

Структура обозначения Tokoprime Busway Monitor (TBM)

Для заказа система имеет структурированное обозначение.

Формат кода:

TBM – X – Y – DNS / DS

Где:

Позиция	Обозначение	Значение
• TBM	• Серия	• Tokoprime Busway Monitor (TBM)
• DNS / DS	• Датчики тока и их номинал Detector current Non-split • Detector current Split-core	• Например: DNS100 (100 A), DS400 (400 A)
• X	• Количество измерительных каналов	• 3 / 6 / 9 / 12
• Y	• Модуль коммутации	• 0 – нет, 1 – да
• Z	• Соединительный модуль	• Z0 – нет, Z3, Z4

◆ Примеры заказа

2TBM- DNS100-6-0-1Z4

2 Системы мониторинга шинпровода Tokoprime,
неразборные датчики тока 100 А,
6 датчиков тока,
без модуля коммутации,
1 соединительный модуль Z4

Неразборные датчики тока DNS (высокая точность)

Применяются в новых установках, когда монтаж возможен до подключения нагрузки.

Модель	Номинальный ток	Диапазон измерения	Класс точности	Испыт. изоляция	Температура эксплуатации	Диаметр
DNS 05	5 А	0.1 – 6 А	0.1 %	~4000 В	-40...+70 °С	8 мм
DNS100	100 А	2 – 120 А	0.1 %	~4000 В	-40...+70 °С	18 мм
DNS200	200 А	4 – 240 А	0.1 %	~4000 В	-40...+70 °С	24 мм
DNS400	400 А	8 – 480 А	0.1 %	~4000 В	-40...+70 °С	29 мм
DNS600	600 А	12 – 720 А	0.1 %	~4000 В	-40...+70 °С	29 мм

Преимущества DNS:

- Максимальная точность учёта (подходит для биллинга)
- Стабильные характеристики во всём диапазоне нагрузок
- Высокая стойкость к помехам

Разборные датчики тока DS (для модернизации)

Оптимальны для действующих ЦОД, где нельзя отключать нагрузку.

Модель	Номинальный ток	Диапазон измерения	Класс точности	Испыт. изоляция	Температура эксплуатации	Диаметр
DS 05	5 А	0.1 – 6 А	1 %	~4000 В	-10...+50 °С	8 мм
DS 50	50 А	1 – 60 А	1 %	~4000 В	-10...+50 °С	10 мм
DS100	100 А	2 – 120 А	0.5 %	~4000 В	-10...+50 °С	18 мм
DS200	200 А	4 – 240 А	0.5 %	~4000 В	-10...+50 °С	24 мм
DS400	400 А	8 – 480 А	0.5 %	~4000 В	-10...+50 °С	29 мм
DS600	600 А	12 – 720 А	0.5 %	~4000 В	-10...+50 °С	29 мм

Преимущества DS:

- Монтаж без отключения линии
- Удобны при дооснащении существующего шинпровода
- Достаточная точность для технического и распределительного учёта

Технические характеристики измерительного модуля ТВМ

	Функция	ТВМ
Измерения в реальном времени	U, I, Hz, P, Q, S, PF	✓
	Нагрузка (Demand), макс./мин./средние значения	✓
Учёт электроэнергии	Двунаправленная активная энергия, полная энергия	✓
	Реактивная энергия по четырём квадрантам	✓
	Энергия пофазно	✓
Качество электроэнергии	THDu, THDi (суммарные гармонические искажения)	✓
	Отдельные гармоники	2–31-я
	Несимметрия фаз	✓
	Крест-фактор, К-фактор	✓
	Отклонение напряжения, отклонение частоты	✓
Регистрация данных	Запись нагрузки (Demand record)	✓
	Запись макс./мин./средних значений	✓
	Журнал выходов параметров за пределы (аварийные события)	✓

Условия эксплуатации

Рабочая температура	-20°C ~ 70°C
Температура хранения	-40°C ~ 85°C
Относительная влажность	≤95% RH, без конденсации
Рабочая высота	≤2000 м
Степень защиты	IP20
Изоляция	Сигнал, питание и выходы → корпус >100 МОм
Испытательное напряжение	≥2 кВ
Электромагнитная совместимость (Уровень ЭМС)	Выше класса III

Питание

Номинальный диапазон	AC/DC 80~270 В
Потребляемая мощность	≤0,5 Вт

Вход напряжения

Диапазон	3×220/380 В
Разрешение	0,1 В
Входное сопротивление	≥1,7 МОм/фаза

Потребление	$\leq 0,1$ В·А/фаза
Перенапряжение	Длительно 1,2×; кратковременно 2× / 10 с
Частота	45–65 Гц
Входной ток	
Диапазон	Внешний трансформатор тока
Дискретный вход	
Выходной канал	1 дискретный выход DO
Тип	Твердотельное реле
Коммутационная способность	400 В / 0,12 А АС
Напряжение изоляции	5000 В АС
Время срабатывания	≤ 2 мс
Порт связи COM	
Физический интерфейс	RS-485
Скорость передачи	До 19 200 бод
Протокол связи	Modbus-RTU
Напряжение изоляции	4000 В АС
Порт связи SBUS	
Физический интерфейс	RS-485
Назначение	Подключение модулей ТВМ
Скорость передачи	38 400 бод
Протокол связи	Modbus-RTU
Напряжение изоляции	4000 В АС

Протокол MODBUS и размещение данных в регистрах

Описание протокола Modbus RTU.

Приборы имеют цифровой порт связи типа RS-485, реализующий протокол Modbus RTU, с помощью которого можно проверять состояние приборов, просматривать измеряемые величины.

Физический уровень:

- порт связи RS-485, асинхронный полудуплексный режим передачи данных;
- скорость передачи данных 1200, 2400, 4800, 9600 бод (по умолчанию установлена скорость 9600 бод);
- формат передачи данных: 1 стартовый бит, 8 битов данных, 0-1 контрольный бит и 1-2 стоповых бита (N81/O81/E81/N82) по выбору.

Ниже приведена таблица основных адресов регистров и функций.

Электрические величины в реальном времени

Адрес	Формат	Описание	Единицы	Тип
0000-0005		Reserved		
0006-0007	Float	Phase A voltage	V	R
0008-0009	Float	Phase B voltage	V	R
0010-0011	Float	Phase C voltage	V	R
0012-0013	Float	Line AB voltage	V	R
0014-0015	Float	Line BC voltage	V	R
0016-0017	Float	Line CA voltage	V	R
0018-0019	Float	Phase A current	A	R
0020-0021	Float	Phase B current	A	R
0022-0023	Float	Phase C current	A	R
0024-0025	Float	In current (reserved)	A	R
0026-0027	Float	Phase A active power	kW	R
0028-0029	Float	Phase B active power	kW	R
0030-0031	Float	Phase C active power	kW	R
0032-0033	Float	Total active power	kW	R
0034-0035	Float	Phase A reactive power	kvar	R
0036-0037	Float	Phase B reactive power	kvar	R
0038-0039	Float	Phase C reactive power	kvar	R
0040-0041	Float	Total reactive power	kvar	R
0042-0043	Float	Phase A apparent power	kVA	R
0044-0045	Float	Phase B apparent power	kVA	R
0046-0047	Float	Phase C apparent power	kVA	R
0048-0049	Float	Total apparent power	kVA	R
0050-0051	Float	Phase A power factor		R
0052-0053	Float	Phase B power factor		R
0054-0055	Float	Phase C power factor		R
0056-0057	Float	Total power factor		R

0058-0059	Float	Grid frequency	Hz	R
0060-0061	Float	Import active energy EP+	kWh	R
0062-0063	Float	Export active energy EP-	kWh	R
0064-0065	Float	Import reactive energy EQ+	kvarh	R
0066-0067	Float	Export reactive energy EQ-	kvarh	R
0068-0069	Float	Apparent energy	kVAh	R
0070-0071	Float	First quadrant reactive energy	kvarh	R
0072-0073	Float	Second quadrant reactive energy	kvarh	R
0074-0075	Float	Third quadrant reactive energy	kvarh	R
0076-0077	Float	Fourth quadrant reactive energy	kvarh	R
0078-0079	Float	Import fundamental wave active energy	kWh	R
0080-0081	Float	Export fundamental wave active energy	kWh	R
0082-0083	Float	Import fundamental wave reactive energy	kvarh	R
0084-0085	Float	Export fundamental wave reactive energy	kvarh	R
0086-0087	Float	Phase A import active energy	kWh	R
0088-0089	Float	Phase B import active energy	kWh	R
0090-0091	Float	Phase C import active energy	kWh	R
0092-0093	Float	Phase A export active energy	kWh	R
0094-0095	Float	Phase B export active energy	kWh	R
0096-0097	Float	Phase C export active energy	kWh	R
0098-0099	Float	Phase A import reactive energy	kvarh	R
0100-0101	Float	Phase B import reactive energy	kvarh	R
0102-0103	Float	Phase C import reactive energy	kvarh	R
0104-0105	Float	Phase A export reactive energy	kvarh	R
0106-0107	Float	Phase B export reactive energy	kvarh	R
0108-0109	Float	Phase C export reactive energy	kvarh	R
0110-0229		Reserved		

Информация о состоянии системы

Адрес	Формат	Описание	Единицы	Тип
0230	Int	The 1 st way leakage	0.1mA	R
0231	Int	The 2 nd way leakage	0.1mA	R
0232	Int	The 3 rd way leakage	0.1mA	R
0233	Int	The 1 st temperature	0.1°C	R
0234	Int	The 2 nd temperature	0.1°C	R
0235	Int	The 3 rd temperature	0.1°C	R
0236	Int	The 4 th temperature	0.1°C	R
0237	Int	Extensible module type		R
0238	char	High byte: year; low byte: month		R/W
0239	char	High byte : day ; Low byte : time		R/W
0240	char	High byte : minute ; Low byte : second		R/W
0241	char	High byte : week ; Low byte : reserved		R/W

0242	Int	Relay output information : 0-OFF 1- ON Bit0 : the 1 st way relay output status Bit1 : the 2 nd way relay output status Bit2 : the 3 rd way relay output status Bit3 : the 4 th way relay output status		R
0243	Int	Digital input information : 0-OFF 1- ON Bit0 : the 1 st way digital input status Bit1 : the 2 nd way digital input status Bit2 : the 3 rd way digital input status		R
0244	Int	System status : 0 : normal 1 : abnormal Bit00: frequency high alarm Bit01: frequency low alarm Bit02: Phase A current high alarm Bit03: Phase A current low alarm Bit04: Phase B current high alarm Bit05: Phase B current low alarm Bit06: Phase C current high alarm Bit07: Phase C current low alarm Bit08: Phase A active powerhigh alarm Bit09: Phase A active power low alarm Bit10: Phase B active power high alarm Bit11: Phase B active power low alarm Bit12: Phase C active power high alarm Bit13: Phase C active power low alarm Bit14: phase sequence alarm Bit15: reserved		R
0245	Int	System status : 0 : normal 1 : abnormal Bit00: Phase A reactive power high alarm Bit01: Phase A reactive power low alarm Bit02: Phase B reactive power high alarm Bit03: Phase B reactive power low alarm Bit04: Phase C reactive power high alarm Bit05: Phase C reactive power low alarm Bit06: The 1st temperature high alarm Bit07: The 1st temperature low alarm Bit08: The 2nd temperature high alarm Bit09: The 2nd temperature low alarm Bit10: The 3rd temperature high alarm Bit11: The 3rd temperature low alarm Bit12: The 4th temperature high alarm Bit13: The 4th temperature low alarm Bit14: Total active power high alarm Bit15: Total active power low alarm		R

0246	Int	System status : 0 : normal 1 : abnormal Bit00: The 1st way leakage high alarm Bit01: The 1st way leakage low alarm Bit02: The 2nd way leakage high alarm Bit03: The 2nd way leakage low alarm Bit04: The 3rd way leakage high alarm Bit05: The 3rd way leakage low alarm Bit06: Phase A voltage high alarm Bit07: Phase A voltage low alarm Bit08: Phase B voltage high alarm		R
247	Int	Voltage opening and closing status information : 0-OFF 1-ON Bit0 : the 1 st way of switch opening and closing status Bit1 : the 2 nd way of switch opening and closing status Bit2 : the 3 rd way of switch opening and closing status		R
0248-0255	reserved			

Максимальные и минимальные значения

Адрес	Формат	Описание	Единицы	Тип
0256-0257	Float	Phase A voltage historical maximum	V	R
0258-0259	Float	Phase B voltage historical maximum	V	R
0260-0261	Float	Phase C voltage historical maximum	V	R
0262-0263	Float	Line AB voltage historical maximum	V	R
0264-0265	Float	Line BC voltage historical maximum	V	R
0266-0267	Float	Line CA voltage historical maximum	V	R
0268-0269	Float	Phase A current historical maximum	A	R
0270-0271	Float	Phase B current historical maximum	A	R
0272-0273	Float	Phase C current historical maximum	A	R
0274-0275	Float	In (3P4W) historical maximum	A	R
0276-0277	Float	Total active power historical maximum	kW	R
0278-0279	Float	Total reactive power historical maximum	kW	R
0280-0281	Float	Total apparent power historical maximum	kW	R
0282-0283	Float	Total power factor historical maximum		R
0284-0285	Float	Frequency historical maximum	Hz	R
0286-0287	Float	Phase A voltage historical minimum	V	R
0288-0289	Float	Phase B voltage historical minimum	V	R
0290-0291	Float	Phase C voltage historical minimum	V	R
0292-0293	Float	Line AB voltage historical minimum	V	R
0294-0295	Float	Line BC voltage historical minimum	V	R
0296-0297	Float	Line CA voltage historical minimum	V	R
0298-0299	Float	Phase A current historical minimum	A	R
0300-0301	Float	Phase B current historical minimum	A	R

0302-0303	Float	Phase C current historical minimum	A	R
0304-0305	Float	In(3P4W)historical minimum	A	R
0306-0307	Float	Total active power historical minimum	kW	R
0308-0309	Float	Total reactive power historical minimum	kW	R
0310-0311	Float	Total apparent power historical minimum	kW	R
0312-0313	Float	Total power factor historical minimum		R
0314-0315	Float	Frequency historical minimum	Hz	R
0316-0375	Float	Historical extreme value this month		R
0376-0435	Float	Historical extreme value last month		R
0436-0495	Float	Historical extreme value the month before last month		R
0496-1023	reserved			

Данные по требованию

Адрес	Формат	Описание	Единицы	Тип
1024-1025	Float	Phase A current present demand	A	R
1026-1027	Float	Phase B current present demand	A	R
1028-1029	Float	Phase C current present demand	A	R
1030-1031	Float	Total active power present demand	kW	R
1032-1033	Float	Total reactive power present demand	kvar	R
1034-1035	Float	Total apparent power present demand	kVA	R
1036-1037	Float	Phase A current demand last cycle	A	R
1038-1039	Float	Phase B current demand last cycle	A	R
1040-1041	Float	Phase C current demand last cycle	A	R
1042-1043	Float	Total active power demand last cycle	kW	R
1044-1045	Float	Total reactive power demand last cycle	kvar	R
1046-1047	Float	Total apparent power demand last cycle	kVA	R
1048-1059	Float	Historical demand maximum		R
1060-1071	Float	Demand maximum this month		R
1072-1083	Float	Demand maximum last month		R
1084-1095	Float	Demand maximum the month before last month		R
1096-1279	reserved			

Параметры качества электроэнергии

Адрес	Формат	Описание	Единицы	Тип
1280-1281	Float	Voltage positive sequence component	V	R
1282-1283	Float	Voltage negative sequence component	V	R
1284-1285	Float	Voltage zero sequence component	V	R

1286-1287	Float	Unbalanced voltage		R
1288-1289	Float	Current positive sequence component	A	R
1290-1291	Float	Current negative sequence component	A	R
1292-1293	Float	Current zero sequence component	A	R
1294-1295	Float	Unbalanced current		R
1296-1297	Float	Phase voltage average value	A	R
1298-1299	Float	Line voltage average value	A	R
1300-1301	Float	Current average value	A	R
1302-1303	Float	Active power average value	kW	R
1304-1305	Float	Reactive power average value	kvar	R
1306-1307	Float	Apparent power average value	kVA	R
1308-1309	Float	Phase A voltage deviation	V	R
1310-1311	Float	Phase B voltage deviation	V	R
1312-1313	Float	Phase C voltage deviation	V	R
1314-1315	Float	Line AB voltage deviation	V	R
1316-1317	Float	Line BC voltage deviation	V	R
1318-1319	Float	Line CA voltage deviation	V	R
1320-1321	Float	Frequency deviation	Hz	R
1322-1323	Float	Phase A voltage fundamental wave value	V	R
1324-1325	Float	Phase B voltage fundamental wave value	V	R
1326-1327	Float	Phase C voltage fundamental wave value	V	R
1328-1329	Float	Phase A current fundamental wave value	A	R
1330-1331	Float	Phase B current fundamental wave value	A	R
1332-1333	Float	Phase C current fundamental wave value	A	R
1334-1335	Float	Phase A voltage harmonic content	V	R
1336-1337	Float	Phase B voltage harmonic content	V	R
1338-1339	Float	Phase C voltage harmonic content	V	R
1340-1341	Float	Phase A current harmonic content	A	R
1342-1343	Float	Phase B current harmonic content	A	R
1344-1345	Float	Phase C current harmonic content	A	R
1346-1347	Float	Phase A fundamental wave active power	kW	R
1348-1349	Float	Phase B fundamental wave active power	kW	R
1350-1351	Float	Phase C fundamental wave active power	kW	R
1352-1353	Float	Total fundamental wave active power	kW	R
1354-1387	reserved			
1388	Int	Phase A voltage phase angle	0.1°	R
1389	Int	Phase B voltage phase angle	0.1°	R
1390	Int	Phase C voltage phase angle	0.1°	R
1391	Int	Phase A current phase angle	0.1°	R
1392	Int	Phase B current phase angle	0.1°	R
1393	Int	Phase C current phase angle	0.1°	R
1394	Int	Phase A voltage crest factor	0.001	R
1395	Int	Phase B voltage crest factor	0.001	R
1396	Int	Phase C voltage crest factor	0.001	R
1397	Int	Phase A current K coefficient	0.001	R
1398	Int	Phase B current K coefficient	0.001	R
1399	Int	Phase C current K coefficient	0.001	R
1400-1402	reserved			

1403	Int	Transformer derating coefficient	0.1%	R
1404	Int	Phase A current percentage	0.1%	R
1405	Int	Phase B current percentage	0.1%	R
0406	Int	Phase C current percentage	0.1%	R
1407	Int	Load percentage	0.1%	R
1408	Int	Voltage pass rate	0.1%	R
1409	Int	Frequency pass rate	0.1%	R
1410	Int	Phase A voltage total harmonic distortion	0.01%	R
1411	Int	Phase B voltage total harmonic distortion	0.01%	R
1412	Int	Phase C voltage total harmonic distortion	0.01%	R
1413	Int	Phase A current total harmonic distortion	0.01%	R
1414	Int	Phase B current total harmonic distortion	0.01%	R
1415	Int	Phase C current total harmonic distortion	0.01%	R
1416	Int	Phase A voltage 2 nd harmonic content rate	0.01%	R
1417	Int	Phase B voltage 2 nd harmonic content rate	0.01%	
1418	Int	Phase C voltage 2 nd harmonic content rate	0.01%	
1419	Int	Phase A current 2 nd harmonic content rate	0.01%	
1420	Int	Phase B current 2 nd harmonic content rate	0.01%	
1421	Int	Phase C current 2 nd harmonic content rate	0.01%	
1422-1595	Int	03 rd -31 st harmonic content rate	0.01%	
1596-1787	Int	32 nd -63 rd harmonic content rate	0.01%	
1788-1791	reserved			

Информация изготовителя

Адрес	Формат	Описание	Единицы	Тип
1792-1823	Int	Ua real-time wave form data (32 points)		R
1824-1855	Int	Ub real-time wave form data (32 points)		R
1856-1887	Int	Uc real-time wave form data (32 points)		R
1888-1919	Int	Ia real-time wave form data (32 points)		R
1920-1951	Int	Ib real-time waveform data (32 points)		R
1952-1983	Int	Ic real-time waveform data (32 points)		R
1984-2015	reserved			

Запись событий

Адрес	Формат	Описание	Единицы	Тип
2016	Int	High byte: year, Low byte : month	Meter power- on	R
2017	Int	High byte : day, Low byte : hour		R

2018	Int	High byte : minute, Low byte : second	record	R
2019	Int	Meter power-on times		R
2020	Int	High byte : year, Low byte : month	Meter power- off record	R
2021	Int	High byte : day,Low byte : hour		R
2022	Int	High byte : minute, Low byte : second		R
2023	Int	Meter power-off times		R
2024	Int	High byte : year, Low byte : month	Parameter modification record	R
2025	Int	High byte : day,Low byte : hour		R
2026	Int	High byte : minute, Low byte : second		R
2027	Int	Parameter modification times		R
2028	Int	High byte : year, Low byte : month	Demand reset reocrd	R
2029	Int	High byte : day,Low byte : hour		R
2030	Int	High byte : minute, Low byte : second		R
2031	Int	Demand reset times		R
2032	Int	High byte : year, Low byte : month	Energy clear	R
2033	Int	High byte : day,Low byte : hour	record	R
2034	Int	High byte : minute, Low byte : second		R
2035	Int	Energy clear times		R
2036	Int	High byte : Overvoltage record times Low byte : reserved		R
2037	Int	High byte : Undervoltage record times Low byte : reserved		R
2038	Int	High byte : Overcurrent record times Low byte : reserved		R
2039	Int	High byte : Undercurrent record times Low byte : reserved		R
2040	Int	High byte : Overload record times Low byte : reserved		R
2041	Int	High byte : Underload record times Low byte : reserved		R
2042	Int	High byte : SOE times Low byte : reserved		R
2043-2048	reserved			

Запись в регистры

Адрес	Формат	Описание	Единицы	Тип
2049	Int	High byte : current	0 : below 100.0A 1 : 100A and above	R/W
		Low byte : current transformer type	0 : closed CT 1 : split CT	
2050	Int	Meter address	1-247	R/W
2051	Int	Baud rate	0 : 1200bps 1 : 2400bps 2 : 4800bps 3 : 9600bps 4 : 19200bps 5 : 38400bps	R/W
2052	Int	Check format	0 : N,8,1 1 : E,8,1 2 : O,8,1 3 : N,8,2	R/W
2053	reserved			
2054	Int	High byte : wiring type	0 : 3P4W 1 : 3P3W 2 : 1P2W	R/W
		Low byte : grid frequency	0 : 50Hz 1 : 60Hz	R/W
2055	reserved			
2056	Int	Secondary voltage	1~690V	R/W
2057	Int	Secondary current	1~6A	R/W
2058-2059	Long	Primary voltage	1~999999V	R/W
2060-2061	Long	Primary current	1~999999A	R/W
2062	Int	Demand item	Default as Ia/Ib/Ic/P/Q/S	R
2063	Int	Demand working mode	0 : slip block 1 : fixed block	R/W
2064	Int	Demand slip time (t)	1~9999s	R/W
2065	Int	Demand calculation period (T)	1~30T	R/W
2066	Int	Voltage pass rate upper limit	0.01V	R/W
2067	Int	Voltage pass rate lower limit	0.01V	R/W
2068	Int	Frequency pass rate upper limit	0.01Hz	R/W
2069	Int	Frequency pass rate lower limit	0.01Hz	R/W
2070	Int	DO1 working mode	0 : OFF 1 : Alarm 2 : Remote control	R/W

2071	Int	DO1 Pulse width	Pulse width : 0.10 ~99.99s Level : 0.00	R/W
2072	Int	DO1 alarm item	0 : Phase voltage overvoltage 1 : Phase voltage Undervoltage 2 : Line voltage overvoltage 3 : Line voltage Undervoltage 4 : current overcurrent 5 : current undercurrent 6 : Frequency exceeds over limit 7 : Frequency exceeds lower limit 8 : Total active power overload 9 : Total active power underload 10 : Total reactive power overload 11 : Total reactive power underload 12 : Total apparent power overload 13 : Total apparent power underload 14 : high power factor 15 : low power factor 16 : high voltage total harmonic distortion 17 : low voltage total harmonic distortion 18 : high current total harmonic distortion 19 : low current total harmonic distortion 20 : system alarm	R/W

			21 : The first switch input is linked, the switch input is closed, and the relay output operates; 22 : The second switch input is linked, the switch input is closed, and the relay output operates; 23 : The third switch input is linked, the switch input is closed, and the relay output operates;	
2073	Int	DO1 alarm delay time	0.00~99.99s	R/W
2074-2075	Float	DO1 alarm value	numerical scale coefficient: voltage : V current : A power : kW frequency : Hz PF harmonic : 0.01%	R/W
2076-2077	Float	DO1 Hysteresis	same as the alarm value	R/W
2078-2085		DO2 setting		R/W
2086-2093		DO3 setting		R/W
2094-2101		DO4 setting		R/W
2102-2127	reserved			
2128-2129	Float	Total active power off-limit upper limit value	V	R/W
2130-2131	Float	Total active power off-limit upper limit hysteresis	V	R/W
2132-2133	Float	Total active power off-limit lower limit value	V	R/W
2134-2135	Float	Total active power off-limit lower limit hysteresis	V	R/W
2136-2137	Float	Total reactive power off-limit upper limit value	V	R/W
2138-2139	Float	Total reactive power off-limit upper limit hysteresis	V	R/W
2140-2141	Float	Total reactive power off-limit lower limit value	V	R/W
2142-2143	Float	Total reactive power off-limit lower limit hysteresis	V	R/W
2144-2145	Float	Phase A voltage off-limit upper limit value	V	R/W

2146-2147	Float	Phase A voltage off-limit upper limit hysteresis	V	R/W
2148-2149	Float	Phase B voltage off-limit upper limit value	V	R/W
2150-2151	Float	Phase B voltage off-limit upper limit hysteresis	V	R/W
2152-2153	Float	Phase C voltage off-limit upper limit value	V	R/W
2154-2155	Float	Phase C voltage off-limit upper limit hysteresis	V	R/W
2156-2157	Float	Phase A voltage off-limit lower limit valve	V	R/W
2158-2159	Float	Phase A voltage off-limit lower limit hysteresis	V	R/W
2160-2161	Float	Phase B voltage off-limit lower limit valve	V	R/W
2162-2163	Float	Phase B voltage off-limit lower limit hysteresis	V	R/W
2164-2165	Float	Phase C voltage off-limit lower limit valve	V	R/W
2166-2167	Float	Phase C voltage off-limit lower limit hysteresis	V	R/W
2168-2169	Float	Phase A current off-limit upper limit value	A	R/W
2170-2171	Float	Phase A current off-limit upper limit hysteresis	A	R/W
2172-2173	Float	Phase B current off-limit upper limit value	A	R/W
2174-2175	Float	Phase B current off-limit upper limit hysteresis	A	R/W
2176-2177	Float	Phase C current off-limit upper limit value	A	R/W
2178-2179	Float	Phase C current off-limit upper limit hysteresis	A	R/W
2180-2181	Float	Phase A current off-limit lower limit valve	A	R/W
2182-2183	Float	Phase A current off-limit lower limit hysteresis	A	R/W
2184-2185	Float	Phase B current off-limit lower limit valve	A	R/W
2186-2187	Float	Phase B current off-limit lower limit hysteresis	A	R/W
2188-2189	Float	Phase C current off-limit lower limit valve	A	R/W
2190-2191	Float	Phase C current off-limit lower limit hysteresis	A	R/W
2192-2193	Float	Phase A active power off-limit upper limit value	kW	R/W
2194-2195	Float	Phase A active power off-limit upper limit hysteresis	kW	R/W

2196-2197	Float	Phase B active power off-limit upper limit value	kW	R/W
2198-2199	Float	Phase B active power off-limit upper limit hysteresis	kW	R/W
2200-2201	Float	Phase C active power off-limit upper limit value	kW	R/W
2202-2203	Float	Phase C active power off-limit upper limit hysteresis	kW	R/W
2204-2205	Float	Phase A active power off-limit lower limit value	kW	R/W
2206-2207	Float	Phase A active power off-limit lower limit hysteresis	kW	R/W
2208-2209	Float	Phase B active power off-limit lower limit value	kW	R/W
2210-2211	Float	Phase B active power off-limit lower limit hysteresis	kW	R/W
2212-2213	Float	Phase C active power off-limit lower limit value	kW	R/W
2214-2215	Float	Phase C active power off-limit lower limit hysteresis	kW	R/W
2216-2217	Float	Phase A reactive power off-limit upper limit value	kW	R/W
2218-2219	Float	Phase A reactive power off-limit upper limit hysteresis	kW	R/W
2220-2221	Float	Phase B reactive power off-limit upper limit value	kW	R/W
2222-2223	Float	Phase B reactive power off-limit upper limit hysteresis	kW	R/W
2224-2225	Float	Phase C reactive power off-limit upper limit value	kW	R/W
2226-2227	Float	Phase C reactive power off-limit upper limit hysteresis	kW	R/W
2228-2229	Float	Phase A reactive power off-limit lower limit value	kW	R/W
2230-2231	Float	Phase A reactive power off-limit lower limit hysteresis	kW	R/W
2232-2233	Float	Phase B reactive power off-limit lower limit value	kW	R/W
2234-2235	Float	Phase B reactive power off-limit lower limit hysteresis	kW	R/W
2236-2237	Float	Phase C reactive power off-limit lower limit value	kW	R/W
2238-2239	Float	Phase C reactive power off-limit lower limit hysteresis	kW	R/W
2240	Int	The 1st temperature off-limit upper limit value	0.1°C	R/W
2241	Int	The 1st temperature off-limit upper limit hysteresis	0.1°C	R/W
2242	Int	The 2nd temperature off-limit upper limit value	0.1°C	R/W

2243	Int	The 2nd temperature off-limit upper limit hysteresis	0.1°C	R/W
2244	Int	The 3rd temperature off-limit upper limit value	0.1°C	R/W
2245	Int	The 3rd temperature off-limit upper limit hysteresis	0.1°C	R/W
2246	Int	The 4th temperature off-limit upper limit value	0.1°C	R/W
2247	Int	The 4th temperature off-limit upper limit hysteresis	0.1°C	R/W
2248	Int	The 1st temperature off-limit lower limit valve	0.1°C	R/W
2249	Int	The 1st temperature off-limit lower limit hysteresis	0.1°C	R/W
2250	Int	The 2nd temperature off-limit lower limit valve	0.1°C	R/W
2251	Int	The 2nd temperature off-limit lower limit hysteresis	0.1°C	R/W
2252	Int	The 3rd temperature off-limit lower limit valve	0.1°C	R/W
2253	Int	The 3rd temperature off-limit lower limit hysteresis	0.1°C	R/W
2254	Int	The 4th temperature off-limit lower limit valve	0.1°C	R/W
2255	Int	The 4th temperature off-limit lower limit hysteresis	0.1°C	R/W
2256	Int	The 1st way leakage off-limit upper limit value	0.1mA	R/W
2257	Int	The 1st way leakage off-limit upper limit hysteresis	0.1mA	R/W
2258	Int	The 2nd way leakage off-limit upper limit value	0.1mA	R/W
2259	Int	The 2nd way leakage off-limit upper limit hysteresis	0.1mA	R/W
2260	Int	The 3rd way leakage off-limit upper limit value	0.1mA	R/W
2261	Int	The 3rd way leakage off-limit upper limit hysteresis	0.1mA	R/W
2262	Int	The 1st way leakage off-limit lower limit valve	0.1mA	R/W
2263	Int	The 1st way leakage off-limit lower limit hysteresis	0.1mA	R/W
2264	Int	The 2nd way leakage off-limit lower limit valve	0.1mA	R/W
2265	Int	The 2nd way leakage off-limit lower limit hysteresis	0.1mA	R/W
2266	Int	The 3rd way leakage off-limit lower limit valve	0.1mA	R/W
2267	Int	The 3rd way leakage off-limit lower limit hysteresis	0.1mA	R/W

2268	Int	Frequency off-limit upper limit value		R/W
2269	Int	Frequency off-limit upper limit hysteresis		R/W
2270	Int	Frequency off-limit lower limit valve		R/W
2271	Int	Frequency off-limit lower limit hysteresis		R/W
2172-2275	reserved			
2276	Int	Phase A voltage upper limit alarm enable	0 : OFF 1 : ON	R/W
2277	Int	Phase B voltage upper limit alarm enable	0 : OFF 1 : ON	R/W
2278	Int	Phase C voltage upper limit alarm enable	0 : OFF 1 : ON	R/W
2279	Int	Phase A voltage lower limit alarm enable	0 : OFF 1 : ON	R/W
2280	Int	Phase B voltage lower limit alarm enable	0 : OFF 1 : ON	R/W
2281	Int	Phase C voltage lower limit alarm enable	0 : OFF 1 : ON	R/W
2282	Int	Phase A current upper limit alarm enable	0 : OFF 1 : ON	R/W
2283	Int	Phase B current upper limit alarm enable	0 : OFF 1 : ON	R/W
2284	Int	Phase C current upper limit alarm enable	0 : OFF 1 : ON	R/W
2285	Int	Phase A current lower limit alarm enable	0 : OFF 1 : ON	R/W
2286	Int	Phase B current lower limit alarm enable	0 : OFF 1 : ON	R/W
2287	Int	Phase C current lower limit alarm enable	0 : OFF 1 : ON	R/W
2288	Int	Phase A active power upper limit alarm enable	0 : OFF 1 : ON	R/W
2289	Int	Phase B active power upper limit alarm enable	0 : OFF 1 : ON	R/W
2290	Int	Phase C active power upper limit alarm enable	0 : OFF 1 : ON	R/W
2291	Int	Phase A active power lower limit alarm enable	0 : OFF 1 : ON	R/W
2292	Int	Phase B active power lower limit alarm enable	0 : OFF 1 : ON	R/W
2293	Int	Phase C active power lower limit alarm enable	0 : OFF 1 : ON	R/W
2294	Int	Phase A reactive power upper limit alarm enable	0 : OFF 1 : ON	R/W

2295	Int	Phase B reactive power upper limit alarm enable	0 : OFF 1 : ON	R/W
2296	Int	Phase C reactive power upper limit alarm enable	0 : OFF 1 : ON	R/W
2297	Int	Phase A reactive power lower limit alarm enable	0 : OFF 1 : ON	R/W
2298	Int	Phase B reactive power lower limit alarm enable	0 : OFF 1 : ON	R/W
2299	Int	Phase C reactive power lower limit alarm enable	0 : OFF 1 : ON	R/W
2300	Int	The 1st temperature upper limit alarm enable	0 : OFF 1 : ON	R/W
2301	Int	The 2nd temperature upper limit alarm enable	0 : OFF 1 : ON	R/W
2302	Int	The 3rd temperature upper limit alarm enable	0 : OFF 1 : ON	R/W
2303	Int	The 4th temperature upper limit alarm enable	0 : OFF 1 : ON	R/W
2304	Int	The 1st temperature lower limit alarm enable	0 : OFF 1 : ON	R/W
2305	Int	The 2nd temperature lower limit alarm enable	0 : OFF 1 : ON	R/W
2306	Int	The 3rd temperature lower limit alarm enable	0 : OFF 1 : ON	R/W
2307	Int	The 4th temperature lower limit alarm enable	0 : OFF 1 : ON	R/W
2308	Int	The 1st way leakage upper limit alarm enable	0 : OFF 1 : ON	R/W
2309	Int	The 2nd way leakage upper limit alarm enable	0 : OFF 1 : ON	R/W
2310	Int	The 3rd way leakage upper limit alarm enable	0 : OFF 1 : ON	R/W
2311	Int	The 1st way leakage lower limit alarm enable	0 : OFF 1 : ON	R/W
2312	Int	The 2nd way leakage lower limit alarm enable	0 : OFF 1 : ON	R/W
2313	Int	The 3rd way leakage lower limit alarm enable	0 : OFF 1 : ON	R/W
2314	Int	Frequency upper limit alarm enable	0 : OFF 1 : ON	R/W
2315	Int	Frequency lower limit alarm enable	0 : OFF 1 : ON	R/W
2316	Int	Phase sequence alarm ON	0 : OFF 1 : ON	R/W
2317	Int	Total active power upper limit alarm	0 : OFF	R/W

		enable	1 : ON	
2318	Int	Total active power lower limit alarm enable	0 : OFF 1 : ON	R/W
2319	Int	Total reactive power upper limit alarm enable	0 : OFF 1 : ON	R/W
2320	Int	Total reactive power lower limit alarm enable	0 : OFF 1 : ON	R/W
2321-65279	reserved (2556-3031#)			

Номер версии встроенного ПО

Адрес	Формат	Описание	Единицы	Тип
65280-65295	Int	The software version number of the main module		R
65296-65311	Int	The software version number of the mextensible module		R
65312-65503	reserved			
65504-65519	Int	Meter model		R