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United power system and isolated power systems. Electrical substations.  
Automated process control systems. Conditions for creating. Norms and requirements

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12.1.004

12.1.019

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30804.4.2 (IEC 61000-4-2:2008)

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50571.4.41 ( 60364-4-41:2017) 4-41.

50648 ( 1000-4-8—93)

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50932

51317.4.5 ( 61000-4-5—95)

51317.4.6 ( 61000-4-6—96)

51317.4.14 ( 61000-4-14—99)

51317.4.15 ( 61000-4-15:2010)

51317.4.16 ( 61000-4-16—98)

51317.4.17 ( 61000-4-17—99) 0 150

51317.4.28 ( 61000-4-28—99)

51317.6.5 ( 61000-6-5:2001)

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54325 (IEC/TS 61850-2:2003) 2.

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CPU —	(Central Processing Unit);	
FTP —	(File Transfer Protocol);	
GOOSE —	-	
	(Generic Object-Oriented Substation Event);	
GPS —	(Global Positioning System);	
HDD —	(Hard Disk Drive);	
HSR —	(High-availability Seamless Redundancy);	
ICCP/ —	(Inter Control Center Communications	
TASE.2 Protocol);		
MMS —	(Manufacturing Message Specification);	
MRP —	(Media Redundancy Protocol);	
NTP/SNTP —	/	(Network Time
	Protocol/Simple Network Time Protocol);	
QoS —	(Quality of Service);	
PRP —	(Parallel Redundancy Protocol);	
PTP —	(Precision Time Protocol);	
RSTP —	(Rapid Spanning Tree Protocol);	
SCADA —	(Supervisory Control And Data Acquisition);	
SCL —	(System Configuration Language);	
SNMP —	(Simple Network Management Protocol);	
SSD —	(Solid-State Drive);	
SV —	(Sampled Values);	
TCP/IP —	/ -	(Transmission Control Protocol/Inter-
	net Protocol);	
VLAN —	(Virtual Local Area Network).	

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7.2.5.1	70450	-
7.2.5.2		-
	( 60870-5-104 )	-
7.2.5.3		-
	FTP ( . [4]), ICCP/TASE.2 ( . [5]),	-
7.2.5.4		-
	59550.	-
<b>7.2.6</b>		-
7.2.6.1		-
7.2.6.2		-
7.2.6.3		-
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7.2.7.1

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58601, [6].

59364, 59365, 59366.

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58601.

7.2.8.5

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7.2.8.6

7.2.8.7

**7.2.9**

7.2.9.1

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7.2.9.3

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7.2.10.1

7.2.10.2

7.2.10.3

7.2.10.4

**7.2.11**

7.2.11.1

7.2.11.2

7.2.11.3

7.2.11.4

**7.3**

**7.3.1**

7.3.1.1

7.3.1.2

MMS, GOOSE ( . [3]),  
SV ( . [2]).

Ethernet IEEE 802.3 ( . [7])

7.3.1.3

Ethernet IEEE 802.3 ( . [7])

MMS, GOOSE ( . [3]),  
SV ( . [2]).

7.3.1.4

MMS, GOOSE ( . [3]), SV ( . [2]) ( 60870).

6 35 (110)

MMS, GOOSE ( . [3]), SV ( . [2]),

7.3.1.5

7.3.1.6

60870-5-104.

**7.3.2**

7.3.2.1

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7.3.2.2

/GPS

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7.3.2.4

NTP/SNTP,

[8]-[ ].

7.3.2.5

MMS, GOOSE, SV.

[3], [2].

**7.3.3**

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7.3.3.9		( )	-
<b>7.3.4</b>			
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7.3.4.2			-
7.3.4.3			-
7.3.4.4			CPU, HDD/
SSD-			
7.3.4.5		( , SNMP, [3]).	
7.3.4.6		( )	-
7.3.4.7			SV -
GOOSE.			
7.3.4.8		( , SNMP, [3]).	-
7.3.4.9			-
<b>7.3.5</b>			
7.3.5.1		( )	-
7.3.5.2			-
7.3.5.3			-
7.3.5.4		( ) ( )	-
7.3.5.5			-

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7.3.5.6 / / ( ) ( ) -

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**7.3.6**

7.3.6.1 -

7.3.6.2 , .

7.3.6.3 SCADA. ,

61131-3 ( . [11]),

7.3.6.4 SCADA -

7.3.6.5 SCADA

7.3.6.6 -

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MMS, GOOSE ( . [3]).

SV,

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MMS, GOOSE ( . [3]).

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8.4.2	SCADA,
8.4.3	
<b>8.5</b>	
8.5.1	( ),
8.5.2	
	MMS, GOOSE ( . [3]).
8.5.3	SV ( . [2]),
8.5.4	
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8.5.5	( . RSTP [12], MRP [13], PRP [14], HSR [14]). ( )
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	PRP ( . [14]).
8.5.6	
Ethernet IEEE 802.3 ( . [7])	MMS, GOOSE ( . [3]),
8.5.7	PRP ( . [14])
	Redundancy Box (RedBox).
8.5.8	
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( . SNMP, [3]).

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Ethernet IEEE 802.3 ( . [7])

9.1.3

( . MMS, GOOSE [3]).

9.1.4

SV ( . [2])

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61131-3 ( . [11]).

9.1.10

9.1.11

( . NTP/SNTP [8], [9], [10]).

9.1.12

SNMP.

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9.1.14

HDD/SSD.

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( . NTP/SNTP [8]).

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SNMP.

( . NTP/SNTP [8], [9], [10]).

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( . SNMP [3]).

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Ethernet IEEE 802.3 ( . [7])

9.1.21

( . RSTP [12], MRP [13], PRP HSR [14]),

( . QoS [12] VLAN [15]).

9.1.22

( . NTP/SNTP [8], [9], [10]).

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SCADA		61850-6	61850-7-1	—
61850-7-4 (SCL).				-
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61850-7-1	—	61850-7-4 (SCL).		-
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9.4.4				-
	SCADA		61850-6	61850-7-1
61850-7-4 (SCL).				—
9.4.5		61131-3 (	[11]).	-
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50571.4.41

12.1.019.  
12.1.030.

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12.1.004, 31565.

#### 10.2

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**10.4**

50648,	50649,	30804.4.2, 50932,	30804.4.3, 51317.4.5, 51317.4.17,	30804.4.4, 51317.4.6, 51317.4.28,	30804.4.11, 51317.4.14, 51317.6.5,
51317.4.15, IEC 61000-4-29,	IEC 60255-5.				

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- [2] 61850-9-2:2011 -  
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 3. (PRP) (HSR) [Industrial communication networks — High availability automation networks — Part 3: Parallel Redundancy Protocol (PRP) and High-availability Seamless Redundancy (HSR)]

[15] IEEE 802.10:2014

1Q.  
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