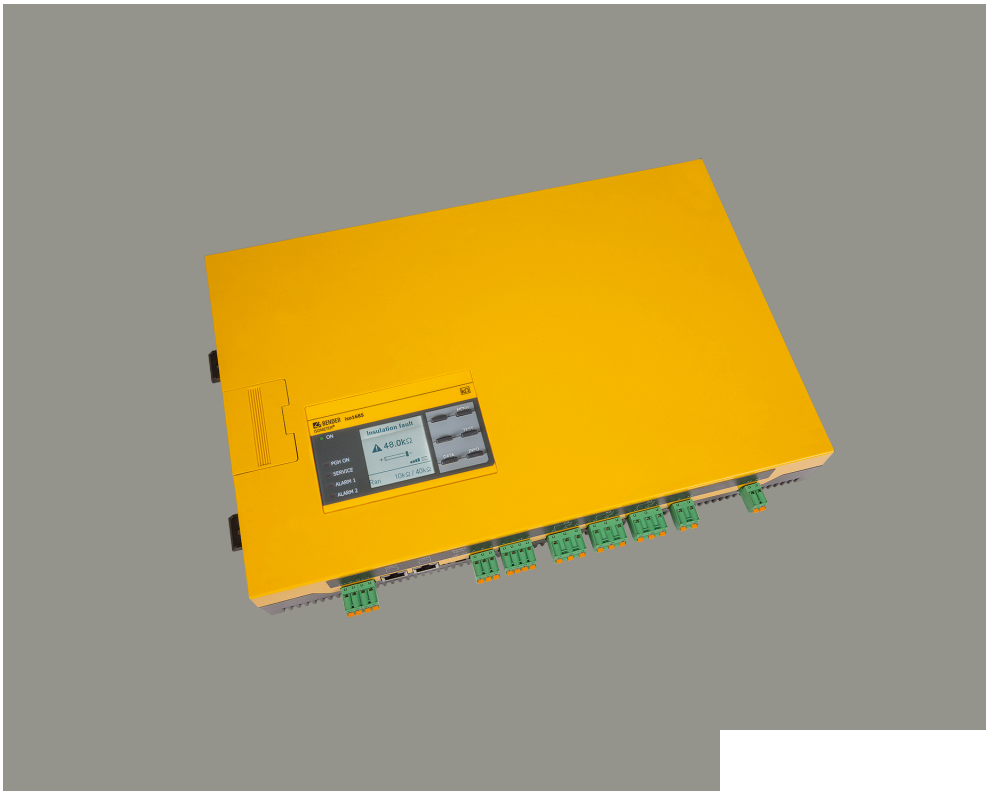
Modbus settings

ISOMETER® iso1685 device family



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1 General information

This appendix descibes the complete Modbus register for the device to facilitate access to information. The adjustable parameters for individual keys are listed.

The iso685 device family supports 4-digit addressing and the following Modbus functions:

- Holding registers for reading values (Read Holding Register; function code 0x03)
- Registers for device programming (Preset Multiple Registers; function code 0x10)

For the complete Modbus protocol specification, visit www.modbus.org.

2 Data access via Modbus

2.1 Exception-Code

If the ISOMETER® cannot respond to a request, it will send an exception code with which possible faults can be narrowed down.

Exception code	Description
0x01	Invalid function
0x02	Invalid data access
0x03	Invalid data value
0x04	Slave device error
0x05	Acceptance confirmed (response is delayed)
0x06	Request not accepted (repeat request if necessary)
0x08	Memory: Parity error
0x0A	Gateway path not available
0x0B	Gateway error

2.2 Modbus request

With the function code FC3, you can read the words from the input registers. For this, specify the start address and the number of registers to be read.

Example: The insulation value should be read from the input register with a start address of 0x20 00.

Byte	Name	Example
Byte 0, 1	Transaction identifier	0x00 00
Byte 2, 3	Protocol identifier	0x00 00
Byte 4, 5	Length field	0x00 06
Byte 6	Unit identifier	BCOM device address
Byte 7	Modbus function code	0x03
Byte 8, 9	Register address	0x20 00
Byte 10, 11	Number of words	0x00 02

2.3 Modbus response

The response consists of 2 bytes per register. The byte sequence is defined with the Most Significant Bit (MSB) first.

Byte	Name	Example
…	…	…
Byte 7	Modbus function code	0x03
Byte 8	Byte count	0x04
Byte 9, 10	Value in Register 0	0x12 34 (fictitous value)
Byte 11, 12	Value in Register 1	0x23 45 (fictitous value)

2.4 Structure of exception code

Byte	Name	Beispiel
…	…	…
Byte 7	Modbus function code	0x83
Byte 8	Exception code	0x01 or 0x02

3 Measuring value information

High-byte test status		Low-byte alarm status	
Value	**Description**	**Value**	**Description**
0	No test	0	No alarm
1	Internal test	1	Prewarning
2	External test	2	error
		3	Reserved
		4	Warning
		5	Alarm

High-byte range

Value	Description
0	=
1	<
2	>
3	Invalid

Low-byte unit

Value	Description	Value	Description
0	Invalid		
1	None	13	Minute
2	Ohm	14	Hour
3	Ampere	15	Day
4	Volt	16	Month
5	Percent	17	Watt
6	Hertz	18	var
7	Baud	19	VA
8	Farad	20	Wh
9	Henry	21	varh
10	Degree Celsius	22	Vah
11	Degree Fahrenheit	23	Grad
12	Second	24	Hertz

4 Modbus register table iso1685 device family

Device information

Register address (Hex)	Register address (Dec)	Description	Bytes	Data type	Mode	Range	Unit	Comment / Values	Standard	iso1685DP	isoLR1685DP	isoHV1685D	isoHR1685D	isoPV1685DP	isoPV1685RTU
0x510	1296	Device model	10	UTF 8	RO				---						
0x51A	1306	D-No. Software MU	1	UInt16	RO				---	484	538	588	601	785	649
0x51B	1307	Software version MU	1	UInt16	RO			Example: 206 = V2.06	---						
0x51C	1308	Build-No. MU	1	Int16	RO				---						
0x51D	1309	D-No. Software IU	1	UInt16	RO				---	485	539	589	602	786	650
0x51E	1310	Software version IU	1	UInt16	RO			Example: 206 = V2.06	---						
0x51F	1311	Build-No. IU	1	Int16	RO				---						

Values

Register address (Hex)	Register address (Dec)	Description	Bytes	Data type	Mode	Range	Unit	Comment / Values	Standard	iso1685DP	isoLR1685DP	isoHV1685D	isoHR1685D	isoPV1685DP	isoPV1685RTU
0x2000	8192	Insulation resistance	2	Float	RO		Ohm	nan = not available, code 1 during Standby	---	X	X	X	X	X	X
0x2002	8194	Leakage capacity	2	Float	RO		Farad	nan = not available	---	X	X	X	X	X	X
0x2004	8196	Prewarning (Insulation resistance)	1	UInt16	RO			0 - OK 4 - Warning	---	X	X	X	X	X	X
0x2005	8197	Alarm (Insulation resistance)	1	UInt16	RO			0 - OK 4 - Warning	---	X	X	X	X	X	X
0x2006	8198	Mains voltage	1	Int16	RO		V		---	X	X	X	X	X	X
0x2007	8199	Voltage U+/EARTH	1	Int16	RO		V	Code 213 during recalibration	---	X	X	X	X	X	X
0x2008	8200	Voltage U-/EARTH	1	Int16	RO		V	Code 213 during recalibration	---	X	X	X	X	X	X
0x2009	8201	System frequency	1	Int16	RO	100	mHz								
0x200A	8202	PGH Current	1	Int16	RO		mA		---	X	X			X	
0x200B	8203	Temperature coupling L+	1	Int16	RO		°C		---	X	X	X	X	X	X
0x200C	8204	Temperature coupling L-	1	Int16	RO		°C		---	X	X	X	X	X	X
0x200D	8205	Temperature PGH	1	Int16	RO		°C		---	X	X			X	
0x200E	8206	Alarm Overtemperature coupling L+	1	UInt16	RO			0 - OK 4 - Warning (> 100°C)	0	X	X	X	X	X	X

Register address (Hex)	Register address (Dec)	Description	Bytes	Data type	Mode	Range	Unit	Comment / Values	Standard	iso1685DP	isoLR1685DP	isoHV1685D	isoHR1685D	isoPV1685DP	isoPV1685RTU
0x200F	8207	Alarm Overtemperature coupling L-	1	UInt16	RO			0 - OK 4 - Warning (> 100°C)	0	X	X	X	X	X	X
0x2010	8208	Alarm Overtemperature PGH	1	UInt16	RO			0 - OK 4 - Warning	0	X	X			X	
0x2011	8209	Connection EARTH (E/KE)	1	UInt16	RO			0 - OK 2 - Error	0	X	X	X	X	X	X
0x2012	8210	Connection system (L1/+, L2/-)	1	UInt16	RO			0 - OK 2 - Error	0	X	X	X	X	X	X
0x2013	8211	Device error	1	UInt16	RO			0 - no Error > 0 - Errorcode acc. to manual	0	X	X	X	X	X	X
0x2014	8212	Status Test	1	UInt16	RO			0 - no Test 1 - Test internal 2 - Test external	0	X	X	X	X	X	X

Parameter

Register address (Hex)	Register address (Dec)	Description	Bytes	Data type	Mode	Range	Unit	Comment / Values	Standard	iso1685DP	isoLR1685DP	isoHV1685D	isoHR1685D	isoPV1685DP	isoPV1685RTU
0x3000	12288	Measurement profiles	1	UInt16	R/W	1…5		1: Power circuit 2: High capacity 3: Inverter > 10Hz 4: Inverter < 10Hz 5: Fast 2.000µF 6: PV up to 500 µF 7: PV up to 4000 µF	1	1...5	1...5	1...5	1...5	6…7	
0x3001	12289	Response value prewarning	2	UInt32	R/W	10…100 M	Ohm	depending on device variant and profile		200 Ω … 1 MΩ	20 Ω … 100 kΩ	200 Ω … 1 MΩ	100 kΩ … 100 MΩ	200 Ω … 1 MΩ	200 Ω … 1 MΩ
0x3003	12291	Response value mainalarm	2	UInt32	R/W	10…100 M	Ohm								
0x3005	12293	Error memory	1	UInt16	R/W	1…2		1 = on 2 = off	2	X	X	X	X	X	X
0x3006	12294	Coupling monitoring	1	UInt16	R/W	1…2		1 = on 2 = off	1	X	X	X		X	X
0x3007	12295	Relay K1 (Prewarning)	1	UInt16	R/W	1…4		1 = N/O 2 = N/C 3 = N/O+Test 4 = N/C+Test	4	X	X	X	X	X	X
0x3008	12296	Relay K2 (Mainalarm)	1	UInt16	R/W	1…4		1 = N/O 2 = N/C 3 = N/O+Test 4 = N/C+Test	4	X	X	X	X	X	X

Register address (Hex)	Register address (Dec)	Description	Bytes	Data type	Mode	Range	Unit	Comment / Values	Standard	iso1685DP	isoLR1685DP	isoHV1685D	isoHR1685D	isoPV1685DP	isoPV1685RTU
0x3009	12297	EDS mode	1	UInt16	R/W	0…3		1 = manual 2 = auto 3 = 1 pass	2	X	X			X	
0x300A	12298	EDS current	1	UInt16	R/W	1…6		1: 1mA 2: 2,5mA 3: 5mA 4: 10mA 5: 25mA 6: 50mA	5	X	X			X	
0x300B	12299	Protocol RS-485 interface	1	UInt16	R/W	1…2		1: BMS 2: Modbus RTU	1	X	X	X	X	X	X
0x300C	12300	Adress for BMS	1	UInt16	R/W	1…99			2	X	X	X	X	X	X
0x300D	12301	Adresse für Modbus/RTU	1	UInt16	R/W	1…247		Modbus slave only	247	X	X	X	X	X	X
0x300E	12302	Modbus/RTU Baud rate	1	UInt16	R/W	1…5		1 = 9600 2 = 19200 3 = 38400 4 = 57600 5 = 115200	2	X	X	X	X	X	X
0x300F	12303	Modbus/RTU Parity	1	UInt16	R/W	1…3		1 = even 2 = odd 3 = none	1	X	X	X	X	X	X
0x3010	12304	Modbus/RTU Stop bits	1	UInt16	R/W	1…3		1 = 1 2 = 2 3 = auto	1	X	X	X	X	X	X
0x3011	12305	Digital input 1: Modus	1	UInt16	R/W	1…2		1: Active High 2: Active Low	1	X	X	X	X	X	X
0x3012	12306	Digital input 1: t(on)	1	UInt16	R/W	1…3000	100 ms	Range: 0.1…300 sec	1	X	X	X	X	X	X
0x3013	12307	Digital input 1: t(off)	1	UInt16	R/W	1…3000	100 ms	Range: 0.1…300 sec	1	X	X	X	X	X	X
0x3014	12308	Digital input 1: Function	1	UInt16	R/W	1…5		1: off 2: TEST 3: RESET 4: Deactivate device (*5: Insulation fault location)	2	X	X	X	X	X	X
0x3015	12309	Digital input 2: Modus	1	UInt16	R/W	1…2		1: Active High 2: Active Low	1	X	X	X	X	X	X
0x3016	12310	Digital input 2: t(on)	1	UInt16	R/W	1…3000	100 ms	Range: 0.1…300 sec	1	X	X	X	X	X	X
0x3017	12311	Digital input 2: t(off)	1	UInt16	R/W	1…3000	100 ms	Range: 0.1…300 sec	1	X	X	X	X	X	X

Register address (Hex)	Register address (Dec)	Description	Bytes	Data type	Mode	Range	Unit	Comment / Values	Standard	iso1685DP	isoLR1685DP	isoHV1685D	isoHR1685D	isoPV1685DP	isoPV1685RTU
0x3018	12312	Digital input 2: Function	1	UInt16	R/W	1…5		1: off 2: TEST 3: RESET 4: Deactivate device (*5: Insulation fault location)	4	X	X	X	X	X	X
0x3019	12313	Buzzer TEST	1	UInt16	R/W	1…2		1 = on, 2 = off	2	X	X	X	X	X	X
0x301A	12314	Buzzer Function 1	1	UInt16	R/W	1…8		1: off 2: Prewarning 3: Alarm 4: Connection error 5: Device error 6: Common alarm 7: Gerät inactive (*8: Common alarm EDS)	1	X	X	X	X	X	X
0x301B	12315	Buzzer Function 2	1	UInt16	R/W	1…8		1: off 2: Prewarning 3: Alarm 4: Connection error 5: Grätefehler 6: Common alarm 7: Device inactive (*8: Common alarm EDS)	1	X	X	X	X	X	X
0x301C	12316	Buzzer Function 3	1	UInt16	R/W	1…8		1: off 2: Prewarning 3: Alarm 4: Connection error 5: Device error 6: Common alarm 7: Device inactive (*8: Common alarm EDS)	1	X	X	X	X	X	X
0x301D	12317	RTC time hour	1	UInt16	R/W	0…23				X	X	X	X	X	X
0x301E	12318	RTC time minute	1	UInt16	R/W	0…59				X	X	X	X	X	X
0x301F	12319	RTC time second	1	UInt16	R/W	0…59				X	X	X	X	X	X
0x3020	12320	RTC date day	1	UInt16	R/W	1…31				X	X	X	X	X	X
0x3021	12321	RTC date month	1	UInt16	R/W	1…12				X	X	X	X	X	X
0x3022	12322	RTC date year	1	UInt16	R/W	2014…2063				X	X	X	X	X	X
0x3023	12323	RTC time format	1	UInt16	R/W	1…2		1: 12h 2: 24h	2	X	X	X	X	X	X

Register address (Hex)	Register address (Dec)	Description	Bytes	Data type	Mode	Range	Unit	Comment / Values	Standard	iso1685DP	isoLR1685DP	isoHV1685D	isoHR1685D	isoPV1685DP	isoPV1685RTU
0x3024	12324	Summertime	1	UInt16	R/W	1…3		1: off 2: DST 3: CEST	2	X	X	X	X	X	X
0x3025	12325	Standby (system disconnection)	1	UInt16	R/W	1…2		1: active 2: inactive (Standby)	1	X	X			X	
0x3026	12326	System frequency	1	UInt16	R/W	1…2		1: <= 460 Hz 2: > 460 Hz	1	X	X	X [1]		X [2]	

1) from D0588 V2.11
2) 1: 50 Hz, 2: 60 Hz

Control commands

Register address (Hex)	Register address (Dec)	Description	Bytes	Data type	Mode	Range	Unit	Comment / Values	Standard	iso1685DP	isoLR1685DP	isoHV1685D	isoHR1685D	isoPV1685DP	isoPV1685RTU
0x3100	12544	Factory settings	1	UInt16	WO			0xFF00		X	X	X	X	X	X
0x3101	12545	Start test	1	UInt16	WO			Start test = 0xFF00		X	X	X	X	X	X
0x3102	12546	Reset (memory)	1	UInt16	WO			Reset (memory) = 0xFF00		X	X	X	X	X	X
0x3103	12547	EDS start	1	UInt16	WO			EDS start = 0xFF00		X	X			X	
0x3104	12548	EDS stop	1	UInt16	WO			EDS stop = 0xFF00		X	X			X	

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