

Remote Control Interface Specification

Project: IF-MOD2128C

Rev. 2.1

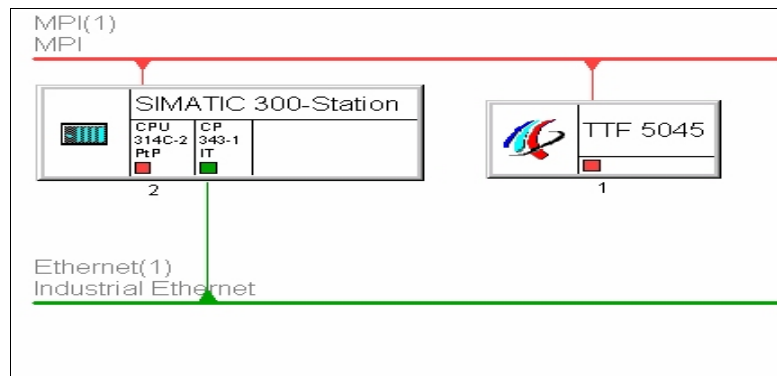
see ChangeLog on last page

M.Kazmierczak

C:\Dokumente und Einstellungen\markus\Desktop\IF-MOD2128C\RCI_RemoteControlInterface\tcpip-
interface-description_IF-MOD2128C_Rev2-1.sxw

Communication via TCP/IP

Connection parameters PLC



Kurzbezeichnung: CP 343-1 IT

S7 CP für Industrial Ethernet ISO und TCP/IP mit SEND-RECEIVE- und FETCH-WRITE-Schnittstelle, lange Daten, UDP, TCP, ISO, S7-Kommunikation, Routing, BG-Tausch ohne PG, mit Web-Server und E-Mail, 10/100 Mbit, feste MAC-Adresse, Initialisierung über LAN.

Bestell-Nr./ Firmware: 6GK7 343-1EX31-0XE0 / V2.0

Name: CP 343-1 IT

Schnittstelle
Typ: Ethernet
Adresse: 192.168.10.110
Vernetzt: Ja

Rückwandanschluß
MPI-Adresse: 3

Eigenschaften...

Lokaler Endpunkt

ID (Hex): 0001 A050

Name: TCP-Verbindung-1

Über CP: CP 343-1 IT - (R0/S4)

Wegwahl...

☐ Aktiver Verbindungsaufbau

☐ FTP-Protokoll nutzen

Bausteinparameter

1 ID

W#16#0100 LADDR

Die Ports von 1025 bis 65535 stehen zur Verfügung.
(Weitere Ports siehe Hilfe)

	Lokal	Partner
IP (DEZ):	192.168.10.110	
PORT (DEZ):	2000	

Lokale ID	Partner ID	Partner	Typ	Aktiver Verbindungsaufbau
0001 A050		TCP-Verbindung-1	TCP-Verbindung	nein

Overview data packets**Status Packet**

WORD0	Heater Voltage LSByte	Heater Voltage MSByte	Thyratron
WORD2	Reservoir Voltage LSByte	Reservoir Voltage MSByte	
WORD4	Total Current LSByte	Total Current MSByte	
WORD6	Timer Preheating (minutes) LSByte	Timer Preheating (minutes) MSByte	
WORD8	Timer Preheating (seconds) LSByte	Timer Preheating (seconds) MSByte	
WORD10	Interlock messages LSByte	Interlock messages MSByte	
WORD12	Status messages LSByte	Status messages MSByte	Klystron
WORD14	Heater Voltage LSByte	Heater Voltage MSByte	
WORD16	Heater Current LSByte	Heater Current MSByte	
WORD18	Body Water Input Temperature LSByte	Body Water Input Temperature MSByte	
WORD20	Body Water Output Temperature LSByte	Body Water Output Temperature MSByte	
WORD22	Body Water Flow LSByte	Body Water Flow MSByte	
WORD24	Timer Preheating 100% (minutes) LSByte	Timer Preheating 100% (minutes) MSByte	
WORD26	Timer Preheating 100% (seconds) LSByte	Timer Preheating 100% (seconds) MSByte	
WORD28	Interlock messages LSByte	Interlock messages MSByte	
WORD30	Status messages LSByte	Status messages MSByte	
WORD32	Klytron Voltage LSByte	Klytron Voltage MSByte	Focus
WORD34	Klytron Current LSByte	Klytron Current MSByte	
WORD36	Magnet Voltage Coil 1 LSByte	Magnet Voltage Coil 1 MSByte	
WORD38	Magnet Current Coil 1 LSByte	Magnet Current Coil 1 MSByte	
WORD40	Magnet Voltage Coil 2 LSByte	Magnet Voltage Coil 2 MSByte	
WORD42	Magnet Current Coil 2 LSByte	Magnet Current Coil 2 MSByte	
WORD44	Magnet Voltage Coil 3 LSByte	Magnet Voltage Coil 3 MSByte	
WORD46	Magnet Current Coil 3 LSByte	Magnet Current Coil 3 MSByte	
WORD48	Interlock messages LSByte	Interlock messages MSByte	
WORD50	Status messages LSByte	Status messages MSByte	
WORD52	Magnet Voltage LSByte	Magnet Voltage MSByte	Premagnetisation
WORD54	Magnet Current LSByte	Magnet Current MSByte	
WORD56	Interlock messages LSByte	Interlock messages MSByte	Vacuum (external)
WORD58	Status messages LSByte	Status messages MSByte	
WORD60	Interlock messages LSByte	Interlock messages MSByte	Interlocks (external)
WORD62	Interlock messages LSByte	Interlock messages MSByte	
WORD64	Interlock messages LSByte	Interlock messages MSByte	EOLC
WORD66	Counter LSByte	Counter MSByte	
WORD68	Charging Voltage PFN LSByte	Charging Voltage PFN MSByte	HVPS
WORD70	Temperature water HVPS LSByte	Temperature water HVPS MSByte	
WORD72	Interlock messages LSByte	Interlock messages MSByte	
WORD74	Status messages LSByte	Status messages MSByte	
WORD76	Interlock messages LSByte	Interlock messages MSByte	Modu- lator
WORD78	Status messages LSByte	Status messages MSByte	

Command Packet

WORD0	ON/OFF-Commands LSByte	ON/OFF-Commands MSByte
WORD2	Set value charging voltage LSByte	Set value charging voltage LSByte

Thyratron: Analog values

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8

Description	Signal Range	Value Range	Byte
Heater Voltage	0..10V	0..100	0..1
Reservoir Voltage	0..10V	0..100	2..3
Total Current ($I_{\text{Reservoir}} + I_{\text{Heater}}$)	0..100V	0..1000	4..5
Timer Preheating (minutes)	0..15min	0..15	6..7
Timer Preheating (seconds)	0..60s	0..60	8..9

Remark: All values are integer values.

Example: Heater Voltage = 7.5V => Value = 75₁₀

Thyratron: Interlock and status messages

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8
1		ALARM	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM								
0		OK	OK	OK	OK	OK	OK	OK								

Bit	Description	Byte
0	Alarm: Thyratron heater voltage exceeds upper limit	10
1	Alarm: Thyratron heater voltage falls below lower limit	10
2	Alarm: Thyratron reservoir voltage exceeds upper limit	10
3	Alarm: Thyratron reservoir voltage falls below lower limit	10
4	Alarm: Thyratron total current exceeds upper limit	10
5	Alarm: Thyratron total current falls below lower limit	10
6	Alarm: Thyratron temperature switch	10
7		10
8		11
9		11
10		11
11		11
12		11
13		11
14		11
15		11

Thyratron: Status messages

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8
1						ON	ON	Ready								
0						OFF	OFF	-								

Bit	Description	Byte
0	Status: Thyratron ready (no error and preheating time has run off)	12
1	Status: Thyratron contacts (power supply on/off)	12
2	Status: Thyratron Preheating time running	12
3		12
4		12
5		12
6		12
7		12
8		13
9		13
10		13
11		13
12		13
13		13
14		13
15		13

Klystron: Analog values

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8

Description	Signal Range	Value Range	Byte
Heater Voltage	0..270V	0..270	14..15
Heater Current	0..6A	0..6	16..17
Body Water Input Temperature	0..100°C	0..100	18..19
Body Water Output Temperature	0..100°C	0..100	20..21
Body Water Flow	0..10l/min	0..100	22..23
Dissipated Power	0..5000kW	0..5000	24..25
Oil Temperature	0..100°C	0..100	26..27
Timer Preheating 100% (minutes)	0..15min	0..15	28..29
Timer Preheating 100% (seconds)	0..60s	0..60	30..31

Remark: All values are integer values.

Example: Heater Voltage = 7.5V => Value = 75₁₀

Klystron: Interlock messages

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8
1	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM				ALARM	ALARM	ALARM	ALARM	ALARM
0	OK	OK	OK	OK	OK	OK	OK	OK				OK	OK	OK	OK	OK

Bit	Description	Byte
0	Alarm: Klystron heater voltage exceeds upper limit	32
1	Alarm: Klystron heater voltage falls below lower limit	32
2	Alarm: Klystron heater current exceeds upper limit	32
3	Alarm: Klystron heater current falls below lower limit	32
4	Alarm: Klystron Preheating Error	32
5	Alarm: Klystron vacuum warning	32
6	Alarm: Klystron tank oil level	32
7	Alarm: Klystron dissipated power error	32
8	Alarm: Klystron tank temperature	33
9	Alarm: Klystron body water flow	33
10	Alarm: Klystron collector water	33
11	Alarm: max. klystron voltage (pulse voltage)	33
12	Alarm: max. klystron current (pulse current)	33
13	Alarm: Klystron vacuum	33
14	Alarm: Klystron body water input temperature	33
15	Alarm: Klystron body water output temperature	33

Klystron: Status messages

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8
1				ON	ON	ON	ON	Ready								
0				OFF	OFF	OFF	OFF									

Bit	Description	Byte
0	Status: Klystron ready (no errors, preheating time has run off, heater voltage 100%)	34
1	Status: Klystron ON/OFF	34
2	Status: Klystron Timer 100% is running	34
3	Status: Klystron Heater voltage 80%	34
4	Status: Klystron Heater voltage 100%	34
5		34
6		34
7		34
8		35
9		35
10		35
11		35
12		35
13		35
14		35
15		35

Focus: Analog values

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8

Description	Signal Range	Value Range	Byte
Magnet Voltage Coil 1	0..132V	0..1320	36..37
Magnet Current Coil 1	0..50A	0..500	38..39
Magnet Voltage Coil 2	0..132V	0..1320	40..41
Magnet Current Coil 2	0..50A	0..500	42..43
Magnet Voltage Coil 3	0..132V	0..1320	44..45
Magnet Current Coil 3	0..50A	0..500	46..47

Remark: All values are integer values.

Example: Heater Voltage = 7.5V => Value = 75₁₀

Focus: Interlock and status messages

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8
1	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM		ALARM	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM
0	OK	OK	OK	OK	OK	OK	OK	OK		OK	OK	OK	OK	OK	OK	OK

Bit	Description	Byte
0	Alarm: Focus coil 1 voltage exceeds upper limit	48
1	Alarm: Focus coil 1 voltage falls below lower limit	48
2	Alarm: Focus coil 1 current exceeds upper limit	48
3	Alarm: Focus coil 1 current falls below lower limit	48
4	Alarm: Focus coil 2 voltage exceeds upper limit	48
5	Alarm: Focus coil 2 voltage falls below lower limit	48
6	Alarm: Focus coil 2 current exceeds upper limit	48
7	Alarm: Focus coil 2 current falls below lower limit	48
8	Alarm: Focus coil 3 voltage exceeds upper limit	49
9	Alarm: Focus coil 3 voltage falls below lower limit	49
10	Alarm: Focus coil 3 current exceeds upper limit	49
11	Alarm: Focus coil 3 current falls below lower limit	49
12	Alarm: Focus magnet water flow	49
13	Alarm Focus magnet temperature	49
14	Alarm: Focus magnet short-circuit to ground	49
15		49

Focus: Interlock and status messages

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8
1							ON	ready								
0							OFF									

Bit	Description	Byte
0	Status: Focus ready (no error and ON)	50
1	Status: Focus ON/OFF	50
2		50
3		50
4		50
5		50
6		50
7		50
8		51
9		51
10		51
11		51
12		51
13		51
14		51
15		51

Premagnetisation Bias Transformer: Analog values

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8

Description	Signal Range	Value Range	Byte
Magnet Voltage	0..70V	0..700	52..53
Magnet Current	0..20A	0..200	54..55

Remark: All values are integer values.
 Example: Heater Voltage = 7.5V => Value = 75₁₀

Premagnetisation: Interlock messages

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8
1		ALARM	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM								
0		OK	OK	OK	OK	OK	OK	OK								

Bit	Description	Byte
0	Alarm: Premagnetisation voltage exceeds upper limit	56
1	Alarm: Premagnetisation voltage falls below lower limit	56
2	Alarm: Premagnetisation current exceeds upper limit	56
3	Alarm: Premagnetisation current falls below lower limit	56
4		56
5		56
6		56
7	Alarm: HV-Cable not connected	56
8		57
9		57
10		57
11		57
12		57
13		57
14		57
15		57

Premagnetisation: Interlock and status messages

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8
1							ON	Ready							ON	Ready
0							OFF	-							OFF	-

Bit	Description	Byte
0	Status: Premagnetisation ready (no error and ON)	58
1	Status: Premagnetisation ON/OFF	58
2		58
3		58
4		58
5		58
6		58
7		58
8		59
9		59
10		59
11		59
12		59
13		59
14		59
15		59

Vacuum (external): Interlock messages

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8
1	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM			ALARM	ALARM
0	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK			OK	OK

Bit	Description	Byte
0	Alarm: Vacuum waveguide 1	60
1	Alarm: Vacuum waveguide 2	60
2	Alarm: Vacuum waveguide 3	60
3	Alarm: Vacuum waveguide 4	60
4	Alarm: Vacuum waveguide 5	60
5	Alarm: Vacuum waveguide 6	60
6	Alarm: Vacuum waveguide 7	60
7	Alarm: Vacuum waveguide 8	60
8	Alarm: VSWR interlock 1	61
9	Alarm: VSWR interlock 2	61
10		61
11		61
12	Alarm: Vacuum Acc 1	61
13	Alarm: Vacuum Acc 2	61
14	Alarm: Water Acc 1	61
15	Alarm: Water Acc 2	61

Interlocks (external): Interlock messages

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8
1	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM								
0	OK	OK	OK	OK	OK	OK	OK	OK								

Bit	Description	Byte
0	Interlock 1A	62
1	Interlock 1B	62
2	Interlock 2A	62
3	Interlock 2B	62
4	Interlock 3A	62
5	Interlock 3B	62
6	Interlock 4A	62
7	Interlock 4B	62
8		63
9		63
10		63
11		63
12		63
13		63
14		63
15		63

End of line clipper: Interlock messages

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8
1							ALARM	ALARM								
0							OK	OK								

Bit	Description	Byte
0	Alarm: End of line clipper 1	64
1	Alarm: End of line clipper 2	64
2	Alarm: End of line clipper Error	64
3		64
4		64
5		64
6		64
7		64
8		65
9		65
10		65
11		65
12		65
13		65
14		65
15		65

End of line clipper: Analog values

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8

Description	Signal Range	Value Range	Byte
End of line clipper counter	0..100	0..100	66..67

Remark: All values are integer values.
 Example: Heater Voltage = 7.5V => Value = 75₁₀

HVPS: Analog values

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8

Description	Signal Range	Value Range	Byte
Charging voltage	0..50.0kV	0..500	68..69
Water temperature	0..100.0°C	0..1000	70..71

Remark: All values are integer values.

Example: Heater Voltage = 7.5V => Value = 75₁₀

HVPS: Interlock messages

Bit	LSByte								MSByte							
	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8
1					ALARM	ALARM	ALARM	ALARM								
0					OK	OK	OK	OK								

Bit	Description	Byte
0	Alarm: HVPS internal interlock	72
1	Alarm: HVPS line	72
2	Alarm: HVPS overload	72
3	Alarm: HVPS temperature	72
4	Alarm: HVPS water temperature error	72
5	Alarm: HVPS overvoltage protection	72
6	Alarm: HVPS water flow	72
7	Alarm: HVPS max. voltage reached (fixed trip level on MAXVOLT)	72
8		73
9		73
10		73
11		73
12		73
13		73
14		73
15		73

HVPS: Status messages

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8
1						Statur	Statur	Statur								
0																

Bit	Description	Byte
0	Status: HVPS ON/OFF	74
1	Status: HVPS ready (after 15s: HVPS is switched on and shows no error)	74
2	Status: High voltage ON/OFF	74
3		74
4		74
5		74
6		74
7		74
8		75
9		75
10		75
11		75
12		75
13		75
14		75
15		75

Cabinets and Safety Systems: Interlock messages

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8
1	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM	ALARM								
0	OK	OK	OK	OK	OK	OK	OK	OK								

Bit	Description	Byte
0	Alarm: Ground switches	76
1	Alarm: Doors PFN	76
2	Alarm: Ground Rods	76
3	Alarm: Personnel safety system 1	76
4	Alarm: Personnel safety system 2	76
5	Alarm: Cooling Unit Error 1	76
6	Alarm: Cooling Unit Error 1	76
7	Alarm: Main Contactor	76
8	Alarm: Emergency Off	77
9	Alarm: Circuit Breaker	77
10	Alarm: Smoke Detection Error	77
11		77
12		77
13		77
14		77
15		77

Cabinets and Safety Systems: Status messages

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8
1	Status	Status	Status	Status	Status	Status	Status	Status								Status
0																

Bit	Description	Byte
0	Status: Local/Remote (false/true)	78
1	Status: Cabinet Doors	78
2	Status: Emergency Off System	78
3	Status: Main Contactor	78
4	Status: Signal Light green (on = Ground switches are closed!)	78
5	Status: Signal Light yellow (on = Ground switches are open!)	78
6	Status: Signal Light red (on = THT100 & Trigger Relay are on; Trigger enabled)	78
7	Status: Ground Rods	78
8	Status: Ground Switches	79
9	Status: Personnel Safety System 1	79
10	Status: Personnel Safety System 1	79
11		79
12		79
13		79
14		79
15		79

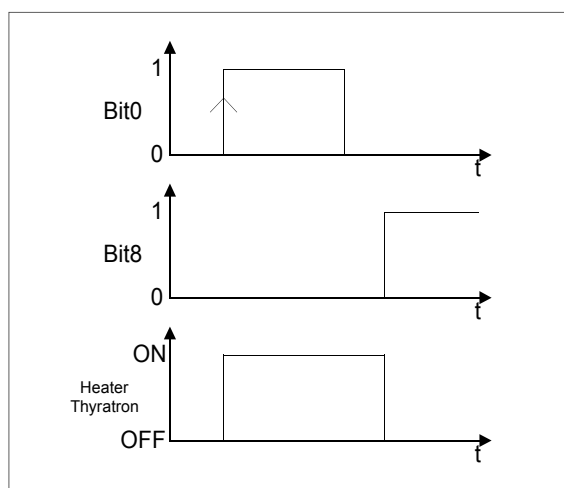
Commands from remote control system: ON/OFF-Commands

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8
1																
0																

Bit	Description	Byte
0	ON: Heater Thyatron	0
1	ON: Heater Klytron 80% (Start of Timer 80%)	0
2	ON: Heater Klystron 100% (Start of Timer 100%)	0
3	ON: Focus power supply	0
4	ON: Premagnetisation power supply	0
5	ON: HVPS	0
6	ON: Charge PFN	0
7	ON: Reset	0
8	OFF: Heater Thyatron	1
9	OFF: Heater Klytron 80%	1
10	OFF: Heater Klystron 100%	1
11	OFF: Focus power supply	1
12	OFF: Premagnetisation power supply	1
13	OFF: HVPS	1
14	OFF: Charge PFN	1
15	OFF: Reset	1

Reset-Command: Only the rising edge of the ON-Signal is important.
Switch off Reset after setting reset.

Example: Heater Thyatron
Switch ON with rising edge of Bit0 (0 => 1)
OFF while Bit8=1



HVPS: Set value charging voltage

	LSByte								MSByte							
Bit	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8

Description	Signal Range	Value Range	Byte
set value charging voltage PFN	0..50kV	0..500	2..3

Remark: All values are integer values.

Example: set value charging voltage = 45.12kV => Value = 4512₁₀

ChangeLog:

Revision 2.0 => Revision 2.1:

Page 10: Value Range extended to 1300 (132.0V) and 500 (50.0V). 29.04.2005

Page 8: Bit 7 (32.7)

Alarm: Klystron dissipated power error instead of

Alarm: Klystron tank water

29.04.2005

Bits 14..15 (33.6..33.7)

Alarm: Klystron body water input temperature

29.04.2005

Alarm: Klystron body water output temperature

29.04.2005

Bit 4 (32.4)

Alarm: Klystron Preheating Error instead of

12.04.2005

Alarm: Klystron Alarm: Klystron Preheating time 100% has not yet run off

Page 13: Value range extended to 700 (70.0V) and 200 (20.0A).

29.04.2005

Page 14: Bit 7 (56.7)

Alarm: HV-Cable not connected instead of

Alarm: Premagnetisation magnet short-circuit to ground

29.04.2005

Page 14: Bits4..6 (56.4..56.7) not used!!!

Alarm: Premagnetisation magnet water

Alarm: Premagnetisation magnet temperature

Alarm: Premagnetisation magnet short-circuit to ground

29.04.2005

Page 21: Bits 4..6 (72.4..72.6) new!!!

Alarm: HVPS water temperature error

Alarm: HVPS overvoltage protection

Alarm: HVPS water flow

29.04.2005

Page 25: Bit 7 (0.7)

Reset Command

Page 23: Bit 8 (77.0)

Alarm: Emergency Off

09.05.2005

Page 23: Bit 9 (77.1)

Alarm: Circuit Breaker

09.05.2005

Page 23: Bit 10 (77.2)

Alarm: Smoke Detection Error

09.05.2005

Page 16: Bit 8..9 (61.0..61.1)

Alarm: SWR interlock 1

09.05.2005

Alarm: SWR interlock 2

09.05.2005

Page 18: Bit 2 (64.2) new!!!

Alarm: End of line clipper Error

11.05.2005

Page 21: Bit 7 (72.7) new!!!

Alarm: HVPS max. voltage reached

13.05.2005