

# Modbus

Comms mode – RTU, TCP, RTUoverTCP

Baud rates – 19200/9600

Parity - Even

Slave address – 1 to 127

**Functions** 0x03 Read Holding Registers

0x02 Read Input Status

## Holding Registers Map (16-bit quantities)

0x03 Read Holding Registers

Register Address	Name	Scale	Unit
40001	Analogue 1	-	-
40002	Analogue 2		
40003	Analogue 3		
40004	Analogue 4		
40005	Analogue 5		
40006	Analogue 6		
40007	Analogue 7		
40008	Analogue 8		
40009	Analogue 9		
40010	Analogue 10		
40011	Analogue 11		
40012	Analogue 12		
40013	Frequency		0.01 Hz
	<b>Circuit 1</b>		
40100	Van		V
40101	Vbn		V
40102	Vcn		V
40103	Vn		V
40104	Vab		V
40105	Vbc		V
40106	Vca		V
40107	Ia		A
40108	Ib		A
40109	Ic		A
40110	In		A
40111	Power Factor A		0.001

40112	Power Factor B		0.001
40113	Power Factor C		0.001
40114	Power Factor Total		0.001
40115	KW Phase A		kW
40116	KW Phase B		kW
40117	KW Phase C		kW
40118	KW Total		kW
40119	KVAR Phase A		kVAR
40120	KVAR Phase B		kVAR
40121	KVAR Phase C		kVAR
40122	KVAR Total		kVAR
40123	KVA Phase A		kVA
40124	KVA Phase B		kVA
40125	KVA Phase C		kVA
40126	KVA Total		kVA
40127	KWH Import		KWH
40128	MWH Import		MWH
40129	KWH Export		KWH
40130	MWH Export		MWH
40131	KWH Total		KWH
40132	MWH Total		MWH
40133	KVARH Import		KVARH
40134	MVARH Import		MVARH
40135	KVARH Export		KVARH
40136	MVARH Export		MVARH
40137	KVAH		KVAH
40138	MVAH		MVAH
	<b>Circuit 2</b>		
40200	Van		V
40201	Vbn		V
40202	Vcn		V
40203	Vn		V
40204	Vab		V
40205	Vbc		V
40206	Vca		V
40207	Ia		A
40208	Ib		A
40209	Ic		A
40210	In		A
40211	Power Factor A		0.001
40212	Power Factor B		0.001
40213	Power Factor C		0.001
40214	Power Factor Total		0.001
40215	KW Phase A		kW

40216	KW Phase B		kW
40217	KW Phase C		kW
40218	KW Total		kW
40219	KVAR Phase A		kVAR
40220	KVAR Phase B		kVAR
40221	KVAR Phase C		kVAR
40222	KVAR Total		kVAR
40223	KVA Phase A		kVA
40224	KVA Phase B		kVA
40225	KVA Phase C		kVA
40226	KVA Total		kVA
40227	KWH Import		KWH
40228	MWH Import		MWH
40229	KWH Export		KWH
40230	MWH Export		MWH
40231	KWH Total		KWH
40232	MWH Total		MWH
40233	KVARH Import		KVARH
40234	MVARH Import		MVARH
40235	KVARH Export		KVARH
40236	MVARH Export		MVARH
40237	KVAH		KVAH
40238	MVAH		MVAH
	<b>Circuit 3</b>		
40300	Van		V
40301	Vbn		V
40302	Vcn		V
40303	Vn		V
40304	Vab		V
40305	Vbc		V
40306	Vca		V
40307	Ia		A
40308	Ib		A
40309	Ic		A
40310	In		A
40311	Power Factor A		0.001
40312	Power Factor B		0.001
40313	Power Factor C		0.001
40314	Power Factor Total		0.001
40315	KW Phase A		kW
40316	KW Phase B		kW
40317	KW Phase C		kW
40318	KW Total		kW
40319	KVAR Phase A		kVAR

40320	KVAR Phase B		kVAR
40321	KVAR Phase C		kVAR
40322	KVAR Total		kVAR
40323	KVA Phase A		kVA
40324	KVA Phase B		kVA
40325	KVA Phase C		kVA
40326	KVA Total		kVA
40327	KWH Import		KWH
40328	MWH Import		MWH
40329	KWH Export		KWH
40330	MWH Export		MWH
40331	KWH Total		KWH
40332	MWH Total		MWH
40333	KVARH Import		KVARH
40334	MVARH Import		MVARH
40335	KVARH Export		KVARH
40336	MVARH Export		MVARH
40337	KVAH		KVAH
40338	MVAH		MVAH
	<b>Circuit Breaker 1</b>		
40500	TRIP operation counter		
40501	TRIP Current accumulator Phase A		A
40502	TRIP Current accumulator Phase B		A
40503	TRIP Current accumulator Phase C		A
40504	TRIP Current accumulator Phase A		0.1 % (of limit)
40505	TRIP Current accumulator Phase B		0.1 % (of limit)
40506	TRIP Current accumulator Phase C		0.1 % (of limit)
40507	TRIP I <sup>2</sup> t accumulator Phase A		I <sup>2</sup> tS
40508	TRIP I <sup>2</sup> t accumulator Phase B		I <sup>2</sup> tS
40509	TRIP I <sup>2</sup> t accumulator Phase C		I <sup>2</sup> tS
40510	TRIP I <sup>2</sup> t accumulator Phase A		0.1 % (of limit)
40511	TRIP I <sup>2</sup> t accumulator Phase B		0.1 % (of limit)
40512	TRIP I <sup>2</sup> t accumulator Phase C		0.1 % (of limit)
40513	TRIP operate time Phase A (max)		0.1 ms
40514	TRIP operate time Phase A (min)		0.1 ms
40515	TRIP operate time Phase A (avg)		0.1 ms
40516	TRIP operate time Phase B (max)		0.1 ms
40517	TRIP operate time Phase B (min)		0.1 ms
40518	TRIP operate time Phase B (avg)		0.1 ms
40519	TRIP operate time Phase C (max)		0.1 ms
40520	TRIP operate time Phase C (min)		0.1 ms
40521	TRIP operate time Phase C (avg)		0.1 ms
40522	TRIP coil current (max)		0.1 A
40523	TRIP coil current (min)		0.1 A

40524	TRIP coil current (avg)		0.1 A
40525	TRIP aux time (max)		0.1 ms
40526	TRIP aux time (min)		0.1 ms
40527	TRIP aux time (avg)		0.1 ms
40528	TRIP pulse width (max)		0.1 ms
40529	TRIP pulse width (min)		0.1 ms
40530	TRIP pulse width (avg)		0.1 ms
40531	CLOSE operation counter		
40532	CLOSE coil current (max)		0.1 A
40533	CLOSE coil current (min)		0.1 A
40534	CLOSE coil current (avg)		0.1 A
40535	CLOSE aux time (max)		0.1 ms
40536	CLOSE aux time (min)		0.1 ms
40537	CLOSE aux time (avg)		0.1 ms
40538	CLOSE pulse width (max)		0.1 ms
40539	CLOSE pulse width (min)		0.1 ms
40540	CLOSE pulse width (avg)		0.1 ms
	<b>Circuit Breaker 2</b>		
40600	TRIP operation counter		
40601	TRIP Current accumulator Phase A		A
40602	TRIP Current accumulator Phase B		A
40603	TRIP Current accumulator Phase C		A
40604	TRIP Current accumulator Phase A		0.1 % (of limit)
40605	TRIP Current accumulator Phase B		0.1 % (of limit)
40606	TRIP Current accumulator Phase C		0.1 % (of limit)
40607	TRIP I <sup>2</sup> t accumulator Phase A		I <sup>2</sup> tS
40608	TRIP I <sup>2</sup> t accumulator Phase B		I <sup>2</sup> tS
40609	TRIP I <sup>2</sup> t accumulator Phase C		I <sup>2</sup> tS
40610	TRIP I <sup>2</sup> t accumulator Phase A		0.1 % (of limit)
40611	TRIP I <sup>2</sup> t accumulator Phase B		0.1 % (of limit)
40612	TRIP I <sup>2</sup> t accumulator Phase C		0.1 % (of limit)
40613	TRIP operate time Phase A (max)		0.1 ms
40614	TRIP operate time Phase A (min)		0.1 ms
40615	TRIP operate time Phase A (avg)		0.1 ms
40616	TRIP operate time Phase B (max)		0.1 ms
40617	TRIP operate time Phase B (min)		0.1 ms
40618	TRIP operate time Phase B (avg)		0.1 ms
40619	TRIP operate time Phase C (max)		0.1 ms
40620	TRIP operate time Phase C (min)		0.1 ms
40621	TRIP operate time Phase C (avg)		0.1 ms
40622	TRIP coil current (max)		0.1 A
40623	TRIP coil current (min)		0.1 A
40624	TRIP coil current (avg)		0.1 A
40625	TRIP aux time (max)		0.1 ms

40626	TRIP aux time (min)		0.1 ms
40627	TRIP aux time (avg)		0.1 ms
40628	TRIP pulse width (max)		0.1 ms
40629	TRIP pulse width (min)		0.1 ms
40630	TRIP pulse width (avg)		0.1 ms
40631	CLOSE operation counter		
40632	CLOSE coil current (max)		0.1 A
40633	CLOSE coil current (min)		0.1 A
40634	CLOSE coil current (avg)		0.1 A
40635	CLOSE aux time (max)		0.1 ms
40636	CLOSE aux time (min)		0.1 ms
40637	CLOSE aux time (avg)		0.1 ms
40638	CLOSE pulse width (max)		0.1 ms
40639	CLOSE pulse width (min)		0.1 ms
40640	CLOSE pulse width (avg)		0.1 ms
	<b>Circuit Breaker 3</b>		
40700	TRIP operation counter		
40701	TRIP Current accumulator Phase A		A
40702	TRIP Current accumulator Phase B		A
40703	TRIP Current accumulator Phase C		A
40704	TRIP Current accumulator Phase A		0.1 % (of limit)
40705	TRIP Current accumulator Phase B		0.1 % (of limit)
40706	TRIP Current accumulator Phase C		0.1 % (of limit)
40707	TRIP $I^2t$ accumulator Phase A		$I^2tS$
40708	TRIP $I^2t$ accumulator Phase B		$I^2tS$
40709	TRIP $I^2t$ accumulator Phase C		$I^2tS$
40710	TRIP $I^2t$ accumulator Phase A		0.1 % (of limit)
40711	TRIP $I^2t$ accumulator Phase B		0.1 % (of limit)
40712	TRIP $I^2t$ accumulator Phase C		0.1 % (of limit)
40713	TRIP operate time Phase A (max)		0.1 ms
40714	TRIP operate time Phase A (min)		0.1 ms
40715	TRIP operate time Phase A (avg)		0.1 ms
40716	TRIP operate time Phase B (max)		0.1 ms
40717	TRIP operate time Phase B (min)		0.1 ms
40718	TRIP operate time Phase B (avg)		0.1 ms
40719	TRIP operate time Phase C (max)		0.1 ms
40720	TRIP operate time Phase C (min)		0.1 ms
40721	TRIP operate time Phase C (avg)		0.1 ms
40722	TRIP coil current (max)		0.1 A
40723	TRIP coil current (min)		0.1 A
40724	TRIP coil current (avg)		0.1 A
40725	TRIP aux time (max)		0.1 ms
40726	TRIP aux time (min)		0.1 ms
40727	TRIP aux time (avg)		0.1 ms

40728	TRIP pulse width (max)		0.1 ms
40729	TRIP pulse width (min)		0.1 ms
40730	TRIP pulse width (avg)		0.1 ms
40731	CLOSE operation counter		
40732	CLOSE coil current (max)		0.1 A
40733	CLOSE coil current (min)		0.1 A
40734	CLOSE coil current (avg)		0.1 A
40735	CLOSE aux time (max)		0.1 ms
40736	CLOSE aux time (min)		0.1 ms
40737	CLOSE aux time (avg)		0.1 ms
40738	CLOSE pulse width (max)		0.1 ms
40739	CLOSE pulse width (min)		0.1 ms
40740	CLOSE pulse width (avg)		0.1 ms
	<b>Circuit Breaker 4</b>		
40800	TRIP operation counter		
40801	TRIP Current accumulator Phase A		A
40802	TRIP Current accumulator Phase B		A
40803	TRIP Current accumulator Phase C		A
40804	TRIP Current accumulator Phase A		0.1 % (of limit)
40805	TRIP Current accumulator Phase B		0.1 % (of limit)
40806	TRIP Current accumulator Phase C		0.1 % (of limit)
40807	TRIP I <sup>2</sup> t accumulator Phase A		I <sup>2</sup> tS
40808	TRIP I <sup>2</sup> t accumulator Phase B		I <sup>2</sup> tS
40809	TRIP I <sup>2</sup> t accumulator Phase C		I <sup>2</sup> tS
40810	TRIP I <sup>2</sup> t accumulator Phase A		0.1 % (of limit)
40811	TRIP I <sup>2</sup> t accumulator Phase B		0.1 % (of limit)
40812	TRIP I <sup>2</sup> t accumulator Phase C		0.1 % (of limit)
40813	TRIP operate time Phase A (max)		0.1 ms
40814	TRIP operate time Phase A (min)		0.1 ms
40815	TRIP operate time Phase A (avg)		0.1 ms
40816	TRIP operate time Phase B (max)		0.1 ms
40817	TRIP operate time Phase B (min)		0.1 ms
40818	TRIP operate time Phase B (avg)		0.1 ms
40819	TRIP operate time Phase C (max)		0.1 ms
40820	TRIP operate time Phase C (min)		0.1 ms
40821	TRIP operate time Phase C (avg)		0.1 ms
40822	TRIP coil current (max)		0.1 A
40823	TRIP coil current (min)		0.1 A
40824	TRIP coil current (avg)		0.1 A
40825	TRIP aux time (max)		0.1 ms
40826	TRIP aux time (min)		0.1 ms
40827	TRIP aux time (avg)		0.1 ms
40828	TRIP pulse width (max)		0.1 ms
40829	TRIP pulse width (min)		0.1 ms

40830	TRIP pulse width (avg)		0.1 ms
40831	CLOSE operation counter		
40832	CLOSE coil current (max)		0.1 A
40833	CLOSE coil current (min)		0.1 A
40834	CLOSE coil current (avg)		0.1 A
40835	CLOSE aux time (max)		0.1 ms
40836	CLOSE aux time (min)		0.1 ms
40837	CLOSE aux time (avg)		0.1 ms
40838	CLOSE pulse width (max)		0.1 ms
40839	CLOSE pulse width (min)		0.1 ms
40840	CLOSE pulse width (avg)		0.1 ms
	<b>Circuit Breaker 5</b>		
40900	TRIP operation counter		
40901	TRIP Current accumulator Phase A		A
40902	TRIP Current accumulator Phase B		A
40903	TRIP Current accumulator Phase C		A
40904	TRIP Current accumulator Phase A		0.1 % (of limit)
40905	TRIP Current accumulator Phase B		0.1 % (of limit)
40906	TRIP Current accumulator Phase C		0.1 % (of limit)
40907	TRIP $I^2t$ accumulator Phase A		$I^2tS$
40908	TRIP $I^2t$ accumulator Phase B		$I^2tS$
40909	TRIP $I^2t$ accumulator Phase C		$I^2tS$
40910	TRIP $I^2t$ accumulator Phase A		0.1 % (of limit)
40911	TRIP $I^2t$ accumulator Phase B		0.1 % (of limit)
40912	TRIP $I^2t$ accumulator Phase C		0.1 % (of limit)
40913	TRIP operate time Phase A (max)		0.1 ms
40914	TRIP operate time Phase A (min)		0.1 ms
40915	TRIP operate time Phase A (avg)		0.1 ms
40916	TRIP operate time Phase B (max)		0.1 ms
40917	TRIP operate time Phase B (min)		0.1 ms
40918	TRIP operate time Phase B (avg)		0.1 ms
40919	TRIP operate time Phase C (max)		0.1 ms
40920	TRIP operate time Phase C (min)		0.1 ms
40921	TRIP operate time Phase C (avg)		0.1 ms
40922	TRIP coil current (max)		0.1 A
40923	TRIP coil current (min)		0.1 A
40924	TRIP coil current (avg)		0.1 A
40925	TRIP aux time (max)		0.1 ms
40926	TRIP aux time (min)		0.1 ms
40927	TRIP aux time (avg)		0.1 ms
40928	TRIP pulse width (max)		0.1 ms
40929	TRIP pulse width (min)		0.1 ms
40930	TRIP pulse width (avg)		0.1 ms
40931	CLOSE operation counter		

40932	CLOSE coil current (max)		0.1 A
40933	CLOSE coil current (min)		0.1 A
40934	CLOSE coil current (avg)		0.1 A
40935	CLOSE aux time (max)		0.1 ms
40936	CLOSE aux time (min)		0.1 ms
40937	CLOSE aux time (avg)		0.1 ms
40938	CLOSE pulse width (max)		0.1 ms
40939	CLOSE pulse width (min)		0.1 ms
40940	CLOSE pulse width (avg)		0.1 ms
	<b>Circuit Breaker 6</b>		
41000	TRIP operation counter		
41001	TRIP Current accumulator Phase A		A
41002	TRIP Current accumulator Phase B		A
41003	TRIP Current accumulator Phase C		A
41004	TRIP Current accumulator Phase A		0.1 % (of limit)
41005	TRIP Current accumulator Phase B		0.1 % (of limit)
41006	TRIP Current accumulator Phase C		0.1 % (of limit)
41007	TRIP I <sup>2</sup> t accumulator Phase A		I <sup>2</sup> tS
41008	TRIP I <sup>2</sup> t accumulator Phase B		I <sup>2</sup> tS
41009	TRIP I <sup>2</sup> t accumulator Phase C		I <sup>2</sup> tS
41010	TRIP I <sup>2</sup> t accumulator Phase A		0.1 % (of limit)
41011	TRIP I <sup>2</sup> t accumulator Phase B		0.1 % (of limit)
41012	TRIP I <sup>2</sup> t accumulator Phase C		0.1 % (of limit)
41013	TRIP operate time Phase A (max)		0.1 ms
41014	TRIP operate time Phase A (min)		0.1 ms
41015	TRIP operate time Phase A (avg)		0.1 ms
41016	TRIP operate time Phase B (max)		0.1 ms
41017	TRIP operate time Phase B (min)		0.1 ms
41018	TRIP operate time Phase B (avg)		0.1 ms
41019	TRIP operate time Phase C (max)		0.1 ms
41020	TRIP operate time Phase C (min)		0.1 ms
41021	TRIP operate time Phase C (avg)		0.1 ms
41022	TRIP coil current (max)		0.1 A
41023	TRIP coil current (min)		0.1 A
41024	TRIP coil current (avg)		0.1 A
41025	TRIP aux time (max)		0.1 ms
41026	TRIP aux time (min)		0.1 ms
41027	TRIP aux time (avg)		0.1 ms
41028	TRIP pulse width (max)		0.1 ms
41029	TRIP pulse width (min)		0.1 ms
41030	TRIP pulse width (avg)		0.1 ms
41031	CLOSE operation counter		
41032	CLOSE coil current (max)		0.1 A
41033	CLOSE coil current (min)		0.1 A

41034	CLOSE coil current (avg)		0.1 A
41035	CLOSE aux time (max)		0.1 ms
41036	CLOSE aux time (min)		0.1 ms
41037	CLOSE aux time (avg)		0.1 ms
41038	CLOSE pulse width (max)		0.1 ms
41039	CLOSE pulse width (min)		0.1 ms
41040	CLOSE pulse width (avg)		0.1 ms
	<b>Circuit Breaker 7</b>		
41100	TRIP operation counter		
41101	TRIP Current accumulator Phase A		A
41102	TRIP Current accumulator Phase B		A
41103	TRIP Current accumulator Phase C		A
41104	TRIP Current accumulator Phase A		0.1 % (of limit)
41105	TRIP Current accumulator Phase B		0.1 % (of limit)
41106	TRIP Current accumulator Phase C		0.1 % (of limit)
41107	TRIP I <sup>2</sup> t accumulator Phase A		I <sup>2</sup> tS
41108	TRIP I <sup>2</sup> t accumulator Phase B		I <sup>2</sup> tS
41109	TRIP I <sup>2</sup> t accumulator Phase C		I <sup>2</sup> tS
41110	TRIP I <sup>2</sup> t accumulator Phase A		0.1 % (of limit)
41111	TRIP I <sup>2</sup> t accumulator Phase B		0.1 % (of limit)
41112	TRIP I <sup>2</sup> t accumulator Phase C		0.1 % (of limit)
41113	TRIP operate time Phase A (max)		0.1 ms
41114	TRIP operate time Phase A (min)		0.1 ms
41115	TRIP operate time Phase A (avg)		0.1 ms
41116	TRIP operate time Phase B (max)		0.1 ms
41117	TRIP operate time Phase B (min)		0.1 ms
41118	TRIP operate time Phase B (avg)		0.1 ms
41119	TRIP operate time Phase C (max)		0.1 ms
41120	TRIP operate time Phase C (min)		0.1 ms
41121	TRIP operate time Phase C (avg)		0.1 ms
41122	TRIP coil current (max)		0.1 A
41123	TRIP coil current (min)		0.1 A
41124	TRIP coil current (avg)		0.1 A
41125	TRIP aux time (max)		0.1 ms
41126	TRIP aux time (min)		0.1 ms
41127	TRIP aux time (avg)		0.1 ms
41128	TRIP pulse width (max)		0.1 ms
41129	TRIP pulse width (min)		0.1 ms
41130	TRIP pulse width (avg)		0.1 ms
41131	CLOSE operation counter		
41132	CLOSE coil current (max)		0.1 A
41133	CLOSE coil current (min)		0.1 A
41134	CLOSE coil current (avg)		0.1 A
41135	CLOSE aux time (max)		0.1 ms

41136	CLOSE aux time (min)		0.1 ms
41137	CLOSE aux time (avg)		0.1 ms
41138	CLOSE pulse width (max)		0.1 ms
41139	CLOSE pulse width (min)		0.1 ms
41140	CLOSE pulse width (avg)		0.1 ms
	<b>Circuit Breaker 8</b>		
41200	TRIP operation counter		
41201	TRIP Current accumulator Phase A		A
41202	TRIP Current accumulator Phase B		A
41203	TRIP Current accumulator Phase C		A
41204	TRIP Current accumulator Phase A		0.1 % (of limit)
41205	TRIP Current accumulator Phase B		0.1 % (of limit)
41206	TRIP Current accumulator Phase C		0.1 % (of limit)
41207	TRIP $I^2t$ accumulator Phase A		$I^2tS$
41208	TRIP $I^2t$ accumulator Phase B		$I^2tS$
41209	TRIP $I^2t$ accumulator Phase C		$I^2tS$
41210	TRIP $I^2t$ accumulator Phase A		0.1 % (of limit)
41211	TRIP $I^2t$ accumulator Phase B		0.1 % (of limit)
41212	TRIP $I^2t$ accumulator Phase C		0.1 % (of limit)
41213	TRIP operate time Phase A (max)		0.1 ms
41214	TRIP operate time Phase A (min)		0.1 ms
41215	TRIP operate time Phase A (avg)		0.1 ms
41216	TRIP operate time Phase B (max)		0.1 ms
41217	TRIP operate time Phase B (min)		0.1 ms
41218	TRIP operate time Phase B (avg)		0.1 ms
41219	TRIP operate time Phase C (max)		0.1 ms
41220	TRIP operate time Phase C (min)		0.1 ms
41221	TRIP operate time Phase C (avg)		0.1 ms
41222	TRIP coil current (max)		0.1 A
41223	TRIP coil current (min)		0.1 A
41224	TRIP coil current (avg)		0.1 A
41225	TRIP aux time (max)		0.1 ms
41226	TRIP aux time (min)		0.1 ms
41227	TRIP aux time (avg)		0.1 ms
41228	TRIP pulse width (max)		0.1 ms
41229	TRIP pulse width (min)		0.1 ms
41230	TRIP pulse width (avg)		0.1 ms
41231	CLOSE operation counter		
41232	CLOSE coil current (max)		0.1 A
41233	CLOSE coil current (min)		0.1 A
41234	CLOSE coil current (avg)		0.1 A
41235	CLOSE aux time (max)		0.1 ms
41236	CLOSE aux time (min)		0.1 ms
41237	CLOSE aux time (avg)		0.1 ms

41238	CLOSE pulse width (max)		0.1 ms
41239	CLOSE pulse width (min)		0.1 ms
41240	CLOSE pulse width (avg)		0.1 ms
	<b>Circuit Breaker 9</b>		
41300	TRIP operation counter		
41301	TRIP Current accumulator Phase A		A
41302	TRIP Current accumulator Phase B		A
41303	TRIP Current accumulator Phase C		A
41304	TRIP Current accumulator Phase A		0.1 % (of limit)
41305	TRIP Current accumulator Phase B		0.1 % (of limit)
41306	TRIP Current accumulator Phase C		0.1 % (of limit)
41307	TRIP I <sup>2</sup> t accumulator Phase A		I <sup>2</sup> tS
41308	TRIP I <sup>2</sup> t accumulator Phase B		I <sup>2</sup> tS
41309	TRIP I <sup>2</sup> t accumulator Phase C		I <sup>2</sup> tS
41310	TRIP I <sup>2</sup> t accumulator Phase A		0.1 % (of limit)
41311	TRIP I <sup>2</sup> t accumulator Phase B		0.1 % (of limit)
41312	TRIP I <sup>2</sup> t accumulator Phase C		0.1 % (of limit)
41313	TRIP operate time Phase A (max)		0.1 ms
41314	TRIP operate time Phase A (min)		0.1 ms
41315	TRIP operate time Phase A (avg)		0.1 ms
41316	TRIP operate time Phase B (max)		0.1 ms
41317	TRIP operate time Phase B (min)		0.1 ms
41318	TRIP operate time Phase B (avg)		0.1 ms
41319	TRIP operate time Phase C (max)		0.1 ms
41320	TRIP operate time Phase C (min)		0.1 ms
41321	TRIP operate time Phase C (avg)		0.1 ms
41322	TRIP coil current (max)		0.1 A
41323	TRIP coil current (min)		0.1 A
41324	TRIP coil current (avg)		0.1 A
41325	TRIP aux time (max)		0.1 ms
41326	TRIP aux time (min)		0.1 ms
41327	TRIP aux time (avg)		0.1 ms
41328	TRIP pulse width (max)		0.1 ms
41329	TRIP pulse width (min)		0.1 ms
41330	TRIP pulse width (avg)		0.1 ms
41331	CLOSE operation counter		
41332	CLOSE coil current (max)		0.1 A
41333	CLOSE coil current (min)		0.1 A
41334	CLOSE coil current (avg)		0.1 A
41335	CLOSE aux time (max)		0.1 ms
41336	CLOSE aux time (min)		0.1 ms
41337	CLOSE aux time (avg)		0.1 ms
41338	CLOSE pulse width (max)		0.1 ms
41339	CLOSE pulse width (min)		0.1 ms

41340	CLOSE pulse width (avg)		0.1 ms
	<b>Circuit Breaker 10</b>		
41400	TRIP operation counter		
41401	TRIP Current accumulator Phase A		A
41402	TRIP Current accumulator Phase B		A
41403	TRIP Current accumulator Phase C		A
41404	TRIP Current accumulator Phase A		0.1 % (of limit)
41405	TRIP Current accumulator Phase B		0.1 % (of limit)
41406	TRIP Current accumulator Phase C		0.1 % (of limit)
41407	TRIP $I^2t$ accumulator Phase A		$I^2tS$
41408	TRIP $I^2t$ accumulator Phase B		$I^2tS$
41409	TRIP $I^2t$ accumulator Phase C		$I^2tS$
41410	TRIP $I^2t$ accumulator Phase A		0.1 % (of limit)
41411	TRIP $I^2t$ accumulator Phase B		0.1 % (of limit)
41412	TRIP $I^2t$ accumulator Phase C		0.1 % (of limit)
41413	TRIP operate time Phase A (max)		0.1 ms
41414	TRIP operate time Phase A (min)		0.1 ms
41415	TRIP operate time Phase A (avg)		0.1 ms
41416	TRIP operate time Phase B (max)		0.1 ms
41417	TRIP operate time Phase B (min)		0.1 ms
41418	TRIP operate time Phase B (avg)		0.1 ms
41419	TRIP operate time Phase C (max)		0.1 ms
41420	TRIP operate time Phase C (min)		0.1 ms
41421	TRIP operate time Phase C (avg)		0.1 ms
41422	TRIP coil current (max)		0.1 A
41423	TRIP coil current (min)		0.1 A
41424	TRIP coil current (avg)		0.1 A
41425	TRIP aux time (max)		0.1 ms
41426	TRIP aux time (min)		0.1 ms
41427	TRIP aux time (avg)		0.1 ms
41428	TRIP pulse width (max)		0.1 ms
41429	TRIP pulse width (min)		0.1 ms
41430	TRIP pulse width (avg)		0.1 ms
41431	CLOSE operation counter		
41432	CLOSE coil current (max)		0.1 A
41433	CLOSE coil current (min)		0.1 A
41434	CLOSE coil current (avg)		0.1 A
41435	CLOSE aux time (max)		0.1 ms
41436	CLOSE aux time (min)		0.1 ms
41437	CLOSE aux time (avg)		0.1 ms
41438	CLOSE pulse width (max)		0.1 ms
41439	CLOSE pulse width (min)		0.1 ms
41440	CLOSE pulse width (avg)		0.1 ms

<b>Circuit Breaker 11</b>			
41500	TRIP operation counter		
41501	TRIP Current accumulator Phase A		A
41502	TRIP Current accumulator Phase B		A
41503	TRIP Current accumulator Phase C		A
41504	TRIP Current accumulator Phase A		0.1 % (of limit)
41505	TRIP Current accumulator Phase B		0.1 % (of limit)
41506	TRIP Current accumulator Phase C		0.1 % (of limit)
41507	TRIP $I^2t$ accumulator Phase A		$I^2tS$
41508	TRIP $I^2t$ accumulator Phase B		$I^2tS$
41509	TRIP $I^2t$ accumulator Phase C		$I^2tS$
41510	TRIP $I^2t$ accumulator Phase A		0.1 % (of limit)
41511	TRIP $I^2t$ accumulator Phase B		0.1 % (of limit)
41512	TRIP $I^2t$ accumulator Phase C		0.1 % (of limit)
41513	TRIP operate time Phase A (max)		0.1 ms
41514	TRIP operate time Phase A (min)		0.1 ms
41515	TRIP operate time Phase A (avg)		0.1 ms
41516	TRIP operate time Phase B (max)		0.1 ms
41517	TRIP operate time Phase B (min)		0.1 ms
41518	TRIP operate time Phase B (avg)		0.1 ms
41519	TRIP operate time Phase C (max)		0.1 ms
41520	TRIP operate time Phase C (min)		0.1 ms
41521	TRIP operate time Phase C (avg)		0.1 ms
41522	TRIP coil current (max)		0.1 A
41523	TRIP coil current (min)		0.1 A
41524	TRIP coil current (avg)		0.1 A
41525	TRIP aux time (max)		0.1 ms
41526	TRIP aux time (min)		0.1 ms
41527	TRIP aux time (avg)		0.1 ms
41528	TRIP pulse width (max)		0.1 ms
41529	TRIP pulse width (min)		0.1 ms
41530	TRIP pulse width (avg)		0.1 ms
41531	CLOSE operation counter		
41532	CLOSE coil current (max)		0.1 A
41533	CLOSE coil current (min)		0.1 A
41534	CLOSE coil current (avg)		0.1 A
41535	CLOSE aux time (max)		0.1 ms
41536	CLOSE aux time (min)		0.1 ms
41537	CLOSE aux time (avg)		0.1 ms
41538	CLOSE pulse width (max)		0.1 ms
41539	CLOSE pulse width (min)		0.1 ms
41540	CLOSE pulse width (avg)		0.1 ms
<b>Circuit Breaker 12</b>			
41600	TRIP operation counter		

41601	TRIP Current accumulator Phase A		A
41602	TRIP Current accumulator Phase B		A
41603	TRIP Current accumulator Phase C		A
41604	TRIP Current accumulator Phase A		0.1 % (of limit)
41605	TRIP Current accumulator Phase B		0.1 % (of limit)
41606	TRIP Current accumulator Phase C		0.1 % (of limit)
41607	TRIP $I^2t$ accumulator Phase A		$I^2tS$
41608	TRIP $I^2t$ accumulator Phase B		$I^2tS$
41609	TRIP $I^2t$ accumulator Phase C		$I^2tS$
41610	TRIP $I^2t$ accumulator Phase A		0.1 % (of limit)
41611	TRIP $I^2t$ accumulator Phase B		0.1 % (of limit)
41612	TRIP $I^2t$ accumulator Phase C		0.1 % (of limit)
41613	TRIP operate time Phase A (max)		0.1 ms
41614	TRIP operate time Phase A (min)		0.1 ms
41615	TRIP operate time Phase A (avg)		0.1 ms
41616	TRIP operate time Phase B (max)		0.1 ms
41617	TRIP operate time Phase B (min)		0.1 ms
41618	TRIP operate time Phase B (avg)		0.1 ms
41619	TRIP operate time Phase C (max)		0.1 ms
41620	TRIP operate time Phase C (min)		0.1 ms
41621	TRIP operate time Phase C (avg)		0.1 ms
41622	TRIP coil current (max)		0.1 A
41623	TRIP coil current (min)		0.1 A
41624	TRIP coil current (avg)		0.1 A
41625	TRIP aux time (max)		0.1 ms
41626	TRIP aux time (min)		0.1 ms
41627	TRIP aux time (avg)		0.1 ms
41628	TRIP pulse width (max)		0.1 ms
41629	TRIP pulse width (min)		0.1 ms
41630	TRIP pulse width (avg)		0.1 ms
41631	CLOSE operation counter		
41632	CLOSE coil current (max)		0.1 A
41633	CLOSE coil current (min)		0.1 A
41634	CLOSE coil current (avg)		0.1 A
41635	CLOSE aux time (max)		0.1 ms
41636	CLOSE aux time (min)		0.1 ms
41637	CLOSE aux time (avg)		0.1 ms
41638	CLOSE pulse width (max)		0.1 ms
41639	CLOSE pulse width (min)		0.1 ms
41640	CLOSE pulse width (avg)		0.1 ms
	<b>Circuit Breaker 13</b>		
41700	TRIP operation counter		
41701	TRIP Current accumulator Phase A		A
41702	TRIP Current accumulator Phase B		A

41703	TRIP Current accumulator Phase C		A
41704	TRIP Current accumulator Phase A		0.1 % (of limit)
41705	TRIP Current accumulator Phase B		0.1 % (of limit)
41706	TRIP Current accumulator Phase C		0.1 % (of limit)
41707	TRIP I <sup>2</sup> t accumulator Phase A		I <sup>2</sup> tS
41708	TRIP I <sup>2</sup> t accumulator Phase B		I <sup>2</sup> tS
41709	TRIP I <sup>2</sup> t accumulator Phase C		I <sup>2</sup> tS
41710	TRIP I <sup>2</sup> t accumulator Phase A		0.1 % (of limit)
41711	TRIP I <sup>2</sup> t accumulator Phase B		0.1 % (of limit)
41712	TRIP I <sup>2</sup> t accumulator Phase C		0.1 % (of limit)
41713	TRIP operate time Phase A (max)		0.1 ms
41714	TRIP operate time Phase A (min)		0.1 ms
41715	TRIP operate time Phase A (avg)		0.1 ms
41716	TRIP operate time Phase B (max)		0.1 ms
41717	TRIP operate time Phase B (min)		0.1 ms
41718	TRIP operate time Phase B (avg)		0.1 ms
41719	TRIP operate time Phase C (max)		0.1 ms
41720	TRIP operate time Phase C (min)		0.1 ms
41721	TRIP operate time Phase C (avg)		0.1 ms
41722	TRIP coil current (max)		0.1 A
41723	TRIP coil current (min)		0.1 A
41724	TRIP coil current (avg)		0.1 A
41725	TRIP aux time (max)		0.1 ms
41726	TRIP aux time (min)		0.1 ms
41727	TRIP aux time (avg)		0.1 ms
41728	TRIP pulse width (max)		0.1 ms
41729	TRIP pulse width (min)		0.1 ms
41730	TRIP pulse width (avg)		0.1 ms
41731	CLOSE operation counter		
41732	CLOSE coil current (max)		0.1 A
41733	CLOSE coil current (min)		0.1 A
41734	CLOSE coil current (avg)		0.1 A
41735	CLOSE aux time (max)		0.1 ms
41736	CLOSE aux time (min)		0.1 ms
41737	CLOSE aux time (avg)		0.1 ms
41738	CLOSE pulse width (max)		0.1 ms
41739	CLOSE pulse width (min)		0.1 ms
41740	CLOSE pulse width (avg)		0.1 ms
	<b>Circuit Breaker 14</b>		
41800	TRIP operation counter		
41801	TRIP Current accumulator Phase A		A
41802	TRIP Current accumulator Phase B		A
41803	TRIP Current accumulator Phase C		A
41804	TRIP Current accumulator Phase A		0.1 % (of limit)

41805	TRIP Current accumulator Phase B		0.1 % (of limit)
41806	TRIP Current accumulator Phase C		0.1 % (of limit)
41807	TRIP I <sup>2</sup> t accumulator Phase A		I <sup>2</sup> tS
41808	TRIP I <sup>2</sup> t accumulator Phase B		I <sup>2</sup> tS
41809	TRIP I <sup>2</sup> t accumulator Phase C		I <sup>2</sup> tS
41810	TRIP I <sup>2</sup> t accumulator Phase A		0.1 % (of limit)
41811	TRIP I <sup>2</sup> t accumulator Phase B		0.1 % (of limit)
41812	TRIP I <sup>2</sup> t accumulator Phase C		0.1 % (of limit)
41813	TRIP operate time Phase A (max)		0.1 ms
41814	TRIP operate time Phase A (min)		0.1 ms
41815	TRIP operate time Phase A (avg)		0.1 ms
41816	TRIP operate time Phase B (max)		0.1 ms
41817	TRIP operate time Phase B (min)		0.1 ms
41818	TRIP operate time Phase B (avg)		0.1 ms
41819	TRIP operate time Phase C (max)		0.1 ms
41820	TRIP operate time Phase C (min)		0.1 ms
41821	TRIP operate time Phase C (avg)		0.1 ms
41822	TRIP coil current (max)		0.1 A
41823	TRIP coil current (min)		0.1 A
41824	TRIP coil current (avg)		0.1 A
41825	TRIP aux time (max)		0.1 ms
41826	TRIP aux time (min)		0.1 ms
41827	TRIP aux time (avg)		0.1 ms
41828	TRIP pulse width (max)		0.1 ms
41829	TRIP pulse width (min)		0.1 ms
41830	TRIP pulse width (avg)		0.1 ms
41831	CLOSE operation counter		
41832	CLOSE coil current (max)		0.1 A
41833	CLOSE coil current (min)		0.1 A
41834	CLOSE coil current (avg)		0.1 A
41835	CLOSE aux time (max)		0.1 ms
41836	CLOSE aux time (min)		0.1 ms
41837	CLOSE aux time (avg)		0.1 ms
41838	CLOSE pulse width (max)		0.1 ms
41839	CLOSE pulse width (min)		0.1 ms
41840	CLOSE pulse width (avg)		0.1 ms
	<b>Circuit Breaker 15</b>		
41900	TRIP operation counter		
41901	TRIP Current accumulator Phase A		A
41902	TRIP Current accumulator Phase B		A
41903	TRIP Current accumulator Phase C		A
41904	TRIP Current accumulator Phase A		0.1 % (of limit)
41905	TRIP Current accumulator Phase B		0.1 % (of limit)
41906	TRIP Current accumulator Phase C		0.1 % (of limit)

41907	TRIP $I^2t$ accumulator Phase A		$I^2tS$
41908	TRIP $I^2t$ accumulator Phase B		$I^2tS$
41909	TRIP $I^2t$ accumulator Phase C		$I^2tS$
41910	TRIP $I^2t$ accumulator Phase A		0.1 % (of limit)
41911	TRIP $I^2t$ accumulator Phase B		0.1 % (of limit)
41912	TRIP $I^2t$ accumulator Phase C		0.1 % (of limit)
41913	TRIP operate time Phase A (max)		0.1 ms
41914	TRIP operate time Phase A (min)		0.1 ms
41915	TRIP operate time Phase A (avg)		0.1 ms
41916	TRIP operate time Phase B (max)		0.1 ms
41917	TRIP operate time Phase B (min)		0.1 ms
41918	TRIP operate time Phase B (avg)		0.1 ms
41919	TRIP operate time Phase C (max)		0.1 ms
41920	TRIP operate time Phase C (min)		0.1 ms
41921	TRIP operate time Phase C (avg)		0.1 ms
41922	TRIP coil current (max)		0.1 A
41923	TRIP coil current (min)		0.1 A
41924	TRIP coil current (avg)		0.1 A
41925	TRIP aux time (max)		0.1 ms
41926	TRIP aux time (min)		0.1 ms
41927	TRIP aux time (avg)		0.1 ms
41928	TRIP pulse width (max)		0.1 ms
41929	TRIP pulse width (min)		0.1 ms
41930	TRIP pulse width (avg)		0.1 ms
41931	CLOSE operation counter		
41932	CLOSE coil current (max)		0.1 A
41933	CLOSE coil current (min)		0.1 A
41934	CLOSE coil current (avg)		0.1 A
41935	CLOSE aux time (max)		0.1 ms
41936	CLOSE aux time (min)		0.1 ms
41937	CLOSE aux time (avg)		0.1 ms
41938	CLOSE pulse width (max)		0.1 ms
41939	CLOSE pulse width (min)		0.1 ms
41940	CLOSE pulse width (avg)		0.1 ms
	<b>Circuit Breaker 16</b>		
42000	TRIP operation counter		
42001	TRIP Current accumulator Phase A		A
42002	TRIP Current accumulator Phase B		A
42003	TRIP Current accumulator Phase C		A
42004	TRIP Current accumulator Phase A		0.1 % (of limit)
42005	TRIP Current accumulator Phase B		0.1 % (of limit)
42006	TRIP Current accumulator Phase C		0.1 % (of limit)
42007	TRIP $I^2t$ accumulator Phase A		$I^2tS$
42008	TRIP $I^2t$ accumulator Phase B		$I^2tS$

42009	TRIP $I^2t$ accumulator Phase C		$I^2tS$
42010	TRIP $I^2t$ accumulator Phase A		0.1 % (of limit)
42011	TRIP $I^2t$ accumulator Phase B		0.1 % (of limit)
42012	TRIP $I^2t$ accumulator Phase C		0.1 % (of limit)
42013	TRIP operate time Phase A (max)		0.1 ms
42014	TRIP operate time Phase A (min)		0.1 ms
42015	TRIP operate time Phase A (avg)		0.1 ms
42016	TRIP operate time Phase B (max)		0.1 ms
42017	TRIP operate time Phase B (min)		0.1 ms
42018	TRIP operate time Phase B (avg)		0.1 ms
42019	TRIP operate time Phase C (max)		0.1 ms
42020	TRIP operate time Phase C (min)		0.1 ms
42021	TRIP operate time Phase C (avg)		0.1 ms
42022	TRIP coil current (max)		0.1 A
42023	TRIP coil current (min)		0.1 A
42024	TRIP coil current (avg)		0.1 A
42025	TRIP aux time (max)		0.1 ms
42026	TRIP aux time (min)		0.1 ms
42027	TRIP aux time (avg)		0.1 ms
42028	TRIP pulse width (max)		0.1 ms
42029	TRIP pulse width (min)		0.1 ms
42030	TRIP pulse width (avg)		0.1 ms
42031	CLOSE operation counter		
42032	CLOSE coil current (max)		0.1 A
42033	CLOSE coil current (min)		0.1 A
42034	CLOSE coil current (avg)		0.1 A
42035	CLOSE aux time (max)		0.1 ms
42036	CLOSE aux time (min)		0.1 ms
42037	CLOSE aux time (avg)		0.1 ms
42038	CLOSE pulse width (max)		0.1 ms
42039	CLOSE pulse width (min)		0.1 ms
42040	CLOSE pulse width (avg)		0.1 ms
	<b>Fault indicators</b>		
42100	Circuit 1 - Fault Resistance		0.001 R
42101	Circuit 1 – Fault level		A
42102	Circuit 2 - Fault Resistance		0.001 R
42103	Circuit 2 – Fault level		A
42104	Circuit 3 - Fault Resistance		0.001 R
42105	Circuit 3 – Fault level		A
42106	Distribution DTF circuit number		
	<b>Batteries</b>		
42200	TRIP operation counter		
42201	TRIP Voltage (max)		0.01 V

42202	TRIP Voltage (min)		0.01 V
42203	TRIP Voltage (avg)		0.01 V
42204	TRIP Impedance (max)		0.001 R
42205	TRIP Impedance (min)		0.001 R
42206	TRIP Impedance (avg)		0.001 R
42207	AUX Voltage (max)		0.01 V
42208	AUX Voltage (min)		0.01 V
42209	AUX Voltage (avg)		0.01 V

## Input Status Map (1-bit quantities)

0x02 Read Input Status

Register Address	Name
10001	Contact Input 1
10002	Contact Input 2
10003	Contact Input 3
10004	Contact Input 4
10005	Contact Input 5
10006	Contact Input 6
10007	Contact Input 7
10008	Contact Input 8
10009	Contact Input 9
10010	Contact Input 10
10011	Contact Input 11
10012	Contact Input 12
10013	Contact Input 13
10014	Contact Input 14
10015	Contact Input 15
10016	Contact Input 16
	<b>Alarm Indicators</b>
10017	No Modem
10018	No GPS
10019	No Time Sync
10020	Battery
10021	Modem error
10022	Modem DCD error
	<b>Fault indicators</b>
10100	Circuit 1 – Phase A
10101	Circuit 1 – Phase B
10102	Circuit 1 – Phase C

10103	Circuit 1 – G
10104	Circuit 2 – Phase A
10105	Circuit 2 – Phase B
10106	Circuit 2 – Phase C
10107	Circuit 3 – G
10108	Circuit 3 – Phase A
10109	Circuit 3 – Phase B
10110	Circuit 3 – Phase C
10111	Circuit 3 – G
	<b>Battery indicators</b>
10112	Battery Warning
10113	Battery Fault
	<b>Circuit breaker indicators</b>
10114	Circuit breaker 1 – Warning
10115	Circuit breaker 1 – Fault
10116	Circuit breaker 2 – Warning
10117	Circuit breaker 2 – Fault
10118	Circuit breaker 3 – Warning
10119	Circuit breaker 3 – Fault
10120	Circuit breaker 4 – Warning
10121	Circuit breaker 4 – Fault
10122	Circuit breaker 5 – Warning
10123	Circuit breaker 5 – Fault
10124	Circuit breaker 6 – Warning
10125	Circuit breaker 6 – Fault
10126	Circuit breaker 7 – Warning
10127	Circuit breaker 7 – Fault
10128	Circuit breaker 8 – Warning
10129	Circuit breaker 8 – Fault
10130	Circuit breaker 9 – Warning
10131	Circuit breaker 9 – Fault
10132	Circuit breaker 10 – Warning
10133	Circuit breaker 10 – Fault
10134	Circuit breaker 11 – Warning
10135	Circuit breaker 11 – Fault
10136	Circuit breaker 12 – Warning
10137	Circuit breaker 12 – Fault
10138	Circuit breaker 13 – Warning
10139	Circuit breaker 13 – Fault
10140	Circuit breaker 14 – Warning
10141	Circuit breaker 14 – Fault
10142	Circuit breaker 15 – Warning
10143	Circuit breaker 15 – Fault

10144	Circuit breaker 16 – Warning
10145	Circuit breaker 16 – Fault