### station type

#IME?

016 @



Copyright: Andreja Kolenc, Bojan Černač

Project name: amws\_solar\_radiation\_group

Author: Andreja Kolenc, Bojan Černač

Description: data format specifications

Revision: 3000.0.2

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016 @

amws @

solar_radiation_group	[SMP11]					
	station type	physical properties	interface	measuring physical properties	assembling	sensor type
	#IME? 016 @		12	04	05	008
		physical properties	interface	measuring physical properties	assembling	sensor type
		000 nc [DEF]	00 nc [DEF]	00 nc [DEF]	00 nc [DEF]	000 [DEF]
			01 VI (voltage_input)	01 global_solar_radiation	01 mast1_10m	001 CPM11-G
			02 CI (420mA)	02 diffusse_solar_radiation	02 mast_120cm	002 CPM11-D
		0043 solar_radiation_group	03 PC (pulse_count)	03 smp11_body_temperature	03 mast_150cm	003 SPN1
			04 RM (resist_measure)	04 smp11_supply_voltage	04 mast_160cm	004 UVS-B-T
			05 FM (frequency_measureme		05 mast_200cm	005 SONI e3
			06 Digital Input	06	06 mast_230cm	006 CSD3
			07 Digital Output	07	07	007 SD6
			08	08	08	008 SMP11-G
			09	09	09	009 SMP11-D
			10 SDI12	10	10	010
			11 rs232	11		011
			12 rs485	12		
			14 ETH (ethernet)	14		
			15 WL (wireless)	15		990 test1
			16 gray code	16		991 test2
			17 bin code	17		992 test3
			18 bcd code	18		993 test4
			19 1_wireBus	19		994 test5
			20 spi_bus	20		
			21 I2C_bus	21		
			22	22		
			<i></i>	23		
				20		
				98 SN		
	016 @		. 12	. 04	. 05	. 008
	amws @	solar_radiation_group	. rs485	. smp11_supply_voltage	. mast_200cm	. SMP11-G

CPCODE			1]											
				Pxxx	PP	INTF	MPP	<i>ASMB</i>	ST	MF	SN	MR	U	RE
								mast_20						
016 @ <mark>0043</mark> . 12					solar_radiation_group		smp11_supply_voltage	0cm	SMP11-0	G				
channel					I .		m channel property_code					meta data		
016 @ <mark>0043</mark> . 12				P3300	solar_radiation_group		global_solar_radiation					-4004000	W.m-2	0.
016 @ <mark>0043</mark> . 12				I3101	solar_radiation_group		smp11_body_temperature	nast_200c					st. C	0.
016 @ <mark>0043</mark> . 12				13102	solar_radiation_group		smp11_supply_voltage	nast_200c					Vdc	0.
016 @ <mark>0043</mark> . 12	. 05 . (	05 .	800	S3300	solar_radiation_group	rs486	smp11_status	nast_200c	SMP11-0	G www.ki	ppzonen.	003FC	-	1
				SN										
016 @ 0043 . 12				P3303	solar_radiation_group		diffusse_solar_radiation					-4004000	W.m-2	0.
016 @ 0043 . 12				I3101	solar_radiation_group		smp11_body_temperature	nast_200c					st. C	0.
016 @ 0043 . 12				I3102	solar_radiation_group		smp11_supply_voltage	nast_200c					Vdc	0.
016 @ 0043 . 12	. 05 . 0	05 .	009	S3303	solar_radiation_group	rs486	smp11_status	nast_200c	SMP11-[	) www.k	ppzonen.o	com/		
				SN										
channel	property	y_coc	de		C	lecode fro	m channel property_code					meta data		

solar_radiation_group	[SMP11]
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### channel property:

			Ts =	10	[sec]																		
	Channel		_X15	_X14	_X13	_X12	_X11	_X10	_X9	_X8	_X7	_X6	_X5	_X4	_X3	_X2	_X1	_X0	Ts	PAR_3	PAR_2	PAR_1	PAR_0
ch00	016@0043.12.01.05.008	P3300	input	nc	nc	50	input	nc	nc	4000	-400	4000	-400	nc	nc	-20  70	4000	-400	10	0	0	1	0
ch01	016@0043.12.03.05.008	13101	input	nc	nc	3	input	nc	nc	80	-40	80	-40	nc	nc	-20  70	80	-40	10	0	0	1	0
ch02	016@0043.12.04.05.008	13102	input	nc	nc	nc	input	nc	nc	30	5	30	5	nc	nc	-20  70	30	5	10	0	0	1	0
	016@0043.12.05.05.008																			0		1	0

	Channel	_X15	_X14	_X13	_X12	_X11	_X10	_X9	_X8	_X7	_X6	_X5	_X4	_X3	_X2	_X1	_X0	Ts	PAR	_3 PAR_	2 PAR_1 F	PAR_0
		D1F	D14	D12	D10	D11	D10	DO	DO	D7	D/	DE	D4	Da	Da	D1	DO	1				
	validity register:	D15	D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0				_	
_V0	[MIN=x][MAX=x][DEF=0]	D0		_X0	low_va	lue					_pval <	<_V0						set bi	it	D0		
_V1	[MIN=x][MAX=x][DEF=100.0]	D1		_X1	high_v	alue					_pval >	>_V1						set b	it	D1		
_V2	[DEF=-10.0][DEF=70.0]	D2		_X2	out_of	_temp					V_stC=	="20" N	//AX_st	C="40"	MIN_s	tC="-10		set bi	it	D2		
_V3	nc	D3		_X3	X3						reserve	ed								D3	1	
_V4	nc	D4		_X4	X4						reserve	ed								D4		
_V5	[MIN=x][MAX=x][DEF=0]	D5		_X5	sensor	_range	_min				_pval <	<_V4					•	set bi	t	D5		
_V6	[MIN=x][MAX=x][DEF=100.0]	D6		_X6	sensor	_range	_max				_pval >	>_V5					<b>•</b>	set bi	it	D6		
_V7	[MIN=x][MAX=x][DEF=0]	D7		_X7	logical	_senso	r_range	e_min			_pval <	<_V6					<b>•</b>	set bi	it	D7		
_V8	[MIN=x][MAX=x][DEF=100.0]	D8		_X8	logical	_senso	r_range	e_max			_pval >	>_V7					<b>•</b>	set b	it	D8		
_V9	nc	D9		_X9	X9						reserve	ed								D9		
_V10	input var	D10		_X10	comm	fail					commf	ail					<b>•</b>	set bi	it	D10		
_V11	input var	D11		_X11	X11						reserve	ed								D11		
_V12	[MIN=x][MAX=x][DEF=1]	D12		_X12	step_v	alue					pval(i)	pva	l(i-1) >	_V11			<b>•</b>	set bi	it	D12		
_V13	nc	D13		_X13	no_flov	N					reserve	ed								D13	7	
_V14	nc	D14		_X14	X14						reserve	ed								D14		
_V15	[true,false] [DEF=false]	D15		_X15	servis						door is	open					<b>•</b>	set bi	it	D15		
	_rval											_pva	I[10da	ays]			_	_pval	Strir	ıg 🕨		
												_pva	lidity	10 da	ıys]			_pv	alidi	ty 🕨		

solar\_radiation\_group [SMP11]

channel property:

			Tp=	10	[min]													
	Channel		_Y15	_Y14	_Y13	_Y12	_Y11	_Y10	_Y9	_Y8	_Y7	_Y6	_Y5	_Y4	_Y3	_Y2	_Y1	_Y0
ch00	016@0043.12.01.05.008	P3300	input	nc	nc	50	input	nc	nc	4000	-400	4000	-400	nc	nc	-20  70	4000	-400
ch01	016@0043.12.03.05.008	<b>I3101</b>	input	nc	nc	3	input	nc	nc	80	-40	80	-40	nc	nc	-20  70	80	-40
ch02	016@0043.12.04.05.008	I3102	input	nc	nc	nc	input	nc	nc	30	5	30	5	nc	nc	-20  70	30	5
ch03	016@0043.12.05.05.008	S3300	input	nc	nc	nc	input	nc	nc	03FC	0	03FC	0	nc	nc	-20  70	03FC	0

	Channel	_Y15	_Y14	_Y13	_Y12	_Y11	_Y10	_Y9	_Y8	_Y7	_Y6	_Y5	_Y4	_Y3	_Y2	_Y1	_Y0
	validity register:	D15	D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0
_V0	[MIN=0][MAX=x][DEF=0]	D0	_Y0	low_value	)			_avr@Tp	<_V0					<b></b>	set bit	D0	
_V1	[MIN=0][MAX=x][DEF=100.0]	D1	_Y1	high_valu	е			_avr@Tp	>_V1					<b>&gt;</b>	set bit	D1	
_V2	[MIN=-10.0][MAX=70.0][DEF=20.0]	D2	_Y2	out_of_te	mp			c_Y2 &	_Y11==of	f)				<b>•</b>	set bit	D2	
_V3	nc	D3	_Y3	Y3				reserevd								D3	
_V4	nc	D4	_Y4	Y4				reserved								D4	
_V5	[MIN=x][MAX=x][DEF=0]	D5	_Y5	sensor_ra	ange_min			_min@T	o < _V5					<b>•</b>	set bit	D5	
_V6	[MIN=x][MAX=x][DEF=100.0]	D6	_Y6	sensor_ra	ange_max	(		_max@T	p >_V6					<b>•</b>	set bit	D6	
_V7	[MIN=x][MAX=x][DEF=0]	D7	_Y7	logical_se	ensor_ran	ge_min		_min@T <sub>I</sub>	o < _V7					<b>&gt;</b>	set bit	D7	
_V8	[MIN=x][MAX=x][DEF=100.0]	D8	_Y8	logical_se	ensor_ran	ge_max		_max@T	p >_V8					<b>&gt;</b>	set bit	D8	
_V9	[MIN=x][MAX=x][DEF=100.0]	D9	_Y9	max_min	_absolute	_deviatio	n	(_max@	Tpavr@	Tp >_V8	) V ( _avr	@Tpm	nin@Tp >_	<b>•</b>	set bit	D9	
_V10	nc	D10	_Y10	max-avg-	min			(_max@	Гр < _avr(	@Tp) V ( _	_avr@Tp	< _min@	(Tp)	<b>•</b>	set bit	D10	
_V11	[MIN=0][MAX=100][DEF=75%]	D11	_Y11	aq_ratio				_aq_ratio	@Tp < _\	/11				<b>•</b>	set bit	D11	
_V12	[MIN=x][MAX=x][DEF=0]	D12	_Y12	step_valu	е			(_max@	Γpmin(	@Tp) >_Y	12 & (_Y1	11==true)		<b>&gt;</b>	set bit	D12	
_V13	nc	D13	_Y13	Y13				reserved								D13	
_V14	nc	D14	_Y14					reserved								D14	
_V15	[true,false] [DEF=false]	D15	_Y15	servis				door is o	oen					<b>•</b>	set bit	D15	
	_pval		_pval[1	_											_pva	alString	
	rvalidity		validit	y[180m	in]												_pvalS

ch03 016@0043.12.05.05.008 **\$3300** \_statusSMP11@Tp

						erro	or messa	ges							inf	o messa	ges	]			
		_S15	_S14	_S13	_S12	_S11	_S10	_S9	_S8	_S7	_S6	_S5	_S4	_S3	_S2	_S1	_S0				
																		,			
	validity register:	D15	D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0				
																		_			
_S0		D0	- c_S0															<b>&gt;</b> :	set bit	D0	
_S1		D1	- c_S1															<b>&gt;</b> :	set bit	D1	
_S2	IO_VOID_DATA_FLAG	D2	- c_S2		2				SIGNA					EMPE	RATUR	E TOC	LOW	( <b>&gt;</b> :	set bit	D2	
_S3	IO_OVERFLOW_ERROR	D3	- c_S3		3			OVER	FLOW,	SIGNA	AL OUT	OF R	ANGE					<b>&gt;</b> :	set bit	D3	
_S4	IO_UNDEFLOW_ERROR	D4	- c_S4		4			UNDE	RFLOV	V SIGN	AL OU	T OF F	RANGE					<b>&gt;</b> :	set bit	D4	
_S5	IO_ERROR_FLAG	D5	- c_S5		5			GENE	RAL H	ARDW/	ARE EF	RROR	(SET IF	ONE	OF TH	E H/W	ERRO	<b>&gt;</b> \$	et bit	D5	
_S6	IO_ADC_ERROR	D6	- c_S6		6			HARD	WARE	<b>ERRO</b>	R A/D (	CONVE	ERTER					<b>&gt;</b> :	set bit	D6	
_S7	IO_DAC_ERROR	D7	- c_S7		7			HARD	WARE	<b>ERRO</b>	R D/A (	CONVE	ERTER					<b>&gt;</b> :	set bit	D7	
_S8	IO_CALIBRATION_ERROR	D8	- c_S8		8			<b>CALIB</b>	RATIO	N CHE	CKSUN	/ ERR	OR					<b>&gt;</b> :	set bit	D8	
_S9	IO_UPDATE_FAILED	D9	- c_S9		9			<b>UPDA</b>	TE CAL	LIBRAT	ION PA	ARAME	ETERS	<b>FAILE</b>	D			<b>→</b> :	set bit	D9	
_S10		D10	- c_S10	)														<b>→</b> :	set bit	D10	
_S11		D11	- c_S11	1														<b>&gt;</b> :	set bit	D11	
_S12		D12	- c_S12	2														<b>▶</b> :	set bit	D12	
_S13			- c_S13															<b>&gt;</b> :	set bit	D13	
_S14			- c_S14															<b>&gt;</b> :	set bit	D14	
_S15		D15	- c_S15	5														<b>•</b> :	set bit	D15	

tring **>** 

solar\_radiation\_group [SMP11]

# Processed Tp values

Tp=10min

ch00	016@0043.12.01.05.008	P3300	aqRatic	pValidity	<i>avg</i>	max	maxTime	min	<i>minTime</i>	term	stdev ps	Status
ch01	016@0043.12.03.05.008	13101	aqRatic	pValidity	avg	max	maxTime	min	<i>minTime</i>	term	stdev ps	Status
ch02	016@0043.12.04.05.008	13102	agRatic	pValidity	avg	max	maxTime	min	<i>minTime</i>	term	stdev ps	Status

channel_ID	channel property_code	channel Pxxx_parameter_code	Tp_aquisition ratio	Tp_validity	Tp_average value	Tp_maximum value	time of Tp_maximum value	Tp_minimum value	time of Tp_minimum value	Tp_terminal value	Tp_sandard deviation	Tp_sensor status
PA exan	nple											
	016@0043.12.01.05.008	P3300	100	0000	851	855	15:19	843	15:13	855	0.4	0000
	016@0043.12.03.05.008	13101	100	0000	22.3	22.3	15:19	22.3	15:13	22.3	0.1	0000
	016@0043.12.04.05.008	I3102	100	0000	15.1	15.1	15:19	15.1	15:13	15.1	0.1	0000
	_pvalString		append(_p	valString	1)						<b>•</b>	_pvalStrir

# solar\_radiation\_group

# Report format - description

Tp=10min

	data	Opis	Variables	Format
1	ch00@CPU_0:64005	Indeks kanala@cpu:port	ch_idx@cpu_idx:port	%02d@%s:%04d
2	016@0043.12.01.05.008	koda postaje@koda kanala	station_code@cpcode	%s@%s
3	P3300	Koda parametra	pcode	%s
4	100	Odstotek dobrih podatkov	aqRatio	%.0f
5	0000	veljavnost podatkov	pValidity	%04x
6	851	povprečna vrednost v polurnem intervalu	avg	%.0f
7	855	maksimalna vrednost v polurnem intervalu	max	%.0f
8	15:19	čas maksimuma	maxTime	%H:%M
9	843	minimalna vrednost v polurnem intervalu	min	%.0f
10	15:13	čas minimuma	minTime	%H:%M
11	855	terminska vrednost	term	%.0f
12	0.1	standardna deviacija	stdev	%.1f
13	0000	status podatka	pStatus	%04x

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-

\_pvalString
append(\_pvalString)