

MODBUS RTU MAP

K-PAM 5500 (DG / P / M / F / S)

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1. Scope

This document describes the Modbus RTU register map for the K-PAM 5500

2. Applicable Document

Modicon Modbus Protocol Reference Guide

DWG#:PI-MBUS-300 Rev.E

This document describes the Modicon Modbus RTU communication protocol used by the K-PAM 5500

The device configuration parameters, such as baud rate, is only accessible via debug port on the device.

Because MODBUS is a multidrop network, the operator is responsible to make sure no 2 devices have the same ID on the network, The device ID can range from 1 ~ 254 only.

3. Register Types

The registers are mapped in order listed below.

Register Type	Category	Function Code	Start Address	Use/Contents	Access
Input Registers	Fixed Value Registers	0x04(04)	0000	Fixed data reported by the device	R/O
	Dynamic Value Registers		1000	Metering data-16BIT	
			5000	Metering data-32BIT	
			2400	Counter data	
			2500	Status data	
			5000	Logic Operand Status data	
Coil Registers	Coil Command Registers	0x06(06)	0400	Command coils used for activation	W/O
Set-point Registers	Setting Registers	0x06(06)	7000	K-PAM 5500 System Setting ^{⌘1)}	R/W
		0x10(16)	8000	K-PAM 5500 Protection Setting ^{⌘2)}	R/W

주1) K-PAM 5500 System Setting Write Operation

1. Write System Setting Data to Appropriate Register(7200~7281)

주2) K-PAM 5500 Protection Setting Write Operation

1. Write Protection Setting Data to Appropriate Register(8000~...)

*. If you need to change any kind of Setting Data, we recommend using our Windows Application(KBIED_MNE).

You could visit our web-site(www.kyongbo.co.kr) and download that Windows Application from there.

4. Functions and message parsing

The K-PAM 5500 supports a subset of Modbus commands. All the supported commands are listed below.

Function Code		Modbus Definition	KyongBo Definition	Register Groups
0x04	04	Read Input Registers	Read Actual Values of Set-points, values of Multiple Set-points	Dynamic values, events, Set-point registers fault and reports
0x06	06	Preset Single Register	Program Set-points	Set-point registers
0x10	16	Preset Multiple Register	Program Multiple Set-points	Set-point registers

5. Exception Responses

When a system host command received by a K-PAM 5500 cannot be performed, it replies with an error code.

- 01- illegal function
- 02- illegal register address
- 03- illegal data value
- 04- slave device failure
- 05- acknowledge long duration command
- 06- busy servicing another long duration command
- 07- negative acknowledge
- 08- invalid report index

6. Data Formats

Format	Description	Etc.
ASCII	16bits assigned ASCII	Ex) '1' ⇒ 0x0031
INT16U	0 ~ 65535	H-L Order
INT16S	-32768 ~ 32767	Ex) 0x1234 ⇒ 0x1234
INT32U	0 ~ 4294967295	LL-HH Order
INT32S	-2147483648 ~ 2147483647	Ex) 0x1234-0x5678 ⇒ 0x56781234
Bit Struct	16bits Bit Structure	

7. Communication Configuration

Operation	RS-485	Half-Duplex (2-wire)
Interface	Local	USB
	Remote	RS-485, ETHERNET
Baud rate	USB	115200
	RS-485	9600, 19200, 38400
Protocol	USB/RS-485	Modbus RTU
	ETHERNET	Modbus TCP
Data Bit	USB/RS-485	8 bit
Stop Bit	USB/RS-485	1 bit
Parity Bit	USB/RS-485	None(0)

8. Register Map

8.1 Device Inform/Control/Masurement/Status

Address (dec)	Function Code	Description		Range	Step	Access	Format	Units
Device Inform								
0000 ~ 0011	0x04	Device Type		12 ASCII characters "K-PAM 5500 "	--	R/O	FN420	--
0012 ~0016	0x04	Device Version		5 ASCII characters "xx.xx"	--	R/O	FN420	--
0017 ~		Reserved						
Control								
0501	0x06	Reset Annunciator		FF00 only (65280)	--	W/O	--	--
0502	0x06	LOG Clear	Event	FF00 only (65280)	--	W/O	--	--
0503	0x06		Waveform	FF00 only (65280)	--	W/O	--	--
0504	0x06		Fault	FF00 only (65280)	--	W/O	--	--
0505	0x06		Power Quality	FF00 only (65280)	--	W/O	--	--
0506	0x06		Demand	FF00 only (65280)	--	W/O	--	--
0507 ~		Reserved						
0510	0x06	Max Clear	Voltage	FF00 only (65280)	--	W/O	--	--
0511	0x06		Current	FF00 only (65280)	--	W/O	--	--
0512	0x06		Power	FF00 only (65280)	--	W/O	--	--
0513	0x06		Frequency	FF00 only (65280)	--	W/O	--	--
0514	0x06		Demand	FF00 only (65280)	--	W/O	--	--
0515	0x06		All	FF00 only (65280)	--	W/O	--	--
0516 ~		Reserved						
0520	0x06	Min Clear	Voltage	FF00 only (65280)	--	W/O	--	--
0521	0x06		Current	FF00 only (65280)	--	W/O	--	--
0522	0x06		Power	FF00 only (65280)	--	W/O	--	--
0523	0x06		Frequency	FF00 only (65280)	--	W/O	--	--
0524	0x06		Demand	FF00 only (65280)	--	W/O	--	--
0525	0x06		All	FF00 only (65280)	--	W/O	--	--
0526 ~		Reserved						
0530	0x06	Energy Clear	Forward kW-Hour	FF00 only (65280)	--	W/O	--	--
0531	0x06		Reverse kW-Hour	FF00 only (65280)	--	W/O	--	--
0532	0x06		Forward kvar-Hour	FF00 only (65280)	--	W/O	--	--
0533	0x06		Reverse kvar-Hour	FF00 only (65280)	--	W/O	--	--
0534	0x06		kVA-Hour	FF00 only (65280)	--	W/O	--	--
0535	0x06		All	FF00 only (65280)	--	W/O	--	--
0536 ~		Reserved						

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
0540	0x06	Control	CB OPEN SELECTION	FF00 only (65280)	--	W/O	--
0541	0x06		CB OPEN OPERATION	FF00 only (65280)	--	W/O	--
0542	0x06		CB CLOSE SELECTION	FF00 only (65280)	--	W/O	--
0543	0x06		CB CLOSE OPERATION	FF00 only (65280)	--	W/O	--
0544 ~	0x06	Reserved					
0550	0x06	Digital Output	DO #01 SELECTION	FF00 only (65280)	--	W/O	--
0551	0x06		DO #01 OPERATION	FF00 only (65280)	--	W/O	--
0552	0x06		DO #02 SELECTION	FF00 only (65280)	--	W/O	--
0553	0x06		DO #02 OPERATION	FF00 only (65280)	--	W/O	--
0554	0x06		DO #03 SELECTION	FF00 only (65280)	--	W/O	--
0555	0x06		DO #03 OPERATION	FF00 only (65280)	--	W/O	--
0556	0x06		DO #04 SELECTION	FF00 only (65280)	--	W/O	--
0557	0x06		DO #04 OPERATION	FF00 only (65280)	--	W/O	--
0558	0x06		DO #05 SELECTION	FF00 only (65280)	--	W/O	--
0559	0x06		DO #05 OPERATION	FF00 only (65280)	--	W/O	--
0560	0x06		DO #06 SELECTION	FF00 only (65280)	--	W/O	--
0561	0x06		DO #06 OPERATION	FF00 only (65280)	--	W/O	--
0562 ~		Reserved					
0570	0x06	Clear Thermal		FF00 only (65280)	--	W/O	--
0571 ~		Reserved					
0580	0x06	Clear Total Start Count		FF00 only (65280)	--	W/O	--
0581 ~		Reserved					
0590	0x06	LED Test		FF00 only (65280)	--	W/O	--
0591 ~		Reserved					
0600	0x06	Remote Input 01 Value		On(FF00) /Off(0000)	--	W/O	--
0601	0x06	Remote Input 02 Value		On(FF00) /Off(0000)	--	W/O	--
0602	0x06	Remote Input 03 Value		On(FF00) /Off(0000)	--	W/O	--
0603	0x06	Remote Input 04 Value		On(FF00) /Off(0000)	--	W/O	--
0604	0x06	Remote Input 05 Value		On(FF00) /Off(0000)	--	W/O	--
0605	0x06	Remote Input 06 Value		On(FF00) /Off(0000)	--	W/O	--
0606	0x06	Remote Input 07 Value		On(FF00) /Off(0000)	--	W/O	--
0607	0x06	Remote Input 08 Value		On(FF00) /Off(0000)	--	W/O	--
0608	0x06	Remote Input 09 Value		On(FF00) /Off(0000)	--	W/O	--
0609	0x06	Remote Input 10 Value		On(FF00) /Off(0000)	--	W/O	--
0610	0x06	Remote Input 11 Value		On(FF00) /Off(0000)	--	W/O	--
0611	0x06	Remote Input 12 Value		On(FF00) /Off(0000)	--	W/O	--
0612	0x06	Remote Input 13 Value		On(FF00) /Off(0000)	--	W/O	--
0613	0x06	Remote Input 14 Value		On(FF00) /Off(0000)	--	W/O	--
0614	0x06	Remote Input 15 Value		On(FF00) /Off(0000)	--	W/O	--
0615	0x06	Remote Input 16 Value		On(FF00) /Off(0000)	--	W/O	--
0616		Reserved					

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
Measurement							
		Phase Voltage					
1000	0x04	Phase A Voltage Magnitude	0.00 ~ 655.35	--	R/O	INT16U	kV
1001	0x04	Phase A Voltage Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1002	0x04	Phase B Voltage Magnitude	0.00 ~ 655.35	--	R/O	INT16U	kV
1003	0x04	Phase B Voltage Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1004	0x04	Phase C Voltage Magnitude	0.00 ~ 655.35	--	R/O	INT16U	kV
1005	0x04	Phase C Voltage Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1006	0x04	Phase N Voltage Magnitude	0.00 ~ 655.35	--	R/O	INT16U	kV
1007	0x04	Phase N Voltage Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
		Line to Line Voltage					
1008	0x04	Line AB Voltage Magnitude	0.00 ~ 655.35	--	R/O	INT16U	kV
1009	0x04	Line AB Voltage Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1010	0x04	Line BC Voltage Magnitude	0.00 ~ 655.35	--	R/O	INT16U	kV
1011	0x04	Line BC Voltage Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1012	0x04	Line CA Voltage Magnitude	0.00 ~ 655.35	--	R/O	INT16U	kV
1013	0x04	Line CA Voltage Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
		Sequence Voltage					
1014	0x04	Zero Sequence Voltage Magnitude(3V0)	0.00 ~ 655.35	--	R/O	INT16U	kV
1015	0x04	Zero Sequence Voltage Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1016	0x04	Positive Sequence Voltage Magnitude(V1)	0.00 ~ 655.35	--	R/O	INT16U	kV
1017	0x04	Positive Sequence Voltage Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1018	0x04	Negative Sequence Voltage Magnitude(V2)	0.00 ~ 655.35	--	R/O	INT16U	kV
1019	0x04	Negative Sequence Voltage Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
		Unbalance Voltage					
1020	0x04	Phase A Unbalance Voltage	0.00 ~ 655.35	--	R/O	INT16U	%
1021	0x04	Phase B Unbalance Voltage	0.00 ~ 655.35	--	R/O	INT16U	%
1022	0x04	Phase C Unbalance Voltage	0.00 ~ 655.35	--	R/O	INT16U	%
1023	0x04	Line AB Unbalance Voltage	0.00 ~ 655.35	--	R/O	INT16U	%
1024	0x04	Line BC Unbalance Voltage	0.00 ~ 655.35	--	R/O	INT16U	%
1025	0x04	Line CA Unbalance Voltage	0.00 ~ 655.35	--	R/O	INT16U	%
1026	0x04	Unbalance Voltage	0.00 ~ 655.35	--	R/O	INT16U	%
		Frequency					
1027	0x04	Frequency	40.000 ~ 65.535	--	R/O	INT16U	Hz
1028 ~							
		Fundamental Current					
1050	0x04	Phase A Current Magnitude	0.00 ~ 65.535	--	R/O	INT16U	kA
1051	0x04	Phase A Current Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1052	0x04	Phase B Current Magnitude	0.00 ~ 65.535	--	R/O	INT16U	kA
1053	0x04	Phase B Current Angle	0.00 ~ 359.9	--	R/O	INT16U	deg
1054	0x04	Phase C Current Magnitude	0.00 ~ 65.535	--	R/O	INT16U	kA
1055	0x04	Phase C Current Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1056	0x04	Phase N Current Magnitude	0.00 ~ 65.535	--	R/O	INT16U	kA
1057	0x04	Phase N Current Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1058	0x04	Sensitive Ground Current Magnitude	0.00 ~ 650.00	--	R/O	INT16U	mA
1059	0x04	Sensitive Ground Current Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
		Sequence Current					
1060	0x04	Zero Sequence Current Magnitude(I0)	0.00 ~ 65.535	--	R/O	INT16U	kA
1061	0x04	Zero Sequence Current Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1062	0x04	Positive Sequence Current Magnitude(I1)	0.00 ~ 65.535	--	R/O	INT16U	kA
1063	0x04	Positive Sequence Current Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1064	0x04	Negative Sequence Current Magnitude(I2)	0.00 ~ 65.535	--	R/O	INT16U	kA
1065	0x04	Negative Sequence Current Angle	0.00 ~ 359.99	--	R/O	INT16U	deg

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
		Unbalance Current					
1066	0x04	Phase A Unbalance Current	0.00 ~ 655.35	--	R/O	INT16U	%
1067	0x04	Phase B Unbalance Current	0.00 ~ 655.35	--	R/O	INT16U	%
1068	0x04	Phase C Unbalance Current	0.00 ~ 655.35	--	R/O	INT16U	%
1069	0x04	Unbalance Current	0.00 ~ 655.35	--	R/O	INT16U	%
		Load Rate					
1070	0x04	Phase A	0.00 ~ 655.35	--	R/O	INT16U	%
1071	0x04	Phase B	0.00 ~ 655.35	--	R/O	INT16U	%
1072	0x04	Phase C	0.00 ~ 655.35	--	R/O	INT16U	%
		THERMAL					
1073	0x04	Thermal	0 ~ 250.00	--	R/O	INT16U	%
		Motor					
1074	0x04	Motor Status	Stop(0), Run(1), Start(2)	--	R/O	INT16U	--
1075	0x04	Remain Start Number	0 ~ 5	--	R/O	INT16U	--
1076	0x04	Remain Restart Time	0 ~ 7200	--	R/O	INT16U	sec
1077	0x04	Remain Start MON Time	0 ~ 7200	--	R/O	INT16U	sec
1078	0x04	Total Start Count	0 ~ 65,535	--	R/O	INT16U	--
1079 ~		Reserved					
		Power					
1100	0x04	Phase A Watt	-327.67 ~ 327.67	--	R/O	INT16S	MW
1101	0x04	Phase B Watt	-327.67 ~ 327.67	--	R/O	INT16S	MW
1102	0x04	Phase C Watt	-327.67 ~ 327.67	--	R/O	INT16S	MW
1103	0x04	3 Phase Watt	-327.67 ~ 327.67	--	R/O	INT16S	MW
1104	0x04	Phase A Var	-327.67 ~ 327.67	--	R/O	INT16S	Mvar
1105	0x04	Phase B Var	-327.67 ~ 327.67	--	R/O	INT16S	Mvar
1106	0x04	Phase C Var	-327.67 ~ 327.67	--	R/O	INT16S	Mvar
1107	0x04	3 Phase Var	-327.67 ~ 327.67	--	R/O	INT16S	Mvar
1108	0x04	Phase A VA	0.00 ~ 655.35	--	R/O	INT16U	MVA
1109	0x04	Phase B VA	0.00 ~ 655.35	--	R/O	INT16U	MVA
1110	0x04	Phase C VA	0.00 ~ 655.35	--	R/O	INT16U	MVA
1111	0x04	3 Phase VA	0.00 ~ 655.35	--	R/O	INT16U	MVA
		Power Factor					
1112	0x04	Phase A Power Factor	-1.000 ~ 1.000	--	R/O	INT16S	--
1113	0x04	Phase B Power Factor	-1.000 ~ 1.000	--	R/O	INT16S	--
1114	0x04	Phase C Power Factor	-1.000 ~ 1.000	--	R/O	INT16S	--
1115	0x04	3 Phase Power Factor	-1.000 ~ 1.000	--	R/O	INT16S	--
		Demand Phase Current					
1116	0x04	Demand Phase A Current	0.00 ~ 65.535	--	R/O	INT16U	kA
1117	0x04	Demand Phase B Current	0.00 ~ 65.535	--	R/O	INT16U	kA
1118	0x04	Demand Phase C Current	0.00 ~ 65.535	--	R/O	INT16U	kA
		Demand 3 Phase Power					
1119	0x04	Demand 3 Phase Watt	-327.67 ~ 327.67	--	R/O	INT16S	MW
1120	0x04	Demand 3 Phase Var	-327.67 ~ 327.67	--	R/O	INT16S	MVar
1121	0x04	Demand 3 Phase VA	0.00 ~ 655.35	--	R/O	INT16U	MVA
		K-Factor					
1122	0x04	Ia	0.00 ~ 65.535	--	R/O	INT16U	--
1123	0x04	Ib	0.00 ~ 65.535	--	R/O	INT16U	--
1124	0x04	Ic	0.00 ~ 65.535	--	R/O	INT16U	--
		C-Factor					
1125	0x04	Va	0.00 ~ 65.535	--	R/O	INT16U	--
1126	0x04	Vb	0.00 ~ 65.535	--	R/O	INT16U	--
1127	0x04	Vc	0.00 ~ 65.535	--	R/O	INT16U	--
1128	0x04	Ia	0.00 ~ 65.535	--	R/O	INT16U	--
1129	0x04	Ib	0.00 ~ 65.535	--	R/O	INT16U	--
1130	0x04	Ic	0.00 ~ 65.535	--	R/O	INT16U	--

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
		ANALOG INPUT					
1131	0x04	ANALOG INPUT #1 – DCmA	4.00 ~ 20.00	--	R/O	INT16U	mA
1132	0x04	ANALOG INPUT #2 – DCmA	4.00 ~ 20.00	--	R/O	INT16U	mA
1133	0x04	ANALOG INPUT #1 – Temperature	-1000.0 ~ 1000.0	--	R/O	INT16U	℃
1134	0x04	ANALOG INPUT #2 – Temperature	-1000.0 ~ 1000.0	--	R/O	INT16U	℃
1135 ~		Reserved					
		Voltage THD					
1150	0x04	Phase A Voltage THD	0.00 ~ 655.35	--	R/O	INT16U	%
1151	0x04	Phase B Voltage THD	0.00 ~ 655.35	--	R/O	INT16U	%
1152	0x04	Phase C Voltage THD	0.00 ~ 655.35	--	R/O	INT16U	%
		Voltage Harmonics(Quantity)					
1153 ~ 1167	0x04	Phase A Voltage 1 st ~ 15th Harmonics	0.00 ~ 300.00	--	R/O	INT16U	V
1168 ~ 1182	0x04	Phase B Voltage 1 st ~ 15th Harmonics	0.00 ~ 300.00	--	R/O	INT16U	V
1183 ~ 1197	0x04	Phase C Voltage 1 st ~ 15th Harmonics	0.00 ~ 300.00	--	R/O	INT16U	V
1198 ~		Reserved					
		Current THD					
1250	0x04	Phase A Current THD	0.00 ~ 655.35	--	R/O	INT16U	%
1251	0x04	Phase B Current THD	0.00 ~ 655.35	--	R/O	INT16U	%
1252	0x04	Phase C Current THD	0.00 ~ 655.35	--	R/O	INT16U	%
		Current Harmonics(Quantity)					
1253 ~ 1267	0x04	Phase A Current 1 st ~ 15th Harmonics	0.000 ~ 250.00	--	R/O	INT16U	A
1268 ~ 1282	0x04	Phase B Current 1 st ~ 15th Harmonics	0.000 ~ 250.00	--	R/O	INT16U	A
1283 ~ 1297	0x04	Phase C Current 1 st ~ 15th Harmonics	0.000 ~ 250.00	--	R/O	INT16U	A
1298 ~		Reserved					
Measurement(Secondary)							
		Secondary Phase Voltage					
1400	0x04	Sec Phase A Voltage Magnitude	0.00 ~ 655.35	--	R/O	INT16U	V
1401	0x04	Sec Phase A Voltage Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1402	0x04	Sec Phase B Voltage Magnitude	0.00 ~ 655.35	--	R/O	INT16U	V
1403	0x04	Sec Phase B Voltage Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1404	0x04	Sec Phase C Voltage Magnitude	0.00 ~ 655.35	--	R/O	INT16U	V
1405	0x04	Sec Phase C Voltage Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1406	0x04	Sec Phase N Voltage Magnitude	0.00 ~ 655.35	--	R/O	INT16U	V
1407	0x04	Sec Phase N Voltage Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
		Secondary Line Voltage					
1408	0x04	Sec Line AB Voltage Magnitude	0.00 ~ 655.35	--	R/O	INT16U	V
1409	0x04	Sec Line AB Voltage Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1410	0x04	Sec Line BC Voltage Magnitude	0.00 ~ 655.35	--	R/O	INT16U	V
1411	0x04	Sec Line BC Voltage Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1412	0x04	Sec Line CA Voltage Magnitude	0.00 ~ 655.35	--	R/O	INT16U	V
1413	0x04	Sec Line CA Voltage Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
		Secondary Sequence Voltage					
1414	0x04	Sec Zero Sequence Voltage Magnitude	0.00 ~ 655.35	--	R/O	INT16U	V
1415	0x04	Sec Zero Sequence Voltage Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1416	0x04	Sec Positive Sequence Voltage Magnitude	0.00 ~ 655.35	--	R/O	INT16U	V
1417	0x04	Sec Positive Sequence Voltage Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1418	0x04	Sec Negative Sequence Voltage Magnitude	0.00 ~ 655.35	--	R/O	INT16U	V
1419	0x04	Sec Negative Sequence Voltage Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1420 ~		Reserved					

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
		Secondary Fundamental Current					
1500	0x04	Sec Phase A Current Magnitude	0.00 ~ 655.35	--	R/O	INT16U	A
1501	0x04	Sec Phase A Current Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1502	0x04	Sec Phase B Current Magnitude	0.00 ~ 655.35	--	R/O	INT16U	A
1503	0x04	Sec Phase B Current Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1504	0x04	Sec Phase C Current Magnitude	0.00 ~ 655.35	--	R/O	INT16U	A
1505	0x04	Sec Phase C Current Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1506	0x04	Sec Phase N Current Magnitude	0.00 ~ 655.35	--	R/O	INT16U	A
1507	0x04	Sec Phase N Current Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
		Secondary Sequence Current					
1508	0x04	Sec Zero Sequence Current Magnitude	0.00 ~ 655.35	--	R/O	INT16U	A
1509	0x04	Sec Zero Sequence Current Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1510	0x04	Sec Positive Sequence Current Magnitude	0.00 ~ 655.35	--	R/O	INT16U	A
1511	0x04	Sec Positive Sequence Current Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
1512	0x04	Sec Negative Sequence Current Magnitude	0.00 ~ 655.35	--	R/O	INT16U	A
1513	0x04	Sec Negative Sequence Current Angle	0.00 ~ 359.99	--	R/O	INT16U	deg
		Secondary Power					
1514	0x04	Sec Phase A Watt	-32.767 ~ 32.767	--	R/O	INT16S	kW
1515	0x04	Sec Phase B Watt	-32.767 ~ 32.767	--	R/O	INT16S	kW
1516	0x04	Sec Phase C Watt	-32.767 ~ 32.767	--	R/O	INT16S	kW
1517	0x04	Sec 3 Phase Watt	-32.767 ~ 32.767	--	R/O	INT16S	kW
1518	0x04	Sec Phase A Var	-32.767 ~ 32.767	--	R/O	INT16S	kVar
1519	0x04	Sec Phase B Var	-32.767 ~ 32.767	--	R/O	INT16S	kVar
1520	0x04	Sec Phase C Var	-32.767 ~ 32.767	--	R/O	INT16S	kVar
1521	0x04	Sec 3 Phase Var	-32.767 ~ 32.767	--	R/O	INT16S	kVar
1522	0x04	Sec Phase A VA	0.000 ~ 65.535	--	R/O	INT16U	kVA
1523	0x04	Sec Phase B VA	0.000 ~ 65.535	--	R/O	INT16U	kVA
1524	0x04	Sec Phase C VA	0.000 ~ 65.535	--	R/O	INT16U	kVA
1525	0x04	Sec 3 Phase VA	0.000 ~ 65.535	--	R/O	INT16U	kVA
1526 ~		Reserved					
32Bit Measurement							
		Phase Voltage					
2000	0x04	Phase A Voltage Magnitude	0 ~ 42949672.95	--	R/O	INT32U	V
2002	0x04	Phase A Voltage Angle	0.00 ~ 359.99	--	R/O	INT32U	deg
2004	0x04	Phase B Voltage Magnitude	0 ~ 42949672.95	--	R/O	INT32U	V
2006	0x04	Phase B Voltage Angle	0.00 ~ 359.99	--	R/O	INT32U	deg
2008	0x04	Phase C Voltage Magnitude	0 ~ 42949672.95	--	R/O	INT32U	V
2010	0x04	Phase C Voltage Angle	0.00 ~ 359.99	--	R/O	INT32U	deg
2012	0x04	Phase N Voltage Magnitude	0 ~ 42949672.95	--	R/O	INT32U	V
2014	0x04	Phase N Voltage Angle	0.00 ~ 359.99	--	R/O	INT32U	deg
		Line to Line Voltage					
2016	0x04	Line AB Voltage Magnitude	0 ~ 42949672.95	--	R/O	INT32U	V
2018	0x04	Line AB Voltage Angle	0.00 ~ 359.99	--	R/O	INT32U	deg
2020	0x04	Line BC Voltage Magnitude	0 ~ 42949672.95	--	R/O	INT32U	V
2022	0x04	Line BC Voltage Angle	0.00 ~ 359.99	--	R/O	INT32U	deg
2024	0x04	Line CA Voltage Magnitude	0 ~ 42949672.95	--	R/O	INT32U	V
2026	0x04	Line CA Voltage Angle	0.00 ~ 359.99	--	R/O	INT32U	deg

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
		Fundamental Current					
2028	0x04	Phase A Current Magnitude	0 ~ 42949672.95	--	R/O	INT32U	A
2030	0x04	Phase A Current Angle	0.00 ~ 359.99	--	R/O	INT32U	deg
2032	0x04	Phase B Current Magnitude	0 ~ 42949672.95	--	R/O	INT32U	A
2034	0x04	Phase B Current Angle	0.00 ~ 359.99	--	R/O	INT32U	deg
2036	0x04	Phase C Current Magnitude	0 ~ 42949672.95	--	R/O	INT32U	A
2038	0x04	Phase C Current Angle	0.00 ~ 359.99	--	R/O	INT32U	deg
2040	0x04	Phase N Current Magnitude	0 ~ 42949672.95	--	R/O	INT32U	A
2042	0x04	Phase N Current Angle	0.00 ~ 359.99	--	R/O	INT32U	deg
2044	0x04	Sensitive Ground Current Magnitude	0 ~ 650	--	R/O	INT32U	mA
2046	0x04	Sensitive Ground Current Angle	0.00 ~ 359.99	--	R/O	INT32U	deg
		Sequence Voltage					
2048	0x04	Zero Sequence Voltage Magnitude	0 ~ 42949672.95	--	R/O	INT32U	V
2050	0x04	Zero Sequence Voltage Angle	0.00 ~ 359.99	--	R/O	INT32U	deg
2052	0x04	Positive Sequence Voltage Magnitude	0 ~ 42949672.95	--	R/O	INT32U	V
2054	0x04	Positive Sequence Voltage Angle	0.00 ~ 359.99	--	R/O	INT32U	deg
2056	0x04	Negative Sequence Voltage Magnitude	0 ~ 42949672.95	--	R/O	INT32U	V
2058	0x04	Negative Sequence Voltage Angle	0.00 ~ 359.99	--	R/O	INT32U	deg
		Sequence Current					
2060	0x04	Zero Sequence Current Magnitude	0 ~ 42949672.95	--	R/O	INT32U	A
2062	0x04	Zero Sequence Current Angle	0.00 ~ 359.99	--	R/O	INT32U	deg
2064	0x04	Positive Sequence Current Magnitude	0 ~ 42949672.95	--	R/O	INT32U	A
2066	0x04	Positive Sequence Current Angle	0.00 ~ 359.99	--	R/O	INT32U	deg
2068	0x04	Negative Sequence Current Magnitude	0 ~ 42949672.95	--	R/O	INT32U	A
2070	0x04	Negative Sequence Current Angle	0.00 ~ 359.99	--	R/O	INT32U	deg
		Power					
2072	0x04	Phase A Watt	-2147483647 ~ 2147483647	--	R/O	INT32S	W
2074	0x04	Phase B Watt	-2147483647 ~ 2147483647	--	R/O	INT32S	W
2076	0x04	Phase C Watt	-2147483647 ~ 2147483647	--	R/O	INT32S	W
2078	0x04	3 Phase Watt	-2147483647 ~ 2147483647	--	R/O	INT32S	W
2080	0x04	Phase A Var	-2147483647 ~ 2147483647	--	R/O	INT32S	Var
2082	0x04	Phase B Var	-2147483647 ~ 2147483647	--	R/O	INT32S	Var
2084	0x04	Phase C Var	-2147483647 ~ 2147483647	--	R/O	INT32S	Var
2086	0x04	3 Phase Var	-2147483647 ~ 2147483647	--	R/O	INT32S	Var
2088	0x04	Phase A VA	0 ~ 4294967295	--	R/O	INT32U	VA
2090	0x04	Phase B VA	0 ~ 4294967295	--	R/O	INT32U	VA
2092	0x04	Phase C VA	0 ~ 4294967295	--	R/O	INT32U	VA
2094	0x04	3 Phase VA	0 ~ 4294967295	--	R/O	INT32U	VA
		Demand Phase Current					
2096	0x04	Demand Phase A Current	0 ~ 42949672.95	--	R/O	INT32U	A
2098	0x04	Demand Phase B Current	0 ~ 42949672.95	--	R/O	INT32U	A
2100	0x04	Demand Phase C Current	0 ~ 42949672.95	--	R/O	INT32U	A
		Demand 3 Phase Power					
2102	0x04	Demand 3 Phase Watt	-2147483647 ~ 2147483647	--	R/O	INT32S	W
2104	0x04	Demand 3 Phase Var	-2147483647 ~ 2147483647	--	R/O	INT32S	Var
2106	0x04	Demand 3 Phase VA	0 ~ 4294967295	--	R/O	INT32U	VA
2108 ~		Reserved					

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
Counter							
		Counter Set					
2400	0x04/0x06	CB Open Counter	0 ~ 65,535	--	R/W	INT16U	--
2401	0x04/0x06	CB Close Counter	0 ~ 65,535	--	R/W	INT16U	--
2402 ~		Reserved					
		Running Time Set					
2420 ~ 2421	0x04/0x10	CB Open Time	0 ~ 200,000	--	R/W	INT32U	hr.
2422 ~ 2423	0x04/0x10	CB Close Time	0 ~ 200,000	--	R/W	INT32U	hr.
2424 ~ 2425	0x04/0x10	Running Time	0 ~ 200,000	--	R/W	INT32U	hr.
2426 ~		Reserved					
		Log Counter					
2450	0x04	Log Event	0 ~ 1024	--	R/O	INT16U	--
2451	0x04	Log Waveform	0 ~ 16	--	R/O	INT16U	--
2452	0x04	Log Fault	0 ~ 300	--	R/O	INT16U	--
2453 ~		Reserved					
2455	0x04	Log Demand	0 ~ 2160	--	R/O	INT16U	--
2456	0x04	Log Power Quality	0 ~ 200	--	R/O	INT16U	--
2457 ~		Reserved					
Status							
		Self-Diagnosis					
2500	0x04	IN. Power	OK(0), Fail(1)	--	R/O	INT16U	--
2501	0x04	MAIN CPU	OK(0), Fail(1)	--	R/O	INT16U	--
2502	0x04	DSP CPU	OK(0), Fail(1)	--	R/O	INT16U	--
2503	0x04	Memory	OK(0), Fail(1)	--	R/O	INT16U	--
2504	0x04	Setting	OK(0), Fail(1)	--	R/O	INT16U	--
2505	0x04	AD Circuit	OK(0), Fail(1)	--	R/O	INT16U	--
2506	0x04	DO Circuit	OK(0), Fail(1)	--	R/O	INT16U	--
2507	0x04	EasyLogic	OK(0), Fail(1)	--	R/O	INT16U	--
2508	0x04	Calibration	OK(0), Fail(1)	--	R/O	INT16U	--
2509 ~		Reserved					
		Control					
2520	0x04	CB Status	Intermediate(0), Open(1),	--	R/O	INT16U	--
2521 ~	0x04	Reserved	Close(2), Bad(3), Disabled(4)	--	R/O	INT16U	--
		Supervision					
2550	0x04	TCS	NOP(0), OP(1), Disabled(2)	--	R/O	INT16U	--
2551	0x04	VT Fuse Fail	NOP(0), OP(1), Disabled(2)	--	R/O	INT16U	--
2552	0x04	Voltage Balance	NOP(0), OP(1), Disabled(2)	--	R/O	INT16U	--
2553	0x04	Current Sum	NOP(0), OP(1), Disabled(2)	--	R/O	INT16U	--
2554	0x04	Current Balance	NOP(0), OP(1), Disabled(2)	--	R/O	INT16U	--
2555	0x04	Reverse Con Detect	NOP(0), OP(1), Disabled(2)	--	R/O	INT16U	--
2556	0x04	PF Alarm	NOP(0), OP(1), Disabled(2)	--	R/O	INT16U	--
2557	0x04	A/I 1 High	NOP(0), OP(1), Disabled(2)	--	R/O	INT16U	--
2558	0x04	A/I 1 Low	NOP(0), OP(1), Disabled(2)	--	R/O	INT16U	--
2559	0x04	A/I 2 High	NOP(0), OP(1), Disabled(2)	--	R/O	INT16U	--
2560	0x04	A/I 2 Low	NOP(0), OP(1), Disabled(2)	--	R/O	INT16U	--
2561	0x04	Earth DISCON	NOP(0), OP(1), Disabled(2)	--	R/O	INT16U	--
2562 ~		Reserved					

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
		Protection					
		Phase Overcurrent (50/51)					
2600	0x04	OCR Phase A Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2601	0x04	OCR Phase B Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2602	0x04	OCR Phase C Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2603	0x04	IOCR1 Phase A Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2604	0x04	IOCR1 Phase B Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2605	0x04	IOCR1 Phase C Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2606	0x04	IOCR2 Phase A Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2607	0x04	IOCR2 Phase B Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2608	0x04	IOCR2 Phase C Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2609	0x04	TOCR1 Phase A Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2610	0x04	TOCR1 Phase B Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2611	0x04	TOCR1 Phase C Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2612	0x04	TOCR2 Phase A Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2613	0x04	TOCR2 Phase B Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2614	0x04	TOCR2 Phase C Operate	NOP(0), OP(1)	--	R/O	INT16U	--
		Ground/Neutral Overcurrent (50N/51N)					
2615	0x04	OCGR Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2616	0x04	IOCGR1 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2617	0x04	IOCGR2 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2618	0x04	TOCGR1 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2619	0x04	TOCGR2 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
		Phase Direction (67)					
2620	0x04	67 Phase A Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2621	0x04	67 Phase B Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2622	0x04	67 Phase C Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2623	0x04	67_1 Inst. Phase A Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2624	0x04	67_1 Inst. Phase B Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2625	0x04	67_1 Inst. Phase C Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2626	0x04	67_2 Inst. Phase A Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2627	0x04	67_2 Inst. Phase B Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2628	0x04	67_2 Inst. Phase C Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2629	0x04	67_1 Timed Phase A Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2630	0x04	67_1 Timed Phase B Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2631	0x04	67_1 Timed Phase C Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2632	0x04	67_2 Timed Phase A Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2633	0x04	67_2 Timed Phase B Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2634	0x04	67_2 Timed Phase C Operate	NOP(0), OP(1)	--	R/O	INT16U	--
		Ground Direction (67N)					
2635	0x04	67N Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2636	0x04	67N_1 Inst. Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2637	0x04	67N_2 Inst. Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2638	0x04	67N_1 Timed Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2639	0x04	67N_2 Timed Operate	NOP(0), OP(1)	--	R/O	INT16U	--
		Sensitive Directional Ground Overcurrent (67G)					
2640	0x04	67G Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2641	0x04	67G_1 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2642	0x04	67G_2 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
		Phase Unbalance Protection (46U)					
2643	0x04	46U Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2644	0x04	46U Operate	NOP(0), OP(1)	--	R/O	INT16U	--
		Negative Phase Sequence Overcurrent (46)					
2645	0x04	46 Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2646	0x04	46_1 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2647	0x04	46_2 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2648	0x04	46 Operate	NOP(0), OP(1)	--	R/O	INT16U	--

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
		Undercurrent					
2649	0x04	37 Phase A Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2650	0x04	37 Phase B Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2651	0x04	37 Phase C Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2652	0x04	37_1 Phase A Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2653	0x04	37_1 Phase B Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2654	0x04	37_1 Phase C Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2655	0x04	37_2 Phase A Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2656	0x04	37_2 Phase B Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2657	0x04	37_2 Phase C Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2658 ~		Reserved					
		Phase Overvoltage (59)					
2700	0x04	59 Phase A Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2701	0x04	59 Phase B Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2702	0x04	59 Phase C Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2703	0x04	59_1 Phase A Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2704	0x04	59_1 Phase B Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2705	0x04	59_1 Phase C Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2706	0x04	59_2 Phase A Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2707	0x04	59_2 Phase B Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2708	0x04	59_2 Phase C Operate	NOP(0), OP(1)	--	R/O	INT16U	--
		Phase Undervoltage (27)					
2709	0x04	27 Phase A Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2710	0x04	27 Phase B Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2711	0x04	27 Phase C Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2712	0x04	27_1 Phase A Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2713	0x04	27_1 Phase B Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2714	0x04	27_1 Phase C Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2715	0x04	27_2 Phase A Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2716	0x04	27_2 Phase B Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2717	0x04	27_2 Phase C Operate	NOP(0), OP(1)	--	R/O	INT16U	--
		Residual/Ground Overvoltage (59)					
2718	0x04	OVG Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2719	0x04	IOVG Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2720	0x04	TOVG_1 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2721	0x04	TOVG_2 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
		Phase Open					
2722	0x04	POR Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2723	0x04	POR1 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2724	0x04	POR2 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
		Negative Phase Sequence Overvoltage (47N)					
2725	0x04	47N Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2726	0x04	47N_1 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2727	0x04	47N_2 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
		Over Power (32P)					
2728	0x04	32P Phase A Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2729	0x04	32P Phase B Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2730	0x04	32P Phase C Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2731	0x04	32P_1 Phase A Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2732	0x04	32P_1 Phase B Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2733	0x04	32P_1 Phase C Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2734	0x04	32P_2 Phase A Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2735	0x04	32P_2 Phase B Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2736	0x04	32P_2 Phase C Operate	NOP(0), OP(1)	--	R/O	INT16U	--

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
		Reactive Power (32Q)					
2737	0x04	32Q Phase A Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2738	0x04	32Q Phase B Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2739	0x04	32Q Phase C Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2740	0x04	32Q_1 Phase A Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2741	0x04	32Q_1 Phase B Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2742	0x04	32Q_1 Phase C Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2743	0x04	32Q_2 Phase A Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2744	0x04	32Q_2 Phase B Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2745	0x04	32Q_2 Phase C Operate	NOP(0), OP(1)	--	R/O	INT16U	--
		Under Power (32P)					
2746	0x04	32P Phase A Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2747	0x04	32P Phase B Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2748	0x04	32P Phase C Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2749	0x04	32P_1 Phase A Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2750	0x04	32P_1 Phase B Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2751	0x04	32P_1 Phase C Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2752	0x04	32P_2 Phase A Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2753	0x04	32P_2 Phase B Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2754	0x04	32P_2 Phase C Operate	NOP(0), OP(1)	--	R/O	INT16U	--
		UFR(81U)					
2755	0x04	81U1 Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2756	0x04	81U1 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2757	0x04	81U2 Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2758	0x04	81U2 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2759	0x04	81U3 Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2760	0x04	81U3 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2761	0x04	81U4 Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2762	0x04	81U4 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
		OFR(81O)					
2763	0x04	81O1 Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2764	0x04	81O1 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2765	0x04	81O2 Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2766	0x04	81O2 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2767	0x04	81O3 Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2768	0x04	81O3 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2769	0x04	81O4 Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2770	0x04	81O4 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
		ROCOF (81R)					
2771	0x04	81R Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2772	0x04	81R_1 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2773	0x04	81R_2 Operate	NOP(0), OP(1)	--	R/O	INT16U	--
		VOLTAGE VECTOR SHIFT(78V)					
2774	0x04	VOLTAGE VECTOR SHIFT Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2775	0x04	VOLTAGE VECTOR SHIFT Operate	NOP(0), OP(1)	--	R/O	INT16U	--
		THERMAL OVERLOAD(49)					
2776	0x04	49 Alarm	NOP(0), Alarm(1)	--	R/O	INT16U	--
2777	0x04	49 Trip	NOP(0), Trip(1)	--	R/O	INT16U	--
		STALL/LOCK (48/51LR)					
2778	0x04	Start-up Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2779	0x04	Start-up Operate	NOP(0), OP(1)	--	R/O	INT16U	--
2780	0x04	Rotor locked	NOP(0), Lock(1)	--	R/O	INT16U	--
		NOTCHING(66)					
2781	0x04	Start Progress	NOP(0), Prog(1)	--	R/O	INT16U	--
2782	0x04	Start Operate	NOP(0), OP(1)	--	R/O	INT16U	--

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
		COLD LOAD(CLP)					
2783	0x04	Cold Load Pickup	NOP(0), Pickup(1)	--	R/O	INT16U	--
2784	0x04	Cold Load Operate	NOP(0), OP(1)	--	R/O	INT16U	--
		INRUSH					
2785	0x04	Inrush	NOP(0), OP(1)	--	R/O	INT16U	--
		Circuit Breaker Failure (50BF)					
2786	0x04	50BF Operate	NOP(0), OP(1)	--	R/O	INT16U	--
		Reclosing (79)					
2787	0x04	Reclose Ready	NOP(0), Ready(1)	--	R/O	INT16U	--
2788	0x04	Reclose in Progressing	NOP(0), Prog(1)	--	R/O	INT16U	--
2789	0x04	Reclose Failed	NOP(0), Fail(1)	--	R/O	INT16U	--
2790	0x04	Reclose Success	NOP(0), Success(1)	--	R/O	INT16U	--
2791 ~		Reserved					
		Digital Input					
2900 ~ 2905	0x04	Digital Input#01 ~ #06	DeEnergized(0), Energized(1)	--	R/O	INT16U	--
2906 ~		Reserved					
		Digital Output					
2910 ~ 2915	0x04	Digital Output#01 ~ #06	DeEnergized(0), Energized(1)	--	R/O	INT16U	--
2916 ~		Reserved					
		LED					
2920	0x04	Power LED	Off(0), ON(1)	--	R/O	INT16U	--
2921	0x04	RUN LED	Off(0), ON(1)	--	R/O	INT16U	--
2922	0x04	ERROR LED	Off(0), ON(1)	--	R/O	INT16U	--
2923	0x04	Pickup LED	Off(0), ON(1)	--	R/O	INT16U	--
2924	0x04	Trip LED	Off(0), ON(1)	--	R/O	INT16U	--
2925	0x04	ALARM LED	Off(0), ON(1)	--	R/O	INT16U	--
2926	0x04	LOCAL / REMOTE LED	LOCAL(0), REMOTE(1)	--	R/O	INT16U	--
2927 ~ 2935	0x04	User LED#1 ~ #9	Off(0), ON(1)	--	R/O	INT16U	--
2936 ~		Reserved					
		Logic Component					
3000 ~ 3095	0x04	Logic Component#01 ~ #96	Off(0), ON(1)	--	R/O	INT16U	--
3096 ~		Reserved					
		Remote Input					
3200 ~ 3215	0x04	Remote IN#01 ~ #16	Off(0), ON(1)	--	R/O	INT16U	--
3216 ~		Reserved					
		Logic Operand(EasyLogic Monitoring)					
5000 ~ 5329	0x04	Logic Operand Status Data(330)	Off(0), On(1)	--	R/O	INT16U	--
~5330		Reserved					

8.2 System Setting

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
System Setting							
		Power System					
		General					
7000	0x04/0x06/0x10	Frequency	60Hz(0), 50Hz(1)	1	R/W	INT16U	Hz
7001	0x04/0x06/0x10	Wiring	3P4W(0), 3P3W(1)	1	R/W	INT16U	--
7002	0x04/0x06/0x10	Phase VT Primary	0.01 ~ 350.00	0.01	R/W	INT16U	kV
7003	0x04/0x06/0x10	Phase VT Secondary	50.0 ~ 250.0	0.1	R/W	INT16U	V
7004	0x04/0x06/0x10	Ground VT Primary	0.01 ~ 350.00	0.01	R/W	INT16U	kV
7005	0x04/0x06/0x10	Ground VT Secondary	50.0 ~ 250.0	0.1	R/W	INT16U	V
7006	0x04/0x06/0x10	Phase CT Ratio	5 ~ 50000	5	R/W	INT16U	:5
7007	0x04/0x06/0x10	Ground CT Ratio	5 ~ 50000	5	R/W	INT16U	:5
7008	0x04/0x06/0x10	Voltage Phase Rotation	ABC(0), ACB(1)	1	R/W	INT16U	--
7009	0x04/0x06/0x10	Current Phase Rotation	ABC(0), ACB(1)	1	R/W	INT16U	--
7010	0x04/0x06/0x10	Measurement	Primary(0), Secondary(1)	1	R/W	INT16U	--
7011 ~		Reserved					
		CB					
7030	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
7031	0x04/0x06/0x10	Open Time	0.10 ~ 6.00	0.01	R/W	INT16U	sec
7032	0x04/0x06/0x10	Close Time	0.10 ~ 6.00	0.01	R/W	INT16U	sec
7033	0x04/0x06/0x10	52a Input	NONE(0), DI #1(1) ~ DI #6(6)	1	R/W	FN410	--
7034	0x04/0x06/0x10	52b Input	NONE(0), DI #1(1) ~ DI #6(6)	1	R/W	FN410	--
7035 ~		Reserved					
		Motor					
7060	0x04/0x06/0x10	Full Load Ampere(FLA)	0.40 ~ 10.00	0.01	R/W	INT16U	A
7061	0x04/0x06/0x10	Start Time	1.00 ~ 300.00	0.01	R/W	INT16U	sec
7062 ~		Reserved					
		Waveform Record					
7080	0x04/0x06/0x10	Type	16*120(0)	--	R/W	INT16U	Cycle
7081	0x04/0x06/0x10	Trigger 1	Disabled(0), Portection OP(1)	1	R/W	INT16U	--
7082	0x04/0x06/0x10	Trigger 2	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
7083	0x04/0x06/0x10	Position	0 ~ 99	1	R/W	INT16U	%
7084 ~		Reserved					
		Supervision					
		Trip Circuit Supervision					
7100	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
7101	0x04/0x06/0x10	Trip Input	DI #01(0) ~ DI #06(5)	1	R/W	INT16U	--
7102	0x04/0x06/0x10	Time Delay	0.04 ~ 600.00	0.01	R/W	INT16U	sec
7103 ~							

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
		VT Fuse Failure					
7120	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
7121	0x04/0x06/0x10	Zero Sequence Voltage(3V0) Pickup	5 ~ 170	1	R/W	INT16U	V
7122	0x04/0x06/0x10	Zero Sequence Current(3I0) Pickup	0.10 ~ 5.00	0.01	R/W	INT16U	A
7123	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
7124 ~		Reserved					
		Voltage Balance					
7140	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
7141	0x04/0x06/0x10	Voltage Balance Threshold	5 ~ 170	1	R/W	INT16U	V
7142	0x04/0x06/0x10	Voltage Balance Factor	0.10 ~ 0.90	0.01	R/W	INT16U	--
7143	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
7144 ~		Reserved					
		Current Sum					
7160	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
7161	0x04/0x06/0x10	Current Sum Threshold	0.10 ~ 10.00	0.01	R/W	INT16U	A
7162	0x04/0x06/0x10	Current Sum Factor	0.10 ~ 0.90	0.01	R/W	INT16U	--
7163	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
7164 ~		Reserved					
		Current Balance					
7180	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
7181	0x04/0x06/0x10	Current Balance Threshold	0.10 ~ 10.00	0.01	R/W	INT16U	A
7182	0x04/0x06/0x10	Current Balance Factor	0.10 ~ 0.90	0.01	R/W	INT16U	--
7183	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
7184 ~		Reserved					
		REV CON Detector					
7200	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
7201	0x04/0x06/0x10	Mode	Voltage(0), Current(1), Volt+Curr(2)	1	R/W	INT16U	--
7202	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
7203 ~		Reserved					
		Power Factor Alarm					
7220	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
7221	0x04/0x06/0x10	MAX PF	0.85 ~ 1 ~ -0.50	0.01	R/W	INT16S	LEAD
7222	0x04/0x06/0x10	MIN PF	0.50 ~ 0.99	0.01	R/W	INT16U	LAG
7223	0x04/0x06/0x10	Block Voltage	5 ~ 110	1	R/W	INT16U	V
7224	0x04/0x06/0x10	MIN Current	0.50 ~ 5.00	0.01	R/W	INT16U	A
7225	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
7226 ~		Reserved					

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
		Analog Input 1					
7240	0x04/0x06/0x10	Mode	DC mA(0), Temperature(1)	1	R/W	INT16U	--
7241	0x04/0x06/0x10	DCmA High Scale	20.00	-	R/W	INT16U	mA
7242	0x04/0x06/0x10	DCmA Low Scale	4.00	-	R/W	INT16U	mA
7243	0x04/0x06/0x10	Temperature High Scale	-1000.0 ~ 1000.0	0.1	R/W	INT16U	℃
7244	0x04/0x06/0x10	Temperature Low Scale	-1000.0 ~ 1000.0	0.1	R/W	INT16U	℃
7245	0x04/0x06/0x10	LIMIT ALARM	Disabled(0), Enabled(1)	1	R/W	INT16U	--
7246	0x04/0x06/0x10	DCmA High ALARM	4.00 ~ 20.00	0.01	R/W	INT16U	mA
7247	0x04/0x06/0x10	DCmA Low ALARM	4.00 ~ 20.00	0.01	R/W	INT16U	mA
7248	0x04/0x06/0x10	Temperature High ALARM	-1000.0 ~ 1000.0	0.1	R/W	INT16U	℃
7249	0x04/0x06/0x10	Temperature Low ALARM	-1000.0 ~ 1000.0	0.1	R/W	INT16U	℃
7250	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
7251 ~		Reserved					
		Analog Input 2					
7260	0x04/0x06/0x10	Mode	DC mA(0), Temperature(1)	1	R/W	INT16U	--
7261	0x04/0x06/0x10	DCmA High Scale	20.00	-	R/W	INT16U	mA
7262	0x04/0x06/0x10	DCmA Low Scale	4.00	-	R/W	INT16U	mA
7263	0x04/0x06/0x10	Temperature High Scale	-1000.0 ~ 1000.0	0.1	R/W	INT16U	℃
7264	0x04/0x06/0x10	Temperature Low Scale	-1000.0 ~ 1000.0	0.1	R/W	INT16U	℃
7265	0x04/0x06/0x10	LIMIT ALARM	Disabled(0), Enabled(1)	1	R/W	INT16U	--
7266	0x04/0x06/0x10	DCmA High ALARM	4.00 ~ 20.00	0.01	R/W	INT16U	mA
7267	0x04/0x06/0x10	DCmA Low ALARM	4.00 ~ 20.00	0.01	R/W	INT16U	mA
7268	0x04/0x06/0x10	Temperature High ALARM	-1000.0 ~ 1000.0	0.1	R/W	INT16U	℃
7269	0x04/0x06/0x10	Temperature Low ALARM	-1000.0 ~ 1000.0	0.1	R/W	INT16U	℃
7270	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
7271 ~		Reserved					
		Earth Disconnecting					
7280	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
7281	0x04/0x06/0x10	Time Delay	0.02 ~ 60.00	0.01	R/W	INT16U	sec
7282 ~		Reserved					
		System Time					
7300	0x06/0x10	Year	2000 ~ 2104	1	W/O	INT16U	yr
7301	0x06/0x10	Month	1 ~ 12	1	W/O	INT16U	mo.
7302	0x06/0x10	Day	1 ~ 31	1	W/O	INT16U	d
7303	0x06/0x10	Hour	0 ~ 23	1	W/O	INT16U	hr
7304	0x06/0x10	Minute	0 ~ 59	1	W/O	INT16U	min.
7305	0x06/0x10	Second	0 ~ 59	1	W/O	INT16U	sec.
7306 ~		Reserved					

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
		Display					
		LCD					
7320	0x04/0x06/0x10	Off Mode	Auto Off(0), Always On(1)	1	R/W	INT16U	--
7321	0x04/0x06/0x10	Wait Time	1 ~ 30	1	R/W	INT16U	min
7322	0x04/0x06/0x10	Highlight	Disabled(0), Enabled(1)	1	R/W	INT16U	--
7323 ~		Reserved					
		Language					
7370	0x04/0x06/0x10	Language	English(0), Korean(1)	1	R/W	INT16U	--
7371 ~		Reserved					
		Communication					
		RS-485(Modbus)					
7390	0x04/0x06/0x10	BPS(Bit Per Sec)	9600(0), 19200(1), 38400(2)	1	R/W	INT16U	--
7391	0x04/0x06/0x10	Slave Address	1 ~ 254	1	R/W	INT16U	--
7392 ~		Reserved					
		Ethernet(TCP Modbus)					
7410 ~ 7413	0x04/0x06/0x10	IP Address	0 ~ 255	1	R/W	INT16U	--
7414 ~ 7417	0x04/0x06/0x10	Subnet Mask	0 ~ 255	1	R/W	INT16U	--
7418 ~ 7421	0x04/0x06/0x10	Gateway	0 ~ 255	1	R/W	INT16U	--
7422 ~		Reserved					

8.3 Protection Setting

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
Protection Setting							
		Phase Overcurrent (50_1)					
		Instantaneous Phase Overcurrent (50_1)					
8000	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8001	0x04/0x06/0x10	Pickup	0.50 ~ 100.00	0.01	R/W	INT16U	A
8002	0x04/0x06/0x10	Mode	DT(0), Inst(1)	1	R/W	INT16U	--
8003	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8004	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8005	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8006 ~		Reserved					
		Instantaneous Phase Overcurrent (50_2)					
8020	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8021	0x04/0x06/0x10	Pickup	0.50 ~ 100.00	0.01	R/W	INT16U	A
8022	0x04/0x06/0x10	Mode	DT(0), Inst(1)	1	R/W	INT16U	--
8023	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8024	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8025	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8026 ~		Reserved					
		Inverse Time Phase Overcurrent (51_1)					
8040	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8041	0x04/0x06/0x10	Pickup	0.50 ~ 100.00	0.01	R/W	INT16U	A
8042	0x04/0x06/0x10	Curve	DT(0) ~ KDNI(15)	1	R/W	FN301	--
8043	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8044	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8045	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8046	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8047 ~		Reserved					
		Inverse Time Phase Overcurrent (51_2)					
8060	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8061	0x04/0x06/0x10	Pickup	0.50 ~ 100.00	0.01	R/W	INT16U	A
8062	0x04/0x06/0x10	Curve	DT(0) ~ KDNI(15)	1	R/W	FN301	--
8063	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8064	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8065	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8066	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8067 ~		Reserved					
		Ground Overcurrent					
		Instantaneous Ground Overcurrent (50N_1)					
8080	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8081	0x04/0x06/0x10	Pickup	0.10 ~ 100.00	0.01	R/W	INT16U	A
8082	0x04/0x06/0x10	Mode	DT(0), Inst(1)	1	R/W	INT16U	--
8083	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8084	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8085	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8086 ~		Reserved					

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
Instantaneous Ground Overcurrent (50N_2)							
8100	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8101	0x04/0x06/0x10	Pickup	0.10 ~ 100.00	0.01	R/W	INT16U	A
8102	0x04/0x06/0x10	Mode	DT(0), Inst(1)	1	R/W	INT16U	--
8103	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8104	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8105	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8106 ~		Reserved					
Inverse Time Ground Overcurrent (51N_1)							
8120	0x04/0x06/0x10	Function	Disable(0), Enable(1)	1	R/W	INT16U	--
8121	0x04/0x06/0x10	Pickup	0.10 ~ 100.00	0.01	R/W	INT16U	A
8122	0x04/0x06/0x10	Curve	DT(0) ~ KDNI(15)	1	R/W	INT16U	--
8123	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8124	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8125	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	INT16U	--
8126	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8127 ~		Reserved					
Inverse Time Ground Overcurrent (51N_2)							
8140	0x04/0x06/0x10	Function	Disable(0), Enable(1)	1	R/W	INT16U	--
8141	0x04/0x06/0x10	Pickup	0.10 ~ 100.00	0.01	R/W	INT16U	A
8142	0x04/0x06/0x10	Curve	DT(0) ~ KDNI(15)	1	R/W	INT16U	--
8143	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8144	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8145	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8146	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8147 ~		Reserved					
Directional Phase Overcurrent (DOCR)							
Directional Instantaneous Phase (IDOCR_1)							
8160	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8161	0x04/0x06/0x10	Direction	Forward(0), Reverse(1)	1	R/W	INT16U	--
8162	0x04/0x06/0x10	Pickup	0.50 ~ 100.00	0.01	R/W	INT16U	A
8163	0x04/0x06/0x10	RCA	0 ~ 359	1	R/W	INT16U	deg
8164	0x04/0x06/0x10	Mode	DT(0), Inst(1)	1	R/W	INT16U	--
8165	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8166	0x04/0x06/0x10	Volt Loss Block	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8167	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8168	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8169 ~		Reserved					
Directional Instantaneous Phase (IDOCR_2)							
8180	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8181	0x04/0x06/0x10	Direction	Forward(0), Reverse(1)	1	R/W	INT16U	--
8182	0x04/0x06/0x10	Pickup	0.50 ~ 100.00	0.01	R/W	INT16U	A
8183	0x04/0x06/0x10	RCA	0 ~ 359	1	R/W	INT16U	deg
8184	0x04/0x06/0x10	Mode	DT(0), Inst(1)	1	R/W	INT16U	--
8185	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8186	0x04/0x06/0x10	Volt Loss Block	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8187	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8188	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8189 ~		Reserved					

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
Directional Phase Overcurrent (DOCR)							
Directional Inverse Time Phase Overcurrent (TDOCR_1)							
8200	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8201	0x04/0x06/0x10	Direction	Forward(0), Reverse(1)	1	R/W	INT16U	--
8202	0x04/0x06/0x10	Pickup	0.50 ~ 100.00	0.01	R/W	INT16U	A
8203	0x04/0x06/0x10	RCA	0 ~ 359	1	R/W	INT16U	deg
8204	0x04/0x06/0x10	Curve	DT(0) ~ KDNI(15)	1	R/W	FN300	--
8205	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8206	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8207	0x04/0x06/0x10	Volt Loss Block	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8208	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8209	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8210 ~		Reserved					
Directional Inverse Time Phase Overcurrent (TDOCR_2)							
8220	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8221	0x04/0x06/0x10	Direction	Forward(0), Reverse(1)	1	R/W	INT16U	--
8222	0x04/0x06/0x10	Pickup	0.50 ~ 100.00	0.01	R/W	INT16U	A
8223	0x04/0x06/0x10	RCA	0 ~ 359	1	R/W	INT16U	deg
8224	0x04/0x06/0x10	Curve	DT(0) ~ KDNI(15)	1	R/W	FN300	--
8225	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8226	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8227	0x04/0x06/0x10	Volt Loss Block	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8228	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8229	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8220 ~		Reserved					
Direction Ground Overcurrent(DOCGR)							
Directional Instantaneous Ground Overcurrent (IDOCGR_1)							
8240	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8241	0x04/0x06/0x10	Direction	Forward(0), Reverse(1)	1	R/W	INT16U	--
8242	0x04/0x06/0x10	Pickup	0.10 ~ 100.00	0.01	R/W	INT16U	A
8243	0x04/0x06/0x10	Polarizing	VOLT(0), CURR(1), VOLT or CURR(2)	1	R/W	INT16U	--
8244	0x04/0x06/0x10	Volt Source	3V0(0), VG(1)	1	R/W	INT16U	--
8245	0x04/0x06/0x10	Block VOLT	5 ~ 170	1	R/W	INT16U	V
8246	0x04/0x06/0x10	RCA	0 ~ 359	1	R/W	INT16U	deg
8247	0x04/0x06/0x10	Mode	DT(0), Inst(1)	1	R/W	INT16U	--
8248	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8249	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8250	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8251 ~		Reserved					

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
		Directional Instantaneous Ground Overcurrent (IDOCGR_2)					
8260	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8261	0x04/0x06/0x10	Direction	Forward(0), Reverse(1)	1	R/W	INT16U	--
8262	0x04/0x06/0x10	Pickup	0.10 ~ 100.00	0.01	R/W	INT16U	A
8263	0x04/0x06/0x10	Polarizing	VOLT(0), CURR(1), VOLT or CURR(2)	1	R/W	INT16U	--
8264	0x04/0x06/0x10	Volt Source	3V0(0), VG(1)	1	R/W	INT16U	--
8265	0x04/0x06/0x10	Block VOLT	5 ~ 170	1	R/W	INT16U	V
8266	0x04/0x06/0x10	RCA	0 ~ 359	1	R/W	INT16U	deg
8267	0x04/0x06/0x10	Mode	DT(0), Inst(1)	1	R/W	INT16U	--
8268	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8269	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8270	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8271 ~		Reserved					
		Directional Inverse Time Ground Overcurrent (TDOCGR 1)					
8280	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8281	0x04/0x06/0x10	Direction	Forward(0), Reverse(1)	1	R/W	INT16U	--
8282	0x04/0x06/0x10	Pickup	0.10 ~ 100.00	0.01	R/W	INT16U	A
8283	0x04/0x06/0x10	Polarizing	VOLT(0), CURR(1), VOLT or CURR(2)	1	R/W	INT16U	--
8284	0x04/0x06/0x10	Volt Source	3V0(0), VG(1)	1	R/W	INT16U	--
8285	0x04/0x06/0x10	Block VOLT	5 ~ 170	1	R/W	INT16U	V
8286	0x04/0x06/0x10	RCA	0 ~ 359	1	R/W	INT16U	deg
8287	0x04/0x06/0x10	Curve	DT(0) ~ KDNI(15)	1	R/W	FN300	--
8288	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8289	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8290	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8291	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8292 ~		Reserved					
		Directional Inverse Time Ground Overcurrent (TDOCGR 2)					
8300	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8301	0x04/0x06/0x10	Direction	Forward(0), Reverse(1)	1	R/W	INT16U	--
8302	0x04/0x06/0x10	Pickup	0.10 ~ 100.00	0.01	R/W	INT16U	A
8303	0x04/0x06/0x10	Polarizing	VOLT(0), CURR(1), VOLT or CURR(2)	1	R/W	INT16U	--
8304	0x04/0x06/0x10	Volt Source	3V0(0), VG(1)	1	R/W	INT16U	--
8305	0x04/0x06/0x10	Block VOLT	5 ~ 170	1	R/W	INT16U	V
8306	0x04/0x06/0x10	RCA	0 ~ 359	1	R/W	INT16U	deg
8307	0x04/0x06/0x10	Curve	DT(0) ~ KDNI(15)	1	R/W	FN300	--
8308	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8309	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8310	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8311	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8312 ~		Reserved					

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
		SGR (67G_1)					
8320	0x04/0x06/0x10	Function	Disable(0), Enable(1)	1	R/W	INT16U	--
8321	0x04/0x06/0x10	Direction	None(0), Forward(1), Reverse(2)	1	R/W	INT16U	--
8322	0x04/0x06/0x10	Pickup	0.9 ~ 250.0	0.1	R/W	INT16U	mA
8323	0x04/0x06/0x10	Block VOLT	5 ~ 170	1	R/W	INT16U	V
8324	0x04/0x06/0x10	RCA	0 ~ 359	1	R/W	INT16S	°
8325	0x04/0x06/0x10	Curve	DT(0), INVERSE(1)	1	R/W	INT16U	--
8326	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8327	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8328	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8329	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8330 ~	0x04/0x06/0x10	Reserved					
		SGR (67G_2)					
8340	0x04/0x06/0x10	Function	Disable(0), Enable(1)	1	R/W	INT16U	--
8341	0x04/0x06/0x10	Direction	None(0), Forward(1), Reverse(2)	1	R/W	INT16U	--
8342	0x04/0x06/0x10	Pickup	0.9 ~ 250.0	0.1	R/W	INT16U	mA
8343	0x04/0x06/0x10	Block VOLT	5 ~ 170	1	R/W	INT16U	V
8344	0x04/0x06/0x10	RCA	0 ~ 359	1	R/W	INT16S	°
8345	0x04/0x06/0x10	Curve	DT(0), INVERSE(1)	1	R/W	INT16U	--
8346	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8347	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8348	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8349	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8350 ~	0x04/0x06/0x10	Reserved					
		Unbalance Overcurrent(46U)					
8360	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8361	0x04/0x06/0x10	Pickup	2 ~ 80	1	R/W	INT16U	%
8362	0x04/0x06/0x10	MIN I1	0.50 ~ 5.00	0.01	R/W	INT16U	A
8363	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8364	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8365	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8366 ~		Reserved					
		NSOCR					
		INSOCR 1					
8380	0x04/0x06/0x10	Function	Disable(0), Enable(1)	1	R/W	INT16U	--
8381	0x04/0x06/0x10	Pickup	0.50 ~ 100.00	0.01	R/W	INT16U	A
8382	0x04/0x06/0x10	Mode	DT(0), Inst(1)	1	R/W	INT16U	--
8383	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8384	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8385	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8386 ~		Reserved					

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
INSOCR 2							
8400	0x04/0x06/0x10	Function	Disable(0), Enable(1)	1	R/W	INT16U	--
8401	0x04/0x06/0x10	Pickup	0.50 ~ 100.00	0.01	R/W	INT16U	A
8402	0x04/0x06/0x10	Mode	DT(0), Inst(1)	1	R/W	INT16U	A
8403	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8404	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8405	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8406 ~		Reserved					
TNSOCR							
8420	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8421	0x04/0x06/0x10	Pickup	0.50 ~ 100.00	0.01	R/W	INT16U	A
8422	0x04/0x06/0x10	Curve	DT(0) ~ KDNI(15)	1	R/W	FN300	--
8423	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8424	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8425	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8426	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8427 ~		Reserved					
Under Current (37)							
Under Current 1							
8440	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8441	0x04/0x06/0x10	Pickup	0.10 ~ 5.00	0.01	R/W	INT16U	A
8442	0x04/0x06/0x10	Mode	DT(0), Inst.(1)	1	R/W	INT16U	--
8443	0x04/0x06/0x10	Time Delay	0.04 ~ 180.00	0.01	R/W	INT16U	sec
8444	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8445	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8446 ~		Reserved					
Under Current 2							
8460	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8461	0x04/0x06/0x10	Pickup	0.10 ~ 5.00	0.01	R/W	INT16U	A
8462	0x04/0x06/0x10	Mode	DT(0), Inst.(1)	1	R/W	INT16U	--
8463	0x04/0x06/0x10	Time Delay	0.04 ~ 180.00	0.01	R/W	INT16U	sec
8464	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8465	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8466 ~		Reserved					
OVR							
OVR 1							
8480	0x04/0x06/0x10	Function	Disable(0), Enable(1)	1	R/W	INT16U	--
8481	0x04/0x06/0x10	OP Mode	1Phase(0), 3Phase(1)	1	R/W	INT16U	--
8482	0x04/0x06/0x10	Pickup	5 ~ 170	1	R/W	INT16U	V
8483	0x04/0x06/0x10	Curve	DT(0), INVERSE(1)	1	R/W	INT16U	--
8484	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8485	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8486	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8487	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8488 ~							

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
OVR 2							
8500	0x04/0x06/0x10	Function	Disable(0), Enable(1)	1	R/W	INT16U	--
8501	0x04/0x06/0x10	OP Mode	1Phase(0), 3Phase(1)	1	R/W	INT16U	--
8502	0x04/0x06/0x10	Pickup	5 ~ 170	1	R/W	INT16U	V
8503	0x04/0x06/0x10	Curve	DT(0), INVERSE(1)	1	R/W	INT16U	--
8504	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8505	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8506	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8507	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8508 ~		Reserved					
UVR							
UVR 1							
8520	0x04/0x06/0x10	Function	Disable(0), Enable(1)	1	R/W	INT16U	--
8521	0x04/0x06/0x10	OP Mode	1Phase(0), 3Phase(1)	1	R/W	INT16U	--
8522	0x04/0x06/0x10	Pickup	5 ~ 170	1	R/W	INT16U	V
8523	0x04/0x06/0x10	Curve	DT(0), NI(1)	1	R/W	INT16U	--
8524	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8525	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8526	0x04/0x06/0x10	Dead Block	Disable(0), Enable(1)	1	R/W	INT16U	--
8527	0x04/0x06/0x10	Dead Volt	5 ~ 170	1	R/W	INT16U	V
8528	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8529	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8530 ~		Reserved					
UVR 2							
8540	0x04/0x06/0x10	Function	Disable(0), Enable(1)	1	R/W	INT16U	--
8541	0x04/0x06/0x10	OP Mode	1Phase(0), 3Phase(1)	1	R/W	INT16U	--
8542	0x04/0x06/0x10	Pickup	5 ~ 170	1	R/W	INT16U	V
8543	0x04/0x06/0x10	Curve	DT(0), NI(1)	1	R/W	INT16U	--
8544	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8545	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8546	0x04/0x06/0x10	Dead Block	Disable(0), Enable(1)	1	R/W	INT16U	--
8547	0x04/0x06/0x10	Dead Volt	5 ~ 170	1	R/W	INT16U	V
8548	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8549	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8550 ~		Reserved					
OVGR							
IOVGR							
8560	0x04/0x06/0x10	Function	Disable(0), Enable(1)	1	R/W	INT16U	--
8561	0x04/0x06/0x10	Volt SRC	3V0(0), VG(1)	1	R/W	INT16U	--
8562	0x04/0x06/0x10	Pickup	5 ~ 170	1	R/W	INT16U	V
8563	0x04/0x06/0x10	Mode	DT(0), INST(1)	1	R/W	INT16U	--
8564	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8565	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8566	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8567 ~		Reserved					

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
TOVGR 1							
8580	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8581	0x04/0x06/0x10	Volt SRC	3V0(0), VG(1)	1	R/W	INT16U	--
8582	0x04/0x06/0x10	Pickup	5 ~ 170	1	R/W	INT16U	V
8583	0x04/0x06/0x10	Curve	DT(0), INV Trip(1), INV Alarm(2)	1	R/W	INT16U	--
8584	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8585	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8586	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8587	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8588 ~		Reserved					
TOVGR 2							
8600	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8601	0x04/0x06/0x10	Volt SRC	3V0(0), VG(1)	1	R/W	INT16U	--
8602	0x04/0x06/0x10	Pickup	5 ~ 170	1	R/W	INT16U	V
8603	0x04/0x06/0x10	Curve	DT(0), INV Trip(1), INV Alarm(2)	1	R/W	INT16U	--
8604	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8605	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8606	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8607	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8608 ~		Reserved					
POR							
POR 1							
8620	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8621	0x04/0x06/0x10	Pickup	5 ~ 100	1	R/W	INT16U	%
8622	0x04/0x06/0x10	Min VOLT	5 ~ 10	1	R/W	INT16U	V
8623	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8624	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8625	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8626 ~							
POR 2							
8640	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8641	0x04/0x06/0x10	Pickup	5 ~ 100	1	R/W	INT16U	%
8642	0x04/0x06/0x10	Min VOLT	5 ~ 10	1	R/W	INT16U	V
8643	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8644	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8645	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8646 ~		Reserved					
NSOVR							
NSOVR 1							
8660	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8661	0x04/0x06/0x10	Pickup	5 ~ 170	1	R/W	INT16U	V
8662	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8663	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8664	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8665 ~		Reserved					

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
		NSOVR 2					
8680	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8681	0x04/0x06/0x10	Pickup	5 ~ 170	1	R/W	INT16U	V
8682	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8683	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8684	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8685 ~		Reserved					
		OPR					
		Over Power 1 (32P)					
8700	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8701	0x04/0x06/0x10	Source	1 PHASE(0), 3 PHASE(1)	1	R/W	INT16U	--
8702	0x04/0x06/0x10	Direction	NONE(0), FORWARD(1), REVERSE(2)	1	R/W	INT16U	--
8703	0x04/0x06/0x10	Pickup	3 ~ 1500	1	R/W	INT16U	W
8704	0x04/0x06/0x10	Curve	DT(0), INVERSE1(1), INVERSE2(2)	1	R/W	INT16U	--
8705	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8706	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8707	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8708	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8709 ~		Reserved					
		Over Power 2 (32P)					
8720	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8721	0x04/0x06/0x10	Source	1 PHASE(0), 3 PHASE(1)	1	R/W	INT16U	--
8722	0x04/0x06/0x10	Direction	NONE(0), FORWARD(1), REVERSE(2)	1	R/W	INT16U	--
8723	0x04/0x06/0x10	Pickup	3 ~ 1500	1	R/W	INT16U	W
8724	0x04/0x06/0x10	Curve	DT(0), INVERSE1(1), INVERSE2(2)	1	R/W	INT16U	--
8725	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8726	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8727	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8728	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8729 ~		Reserved					
		Re.PR					
		Reactive Power (32Q_1)					
8740	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8741	0x04/0x06/0x10	Direction	NONE(0), FORWARD(1), REVERSE(2)	1	R/W	INT16U	--
8742	0x04/0x06/0x10	Pickup	3 ~ 1500	1	R/W	INT16U	var
8743	0x04/0x06/0x10	Curve	DT(0), INVERSE1(1)	1	R/W	INT16U	--
8744	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8745	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8746	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8747	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8748 ~		Reserved					

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
		Reactive Power (32Q_2)					
8760	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8761	0x04/0x06/0x10	Direction	NONE(0), FORWARD(1), REVERSE(2)	1	R/W	INT16U	--
8762	0x04/0x06/0x10	Pickup	3 ~ 1500	1	R/W	INT16U	var
8763	0x04/0x06/0x10	Curve	DT(0), INVERSE(1)	1	R/W	INT16U	--
8764	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8765	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8766	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8767	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8768 ~		Reserved					
		Under Power (32U)					
		Under Power (32U_1)					
8780	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8781	0x04/0x06/0x10	Source	1 PHASE(0), 3 PHASE(1)	1	R/W	INT16U	--
8782	0x04/0x06/0x10	Direction	NONE(0), FORWARD(1), REVERSE(2)	1	R/W	INT16U	--
8783	0x04/0x06/0x10	Pickup	3 ~ 900	1	R/W	INT16U	W
8784	0x04/0x06/0x10	Curve	DT(0), INVERSE(1)	1	R/W	INT16U	--
8785	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8786	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8787	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8788	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8789 ~		Reserved					
		Under Power (32U_2)					
8800	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8801	0x04/0x06/0x10	Source	1 PHASE(0), 3 PHASE(1)	1	R/W	INT16U	--
8802	0x04/0x06/0x10	Direction	NONE(0), FORWARD(1), REVERSE(2)	1	R/W	INT16U	--
8803	0x04/0x06/0x10	Pickup	3 ~ 900	1	R/W	INT16U	W
8804	0x04/0x06/0x10	Curve	DT(0), INV1(1)	1	R/W	INT16U	--
8805	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
8806	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
8807	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8808	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8809 ~		Reserved					
		UFR (Under Frequency)					
		UFR 1					
8820	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8821	0x04/0x06/0x10	Pickup	40.00 ~ 70.00	0.01	R/W	INT16U	Hz
8822	0x04/0x06/0x10	Block VOLT	20 ~ 170	1	R/W	INT16U	V
8823	0x04/0x06/0x10	Time Delay	0.07 ~ 180.00	0.01	R/W	INT16U	sec
8824	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8825	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8826 ~		Reserved					

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
		UFR 2					
8840	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8841	0x04/0x06/0x10	Pickup	40.00 ~ 70.00	0.01	R/W	INT16U	Hz
8842	0x04/0x06/0x10	Block VOLT	20 ~ 170	1	R/W	INT16U	V
8843	0x04/0x06/0x10	Time Delay	0.07 ~ 180.00	0.01	R/W	INT16U	sec
8844	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8845	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8846 ~		Reserved					
		UFR 3					
8860	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8861	0x04/0x06/0x10	Pickup	40.00 ~ 70.00	0.01	R/W	INT16U	Hz
8862	0x04/0x06/0x10	Block VOLT	20 ~ 170	1	R/W	INT16U	V
8863	0x04/0x06/0x10	Time Delay	0.07 ~ 180.00	0.01	R/W	INT16U	sec
8864	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8865	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8866 ~		Reserved					
		UFR 4					
8880	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8881	0x04/0x06/0x10	Pickup	40.00 ~ 70.00	0.01	R/W	INT16U	Hz
8882	0x04/0x06/0x10	Block VOLT	20 ~ 170	1	R/W	INT16U	V
8883	0x04/0x06/0x10	Time Delay	0.07 ~ 180.00	0.01	R/W	INT16U	sec
8884	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8885	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8886 ~		Reserved					
		OFR (Over Frequency)					
		OFR 1					
8900	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8901	0x04/0x06/0x10	Pickup	40.00 ~ 70.00	0.01	R/W	INT16U	Hz
8902	0x04/0x06/0x10	Block VOLT	20 ~ 170	1	R/W	INT16U	V
8903	0x04/0x06/0x10	Time Delay	0.07 ~ 180.00	0.01	R/W	INT16U	sec
8904	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8905	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8906 ~		Reserved					
		OFR 2					
8920	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8921	0x04/0x06/0x10	Pickup	40.00 ~ 70.00	0.01	R/W	INT16U	Hz
8922	0x04/0x06/0x10	Block VOLT	20 ~ 170	1	R/W	INT16U	V
8923	0x04/0x06/0x10	Time Delay	0.07 ~ 180.00	0.01	R/W	INT16U	sec
8924	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8925	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8926 ~		Reserved					

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
OFR 3							
8940	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8941	0x04/0x06/0x10	Pickup	40.00 ~ 70.00	0.01	R/W	INT16U	Hz
8942	0x04/0x06/0x10	Block VOLT	20 ~ 170	1	R/W	INT16U	V
8943	0x04/0x06/0x10	Time Delay	0.07 ~ 180.00	0.01	R/W	INT16U	sec
8944	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8945	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8946 ~		Reserved					
OFR 4							
8960	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8961	0x04/0x06/0x10	Pickup	40.00 ~ 70.00	0.01	R/W	INT16U	Hz
8962	0x04/0x06/0x10	Block VOLT	20 ~ 170	1	R/W	INT16U	V
8963	0x04/0x06/0x10	Time Delay	0.07 ~ 180.00	0.01	R/W	INT16U	sec
8964	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8965	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8966 ~		Reserved					
Rate of Change of Frequency							
Rate of Change of Frequency 1(81R)							
8980	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8981	0x04/0x06/0x10	Mode	Increasing(0), Decreasing(1), Bidirectional(2)	1	R/W	INT16U	--
8982	0x04/0x06/0x10	Pickup	0.10 ~ 10.00	0.01	R/W	INT16U	Hz/s
8983	0x04/0x06/0x10	Block VOLT	20 ~ 170	1	R/W	INT16U	V
8984	0x04/0x06/0x10	Time Delay	0.10 ~ 1.00	0.01	R/W	INT16U	sec
8985	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
8986	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
8987 ~		Reserved					
Rate of Change of Frequency 2(81R)							
9000	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
9001	0x04/0x06/0x10	Mode	Increasing(0), Decreasing(1), Bidirectional(2)	1	R/W	INT16U	--
9002	0x04/0x06/0x10	Pickup	0.10 ~ 10.00	0.1	R/W	INT16U	Hz/s
9003	0x04/0x06/0x10	Block VOLT	20 ~ 170	1	R/W	INT16U	V
9004	0x04/0x06/0x10	Time Delay	0.10 ~ 1.00	0.01	R/W	INT16U	sec
9005	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
9006	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
9007 ~		Reserved					
VOLTAGE VECTOR SHIFT							
9020	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
9021	0x04/0x06/0x10	Pickup	2.0 ~ 30.0	0.1	R/W	INT16U	deg
9022	0x04/0x06/0x10	Block VOLT	20 ~ 170	1	R/W	INT16U	V
9023	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	INT16U	--
9024	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
9025 ~		Reserved					

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
		Thermal (49)					
9040	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
9041	0x04/0x06/0x10	K-Factor	0.10 ~ 4.00	0.01	R/W	INT16U	--
9042	0x04/0x06/0x10	Time Constant	1.0 ~ 999.9	0.1	R/W	INT16U	min
9043	0x04/0x06/0x10	Cooling Constant	1.0 ~ 999.9	0.1	R/W	INT16U	min
9044	0x04/0x06/0x10	Alarm	40 ~ 100	1	R/W	INT16U	%
9045	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
9046	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
9047 ~		Reserved					
		Motor Protection					
		Stall (48)					
9060	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
9061	0x04/0x06/0x10	Pickup	1.00 ~ 100.00	0.01	R/W	INT16U	A
9062	0x04/0x06/0x10	Time Delay	0.04 ~ 300.00	0.01	R/W	INT16U	sec
9063	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
9064	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
9065 ~		Reserved					
		Lock(51LR)					
9080	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
9081	0x04/0x06/0x10	Pickup	1.00 ~ 100.00	0.01	R/W	INT16U	A
9082	0x04/0x06/0x10	Curve	DT(0), IEC_VI(1), IEC_EI(2)	1	R/W	INT16U	--
9083	0x04/0x06/0x10	Time Delay	0.04 ~ 300.00	0.01	R/W	INT16U	sec
9084	0x04/0x06/0x10	Lever	0.01 ~ 10.00	0.01	R/W	INT16U	--
9085	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
9086	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
9087 ~		Reserved					
		Start(66/68)					
9100	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
9101	0x04/0x06/0x10	T MON	5 ~ 120	1	R/W	INT16U	min
9102	0x04/0x06/0x10	START NUMBER	1 ~ 5	1	R/W	INT16U	--
9103	0x04/0x06/0x10	dT START	1 ~ 120	1	R/W	INT16U	min
9104	0x04/0x06/0x10	EMERGENCY SWITCH	NONE(0), DI #1(1) ~ DI #6(6)	1	R/W	FN220	--
9105	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
9106 ~		Reserved					
		Cold Load Pick-up					
9120	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
9121	0x04/0x06/0x10	Pickup	0.20 ~ 5.00	0.01	R/W	INT16U	A
9122	0x04/0x06/0x10	OP Delay	0 ~ 1000	1	R/W	INT16U	sec
9123	0x04/0x06/0x10	Reset Delay	0 ~ 1000	1	R/W	INT16U	sec
9124	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
9125	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
9126 ~		Reserved					

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
		INRUSH					
9140	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
9141	0x04/0x06/0x10	PICKUP	10 ~ 100	1	R/W	INT16U	%
9142	0x04/0x06/0x10	MIN IIf	0.10 ~ 5.00	0.01	R/W	INT16U	A
9143	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
9144	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
9145	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
9146 ~		Reserved					
		Circuit Break Failure(50BF)					
9160	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
9161	0x04/0x06/0x10	Trip Relay Input	D/O #1(0) ~ D/O #5(4), D/I #1(5) ~ D/I #6(10)	1	R/W	FN222	--
9162	0x04/0x06/0x10	Pickup	0.20 ~ 5.00	0.01	R/W	INT16U	A
9163	0x04/0x06/0x10	Time Delay	0.04 ~ 60.00	0.01	R/W	INT16U	sec
9164	0x04/0x06/0x10	Block	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
9165	0x04/0x06/0x10	Waveform	Disabled(0), Enabled(1)	1	R/W	INT16U	--
9166 ~		Reserved					
		Auto - Reclosing (79)					
9180	0x04/0x06/0x10	Function	Disabled(0), Enabled(1)	1	R/W	INT16U	--
9181	0x04/0x06/0x10	SHOT NUM	1 ~ 4	1	R/W	INT16U	--
9182	0x04/0x06/0x10	PRE CON	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
9183	0x04/0x06/0x10	START CON	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
9184	0x04/0x06/0x10	STOP CON	L_OFF(0) ~ 79 SUCCESS(329)	1	R/W	FN410	--
9185	0x04/0x06/0x10	PRE TIME	0.05 ~ 200.00	0.01	R/W	INT16U	sec
9186	0x04/0x06/0x10	DISC Time	0.01 ~ 5.00	0.01	R/W	INT16U	sec
9187	0x04/0x06/0x10	RECL Time	0.01 ~ 350.00	0.01	R/W	INT16U	sec
9188	0x04/0x06/0x10	1st Time	0.01 ~ 300.00	0.01	R/W	INT16U	sec
9189	0x04/0x06/0x10	2nd Time	0.01 ~ 300.00	0.01	R/W	INT16U	sec
9190	0x04/0x06/0x10	3rd Time	0.01 ~ 300.00	0.01	R/W	INT16U	sec
9191	0x04/0x06/0x10	4th Time	0.01 ~ 300.00	0.01	R/W	INT16U	sec
9192	0x04/0x06/0x10	Inst. BLOCK	Disabled(0), Enabled(1)	1	R/W	INT16U	--
9193 ~		Reserved					

8.4 Min/Max Record

Address (dec)	Function Code	Description		Range	Step	Access	Format	Units
		Minimum Data						
10000 ~ 10001	0x04	Va		0.00 ~ 999,999.99	1	R/O	INT32U	V
10002	0x04	Record Time	Year	2000 ~ 2099	1	R/O	INT16U	--
10003	0x04		Month	1 ~ 12	1	R/O	INT16U	--
10004	0x04		Day	1 ~ 31	1	R/O	INT16U	--
10005	0x04		Hour	0 ~ 23	1	R/O	INT16U	--
10006	0x04		Minute	0 ~ 59	1	R/O	INT16U	--
10007	0x04		Second	0 ~ 59	1	R/O	INT16U	sec
10008	0x04		Millisecond	0 ~ 999	1	R/O	INT16U	msec
...								
10324 ~ 10325	0x04	DMD_St		0 ~ 4294967295	1	R/O	INT32U	VA
10326	0x04	Record Time	Year	2000 ~ 2099	1	R/O	INT16U	--
10327	0x04		Month	1 ~ 12	1	R/O	INT16U	--
10328	0x04		Day	1 ~ 31	1	R/O	INT16U	--
10329	0x04		Hour	0 ~ 23	1	R/O	INT16U	--
10330	0x04		Minute	0 ~ 59	1	R/O	INT16U	--
10331	0x04		Second	0 ~ 59	1	R/O	INT16U	sec
10332	0x04		Millisecond	0 ~ 999	1	R/O	INT16U	msec
10333 ~		Reserved						
		Maximum Data						
10500 ~ 10501	0x04	Va		0.00 ~ 999,999.99	1	R/O	INT32U	V
10502	0x04	Record Time	Year	2000 ~ 2099	1	R/O	INT16U	--
10503	0x04		Month	1 ~ 12	1	R/O	INT16U	--
10504	0x04		Day	1 ~ 31	1	R/O	INT16U	--
10505	0x04		Hour	0 ~ 23	1	R/O	INT16U	--
10506	0x04		Minute	0 ~ 59	1	R/O	INT16U	--
10507	0x04		Second	0 ~ 59	1	R/O	INT16U	sec
10508	0x04		Millisecond	0 ~ 999	1	R/O	INT16U	msec
...								
10824 ~ 10825		DMD_St		0 ~ 4294967295	1	R/O	INT32U	VA
10826	0x04	Record Time	Year	2000 ~ 2099	1	R/O	INT16U	--
10827	0x04		Month	1 ~ 12	1	R/O	INT16U	--
10828	0x04		Day	1 ~ 31	1	R/O	INT16U	--
10829	0x04		Hour	0 ~ 23	1	R/O	INT16U	--
10830	0x04		Minute	0 ~ 59	1	R/O	INT16U	--
10831	0x04		Second	0 ~ 59	1	R/O	INT16U	sec
10832	0x04		Millisecond	0 ~ 999	1	R/O	INT16U	msec
10833 ~		Reserved						

※ Min Record

Num	Address	Description	Range	Step	Access	Format	Units
1	10000 ~ 10008	Va	0.00 ~ 999,999.99	--	R/O	INT32U	V
2	10009 ~ 10017	Vb	0.00 ~ 999,999.99	--	R/O	INT32U	V
3	10018 ~ 10026	Vc	0.00 ~ 999,999.99	--	R/O	INT32U	V
4	10027 ~ 10035	Vn	0.00 ~ 999,999.99	--	R/O	INT32U	V
5	10036 ~ 10044	Vab	0.00 ~ 999,999.99	--	R/O	INT32U	V
6	10045 ~ 10053	Vbc	0.00 ~ 999,999.99	--	R/O	INT32U	V
7	10054 ~ 10062	Vca	0.00 ~ 999,999.99	--	R/O	INT32U	V
8	10063 ~ 10071	V0	0.00 ~ 999,999.99	--	R/O	INT32U	V
9	10072 ~ 10080	V1	0.00 ~ 999,999.99	--	R/O	INT32U	V
10	10081 ~ 10089	V2	0.00 ~ 999,999.99	--	R/O	INT32U	V
11	10090 ~ 10098	Frequency	40.000 ~ 100.000	--	R/O	INT32U	Hz
12	10099 ~ 10107	Ia	0.00 ~ 999,999.999	--	R/O	INT32U	A
13	10108 ~ 10116	Ib	0.00 ~ 999,999.999	--	R/O	INT32U	A
14	10117 ~ 10125	Ic	0.00 ~ 999,999.999	--	R/O	INT32U	A
15	10126 ~ 10134	In	0.00 ~ 999,999.999	--	R/O	INT32U	A
16	10135 ~ 10143	Is	0.00 ~ 999,999.99	--	R/O	INT32U	mA
17	10144 ~ 10152	I0	0.00 ~ 999,999.999	--	R/O	INT32U	A
18	10153 ~ 10161	I1	0.00 ~ 999,999.999	--	R/O	INT32U	A
19	10162 ~ 10170	I2	0.00 ~ 999,999.999	--	R/O	INT32U	A
20	10171 ~ 10179	Pa	-2147483647 ~ 2147483647	--	R/O	INT32S	W
21	10180 ~ 10188	Pb	-2147483647 ~ 2147483647	--	R/O	INT32S	W
22	10189 ~ 10197	Pc	-2147483647 ~ 2147483647	--	R/O	INT32S	W
23	10198 ~ 10206	Pt	-2147483647 ~ 2147483647	--	R/O	INT32S	W
24	10207 ~ 10215	Qa	-2147483647 ~ 2147483647	--	R/O	INT32S	var
25	10216 ~ 10224	Qb	-2147483647 ~ 2147483647	--	R/O	INT32S	var
26	10225 ~ 10233	Qc	-2147483647 ~ 2147483647	--	R/O	INT32S	var
27	10234 ~ 10242	Qt	-2147483647 ~ 2147483647	--	R/O	INT32S	var
28	10243 ~ 10251	Sa	0 ~ 4294967295	--	R/O	INT32U	VA
29	10252 ~ 10260	Sb	0 ~ 4294967295	--	R/O	INT32U	VA
30	10261 ~ 10269	Sc	0 ~ 4294967295	--	R/O	INT32U	VA
31	10270 ~ 10278	St	0 ~ 4294967295	--	R/O	INT32U	VA
32	10279 ~ 10287	DMD_Ia	0.00 ~ 999,999.999	--	R/O	INT32U	A
33	10288 ~ 10296	DMD_Ib	0.00 ~ 999,999.999	--	R/O	INT32U	A
34	10297 ~ 10305	DMD_Ic	0.00 ~ 999,999.999	--	R/O	INT32U	A
35	10306 ~ 10314	DMD_Pt	-2147483647 ~ 2147483647	--	R/O	INT32S	W
36	10315 ~ 10323	DMD_Qt	-2147483647 ~ 2147483647	--	R/O	INT32S	var
37	10324 ~ 10332	DMD_St	0 ~ 4294967295	--	R/O	INT32U	VA

※ Max Record

Num	Address	Description	Range	Step	Access	Format	Units
1	10500 ~ 10508	Va	0.00 ~ 999,999.99	--	R/O	INT32U	V
2	10509 ~ 10517	Vb	0.00 ~ 999,999.99	--	R/O	INT32U	V
3	10518 ~ 10526	Vc	0.00 ~ 999,999.99	--	R/O	INT32U	V
4	10527 ~ 10535	Vn	0.00 ~ 999,999.99	--	R/O	INT32U	V
5	10536 ~ 10544	Vab	0.00 ~ 999,999.99	--	R/O	INT32U	V
6	10545 ~ 10553	Vbc	0.00 ~ 999,999.99	--	R/O	INT32U	V
7	10554 ~ 10562	Vca	0.00 ~ 999,999.99	--	R/O	INT32U	V
8	10563 ~ 10571	V0	0.00 ~ 999,999.99	--	R/O	INT32U	V
9	10572 ~ 10580	V1	0.00 ~ 999,999.99	--	R/O	INT32U	V
10	10581 ~ 10589	V2	0.00 ~ 999,999.99	--	R/O	INT32U	V
11	10590 ~ 10598	Frequency	40.000 ~ 100.000	--	R/O	INT32U	Hz
12	10599 ~ 10607	Ia	0.00 ~ 999,999.999	--	R/O	INT32U	A
13	10608 ~ 10616	Ib	0.00 ~ 999,999.999	--	R/O	INT32U	A
14	10617 ~ 10625	Ic	0.00 ~ 999,999.999	--	R/O	INT32U	A
15	10626 ~ 10634	In	0.00 ~ 999,999.999	--	R/O	INT32U	A
16	10635 ~ 10643	Is	0.00 ~ 999,999.99	--	R/O	INT32U	mA
17	10644 ~ 10652	I0	0.00 ~ 999,999.999	--	R/O	INT32U	A
18	10653 ~ 10661	I1	0.00 ~ 999,999.999	--	R/O	INT32U	A
19	10662 ~ 10672	I2	0.00 ~ 999,999.999	--	R/O	INT32U	A
20	10671 ~ 10679	Pa	-2147483647 ~ 2147483647	--	R/O	INT32S	W
21	10680 ~ 10688	Pb	-2147483647 ~ 2147483647	--	R/O	INT32S	W
22	10689 ~ 10697	Pc	-2147483647 ~ 2147483647	--	R/O	INT32S	W
23	10698 ~ 10706	Pt	-2147483647 ~ 2147483647	--	R/O	INT32S	W
24	10707 ~ 10715	Qa	-2147483647 ~ 2147483647	--	R/O	INT32S	var
25	10716 ~ 10724	Qb	-2147483647 ~ 2147483647	--	R/O	INT32S	var
26	10725 ~ 10733	Qc	-2147483647 ~ 2147483647	--	R/O	INT32S	var
27	10734 ~ 10742	Qt	-2147483647 ~ 2147483647	--	R/O	INT32S	var
28	10743 ~ 10751	Sa	0 ~ 4294967295	--	R/O	INT32U	VA
29	10752 ~ 10760	Sb	0 ~ 4294967295	--	R/O	INT32U	VA
30	10761 ~ 10769	Sc	0 ~ 4294967295	--	R/O	INT32U	VA
31	10770 ~ 10778	St	0 ~ 4294967295	--	R/O	INT32U	VA
32	10779 ~ 10787	DMD_Ia	0.00 ~ 999,999.999	--	R/O	INT32U	A
33	10788 ~ 10796	DMD_Ib	0.00 ~ 999,999.999	--	R/O	INT32U	A
34	10797 ~ 10805	DMD_Ic	0.00 ~ 999,999.999	--	R/O	INT32U	A
35	10806 ~ 10814	DMD_Pt	-2147483647 ~ 2147483647	--	R/O	INT32S	W
36	10815 ~ 10823	DMD_Qt	-2147483647 ~ 2147483647	--	R/O	INT32S	var
37	10824 ~ 10832	DMD_St	0 ~ 4294967295	--	R/O	INT32U	VA

8.5 Energy Record

Address (dec)	Function Code	Description	Range	Step	Access	Format	Units
		Energy					
15000 ~ 15001	0x04	Forward kW-Hour	0 ~ 999,999,999	--	R/O	INT32U	kW
15002 ~ 15003	0x04	Reverse kW-Hour	0 ~ 999,999,999	--	R/O	INT32U	kW
15004 ~ 15005	0x04	Forward kvar-Hour	0 ~ 999,999,999	--	R/O	INT32U	kvar
15006 ~ 15007	0x04	Reverse kvar-Hour	0 ~ 999,999,999	--	R/O	INT32U	kvar
15008 ~ 15009	0x04	kVA-Hour	0 ~ 999,999,999	--	R/O	INT32U	kVA
15010 ~		Reserved					

8.6 File(Log, WAVEFORM Recording, EasyLogic)

Address (dec)	Function Code	Description		Range	Step	Access	Format	Units
File (Event, Wave Recording, EasyLogic File)								
60500 ~60519	0x06/0x10	File Open Operation	File ID		--	W/O	FN0	--
60520	0x06/0x10		File Open Operation	Read(0), Write(1)	1	W/O	FN6	--
60521	0x06/0x10	File Close Operation		Read(0), Write(1)	1	W/O	FN6	--
60522	0x04	File Status		OK(0), EOF(1)	--	R/O	INT16U	--
60523 ~ 60525		Reserved						
60526 ~ 60527	0x04/(0x06/0x10 Logic Only)	File size		0 ~ 4294967295	1	R/W	INT32U	Byte
60528	0x04/0x06/0x10	File Attribute		Read(0), Write(1)	1	R/W	FN6	--
60529 ~ 60599		Reserved						
60600	0x04/0x06/0x10	Buff Valid WORD Length		1 ~ 124	1	R/W	INT16U	Byte
60601	0x04/0x06/0x10	File buffer[0]			1	R/W	FN9	--
...	...	...		...	...	...	...	...
60724	0x04/0x06/0x10	File butter[123]			1	R/W	FN9	--
60725 ~		Reserved						

***How to upload or download File →**

- Previous procedure

- Read Type and Version(Address : 0 ~ 16)
- If it will be succeeded it can be read Log counter(Address : 2450 ~ 5247). If there is at least one log counter, you can follow below the list

1. Write File Name(60500 ~ 60519) and if you want to read or write File Open Operation(60520) that should be RD(0), or WR(1).

And this should be written File Name and File Open Operation at the same time.

2. Read File size(60526~60527) : Word Length
3. Read or Write File(60600 ~ 60724) - Valid WORD Length(60600), File buffer(60601 ~ 60724)
4. Repeat 3. and count that valid WORDs until that counts is same with the File size.
5. Write File Close Operation(60521)

*. If you need to read or write any kind of Files, we recommend using our Windows Application(KBIED_MNE).

You could visit our web-site(www.kyongbo.co.kr) and download that Windows Application from there.

9. Register Formats

No.	Format Name	Description		
		File ID		File Format
	Log List	60500	60501 ~ 60519	
FN0	Event Log File	0000	NULL	*.log file
	Fault Log File	0001		*.log file
	Demand Log File	0004		*.log file
	Waveform recording Log File	0005		*.log file
	Power Quality Log File	0006		*.log file
	Waveform recording #1 Configuration File	0100		*.cfg(config)file
	Waveform recording #2 Configuration File	0102		*.cfg(config)file
	Waveform recording #3 Configuration File	0104		*.cfg(config)file
	Waveform recording #4 Configuration File	0106		*.cfg(config)file
	Waveform recording #5 Configuration File	0108		*.cfg(config)file
	Waveform recording #6 Configuration File	0110		*.cfg(config)file
	Waveform recording #7 Configuration File	0112		*.cfg(config)file
	Waveform recording #8 Configuration File	0114		*.cfg(config)file
	Waveform recording #9 Configuration File	0116		*.cfg(config)file
	Waveform recording #10 Configuration File	0118		*.cfg(config)file
	Waveform recording #11 Configuration File	0120		*.cfg(config)file
	Waveform recording #12 Configuration File	0122		*.cfg(config)file
	Waveform recording #13 Configuration File	0124		*.cfg(config)file
	Waveform recording #14 Configuration File	0126		*.cfg(config)file
	Waveform recording #15 Configuration File	0128		*.cfg(config)file
	Waveform recording #16 Configuration File	0130		*.cfg(config)file
	Waveform recording #1 Data File	0101		*.dat(data)file
	Waveform recording #2 Data File	0103		*.dat(data)file
	Waveform recording #3 Data File	0105		*.dat(data)file
	Waveform recording #4 Data File	0107		*.dat(data)file
	Waveform recording #5 Data File	0109		*.dat(data)file
	Waveform recording #6 Data File	0111		*.dat(data)file
	Waveform recording #7 Data File	0113		*.dat(data)file
	Waveform recording #8 Data File	0115		*.dat(data)file
	Waveform recording #9 Data File	0117		*.dat(data)file
	Waveform recording #10 Data File	0119		*.dat(data)file
	Waveform recording #11 Data File	0121		*.dat(data)file
	Waveform recording #12 Data File	0123		*.dat(data)file
	Waveform recording #13 Data File	0125		*.dat(data)file
	Waveform recording #14 Data File	0127		*.dat(data)file
	Waveform recording #15 Data File	0129		*.dat(data)file
	Waveform recording #16 Data File	0131		*.dat(data)file
	Logic Data File	0200		*.dat(data)file
	Logic Picture Inform File	0201		*.dat(data)file

No.	Format Name	Description
FN6	File Open/Close Operation File Attributes	Bit Description 0: Read 1: Write
FN8	File Error Codes	0: No errors 1: Not Exist 2: No Permission : 허가 되지 않은 요구 시 에러, ID입력 에러 3: Already Opened : 이미 열려 있는 상태, 데이터 전송 완료 상태, 보낼 파일 없는 상태 파일 닫기 후 파일 열기부터 요망 4: Not Opened : 열리지 않은 상태, 강제 종료, ID입력 에러, 파일 닫기 후 파일 열기 요망
FN9	File Buffer	2Byte assemble into a word L-H order 0x12-0x34 ->0x3412
FN301	Inverse Time Overcurrent Curve	ENUMERATION 0: DT----- (Definite Time) 1: IEC_NI ----- (IEC Normal Inverse) 2: IEC_VI ----- (IEC Very Inverse) 3: IEC_EI ----- (IEC Extremely Inverse) 4: IEC_LI ----- (IEC Long Inverse) 5: ANSI_I ----- (ANSI Inverse) 6: ANSI_SI ----- (ANSI Short Inverse) 7: ANSI_LI ----- (ANSI Long Inverse) 8: ANSI_MI ----- (ANSI Moderately Inverse) 9: ANSI_VI ----- (ANSI Very Inverse) 10: ANSI_EI ----- (ANSI Extremely Inverse) 11: ANSI_DI ----- (ANSI Definite Inverse) 12: IEEE_EI ----- (IEEE Extremely Inverse) 13: KNI ----- (KEPCO Normal Inverse) 14: KVI ----- (KEPCO Very Inverse) 15: KDNI----- (KEPCO Direction Normal Inverse)
FN410	EasyLogic Operand	표1 참조
FN420	Characters	ASCII characters(Low Byte Only)

10. Log File Format(Event, Fault, Demand, Power Quality)

Event Format

<TYPE>,<DATE/TIME>,<EVENT ID>,<CR/LF>

ex) 0,2017/11/23,20:16:24.999,SYSTEM RESET – POWER ON<CR,LF>

Fault Format

<TYPE>,<DATE/TIME>,<FAULT ID>,<Duration>,<Field#1>,<Field#2>,...,<Field#n><CR/LF>

ex1) 1,2017/11/23,20:16:24.999,PROTECTION PICK_UP – IOCGR

Duration : 1.53sec, Ia:5.00[A],0.0' ,Ib:1.00[A],239.9' ,Ic:3.00[A],120.0' ,In:2.00[A],0.0' ...<CR/LF>

<TYPE>,<DATE/TIME>,<FAULT ID>,<Field#1>,<Field#2>,...,<Field#n><CR/LF>

ex2) 1,2017/11/23,20:16:24.999,PROTECTION PICK_UP - IOCGR

Ia:5.00[A],0.0' ,Ib:1.00[A],239.9' ,Ic:3.00[A],120.0' ,In:2.00[A],0.0' ...<CR/LF>

Demand Format

<TYPE>,<DATE/TIME>,<Demand#1>,<Demand#2>,...,<Demand#n><CR/LF>

ex) 1,2017/11/23,20:16:24.999

Ia:5.00[A], Ib:1.00[A], Ic:3.00[A], Pt: 450.454W, Qt 50.524var, St: 453.041VA ...<CR/LF>

Power Quality Format

<TYPE>,<DATE/TIME>,<Power Quality ID>,<Duration><CR/LF>

ex) 1,2017/11/23,20:16:24.999, SWELL A – 100.00V, DURATION 60.000sec<CR,LF>

1,2017/11/23,20:16:24.999, SAG A – 100.00V, DURATION 60.000sec<CR,LF>

1,2017/11/23,20:16:24.999, INTERRUPTION A – 100.00V, DURATION 60.000sec<CR,LF>

11. Waveform Recording File Format

COMTRADE File Format

Configuration and Data File supported

1) *.cfg File Format

L-H Order 2Byte ASCII

ex) 3,2A,1D<CR/LF>

File Buff: 0x2C 0x33 0x41 0x32 0x31 0x2C 0x0D 0x44 0x0A

ASCII : ',' '3' 'A' '2' '1' ',' <CR> 'D' <LF>

Read : 3,2A,1D<CR/LF>

2) *.dat File Format

L-H Order 2Byte assemble into a word

ex) File Buff: 0x12 0x34

Read : 0x3412

[표 1] EasyLogic Operand

Operand Group	Operand	NUM
Logic	LOGIC_OFF	0
	LOGIC_ON	1
DIGITAL INPUT	DIGITAL INPUT #01	2
	...	...
	DIGITAL INPUT #06	7
Remote Inputs	REMOTE INPUT #01	8
	...	...
	REMOTE INPUT #16	23
Logic Components	LOGIC COMPONENT #01	24
	...	...
	LOGIC COMPONENT #96	119
System Error	SYSTEM_ERR	120
Supervision	SUPERVISION_OP_OR	121
	TCS FAIL	122
	VT FUSE FAIL	123
	VOLTAGE BALANCE FAIL	124
	CURRENT SUM FAIL	125
	CURRENT BALANCE FAIL	126
	REVERSE CONN	127
	PF DETECT	128
	A/I HIGH1	129
	A/I LOW1	130
	A/I HIGH2	131
	A/I LOW2	132
	EARTH DISCON	133
ANNUNCIATOR RESET	ANNUNCIATOR RESET	134
LOCAL/REMOTE STATUS	LOCAL/REMOTE STATUS	135
Control Command	CB OPEN CONTROL	136
	CB CLOSE CONTROL	137
Control Status	CB OPEN STATUS	138
	CB CLOSE STATUS	139

Operand Group		Operand	NUM
Protection	ALL	PROTECTION PICKUP	140
		PROTECTION OP	141
	OCR(50/51)	OCR PICKUP	142
		OCR OP	143
		IOCR1 OP	144
		IOCR1 A OP	145
		IOCR1 B OP	146
		IOCR1 C OP	147
		IOCR2 OP	148
		IOCR2 A OP	149
		IOCR2 B OP	150
		IOCR2 C OP	151
		TOCR1 OP	152
		TOCR1 A OP	153
		TOCR1 B OP	154
		TOCR1 C OP	155
		TOCR2 OP	156
		TOCR2 A OP	157
		TOCR2 B OP	158
		TOCR2 C OP	159
	OCGR(50N/51N)	OCGR PICKUP	160
		OCGR OP	161
		IOCGR1 OP	162
		IOCGR2 OP	163
		TOCGR1 OP	164
		TOCGR2 OP	165
	DOCR(67)	DOCR PICKUP	166
		DOCR OP	167
		IDOCR1 OP	168
		IDOCR1 A OP	169
		IDOCR1 B OP	170
		IDOCR1 C OP	171
		IDOCR2 OP	172
		IDOCR2 A OP	173
		IDOCR2 B OP	174
		IDOCR2 C OP	175
		TDOCR1 OP	176
		TDOCR1 A OP	177

Operand Group		Operand	NUM
Protection	DOCR(67)	TDOCR1 B OP	178
		TDOCR1 C OP	179
		TDOCR2 OP	180
		TDOCR2 A OP	181
		TDOCR2 B OP	182
		TDOCR2 C OP	183
	DOCGR(67N)	DOCGR PICKUP	184
		DOCGR OP	185
		IDOCGR1 OP	186
		IDOCGR2 OP	187
		TDOCGR1 OP	188
		TDOCGR2 OP	189
	SGR(67)	SGR PICKUP	190
		SGR OP	191
		SGR1 OP	192
		SGR2 OP	193
	UBOCR(46U)	UBOCR PKP	194
		UBOCR OP	195
	NSOCR(46/46T)	NSOCR PKP	196
		NSOCR OP	197
		INSOCR1 OP	198
		INSOCR2 OP	199
		TNSOCR OP	200
	UCR(37)	UCR PKP	201
		UCR OP	202
		UCR1 OP	203
		UCR1 A OP	204
		UCR1 B OP	205
		UCR1 C OP	206
		UCR2 OP	207
		UCR2 A OP	208
		UCR2 B OP	209
		UCR2 C OP	210
		OVR PKP	211
	OVR(59)	OVR OP	212
		OVR1 OP	213
		OVR1 A OP	214
		OVR1 B OP	215
		OVR1 C OP	216

Operand Group		Operand	NUM
Protection	OVR(59)	OVR2 OP	217
		OVR2 A OP	218
		OVR2 B OP	219
		OVR2 C OP	220
	UVR(27)	UVR PKP	221
		UVR OP	222
		UVR1 OP	223
		UVR1 A OP	224
		UVR1 B OP	225
		UVR1 C OP	226
		UVR2 OP	227
		UVR2 A OP	228
		UVR2 B OP	229
		UVR2 C OP	230
	OVGR	OVGR PICKUP	231
		OVGR OP	232
		IOVGR OP	233
		TOVGR1 OP	234
		TOVGR2 OP	235
	POR	POR PICKUP	236
		POR OP	237
		POR1 OP	238
		POR2 OP	239
	NSOVR	NSOVR PICKUP	240
		NSOVR OP	241
		NSOVR1 OP	242
		NSOVR2 OP	243
	OPR	OPR PICKUP	244
		OPR OP	245
		OPR1 OP	246
		OPR1 FOR OP	247
		OPR1 REV OP	248
		OPR1 A OP	249
		OPR1 B OP	250
		OPR1 C OP	251
		OPR2 OP	252
		OPR2 FOR OP	253
		OPR2 REV OP	254
		OPR2 A OP	255
		OPR2 B OP	256
		OPR2 C OP	257

Operand Group		Operand	NUM
Protection	RePR	RePR PICKUP	258
		RePR OP	259
		RePR1 OP	260
		RePR1 FOR OP	261
		RePR1 REV OP	262
		RePR1 A OP	263
		RePR1 B OP	264
		RePR1 C OP	265
		RePR2 OP	266
		RePR2 FOR OP	267
		RePR2 REV OP	268
		RePR2 A OP	269
		RePR2 B OP	270
		RePR2 C OP	271
	UPR	UPR PICKUP	272
		UPR OP	273
		UPR1 OP	274
		UPR1 FOR OP	275
		UPR1 REV OP	276
		UPR1 A OP	277
		UPR1 B OP	278
		UPR1 C OP	279
		UPR2 OP	280
		UPR2 FOR OP	281
		UPR2 REV OP	282
		UPR2 A OP	283
		UPR2 B OP	284
		UPR2 C OP	285
	UFR	UFR PICKUP	286
		UFR OP	287
		UFR1 PICKUP	288
		UFR1 OP	289
		UFR2 PICKUP	290
		UFR2 OP	291
		UFR3 PICKUP	292
		UFR3 OP	293
		UFR4 PICKUP	294
		UFR4 OP	295

Operand Group		Operand	NUM
Protection	OFR	OFR PICKUP	296
		OFR OP	297
		OFR1 PICKUP	298
		OFR1 OP	299
		OFR2 PICKUP	300
		OFR2 OP	301
		OFR3 PICKUP	302
		OFR3 OP	303
		OFR4 PICKUP	304
		OFR4 OP	305
	ROCOF	ROCOF PKP	306
		ROCOF OP	307
		ROCOF1 OP	308
		ROCOF2 OP	309
	VOLTAGE VECTOR SHIFT	VOLTAGE VECTOR SHIFT PICKUP	310
		VOLTAGE VECTOR SHIFT OP	311
	THERMAL	THERMAL ALM	312
		THERMAL OP	313
	STALL / LOCK	STALL/LR PICKUP	314
		STALL OP	315
		LOCK OP	316
	START	START IN-PRG OP	317
		START INHIBIT OP	318
	COLD LOAD	COLD LD PICKUP	319
		COLD LD OP	320
	INRUSH	INRUSH OP	321
	CBF	CBF OP	322
	AREL	79 READY	323
		79 CLOSE	324
		79 IN-PRG	325
		79 SET INST BLOCK	326
		79 INST BLOCK	327
		79 FAIL	328
		79 SUCCESS	329