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GB POWER ANALYZERS
BACnet manual

I ANALIZZATORI DI RETE
Manuale BACnet

DMG7501**INTRODUCTION**

The DMG7501 power analyzer supports BACnet MS/TP protocol over RS485 serial port.

MAC ADDRESS AND DEVICE ID

- Both MAC address and Device ID can be set from DMG 7501 M07 – Communications menu (COM1).
- MAC address must be in the range 0..127.
- Device ID must be in the range 0..4194303.

Be careful: The parameter pair <MAC address; Device ID> must be unique within the BACnet MS/TP network.

PROTOCOL SPECIFICATIONS

As specified in the ASHRAE Standard Clause 9, the serial data format is fixed to 8 data bits, with 1 stop bit and no parity. Segmentation is not supported.

BACnet protocol property	
Protocol version	1
Protocol revision	26
Device Profile	BACnet Application Specific Controller (B-ASC)
Character Set Support	UTF-8, ANSI X3.4
Datalink layer	MS/TP Manager, Baud: 9600, 19200, 38400, 57600, 115200
Supported BIBBs	DS-RP-B (Read Property) DS-RPM-B (Read Property Multiple) DS-WP-B (Write Property) DS-COV-B (Change Of Value) DM-DDB-B (Dynamic Device Binding) DM-DOB-B (Dynamic Object Binding) DM-DCC-B (Device Communication Control) DM-RD-B (Reinitialize Device)
Supported Services	Subscribe COV (Max. 20 contemporary subscriptions) Read Property Read Property Multiple Write property Device Communication Control Reinitialize Device ❶ Who Has Who Is
Supported Object	Device Analog Value Large Analog Value Binary Input Network Port

- ❶ If DMG7501 password is enabled, these operations can be done only if it is entered the correct password. If password is disabled, the services can be executed without entering the password. For password settings, see menu M03 – Password.

BACNET OBJECTS

DMG7501 has a total of 109 objects (1 Device, 1 Network Port, 61 Analog Value, 30 Large Analog Value, 16 Binary Input). Creation and deletion of object is not allowed.

ANALOG VALUE

Property Proprietà	Required/Optional Richiesta/Opzionale	Writable Modificabile
Object Identifier	R	X
Object Name	R	X
Object Type	R	X
Property List	R	X
Present Value	R	V❶
Status Flag	R	X
Event State	R	X
Out Of Service	R	V
Units	R	X
COV Increment	O	V

- ❶ Writable only if Out Of Service is TRUE / Modificabile solo se Out Of Service è TRUE.

INTRODUZIONE

L'analizzatore di rete DMG7501 supporta il protocollo BACnet MS/TP sulla porta seriale RS485.

INDIRIZZO MAC E ID DISPOSITIVO

- I parametri Indirizzo MAC e ID Dispositivo possono essere impostati dal menu M07 – Comunicazione (COM1) del DMG7501.
- L'Indirizzo MAC deve essere compreso nell'intervallo 0..127.
- L'ID Dispositivo deve essere compreso nell'intervallo 0..4194303.

Attenzione: La coppia di parametri <Indirizzo MAC; ID Dispositivo> deve essere unica all'interno della rete BACnet MS/TP.

SPECIFICHE PROTOCOLLO

Come specificato nello Standard ASHRAE Clausola 9, il formato dati della seriale è fisso a 8 bit di dati, 1 bit di stop e nessun bit di parità. La segmentazione non è supportata.

Proprietà protocollo BACnet	
Versione protocollo	1
Revisione protocollo	26
Profilo dispositivo	BACnet Application Specific Controller (B-ASC)
Set di caratteri supportato	UTF-8, ANSI X3.4
Datalink layer	MS/TP Manager, Velocità: 9600, 19200, 38400, 57600, 115200
BIBBs Supportati	DS-RP-B (Read Property) DS-RPM-B (Read Property Multiple) DS-WP-B (Write Property) DS-COV-B (Change Of Value) DM-DDB-B (Dynamic Device Binding) DM-DOB-B (Dynamic Object Binding) DM-DCC-B (Device Communication Control) DM-RD-B (Reinitialize Device)
Servizi Supportati	Subscribe COV (Max. 20 contemporary subscriptions) Read Property Read Property Multiple Write property Device Communication Control Reinitialize Device ❶ Who Has Who Is
Oggetti Supportati	Device Analog Value Large Analog Value Binary Input Network Port

- ❶ Se il DMG ha abilitato la password, queste operazioni possono essere effettuate solo se si immette la password corretta. Se la password è disabilitata, questi servizi vengono eseguiti senza password. Per le impostazioni della password, vedere il menu M03 – Password.

OGGETTI BACNET

Il DMG7501 ha 109 oggetti in totale (1 Device, 1 Network Port, 61 Analog Value, 30 Large Analog Value, 16 Binary Input). La creazione e la cancellazione di oggetti non sono ammesse.

Object ID ID Oggetto	Object name Nome oggetto	Unit Unità	Default COV
OBJECT_ANALOG_VALUE:0	L1 Phase Voltage [V]	5 : Volts	5.0
OBJECT_ANALOG_VALUE:1	L2 Phase Voltage [V]	5 : Volts	5.0
OBJECT_ANALOG_VALUE:2	L3 Phase Voltage [V]	5 : Volts	5.0
OBJECT_ANALOG_VALUE:3	L1 Current [A]	3 : Amperes	0.2
OBJECT_ANALOG_VALUE:4	L2 Current [A]	3 : Amperes	0.2
OBJECT_ANALOG_VALUE:5	L3 Current [A]	3 : Amperes	0.2
OBJECT_ANALOG_VALUE:6	L1-L2 Voltage [V]	5 : Volts	5.0
OBJECT_ANALOG_VALUE:7	L2-L3 Voltage [V]	5 : Volts	5.0
OBJECT_ANALOG_VALUE:8	L3-L1 Voltage [V]	5 : Volts	5.0
OBJECT_ANALOG_VALUE:9	L1 Active Power [kW]	48 : Kilowatts	0.1
OBJECT_ANALOG_VALUE:10	L2 Active Power [kW]	48 : Kilowatts	0.1
OBJECT_ANALOG_VALUE:11	L3 Active Power [kW]	48 : Kilowatts	0.1
OBJECT_ANALOG_VALUE:12	L1 Reactive Power [kvar]	12 : Kilovolt Amperes Reactive	0.1
OBJECT_ANALOG_VALUE:13	L2 Reactive Power [kvar]	12 : Kilovolt Amperes Reactive	0.1
OBJECT_ANALOG_VALUE:14	L3 Reactive Power [kvar]	12 : Kilovolt Amperes Reactive	0.1
OBJECT_ANALOG_VALUE:15	L1 Apparent Power [kVA]	9 : Kilovolt Amperes	0.1
OBJECT_ANALOG_VALUE:16	L2 Apparent Power [kVA]	9 : Kilovolt Amperes	0.1
OBJECT_ANALOG_VALUE:17	L3 Apparent Power [kVA]	9 : Kilovolt Amperes	0.1
OBJECT_ANALOG_VALUE:18	L1 Power Factor	95 : No Units	1.0
OBJECT_ANALOG_VALUE:19	L2 Power Factor	95 : No Units	1.0
OBJECT_ANALOG_VALUE:20	L3 Power Factor	95 : No Units	1.0
OBJECT_ANALOG_VALUE:21	Cosf L1	95 : No Units	1.0
OBJECT_ANALOG_VALUE:22	Cosf L2	95 : No Units	1.0
OBJECT_ANALOG_VALUE:23	Cosf L3	95 : No Units	1.0
OBJECT_ANALOG_VALUE:24	Frequency [Hz]	27 : Hertz	0.5
OBJECT_ANALOG_VALUE:25	Eqv Phase Voltage [V]	5 : Volts	5.0
OBJECT_ANALOG_VALUE:26	Eqv Phase-to-Phase Voltage [V]	5 : Volts	5.0
OBJECT_ANALOG_VALUE:27	Eqv Current [A]	3 : Amperes	0.2
OBJECT_ANALOG_VALUE:28	Eqv Active Power [kW]	48 : Kilowatts	0.1
OBJECT_ANALOG_VALUE:29	Eqv Reactive Power [kvar]	12 : Kilovolt Amperes Reactive	0.1
OBJECT_ANALOG_VALUE:30	Eqv Apparent Power [kVA]	9 : Kilovolt Amperes	0.1
OBJECT_ANALOG_VALUE:31	Eqv Power Factor	95 : No Units	1.0
OBJECT_ANALOG_VALUE:32	VLL Unbalance [%]	98 : Percent	1.0
OBJECT_ANALOG_VALUE:33	VLN Unbalance [%]	98 : Percent	1.0
OBJECT_ANALOG_VALUE:34	Current Unbalance [%]	98 : Percent	1.0
OBJECT_ANALOG_VALUE:35	Thd L1 Voltage [%]	98 : Percent	1.0
OBJECT_ANALOG_VALUE:36	Thd L2 Voltage [%]	98 : Percent	1.0
OBJECT_ANALOG_VALUE:37	Thd L3 Voltage [%]	98 : Percent	1.0
OBJECT_ANALOG_VALUE:38	THD L1 Current [%]	98 : Percent	1.0
OBJECT_ANALOG_VALUE:39	THD L2 Current [%]	98 : Percent	1.0
OBJECT_ANALOG_VALUE:40	THD L3 Current [%]	98 : Percent	1.0
OBJECT_ANALOG_VALUE:41	Thd L1-2 Voltage [%]	98 : Percent	1.0
OBJECT_ANALOG_VALUE:42	Thd L2-3 Voltage [%]	98 : Percent	1.0
OBJECT_ANALOG_VALUE:43	Thd L3-1 Voltage [%]	98 : Percent	1.0
OBJECT_ANALOG_VALUE:44	Analog Input 1	95 : No Units	1.0
OBJECT_ANALOG_VALUE:45	Analog Input 2	95 : No Units	1.0
OBJECT_ANALOG_VALUE:46	Analog Input 3	95 : No Units	1.0
OBJECT_ANALOG_VALUE:47	Analog Input 4	95 : No Units	1.0
OBJECT_ANALOG_VALUE:48	Analog Input 5	95 : No Units	1.0
OBJECT_ANALOG_VALUE:49	Analog Input 6	95 : No Units	1.0
OBJECT_ANALOG_VALUE:50	Counters 1	95 : No Units	1.0
OBJECT_ANALOG_VALUE:51	Counters 2	95 : No Units	1.0
OBJECT_ANALOG_VALUE:52	Counters 3	95 : No Units	1.0
OBJECT_ANALOG_VALUE:53	Counters 4	95 : No Units	1.0
OBJECT_ANALOG_VALUE:54	Counters 5	95 : No Units	1.0
OBJECT_ANALOG_VALUE:55	Counters 6	95 : No Units	1.0
OBJECT_ANALOG_VALUE:56	Counters 7	95 : No Units	1.0
OBJECT_ANALOG_VALUE:57	Counters 8	95 : No Units	1.0
OBJECT_ANALOG_VALUE:58	Input ❶	95 : No Units	1.0
OBJECT_ANALOG_VALUE:59	Output ❷	95 : No Units	1.0
OBJECT_ANALOG_VALUE:60	Alarm ❸	95 : No Units	1.0

❶ Input 1 (bit 0) – 12 (bit 11) / Ingresso 1 (bit 0) – 12 (bit 11)

❷ Output 1 (bit 0) – 12 (bit 11) / Ingresso 1 (bit 0) – 12 (bit 11)

❸ Alarm 1 (bit 0) – 16 (bit 15) / Ingresso 1 (bit 0) – 16 (bit 15)

LARGE ANALOG VALUE

Property Proprietà	Required/Optional Richiesta/Opzionale	Writable Modificabile
Object Identifier	R	X
Object Name	R	X
Object Type	R	X
Property List	R	X
Present Value	R	V ^①
Status Flag	R	X
Event State	R	X
Out Of Service	R	V
Units	R	X
COV Increment	O	V

① Writable only if Out Of Service is TRUE / Modificabile solo se Out Of Service è TRUE.

Object ID ID Oggetto	Object name Nome oggetto	Unit Unità	Default COV
OBJECT_LARGE_ANALOG_VALUE:0	Active Energy - Import [kWh]	19 : Kilowatt Hours	0.1
OBJECT_LARGE_ANALOG_VALUE:1	Active Energy - Export [kWh]	19 : Kilowatt Hours	0.1
OBJECT_LARGE_ANALOG_VALUE:2	Reactive Energy - Import [kvarh]	243 : Kilovolt Ampere Hours Reactive	0.1
OBJECT_LARGE_ANALOG_VALUE:3	Reactive Energy - Export [kvarh]	243 : Kilovolt Ampere Hours Reactive	0.1
OBJECT_LARGE_ANALOG_VALUE:4	Apparent Energy [kVAh]	240 : Kilovolt Ampere Hours	0.1
OBJECT_LARGE_ANALOG_VALUE:5	Partial Active Energy - Import [kWh]	19 : Kilowatt Hours	0.1
OBJECT_LARGE_ANALOG_VALUE:6	Partial Active Energy - Export [kWh]	19 : Kilowatt Hours	0.1
OBJECT_LARGE_ANALOG_VALUE:7	Partial Reactive Energy - Import [kvarh]	243 : Kilovolt Ampere Hours Reactive	0.1
OBJECT_LARGE_ANALOG_VALUE:8	Partial Reactive Energy - Export [kvarh]	243 : Kilovolt Ampere Hours Reactive	0.1
OBJECT_LARGE_ANALOG_VALUE:9	Partial Apparent Energy [kVAh]	240 : Kilovolt Ampere Hours	0.1
OBJECT_LARGE_ANALOG_VALUE:10	T1 Active Energy (Imp) [kWh]	19 : Kilowatt Hours	0.1
OBJECT_LARGE_ANALOG_VALUE:11	T1 Active Energy (Exp) [kWh]	19 : Kilowatt Hours	0.1
OBJECT_LARGE_ANALOG_VALUE:12	T1 Reactive Energy (Imp) [kvarh]	243 : Kilovolt Ampere Hours Reactive	0.1
OBJECT_LARGE_ANALOG_VALUE:13	T1 Reactive Energy (Exp) [kvarh]	243 : Kilovolt Ampere Hours Reactive	0.1
OBJECT_LARGE_ANALOG_VALUE:14	T1 Apparent Energy [kVAh]	240 : Kilovolt Ampere Hours	0.1
OBJECT_LARGE_ANALOG_VALUE:15	T2 Active Energy (Imp) [kWh]	19 : Kilowatt Hours	0.1
OBJECT_LARGE_ANALOG_VALUE:16	T2 Active Energy (Exp) [kWh]	19 : Kilowatt Hours	0.1
OBJECT_LARGE_ANALOG_VALUE:17	T2 Reactive Energy (Imp) [kvarh]	243 : Kilovolt Ampere Hours Reactive	0.1
OBJECT_LARGE_ANALOG_VALUE:18	T2 Reactive Energy (Exp) [kvarh]	243 : Kilovolt Ampere Hours Reactive	0.1
OBJECT_LARGE_ANALOG_VALUE:19	T2 Apparent Energy [kVAh]	240 : Kilovolt Ampere Hours	0.1
OBJECT_LARGE_ANALOG_VALUE:20	T3 Active Energy (Imp) [kWh]	19 : Kilowatt Hours	0.1
OBJECT_LARGE_ANALOG_VALUE:21	T3 Active Energy (Exp) [kWh]	19 : Kilowatt Hours	0.1
OBJECT_LARGE_ANALOG_VALUE:22	T3 Reactive Energy (Imp) [kvarh]	243 : Kilovolt Ampere Hours Reactive	0.1
OBJECT_LARGE_ANALOG_VALUE:23	T3 Reactive Energy (Exp) [kvarh]	243 : Kilovolt Ampere Hours Reactive	0.1
OBJECT_LARGE_ANALOG_VALUE:24	T3 Apparent Energy [kVAh]	240 : Kilovolt Ampere Hours	0.1
OBJECT_LARGE_ANALOG_VALUE:25	T4 Active Energy (Imp) [kWh]	19 : Kilowatt Hours	0.1
OBJECT_LARGE_ANALOG_VALUE:26	T4 Active Energy (Exp) [kWh]	19 : Kilowatt Hours	0.1
OBJECT_LARGE_ANALOG_VALUE:27	T4 Reactive Energy (Imp) [kvarh]	243 : Kilovolt Ampere Hours Reactive	0.1
OBJECT_LARGE_ANALOG_VALUE:28	T4 Reactive Energy (Exp) [kvarh]	243 : Kilovolt Ampere Hours Reactive	0.1
OBJECT_LARGE_ANALOG_VALUE:29	T4 Apparent Energy [kVAh]	240 : Kilovolt Ampere Hours	0.1

BINARY INPUT

Property Proprietà	Required/Optional Richiesta/Opzionale	Writable Modificabile
Object Identifier	R	X
Object Name	R	X
Object Type	R	X
Property List	R	X
Present Value	R	V ^❶
Status Flag	R	X
Event State	R	X
Out Of Service	R	V
Polarity	R	X

❶ Writable only if Out Of Service is TRUE / Modificabile solo se Out Of Service è TRUE.

Object ID ID Oggetto	Object name Nome oggetto
OBJECT_BINARY_INPUT:0	Remote variable 01
OBJECT_BINARY_INPUT:1	Remote variable 02
OBJECT_BINARY_INPUT:2	Remote variable 03
OBJECT_BINARY_INPUT:3	Remote variable 04
OBJECT_BINARY_INPUT:4	Remote variable 05
OBJECT_BINARY_INPUT:5	Remote variable 06
OBJECT_BINARY_INPUT:6	Remote variable 07
OBJECT_BINARY_INPUT:7	Remote variable 08
OBJECT_BINARY_INPUT:8	Remote variable 09
OBJECT_BINARY_INPUT:9	Remote variable 10
OBJECT_BINARY_INPUT:10	Remote variable 11
OBJECT_BINARY_INPUT:11	Remote variable 12
OBJECT_BINARY_INPUT:12	Remote variable 13
OBJECT_BINARY_INPUT:13	Remote variable 14
OBJECT_BINARY_INPUT:14	Remote variable 14
OBJECT_BINARY_INPUT:15	Remote variable 15

NETWORK PORT (COM1)

Property Proprietà	Required/Optional Richiesta/Opzionale	Writable Modificabile
Object Identifier	R	X
Object Name	R	X
Object Type	R	X
Property List	R	X
Apu Length	R	X
Changes Pending	R	X
Link Speed	R	V ^❶
Link Speeds	R	X
MAC Address	R	X
Max Info Frames	R	V ^❷
Max Master	R	V ^❸
Network Number	R	X
Network Number Quality	R	X
Network Type	R	X
Out Of Service	R	V
Protocol Level	R	X
Reliability	R	X
Status Flags	R	X

❶ Allowed values / Valori ammessi [9600, 19200, 38400, 57600, 115200]

❷ Allowed range / Intervallo ammesso [1..14]

❸ Allowed range / Intervallo ammesso [50..127]

Property Proprietà	Required/Optional Richiesta/Opzionale	Writable Modificabile
Object Identifier	R	V❶
Object Name	R	V❷
Object Type	R	X
Active COV Subscriptions	R	X
APDU Timeout	R	X
Application Software Version	R	X
Database Revision	R	X
Description	O	X
Device Address Binding	R	X
Firmware Revision	R	X
Max APDU Length Accepted	R	X
Max Info Frames	R	V❸
Max Master	R	V❹
Model Name	R	X
Number Of APDU Retries	R	X
Protocol Object Types Supported	R	X
Protocol Revision	R	X
Protocol Services Supported	R	X
Protocol Version	R	X
Segmentation Supported	R	X
System Status	R	X
Vendor Name	R	X
Vendor Identifier	R	X

❶ Maximum length 20 character / lunghezza massima 20 caratteri

❷ Allowed range / Intervallo ammesso [0..4194303]

❸ Allowed range / Intervallo ammesso [1..14]

❹ Allowed range / Intervallo ammesso [50..127]

M07 - COMMUNICATION (COMn, n=1, BACnet protocol)		UoM	Default	Range
P07.n.01	MAC address		1	1-127
P07.n.02	Serial speed	bps	9600	1200 2400 4800 9600 19200 38400 57600 115200
P07.n.03	Data format		8 bit-none	8 bit-none
P07.n.04	Stop bit		1	1
P07.n.14	Device ID		4194303	0-4194303
P07.n.15	Max manager		127	50-127
P07.n.16	Max num. of info frames		1	1-14

P07.n.01 – MAC address used for BACnet communication.

P07.n.02 – Transmission speed of the communication port.

P07.n.03 – Data format.

P07.n.04 – Number of stop bits.

P07.n.14 – Device ID used for BACnet communication.

P07.n.15 – Maximum number of manager in the BACnet MS/TP network.

P07.n.16 – Maximum number of consecutive frames that the DMG7501 can send.

M07 - COMUNICAZIONE (COMn, n=1, BACnet protocol)		UoM	Default	Range
P07.n.01	MAC address		1	1-127
P07.n.02	Velocità seriale	bps	9600	1200 2400 4800 9600 19200 38400 57600 115200
P07.n.03	Formato dati		8 bit-none	8 bit-none
P07.n.04	Bit di stop		1	1
P07.n.14	Device ID		4194303	0-4194303
P07.n.15	Numero massimo di manager		127	50-127
P07.n.16	Numero massimo di frames		1	1-14

P07.n.01 – MAC address utilizzato per la comunicazione BACnet

P07.n.02 – Velocità di trasmissione della porta seriale.

P07.n.03 – Formato dati.

P07.n.04 – Numero di stop bit.

P07.n.14 – Device ID utilizzato per la comunicazione BACnet.

P07.n.15 – Numero massimo di manager nella rete BACnet MS/TP.

P07.n.16 – Numero massimo di frames consecutivi che possono essere spediti da DMG7501.