SIL-G

Feeder & Generator Protection Relay



IEC 60870-5-104 PROTOCOL MANUAL

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1. IEC 60870-5-104 PROTOCOL

This document describes the IEC 60870-5-104 data points and structures available in the IED. The point lists describe a superset of all data available through the standard configuration/s.

1.1 Device

- ☐ System definition.
- ☐ Controlling station definition (Master).
- ☒ Controlled station definition (Slave)/(server).

1.2 Network Configuration

- ☒ LAN Ethernet Network.

1.3 Application layer

1.3.1 Transmission mode for application data

Mode 1 (Least significant octet first), as defined in 4.10 of IEC 60870-5-104, is used exclusively in this companion standard.

1.3.2 Common Address of ASDU

- ☐ One Octet.
- ☒ Two Octets.

1.3.3 Information Object Address

- ☐ One Octet.
- ☐ Two Octets.
- ☒ Three Octets.
- ☐ Structured.
- ☐ Unstructured

1.3.4 Cause of transmission

☐ One Octet. ☒ Two Octets (with originator address. set to zero if not used).

1.3.5 Length of APDU

Maximum length of the APDU is 253.

1.3.6 Selection of standard ASDUs

1.3.6.1 Process information in control direction

☒ <45>:= Single command

1.3.6.2 System information in control direction

☒ <100>:= Interrogation command

☒ <101>:= Counter interrogation command

☒ <103>:= Clock synchronization command

1.3.6.3 Station interrogation

☒ Global

1.3.6.4 Clock synchronization

☒ Clock synchronization

1.3.6.5 Command transmission

☒ Select and xecute command

1.3.6.6 Transmission of integrated totals

☒ General request counter

2. STANDARD INFORMATION NUMBERS, CONTROL DIRECTION

Selection of standard information numbers in control direction:

Com Add.	Add.	Description	ASDU Type ID	COT
System functions in control direction				
100	<0>	States	<100> Interrogation Command	Activation
200	<0>	Measurements (Type Identification 9)	<100> Interrogation Command	Activation
500	<0>	Time synchronization	<103> Clock Synch Command	Activation
Counter interrogation				
300	<0>	Counters	<101> Counter Interrogation Command	Activation
General commands in control direction				
400	<3>	Auto-recloser on (0) / off (1)	<45> Single Command	Activation
400	<7>	Reset (1)	<45> Single Command	Activation
Particular commands in control direction				
400	<1>	Close CB (0) / Open CB (1)	<45> Single Command	Activation
400	<9>	49 Reset (1)	<45> Single Command	Activation
400	<5>	Local Control (1) / Remote Control (0)	<45> Single Command	Activation
400	<11>	HLT ON (1) / HLT OFF (0)	<45> Single Command	Activation
400	<13>	User Com. 1 (1) / User Com. 2 (0)	<45> Single Command	Activation
400	<15>	User Com. 3 (1) / User Com. 4 (0)	<45> Single Command	Activation
400	<17>	User Com. 5 (1) / User Com. 6 (0)	<45> Single Command	Activation

2.1 IEC 104 ASDU types, control direction

Type	Description	Reference	Format	Valid COTs
Process information in monitor direction:				
1	States - Single point information	M_SP_NA_1	SIQ	20
9	Measures - Measured value, normalized value	M_ME_NA_1	NVA + QDS	20
15	Counters - Integrated totals	M_IT_NA_1	BCR	37

3. STANDARD INFORMATION NUMBERS, MONITOR DIRECTION

3.1 IEC 104 ASDU types, monitor direction

Type	Description	Reference	Format	Valid COTs
Process information in control direction:				
45	Single command	C_SC_NA_1	SCO	6
System information in control direction:				
100	(General-) Interrogation command	C_IC_NA_1	QOI	6
101	Counter interrogation command	C_CI_NA_1	QCC	6
103	Clock synchronization command	C_CS_NA_1	CP56Time2a	6

3.2 States

The selection of standard information numbers in monitor direction for SIL-G states depends on the SIL-G model, specifically on the additional functions and number of inputs.

3.2.1 Until ver 01.02.02

3.2.1.1 Additional Function digit 0, communication C, D, E, H, I, J, K or L.

SIL-G Criterio	Add. Fun. 0, Comms. C, D, E, H, I, J, K or L					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
24 1	0	0	0	0	0	Pickup
	1	1	1	1	1	Trip
24 2	2	2	2	2	2	Pickup
	3	3	3	3	3	Trip
25	-	-	-	-	-	Synchrocheck
	-	-	-	-	-	Dead L & Dead B
	-	-	-	-	-	Dead L & Live B
	-	-	-	-	-	Live L & Dead B
	-	-	-	-	-	Live L & Live B
27-L	-	-	-	-	-	Phase Pickup
	-	-	-	-	-	Phase Trip
27 1	4	4	4	4	4	Phase Pickup
	5	5	5	5	5	Phase Trip
27 2	6	6	6	6	6	Phase Pickup
	7	7	7	7	7	Phase Trip
32-1	8	8	8	8	8	Phase Pickup
	9	9	9	9	9	Phase Trip
32-2	10	10	10	10	10	Phase Pickup
	11	11	11	11	11	Phase Trip
32-3	12	12	12	12	12	Phase Pickup

SIL-G Criterio	Add. Fun. 0, Comms. C, D, E, H, I, J, K or L					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	13	13	13	13	13	Phase Trip
32-4	14	14	14	14	14	Phase Pickup
	15	15	15	15	15	Phase Trip
37	16	16	16	16	16	Phase Pickup
	17	17	17	17	17	Phase Trip
46	18	18	18	18	18	Pickup
	19	19	19	19	19	Trip
46BC	20	20	20	20	20	Pickup
	21	21	21	21	21	Trip
47	22	22	22	22	22	Pickup
	23	23	23	23	23	Trip
49	24	24	24	24	24	Alarm
	25	25	25	25	25	Trip
50-1	26	26	26	26	26	Phase Pickup
	27	27	27	27	27	Phase Trip
50-2	28	28	28	28	28	Phase Pickup
	29	29	29	29	29	Phase Trip
52	30	30	30	30	30	Error
	31	31	31	31	31	Closed
	32	32	32	32	32	Openings Alarm
	33	33	33	33	33	I2t Alarm
	34	34	34	34	34	Openings/T Alarm
59-L	-	-	-	-	-	Phase Pickup
	-	-	-	-	-	Phase Trip
59-1	35	35	35	35	35	Phase Pickup
	36	36	36	36	36	Phase Trip
59-2	37	37	37	37	37	Phase Pickup
	38	38	38	38	38	Phase Trip
60VTS	39	39	39	39	39	Phase Pickup
	40	40	40	40	40	Phase Trip
67/51-1	41	41	41	41	41	Phase Pickup
	42	42	42	42	42	Phase Trip
	43	43	43	43	43	Directionality A
	44	44	44	44	44	Directionality B
	45	45	45	45	45	Directionality C
67/51-2	46	46	46	46	46	Phase Pickup
	47	47	47	47	47	Phase Trip
	48	48	48	48	48	Directionality A

SIL-G Criterio	Add. Fun. 0, Comms. C, D, E, H, I, J, K or L					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	49	49	49	49	49	Directionality B
	50	50	50	50	50	Directionality C
67/51-3	51	51	51	51	51	Phase Pickup
	52	52	52	52	52	Phase Trip
	53	53	53	53	53	Directionality A
	54	54	54	54	54	Directionality B
	55	55	55	55	55	Directionality C
67/51-4	56	56	56	56	56	Phase Pickup
	57	57	57	57	57	Phase Trip
	58	58	58	58	58	Directionality A
	59	59	59	59	59	Directionality B
	60	60	60	60	60	Directionality C
74TCS	61	61	61	61	61	Pickup
	62	62	62	62	62	Trip
78	63	63	63	63	63	Trip
79	64	64	64	64	64	Standby
	65	65	65	65	65	Closing Time
	66	66	66	66	66	Lockout
	67	67	67	67	67	79 Blocked
81-1	68	68	68	68	68	Pickup
	69	69	69	69	69	Trip
81-2	70	70	70	70	70	Pickup
	71	71	71	71	71	Trip
81-3	72	72	72	72	72	Pickup
	73	73	73	73	73	Trip
81-4	74	74	74	74	74	Pickup
	75	75	75	75	75	Trip
27V1	76	76	76	76	76	Pickup
	77	77	77	77	77	Trip
SOTF	78	78	78	78	78	Pickup
	79	79	79	79	79	Trip
50G	80	80	80	80	80	Neutral Pickup
	81	81	81	81	81	Neutral Trip
50N	82	82	82	82	82	Neutral Pickup
	83	83	83	83	83	Neutral Trip
50BF	84	84	84	84	84	Pickup
	85	85	85	85	85	Trip
59N/G-1	86	86	86	86	86	Neutral Pickup

SIL-G Criterio	Add. Fun. 0, Comms. C, D, E, H, I, J, K or L					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	87	87	87	87	87	Neutral Trip
59N/G-2	88	88	88	88	88	Neutral Pickup
	89	89	89	89	89	Neutral Trip
64REF	90	90	90	90	90	Pickup
	91	91	91	91	91	Trip
67GI	92	92	92	92	92	Ground Pickup
	93	93	93	93	93	Ground Trip
	94	94	94	94	94	Directionality
67NI	95	95	95	95	95	Neutral Pickup
	96	96	96	96	96	Neutral Trip
	97	97	97	97	97	Directionality
67G/51G-1	98	98	98	98	98	Neutral Pickup
	99	99	99	99	99	Neutral Trip
	100	100	100	100	100	Directionality
67N/51N-1	101	101	101	101	101	Neutral Pickup
	102	102	102	102	102	Neutral Trip
	103	103	103	103	103	Directionality
67G/51G-2	104	104	104	104	104	Neutral Pickup
	105	105	105	105	105	Neutral Trip
	106	106	106	106	106	Directionality
67N/51N-2	107	107	107	107	107	Neutral Pickup
	108	108	108	108	108	Neutral Trip
	109	109	109	109	109	Directionality
60CTS	110	110	110	110	110	Pickup
	111	111	111	111	111	Trip
81R-1	112	112	112	112	112	Pickup
	113	113	113	113	113	Trip
81R-2	114	114	114	114	114	Pickup
	115	115	115	115	115	Trip
81R-3	116	116	116	116	116	Pickup
	117	117	117	117	117	Trip
81R-4	118	118	118	118	118	Pickup
	119	119	119	119	119	Trip
AFD	-	-	-	-	120	AFD Input 1
	-	-	-	-	121	AFD Input 2
	-	-	-	-	122	AFD Input 3
	-	-	-	-	123	AFD Input 4
General	120	120	120	120	124	Trip

SIL-G Criterio	Add. Fun. 0, Comms. C, D, E, H, I, J, K or L					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
General	121	121	121	121	125	Ready
	122	122	122	122	126	Date&Time Set
	123	123	123	123	127	Local
	124	124	124	124	128	SER Deleted
	125	125	125	125	129	Settings Change
	126	126	126	126	130	Config Change
	127	127	127	127	131	New DFR
	128	128	128	128	132	Phase Trip
	129	129	129	129	133	Trip Block
	130	130	130	130	134	Pickup
	131	131	131	131	135	Phase A Pickup
	132	132	132	132	136	Phase B Pickup
	133	133	133	133	137	Phase C Pickup
	134	134	134	134	138	Neutral Pickup
	135	135	135	135	139	Phase A Trip
	136	136	136	136	140	Phase B Trip
	137	137	137	137	141	Phase C Trip
	138	138	138	138	142	Neutral Trip
Self Diagnosis	139	139	139	139	143	HW Error
	140	140	140	140	144	Default Settings
	141	141	141	141	145	Error:Settings
SHB	142	142	142	142	146	Phase Block
CLP	143	143	143	143	147	CLP
HMI	144	144	144	144	148	Reset
	145	145	145	145	149	Thermal I. Reset
	146	146	146	146	150	Identification
Alarm LEDs	147	147	147	147	151	Alarm 1
	148	148	148	148	152	Alarm 2
	149	149	149	149	153	Alarm 3
	150	150	150	150	154	Alarm 4
	151	151	151	151	155	Alarm 5
	152	152	152	152	156	Alarm 6
	153	153	153	153	157	Alarm 7
	154	154	154	154	158	Alarm 8
IEC60870-104	155	155	155	155	159	Open Breaker
	156	156	156	156	160	Close Breaker
	157	157	157	157	161	79 Block
	158	158	158	158	162	79 Unblock

SIL-G Criterio	Add. Fun. 0, Comms. C, D, E, H, I, J, K or L					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	159	159	159	159	163	Local Control
	160	160	160	160	164	Remote Control
	161	161	161	161	165	Reset
	162	162	162	162	166	Thermal Image Reset
DNP3 TCP	163	163	163	163	167	Open Breaker
	164	164	164	164	168	Close Breaker
	165	165	165	165	169	79 Block
	166	166	166	166	170	79 Unblock
	167	167	167	167	171	Local Control
	168	168	168	168	172	Remote Control
	169	169	169	169	173	Reset
	170	170	170	170	174	Thermal Image Reset
USB COM	171	171	171	171	175	Open Breaker
	172	172	172	172	176	Close Breaker
	173	173	173	173	177	79 Block
	174	174	174	174	178	79 Unblock
	175	175	175	175	179	Local Control
	176	176	176	176	180	Remote Control
	177	177	177	177	181	Reset
	178	178	178	178	182	Thermal Image Reset
	179	179	179	179	183	Identification
MODBUS TCP	180	180	180	180	184	Open Breaker
	181	181	181	181	185	Close Breaker
	182	182	182	182	186	79 Block
	183	183	183	183	187	79 Unblock
	184	184	184	184	188	Local Control
	185	185	185	185	189	Remote Control
	186	186	186	186	190	Reset
	187	187	187	187	191	Thermal Image Reset
	188	188	188	188	192	Identification
WEB SERVER	189	189	189	189	193	Open Breaker
	190	190	190	190	194	Close Breaker
	191	191	191	191	195	79 Block
	192	192	192	192	196	79 Unblock
	193	193	193	193	197	Local Control
	194	194	194	194	198	Remote Control

SIL-G Criterio	Add. Fun. 0, Comms. C, D, E, H, I, J, K or L					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	195	195	195	195	199	Reset
	196	196	196	196	200	Thermal Image Reset
PGC	197	197	197	197	201	Open Breaker
	198	198	198	198	202	Close Breaker
	199	199	199	199	203	79 Block
	200	200	200	200	204	79 Unblock
	201	201	201	201	205	Local Control
	202	202	202	202	206	Remote Control
	203	203	203	203	207	52a
	204	204	204	204	208	52b
	205	205	205	205	209	SettingsG. x1
	206	206	206	206	210	SettingsG. x2
	207	207	207	207	211	Hot Line Tag
	208	208	208	208	212	79 Enable
	209	209	209	209	213	79N1 Start
	210	210	210	210	214	79N2 Start
	211	211	211	211	215	79N3 Start
	212	212	212	212	216	79N4 Start
	213	213	213	213	217	DFR Start
	214	214	214	214	218	50BF Start
	215	215	215	215	219	SOTF Start
	216	216	216	216	220	Thermal I. Reset
	217	217	217	217	221	74TCS Coil A
	218	218	218	218	222	74TCS Coil B
	219	219	219	219	223	Neutral Block
	220	220	220	220	224	Phase Block
	221	221	221	221	225	External trip
Inputs	222	222	222	222	226	Input 1
	223	223	223	223	227	Input 2
	224	224	224	224	228	Input 3
	225	225	225	225	229	Input 4
	226	226	226	226	230	Input 5
	227	227	227	227	231	Input 6
	228	228	228	228	232	Input 7
	229	229	229	229	233	Input 8
	-	-	230	230	-	Input 9
	-	-	231	231	-	Input 10
	-	-	232	232	-	Input 11

SIL-G Criterio	Add. Fun. 0, Comms. C, D, E, H, I, J, K or L					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	-	-	233	233	-	Input 12
	-	-	234	234	-	Input 13
	-	-	235	235	-	Input 14
	-	-	236	236	-	Input 15
	-	-	237	237	-	Input 16
	-	-	238	-	-	Input 17
	-	-	239	-	-	Input 18
	-	-	240	-	-	Input 19
	-	-	241	-	-	Input 20
	-	-	242	-	-	Input 21
	-	-	243	-	-	Input 22
	-	-	244	-	-	Input 23
	-	-	245	-	-	Input 24
Measurements	230	230	246	238	234	Error:Measurem.
	231	231	247	239	235	Net Freq.50Hz

3.2.1.2 Additional Function digit 0, communication B or G

SIL-G Criterio	Add. Fun. 0, Comms. B or G					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
24 1	0	0	0	0	0	Pickup
	1	1	1	1	1	Trip
24 2	2	2	2	2	2	Pickup
	3	3	3	3	3	Trip
25	-	-	-	-	-	Synchrocheck
	-	-	-	-	-	Dead L & Dead B
	-	-	-	-	-	Dead L & Live B
	-	-	-	-	-	Live L & Dead B
	-	-	-	-	-	Live L & Live B
27-L	-	-	-	-	-	Phase Pickup
	-	-	-	-	-	Phase Trip
27 1	4	4	4	4	4	Phase Pickup
	5	5	5	5	5	Phase Trip
27 2	6	6	6	6	6	Phase Pickup
	7	7	7	7	7	Phase Trip
32-1	8	8	8	8	8	Phase Pickup
	9	9	9	9	9	Phase Trip
32-2	10	10	10	10	10	Phase Pickup
	11	11	11	11	11	Phase Trip
32-3	12	12	12	12	12	Phase Pickup
	13	13	13	13	13	Phase Trip
32-4	14	14	14	14	14	Phase Pickup
	15	15	15	15	15	Phase Trip
37	16	16	16	16	16	Phase Pickup
	17	17	17	17	17	Phase Trip
46	18	18	18	18	18	Pickup
	19	19	19	19	19	Trip
46BC	20	20	20	20	20	Pickup
	21	21	21	21	21	Trip
47	22	22	22	22	22	Pickup
	23	23	23	23	23	Trip
49	24	24	24	24	24	Alarm
	25	25	25	25	25	Trip
50-1	26	26	26	26	26	Phase Pickup
	27	27	27	27	27	Phase Trip
50-2	28	28	28	28	28	Phase Pickup
	29	29	29	29	29	Phase Trip

SIL-G Criterio	Add. Fun. 0, Comms. B or G					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
52	30	30	30	30	30	Error
	31	31	31	31	31	Closed
	32	32	32	32	32	Openings Alarm
	33	33	33	33	33	I2t Alarm
	34	34	34	34	34	Openings/T Alarm
59-L	-	-	-	-	-	Phase Pickup
	-	-	-	-	-	Phase Trip
59-1	35	35	35	35	35	Phase Pickup
	36	36	36	36	36	Phase Trip
59-2	37	37	37	37	37	Phase Pickup
	38	38	38	38	38	Phase Trip
60VTS	39	39	39	39	39	Phase Pickup
	40	40	40	40	40	Phase Trip
67/51-1	41	41	41	41	41	Phase Pickup
	42	42	42	42	42	Phase Trip
	43	43	43	43	43	Directionality A
	44	44	44	44	44	Directionality B
	45	45	45	45	45	Directionality C
67/51-2	46	46	46	46	46	Phase Pickup
	47	47	47	47	47	Phase Trip
	48	48	48	48	48	Directionality A
	49	49	49	49	49	Directionality B
	50	50	50	50	50	Directionality C
67/51-3	51	51	51	51	51	Phase Pickup
	52	52	52	52	52	Phase Trip
	53	53	53	53	53	Directionality A
	54	54	54	54	54	Directionality B
	55	55	55	55	55	Directionality C
67/51-4	56	56	56	56	56	Phase Pickup
	57	57	57	57	57	Phase Trip
	58	58	58	58	58	Directionality A
	59	59	59	59	59	Directionality B
	60	60	60	60	60	Directionality C
74TCS	61	61	61	61	61	Pickup
	62	62	62	62	62	Trip
78	63	63	63	63	63	Trip
79	64	64	64	64	64	Standby
	65	65	65	65	65	Closing Time

SIL-G Criterio	Add. Fun. 0, Comms. B or G					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	66	66	66	66	66	Lockout
	67	67	67	67	67	79 Blocked
81-1	68	68	68	68	68	Pickup
	69	69	69	69	69	Trip
81-2	70	70	70	70	70	Pickup
	71	71	71	71	71	Trip
81-3	72	72	72	72	72	Pickup
	73	73	73	73	73	Trip
81-4	74	74	74	74	74	Pickup
	75	75	75	75	75	Trip
27V1	76	76	76	76	76	Pickup
	77	77	77	77	77	Trip
SOTF	78	78	78	78	78	Pickup
	79	79	79	79	79	Trip
50G	80	80	80	80	80	Neutral Pickup
	81	81	81	81	81	Neutral Trip
50N	82	82	82	82	82	Neutral Pickup
	83	83	83	83	83	Neutral Trip
50BF	84	84	84	84	84	Pickup
	85	85	85	85	85	Trip
59N/G-1	86	86	86	86	86	Neutral Pickup
	87	87	87	87	87	Neutral Trip
59N/G-2	88	88	88	88	88	Neutral Pickup
	89	89	89	89	89	Neutral Trip
64REF	90	90	90	90	90	Pickup
	91	91	91	91	91	Trip
67GI	92	92	92	92	92	Ground Pickup
	93	93	93	93	93	Ground Trip
	94	94	94	94	94	Directionality
67NI	95	95	95	95	95	Neutral Pickup
	96	96	96	96	96	Neutral Trip
	97	97	97	97	97	Directionality
67G/51G-1	98	98	98	98	98	Neutral Pickup
	99	99	99	99	99	Neutral Trip
	100	100	100	100	100	Directionality
67N/51N-1	101	101	101	101	101	Neutral Pickup
	102	102	102	102	102	Neutral Trip
	103	103	103	103	103	Directionality

SIL-G Criterio	Add. Fun. 0, Comms. B or G					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
67G/51G-2	104	104	104	104	104	Neutral Pickup
	105	105	105	105	105	Neutral Trip
	106	106	106	106	106	Directionality
67N/51N-2	107	107	107	107	107	Neutral Pickup
	108	108	108	108	108	Neutral Trip
	109	109	109	109	109	Directionality
60CTS	110	110	110	110	110	Pickup
	111	111	111	111	111	Trip
81R-1	112	112	112	112	112	Pickup
	113	113	113	113	113	Trip
81R-2	114	114	114	114	114	Pickup
	115	115	115	115	115	Trip
81R-3	116	116	116	116	116	Pickup
	117	117	117	117	117	Trip
81R-4	118	118	118	118	118	Pickup
	119	119	119	119	119	Trip
AFD	-	-	-	-	120	AFD Input 1
	-	-	-	-	121	AFD Input 2
	-	-	-	-	122	AFD Input 3
	-	-	-	-	123	AFD Input 4
General	120	120	120	120	124	Trip
	121	121	121	121	125	Ready
	122	122	122	122	126	Date&Time Set
	123	123	123	123	127	Local
	124	124	124	124	128	SER Deleted
	125	125	125	125	129	Settings Change
	126	126	126	126	130	Config Change
	127	127	127	127	131	New DFR
	128	128	128	128	132	Phase Trip
	129	129	129	129	133	Trip Block
	130	130	130	130	134	Pickup
	131	131	131	131	135	Phase A Pickup
	132	132	132	132	136	Phase B Pickup
	133	133	133	133	137	Phase C Pickup
	134	134	134	134	138	Neutral Pickup
	135	135	135	135	139	Phase A Trip
	136	136	136	136	140	Phase B Trip
	137	137	137	137	141	Phase C Trip

SIL-G Criterio	Add. Fun. 0, Comms. B or G					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	138	138	138	138	142	Neutral Trip
Self Diagnosis	139	139	139	139	143	HW Error
	140	140	140	140	144	Default Settings
	141	141	141	141	145	Error:Settings
SHB	142	142	142	142	146	Phase Block
CLP	143	143	143	143	147	CLP
HMI	144	144	144	144	148	Reset
	145	145	145	145	149	Thermal I. Reset
	146	146	146	146	150	Identification
Alarm LEDs	147	147	147	147	151	Alarm 1
	148	148	148	148	152	Alarm 2
	149	149	149	149	153	Alarm 3
	150	150	150	150	154	Alarm 4
	151	151	151	151	155	Alarm 5
	152	152	152	152	156	Alarm 6
	153	153	153	153	157	Alarm 7
	154	154	154	154	158	Alarm 8
IEC60870-103	155	155	155	155	159	Open Breaker
	156	156	156	156	160	Close Breaker
	157	157	157	157	161	79 Block
	158	158	158	158	162	79 Unblock
	159	159	159	159	163	Local Control
	160	160	160	160	164	Remote Control
	161	161	161	161	165	Reset
	162	162	162	162	166	Thermal Image Reset
IEC60870-104	163	163	163	163	167	Open Breaker
	164	164	164	164	168	Close Breaker
	165	165	165	165	169	79 Block
	166	166	166	166	170	79 Unblock
	167	167	167	167	171	Local Control
	168	168	168	168	172	Remote Control
	169	169	169	169	173	Reset
	170	170	170	170	174	Thermal Image Reset
DNP3 Serial	171	171	171	171	175	Open Breaker
	172	172	172	172	176	Close Breaker
	173	173	173	173	177	79 Block
	174	174	174	174	178	79 Unblock

SIL-G Criterio	Add. Fun. 0, Comms. B or G					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	175	175	175	175	179	Local Control
	176	176	176	176	180	Remote Control
	177	177	177	177	181	Reset
	178	178	178	178	182	Thermal Image Reset
DNP3 TCP	179	179	179	179	183	Open Breaker
	180	180	180	180	184	Close Breaker
	181	181	181	181	185	79 Block
	182	182	182	182	186	79 Unblock
	183	183	183	183	187	Local Control
	184	184	184	184	188	Remote Control
	185	185	185	185	189	Reset
	186	186	186	186	190	Thermal Image Reset
USB COM	187	187	187	187	191	Open Breaker
	188	188	188	188	192	Close Breaker
	189	189	189	189	193	79 Block
	190	190	190	190	194	79 Unblock
	191	191	191	191	195	Local Control
	192	192	192	192	196	Remote Control
	193	193	193	193	197	Reset
	194	194	194	194	198	Thermal Image Reset
	195	195	195	195	199	Identification
MODBUS RTU	196	196	196	196	200	Open Breaker
	197	197	197	197	201	Close Breaker
	198	198	198	198	202	79 Block
	199	199	199	199	203	79 Unblock
	200	200	200	200	204	Local Control
	201	201	201	201	205	Remote Control
	202	202	202	202	206	Reset
	203	203	203	203	207	Thermal Image Reset
	204	204	204	204	208	Identification
MODBUS TCP	205	205	205	205	209	Open Breaker
	206	206	206	206	210	Close Breaker
	207	207	207	207	211	79 Block
	208	208	208	208	212	79 Unblock
	209	209	209	209	213	Local Control
	210	210	210	210	214	Remote Control

SIL-G Criterio	Add. Fun. 0, Comms. B or G					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	211	211	211	211	215	Reset
	212	212	212	212	216	Thermal Image Reset
	213	213	213	213	217	Identification
WEB SERVER	214	214	214	214	218	Open Breaker
	215	215	215	215	219	Close Breaker
	216	216	216	216	220	79 Block
	217	217	217	217	221	79 Unblock
	218	218	218	218	222	Local Control
	219	219	219	219	223	Remote Control
	220	220	220	220	224	Reset
	221	221	221	221	225	Thermal Image Reset
PGC	222	222	222	222	226	Open Breaker
	223	223	223	223	227	Close Breaker
	224	224	224	224	228	79 Block
	225	225	225	225	229	79 Unblock
	226	226	226	226	230	Local Control
	227	227	227	227	231	Remote Control
	228	228	228	228	232	52a
	229	229	229	229	233	52b
	230	230	230	230	234	SettingsG. x1
	231	231	231	231	235	SettingsG. x2
	232	232	232	232	236	Hot Line Tag
	233	233	233	233	237	79 Enable
	234	234	234	234	238	79N1 Start
	235	235	235	235	239	79N2 Start
	236	236	236	236	240	79N3 Start
	237	237	237	237	241	79N4 Start
	238	238	238	238	242	DFR Start
	239	239	239	239	243	50BF Start
	240	240	240	240	244	SOTF Start
	241	241	241	241	245	Thermal I. Reset
	242	242	242	242	246	74TCS Coil A
	243	243	243	243	247	74TCS Coil B
	244	244	244	244	248	Neutral Block
	245	245	245	245	249	Phase Block
	246	246	246	246	250	External trip
Inputs	247	247	247	247	251	Input 1

SIL-G Criterio	Add. Fun. 0, Comms. B or G					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	248	248	248	248	252	Input 2
	249	249	249	249	253	Input 3
	250	250	250	250	254	Input 4
	251	251	251	251	255	Input 5
	252	252	252	252	256	Input 6
	253	253	253	253	257	Input 7
	254	254	254	254	258	Input 8
	-	-	255	255	-	Input 9
	-	-	256	256	-	Input 10
	-	-	257	257	-	Input 11
	-	-	258	258	-	Input 12
	-	-	259	259	-	Input 13
	-	-	260	260	-	Input 14
	-	-	261	261	-	Input 15
	-	-	262	262	-	Input 16
	-	-	263	-	-	Input 17
	-	-	264	-	-	Input 18
	-	-	265	-	-	Input 19
	-	-	266	-	-	Input 20
	-	-	267	-	-	Input 21
	-	-	268	-	-	Input 22
	-	-	269	-	-	Input 23
	-	-	270	-	-	Input 24
Measurements	255	255	271	263	259	Error:Measurem.
	256	256	272	264	260	Net Freq.50Hz

3.2.1.3 Additional Function digit 1, communication C, D, E, H, I, J, K or L.

SIL-G Criterio	Add. Fun. 1, Comms. C, D, E, H, I, J, K or L					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
24 1	0	0	0	0	0	Pickup
	1	1	1	1	1	Trip
24 2	2	2	2	2	2	Pickup
	3	3	3	3	3	Trip
25	4	4	4	4	4	Synchrocheck
	5	5	5	5	5	Dead L & Dead B
	6	6	6	6	6	Dead L & Live B
	7	7	7	7	7	Live L & Dead B
	8	8	8	8	8	Live L & Live B
27-L	9	9	9	9	9	Phase Pickup
	10	10	10	10	10	Phase Trip
27 1	11	11	11	11	11	Phase Pickup
	12	12	12	12	12	Phase Trip
27 2	13	13	13	13	13	Phase Pickup
	14	14	14	14	14	Phase Trip
32-1	15	15	15	15	15	Phase Pickup
	16	16	16	16	16	Phase Trip
32-2	17	17	17	17	17	Phase Pickup
	18	18	18	18	18	Phase Trip
32-3	19	19	19	19	19	Phase Pickup
	20	20	20	20	20	Phase Trip
32-4	21	21	21	21	21	Phase Pickup
	22	22	22	22	22	Phase Trip
37	23	23	23	23	23	Phase Pickup
	24	24	24	24	24	Phase Trip
46	25	25	25	25	25	Pickup
	26	26	26	26	26	Trip
46BC	27	27	27	27	27	Pickup
	28	28	28	28	28	Trip
47	29	29	29	29	29	Pickup
	30	30	30	30	30	Trip
49	31	31	31	31	31	Alarm
	32	32	32	32	32	Trip
50-1	33	33	33	33	33	Phase Pickup
	34	34	34	34	34	Phase Trip
50-2	35	35	35	35	35	Phase Pickup
	36	36	36	36	36	Phase Trip

SIL-G Criterio	Add. Fun. 1, Comms. C, D, E, H, I, J, K or L					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
52	37	37	37	37	37	Error
	38	38	38	38	38	Closed
	39	39	39	39	39	Openings Alarm
	40	40	40	40	40	I2t Alarm
	41	41	41	41	41	Openings/T Alarm
59-L	42	42	42	42	42	Phase Pickup
	43	43	43	43	43	Phase Trip
59-1	44	44	44	44	44	Phase Pickup
	45	45	45	45	45	Phase Trip
59-2	46	46	46	46	46	Phase Pickup
	47	47	47	47	47	Phase Trip
60VTS	48	48	48	48	48	Phase Pickup
	49	49	49	49	49	Phase Trip
67/51-1	50	50	50	50	50	Phase Pickup
	51	51	51	51	51	Phase Trip
	52	52	52	52	52	Directionality A
	53	53	53	53	53	Directionality B
	54	54	54	54	54	Directionality C
67/51-2	55	55	55	55	55	Phase Pickup
	56	56	56	56	56	Phase Trip
	57	57	57	57	57	Directionality A
	58	58	58	58	58	Directionality B
	59	59	59	59	59	Directionality C
67/51-3	60	60	60	60	60	Phase Pickup
	61	61	61	61	61	Phase Trip
	62	62	62	62	62	Directionality A
	63	63	63	63	63	Directionality B
	64	64	64	64	64	Directionality C
67/51-4	65	65	65	65	65	Phase Pickup
	66	66	66	66	66	Phase Trip
	67	67	67	67	67	Directionality A
	68	68	68	68	68	Directionality B
	69	69	69	69	69	Directionality C
74TCS	70	70	70	70	70	Pickup
	71	71	71	71	71	Trip
78	72	72	72	72	72	Trip
79	73	73	73	73	73	Standby
	74	74	74	74	74	Closing Time

SIL-G Criterio	Add. Fun. 1, Comms. C, D, E, H, I, J, K or L					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	75	75	75	75	75	Lockout
	76	76	76	76	76	79 Blocked
81-1	77	77	77	77	77	Pickup
	78	78	78	78	78	Trip
81-2	79	79	79	79	79	Pickup
	80	80	80	80	80	Trip
81-3	81	81	81	81	81	Pickup
	82	82	82	82	82	Trip
81-4	83	83	83	83	83	Pickup
	84	84	84	84	84	Trip
27V1	85	85	85	85	85	Pickup
	86	86	86	86	86	Trip
SOTF	87	87	87	87	87	Pickup
	88	88	88	88	88	Trip
50G	89	89	89	89	89	Neutral Pickup
	90	90	90	90	90	Neutral Trip
50N	91	91	91	91	91	Neutral Pickup
	92	92	92	92	92	Neutral Trip
50BF	93	93	93	93	93	Pickup
	94	94	94	94	94	Trip
59N/G-1	95	95	95	95	95	Neutral Pickup
	96	96	96	96	96	Neutral Trip
59N/G-2	97	97	97	97	97	Neutral Pickup
	98	98	98	98	98	Neutral Trip
64REF	99	99	99	99	99	Pickup
	100	100	100	100	100	Trip
67GI	101	101	101	101	101	Ground Pickup
	102	102	102	102	102	Ground Trip
	103	103	103	103	103	Directionality
67NI	104	104	104	104	104	Neutral Pickup
	105	105	105	105	105	Neutral Trip
	106	106	106	106	106	Directionality
67G/51G-1	107	107	107	107	107	Neutral Pickup
	108	108	108	108	108	Neutral Trip
	109	109	109	109	109	Directionality
67N/51N-1	110	110	110	110	110	Neutral Pickup
	111	111	111	111	111	Neutral Trip
	112	112	112	112	112	Directionality

SIL-G Criterio	Add. Fun. 1, Comms. C, D, E, H, I, J, K or L					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
67G/51G-2	113	113	113	113	113	Neutral Pickup
	114	114	114	114	114	Neutral Trip
	115	115	115	115	115	Directionality
67N/51N-2	116	116	116	116	116	Neutral Pickup
	117	117	117	117	117	Neutral Trip
	118	118	118	118	118	Directionality
60CTS	119	119	119	119	119	Pickup
	120	120	120	120	120	Trip
81R-1	121	121	121	121	121	Pickup
	122	122	122	122	122	Trip
81R-2	123	123	123	123	123	Pickup
	124	124	124	124	124	Trip
81R-3	125	125	125	125	125	Pickup
	126	126	126	126	126	Trip
81R-4	127	127	127	127	127	Pickup
	128	128	128	128	128	Trip
AFD	-	-	-	-	129	AFD Input 1
	-	-	-	-	130	AFD Input 2
	-	-	-	-	131	AFD Input 3
	-	-	-	-	132	AFD Input 4
General	129	129	129	129	133	Trip
	130	130	130	130	134	Ready
	131	131	131	131	135	Date&Time Set
	132	132	132	132	136	Local
	133	133	133	133	137	SER Deleted
	134	134	134	134	138	Settings Change
	135	135	135	135	139	Config Change
	136	136	136	136	140	New DFR
	137	137	137	137	141	Phase Trip
	138	138	138	138	142	Trip Block
	139	139	139	139	143	Pickup
	140	140	140	140	144	Phase A Pickup
	141	141	141	141	145	Phase B Pickup
	142	142	142	142	146	Phase C Pickup
	143	143	143	143	147	Neutral Pickup
	144	144	144	144	148	Phase A Trip
	145	145	145	145	149	Phase B Trip
	146	146	146	146	150	Phase C Trip

SIL-G Criterio	Add. Fun. 1, Comms. C, D, E, H, I, J, K or L					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	147	147	147	147	151	Neutral Trip
Self Diagnosis	148	148	148	148	152	HW Error
	149	149	149	149	153	Default Settings
	150	150	150	150	154	Error:Settings
SHB	151	151	151	151	155	Phase Block
CLP	152	152	152	152	156	CLP
HMI	153	153	153	153	157	Reset
	154	154	154	154	158	Thermal I. Reset
	155	155	155	155	159	Identification
Alarm LEDs	156	156	156	156	160	Alarm 1
	157	157	157	157	161	Alarm 2
	158	158	158	158	162	Alarm 3
	159	159	159	159	163	Alarm 4
	160	160	160	160	164	Alarm 5
	161	161	161	161	165	Alarm 6
	162	162	162	162	166	Alarm 7
	163	163	163	163	167	Alarm 8
IEC60870-104	164	164	164	164	168	Open Breaker
	165	165	165	165	169	Close Breaker
	166	166	166	166	170	79 Block
	167	167	167	167	171	79 Unblock
	168	168	168	168	172	Local Control
	169	169	169	169	173	Remote Control
	170	170	170	170	174	Reset
	171	171	171	171	175	Thermal Image Reset
DNP3 TCP	172	172	172	172	176	Open Breaker
	173	173	173	173	177	Close Breaker
	174	174	174	174	178	79 Block
	175	175	175	175	179	79 Unblock
	176	176	176	176	180	Local Control
	177	177	177	177	181	Remote Control
	178	178	178	178	182	Reset
	179	179	179	179	183	Thermal Image Reset
USB COM	180	180	180	180	184	Open Breaker
	181	181	181	181	185	Close Breaker
	182	182	182	182	186	79 Block
	183	183	183	183	187	79 Unblock

SIL-G Criterio	Add. Fun. 1, Comms. C, D, E, H, I, J, K or L					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	184	184	184	184	188	Local Control
	185	185	185	185	189	Remote Control
	186	186	186	186	190	Reset
	187	187	187	187	191	Thermal Image Reset
	188	188	188	188	192	Identification
MODBUS TCP	189	189	189	189	193	Open Breaker
	190	190	190	190	194	Close Breaker
	191	191	191	191	195	79 Block
	192	192	192	192	196	79 Unblock
	193	193	193	193	197	Local Control
	194	194	194	194	198	Remote Control
	195	195	195	195	199	Reset
	196	196	196	196	200	Thermal Image Reset
	197	197	197	197	201	Identification
WEB SERBER	198	198	198	198	202	Open Breaker
	199	199	199	199	203	Close Breaker
	200	200	200	200	204	79 Block
	201	201	201	201	205	79 Unblock
	202	202	202	202	206	Local Control
	203	203	203	203	207	Remote Control
	204	204	204	204	208	Reset
	205	205	205	205	209	Thermal Image Reset
PGC	206	206	206	206	210	Open Breaker
	207	207	207	207	236	Close Breaker
	208	208	208	208	237	79 Block
	209	209	209	209	238	79 Unblock
	210	210	210	210	239	Local Control
	211	211	211	211	240	Remote Control
	212	212	212	212	241	52a
	213	213	213	213	242	52b
	214	214	214	214	243	SettingsG. x1
	215	215	215	215	244	SettingsG. x2
	216	216	216	216	245	Hot Line Tag
	217	217	217	217	246	79 Enable
	218	218	218	218	247	79N1 Start
	219	219	219	219	248	79N2 Start

SIL-G Criterio	Add. Fun. 1, Comms. C, D, E, H, I, J, K or L					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	220	220	220	220	249	79N3 Start
	221	221	221	221	250	79N4 Start
	222	222	222	222	251	DFR Start
	223	223	223	223	252	50BF Start
	224	224	224	224	253	SOTF Start
	225	225	225	225	254	Thermal I. Reset
	226	226	226	226	255	74TCS Coil A
	227	227	227	227	256	74TCS Coil B
	228	228	228	228	257	Neutral Block
	229	229	229	229	258	Phase Block
	230	230	230	230	259	External trip
Inputs	231	231	231	231	260	Input 1
	232	232	232	232	261	Input 2
	233	233	233	233	262	Input 3
	234	234	234	234	263	Input 4
	235	235	235	235	264	Input 5
	236	236	236	236	265	Input 6
	237	237	237	237	266	Input 7
	238	238	238	238	267	Input 8
	-	239	-	239	-	Input 9
	-	240	-	240	-	Input 10
	-	241	-	241	-	Input 11
	-	242	-	242	-	Input 12
	-	243	-	243	-	Input 13
	-	244	-	244	-	Input 14
	-	245	-	245	-	Input 15
	-	246	-	246	-	Input 16
	-	247	-	-	-	Input 17
	-	248	-	-	-	Input 18
	-	249	-	-	-	Input 19
	-	250	-	-	-	Input 20
	-	251	-	-	-	Input 21
	-	252	-	-	-	Input 22
	-	253	-	-	-	Input 23
	-	254	-	-	-	Input 24
Measurements	239	255	239	247	268	Error:Measurem.
	240	256	240	248	269	Net Freq.50Hz

3.2.1.4 Additional Function digit 1, communication B or G.

SIL-G Criterio	Add. Fun. 1, Comm. B or G					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
24 1	0	0	0	0	0	Pickup
	1	1	1	1	1	Trip
24 2	2	2	2	2	2	Pickup
	3	3	3	3	3	Trip
25	4	4	4	4	4	Synchrocheck
	5	5	5	5	5	Dead L & Dead B
	6	6	6	6	6	Dead L & Live B
	7	7	7	7	7	Live L & Dead B
	8	8	8	8	8	Live L & Live B
27-L	9	9	9	9	9	Phase Pickup
	10	10	10	10	10	Phase Trip
27 1	11	11	11	11	11	Phase Pickup
	12	12	12	12	12	Phase Trip
27 2	13	13	13	13	13	Phase Pickup
	14	14	14	14	14	Phase Trip
32-1	15	15	15	15	15	Phase Pickup
	16	16	16	16	16	Phase Trip
32-2	17	17	17	17	17	Phase Pickup
	18	18	18	18	18	Phase Trip
32-3	19	19	19	19	19	Phase Pickup
	20	20	20	20	20	Phase Trip
32-4	21	21	21	21	21	Phase Pickup
	22	22	22	22	22	Phase Trip
37	23	23	23	23	23	Phase Pickup
	24	24	24	24	24	Phase Trip
46	25	25	25	25	25	Pickup
	26	26	26	26	26	Trip
46BC	27	27	27	27	27	Pickup
	28	28	28	28	28	Trip
47	29	29	29	29	29	Pickup
	30	30	30	30	30	Trip
49	31	31	31	31	31	Alarm
	32	32	32	32	32	Trip
50-1	33	33	33	33	33	Phase Pickup
	34	34	34	34	34	Phase Trip
50-2	35	35	35	35	35	Phase Pickup
	36	36	36	36	36	Phase Trip

SIL-G Criterio	Add. Fun. 1, Comm. B or G					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
52	37	37	37	37	37	Error
	38	38	38	38	38	Closed
	39	39	39	39	39	Openings Alarm
	40	40	40	40	40	I2t Alarm
	41	41	41	41	41	Openings/T Alarm
59-L	42	42	42	42	42	Phase Pickup
	43	43	43	43	43	Phase Trip
59-1	44	44	44	44	44	Phase Pickup
	45	45	45	45	45	Phase Trip
59-2	46	46	46	46	46	Phase Pickup
	47	47	47	47	47	Phase Trip
60VTS	48	48	48	48	48	Phase Pickup
	49	49	49	49	49	Phase Trip
67/51-1	50	50	50	50	50	Phase Pickup
	51	51	51	51	51	Phase Trip
	52	52	52	52	52	Directionality A
	53	53	53	53	53	Directionality B
	54	54	54	54	54	Directionality C
67/51-2	55	55	55	55	55	Phase Pickup
	56	56	56	56	56	Phase Trip
	57	57	57	57	57	Directionality A
	58	58	58	58	58	Directionality B
	59	59	59	59	59	Directionality C
67/51-3	60	60	60	60	60	Phase Pickup
	61	61	61	61	61	Phase Trip
	62	62	62	62	62	Directionality A
	63	63	63	63	63	Directionality B
	64	64	64	64	64	Directionality C
67/51-4	65	65	65	65	65	Phase Pickup
	66	66	66	66	66	Phase Trip
	67	67	67	67	67	Directionality A
	68	68	68	68	68	Directionality B
	69	69	69	69	69	Directionality C
74TCS	70	70	70	70	70	Pickup
	71	71	71	71	71	Trip
78	72	72	72	72	72	Trip
79	73	73	73	73	73	Standby
	74	74	74	74	74	Closing Time

SIL-G Criterio	Add. Fun. 1, Comm. B or G					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	75	75	75	75	75	Lockout
	76	76	76	76	76	79 Blocked
81-1	77	77	77	77	77	Pickup
	78	78	78	78	78	Trip
81-2	79	79	79	79	79	Pickup
	80	80	80	80	80	Trip
81-3	81	81	81	81	81	Pickup
	82	82	82	82	82	Trip
81-4	83	83	83	83	83	Pickup
	84	84	84	84	84	Trip
27V1	85	85	85	85	85	Pickup
	86	86	86	86	86	Trip
SOTF	87	87	87	87	87	Pickup
	88	88	88	88	88	Trip
50G	89	89	89	89	89	Neutral Pickup
	90	90	90	90	90	Neutral Trip
50N	91	91	91	91	91	Neutral Pickup
	92	92	92	92	92	Neutral Trip
50BF	93	93	93	93	93	Pickup
	94	94	94	94	94	Trip
59N/G-1	95	95	95	95	95	Neutral Pickup
	96	96	96	96	96	Neutral Trip
59N/G-2	97	97	97	97	97	Neutral Pickup
	98	98	98	98	98	Neutral Trip
64REF	99	99	99	99	99	Pickup
	100	100	100	100	100	Trip
67GI	101	101	101	101	101	Ground Pickup
	102	102	102	102	102	Ground Trip
	103	103	103	103	103	Directionality
67NI	104	104	104	104	104	Neutral Pickup
	105	105	105	105	105	Neutral Trip
	106	106	106	106	106	Directionality
67G/51G-1	107	107	107	107	107	Neutral Pickup
	108	108	108	108	108	Neutral Trip
	109	109	109	109	109	Directionality
67N/51N-1	110	110	110	110	110	Neutral Pickup
	111	111	111	111	111	Neutral Trip
	112	112	112	112	112	Directionality

SIL-G Criterio	Add. Fun. 1, Comm. B or G					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
67G/51G-2	113	113	113	113	113	Neutral Pickup
	114	114	114	114	114	Neutral Trip
	115	115	115	115	115	Directionality
67N/51N-2	116	116	116	116	116	Neutral Pickup
	117	117	117	117	117	Neutral Trip
	118	118	118	118	118	Directionality
60CTS	119	119	119	119	119	Pickup
	120	120	120	120	120	Trip
81R-1	121	121	121	121	121	Pickup
	122	122	122	122	122	Trip
81R-2	123	123	123	123	123	Pickup
	124	124	124	124	124	Trip
81R-3	125	125	125	125	125	Pickup
	126	126	126	126	126	Trip
81R-4	127	127	127	127	127	Pickup
	128	128	128	128	128	Trip
AFD	-	-	-	-	129	AFD Input 1
	-	-	-	-	130	AFD Input 2
	-	-	-	-	131	AFD Input 3
	-	-	-	-	132	AFD Input 4
General	129	129	129	129	133	Trip
	130	130	130	130	134	Ready
	131	131	131	131	135	Date&Time Set
	132	132	132	132	136	Local
	133	133	133	133	137	SER Deleted
	134	134	134	134	138	Settings Change
	135	135	135	135	139	Config Change
	136	136	136	136	140	New DFR
	137	137	137	137	141	Phase Trip
	138	138	138	138	142	Trip Block
	139	139	139	139	143	Pickup
	140	140	140	140	144	Phase A Pickup
	141	141	141	141	145	Phase B Pickup
	142	142	142	142	146	Phase C Pickup
	143	143	143	143	147	Neutral Pickup
	144	144	144	144	148	Phase A Trip
	145	145	145	145	149	Phase B Trip
	146	146	146	146	150	Phase C Trip

SIL-G Criterio	Add. Fun. 1, Comm. B or G					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	147	147	147	147	151	Neutral Trip
Self Diagnosis	148	148	148	148	152	HW Error
	149	149	149	149	153	Default Settings
	150	150	150	150	154	Error:Settings
SHB	151	151	151	151	155	Phase Block
CLP	152	152	152	152	156	CLP
HMI	153	153	153	153	157	Reset
	154	154	154	154	158	Thermal I. Reset
	155	155	155	155	159	Identification
Alarm LEDs	156	156	156	156	160	Alarm 1
	157	157	157	157	161	Alarm 2
	158	158	158	158	162	Alarm 3
	159	159	159	159	163	Alarm 4
	160	160	160	160	164	Alarm 5
	161	161	161	161	165	Alarm 6
	162	162	162	162	166	Alarm 7
	163	163	163	163	167	Alarm 8
IEC60870-103	164	164	164	164	168	Open Breaker
	165	165	165	165	169	Close Breaker
	166	166	166	166	170	79 Block
	167	167	167	167	171	79 Unblock
	168	168	168	168	172	Local Control
	169	169	169	169	173	Remote Control
	170	170	170	170	174	Reset
	171	171	171	171	175	Thermal Image Reset
IEC60870-104	172	172	172	172	176	Open Breaker
	173	173	173	173	177	Close Breaker
	174	174	174	174	178	79 Block
	175	175	175	175	179	79 Unblock
	176	176	176	176	180	Local Control
	177	177	177	177	181	Remote Control
	178	178	178	178	182	Reset
	179	179	179	179	183	Thermal Image Reset
DNP3 Serial	180	180	180	180	184	Open Breaker
	181	181	181	181	185	Close Breaker
	182	182	182	182	186	79 Block
	183	183	183	183	187	79 Unblock

SIL-G Criterio	Add. Fun. 1, Comm. B or G					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	184	184	184	184	188	Local Control
	185	185	185	185	189	Remote Control
	186	186	186	186	190	Reset
	187	187	187	187	191	Thermal Image Reset
DNP3 TCP	188	188	188	188	192	Open Breaker
	189	189	189	189	193	Close Breaker
	190	190	190	190	194	79 Block
	191	191	191	191	195	79 Unblock
	192	192	192	192	196	Local Control
	193	193	193	193	197	Remote Control
	194	194	194	194	198	Reset
	195	195	195	195	199	Thermal Image Reset
USB COM	196	196	196	196	200	Open Breaker
	197	197	197	197	201	Close Breaker
	198	198	198	198	202	79 Block
	199	199	199	199	203	79 Unblock
	200	200	200	200	204	Local Control
	201	201	201	201	205	Remote Control
	202	202	202	202	206	Reset
	203	203	203	203	207	Thermal Image Reset
	204	204	204	204	208	Identification
MODBUS RTU	205	205	205	205	209	Open Breaker
	206	206	206	206	210	Close Breaker
	207	207	207	207	211	79 Block
	208	208	208	208	212	79 Unblock
	209	209	209	209	213	Local Control
	210	210	210	210	214	Remote Control
	211	211	211	211	215	Reset
	212	212	212	212	216	Thermal Image Reset
	213	213	213	213	217	Identification
MODBUS TCP	214	214	214	214	218	Open Breaker
	215	215	215	215	219	Close Breaker
	216	216	216	216	220	79 Block
	217	217	217	217	221	79 Unblock
	218	218	218	218	222	Local Control

SIL-G Criterio	Add. Fun. 1, Comm. B or G					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	219	219	219	219	223	Remote Control
	220	220	220	220	224	Reset
	221	221	221	221	225	Thermal Image Reset
	222	222	222	222	226	Identification
WEB SERBER	223	223	223	223	227	Open Breaker
	224	224	224	224	228	Close Breaker
	225	225	225	225	229	79 Block
	226	226	226	226	230	79 Unblock
	227	227	227	227	231	Local Control
	228	228	228	228	232	Remote Control
	229	229	229	229	233	Reset
	230	230	230	230	234	Thermal Image Reset
PGC	231	231	231	231	235	Open Breaker
	232	232	232	232	236	Close Breaker
	233	233	233	233	237	79 Block
	234	234	234	234	238	79 Unblock
	235	235	235	235	239	Local Control
	236	236	236	236	240	Remote Control
	237	237	237	237	241	52a
	238	238	238	238	242	52b
	239	239	239	239	243	SettingsG. x1
	240	240	240	240	244	SettingsG. x2
	241	241	241	241	245	Hot Line Tag
	242	242	242	242	246	79 Enable
	243	243	243	243	247	79N1 Start
	244	244	244	244	248	79N2 Start
	245	245	245	245	249	79N3 Start
	246	246	246	246	250	79N4 Start
	247	247	247	247	251	DFR Start
	248	248	248	248	252	50BF Start
	249	249	249	249	253	SOTF Start
	250	250	250	250	254	Thermal I. Reset
	251	251	251	251	255	74TCS Coil A
	252	252	252	252	256	74TCS Coil B
	253	253	253	253	257	Neutral Block
	254	254	254	254	258	Phase Block
	255	255	255	255	259	External trip

SIL-G Criterio	Add. Fun. 1, Comm. B or G					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
Inputs	256	256	256	256	260	Input 1
	257	257	257	257	261	Input 2
	258	258	258	258	262	Input 3
	259	259	259	259	263	Input 4
	260	260	260	260	264	Input 5
	261	261	261	261	265	Input 6
	262	262	262	262	266	Input 7
	263	263	263	263	267	Input 8
	-	264	-	264	-	Input 9
	-	265	-	265	-	Input 10
	-	266	-	266	-	Input 11
	-	267	-	267	-	Input 12
	-	268	-	268	-	Input 13
	-	269	-	269	-	Input 14
	-	270	-	270	-	Input 15
	-	271	-	271	-	Input 16
	-	272	-	-	-	Input 17
	-	273	-	-	-	Input 18
	-	274	-	-	-	Input 19
	-	275	-	-	-	Input 20
	-	276	-	-	-	Input 21
	-	277	-	-	-	Input 22
	-	278	-	-	-	Input 23
	-	279	-	-	-	Input 24
Measurements	264	280	264	272	268	Error:Measurem.
	265	281	265	273	269	Net Freq.50Hz

3.2.2 From ver 01.02.03

3.2.2.1 Additional Function digict 0

SIL-G Criterio	Add. Fun. 0					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
24 1	0	0	0	0	0	Pickup
	1	1	1	1	1	Trip
24 2	2	2	2	2	2	Pickup
	3	3	3	3	3	Trip
25	-	-	-	-	-	Synchrocheck
	-	-	-	-	-	Dead L & Dead B
	-	-	-	-	-	Dead L & Live B
	-	-	-	-	-	Live L & Dead B
	-	-	-	-	-	Live L & Live B
27-L	-	-	-	-	-	Phase Pickup
	-	-	-	-	-	Phase Trip
27 1	4	4	4	4	4	Phase Pickup
	5	5	5	5	5	Phase Trip
27 2	6	6	6	6	6	Phase Pickup
	7	7	7	7	7	Phase Trip
32-1	8	8	8	8	8	Phase Pickup
	9	9	9	9	9	Phase Trip
32-2	10	10	10	10	10	Phase Pickup
	11	11	11	11	11	Phase Trip
32-3	12	12	12	12	12	Phase Pickup
	13	13	13	13	13	Phase Trip
32-4	14	14	14	14	14	Phase Pickup
	15	15	15	15	15	Phase Trip
37	16	16	16	16	16	Phase Pickup
	17	17	17	17	17	Phase Trip
46	18	18	18	18	18	Pickup
	19	19	19	19	19	Trip
46BC	20	20	20	20	20	Pickup
	21	21	21	21	21	Trip
47	22	22	22	22	22	Pickup
	23	23	23	23	23	Trip
49	24	24	24	24	24	Alarm
	25	25	25	25	25	Trip
50-1	26	26	26	26	26	Phase Pickup
	27	27	27	27	27	Phase Trip
50-2	28	28	28	28	28	Phase Pickup

SIL-G Criterio	Add. Fun. 0					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	29	29	29	29	29	Phase Trip
52	30	30	30	30	30	Error
	31	31	31	31	31	Closed
	32	32	32	32	32	Openings Alarm
	33	33	33	33	33	I2t Alarm
	34	34	34	34	34	Openings/T Alarm
59-L	-	-	-	-	-	Phase Pickup
	-	-	-	-	-	Phase Trip
59-1	35	35	35	35	35	Phase Pickup
	36	36	36	36	36	Phase Trip
59-2	37	37	37	37	37	Phase Pickup
	38	38	38	38	38	Phase Trip
60VTS	39	39	39	39	39	Phase Pickup
	40	40	40	40	40	Phase Trip
67/51-1	41	41	41	41	41	Phase Pickup
	42	42	42	42	42	Phase Trip
	43	43	43	43	43	Directionality A
	44	44	44	44	44	Directionality B
	45	45	45	45	45	Directionality C
67/51-2	46	46	46	46	46	Phase Pickup
	47	47	47	47	47	Phase Trip
	48	48	48	48	48	Directionality A
	49	49	49	49	49	Directionality B
	50	50	50	50	50	Directionality C
67/51-3	51	51	51	51	51	Phase Pickup
	52	52	52	52	52	Phase Trip
	53	53	53	53	53	Directionality A
	54	54	54	54	54	Directionality B
	55	55	55	55	55	Directionality C
67/51-4	56	56	56	56	56	Phase Pickup
	57	57	57	57	57	Phase Trip
	58	58	58	58	58	Directionality A
	59	59	59	59	59	Directionality B
	60	60	60	60	60	Directionality C
74TCS	61	61	61	61	61	Pickup
	62	62	62	62	62	Trip
78	63	63	63	63	63	Trip
79	64	64	64	64	64	Standby

SIL-G Criterio	Add. Fun. 0					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	65	65	65	65	65	Closing Time
	66	66	66	66	66	Lockout
	67	67	67	67	67	79 Blocked
81-1	68	68	68	68	68	Pickup
	69	69	69	69	69	Trip
81-2	70	70	70	70	70	Pickup
	71	71	71	71	71	Trip
81-3	72	72	72	72	72	Pickup
	73	73	73	73	73	Trip
81-4	74	74	74	74	74	Pickup
	75	75	75	75	75	Trip
27V1	76	76	76	76	76	Pickup
	77	77	77	77	77	Trip
SOTF	78	78	78	78	78	Pickup
	79	79	79	79	79	Trip
50G	80	80	80	80	80	Neutral Pickup
	81	81	81	81	81	Neutral Trip
50N	82	82	82	82	82	Neutral Pickup
	83	83	83	83	83	Neutral Trip
50BF	84	84	84	84	84	Pickup
	85	85	85	85	85	Trip
59N/G-1	86	86	86	86	86	Neutral Pickup
	87	87	87	87	87	Neutral Trip
59N/G-2	88	88	88	88	88	Neutral Pickup
	89	89	89	89	89	Neutral Trip
64REF	90	90	90	90	90	Pickup
	91	91	91	91	91	Trip
67GI	92	92	92	92	92	Ground Pickup
	93	93	93	93	93	Ground Trip
	94	94	94	94	94	Directionality
67NI	95	95	95	95	95	Neutral Pickup
	96	96	96	96	96	Neutral Trip
	97	97	97	97	97	Directionality
67G/51G-1	98	98	98	98	98	Neutral Pickup
	99	99	99	99	99	Neutral Trip
	100	100	100	100	100	Directionality
67N/51N-1	101	101	101	101	101	Neutral Pickup
	102	102	102	102	102	Neutral Trip

SIL-G Criterio	Add. Fun. 0					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	103	103	103	103	103	Directionality
67G/51G-2	104	104	104	104	104	Neutral Pickup
	105	105	105	105	105	Neutral Trip
	106	106	106	106	106	Directionality
67N/51N-2	107	107	107	107	107	Neutral Pickup
	108	108	108	108	108	Neutral Trip
	109	109	109	109	109	Directionality
60CTS	110	110	110	110	110	Pickup
	111	111	111	111	111	Trip
81R-1	112	112	112	112	112	Pickup
	113	113	113	113	113	Trip
81R-2	114	114	114	114	114	Pickup
	115	115	115	115	115	Trip
81R-3	116	116	116	116	116	Pickup
	117	117	117	117	117	Trip
81R-4	118	118	118	118	118	Pickup
	119	119	119	119	119	Trip
AFD	-	-	-	-	120	AFD Input 1
	-	-	-	-	121	AFD Input 2
	-	-	-	-	122	AFD Input 3
	-	-	-	-	123	AFD Input 4
General	120	120	120	120	124	Trip
	121	121	121	121	125	Ready
	122	122	122	122	126	Date&Time Set
	123	123	123	123	127	Local
	124	124	124	124	128	SER Deleted
	125	125	125	125	129	Settings Change
	126	126	126	126	130	Config Change
	127	127	127	127	131	New DFR
	128	128	128	128	132	Phase Trip
	129	129	129	129	133	Trip Block
	130	130	130	130	134	Pickup
	131	131	131	131	135	Phase A Pickup
	132	132	132	132	136	Phase B Pickup
	133	133	133	133	137	Phase C Pickup
	134	134	134	134	138	Neutral Pickup
	135	135	135	135	139	Phase A Trip
	136	136	136	136	140	Phase B Trip

SIL-G Criterio	Add. Fun. 0					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	137	137	137	137	141	Phase C Trip
	138	138	138	138	142	Neutral Trip
	139	139	139	139	143	Setting Group 1
	140	140	140	140	144	Setting Group 2
	141	141	141	141	145	Setting Group 3
	142	142	142	142	146	Setting Group 4
Self Diagnosis	143	143	143	143	147	HW Error
	144	144	144	144	148	Default Settings
	145	145	145	145	149	Error:Settings
SHB	146	146	146	146	150	Phase Block
CLP	147	147	147	147	151	CLP
HMI	148	148	148	148	152	Reset
	149	149	149	149	153	Identification
Alarm LEDs	150	150	150	150	154	Alarm 1
	151	151	151	151	155	Alarm 2
	152	152	152	152	156	Alarm 3
	153	153	153	153	157	Alarm 4
	154	154	154	154	158	Alarm 5
	155	155	155	155	159	Alarm 6
	156	156	156	156	160	Alarm 7
	157	157	157	157	161	Alarm 8
PGC	158	158	158	158	162	Open Breaker
	159	159	159	159	163	Close Breaker
	160	160	160	160	164	79 Block
	161	161	161	161	165	79 Unblock
	162	162	162	162	166	Local Control
	163	163	163	163	167	Remote Control
	164	164	164	164	168	52a
	165	165	165	165	169	52b
	166	166	166	166	170	SettingsG. x1
	167	167	167	167	171	SettingsG. x2
	168	168	168	168	172	Hot Line Tag
	169	169	169	169	173	79 Enable
	170	170	170	170	174	79N1 Start
	171	171	171	171	175	79N2 Start
	172	172	172	172	176	79N3 Start
	173	173	173	173	177	79N4 Start
	174	174	174	174	178	DFR Start

SIL-G Criterio	Add. Fun. 0					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	175	175	175	175	179	50BF Start
	176	176	176	176	180	SOTF Start
	177	177	177	177	181	Thermal I. Reset
	178	178	178	178	182	74TCS Coil A
	179	179	179	179	183	74TCS Coil B
	180	180	180	180	184	Neutral Block
	181	181	181	181	185	Phase Block
	182	182	182	182	186	External trip
Control LED	183	183	183	183	187	Led Local
	184	184	184	184	188	Led 79
	185	185	185	185	189	Led 52
Inputs	186	186	186	186	190	Input 1
	187	187	187	187	191	Input 2
	188	188	188	188	192	Input 3
	189	189	189	189	193	Input 4
	190	190	190	190	194	Input 5
	-	191	191	191	195	Input 6
	-	192	192	192	196	Input 7
	-	193	193	193	197	Input 8
	-	194	-	194	-	Input 9
	-	195	-	195	-	Input 10
	-	196	-	196	-	Input 11
	-	197	-	197	-	Input 12
	-	198	-	198	-	Input 13
	-	199	-	199	-	Input 14
	-	200	-	200	-	Input 15
	-	201	-	201	-	Input 16
	-	202	-	-	-	Input 17
	-	203	-	-	-	Input 18
	-	204	-	-	-	Input 19
	-	205	-	-	-	Input 20
	-	206	-	-	-	Input 21
	-	207	-	-	-	Input 22
	-	208	-	-	-	Input 23
	-	209	-	-	-	Input 24
Outputs	191	210	194	202	198	Output 1 / Logical Outputs
	192	211	195	203	199	Output 2 / Logical Outputs
	193	212	196	204	200	Output 3 / Logical Outputs

SIL-G Criterio	Add. Fun. 0					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	194	213	197	205	201	Output 4 / Logical Outputs
	195	214	198	206	202	Output 5 / Logical Outputs
	196	215	199	207	203	Output 6 / Logical Outputs
	197	216	200	208	204	Output 7 / Logical Outputs
	198	217	201	209	205	Output 8 / Logical Outputs
	199	218	202	210	206	Output 9 / Logical Outputs
	200	219	203	211	207	Output 10 / Logical Outputs
	201	220	204	212	208	Output 11 / Logical Outputs
	202	221	205	213	209	Output 12 / Logical Outputs
	203	222	206	214	210	Output 13 / Logical Outputs
	204	223	207	215	211	Output 14 / Logical Outputs
	205	224	208	216	212	Output 15 / Logical Outputs
	206	225	209	217	213	Output 16 / Logical Outputs
	207	226	210	218	214	Output 17 / Logical Outputs
	208	227	211	219	215	Output 18 / Logical Outputs
Measurements	209	228	212	220	216	Error:Measurem.
	210	229	213	221	217	Net Freq.50Hz

3.2.2.2 Additional Function digict 0

SIL-G Criterio	Add. Fun. 1					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
24 1	0	0	0	0	0	Pickup
	1	1	1	1	1	Trip
24 2	2	2	2	2	2	Pickup
	3	3	3	3	3	Trip
25	4	4	4	4	4	Synchrocheck
	5	5	5	5	5	Dead L & Dead B
	6	6	6	6	6	Dead L & Live B
	7	7	7	7	7	Live L & Dead B
	8	8	8	8	8	Live L & Live B
27-L	9	9	9	9	9	Phase Pickup
	10	10	10	10	10	Phase Trip
27 1	11	11	11	11	11	Phase Pickup
	12	12	12	12	12	Phase Trip
27 2	13	13	13	13	13	Phase Pickup
	14	14	14	14	14	Phase Trip
32-1	15	15	15	15	15	Phase Pickup
	16	16	16	16	16	Phase Trip
32-2	17	17	17	17	17	Phase Pickup
	18	18	18	18	18	Phase Trip
32-3	19	19	19	19	19	Phase Pickup
	20	20	20	20	20	Phase Trip
32-4	21	21	21	21	21	Phase Pickup
	22	22	22	22	22	Phase Trip
37	23	23	23	23	23	Phase Pickup
	24	24	24	24	24	Phase Trip
46	25	25	25	25	25	Pickup
	26	26	26	26	26	Trip
46BC	27	27	27	27	27	Pickup
	28	28	28	28	28	Trip
47	29	29	29	29	29	Pickup
	30	30	30	30	30	Trip
49	31	31	31	31	31	Alarm
	32	32	32	32	32	Trip
50-1	33	33	33	33	33	Phase Pickup
	34	34	34	34	34	Phase Trip
50-2	35	35	35	35	35	Phase Pickup
	36	36	36	36	36	Phase Trip

SIL-G Criterio	Add. Fun. 1					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
52	37	37	37	37	37	Error
	38	38	38	38	38	Closed
	39	39	39	39	39	Openings Alarm
	40	40	40	40	40	I2t Alarm
	41	41	41	41	41	Openings/T Alarm
59-L	42	42	42	42	42	Phase Pickup
	43	43	43	43	43	Phase Trip
59-1	44	44	44	44	44	Phase Pickup
	45	45	45	45	45	Phase Trip
59-2	46	46	46	46	46	Phase Pickup
	47	47	47	47	47	Phase Trip
60VTS	48	48	48	48	48	Phase Pickup
	49	49	49	49	49	Phase Trip
67/51-1	50	50	50	50	50	Phase Pickup
	51	51	51	51	51	Phase Trip
	52	52	52	52	52	Directionality A
	53	53	53	53	53	Directionality B
	54	54	54	54	54	Directionality C
67/51-2	55	55	55	55	55	Phase Pickup
	56	56	56	56	56	Phase Trip
	57	57	57	57	57	Directionality A
	58	58	58	58	58	Directionality B
	59	59	59	59	59	Directionality C
67/51-3	60	60	60	60	60	Phase Pickup
	61	61	61	61	61	Phase Trip
	62	62	62	62	62	Directionality A
	63	63	63	63	63	Directionality B
	64	64	64	64	64	Directionality C
67/51-4	65	65	65	65	65	Phase Pickup
	66	66	66	66	66	Phase Trip
	67	67	67	67	67	Directionality A
	68	68	68	68	68	Directionality B
	69	69	69	69	69	Directionality C
74TCS	70	70	70	70	70	Pickup
	71	71	71	71	71	Trip
78	72	72	72	72	72	Trip
79	73	73	73	73	73	Standby
	74	74	74	74	74	Closing Time

SIL-G Criterio	Add. Fun. 1					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	75	75	75	75	75	Lockout
	76	76	76	76	76	79 Blocked
81-1	77	77	77	77	77	Pickup
	78	78	78	78	78	Trip
81-2	79	79	79	79	79	Pickup
	80	80	80	80	80	Trip
81-3	81	81	81	81	81	Pickup
	82	82	82	82	82	Trip
81-4	83	83	83	83	83	Pickup
	84	84	84	84	84	Trip
27V1	85	85	85	85	85	Pickup
	86	86	86	86	86	Trip
SOTF	87	87	87	87	87	Pickup
	88	88	88	88	88	Trip
50G	89	89	89	89	89	Neutral Pickup
	90	90	90	90	90	Neutral Trip
50N	91	91	91	91	91	Neutral Pickup
	92	92	92	92	92	Neutral Trip
50BF	93	93	93	93	93	Pickup
	94	94	94	94	94	Trip
59N/G-1	95	95	95	95	95	Neutral Pickup
	96	96	96	96	96	Neutral Trip
59N/G-2	97	97	97	97	97	Neutral Pickup
	98	98	98	98	98	Neutral Trip
64REF	99	99	99	99	99	Pickup
	100	100	100	100	100	Trip
67GI	101	101	101	101	101	Ground Pickup
	102	102	102	102	102	Ground Trip
	103	103	103	103	103	Directionality
67NI	104	104	104	104	104	Neutral Pickup
	105	105	105	105	105	Neutral Trip
	106	106	106	106	106	Directionality
67G/51G-1	107	107	107	107	107	Neutral Pickup
	108	108	108	108	108	Neutral Trip
	109	109	109	109	109	Directionality
67N/51N-1	110	110	110	110	110	Neutral Pickup
	111	111	111	111	111	Neutral Trip
	112	112	112	112	112	Directionality

SIL-G Criterio	Add. Fun. 1					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
67G/51G-2	113	113	113	113	113	Neutral Pickup
	114	114	114	114	114	Neutral Trip
	115	115	115	115	115	Directionality
67N/51N-2	116	116	116	116	116	Neutral Pickup
	117	117	117	117	117	Neutral Trip
	118	118	118	118	118	Directionality
60CTS	119	119	119	119	119	Pickup
	120	120	120	120	120	Trip
81R-1	121	121	121	121	121	Pickup
	122	122	122	122	122	Trip
81R-2	123	123	123	123	123	Pickup
	124	124	124	124	124	Trip
81R-3	125	125	125	125	125	Pickup
	126	126	126	126	126	Trip
81R-4	127	127	127	127	127	Pickup
	128	128	128	128	128	Trip
AFD	-	-	-	-	129	AFD Input 1
	-	-	-	-	130	AFD Input 2
	-	-	-	-	131	AFD Input 3
	-	-	-	-	132	AFD Input 4
General	129	129	129	129	133	Trip
	130	130	130	130	134	Ready
	131	131	131	131	135	Date&Time Set
	132	132	132	132	136	Local
	133	133	133	133	137	SER Deleted
	134	134	134	134	138	Settings Change
	135	135	135	135	139	Config Change
	136	136	136	136	140	New DFR
	137	137	137	137	141	Phase Trip
	138	138	138	138	142	Trip Block
	139	139	139	139	143	Pickup
	140	140	140	140	144	Phase A Pickup
	141	141	141	141	145	Phase B Pickup
	142	142	142	142	146	Phase C Pickup
	143	143	143	143	147	Neutral Pickup
	144	144	144	144	148	Phase A Trip
	145	145	145	145	149	Phase B Trip
	146	146	146	146	150	Phase C Trip

SIL-G Criterio	Add. Fun. 1					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	147	147	147	147	151	Neutral Trip
	148	148	148	148	152	Setting Group 1
	149	149	149	149	153	Setting Group 2
	150	150	150	150	154	Setting Group 3
	151	151	151	151	155	Setting Group 4
Self Diagnosis	152	152	152	152	156	HW Error
	153	153	153	153	157	Default Settings
	154	154	154	154	158	Error:Settings
SHB	155	155	155	155	159	Phase Block
CLP	156	156	156	156	160	CLP
HMI	157	157	157	157	161	Reset
	158	158	158	158	162	Identification
Alarm LEDs	159	159	159	159	163	Alarm 1
	160	160	160	160	164	Alarm 2
	161	161	161	161	165	Alarm 3
	162	162	162	162	166	Alarm 4
	163	163	163	163	167	Alarm 5
	164	164	164	164	168	Alarm 6
	165	165	165	165	169	Alarm 7
	166	166	166	166	170	Alarm 8
PGC	167	167	167	167	171	Open Breaker
	168	168	168	168	172	Close Breaker
	169	169	169	169	173	79 Block
	170	170	170	170	174	79 Unblock
	171	171	171	171	175	Local Control
	172	172	172	172	176	Remote Control
	173	173	173	173	177	52a
	174	174	174	174	178	52b
	175	175	175	175	179	SettingsG. x1
	176	176	176	176	180	SettingsG. x2
	177	177	177	177	181	Hot Line Tag
	178	178	178	178	182	79 Enable
	179	179	179	179	183	79N1 Start
	180	180	180	180	184	79N2 Start
	181	181	181	181	185	79N3 Start
	182	182	182	182	186	79N4 Start
	183	183	183	183	187	DFR Start
	184	184	184	184	188	50BF Start

SIL-G Criterio	Add. Fun. 1					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	185	185	185	185	189	SOTF Start
	186	186	186	186	190	Thermal I. Reset
	187	187	187	187	191	74TCS Coil A
	188	188	188	188	192	74TCS Coil B
	189	189	189	189	193	Neutral Block
	190	190	190	190	194	Phase Block
	191	191	191	191	195	External trip
Control LED	192	192	192	192	196	Led Local
	193	193	193	193	197	Led 79
	194	194	194	194	198	Led 52
Inputs	195	195	195	195	199	Input 1
	196	196	196	196	200	Input 2
	197	197	197	197	201	Input 3
	198	198	198	198	202	Input 4
	199	199	199	199	203	Input 5
	-	200	200	200	204	Input 6
	-	201	201	201	205	Input 7
	-	202	202	202	206	Input 8
	-	203	-	203	-	Input 9
	-	204	-	204	-	Input 10
	-	205	-	205	-	Input 11
	-	206	-	206	-	Input 12
	-	207	-	207	-	Input 13
	-	208	-	208	-	Input 14
	-	209	-	209	-	Input 15
	-	210	-	210	-	Input 16
	-	211	-	-	-	Input 17
	-	212	-	-	-	Input 18
	-	213	-	-	-	Input 19
	-	214	-	-	-	Input 20
	-	215	-	-	-	Input 21
	-	216	-	-	-	Input 22
	-	217	-	-	-	Input 23
	-	218	-	-	-	Input 24
Outputs	200	219	203	210	207	Output 1 / Logical Outputs
	201	220	204	211	208	Output 2 / Logical Outputs
	202	221	205	212	209	Output 3 / Logical Outputs
	203	222	206	213	210	Output 4 / Logical Outputs

SIL-G Criterio	Add. Fun. 1					State Description
	I/O 0	I/O 5	I/O 6	I/O 7	I/O A	
	204	223	207	214	211	Output 5 / Logical Outputs
	205	224	208	215	212	Output 6 / Logical Outputs
	206	225	209	216	213	Output 7 / Logical Outputs
	207	226	210	217	214	Output 8 / Logical Outputs
	208	227	211	218	215	Output 9 / Logical Outputs
	209	228	212	219	216	Output 10 / Logical Outputs
	210	229	213	220	217	Output 11 / Logical Outputs
	211	230	214	221	218	Output 12 / Logical Outputs
	212	231	215	222	219	Output 13 / Logical Outputs
	213	232	216	223	220	Output 14 / Logical Outputs
	214	233	217	224	221	Output 15 / Logical Outputs
	215	234	218	225	222	Output 16 / Logical Outputs
	216	235	219	226	223	Output 17 / Logical Outputs
	217	236	220	227	224	Output 18 / Logical Outputs
Measurements	218	237	221	228	225	Error:Measurem.
	219	238	222	229	226	Net Freq.50Hz

3.3 Measurements

Object	Measurement	Unit
AI 0	I-A	A
AI 1	I-B	A
AI 2	I-C	A
AI 3	I-N	A
AI 4	V-A	V
AI 5	V-B	V
AI 6	V-C	V
AI 7	V-R	V
AI 8	V-L	V
AI 9	U-AB	V
AI 10	U-BC	V
AI 11	U-CA	V
AI 12	3I-0	A
AI 13	I-1	A
AI 14	I-2	A
AI 15	I-Max	A
AI 16	I-A2H	A
AI 17	I-B2H	A
AI 18	I-C2H	A
AI 19	3V-0	V
AI 20	V-1	V
AI 21	V-2	V
AI 22	V-Max	V
AI 23	P-3P	W
AI 24	Q-3P	VAr
AI 25	S-3P	VA
AI 26	P-A	W
AI 27	Q-A	VAr
AI 28	S-A	VA
AI 29	P-B	W
AI 30	Q-B	VAr
AI 31	S-B	VA

Object	Measurement	Unit
AI 32	P-C	W
AI 33	Q-C	VAr
AI 34	S-C	VA
AI 35	f Bar	Hz
AI 36	f Line	Hz
AI 37	df/dt	Hz/s
AI 38	Ang I-A	deg
AI 39	Ang I-B	deg
AI 40	Ang I-C	deg
AI 41	Ang I-N	deg
AI 42	Ang 3I0	deg
AI 43	Ang V-A	deg
AI 44	Ang V-B	deg
AI 45	Ang V-C	deg
AI 46	Ang V-R	deg
AI 47	Ang 3V0	deg
AI 48	Ang UAB	deg
AI 49	Ang UBC	deg
AI 50	Ang UCA	deg
AI 51	Ang V-L	deg
AI 52	V/Hz	xV/f
AI 53	Therm.I	%
AI 54	I-2/I-1	%
AI 55	I-N2H	A
AI 56	cosPhiA	-
AI 57	cosPhiB	-
AI 58	cosPhiC	-
AI 59	cosPhi	-
AI 60	THD IA	%
AI 61	THD IB	%
AI 62	THD IC	%

3.4 Counters

Object	Counter	Unit
PI 0	Openings Number	-
PI 1	Recloses Number	-
PI 2	Accumulated Amps	kA2
PI 3	AE+	Wh
PI 4	AE-	Wh
PI 5	RE+	VArh
PI 6	RE-	VArh



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