

# Liebert Distribution Monitoring (LDM)

## Modbus Register Summary

Rev. G

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**Detailed Revision History****Revision G (10/30/07)**

1. Converted Modbus function 23 operations (Read/Write Multiple Registers) to function 16 (Write Multiple Registers).
  - In section 4.1, “Resetting Metering Information”, changed function code from 23 to 16.
  - In section 4.2, “Resetting Alarms”, changed function code from 23 to 16 to reset panel, breaker and subfeed alarms.
  - In section 5.1, “Setting the Clock”, changed function code from 23 to 16.
2. In section 2, added “Extended Circuit Breaker Status” registers which include the current for each individual pole.

**Revision F (02/07/07)**

1. Added Section 3.1, “Basic Panel Configuration”
  - Added panel layout register 43801.

**Revision E (12/21/06)**

1. Modified Section 2.3, “Sub-Feed and Output Breaker Status”
  - Added subfeed status registers 41145 through 41288 (addresses 1144 through 1287) for subfeeds 9 through 16.
2. Modified Section 5, “Alarm Information”
  - Corrected addresses for subfeed registers 49556 through 49563. Addresses were changed to 9555 through 9562.
  - Added subfeed alarm registers 49564 through 49571 (addresses 9563 through 9570) for new subfeeds 9 through 16.
3. Added Section 6, “Other Commands”
  - Added subsection 6.1, “Setting the Clock”

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## 1. Overview of LDM Modbus Registers

This document describes the Modbus registers supported by the Liebert Distribution Monitoring (LDM) unit.

The LDM provides a single RS-422/485 serial Modbus port that supports 2- and 4-wire communication in either a point-to-point or multi-drop bus configuration. Supported Modbus baud rates include 9600, 19200, 38400 and 115200 bps. The LDM supports only Modbus RTU transmission mode; ASCII is not supported.

Each Control Board can be attached to two panel boards, each of which is treated as a distinct slave device with a unique address. Therefore, each LDM unit will respond to two Modbus slave device addresses. The address for the first panel is specified by DIP switch bank S2. The address for the second panel is equal to the first panel's address plus one.

*For example, if switch bank S2 is configured for address 21 then panel A is addressed as slave device 21 and panel B is addressed as slave device 22.*

Even though all of the registers described in this document are accessed as holding registers, they are only available with read-only access. The LDM Modbus registers are divided into the following groups:

- Status Registers
- Basic Configuration Registers
- Metering Information
- Alarms

Each of these groups of registers is described in detail in the following sections.

## 2. Status Registers

The LDM status registers are grouped into main panel status, breaker status and sub-feed status registers.

### 2.1 Main Panel Status

MAIN PANEL STATUS					
Register	Address	Description	Units	Format	Scaling
40101	100	Line-to-Line Vxy	Volts	16-bit Unsigned	
40102	101	Line-to-Line Vyz	Volts	16-bit Unsigned	
40103	102	Line-to-Line Vzx	Volts	16-bit Unsigned	
40104	103	Line-to-Neutral Vxn	Volts	16-bit Unsigned	
40105	104	Line-to-Neutral Vyn	Volts	16-bit Unsigned	
40106	105	Line-to-Neutral Vzn	Volts	16-bit Unsigned	
40107	106	THD Vxn	---	16-bit Unsigned	Divide by 10
40108	107	THD Vyn	---	16-bit Unsigned	Divide by 10
40109	108	THD Vzn	---	16-bit Unsigned	Divide by 10
40201	200	Phase Current Ix	Amps	16-bit Unsigned	
40202	201	Phase Current Iy	Amps	16-bit Unsigned	
40203	202	Phase Current Iz	Amps	16-bit Unsigned	
40204	203	Neutral Current	Amps	16-bit Unsigned	
40205	204	Ground Current	Amps	16-bit Unsigned	Divide by 10
40206	205	Real Power	kW	16-bit Unsigned	
40207	206	Apparent Power	kVA	16-bit Unsigned	
40208	207	Power Factor	Percent	16-bit Unsigned	
40209	208	Percent Load	Percent	16-bit Unsigned	
40210	209	THD Ix	---	16-bit Unsigned	Divide by 10
40211	210	THD Iy	---	16-bit Unsigned	Divide by 10
40212	211	THD Iz	---	16-bit Unsigned	Divide by 10
40213	212	Crest Factor Ix	---	16-bit Unsigned	Divide by 10
40214	213	Crest Factor Iy	---	16-bit Unsigned	Divide by 10
40215	214	Crest Factor Iz	---	16-bit Unsigned	Divide by 10
40216	215	Panel Metered kWh	kWh	32-bit Unsigned	Divide by 10
40217	216				
40218	217	Main Alarms	---	Bitmapped	

Main Alarm Bitmap		
Alarm	Bit	Notes
System Summary Alarm	1	1=Active, 0=Clear
Panel Board Summary Alarm	2	1=Active, 0=Clear
Main Overvoltage	3	1=Active, 0=Clear
Main Undervoltage	4	1=Active, 0=Clear
Phase Overcurrent Alarm	5	1=Active, 0=Clear
Phase Overcurrent Warning	6	1=Active, 0=Clear
Neutral Overcurrent	7	1=Active, 0=Clear
Ground Overcurrent	8	1=Active, 0=Clear

## 2.2 Circuit Breaker Status

CIRCUIT BREAKER STATUS					
Register	Address	Description	Units	Format	Scaling
40501	500	Breaker 1 Current	Amps	16-bit Unsigned	Divide by 10
40502	501	Breaker 1 Load	Percent	16-bit Unsigned	
40503	502	Breaker 1 Power	Watts	16-bit Unsigned	
40504	503	Breaker 1 kWh	kWh	32-bit Unsigned	Divide by 1000
40505	504				
40506	505	Breaker 1 Alarms	---	Bitmapped	
40507	506	Breaker 2 Current	Amps	16-bit Unsigned	Divide by 10
40508	507	Breaker 2 Load	Percent	16-bit Unsigned	
40509	508	Breaker 2 Power	Watts	16-bit Unsigned	
40510	509	Breaker 2 kWh	kWh	32-bit Unsigned	Divide by 1000
40511	510				
40512	511	Breaker 2 Alarms	---	Bitmapped	
:					
40741	740	Breaker 41 Current	Amps	16-bit Unsigned	Divide by 10
40742	741	Breaker 41 Load	Percent	16-bit Unsigned	
40743	742	Breaker 41 Power	Watts	16-bit Unsigned	
40744	743	Breaker 41 kWh	kWh	32-bit Unsigned	Divide by 1000
40745	744				
40746	745	Breaker 41 Alarms	---	Bitmapped	
40747	746	Breaker 42 Current	Amps	16-bit Unsigned	Divide by 10
40748	747	Breaker 42 Load	Percent	16-bit Unsigned	
40749	748	Breaker 42 Power	Watts	16-bit Unsigned	
40750	749	Breaker 42 kWh	kWh	32-bit Unsigned	Divide by 1000
40751	750				
40752	751	Breaker 42 Alarms	---	Bitmapped	

Breaker Alarms Bitmap		
Alarm	Bit	Notes
Overcurrent Alarm	1	1=Active, 0=Clear
Overcurrent Warning	2	1=Active, 0=Clear
Low Current Alarm	3	1=Active, 0=Clear

### 2.3 Extended Circuit Breaker Status

EXTENDED CIRCUIT BREAKER STATUS					
Register	Address	Description	Units	Format	Scaling
41401	1400	Breaker 1 Pole 1 Current	Amps	16-bit Unsigned	Divide by 10
41402	1401	Breaker 1 Pole 2 Current*	Amps	16-bit Unsigned	Divide by 10
41403	1402	Breaker 1 Pole 3 Current**	Amps	16-bit Unsigned	Divide by 10
41404	1403	Breaker 1 Load	Percent	16-bit Unsigned	
41405	1404	Breaker 1 Power	Watts	16-bit Unsigned	
41406	1405	Breaker 1 kWH	kWH	32-bit Unsigned	Divide by 1000
41407	1406				
41408	1407	Breaker 1 Alarms	---	Bitmapped	
41409	1408	Breaker 2 Pole 1 Current	Amps	16-bit Unsigned	Divide by 10
41410	1409	Breaker 2 Pole 2 Current*	Amps	16-bit Unsigned	Divide by 10
41411	1410	Breaker 2 Pole 3 Current**	Amps	16-bit Unsigned	Divide by 10
41412	1411	Breaker 2 Load	Percent	16-bit Unsigned	
41413	1412	Breaker 2 Power	Watts	16-bit Unsigned	
41414	1413	Breaker 2 kWH	kWH	32-bit Unsigned	Divide by 1000
41415	1414				
41416	1415	Breaker 2 Alarms	---	Bitmapped	
:					
41721	1720	Breaker 41 Pole 1 Current	Amps	16-bit Unsigned	Divide by 10
41722	1721	Breaker 41 Pole 2 Current*	Amps	16-bit Unsigned	Divide by 10
41723	1722	Breaker 41 Pole 3 Current**	Amps	16-bit Unsigned	Divide by 10
41724	1723	Breaker 41 Load	Percent	16-bit Unsigned	
41725	1724	Breaker 41 Power	Watts	16-bit Unsigned	
41726	1725	Breaker 41 kWH	kWH	32-bit Unsigned	Divide by 1000
41727	1726				
41728	1727	Breaker 41 Alarms	---	Bitmapped	
41729	1728	Breaker 42 Pole 1 Current	Amps	16-bit Unsigned	Divide by 10
41730	1729	Breaker 42 Pole 2 Current*	Amps	16-bit Unsigned	Divide by 10
41731	1730	Breaker 42 Pole 3 Current**	Amps	16-bit Unsigned	Divide by 10
41732	1731	Breaker 42 Load	Percent	16-bit Unsigned	
41733	1732	Breaker 42 Power	Watts	16-bit Unsigned	
41734	1733	Breaker 42 kWH	kWH	32-bit Unsigned	Divide by 1000
41735	1734				
41736	1735	Breaker 42 Alarms	---	Bitmapped	

\* Always zero for single-pole breakers

\*\* Always zero for single- or two-pole breakers

## 2.4 Sub-Feed and Output Breaker Status

SUBFEED STATUS					
Register	Address	Description	Units	Format	Scaling
41001	1000	Subfeed 1 Current Ix	Amps	16-bit Unsigned	
41002	1001	Subfeed 1 Current Iy	Amps	16-bit Unsigned	
41003	1002	Subfeed 1 Current Iz	Amps	16-bit Unsigned	
41004	1003	Subfeed 1 Neutral Current	Amps	16-bit Unsigned	
41005	1004	Subfeed 1 Ground Current	Amps	16-bit Unsigned	Divide by 10
41006	1005	Subfeed 1 Real Power	kW	16-bit Unsigned	
41007	1006	Subfeed 1 Apparent Power	kVA	16-bit Unsigned	
41008	1007	Subfeed 1 Power Factor	Percent	16-bit Unsigned	
41009	1008	Subfeed 1 Percent Load	Percent	16-bit Unsigned	
41010	1009	Subfeed 1 THD Ix	---	16-bit Unsigned	Divide by 10
41011	1010	Subfeed 1 THD Iy	---	16-bit Unsigned	Divide by 10
41012	1011	Subfeed 1 THD Iz	---	16-bit Unsigned	Divide by 10
41013	1012	Subfeed 1 Crest Factor Ix	---	16-bit Unsigned	Divide by 10
41014	1013	Subfeed 1 Crest Factor Iy	---	16-bit Unsigned	Divide by 10
41015	1014	Subfeed 1 Crest Factor Iz	---	16-bit Unsigned	Divide by 10
41016	1015	Subfeed 1 Metered kWh	kWh	32-bit Unsigned	Divide by 10
41017	1016				
41018	1017	Subfeed 1 Alarms	---	Bitmapped	
41019	1018	Subfeed 2 Current Ix	Amps	16-bit Unsigned	
41020	1019	Subfeed 2 Current Iy	Amps	16-bit Unsigned	
41021	1020	Subfeed 2 Current Iz	Amps	16-bit Unsigned	
41022	1021	Subfeed 2 Neutral Current	Amps	16-bit Unsigned	
41023	1022	Subfeed 2 Ground Current	Amps	16-bit Unsigned	Divide by 10
41024	1023	Subfeed 2 Real Power	kW	16-bit Unsigned	
41025	1024	Subfeed 2 Apparent Power	kVA	16-bit Unsigned	
41026	1025	Subfeed 2 Power Factor	Percent	16-bit Unsigned	
41027	1026	Subfeed 2 Percent Load	Percent	16-bit Unsigned	
41028	1027	Subfeed 2 THD Ix	---	16-bit Unsigned	Divide by 10
41029	1028	Subfeed 2 THD Iy	---	16-bit Unsigned	Divide by 10
41030	1029	Subfeed 2 THD Iz	---	16-bit Unsigned	Divide by 10
41031	1030	Subfeed 2 Crest Factor Ix	---	16-bit Unsigned	Divide by 10
41032	1031	Subfeed 2 Crest Factor Iy	---	16-bit Unsigned	Divide by 10
41033	1032	Subfeed 2 Crest Factor Iz	---	16-bit Unsigned	Divide by 10
41034	1033	Subfeed 2 Metered kWh	kWh	32-bit Unsigned	Divide by 10
41035	1034				
41036	1035	Subfeed 2 Alarms	---	Bitmapped	
:	:	:	:	:	:
41253	1252	Subfeed 15 Current Ix	Amps	16-bit Unsigned	
41254	1253	Subfeed 15 Current Iy	Amps	16-bit Unsigned	
41255	1254	Subfeed 15 Current Iz	Amps	16-bit Unsigned	
41256	1255	Subfeed 15 Neutral Current	Amps	16-bit Unsigned	
41257	1256	Subfeed 15 Ground Current	Amps	16-bit Unsigned	Divide by 10
41258	1257	Subfeed 15 Real Power	kW	16-bit Unsigned	
41259	1258	Subfeed 15 Apparent Power	kVA	16-bit Unsigned	
41260	1259	Subfeed 15 Power Factor	Percent	16-bit Unsigned	
41261	1260	Subfeed 15 Percent Load	Percent	16-bit Unsigned	
41262	1261	Subfeed 15 THD Ix	---	16-bit Unsigned	Divide by 10
41263	1262	Subfeed 15 THD Iy	---	16-bit Unsigned	Divide by 10



SUBFEED STATUS					
Register	Address	Description	Units	Format	Scaling
41264	1263	Subfeed 15 THD Iz	---	16-bit Unsigned	Divide by 10
41265	1264	Subfeed 15 Crest Factor Ix	---	16-bit Unsigned	Divide by 10
41266	1265	Subfeed 15 Crest Factor Iy	---	16-bit Unsigned	Divide by 10
41267	1266	Subfeed 15 Crest Factor Iz	---	16-bit Unsigned	Divide by 10
41268	1267	Subfeed 15 Metered kWH	kWH	32-bit Unsigned	Divide by 10
41269	1268				
41270	1269	Subfeed 15 Alarms	---	Bitmapped	
41271	1270	Subfeed 16 Current Ix	Amps	16-bit Unsigned	
41272	1271	Subfeed 16 Current Iy	Amps	16-bit Unsigned	
41273	1272	Subfeed 16 Current Iz	Amps	16-bit Unsigned	
41274	1273	Subfeed 16 Neutral Current	Amps	16-bit Unsigned	
41275	1274	Subfeed 16 Ground Current	Amps	16-bit Unsigned	Divide by 10
41276	1275	Subfeed 16 Real Power	kW	16-bit Unsigned	
41277	1276	Subfeed 16 Apparent Power	kVA	16-bit Unsigned	
41278	1277	Subfeed 16 Power Factor	Percent	16-bit Unsigned	
41279	1278	Subfeed 16 Percent Load	Percent	16-bit Unsigned	
41280	1279	Subfeed 16 THD Ix	---	16-bit Unsigned	Divide by 10
41281	1280	Subfeed 16 THD Iy	---	16-bit Unsigned	Divide by 10
41282	1281	Subfeed 16 THD Iz	---	16-bit Unsigned	Divide by 10
41283	1282	Subfeed 16 Crest Factor Ix	---	16-bit Unsigned	Divide by 10
41284	1283	Subfeed 16 Crest Factor Iy	---	16-bit Unsigned	Divide by 10
41285	1284	Subfeed 16 Crest Factor Iz	---	16-bit Unsigned	Divide by 10
41286	1285	Subfeed 16 Metered kWH	kWH	32-bit Unsigned	Divide by 10
41287	1286				
41288	1287	Subfeed 16 Alarms	---	Bitmapped	

Subfeed Alarms Bitmap		
Alarm	Bit	Notes
Phase Overcurrent Alarm	5	1=Active, 0=Clear
Phase Overcurrent Warning	6	1=Active, 0=Clear
Neutral Overcurrent	7	1=Active, 0=Clear
Ground Overcurrent	8	1=Active, 0=Clear

*Note: Please refer to section 2.1 for a similar description of main panel status and alarms.*

### 3. Basic Configuration Information Registers

#### 3.1 Basic Panel Configuration Information

PANEL LAYOUT			
Register	Address	Description	Format
43801	3800	Panel Layout	See Table Below

Panel Layout Codes	
Value	Description
0	In-line
1	Side-by-side

#### 3.2 Basic Breaker Configuration Information

BREAKER LOCATION INFORMATION			
Register	Address	Description	Format
44001	4000	Breaker Count	16-bit Signed Integer
44002	4001	Breaker 1 Pole Location	16-bit Signed Integer
44003	4002	Breaker 1 Pole Count	16-bit Signed Integer
44004	4003	Breaker 2 Pole Location	16-bit Signed Integer
44005	4004	Breaker 2 Pole Count	16-bit Signed Integer
44006	4005	Breaker 3 Pole Location	16-bit Signed Integer
44007	4006	Breaker 3 Pole Count	16-bit Signed Integer
44008	4007	Breaker 4 Pole Location	16-bit Signed Integer
44009	4008	Breaker 4 Pole Count	16-bit Signed Integer
44010	4009	Breaker 5 Pole Location	16-bit Signed Integer
44011	4010	Breaker 5 Pole Count	16-bit Signed Integer
44012	4011	Breaker 6 Pole Location	16-bit Signed Integer
44013	4012	Breaker 6 Pole Count	16-bit Signed Integer
44014	4013	Breaker 7 Pole Location	16-bit Signed Integer
44015	4014	Breaker 7 Pole Count	16-bit Signed Integer
44016	4015	Breaker 8 Pole Location	16-bit Signed Integer
44017	4016	Breaker 8 Pole Count	16-bit Signed Integer
44018	4017	Breaker 9 Pole Location	16-bit Signed Integer
44019	4018	Breaker 9 Pole Count	16-bit Signed Integer
44020	4019	Breaker 10 Pole Location	16-bit Signed Integer
44021	4020	Breaker 10 Pole Count	16-bit Signed Integer
44022	4021	Breaker 11 Pole Location	16-bit Signed Integer
44023	4022	Breaker 11 Pole Count	16-bit Signed Integer
44024	4023	Breaker 12 Pole Location	16-bit Signed Integer
44025	4024	Breaker 12 Pole Count	16-bit Signed Integer
44026	4025	Breaker 13 Pole Location	16-bit Signed Integer
44027	4026	Breaker 13 Pole Count	16-bit Signed Integer
44028	4027	Breaker 14 Pole Location	16-bit Signed Integer
44029	4028	Breaker 14 Pole Count	16-bit Signed Integer
44030	4029	Breaker 15 Pole Location	16-bit Signed Integer
44031	4030	Breaker 15 Pole Count	16-bit Signed Integer
44032	4031	Breaker 16 Pole Location	16-bit Signed Integer
44033	4032	Breaker 16 Pole Count	16-bit Signed Integer
44034	4033	Breaker 17 Pole Location	16-bit Signed Integer

BREAKER LOCATION INFORMATION			
Register	Address	Description	Format
44035	4034	Breaker 17 Pole Count	16-bit Signed Integer
44036	4035	Breaker 18 Pole Location	16-bit Signed Integer
44037	4036	Breaker 18 Pole Count	16-bit Signed Integer
44038	4037	Breaker 19 Pole Location	16-bit Signed Integer
44039	4038	Breaker 19 Pole Count	16-bit Signed Integer
44040	4039	Breaker 20 Pole Location	16-bit Signed Integer
44041	4040	Breaker 20 Pole Count	16-bit Signed Integer
44042	4041	Breaker 21 Pole Location	16-bit Signed Integer
44043	4042	Breaker 21 Pole Count	16-bit Signed Integer
44044	4043	Breaker 22 Pole Location	16-bit Signed Integer
44045	4044	Breaker 22 Pole Count	16-bit Signed Integer
44046	4045	Breaker 23 Pole Location	16-bit Signed Integer
44047	4046	Breaker 23 Pole Count	16-bit Signed Integer
44048	4047	Breaker 24 Pole Location	16-bit Signed Integer
44049	4048	Breaker 24 Pole Count	16-bit Signed Integer
44050	4049	Breaker 25 Pole Location	16-bit Signed Integer
44051	4050	Breaker 25 Pole Count	16-bit Signed Integer
44052	4051	Breaker 26 Pole Location	16-bit Signed Integer
44053	4052	Breaker 26 Pole Count	16-bit Signed Integer
44054	4053	Breaker 27 Pole Location	16-bit Signed Integer
44055	4054	Breaker 27 Pole Count	16-bit Signed Integer
44056	4055	Breaker 28 Pole Location	16-bit Signed Integer
44057	4056	Breaker 28 Pole Count	16-bit Signed Integer
44058	4057	Breaker 29 Pole Location	16-bit Signed Integer
44059	4058	Breaker 29 Pole Count	16-bit Signed Integer
44060	4059	Breaker 30 Pole Location	16-bit Signed Integer
44061	4060	Breaker 30 Pole Count	16-bit Signed Integer
44062	4061	Breaker 31 Pole Location	16-bit Signed Integer
44063	4062	Breaker 31 Pole Count	16-bit Signed Integer
44064	4063	Breaker 32 Pole Location	16-bit Signed Integer
44065	4064	Breaker 32 Pole Count	16-bit Signed Integer
44066	4065	Breaker 33 Pole Location	16-bit Signed Integer
44067	4066	Breaker 33 Pole Count	16-bit Signed Integer
44068	4067	Breaker 34 Pole Location	16-bit Signed Integer
44069	4068	Breaker 34 Pole Count	16-bit Signed Integer
44070	4069	Breaker 35 Pole Location	16-bit Signed Integer
44071	4070	Breaker 35 Pole Count	16-bit Signed Integer
44072	4071	Breaker 36 Pole Location	16-bit Signed Integer
44073	4072	Breaker 36 Pole Count	16-bit Signed Integer
44074	4073	Breaker 37 Pole Location	16-bit Signed Integer
44075	4074	Breaker 37 Pole Count	16-bit Signed Integer
44076	4075	Breaker 38 Pole Location	16-bit Signed Integer
44077	4076	Breaker 38 Pole Count	16-bit Signed Integer
44078	4077	Breaker 39 Pole Location	16-bit Signed Integer
44079	4078	Breaker 39 Pole Count	16-bit Signed Integer
44080	4079	Breaker 40 Pole Location	16-bit Signed Integer
44081	4080	Breaker 40 Pole Count	16-bit Signed Integer
44082	4081	Breaker 41 Pole Location	16-bit Signed Integer
44083	4082	Breaker 41 Pole Count	16-bit Signed Integer
44084	4083	Breaker 42 Pole Location	16-bit Signed Integer
44085	4084	Breaker 42 Pole Count	16-bit Signed Integer

### 3.3 Basic Sub-Feed Configuration

BASIC SUBFEED CONFIGURATION			
Register	Address	Description	Format
44501	4500	Subfeed Count	16-bit Signed Integer

## 4. Energy Metering Registers

### 4.1 Resetting Metering Information

CODE 16 (0x10) PANEL MASTER METER RESET				
Register	Address	Description	Units	Format
49201	9200	Password Access		10 x Packed Character
49202	9201			
49203	9202			
49204	9203			
49205	9204			

## 5. Alarm Information

### 5.1 Breaker Alarms

BRANCH ALARM INFORMATION				
Register	Address	Description	Format	Comments
49501	9500	Panel Alarms	16-bit Bitmap	See Panel Alarms Bitmap
49502	9501	Breaker 1 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49503	9502	Breaker 2 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49504	9503	Breaker 3 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49505	9504	Breaker 4 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49506	9505	Breaker 5 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49507	9506	Breaker 6 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49508	9507	Breaker 7 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49509	9508	Breaker 8 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49510	9509	Breaker 9 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49511	9510	Breaker 10 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49512	9511	Breaker 11 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49513	9512	Breaker 12 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49514	9513	Breaker 13 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49515	9514	Breaker 14 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49516	9515	Breaker 15 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49517	9516	Breaker 16 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49518	9517	Breaker 17 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49519	9518	Breaker 18 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49520	9519	Breaker 19 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49521	9520	Breaker 20 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49522	9521	Breaker 21 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49523	9522	Breaker 22 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49524	9523	Breaker 23 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49525	9524	Breaker 24 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49526	9525	Breaker 25 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49527	9526	Breaker 26 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49528	9527	Breaker 27 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49529	9528	Breaker 28 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49530	9529	Breaker 29 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49531	9530	Breaker 30 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49532	9531	Breaker 31 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49533	9532	Breaker 32 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49534	9533	Breaker 33 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49535	9534	Breaker 34 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49536	9535	Breaker 35 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49537	9536	Breaker 36 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49538	9537	Breaker 37 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49539	9538	Breaker 38 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49540	9539	Breaker 39 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49541	9540	Breaker 40 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49542	9541	Breaker 41 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap
49543	9542	Breaker 42 Alarms	16-bit Bitmap	See Breaker Alarms Bitmap

## 5.2 Subfeed Alarms

SUBFEED ALARM INFORMATION				
Register	Address	Description	Format	Comments
49556	9555	Subfeed 1 Alarms	16-bit Bitmap	See Subfeed Alarms Bitmap
49557	9556	Subfeed 2 Alarms	16-bit Bitmap	See Subfeed Alarms Bitmap
49558	9557	Subfeed 3 Alarms	16-bit Bitmap	See Subfeed Alarms Bitmap
49559	9558	Subfeed 4 Alarms	16-bit Bitmap	See Subfeed Alarms Bitmap
49560	9559	Subfeed 5 Alarms	16-bit Bitmap	See Subfeed Alarms Bitmap
49561	9560	Subfeed 6 Alarms	16-bit Bitmap	See Subfeed Alarms Bitmap
49562	9561	Subfeed 7 Alarms	16-bit Bitmap	See Subfeed Alarms Bitmap
49563	9562	Subfeed 8 Alarms	16-bit Bitmap	See Subfeed Alarms Bitmap
49564	9563	Subfeed 9 Alarms	16-bit Bitmap	See Subfeed Alarms Bitmap
49565	9564	Subfeed 10 Alarms	16-bit Bitmap	See Subfeed Alarms Bitmap
49566	9565	Subfeed 11 Alarms	16-bit Bitmap	See Subfeed Alarms Bitmap
49567	9566	Subfeed 12 Alarms	16-bit Bitmap	See Subfeed Alarms Bitmap
49568	9567	Subfeed 13 Alarms	16-bit Bitmap	See Subfeed Alarms Bitmap
49569	9568	Subfeed 14 Alarms	16-bit Bitmap	See Subfeed Alarms Bitmap
49570	9569	Subfeed 15 Alarms	16-bit Bitmap	See Subfeed Alarms Bitmap
49571	9570	Subfeed 16 Alarms	16-bit Bitmap	See Subfeed Alarms Bitmap

Panel Alarm Bitmap		
Alarm	Bit	Notes
System Summary Alarm	1	1=Active, 0=Clear
Panel Board Summary Alarm	2	1=Active, 0=Clear
Main Overvoltage	3	1=Active, 0=Clear
Main Undervoltage	4	1=Active, 0=Clear
Phase Overcurrent Alarm	5	1=Active, 0=Clear
Phase Overcurrent Warning	6	1=Active, 0=Clear
Neutral Overcurrent	7	1=Active, 0=Clear
Ground Overcurrent	8	1=Active, 0=Clear

Breaker Alarms Bitmap		
Alarm	Bit	Notes
Overcurrent Alarm	1	1=Active, 0=Clear
Overcurrent Warning	2	1=Active, 0=Clear
Low Current Alarm	3	1=Active, 0=Clear

Subfeed Alarms Bitmap		
Alarm	Bit	Notes
Phase Overcurrent Alarm	5	1=Active, 0=Clear
Phase Overcurrent Warning	6	1=Active, 0=Clear
Neutral Overcurrent	7	1=Active, 0=Clear
Ground Overcurrent	8	1=Active, 0=Clear

### 5.3 Resetting Alarms

CODE 16 (0x10) PANEL ALARM RESET				
Register	Address	Description	Format	Comments
49601	9600	Password Access	10 x Packed Character	
49602	9601			
49603	9602			
49604	9603			
49605	9604			
49606	9605	Panel Alarm Reset Mask	16-bit Bitmap	See "Panel Alarms Bitmap" table for bit definitions. Setting a bit in this field clears the associated alarm. If the user resets the System Summary Alarm, all active alarms will be cleared.

CODE 16 (0x10) BREAKER ALARM RESET				
Register	Address	Description	Format	Comments
49701	9700	Password Access	10 x Packed Character	
49702	9701			
49703	9702			
49704	9703			
49705	9704			
49706	9705	Breaker Index	16-bit Unsigned	From 1 to 42
49707	9706	Breaker Alarm Reset Mask	16-bit Bitmap	See "Breaker Alarms Bitmap" table for bit definitions. Setting a bit in this field clears the associated alarm.

CODE 16 (0x10) SUBFEED ALARM RESET				
Register	Address	Description	Format	Comments
49801	9800	Password Access	10 x Packed Character	
49802	9801			
49803	9802			
49804	9803			
49805	9804			
49806	9805	Subfeed Index	16-bit Unsigned	From 1 to 16
49807	9806	Subfeed Alarm Reset Mask	16-bit Bitmap	See "Subfeed Alarms Bitmap" table for bit definitions. Setting a bit in this field clears the associated alarm.

## 6. Other Commands

### 6.1 Setting the Clock

CODE 16 (0x10) SET REAL-TIME CLOCK				
Register	Address	Description	Format	Comments
49901	9900	Password Access	10 x Packed Character	
49902	9901			
49903	9902			
49904	9903			
49905	9904			
49906	9905	New clock setting	32-bit Unsigned	Seconds since midnight, January 1, 1970, UTC. (Unix time format)
49907	9906			

*The LDM unit uses universal coordinated time (UTC) and does not correct for time zones or daylight savings time. It is the responsibility of the user application to make these adjustments.*