

۱۳-۱- پیوست (الف): آدرس‌های مربوط به استفاده از پروتکل Modbus-RTU

جدول ۷۴ - آدرس‌های Modbus (دریافت فرمان‌ها)

Index	Parameter	Range and Description
<b>Synchronization Zone</b>		
2	Year	Year%2000
3	Month and Date	High Byte Month Low Byte Date
4	Hour and Minute	High Byte Hour Low Byte Minute
5	Milisecond	
<b>Identification Zone</b>		
6	Relay Series	176= 2017/06/XX
7	Relay Model	176= 2017/06/XX
<b>Status Zone</b>		
267	Digital Inputs Status	DI 1~16 Status in bit 1~16
268	Digital Outputs Status	DO 1~12 Status in bit 1~12
269	Panel LEDs Status	LED 1~16 Status in bit 1~16
<b>Measurement Zone (x1)</b>		
275	Phase A Current (A)	Ia = received Value / 10 (Ex: 501 means 50.1 A)
276	Phase B Current (A)	Ib = received Value / 10 (Ex: 501 means 50.1 A)
277	Phase C Current (A)	Ic = received Value / 10 (Ex: 501 means 50.1 A)
278	Calculate 3I0	
279	Phase N Current (A)	In = received Value / 10 (Ex: 501 means 50.1 A)
280	Max Demand Current Phase A (A)	Ia = received Value / 10 (Ex: 501 means 50.1 A)
281	Max Demand Current Phase B (A)	Ib = received Value / 10 (Ex: 501 means 50.1 A)
282	Max Demand Current Phase C (A)	Ic = received Value / 10 (Ex: 501 means 50.1 A)
283	RESERVED	
286	Line Voltage A (kV)	VLL = received Value/1000 (Ex: 6600 means 6.6 kV)
287	Line Voltage B (kV)	VLL = received Value/1000 (Ex: 6600 means 6.6 kV)

288	Line Voltage C (kV)	$V_{LL} = \text{received Value}/1000$ (Ex: 6600 means 6.6 kV)
289	Phase Voltage A (kV)	$V_a = \text{received Value}/1000$ (Ex: 3800 means 3.8 kV)
290	Phase Voltage B (kV)	$V_b = \text{received Value}/1000$ (Ex: 3800 means 3.8 kV)
291	Phase Voltage C (kV)	$V_c = \text{received Value}/1000$ (Ex: 3800 means 3.8 kV)
292	Zero Sequence Voltage (kV)	$V_0 = \text{received Value}/1000$ (Ex: 3800 means 3.8 kV)
293	Positive Sequence Voltage (kV)	$V_+ = \text{received Value}/1000$ (Ex: 3800 means 3.8 kV)
294	Negative Sequence Voltage (kV)	$V_- = \text{received Value}/1000$ (Ex: 3800 means 3.8 kV)
295	Frequency (Hz)	$\text{frequency} = \text{received Num} / 100$ (Ex: 5010 means 50.10 Hz)
296	Active Power (kW)	$P = \text{received Value}$ (Ex: 38 means 38 kW)
297	Reactive Power (kVAr)	$Q = \text{received Value}$ (Ex: 38 means 38 kVAr)
298	Apperant Power (kVA)	$S = \text{received Value}$ (Ex: 38 means 38 kVA)
299	Max Demand Active Power (kW)	$P = \text{received Value}$ (Ex: 38 means 38 kW)
300	Max Demand Reactive Power (kVAr)	$Q = \text{received Value}$ (Ex: 38 means 38 kVAr)
301	Power Factor	$PF = \text{received Value} / 100$ (Ex: 90 means 0.9)
302~303	Export Active Energy (kWh)	UInt32 Value = received Value * 100 (Ex: 90 means 9000)
304~305	Import Active Energy (kWh)	UInt32 Value = received Value * 100 (Ex: 90 means 9000)
306~307	Export Active Energy (kWh)	UInt32 Value = received Value * 100 (Ex: 90 means 9000)
308~309	Import Active Energy (kWh)	UInt32 Value = received Value * 100 (Ex: 90 means 9000)
<b>Measurment Zone (x10)</b>		
310	Phase A Current (A)	$I_a = \text{received Value}$ (Ex: 501 means 501 A)

311	Phase B Current (A)	I <sub>b</sub> = received Value (Ex: 501 means 501 A)
312	Phase C Current (A)	I <sub>c</sub> = received Value (Ex: 501 means 501 A)
313	Calculate 3I <sub>0</sub>	
314	Phase N Current (A)	I <sub>n</sub> = received Value (Ex: 501 means 501 A)
315	Max Demand Current Phase A (A)	I <sub>a</sub> = received Value (Ex: 501 means 501 A)
316	Max Demand Current Phase B (A)	I <sub>b</sub> = received Value (Ex: 501 means 501 A)
317	Max Demand Current Phase C (A)	I <sub>c</sub> = received Value (Ex: 501 means 501 A)
318	RESERVED	
321	Line Voltage A (kV)	V <sub>LL</sub> = received Value/100 (Ex: 6600 means 66 kV)
322	Line Voltage B (kV)	V <sub>LL</sub> = received Value/100 (Ex: 6600 means 66 kV)
323	Line Voltage C (kV)	V <sub>LL</sub> = received Value/100 (Ex: 6600 means 66 kV)
324	Phase Voltage A (kV)	V <sub>a</sub> = received Value/100 (Ex: 3800 means 38 kV)
325	Phase Voltage B (kV)	V <sub>b</sub> = received Value/100 (Ex: 3800 means 38 kV)
326	Phase Voltage C (kV)	V <sub>c</sub> = received Value/100 (Ex: 3800 means 38 kV)
327	Zero Sequence Voltage (kV)	V <sub>0</sub> = received Value/100 (Ex: 3800 means 38 kV)
328	Positive Sequence Voltage (kV)	V <sub>+</sub> = received Value/100 (Ex: 3800 means 38 kV)
294	Negative Sequence Voltage (kV)	V <sub>-</sub> = received Value/100 (Ex: 3800 means 38 kV)
295	Frequency (Hz)	frequency = received Num / 100 (Ex: 5010 means 50.10 Hz)
296	Active Power (kW)	P = received Value* 100 (Ex: 38 means 3800 kW)
297	Reactive Power (kVAr)	Q = received Value* 100 (Ex: 38 means 3800 kVAr)
298	Apperant Power (kVA)	S = received Value* 100 (Ex: 38 means 3800 kVA)

299	Max Demand Active Power (kW)	$P = \text{received Value} * 100$ (Ex: 38 means 3800 kW)
300	Max Demand Reactive Power (kVAr)	$Q = \text{received Value} * 100$ (Ex: 38 means 3800 kVAr)
301	Power Factor	$PF = \text{received Value} / 100$ (Ex: 90 means 0.9)
302~ 303	Export Active Energy (kWh)	Uint32 Value = received Value * 100 (Ex: 90 means 9000)
304~ 305	Import Active Energy (kWh)	Uint32 Value = received Value * 100 (Ex: 90 means 9000)
306~ 307	Export Active Energy (kWh)	Uint32 Value = received Value * 100 (Ex: 90 means 9000)
308~ 309	Import Active Energy (kWh)	Uint32 Value = received Value * 100 (Ex: 90 means 9000)
<b>Diagnosis Zone</b>		
356	Overload TCU (%)	$TCU = \text{received Value} / 100$ (Ex: 8000 means 80%)
357	Last Motor Starting Time (Sec)	$\text{Start time} = \text{received Value} / 10$ (Ex: 80 means 8 sec)
358	Last Motor Starting Current (A)	$\text{Start current} = \text{received Value}$ (Ex: 800 means 800 A)
359~ 363	Reserved	
364	RTD Module 1 Channel 1 Temperature (degree)	Temperature = received Value (Ex: 80 means 80 degree)
365	RTD Module 1 Channel 2 Temperature (degree)	Temperature = received Value (Ex: 80 means 80 degree)
366	RTD Module 1 Channel 3 Temperature (degree)	Temperature = received Value (Ex: 80 means 80 degree)
367	RTD Module 1 Channel 4 Temperature (degree)	Temperature = received Value (Ex: 80 means 80 degree)
368	RTD Module 1 Channel 5 Temperature (degree)	Temperature = received Value (Ex: 80 means 80 degree)

369	RTD Module 1 Channel 6 Temperature (degree)	Temperature = received Value (Ex: 80 means 80 degree)
370	RTD Module 1 Channel 7 Temperature (degree)	Temperature = received Value (Ex: 80 means 80 degree)
371	RTD Module 1 Channel 8 Temperature (degree)	Temperature = received Value (Ex: 80 means 80 degree)
372	RTD Module 2 Channel 1 Temperature (degree)	Temperature = received Value (Ex: 80 means 80 degree)
373	RTD Module 2 Channel 2 Temperature (degree)	Temperature = received Value (Ex: 80 means 80 degree)
374	RTD Module 2 Channel 3 Temperature (degree)	Temperature = received Value (Ex: 80 means 80 degree)
375	RTD Module 2 Channel 4 Temperature (degree)	Temperature = received Value (Ex: 80 means 80 degree)
376	RTD Module 2 Channel 5 Temperature (degree)	Temperature = received Value (Ex: 80 means 80 degree)
377	RTD Module 2 Channel 6 Temperature (degree)	Temperature = received Value (Ex: 80 means 80 degree)
378	RTD Module 2 Channel 7 Temperature (degree)	Temperature = received Value (Ex: 80 means 80 degree)
379	RTD Module 2 Channel 8 Temperature (degree)	Temperature = received Value (Ex: 80 means 80 degree)
<b>Tripping Context Zone</b>		
596~ 597	Fault Current Phase A (A)	Uint32 Ia = received Value / 10 (Ex: 501 means 50.1 A)
598~ 599	Fault Current Phase B (A)	Uint32 Ib = received Value / 10 (Ex: 501 means 50.1 A)
600~ 601	Fault Current Phase C (A)	Uint32 Ic = received Value / 10 (Ex: 501 means 50.1 A)
602~ 603	Fault Current Zero Seq (A)	Uint32 I0 = received Value / 10 (Ex: 501 means 50.1 A)
604~ 605	Fault Voltage A (kV)	Uint32 V <sub>LL</sub> = received Value (Ex: 66 means 66 kV)

606~ 607	Fault Voltage B (kV)	Uint32 $V_{LL}$ = received Value (Ex: 66 means 66 kV)
608~ 609	Fault Voltage C (kV)	Uint32 $V_{LL}$ = received Value (Ex: 66 means 66 kV)
610~ 611	Fault Voltage Positive Seq. (kV)	Uint32 $V_{LL}$ = received Value (Ex: 66 means 66 kV)
612~ 613	Fault Voltage Negative Seq. (kV)	Uint32 $V_{LL}$ = received Value (Ex: 66 means 66 kV)
614~ 615	Fault Active Power (kW)	Uint32 $V_{LL}$ = received Value (Ex: 600 means 600 kW)
616~ 617	Fault Reactive Power (kVAr)	Uint32 $V_{LL}$ = received Value (Ex: 600 means 600 kVAr)
618~ 619	Fault Location Length (km)	Uint32 L = received Value/10 (Ex: 600 means 60.0 km)
620~ 621	Fault Resistance ( $\Omega$ )	Uint32 R = received Value/10 (Ex: 6 means 0.6 $\Omega$ )
<b>Reserved</b>		
640	Date of the Last Pickup	1~31
641	Month of the Last Pickup	1~12
642	Year of the Last Pickup	0~100 (Miladi)
643	Hour of the Last Pickup	0~24
644	Minutes of the Last Pickup	0~60
645	Second of the Last Pickup	0~60
<b>Reserved</b>		
4001	Relay Application	Uint16
4002~ 4003	Serial Number	(Uint32) Serial Number
4004	Firmware Version	High Byte (example Firmware in X.0.0 )

4005	Firmware Version	Middle Byte (example Firmware in 0.X.0 )
4006	Firmware Version	Low Byte (example Firmware in 0.0.X )
4007	Software Release Date	176= 2017/06/XX
4008	Hardware Release Date	176= 2017/06/XX
4009	Feeder Name	(High Byte Char[2])   (Low Byte Char[1])
4010	Feeder Name	(High Byte Char[4])   (Low Byte Char[3])
4011	Feeder Name	(High Byte Char[6])   (Low Byte Char[5])
4012	Feeder Name	(High Byte Char[8])   (Low Byte Char[7])
4013	Feeder Name	(High Byte Char[10])   (Low Byte Char[9])
4014	Feeder Name	(High Byte Char[12])   (Low Byte Char[11])
4015	Feeder Name	(High Byte Char[14])   (Low Byte Char[13])
4016	Feeder Name	(High Byte Char[16])   (Low Byte Char[15])
4020	Active Group	0 means Group 1 1 means Group 2 2 means Group 3 3 means Group 4
4021	Relay Measured Temperature	temp = recievedNum / 10 (Ex: 373 means 37.3 °C)
4022	CB Interrupter Age A	Age< %xx.X > = recievedNum / 10 (Ex: 229 means%22.9)
4023	CB Interrupter Age B	Age< %xx.X > = recievedNum / 10 (Ex: 229 means%22.9)
4024	CB Interrupter Age C	Age< %xx.X > = recievedNum / 10 (Ex: 229 means%22.9)
4025	CB Operation Cycle Short	result = recievedNum / 100 (Ex: 1234 means:12.34)



4026	CB Operation Cycle Long	result = recievedNum / 100 (Ex: 1234 means:12.34)
4050	Digital Input1 Status	0~1
4051	Digital Input2 Status	0~1
4052	Digital Input3 Status	0~1
4053	Digital Input4 Status	0~1
4054	Digital Input5 Status	0~1
4055	Digital Input6 Status	0~1
4056	Digital Input7 Status	0~1
4057	Digital Input8 Status	0~1
4058	Digital Input9 Status	0~1
4059	Digital Input10 Status	0~1
4060	Digital Input11 Status	0~1
4061	Digital Input12 Status	0~1
4062	Digital Input13 Status	0~1
4063	Digital Input14 Status	0~1
4064	Digital Input15 Status	0~1
4065	Digital Input16 Status	0~1
4066	Digital Output 1 Status	0~1
4067	Digital Output 2 Status	0~1
4068	Digital Output 3 Status	0~1
4069	Digital Output 4 Status	0~1
4070	Digital Output 5 Status	0~1
4071	Digital Output 6 Status	0~1
4072	Digital Output 7 Status	0~1
4073	Digital Output 8 Status	0~1
4074	Digital Output 9 Status	0~1

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4075	Digital Output10 Status	0~1
4076	Digital Output 11 Status	0~1
4077	Digital Output 12 Status	0~1