1 Structure of SC_DATA and of the Slow Control Data Banks

Length and name of the arrays in the SC_DATA data module and their names in the corresponding slow control data bank:

ZEBRA BANK	struc. in SC_DATA	Length (short int)	comment
SCBM	beam	20	sum of silicium counters
SCTG	target	20	target level
SCPC	pwc	20	
SCXD	xdc	20	not in use
SCJV	jdc_hv	150	JDC HV and currents
SCJG	jdc_gas	20	JDC gas rig
SCXT	xtal_temp	200	all temperature sensors
SCXP	xtal_ps	10	crystal power supplies
SCMG	magnet	20	magnet current
SCHD	hdc	20	test drift chamber
SCHT	hut	20	crate control in electronic hut

1.1 General Remarks

All array words are 2-bit integers (short int). The first word of each array is reserved for the length of the array, the second for the status of the subcomponent. Status = -1 indicates OK, 0 indicates that the subcomponent is 'not being supervised'. A defined integer range is reserved for each subcomponent status to specify error codes:

1 – 10	beam counter
11 – 20	target level
21 – 30	pwc
31 – 50	spare
51 – 90	jdc
91 – 100	spare
101 – 150	temperatures
151 – 160	barrel
161 – 170	magnet
171 – 180	test dc
181 – 200	crates

Please note that the numbering of the words depends on the program language. Fortran numbering goes from 1 to n, C numbering from 0 to n-1, where n is the array length. As all the slow control programs are written in C we will take word number 0 always as the first word.

1.2 Contents of the Arrays

beam[0]	array length	20
[1]	status word	-1 = OK 1 = no q from adc 2 = beam low
[2]	raw adc value	

target[0]	array length	20
[1]	status word	-1 = OK 11 = no q from adc 12 = target 'empty'
[2]	raw adc value	

pwc[0]	array length	20
[1]	status word, PWC #1	-1 = OK 21 = no q from ADCx1 22 = HV too high 23 = HV too low 24 = no q from ADCx100 25 = current high, beam on 26 = current high, beam off
[2]	status word, PWC #2	same code
[3]	HV adc value, PWC #1	
[4]	HV adc value, PWC #2	
[5]	Current adc value, PWC #1	
[6]	Current adc value, PWC #2	

xdc[0]	array length	20
[1]	status word	not in use!

jdc_hv[0]	array length	150
[1]	status, HV channel #1-16	-1 = OK 51 = no q or lam in checkstat() 52 = HV-supply off or at local mode 53 = data error in checkstat() 54 = channel failure 55 = no q or lam for set volts 56 = data error for set volts 57 = no q or lam for true volts 58 = data error true volts 60 = true volts wrong
[2]	status, HV channel #17-32	-1 = OK same error code as in [1]
[3]-[18]	set volts, channel #1-16	
[19]-[34]	set volts, channel #17-32	
[35]-[50]	true volts, channel #1-16	
[51]-[66]	true volts, channel #17-32	
[110]	status, cdi-modules	-1 = OK n = module n not readable
[111]	current warning	-1 = OK n = max current, if > 500 nA
[118]-[149]	current of channel #1-32, unit nA	

jdc_gas[0]	array length	20
[1]	status word	-1 = OK 81 = no entry in ADC channel
[2]	raw ADC value of Isobutane flow	
[3]	raw ADC value of CO_2 flow	
[4]	raw ADC value of 'mixed' flow	
[5]	spare for 4th flowmeter	
[6]	raw ADC value of pressure absolute	
[7]	raw ADC value of pressure differential	

xtal_temp[0]	length of array	200
[1]	status word	-1 = OK else regard bits of (xtal_temp[1]-100)
	XXXX XXX1 = ADC not in differential mode XXXX XX1X = ADC not converting XXXX X1XX = one ore more sensors temp too high XXXX 1XXX = one ore more sensors temp too low XXX1 XXXX = one ore more sensors too noisy XX1X XXXX = one ore more sensors disconnected	
[2]-[n+1]	ADC value of sensors #1-n (see special table)	
[n+2]-[100]	spare for more sensors	
[100+i]	status of sensor #i	-1 = OK 0 = temp too low 1 = temp too high 2 = noisy reading 3 = disconnected

xtal_ps[0]	array length	10
[1]	status word	-1 = OK 151 = no listeners on bus 152 = SRQ set after bus reset 153 = fail on serial poll 154 = fail on power supply
[2]	power supply status	set if failure occurs 0x4a = overcurrent 0x45 = overvoltage
[3]	GPIB bus status	set if failure occurs on polling. It gives an 8 bit pattern showing the status of the 5 bus management lines and the 3 handshake lines.

magnet[0]	array length	20
[1]	status word	-1 = OK 161 = no q from ADC 162 = current out of limits
[2]	raw adc value of magnet current	

hdc[0]	array length	20
[1]	status word	-1 = OK 1 = no entry in 1st TDC channel 2 = no entry in 2nd TDC channel 3 = no entry in both TDC channels 4 = no q from ADC1 5 = no q from ADC2 6 = no q from Hytech-ADC 8 = crate not there
[2]	potential voltage	
[3]	'Gitter' voltage	
[4]	drift voltage	
[5]	temperature 1 (gas in)	
[6]	temperature 2 (gas out)	
[7]	temperature 3 (chamber shell)	
[8]	pressure	
[9]	amplitude of ADC1	
[10]	amplitude of ADC2	
[11]	first drifttime	
[12]	σ of first drifttime (σ_1)	
[13]	second drifttime	
[14]	σ of second drifttime (σ_2)	
[15]	second - first drifttime	
[16]	$\sigma_2 - \sigma_1$	

hut[0]	array length	50
[1]	status word	-1 = OK 181 = one ore more crates off
[2]	crate #1-16	bit pattern, bit set = OK
[3]	crate #17-32	bit pattern, bit set = OK