SIEMENS

SIPART DR24

Serial SIPART DR24 Bus Interface
6DR2400 / 6DR2410

Operating Instructions	C73000-B7476-C135-06

Supplement to Instructions C73000-B7476-C134 and C79000-G7476-C153

Contents

SIPART, SITRANS, SIMATIC
are Siemens registered trademarks.
All other product or system names are (registered) trademarks of their respective owners and must be treated accordingly.

1   Hardware: SIPART DR24

Refer to the Instructions C73000-B7476-C134 and C79000-G7476-C153 for the installation and connections of the SES module 6DR2803-8C and the bus driver C73451-A347-B202.

Quick Reference – connection to PC-COM:

Name	DR-module Pin-No.		PC-COM	
			9 pin D-Sub Pin-No.	25 pin D-Sub Pin-No.
RxD	3	<————>	3	2
TxD	2	<————>	2	3
Gnd	7/8	<————>	5	7

2   Software: Function "SIPART DR24 bus interface"

2.1   Possible applications

The serial interface (SES) 6DR2803-8C and the bus driver C73451-A347-B202 can be used with the SIPART DR24, 6DR2400/6DR2410 for point-to-point or bus connections to personal computers, automation systems, control systems or process computers.

The protocol procedure described below and the data representation enable fast transfer of data between the devices on the one hand and also ensure high transmission reliability on the other (Hamming distance $d = 4$ for the data section).

2.2   General

Alternatively:

- SIPART DR24 bus interface
  - V.24/V.28 signals: Txd (103), Rxd (104) and Ground (102) (designations to CCITT V.24)
  - Up to 32 controllers possible on one bus (a bus driver is required with 4 or more controllers or long lines)
  - Transmission is also possible with TTY signals when using the bus driver
  - Half-duplex mode
  - (Full-duplex mode) – 300, 600, 1200, 2400, 4800, 9600 baud
  - Asynchronous mode
- RS485-bus interface

2.3   Software

2.3.1   Transmission procedure

- Character frame
  - 10-bit frame (start bit; 7 data bits of an ASCII character, starting with the LSB; parity bit; stop bit); rest position = 1 = High (TTL) = -15 to -5 or -3 V (V.28) = 20 mA (TTY)
  - Parity (cross-check sum) can be set to even or odd.

- Procedure
  - To DIN 66258, Part 1, configuration A or B (can be set); either with or without longitudinal redundancy check (Lrc) before (as 2 ASCII characters) or after the end-of-message character ETX
  - Longitudinal redundancy check possible either normal or complemented
  - Master/slave arrangement: the controller is passive, it only reacts to requests
  - See "Safety features, error handling" for procedure in event of fault.

- Protocol
  - 4 different time-optimized messages to the controller:
    - ▶ Command to a controller
    - ▶ Controller scan
    - ▶ Abbreviated scan (repetition of last valid scan)
    - ▶ Controller alarm scan

● Character conventions

STX	02H	
StNo	40H to 5FH	Station number, 32 possible addresses from 00 to 31
StNoA	60H to 7FH	Station number with alarm scan; StNoA = StNo + 20H
StNoA	60H to 7FH	Station number with alarm scan; StNoA = StNo + 20H to detect a supply voltage failure on the controller; reset to StNo following scan
StNoB	20H to 3FH	Station number in case of unaccepted message; StNoB: = StNo - 20H for identification of - Commands on disabled pages - No enable or interrupted enable for parameterization or structuring
N0	40H to 5FH	Number of n0 bytes transmitted by computer (min. 1 = 40H, max. 32 = 5FH)
N1	60H to 7FH	Number of n1 bytes to be transmitted by the controller (min. 1, max. 32) N1 = N0 + 20H
HiAd.0	40H to 5FH, 60H to 7FH	High adress
LoAd.1	ASCII 0 to 9, A to F	High nibble (30H to 39H, 41H to 46H) of 1st transmitted byte
LoAd.2	ASCII 0 to 9, A to F	Low nibble (30H to 39H, 41H to 46H) of 1st transmitted byte
Data byte	2*ASCII 0 to 9, A to F (30Hto39H,41Hto46H)	8 bit as 2 hexadecimal characters (sequence: high nibble, low nibble)
STN STA	40H to 7FH 40H to 7FH	Current statuses (new values) Statuses, old values which have occurred since the last alarm scan and which have been obtained by bit-by-bit ORing of StA and StN once per controller cycle. StA is set to 00H following an alarm scan.
Lrc	7 Bit	Longitudinal redundancy check, block check character: obtained by EXORing all 7-bit characters excluding STX, including ETX; the parity bit for Lrc is formed from the 7 bit of the Lrc
Lrc.1	ASCII 0 to 7	High nibble of Lrc, (MSB = 0)
Lrc.2	ASCII 0 to 9, A to F	Low nibble of Lrc (in this case longitudinal redundancy check excluding ETX)
#	23H	Code to repeat the last valid request
ETX	03H	

● Block conventions

(Representation in chronological order from left to right, data transmitted by computer in 1st line, transmitted by the controller in 2nd line; examples according to block structure type 2).

*Command to a controller**

.. STX,StNr,N0,HiAd.0,LoAd.1,LoAd.2,2*n0 characters (data),ETX,Lrc ....
.... STX,StNr or StNrB,ETX,Lrc ....

*Controller scan **

.. STX,StNo,N1,HiAd.0,LoAd.1,LoAd.2,ETX,Lrc .... Next message ....
.... STX,StNo,2*n1 characters (data),ETX,Lrc ....

Abbreviated controller scan (repetition of last valid scan, e.g. for cyclic image updating):*

.. STX,StNo,#,ETX,Lrc .... Next message ....
.... STX,StNo,2*n1 characters (data),ETX,Lrc ....

*Controller alarm scan **

.. STX,StNoA,ETX,Lrc .... Next message ....
.... STX,StNo or StNoA ,STN,STA,ETX,Lrc ....

* The commas are not part of the message

2.3.2   Safety features, error handling

Error monitoring of the controller always refers to the receiver side of the controller; the transmitter side must be monitored by corresponding functions from the computer. Monitoring is used for the following task:

- Faulty data must be prevented from being transferred to the controller

- The controller must return to a defined initial status following transmission errors in order to be able to receive new messages

● Time-out A: message interval (CB) monitoring

The monitoring time can be adjusted between 1 and 30 s or switched off by means of the offline parameter SES Cbt. It is only effective in computer mode via the serial interface and is used to check whether computer readiness CB = 1 is still present. If messages do not follow in succession within the monitoring time, a computer failure is assumed and the CB signal of the serial interface is set to zero, i.e. the associated controller starts in stand-alone mode. Time-out A is retriggered by each complete, correctly received message, even if this message does not contain the CB signal. The CB signal of the serial interface is signalled in the data source SbE1.

If computer failure has been detected, the message must contain CB in order to switch back to computer mode.

● Time-out B: character interval monitoring

Monitoring time = 1 or 2 controller cycles (depending on when the last character was received with respect to the controller cycle). Once the controller has received an STX and its station address as the start-of-message, all further characters must occur in succession according to the monitoring time interval. A computer failure is assumed if the monitoring time is exceeded, the character position of the controller is reset to the original status. All characters received up to this point are ignored. This ensures that the controller is ready to receive new messages following a temporary computer failure even if the failure occurred during a message.

● Lrc-monitoring

The longitudinal redundancy check Lrc is expected at the last position of the received message if structured accordingly. This is compared with the internal Lrc value generated during reception. If an error is recognized, received data will be ignored.

The Lrc is generated by EXORing all characters following the STX up to the last character to be transmitted before Lrc. Comparison with the received Lrc by means of the EXOR function must result in 00, or 7FH in the case of complementary Lrc formation. The Lrc results in a Hamming distance $d = 4$, without Lrc $d = 2$.

● Protection from power failure of values for parameterization and structuring transmitted via the interface

The values are protected from power failure if the computer transmits the corresponding characters for end of parameterization/structuring at the end of the transmission and if the enable conditions for receiving data have not been changed in the meantime. The data are stored in a non-volatile EEPROM. The non-volatile storage is guaranteed after a maximum of 30 s if an error has not been signalled.

● Functional sequence

Receive

The controller receives the characters in an interrupt routine. The individual parities are checked for vertical parity during this interrupt and the horizontal parity is continuously generated once the station number has been received. The address and length are stored and a receiver buffer reserved according to the length. The data 1 to n0 are entered into the receiver buffer. The data are transferred at the end of the cycle from the receiver buffer to their destinations determined by the addresses HiAd, LoAd following EXT, fault-free Lrc and fault-free procedure, and are then available as input values for the new cycle. The current results (output values) are calculated from these input values in the new cycle.

Transmit

The controller starts to transmit the data requested by the controller immediately after correctly receiving the query message. An auxiliary memory in the main memory RAM is used as a transmitter buffer for this purpose and is loaded once with the current process image during the controller cycle (but not when transmitting is taking place). The initial address of the data to be transmitted is determined by HiAd, LoAd and the number by n1. Transmission takes place sequentially from an interrupt routine and the vertical parity, bit and horizontal parity are generated.

Only the specified address ranges can be accessed via the SES. If other pages are addressed, an acknowledgement is made with a station number reduced by 20H. The messages are ignored.

- Parameterization/structuring via the SES (write → into the controller)

  Parameterization and structuring must be initiated via ST1 (start) (see page 37), followed by the messages with the parameter values or structures, and then terminated by ST1 (end). Either parameterization or structuring is possible. The two functions cannot be selected at the same time. The function first requested using ST1 (start) is carried out. The operational statuses parameterization and structuring are displayed in the process level on w, x via the SES as a warning. The following appears: w:onPA; x:SES or w:StrU; x:SES. Parameterization/ structuring on the front module has priority.

- Parameterization via the SES (write → into the controller)

  1. The computer reads ST2 [*] :

Bit	ST2	
7	X	BLS [**]
6	X	BLPS [**]
5	0	–
4	X	MEM buSY [**]
3	X	onPA SES [**]
2	0	StrU SES
1	0	Par. via Front module
0	0	Struc. via Front module

Enable conditions for parameterization via the SES

  [*]   The bits of the STATi are represented in positive logic, i.e. the bits = 1 when they occur
  [**] x = don't care

  2. If the enable conditions are satisfied, the computer transmits ST1,Bit7 = 1 (start parameterization).

  3. The controller receives ST1,Bit7 = 1 in an interrupt routine and subsequently tests the enable conditions in the basic cycle. If the conditions are satisfied, onPA/SES is displayed on w/x. The keys T2/T3 and T6/T7 have no effect. If the enable conditions are satisfied, the following parameter messages are each acknowledged with the addressed station number.
     If they are not satisfied, the message acknowledgement is made with the station number StNoB=StNo-20H and the parameter messages are ignored.

  4. If parameter messages are transmitted without ST1,Bit7 = 1 (start parameterization) having been transmitted previously a station number reduced by 20H is also transmitted and the messages are ignored.

  5. Once ST1,Bit7 = 1 has been transmitted, the computer can transmit any number of parameter messages.

  6. The controller stores each message for the destination into the RAM. The parameters are immediately effective in the process.

  7. Whilst the parameter values are being transferred, any additional messages (except structuring messages) can be exchanged between the computer and the controller.

  8. If the enable conditions change during transfer of the parameters (for example by parameterization on the front module), the acknowledgement is also made with the station number reduced by 20H and the message is not transferred to the RAM. Previously executed parameter messages have been transferred to the RAM and are therefore effective. They cannot be transferred to the EEPROM via ST1,Bit6 = 1 (end of parameterization), however. ST1,Bit7 = 1 (start parameterization) must be transmitted again for further parameter messages.

  9. At the end of parameterization, the computer transmits ST1,Bit6 = 1 (end parameterization).

  10. The controller receives "End parameterization" but only accepts it if "Start parameterization" was previously present and the enable conditions have not changed in the meantime, and transfers the parameters from the RAM to the EEPROM (user memory).

11. The online parameters are stored in the RAM and are also effective if the computer does not transmit "End parameterization", but they are not stored in the non-volatile EEPROM. If a bus fault is present, the parameters can be transferred from the RAM to the EEPROM by switching to the parameterization level using the front module when the parameterization level is left again.

- Structuring via the SES (write → into the controller)

1. The computer reads ST2:

Bit	ST2	
7	X	BLS [*]
6	X	BLPS [*]
5	0	–
4	X	MEM buSY [*]
3	0	onPA SES
2	X	StrU SES [*]
1	0	Par. via Front module
0	0	Struc. via Front module

Enable condition for structuring via the SES

[*]   X = don't care

2. If the enable conditions are satisfied, the computer transmits ST1,Bit5 = 1 (start structuring).

3. The controller receives ST1,Bit5 in an interrupt routine and subsequently tests the enable conditions in the basic cycle.

   If the conditions are satisfied, the controller switches to offline mode, and StrU/SES is displayed on w/x. The LEDs and the y display are switched off, and the analog and binary outputs are blocked.
   The following structuring messages are each acknowledged with the addressed station number.
   If the conditions are not satisfied, the message acknowledgement is made with a station number reduced by 20H and the messages are ignored.

4. If the structuring messages are transmitted without "Start structuring" having been transmitted previously, they are also acknowledged with a station number reduced by 20H. The messages are ignored.

5. The computer can transmit any number of structuring messages once ST1,Bit5 = 1 (start structuring) has been transmitted.

6. The controller transfers each message for the destination to the RAM. The modified structures are not yet effective because of the offline mode.

7. The structuring switch SES and the offline parameters bdr to Cbt may be contained in the structuring messages but are not transferred to the RAM. This means that the data must be entered manually on the front module if they are to be stored in the user memory (EEPROM).

8. Whilst the structuring messages are being transferred, any other additional messages (except onPA parameter messages) can be exchanged between the computer and the controller.

9. If the enable conditions change during transfer of the structures (for example by structuring on the front module), the acknowledgement is also made with the station number StNoB = StNo – 20H. The message is not transferred to the RAM. Previous structuring messages have been transferred to the RAM and are also effective by returning to online mode. They cannot be transferred to the EEPROM via ST1,Bit4 (end structuring), however. ST1,Bit5 = 1 (start structuring) must be transmitted again for further structuring messages.

10. At the end of structuring, the computer transmits ST1,Bit4 = 1 (end structuring).

11. The controller receives "End structuring" but only accepts it if "Start structuring" was previously present and the enable conditions have not changed in the meantime. The structures are transferred from the RAM to the EEPROM. A return is made to online mode if no errors have been detected during the error check.

12. The structures are stored in the RAM if the computer does not transmit "End structuring" but are not effective because of the offline mode which is still present and are not stored in the non-volatile EEPROM.

   If a bus fault is present, offline mode can be selected again by switching over to structuring on the front module. These structures are also transferred to the EEPROM when the structuring level is left again.

13. The computer reads ST2/ST3/ST4 after the maximum write time of 30 s:

Bit	ST2		ST3 [*)]		ST4 [*)]	
7	0	BLS	0	OPTION Err	0	FdEF Err1
6	0	BLPS	0	AE ⌐	0	FdEF Err2
5	0	–	1	Power on	0	hdEF Err
4	0	MEM busy			0	FCon Err
3	0	onPA SES	1	nStr	0	FPos Err1
2	1	StrU SES	0	ncon Err	0	FPoS Err2
1	0	Par. via Front module	0	-PoS Err	0	FPoS Err3
0	0	Struc. via Front module	0	nPoS Err	0	0

*) see also, Chapter 2.3.7

It detects from ST3/Bit 0 to 2 and from ST4/Bit 1 to 7 that no connection or positioning errors were present. ST3/Bit 3 and ST2/Bit 2 provide the acknowledgements for offline mode and structuring via the SES.

2.3.3   Offline parameters of the SES

1. bdr   Data transmission rate, adjustable to: 9600, 4800, 2400, 1200, 600, 300 characters per second

2. Lrc   Horizontal parity generation: 0 = normal, 1 = complementary

3. LEt   Horizontal parity position: 0 = without Lrc, 1 = Lrc following ETX, 2 = Lrc before ETX

4. Prt   Vertical parity generation: 0 = even, 1 = odd

5. Snr   Station number: 0 to 31

6. cbt   CB time-out monitoring   As multiple of cycle time: off, 1 to 30 s in steps

2.3.4   Parameter "onPA"

● 2-byte parameters which can be written/read by the computer

HiAd: 40H
dd1, dd2, dd3 = Digital display 1, 2, 3

Name		LoAd	Byte	Type	Setting range	Dimen-sion	Parameter meaning
dd2	dd3				dd1		
dd1.1	dr	00H	2	FIX			Digital display 1 input 1
dd1.2	dr	02H	2	FIX			Digital display 1 input 2
dd2.1	dr	04H	2	FIX	1 to 100	Cycles	Digital display 2 input 1 Repetition
dd2.2	dr	06H	2	FIX		Display	Digital display 2 input 2 rate
dd3.1	dr	08H	2	FIX			Digital display 3 input 1
dd3.2	dr	0AH	2	FIX			Digital display 3 input 2
Pd01	—	0CH	2	LOG			
Pd02	—	0EH	2	LOG			
Pd03	—	10H	2	LOG			
Pd04	—	12H	2	LOG			
Pd05	—	14H	2	LOG			
Pd06	—	16H	2	LOG			
Pd07	—	18H	2	LOG			
Pd08	—	1AH	2	LOG	0.100 to 9984	1, s, 100 %	Selectable decadic parameters 1
Pd09	—	1CH	2	LOG			:
Pd10	—	1EH	2	LOG			16
Pd11	—	20H	2	LOG			
Pd12	—	22H	2	LOG			
Pd13	—	24H	2	LOG			
Pd14	—	26H	2	LOG			
Pd15	—	28H	2	LOG			
Pd16	—	2AH	2	LOG			
PL01	—	2CH	2	FIX			
PL02	—	2EH	2	FIX			
PL03	—	30H	2	FIX			
PL04	—	32H	2	FIX			
PL05	—	34H	2	FIX			
PL06	—	36H	2	FIX			
PL07	—	38H	2	FIX			
PL08	—	3AH	2	FIX			
PL09	—	3CH	2	FIX			
PL10	—	3EH	2	FIX			
PL11	—	40H	2	FIX			
PL12	—	42H	2	FIX			
PL13	—	44H	2	FIX			
PL14	—	46H	2	FIX			Selectable linear parameters 1
PL15	—	48H	2	FIX	-1.999 to 19.999[*]	1, s, 100 %	:
PL16	—	4AH	2	FIX			29
PL17	—	4CH	2	FIX			
PL18	—	4EH	2	FIX			
PL19	—	50H	2	FIX			
PL20	—	52H	2	FIX			
PL21	—	54H	2	FIX			
PL22	—	56H	2	FIX			
PL23	—	58H	2	FIX			
PL24	—	5AH	2	FIX			
PL25	—	5CH	2	FIX			
PL26	—	5EH	2	FIX			
PL27	—	60H	2	FIX			
PL28	—	62H	2	FIX			
PL29	—	64H	2	FIX			
AFi1	tF	66H	2	LOG	oFF, 1.000 to 9984	s	Adaptive filter 1 Time constant
AFi2	tF	68H	2	LOG			2
Ain1	tin	6AH	2	LOG	1.000 to 9984	s	Analog integrator 1 Integrating time
Ain1	tr	6CH	2	LOG	oFF, 1.000 to 9984	s	Tracking time (ramp)
Ain1	LiA	6EH	2	LIN	-199.9 to 199.9	%	Output limiting. start
Ain1	LiE	70H	2	LIN	-199.9 to 199.9	%	Output limiting. end
Ain2	tin	72H	2	LOG	1.000 to 9984	s	Analog integrator 2 Integrating time
Ain2	tr	74H	2	LOG	oFF, 1.000 to 9984	s	Tracking time (ramp)
Ain2	LiA	76H	2	LIN	-199.9 to 199.9	%	Output limiting. start
Ain2	LiE	78H	2	LIN	-199.9 to 199.9	%	Output limiting. end

*) only 6DR2410; Full-scale value 6DR2400: 9.999

2.3.4   Parameter "onPA" (continued)

HiAd: 40H (continued)
dd1, dd2, dd3 = Digital display 1, 2, 3

Name		LoAd	Byte	Type	Setting range	Dimen-sion	Parameter meaning	
dd2	dd3				dd1			
bin1	tin	7AH	2	LOG	ProG, 1 to 9984	s	Binary integrator	1 Integrating time
bin1	tr	7CH	2	LOG	oFF, 1.000 to 9984	s		Tracking time (ramp)
bin1	LiA	7EH	2	LIN	-199.9 to 199.9	%		Output limiting, start
bin1	LiE	80H	2	LIN	-199.9 to 199.9	%		Output limiting, end
bin2	tin	82H	2	LOG	ProG, 1 to 9984	s	Binary integrator	2 Integrating time
bin2	tr	84H	2	LOG	oFF, 1.000 to 9984	s		Tracking time (ramp)
bin2	LiA	86H	2	LIN	-199.9 to 199.9	%		Output limiting, start
bin2	LiE	88H	2	LIN	-199.9 to 199.9	%		Output limiting, end
Ccn1	cP	8AH	2	LOG	0.100 to 100.0	1	Controller K	1 Proportional gain
Ccn1	tn	8CH	2	LOG	1.000 to 9984	s		Reset time
Ccn1	tv	8EH	2	LOG	oFF, 1.000 to 2992	s		Derivative action time
Ccn1	vv	90H	2	LOG	0.100 to 10.00	1		Derivative action gain
Ccn1	AH	92H	2	LIN	0.0 to 10.0	%		Response threshold
Ccn1	Yo	94H	2	LIN	AUto, 0.0 to 100.0	%		Working point of P contr.
Ccn1	YA	96H	2	LIN	-10.0 to 110.0	%		Manip. variable limit., start
Ccn1	YE	98H	2	LIN	-10.0 to 110.0	%		Manip. variable limit., end
Ccn1	tY	9AH	2	LOG	10 to 1000	s		Positioning time
Ccn2	cP	9CH	2	LOG	0.100 to 100.0	1	Controller K	2 Proportional gain
Ccn2	tn	9EH	2	LOG	1.000 to 9984	s		Reset time
Ccn2	tv	A0H	2	LOG	oFF, 1.000 to 2992	s		Derivative action time
Ccn2	vv	A2H	2	LOG	0.100 to 10.00	1		Derivative action gain
Ccn2	AH	A4H	2	LIN	0.0 to 10.0	%		Response threshold
Ccn2	Yo	A6H	2	LIN	AUto, 0.0 to 100.0	%		Working point of P contr.
Ccn2	YA	A8H	2	LIN	-10.0 to 110.0	%		Manip. variable limit., start
Ccn2	YE	AAH	2	LIN	-10.0 to 110.0	%		Manip. variable limit., end
Ccn2	tY	ACH	2	LOG	10 to 1000	s		Positioning time
CSE1	cP	AEH	2	LOG	0.100 to 100.0	1	Controller S extern	1 Proportional gain
CSE1	tn	B0H	2	LOG	1.000 to 9984	s		Reset time
CSE1	tv	B2H	2	LOG	oFF, 1.000 to 2992	s		Derivative action time
CSE1	vv	B4H	2	LOG	0.100 to 10.00	1		Derivative action gain
CSE1	AH	B6H	2	LIN	0.0 to 10.0	%		Response threshold
CSE1	Yo	B8H	2	LIN	AUto, 0.0 to 100.0	%		Working point of P contr.
CSE1	YA	BAH	2	LIN	-10.0 to 110.0	%		Manip. variable limit., start
CSE1	YE	BCH	2	LIN	-10.0 to 110.0	%		Manip. variable limit., end
CSE1	tY	BEH	2	LOG	10 to 1000	s		Positioning time
CSE1	tA	C0H	2	FIX	20 to 600	ms		Min. pos. pulse pause
CSE1	tE	C2H	2	FIX	20 to 600	ms		Min. pos. pulse length
CSE2	cP	C4H	2	LOG	0.100 to 100.0	1	Controller S extern	2 Proportional gain
CSE2	tn	C6H	2	LOG	1.000 to 9984	s		Reset time
CSE2	tv	C8H	2	LOG	oFF, 1.000 to 2992	s		Derivative action time
CSE2	vv	CAH	2	LOG	0.100 to 10.00	1		Derivative action gain
CSE2	AH	CCH	2	LIN	0.0 to 10.0	%		Response threshold
CSE2	Yo	CEH	2	LIN	AUto, 0.0 to 100.0	%		Working point of P contr.
CSE2	YA	D0H	2	LIN	-10.0 to 110.0	%		Manip. variable limit., start
CSE2	YE	D2H	2	LIN	-10.0 to 110.0	%		Manip. variable limit., end
CSE2	tY	D4H	2	LOG	10 to 1000	s		Positioning time
CSE2	tA	D6H	2	FIX	20 to 600	ms		Min. pos. pulse pause
CSE2	tE	D8H	2	FIX	20 to 600	ms		Min. pos. pulse length
CSi1	cP	DAH	2	LOG	0.100 to 100.0	1	Controller S intern	1 Proportional gain
CSi1	tn	DCH	2	LOG	1.000 to 9984	s		Reset time
CSi1	tv	DEH	2	LOG	oFF, 1.000 to 2992	s		Derivative action time
CSi1	vv	E0H	2	LOG	0.100 to 10.00	1		Derivative action gain
CSi1	AH	E2H	2	LIN	0.0 to 10.0	%		Response threshold
CSi1	tY	E4H	2	LOG	10 to 1000	s		Positioning time
CSi1	tA	E6H	2	FIX	20 to 600	ms		Min. pos. pulse pause
CSi1	tE	E8H	2	FIX	20 to 600	ms		Min. pos. pulse length

2.3.4   Parameter "onPA" (continued)

HiAd: 40H (continued)
dd1, dd2, dd3 = Digital display 1, 2, 3

Name		LoAd	Byte	Type	Setting range	Dimen-sion	Parameter meaning
dd2	dd3				dd1		
CSi2	cP	EAH	2	LOG	0.100 to 100.0	1	Controller S intern 2 Proportional gain
CSi2	tn	ECH	2	LOG	1.000 to 9984	s	Reset time
CSi2	tv	EEH	2	LOG	oFF, 1.000 to 2992	s	Derivative action time
CSi2	vv	F0H	2	LOG	0.100 to 10.00	1	Derivative action gain
CSi2	AH	F2H	2	LIN	0.0 to 10.0	%	Response threshold
CSi2	tY	F4H	2	LOG	10 to 1000	s	Positioning time
CSi2	tA	F6H	2	FIX	20 to 600	ms	or Min. pos. pulse pause
CSi2	tE	F8H	2	FIX	20 to 600	ms	Controller S intern 2 Min. pos. pulse length
dti1	td	FAH	2	LOG	oFF, 1.000 to 2992	s	Dead time elem. 1 Dead time
dti2	td	FCH	2	LOG			2

HiAd: 71H   **only 6DR2410**
dd1, dd2, dd3 = Digital display 1, 2, 3

Name		LoAd	Byte	Type	Setting range	Dimen-sion	Parameter meaning
dd2	dd3				dd1		
dd1.3	dr	00H	2	FIX		Cycles Display	Digital display 1 input 3
dd1.4	dr	02H	2	FIX			Digital display 1 input 4
dd2.3	dr	04H	2	FIX	1 to 100		Digital display 2 input 3 Repetition
dd2.4	dr	06H	2	FIX			Digital display 2 input 4 rate
dd3.3	dr	08H	2	FIX			Digital display 3 input 3
dd3.4	dr	0AH	2	FIX			Digital display 3 input 4
Pd17	—	0CH	2	LOG			
Pd18	—	0EH	2	LOG			
Pd19	—	10H	2	LOG			
Pd20	—	12H	2	LOG			
Pd21	—	14H	2	LOG			
Pd22	—	16H	2	LOG			
Pd23	—	18H	2	LOG			
Pd24	—	1AH	2	LOG			
Pd25	—	1CH	2	LOG			
Pd26	—	1EH	2	LOG			
Pd27	—	20H	2	LOG			
Pd28	—	22H	2	LOG	0.100 to 9984	1, s, 100 %	Selectable decadic parameters 17
Pd29	—	24H	2	LOG			:
Pd30	—	26H	2	LOG			40
Pd31	—	28H	2	LOG			
Pd32	—	2AH	2	LOG			
Pd33	—	2CH	2	LOG			
Pd34	—	2EH	2	LOG			
Pd35	—	30H	2	LOG			
Pd36	—	32H	2	LOG			
Pd37	—	34H	2	LOG			
Pd38	—	36H	2	LOG			
Pd39	—	38H	2	LOG			
Pd40	—	3AH	2	LOG			
PL30	—	3CH	2	FIX			
PL31	—	3EH	2	FIX			
PL32	—	40H	2	FIX			
PL33	—	42H	2	FIX			
PL34	—	44H	2	FIX			
PL35	—	46H	2	FIX	-1.999 to 19.999	1, s, 100 %	Selectable linear parameters
PL36	—	48H	2	FIX			
PL37	—	4AH	2	FIX			
PL38	—	4CH	2	FIX			
PL39	—	4EH	2	FIX			
PL40	—	50H	2	FIX			
Ain3	tin	52H	2	LOG	1.000 to 9984	s	Analog integrator 3 Integrating time
Ain3	tr	54H	2	LOG	oFF, 1.000 to 9984	s	Tracking time (ramp)
Ain3	LiA	56H	2	LIN	-199.9 to 199.9	%	Output limiting. start
Ain3	LiE	58H	2	LIN	-199.9 to 199.9	%	Output limiting. end

2.3.4   Parameter "onPA" (continued)

HiAd: 71H (continued)   **only 6DR2410**
dd1, dd2, dd3 = Digital display 1, 2, 3

Name		LoAd	Byte	Type	Setting range	Dimen-sion	Parameter meaning		
dd2	dd3				dd1				
Ain4	tin	5AH	2	LOG	1.000 to 9984	s	Analog integrator	4	Integrating time
Ain4	tr	5CH	2	LOG	oFF, 1.000 to 9984	s			Tracking time (ramp)
Ain4	LiA	5EH	2	LIN	-199.9 to 199.9	%			Output limiting. start.
Ain4	LiE	60H	2	LIN	-199.9 to 199.9	%			Output limiting. end
bin3	tin	62H	2	LOG	ProG, 1 to 9984	s	Binary integrator	3	Integrating time
bin3	tr	64H	2	LOG	oFF, 1.000 to 9984	s			Tracking time (ramp)
bin3	LiA	66H	2	LIN	-199.9 to 199.9	%			Output limiting, start
bin3	LiE	68H	2	LIN	-199.9 to 199.9	%			Output limiting, end
bin4	tin	6AH	2	LOG	ProG, 1 to 9984	s	Binary integrator	4	Integrating time
bin4	tr	6CH	2	LOG	oFF, 1.000 to 9984	s			Tracking time (ramp)
bin4	LiA	6EH	2	LIN	-199.9 to 199.9	%			Output limiting, start
bin4	LiE	70H	2	LIN	-199.9 to 199.9	%			Output limiting, end
bin5	tin	72H	2	LOG	ProG, 1 to 9984	s	Binary integrator	5	Integrating time
bin5	tr	74H	2	LOG	oFF, 1.000 to 9984	s			Tracking time (ramp)
bin5	LiA	76H	2	LIN	-199.9 to 199.9	%			Output limiting, start
bin5	LiE	78H	2	LIN	-199.9 to 199.9	%			Output limiting, end
bin6	tin	7AH	2	LOG	ProG, 1 to 9984	s	Binary integrator	6	Integrating time
bin6	tr	7CH	2	LOG	oFF, 1.000 to 9984	s			Tracking time (ramp)
bin6	LiA	7EH	2	LIN	-199.9 to 199.9	%			Output limiting, start
bin6	LiE	80H	2	LIN	-199.9 to 199.9	%			Output limiting, end
Ccn3	cP	82H	2	LOG	0.100 to 100.0	1	Controller K	3	Proportional gain
Ccn3	tn	84H	2	LOG	1.000 to 9984	s			Reset time
Ccn3	tv	86H	2	LOG	oFF, 1.000 to 2992	s			Derivative action time
Ccn3	vv	88H	2	LOG	0.100 to 10.00	1			Derivative action gain
Ccn3	AH	8AH	2	LIN	0.0 to 10.0	%			Response threshold
Ccn3	Yo	8CH	2	LIN	AUto, 0.0 to 100.0	%			Working point of P contr.
Ccn3	YA	8EH	2	LIN	-10.0 to 110.0	%			Manip. variable limit., start
Ccn3	YE	90H	2	LIN	-10.0 to 110.0	%			Manip. variable limit., end
Ccn3	tY	92H	2	LOG	10 to 1000	s			Positioning time
Ccn4	cP	94H	2	LOG	0.100 to 100.0	1	Controller K	4	Proportional gain
Ccn4	tn	96H	2	LOG	1.000 to 9984	s			Reset time
Ccn4	tv	98H	2	LOG	oFF, 1.000 to 2992	s			Derivative action time
Ccn4	vv	9AH	2	LOG	0.100 to 10.00	1			Derivative action gain
Ccn4	AH	9CH	2	LIN	0.0 to 10.0	%			Response threshold
Ccn4	Yo	9EH	2	LIN	AUto, 0.0 to 100.0	%			Working point of P contr.
Ccn4	YA	A0H	2	LIN	-10.0 to 110.0	%			Manip. variable limit., start
Ccn4	YE	A2H	2	LIN	-10.0 to 110.0	%			Manip. variable limit., end
Ccn4	tY	A4H	2	LOG	10 to 1000	s			Positioning time
CSE3	cP	A6H	2	LOG	0.100 to 100.0	1	Controller S extern	3	Proportional gain
CSE3	tn	A8H	2	LOG	1.000 to 9984	s			Reset time
CSE3	tv	AAH	2	LOG	oFF, 1.000 to 2992	s			Derivative action time
CSE3	vv	ACH	2	LOG	0.100 to 10.00	1			Derivative action gain
CSE3	AH	AEH	2	LIN	0.0 to 10.0	%			Response threshold
CSE3	Yo	B0H	2	LIN	AUto, 0.0 to 100.0	%			Working point of P contr.
CSE3	YA	B2H	2	LIN	-10.0 to 110.0	%			Manip. variable limit., start
CSE3	YE	B4H	2	LIN	-10.0 to 110.0	%			Manip. variable limit., end
CSE3	tY	B6H	2	LOG	10 to 1000	s			Positioning time
CSE3	tA	B8H	2	FIX	20 to 600	ms			Min. pos. pulse pause
CSE3	tE	BAH	2	FIX	20 to 600	ms			Min. pos. pulse length
CSE4	cP	BCH	2	LOG	0.100 to 100.0	1	Controller S extern	4	Proportional gain
CSE4	tn	BEH	2	LOG	1.000 to 9984	s			Reset time
CSE4	tv	C0H	2	LOG	oFF, 1.000 to 2992	s			Derivative action time
CSE4	vv	C2H	2	LOG	0.100 to 10.00	1			Derivative action gain
CSE4	AH	C4H	2	LIN	0.0 to 10.0	%			Response threshold
CSE4	Yo	C6H	2	LIN	AUto, 0.0 to 100.0	%			Working point of P contr.
CSE4	YA	C8H	2	LIN	-10.0 to 110.0	%			Manip. variable limit., start
CSE4	YE	CAH	2	LIN	-10.0 to 110.0	%			Manip. variable limit., end
CSE4	tY	CCH	2	LOG	10 to 1000	s			Positioning time
CSE4	tA	CEH	2	FIX	20 to 600	ms			Min. pos. pulse pause
CSE4	tE	D0H	2	FIX	20 to 600	ms			Min. pos. pulse length

2.3.4   Parameter "onPA" (continued)

HiAd: 71H (continued)   only 6DR2410

dd1, dd2, dd3 = Digital display 1, 2, 3

Name		LoAd	Byte	Type	Setting range	Dimen-sion	Parameter meaning
dd2	dd3				dd1		
CSi3	cP	D2H	2	LOG	0.100 to 100.0	1	Controller S intern 3 Proportional gain
CSi3	tn	D4H	2	LOG	1.000 to 9984	s	Reset time
CSi3	tv	D6H	2	LOG	oFF, 1.000 to 2992	s	Derivative action time
CSi3	vv	D8H	2	LOG	0.100 to 10.00	1	Derivative action gain
CSi3	AH	DAH	2	LIN	0.0 to 10.0	%	Response threshold
CSi3	tY	DCH	2	LOG	10 to 1000	s	Positioning time
CSi3	tA	DEH	2	FIX	20 to 600	ms	Min. pos. pulse pause
CSi3	tE	E0H	2	FIX	20 to 600	ms	Min. pos. pulse length
CSi4	cP	E2H	2	LOG	0.100 to 100.0	1	Controller S intern 4 Proportional gain
CSi4	tn	E4H	2	LOG	1.000 to 9984	s	Reset time
CSi4	tv	E6H	2	LOG	oFF, 1.000 to 2992	s	Derivative action time
CSi4	vv	E8H	2	LOG	0.100 to 10.00	1	Derivative action gain
CSi4	AH	EAH	2	LIN	0.0 to 10.0	%	Response threshold
CSi4	tY	ECH	2	LOG	10 to 1000	s	Positioning time
CSi4	tA	EEH	2	FIX	20 to 600	ms	Min. pos. pulse pause
CSi4	tE	F0H	2	FIX	20 to 600	ms	Min. pos. pulse length
PUM1	tAE	F2H	2	FIX	20 to 9980	ms	Min. pos. pulse length/pulse pause
PUM1	tM	F4H	2	LOG	0.100 to 1000	s	Period length
PUM2	tAE	F6H	2	FIX	20 to 9980	ms	Min. pos. pulse length/pulse pause
PUM2	tM	F8H	2	LOG	0.100 to 1000	s	Period length
PUM3	tAE	FAH	2	FIX	20 to 9980	ms	Min. pos. pulse length/pulse pause
PUM3	tM	FCH	2	LOG	0.100 to 1000	s	Period length
PUM4	tAE	FEH	2	FIX	20 to 9980	ms	Min. pos. pulse length/pulse pause

HiAd: 72H   only 6DR2410

dd1, dd2, dd3 = Digital display 1, 2, 3

Name		LoAd	Byte	Type	Setting range	Dimen-sion	Parameter meaning
dd2	dd3				dd1		
PUM4	tM	00H	2	LOG	0.100 to 1000	s	Period length
SPr1	SPA	02H	2	LIN	0.0 to 100.0	%	Splitrange 1 start
SPr1	SPE	04H	2	LIN	0.0 to 100.0	%	Splitrange 1 end
SPr2	SPA	06H	2	LIN	0.0 to 100.0	%	Splitrange 2 start
SPr2	SPE	08H	2	LIN	0.0 to 100.0	%	Splitrange 2 end
SPr3	SPA	0AH	2	LIN	0.0 to 100.0	%	Splitrange 3 start
SPr3	SPE	0CH	2	LIN	0.0 to 100.0	%	Splitrange 3 end
SPr4	SPA	0EH	2	LIN	0.0 to 100.0	%	Splitrange 4 start
SPr4	SPE	10H	2	LIN	0.0 to 100.0	%	Splitrange 4 end
SPr5	SPA	12H	2	LIN	0.0 to 100.0	%	Splitrange 5 start
SPr5	SPE	14H	2	LIN	0.0 to 100.0	%	Splitrange 5 end
SPr6	SPA	16H	2	LIN	0.0 to 100.0	%	Splitrange 6 start
SPr6	SPE	18H	2	LIN	0.0 to 100.0	%	Splitrange 6 end
SPr7	SPA	1AH	2	LIN	0.0 to 100.0	%	Splitrange 7 start
SPr7	SPE	1CH	2	LIN	0.0 to 100.0	%	Splitrange 7 end
SPr8	SPA	1EH	2	LIN	0.0 to 100.0	%	Splitrange 8 start
SPr8	SPE	20H	2	LIN	0.0 to 100.0	%	Splitrange 8 end
tAC1	PEr	22H	2	FIX	2 to 10000	Cycles	Period clock generator 1
tAC1	tAS	24H	2	FIX	1 to 10000	Cycles	Pulse length clock generator 1
tAC2	PEr	26H	2	FIX	2 to 10000	Cycles	Period clock generator 2
tAC2	tAS	28H	2	FIX	1 to 10000	Cycles	Pulse length clock generator 2

2.3.5 Parameter "oFPA"

HiAd: 42H
dd1, dd2, dd3 = Digital display 1, 2, 3

Name		LoAd	Byte	Type	Setting range	Dimen-sion	Parameter meaning				
dd2	dd3				dd1						
dA1.1	dA	00H	2	LIN	-199.9 to 199.9	%	Analog display 1	input 1	Start-of-scale value	Signal range	
dA1.1	dE	02H	2	LIN					Full-scale value		
dA1.2	dA	04H	2	LIN			Analog display 1	input 2	Start-of-scale value		
dA1.2	dE	06H	2	LIN					Full-scale value		
dd1.1	dP	08H	2	FIX	_ . - - - to _ _ _ _	–			Decimal point [1]		
dd1.1	dA	0AH	2	FIX	-1999 to 19999*)		Digital display 1	input 1	Start-of-scale value	Display range	
dd1.1	dE	0CH	2	FIX	-1999 to 19999*)	–			Full-scale value		
dd1.2	dP	0EH	2	FIX	_ . - - - to _ _ _ _	–			Decimal point [1]		
dd1.2	dA	10H	2	FIX	-1999 to 19999*)		Digital display 1	input 2	Start-of-scale value	Display range	
dd1.2	dE	12H	2	FIX	-1999 to 19999*)	–			Full-scale value		
dd2.1	dP	14H	2	FIX	_ . - - - to _ _ _ _	–			Decimal point [1]		
dd2.1	dA	16H	2	FIX	-1999 to 19999*)		Digital display 2	input 1	Start-of-scale value	Display range	
dd2.1	dE	18H	2	FIX	-1999 to 19999*)	–			Full-scale value		
dd2.2	dP	1AH	2	FIX	_ . - - - to _ _ _ _	–			Decimal point [1]		
dd2.2	dA	1CH	2	FIX	-1999 to 19999*)		Digital display 2	input 2	Start-of-scale value	Display range	
dd2.2	dE	1EH	2	FIX	-1999 to 19999*)	–			Full-scale value		
dd3.1	dP	20H	2	FIX	_ . - - - to _ _ _ _	–			Decimal point [1]		
dd3.1	dA	22H	2	FIX	-199 to 999		Digital display 3	input 1	Start-of-scale value	Display range	
dd3.1	dE	24H	2	FIX	-199 to 999	–			Full-scale value		
dd3.2	dP	26H	2	FIX	_ . - - - to _ _ _ _	–			Decimal point [1]		
dd3.2	dA	28H	2	FIX	-199 to 999		Digital display 3	input 2	Start-of-scale value	Display range	
dd3.2	dE	2AH	2	FIX	-199 to 999	–			Full-scale value		
CPt1	PA	2CH	2	FIX	0.010 to 1.000	1	Pressure/temperature correction computer 1				
CPt1	PE	2EH	2	FIX	1.000 to 99.99 [2]	1	correction quotient	Pressure		Start	
CPt1	tA	30H	2	FIX	0.010 to 1.000	1	"			End	
CPt1	tE	32H	2	FIX	1.000 to 99.99 [2]	1	"	Temperature		Start	
							"			End	
CPt2	PA	34H	2	FIX	0.010 to 1.000	1	Pressure/temperature correction computer 2				
CPt2	PE	36H	2	FIX	1.000 to 99.99 [2]	1	correction quotient	Pressure		Start	
CPt2	tA	38H	2	FIX	0.010 to 1.000	1	"			End	
CPt2	tE	3AH	2	FIX	1.000 to 99.99 [2]	1	"	Temperature		Start	
							"			End	
dA2.1	dA	3CH	2	LIN	-199.9 to 199.9	%	Analog display 2	input 1	Start-of-scale value	Signal range	
dA2.1	dE	3EH	2	LIN					Full-scale value		
dA2.2	dA	40H	2	LIN	-199.9 to 199.9	%	Analog display 2	input 2	Start-of-scale value	Signal range	
dA2.2	dE	42H	2	LIN					Full-scale value		
FUL1	0	44H	2	LIN	-199.9 to 199.9	%	Funct. transm. 1 (straight lines), tuning pt. at			0 %	
FUL1	20	46H	2	LIN						20 %	
FUL1	40	48H	2	LIN						40 %	
FUL1	60	4AH	2	LIN						60 %	
FUL1	80	4CH	2	LIN						80 %	
FUL1	100	4EH	2	LIN						100 %	

[1]   Interpretation of decimal point: 0:00H,00H = _____
1:00H,02H = _____ . –
1:00H,04H = ___ . – –
1:00H,06H = _ . – – –

[2]   Interpretation of CPt1,2/PE, tE:
An identification is coded in bit 7 (MSB)
MSB = 0   →   actual decimal value = stored
                      FIX-value/1000
              →   range: 1.000 to 9.999
MSB = 1   →   actual decimal value = stored
                      FIX-value/100
              →   range: 10.00 to 99.99

*) only 6DR2410; Full-scale-value 6DR2400: 9999

2.3.5 Parameter "oFPA" (continued)

HiAd: 42H
dd1, dd2, dd3 = Digital display 1, 2, 3

Name		LoAd	Byte	Type	Setting range	Dimen-	Parameter meaning	
dd2	dd3				dd1	sion		
FUL2	0	50H	2	LIN			Funct.transm.2 (straight lines), tuning pt. at	0 %
FUL2	20	52H	2	LIN				20 %
FUL2	40	54H	2	LIN	-199.9 to 199.9	%		40 %
FUL2	60	56H	2	LIN				60 %
FUL2	80	58H	2	LIN				80 %
FUL2	100	5AH	2	LIN				100 %
FUL3	0	5CH	2	LIN			Funct.transm.3 (straight lines), tuning pt. at	0 %
FUL3	20	5EH	2	LIN				20 %
FUL3	40	60H	2	LIN	-199.9 to 199.9	%		40 %
FUL3	60	62H	2	LIN				60 %
FUL3	80	64H	2	LIN				80 %
FUL3	100	66H	2	LIN				100 %
FUP1	-10	68H	2	LIN		%	Funct.transm.1 (parabolic), tuning pt. at	-10 %
FUP1	0	6AH	2	LIN				0 %
FUP1	10	6CH	2	LIN				10 %
FUP1	20	6EH	2	LIN				20 %
FUP1	30	70H	2	LIN				30 %
FUP1	40	72H	2	LIN				40 %
FUP1	50	74H	2	LIN	-199.9 to 199.9			50 %
FUP1	60	76H	2	LIN				60 %
FUP1	70	78H	2	LIN				70 %
FUP1	80	7AH	2	LIN				80 %
FUP1	90	7CH	2	LIN				90 %
FUP1	100	7EH	2	LIN				100 %
FUP1	110	80H	2	LIN				110 %
FUP2	-10	82H	2	LIN		%	Funct.transm.2 (parabolic), tuning pt. at	-10 %
FUP2	0	84H	2	LIN				0 %
FUP2	10	86H	2	LIN				10 %
FUP2	20	88H	2	LIN				20 %
FUP2	30	8AH	2	LIN				30 %
FUP2	40	8CH	2	LIN				40 %
FUP2	50	8EH	2	LIN	-199.9 to 199.9			50 %
FUP2	60	90H	2	LIN				60 %
FUP2	70	92H	2	LIN				70 %
FUP2	80	94H	2	LIN				80 %
FUP2	90	96H	2	LIN				90 %
FUP2	100	98H	2	LIN				100 %
FUP2	110	9AH	2	LIN				110 %
MUP1	StP	9CH	2	FIX	2 to 8 [1]	-	Multiplexer 1 Number of switching steps	
MUP2	StP	9EH	2	FIX			2	

[1] Interpretation: 00H,04H = 2, 00H,06H = 3 to 00H,10H = 8

● 2-byte parameters which can be read by the computer

HiAd: 42H
dd1, dd2, dd3 = Digital display 1, 2, 3

Name		LoAd	Byte	Type	Setting range	Dimen-	Parameter meaning
dd2	dd3				dd1	sion	
SES	bdr	A0H	2	FIX		baud	Baud rate (transmission speed)
SES	Lrc	A2H	2	FIX		–	Generation of horizontal parity
SES	LEt	A4H	2	FIX	[1]	–	Horizontal parity position
SES	Ptr	A6H	2	FIX		–	Generation of vertical parity
SES	Snr	A8H	2	FIX		–	Station number
SES	Cbt	AAH	2	FIX		s	CB time monitoring at SbE1

[1] Interpretation:

dd2	dd3	dd1	Dezimal-code	FIX value [*] HiBY	FIX value [*] LoBY	Meaning
SES	bdr	300	0	00H	00H	
		600	1		02H	
		1200	2	↓	04H	
		2400	3		06H	
		4800	4		08H	
		9600	5	00H	0AH	
	Lrc	norM	0	00H	00H	Normal
		CMPL	1	00H	02H	Complement
	LEt	no L	0	00H	00H	Without Lrc
		Et-L	1	↓	02H	With Lrc following ETX
		L-Et	2	00H	04H	With Lrc before ETX
	Prt	EvEn	0	00H	00H	Even
		odd	1	00H	02H	Odd
	Snr	0 to 125	0 to 125	00H	00H to FAH	
	Cbt	oFF	0	00H	00H	
		1	1		02H	
		2	2		04H	
		3	3		06H	
		4	4		08H	
		5	5	↓	0AH	
		7	6		0CH	
		10	7		0EH	
		15	8		10H	
		20	9		12H	
		30	10	00H	14H	

[*] HiBY = High byte; LoBY = Low byte

HiAd: 73H   **only 6DR2410**

dd1, dd2, dd3 = Digital display 1, 2, 3

Name dd2	Name dd3	LoAd	Byte	Type	Setting range dd1	Dimen-sion	Parameter meaning			
dA1.3	dA	00H	2	LIN			Analog display 1	input 3	Start-of-scale value	Signal range
dA1.3	dE	02H	2	LIN	-199.9 to 199.9	%			Full-scale value	
dA1.4	dA	04H	2	LIN			Analog display 1	input 4	Start-of-scale value	Signal range
dA1.4	dE	06H	2	LIN					Full-scale value	
dd1.3	dP	08H	2	FIX	_ . - - - to _ _ _ _	–			Decimal point [1]	
dd1.3	dA	0AH	2	FIX	-1999 to 19999		Digital display 1	input 3	Start-of-scale value	Display range
dd1.3	dE	0CH	2	FIX	-1999 to 19999	–			Full-scale value	
dd1.4	dP	0EH	2	FIX	_ . - - - to _ _ _ _	–			Decimal point [1]	
dd1.4	dA	10H	2	FIX	-1999 to 19999		Digital display 1	input 4	Start-of-scale value	Display range
dd1.4	dE	12H	2	FIX	-1999 to 19999	–			Full-scale value	
dd2.3	dP	14H	2	FIX	_ . - - - to _ _ _ _	–			Decimal point [1]	
dd2.3	dA	16H	2	FIX	-1999 to 19999		Digital display 2	input 3	Start-of-scale value	Display range
dd2.3	dE	18H	2	FIX	-1999 to 19999	–			Full-scale value	
dd2.4	dP	1AH	2	FIX	_ . - - - to _ _ _ _	–			Dezimalpunkt [1]	
dd2.4	dA	1CH	2	FIX	-1999 to 19999		Digital display 2	input 4	Start-of-scale value	Display range
dd2.4	dE	1EH	2	FIX	-1999 to 19999	–			Full-scale value	
dd3.3	dP	20H	2	FIX	_ . - - - to _ _ _ _	–			Decimal point [1]	
dd3.3	dA	22H	2	FIX	-199 to 1999		Digital display 3	input 3	Start-of-scale value	Display range
dd3.3	dE	24H	2	FIX	-199 to 1999	–			Full-scale value	
dd3.4	dP	26H	2	FIX	_ . - - - to _ _ _ _	–			Dezimalpunkt [1]	
dd3.4	dA	28H	2	FIX	-199 to 1999		Digital display 3	input 4	Start-of-scale value	Display range
dd3.4	dE	2AH	2	FIX	-199 to 1999	–			Full-scale value	
Cnt1	StP	2CH	2	FIX	2 to 4	-	Umschalter	1	Number of switching steps	
dA2.3	dA	2EH	2	LIN			Analog display 2	input 3	Start-of-scale value	Signal range
dA2.3	dE	30H	2	LIN	-199.9 to 199.9	%			Full-scale value	
dA2.4	dA	32H	2	LIN			Analog display 2	input 4	Start-of-scale value	Signal range
dA2.4	dE	34H	2	LIN					Full-scale value	

[1] Interpretation of decimal point:
0:00H,00H = _____   or 1:00H,02H = _____ . – or 1:00H,04H = ___ . – – or 1:00H,06H = _ . – – –

2.3.6   Parameter "CLPA"

● 2-byte parameters which can be written by the computer

HiAd: 43H
LoAD: With 2-byte variables → in-page address of the High byte

Name		LoAd	Byte	Type	Setting range	Dimen-sion	Parameter meaning/remarks
dd2	dd3				dd1		
CLFo	–	00H	2	FIX		1)	Format of relative clock
CLCy	–	02H	2	FIX		1	Number of program cycles
CLSb	–	04H	2	FIX		1	Factor for clock high-speed
CLPr	--.1	06H	2	FIX			
CLPr	--.2	08H	2	FIX			
CLPr	--.3	0AH	2	FIX			
CLPr	--.4	0CH	2	FIX	2)		Number of intervals per program
CLPr	--.5	0EH	2	FIX		–	(max. total 40 intervals for max. 8 possible programs)
CLPr	--.6	10H	2	FIX			no = no interval
CLPr	--.7	12H	2	FIX			
CLPr	--.8	14H	2	FIX			

1)   h, min, s
2)   Interpretation:

dd2	dd3	dd1	Dezimal code	FIX value *)		Meaning
				HiBY	LoBY	
CLFo	–	h, ' or	0	00H	00H	
		', "	1	00H	02H	
CLCY	–	CYCL, 1 to 255	0 to 255	00H to 01H	00H to FEH	CYCL = cyclic
CLSb	–	3	0	00H	00H	
		6	1		02H	
		12	2		04H	
		24	3	↓	06H	
		60	4		08H	
		120	5		0AH	
		168	6		0CH	
		360	7	00H	0EH	
CLPr	--.1 ↓ --.8	no, 01 to 40	0 to 40	00H	00H to 50H	no = no interval

*)   HiBY = High byte; LoBY = Low byte

HiAd: 43H

Name		LoAd	Byte	Type	Setting range	Dimen-sion	Parameter meaning
dd2	dd3				dd1		
CLti	xx.y	20H	2	BIN			
CLti	xx.y	22H	2	BIN			
CLti	xx.y	24H	2	BIN			
CLti	xx.y	26H	2	BIN			
CLti	xx.y	28H	2	BIN			
CLti	xx.y	2AH	2	BIN			
CLti	xx.y	2CH	2	BIN			
CLti	xx.y	2EH	2	BIN	00.01		
CLti	xx.y	30H	2	BIN	to	For all	
CLti	xx.y	32H	2	BIN	59.59	pro-grams	For all
CLti	xx.y	34H	2	BIN	or	depen-ding on	programs depen-ding on	Time duration per interval xx in program y
CLti	xx.y	36H	2	BIN	00.01	CLFo	CLFo
CLti	xx.y	38H	2	BIN	to		
CLti	xx.y	3AH	2	BIN	23.59		
CLti	xx.y	3CH	2	BIN			
CLti	xx.y	3EH	2	BIN			
CLti	xx.y	40H	2	BIN			
CLti	xx.y	42H	2	BIN			
CLti	xx.y	44H	2	BIN			
CLti	xx.y	46H	2	BIN			
CLti	xx.y	48H	2	BIN			
CLti	xx.y	4AH	2	BIN			

2.3.6   Parameter "CLPA" (continued)

HiAd: 43H

| Name | | LoAd | Byte | Type | Setting range | Dimen-sion | Parameter meaning |
dd2	dd3				dd1		
CLti	xx.y	4CH	2	BIN			
CLti	xx.y	4EH	2	BIN			
CLti	xx.y	50H	2	BIN			
CLti	xx.y	52H	2	BIN			
CLti	xx.y	54H	2	BIN			
CLti	xx.y	56H	2	BIN	00.01		
CLti	xx.y	58H	2	BIN	to	For all	For all
CLti	xx.y	5AH	2	BIN	59,59	pro-grams	programs
CLti	xx.y	5CH	2	BIN	or	depen-	depen-
CLti	xx.y	5EH	2	BIN	00.01	ding on	ding on	Time duration per interval xx in program y
CLti	xx.y	60H	2	BIN	to	CLFo	CLFo
CLti	xx.y	62H	2	BIN	23.59		
CLti	xx.y	64H	2	BIN			
CLti	xx.y	66H	2	BIN			
CLti	xx.y	68H	2	BIN			
CLti	xx.y	6AH	2	BIN			
CLti	xx.y	6CH	2	BIN			
CLti	xx.y	6EH	2	BIN			
CLby	xx.y	80H	2	BIT			
CLby	xx.y	82H	2	BIT			
CLby	xx.y	84H	2	BIT			
CLby	xx.y	86H	2	BIT			
CLby	xx.y	88H	2	BIT			
CLby	xx.y	8AH	2	BIT			
CLby	xx.y	8CH	2	BIT			
CLby	xx.y	8EH	2	BIT			
CLby	xx.y	90H	2	BIT			
CLby	xx.y	92H	2	BIT			
CLby	xx.y	94H	2	BIT			
CLby	xx.y	96H	2	BIT			
CLby	xx.y	98H	2	BIT			
CLby	xx.y	9AH	2	BIT			
CLby	xx.y	9CH	2	BIT			
CLby	xx.y	9EH	2	BIT			
CLby	xx.y	A0H	2	BIT			
CLby	xx.y	A2H	2	BIT			
CLby	xx.y	A4H	2	BIT			
CLby	xx.y	A6H	2	BIT	Low or High	–	Binary output y, status in interval XX of program y
CLby	xx.y	A8H	2	BIT			
CLby	xx.y	AAH	2	BIT			
CLby	xx.y	ACH	2	BIT			
CLby	xx.y	AEH	2	BIT			
CLby	xx.y	B0H	2	BIT			
CLby	xx.y	B2H	2	BIT			
CLby	xx.y	B4H	2	BIT			
CLby	xx.y	B6H	2	BIT			
CLby	xx.y	B8H	2	BIT			
CLby	xx.y	BAH	2	BIT			
CLby	xx.y	BCH	2	BIT			
CLby	xx.y	BEH	2	BIT			
CLby	xx.y	C0H	2	BIT			
CLby	xx.y	C2H	2	BIT			
CLby	xx.y	C4H	2	BIT			
CLby	xx.y	C6H	2	BIT			
CLby	xx.y	C8H	2	BIT			
CLby	xx.y	CAH	2	BIT			
CLby	xx.y	CCH	2	BIT			
CLby	xx.y	CEH	2	BIT			

Note:

xx   = 01 to max. 40 intervals

y   = 1 to max. 8 programs

BIT = each High byte contains 8 status bits CLbj where the MSB corresponds to j = 8 and the LSB corresponds to j = 1;

Low byte = don't care!

2.3.6   **Parameter "CLPA"** (continued)

HiAd: 44H

Name		LoAd	Byte	Type	Setting range	Dimen-sion	Parameter meaning
dd2	dd3				dd1		
CLA1	xx.y	00H	2	LIN			
CLA1	xx.y	02H	2	LIN			
CLA1	xx.y	04H	2	LIN			
CLA1	xx.y	06H	2	LIN			
CLA1	xx.y	08H	2	LIN			
CLA1	xx.y	0AH	2	LIN			
CLA1	xx.y	0CH	2	LIN			
CLA1	xx.y	0EH	2	LIN			
CLA1	xx.y	10H	2	LIN			
CLA1	xx.y	12H	2	LIN			
CLA1	xx.y	14H	2	LIN			
CLA1	xx.y	16H	2	LIN			
CLA1	xx.y	18H	2	LIN			
CLA1	xx.y	1AH	2	LIN			
CLA1	xx.y	1CH	2	LIN			
CLA1	xx.y	1EH	2	LIN			
CLA1	xx.y	20H	2	LIN			
CLA1	xx.y	22H	2	LIN			
CLA1	xx.y	24H	2	LIN			
CLA1	xx.y	26H	2	LIN			
CLA1	xx.y	28H	2	LIN			
CLA1	xx.y	2AH	2	LIN			
CLA1	xx.y	2CH	2	LIN			
CLA1	**xx.y**	**2EH**	**2**	**LIN**	-199.9 to 199.9, noP [1]	%	Analog output 1, amplitude in interval XX of program y
CLA1	xx.y	30H	2	LIN			
CLA1	xx.y	32H	2	LIN			
CLA1	xx.y	34H	2	LIN			
CLA1	xx.y	36H	2	LIN			
CLA1	xx.y	38H	2	LIN			
CLA1	xx.y	3AH	2	LIN			
CLA1	xx.y	3CH	2	LIN			
CLA1	xx.y	3EH	2	LIN			
CLA1	xx.y	40H	2	LIN			
CLA1	xx.y	42H	2	LIN			
CLA1	xx.y	44H	2	LIN			
CLA1	xx.y	46H	2	LIN			
CLA1	xx.y	48H	2	LIN			
CLA1	xx.y	4AH	2	LIN			
CLA1	xx.y	4CH	2	LIN			
CLA1	xx.y	4EH	2	LIN			
CLA1	xx.y	50H	2	LIN			
CLA1	xx.y	52H	2	LIN			
CLA1	xx.y	54H	2	LIN			
CLA1	xx.y	56H	2	LIN			
CLA1	xx.y	58H	2	LIN			
CLA1	xx.y	5AH	2	LIN			
CLA1	xx.y	5CH	2	LIN			
CLA1	xx.y	5EH	2	LIN			

[1]   noP = 200.0 % = FFH, FEH as LiN value

Note:

xx   =   00 to max. 40 intervals

y   =   1 to max. 8 programs

2.3.6   Parameter "CLPA" (continued)

HiAd: 45H

Name		LoAd	Byte	Type	Setting range	Dimen-sion	Parameter meaning
dd2	dd3				dd1		
CLA2	xx.y	00H	2	LIN			
CLA2	xx.y	02H	2	LIN			
CLA2	xx.y	04H	2	LIN			
CLA2	xx.y	06H	2	LIN			
CLA2	xx.y	08H	2	LIN			
CLA2	xx.y	0AH	2	LIN			
CLA2	xx.y	0CH	2	LIN			
CLA2	xx.y	0EH	2	LIN			
CLA2	xx.y	10H	2	LIN			
CLA2	xx.y	12H	2	LIN			
CLA2	xx.y	14H	2	LIN			
CLA2	xx.y	16H	2	LIN			
CLA2	xx.y	18H	2	LIN			
CLA2	xx.y	1AH	2	LIN			
CLA2	xx.y	1CH	2	LIN			
CLA2	xx.y	1EH	2	LIN			
CLA2	xx.y	20H	2	LIN			
CLA2	xx.y	22H	2	LIN			
CLA2	xx.y	24H	2	LIN			
CLA2	xx.y	26H	2	LIN			
CLA2	xx.y	28H	2	LIN			
CLA2	xx.y	2AH	2	LIN			
CLA2	xx.y	2CH	2	LIN			
CLA2	**xx.y**	**2EH**	**2**	**LIN**	-199.9 to 199.9, noP [1]	%	Analog output 2, amplitude in interval XX of program y
CLA2	xx.y	30H	2	LIN			
CLA2	xx.y	32H	2	LIN			
CLA2	xx.y	34H	2	LIN			
CLA2	xx.y	36H	2	LIN			
CLA2	xx.y	38H	2	LIN			
CLA2	xx.y	3AH	2	LIN			
CLA2	xx.y	3CH	2	LIN			
CLA2	xx.y	3EH	2	LIN			
CLA2	xx.y	40H	2	LIN			
CLA2	xx.y	42H	2	LIN			
CLA2	xx.y	44H	2	LIN			
CLA2	xx.y	46H	2	LIN			
CLA2	xx.y	48H	2	LIN			
CLA2	xx.y	4AH	2	LIN			
CLA2	xx.y	4CH	2	LIN			
CLA2	xx.y	4EH	2	LIN			
CLA2	xx.y	50H	2	LIN			
CLA2	xx.y	52H	2	LIN			
CLA2	xx.y	54H	2	LIN			
CLA2	xx.y	56H	2	LIN			
CLA2	xx.y	58H	2	LIN			
CLA2	xx.y	5AH	2	LIN			
CLA2	xx.y	5CH	2	LIN			
CLA2	xx.y	5EH	2	LIN			

[1]   noP = 200.0 % = FFH, FEH as LiN value

Note:
xx =00 to max. 40 intervals
y = 1 to max. 8 programs

- Programmer parameters "CLPA"

  - Each parameter consists of 2 bytes.
  - The CLPA parameters are stored on the pages HiAd 43H to 45H in succession in types as HiBY and LOBY values with increasing addresses. Address offset gaps are present between the parameter types.
  - The parameter type, its range of values and its factory setting can be seen in the following tables.
  - The number and the current address of the parameters "CLtixx.y, CLbxx.y, CLAjxx.y" where j = 1, 2 depend on the number y of defined programmer programs "CLPr.y" and the number xx of their intervals. The following applies:

    $1 \le xx \le 40$ for CLti, CLb, CLAj,   if not the starting interval

    $0 \le xx \le 40$ for CLAj,   only if starting interval

    $0 \le y \le 8$ for CLPr (0 = no)
  - The total of **all** intervals is a maximum of 40, that of the programs a maximum of 8.
  - A set of parameters "CLti, CLb, CLAj" belongs to each interval with the special feature that the respective starting interval of a program is separately assigned another parameter CLA100.y and CLA200.y.
  - The parameters CLti, CLb, CLAj are always "*tightly packed*" since only a maximum of 80 or 96 (with CLAj) address locations are available per type.
  - With undefined programs or a reduction in the interval number of a program, the subsequent parameters are shifted forward to lower addresses (AUTO-DELETE).
  - With newly defined programs or an increase in the interval number of existing programs, the following parameters are shifted to higher addresses (AUTO-INSERT).
  - When defining these parameters by means of a program/interval number, they must be set to the factory values at HiAd 43H to 45H in the currently valid ERAM locations.
  - The addresses are calculated according to the following formulae:

  a) In-page address of parameters CLti:

  $$CLti(m,n) = 30 + 2\left(m + \sum_{k=0}^{n-1} I\_k \right)$$

  where: m = 1, ..., 40 = Interval no. within the n-th program
            n = 0, ..., 8 = Program no. of observed parameter
            I_k = Interval no. of k-th program
            I_0 = 0 per definition

  Example: given: Program 1 with 3 intervals
                         Program 2 not defined (no)
                         Program 3 with 5 intervals
                         Program 4 with 4 intervals
                         Program 5 not defined
                         Program 6 not defined
                         Program 7 not defined
                         Program 8 with 6 intervals

            wanted: In-page address of parameter CLti in the 3rd interval of the 4th program

  $\rightarrow CLti(3,4) = 30 + 2\ (\ 3 + 8\ ) = 30 + 22 = 52 \rightarrow \underline{34H}$

  $$\sum_{k=0}^{3} I\_k = (0) + 3 + 0 + 5 = 8$$

  $\rightarrow$ Since the CLti parameters are present on page HiAd 43H of the ERAM, the HiAd starting address of the HiBY of CLti(3,4) is therefore:

  $\rightarrow \underline{4334H}$

  b) In-page address of parameters CLb_x:

  $$CLb\_x(m,n) = 126 + 2\left(m + \sum_{k=0}^{n-1} I\_k \right)$$

  where: m = 1, ..., 40 = Interval no. within the n-th program
            n = 0, ..., 8 = Program no. of observed parameter
            I_k = Interval no. of k-th program

$I\_0 = 0$ per definition!
$\_x = 1 \dots 8$ (parameter CLb1 ... CLb8)

Example: given: $\rightarrow$ see a)
wanted: Bit position address of the CLb_x parameter "CLb7" in the 3rd interval of the 4th program

$\rightarrow$ CLb7(3,4) = $126 + 2(3 + 8) = 126 + 22 = 148 \rightarrow \underline{94H}$

$$\sum_{k=0}^{3} I\_k = (0) + 3 + 0 + 5 = 8$$

$\rightarrow$ Since the CLb_x parameters are present on page HiAd 43H of the ERAM and always only occupy the HiBY address, the HiAd starting address of the HiBY of CLb7(3,4) is therefore:
$$\rightarrow \underline{4394H}$$

$\rightarrow$ Since the following assignment applies to the CLb_x parameters "CLb1" to "CLb8" within the HiBY:
„CLb8" $\rightarrow$ MSB (Most significant Bit B7)
„CLb1" $\rightarrow$ LSB (Least significant Bit B0)
"CLb7" of the 4th program in the 3rd interval is present at bit position B6 of the ERAM HiAd address 4394H.

c) *In-page address of parameters CLAj:*

$$CLAj(m,n) = 2\left(m - 1 + \sum_{k=0}^{n-1} I\_k + \sum_{k=0}^{n} P\_k \right)$$

where: $j = 1, 2$
$m = 0, \dots, 40 =$ Interval no. within the n-th program
$n = 0, \dots, 8 =$ Program no. of observed parameter
$I\_k =$ Interval no. of k-th program
$I\_0 = 0$ per definition!
$P\_k =$ Number of defined starting intervals of the k-th program
$P\_0 = 0$ per definition

Example 1: given: $\rightarrow$ see a)
wanted: In-page address of parameter CLA2 in the 3rd interval of the 4th program

$\rightarrow$ CLA2(3,4) = $2(3 - 1 + 8 + 3) = 26 \rightarrow \underline{1AH}$

$$\sum_{k=0}^{4} P\_k = (0) + 1 + 0 + 1 + 1 = 3$$

$$\sum_{k=0}^{3} I\_k = (0) + 3 + 0 + 5 = 8$$

$\rightarrow$ Since the CLA2 parameters are present on page HiAd 45H of the ERAM, the HiAd starting address of the HiBY of CLA2(3,4) is therefore:
$$\rightarrow \underline{451AH}$$

Example 2: given: $\rightarrow$ see a)
wanted: In-page address of parameter CLA1 in the 0-th interval of the 8th program

$\rightarrow$ CLA1(0,8) = $2(0 - 1 + 12 + 4) = 30 \rightarrow \underline{1EH}$

$$\sum_{k=0}^{8} P\_k = (0) + 1 + 0 + 1 + 1 + 0 + 0 + 0 + 1 = 4$$

$$\sum_{k=0}^{7} I\_k = (0) + 3 + 0 + 5 + 4 + 0 + 0 + 0 = 12$$

$\rightarrow$ Since the CLA1 parameters are present on page HiAd 44H of the ERAM, the HiAd starting address of the HiBY of CLA1(0,8) is therefore:
$$\rightarrow \underline{441EH}$$

Note: Specific reference is again made to the fact that changing the parameter "CLPr" is not a trivial modification but results in complex restoring within the parameters CLti to CLb_x. This restoring is carried out automatically when operations are made on the front panel (AUTO-DELETE, AUTO-INSERT). In the case of operations via the SES, restoring must be carried out by the host computer.

Interpretation of the contents of the CLPA parameters must always be oriented according to the current number of defined programs "CLPr" and the number of installed intervals per program using the above formulae.

→ The meaning of the parameters "CLFo to CLSb" can be obtained from the following table "TAB1":

TAB1

Parameter	Meaning	Code
CLFo	h,'	00H
	', "	01 H
CLCY	CYCL	00H
	1	01H
	:	:
	255	0FFH

2.3.7　　Parameter "hdEF"

● Parameters which can be written/read by the computer
HiAd:　60H

Name dd2	LoAd	Byte	Type	Setting range dd1	Switch meaning
AA1	80H	1	BIN		
AA2	81H	1	BIN		
AA3	82H	1	BIN	[1]	Signal range of analog outputs 0 mA/4 mA
AA4	83H	1	BIN		
–	84H	1	BIN	(RESERVED!)	
–	85H	1	BIN	(RESERVED!)	
–	86H	1	BIN	(RESERVED!)	
AAU	87H	1	BIN		Analog output switchover
AE1	88H	1	BIN		
AE2	89H	1	BIN		
AE3	8AH	1	BIN		
AE4	8BH	1	BIN		Signal range of analog inputs 0 mA/4 mA
AE5	8CH	1	BIN		
AE6	8DH	1	BIN		
AE7	8EH	1	BIN		
AE8	8FH	1	BIN	[1]	
AEFr	**90H**	**1**	**BIN**		**Analog inputs for mains frequency suppression**
bAtt	91H	1	BIN		Battery back-up for RAM (restart conditions)
bAU	92H	1	BIN		Binary output switchover
dA-L	93H	1	BIN		Display selection: analog display or LED
dPon	**94H**	**1**	**BIN**		**Flashing of dd1 to dd3 with power-on**
nAME	**95H**	**1**	**BIN**		**Name (code) of user program memory**
oP 5	96H	1	BIN		Options in slot 5
oP 6	97H	1	BIN		Options in slot 6
SES	98H	1	BIN	Can only be read! [1]	Serial interface
tA1.U	99H	1	BIN		
tA2.U	9AH	1	BIN		
tA3.U	9BH	1	BIN		
tA4.U	9CH	1	BIN	[1]	Key switchover
tA5.U	9DH	1	BIN		
tA6.U	9EH	1	BIN		
tA7.U	9FH	1	BIN		
AA5[**]	A0H	1	BIN		
AA6[**]	A1H	1	BIN		
AA7[**]	A2H	1	BIN	[1]	Signal range Analog outputs 0 mA/4 mA
AA8[**]	A3H	1	BIN		
AA9[**]	A4H	1	BIN		
AE9[**]	A5H	1	BIN		
AE10[**]	A6H	1	BIN		
AE11[**]	A7H	1	BIN		

[1]　Interpretation:

dd2 Hardware function	dd3 Selection	Dezimal code
AA1 to AA9	**0 mA or 4 mA**	**0 or 1**
AAU	**no or YES**	**0 or 1**
AE1 to AE3	no. 0 mA or 4 mA	0, 1, 2
AE6 to AE11		
AE4, AE5	no/0 mA/4 mA/Uni.-/Uni.-[**]	0, 1, 2, 3, 4
AEFr	50 H or 60 H	0 or 1
bAtt	no or YES	0 or 1
bAU	no or YES	0 or 1
dA-L	**dA2 or L14**	**0 or 1**
dPon	**no or YES**	**0 or 1**
nAME	**0[*] to 254**	**0 or 254**
oP 5 (oP 6)	no/4 bA/5 bE/2rEL/1 AA/3 AE[**]	0 to 5
	3 AA[*]	6
SES	no / YES	0 / 1
tA1.U to tA7.U	no / YES / FOUR[**]	0 / 1 /2

[*]　Only the flashing message "APSt/MEM" is generated if nAME = 0 is entered via the SES!
　　A factory setting is **not** triggered by this, however!
[**]　**only 6DR2410**

2.3.8   Parameter "CAE4"/"CAE5"

● Parameters which can be written/read by the computer

HiAd: 42H   **only 6DR2410**

Name		LoAd	Byte	Type	Setting range	Dimen-sion	Meaning of parameter	
dd2	dd3							
SEnS	AE4	ACH	1	BIN	0 to 7		Sensor type	1)
unit	AE4	ADH	1	BIN	0 to 2		Temperature unit	2)
tc	AE4	AEH	1	BIN	0 to 10		Thermocouple type	3)
Mr	AE4	AFH	2	FIX	0.00 to 100.00	Ohm	Line resistance Pt100 2-wire	4)
tb	AE4	B1H	2	FIX	0.0 to 400.0	Degree	Temperature reference point	5)
MP	AE4	B3H	2	FIX	0 to 3		Decimal point	
MA	AE4	B5H	2	FIX	-1999 to 19999		Range start	
ME	AE4	B7H	2	FIX	-1999 to 19999		Range end	
CA	AE4	B9H	2	FIX			Calibr. range start	
CE	AE4	BBH	2	FIX			Calibr. range end	
SEnS	AE5	BDH	1	BIN	0 to 7		Sensor type	1)
unit	AE5	BEH	1	BIN	0 to 2		Temperature unit	2)
tc	AE5	BFH	1	BIN	0 to 10		Thermocouple type	3)
Mr	AE5	C0H	2	FIX	0.00 to 100.00	Ohm	Line resistance Pt100 2-wir	4)
tb	AE5	C2H	2	FIX	0.0 to 400.0	Degree	Temperature reference point	5)
MP	AE5	C4H	2	FIX	0 to 3		Decimal point	
MA	AE5	C6H	2	FIX	-1999 to 19999		Range start	
ME	AE5	C8H	2	FIX	-1999 to 19999		Range end	
CA	AE5	CAH	2	FIX			Calibr. start-of-scale value	
CE	AE5	CCH	2	FIX			Calibr. full-scale value	

1)   0   →   mV linear (without break signaling)
     1   →   Thermocouple with internal reference point
     2   →   Thermocouple with internal reference point
     3   →   Pt100 4-wire
     4   →   Pt100 3-wire
     5   →   Pt100 2-wire
     6   →   Resistor R < 600 Ohm
     7   →   Resistor R < 2.8 Ohm

2)   only for SEnS = 1 to 5
     0   →   Degree Celsius
     1   →   Degree Fahrenheit
     2   →   Degree Kelvin (absolut)

3)   only for SEnS = 1 to 2
     0   →   Type L
     1   →   Type J
     2   →   Type K (Display "H")
     3   →   Type S
     4   →   Type B
     5   →   Type R
     6   →   Type E
     7   →   Type N
     8   →   Type T
     9   →   Type U
     10 →   any (without linearization)

4)   only for SEnS = 5

5)   only for SEnS = 2

2.3.9   Settings "FdEF"

Adresses of blocks, which can be set with identifications

HiAd: 60H

Name	LoAd	Byte
–	00H	1
b01.F	01H	1
b02.F	02H	1
b03.F	03H	1
b04.F	04H	1
b05.F	05H	1
b06.F	06H	1
b07.F	07H	1
b08.F	08H	1
b09.F	09H	1
b10.F	0AH	1
b11.F	0BH	1
b12.F	0CH	1
b13.F	0DH	1
b14.F	0EH	1
b15.F	0FH	1
b16.F	10H	1
b17.F	11H	1
b18.F	12H	1
b19.F	13H	1
b20.F	14H	1
b21.F	15H	1
b22.F	16H	1
b23.F	17H	1
b24.F	18H	1
b25.F	19H	1
b26.F	1AH	1
b27.F	1BH	1
b28.F	1CH	1
b29.F	1DH	1
b30.F	1EH	1
b31.F	1FH	1
b32.F	20H	1
b33.F	21H	1
b34.F	22H	1
b35.F	23H	1
b36.F	24H	1
b37.F	25H	1
b38.F	26H	1
b39.F	27H	1
b40.F	28H	1
b41.F	29H	1
b42.F	2AH	1
b43.F	2BH	1
b44.F	2CH	1
b45.F	2DH	1
b46.F	2EH	1
b47.F	2FH	1
b48.F	30H	1
b49.F	31H	1
b50.F	32H	1
b51.F	33H	1
b52.F	34H	1
b53.F	35H	1
b54.F	36H	1
b55.F	37H	1
b56.F	38H	1
b57.F	39H	1
b58.F	3AH	1
b59.F	3BH	1
b60.F	3CH	1

Name	LoAd	Byte
b61.F	3DH	1
b62.F	3EH	1
b63.F	3FH	1
b64.F	40H	1
b65.F	41H	1
b66.F	42H	1
b67.F	43H	1
b68.F	44H	1
b69.F	45H	1
b70.F	46H	1
b71.F	47H	1
b72.F	48H	1
b73.F	49H	1
b74.F	4AH	1
b75.F	4BH	1
b76.F	4CH	1
b77.F	4DH	1
b78.F	4EH	1
b79.F	4FH	1
b80.F	50H	1
b81.F	51H	1
b82.F	52H	1
b83.F	53H	1
b84.F	54H	1
b85.F	55H	1
c01.F	56H	1
c02.F	57H	1
c03.F	58H	1
c04.F	59H	1
c05.F	5AH	1
c06.F	5BH	1
c07.F	5CH	1
c08.F	5DH	1
c09.F	5EH	1
c10.F	5FH	1
c11.F	60H	1
c12.F	61H	1
c13.F	62H	1
c14.F	63H	1
c15.F	64H	1
d01.F	65H	1
d02.F	66H	1
d03.F	67H	1
h01.F	68H	1
h02.F	69H	1

HiAd: 50H   **only 6DR2410**

Name	LoAd	Byte
b86.F	00H	1
b87.F	01H	1
b88.F	02H	1
b89.F	03H	1
b90.F	04H	1
b91.F	05H	1
b92.F	06H	1
b93.F	07H	1
b94.F	08H	1
b95.F	09H	1
b96.F	0AH	1
b97.F	0BH	1
b98.F	0CH	1
b99.F	0DH	1
bH0.F	0EH	1
bH1.F	0FH	1
bH2.F	10H	1
bH3.F	11H	1
bH4.F	12H	1
bH5.F	13H	1
bH6.F	14H	1
bH7.F	15H	1
bH8.F	16H	1
bH9.F	17H	1
c16.F	18H	1
c17.F	19H	1
c18.F	1AH	1
c19.F	1BH	1
c20.F	1CH	1
c21.F	1DH	1
c22.F	1EH	1
c23.F	1FH	1
c24.F	20H	1
c25.F	21H	1
c26.F	22H	1
c27.F	23H	1
c28.F	24H	1
c29.F	25H	1
c30.F	26H	1
c31.F	27H	1
c32.F	28H	1
c33.F	29H	1
d04.F	2AH	1
h03.F	2BH	1
h04.F	2CH	1

2.3.9   **Settings ”FdEF”** (continued)

Identifications ”FdEF”

b blocks b01.F to bH9.F
Each block can be defined as often as you want

Identifications	Display dd1
00H	ndEF
01H	AbS
02H	Add
03H	AMEM
04H	AMPL
05H	And
06H	ASo
07H	bSo
08H	CoMP
09H	CoUn
0AH	dEbA
0BH	dFF
0CH	diF
0DH	diu
0EH	Eor
0FH	FiLt
10H	LG
11H	LiMi
12H	LinE
13H	Ln
14H	MAME
15H	MASE
16H	MiME
17H	MiSE
18H	MULt
19H	nAnd
1AH	nor
1BH	or
1CH	Pot
1DH	root
1EH	SUb
1FH	tFF
20H	tiME

c blocks c01.F to c32.F
Each block can be defined only one time

Identifications	Display dd1
00H	ndEF
21H	AFi1
22H	AFi2
23H	Ain1
24H	Ain2
25H	bin1
26H	bin2
27H	CPt1
28H	CPt2
29H	dti1
2AH	dti2
2BH	FUL1
2CH	FUL2
2DH	FUL3
2EH	FUP1
2FH	FUP2
39H	Ain3*)
3AH	Ain4*)
3BH	bin3*)
3CH	bin4*)
3DH	bin5*)
3EH	bin6*)
3FH	PUM1*)
40H	PUM2*)
41H	PUM3*)
42H	PUM4*)
43H	SPr1*)

c blocks c01.F to c32.F (continued)

Identifications	Display dd1
44H	SPr2*)
45H	SPr3*)
46H	SPr4*)
47H	SPr5*)
48H	SPr6*)
49H	SPr7*)
4AH	SPr8*)

d blocks d01.F to d04.F
Each block can be defined only one time

Identifications	Display dd1
00H	ndEF
30H	CLoc
31H	MUP1
32H	MUP2
4BH	Cnt1*)

h blocks h01.F to h04.F
Each block can be defined only one time

Identifications	Display dd1
00H	ndEF
33H	Ccn1
34H	Ccn2
35H	CSE1
36H	CSE2
37H	CSi1
38H	CSi2
4CH	Ccn3*)
4DH	Ccn4*)
4EH	CSE3*)
4FH	CSE4*)
50H	CSi3*)
51H	CSi4*)

Example:

- Block b20.F: MULt
- Block h03.F: CSi4

HiAd	LoAd	Content
60H	14H	18H
50H	2BH	51H

  *) **only 6DR2410**

2.3.10 Settings "FCon"

Each connectable input refers to a 2-byte-pointer which describes the source. The high byte and the low byte of this pointer are stored on 2 different HiAds at the same LoAd.
Only connections to defined blocks are possible.

HiAd: 64H → HiBY pointer of the source
HiAd: 67H → LoBY pointer of the source

Name dd2	LoAd	Name dd2	LoAd	Name dd2	LoAd	Name dd2	LoAd
b01.1	00H	b22.1	3FH	b43.1	7EH	b64.3	BFH
b01.2	01H	b22.2	40H	b43.2	7FH	b65.1	C0H
b01.3	02H	b22.3	41H	b43.3	80H	b65.2	C1H
b02.1	03H	b23.1	42H	b44.1	81H	b65.3	C2H
b02.2	04H	b23.2	43H	b44.2	82H	b66.1	C3H
b02.3	05H	b23.3	44H	b44.3	83H	b66.2	C4H
b03.1	06H	b24.1	45H	b45.1	84H	b66.3	C5H
b03.2	07H	b24.2	46H	b45.2	85H	b67.1	C6H
b03.3	08H	b24.3	47H	b45.3	86H	b67.2	C7H
b04.1	09H	b25.1	48H	b46.1	87H	b67.3	C8H
b04.2	0AH	b25.2	49H	b46.2	88H	b68.1	C9H
b04.3	0BH	b25.3	4AH	b46.3	89H	b68.2	CAH
b05.1	0CH	b26.1	4BH	b47.1	8AH	b68.3	CBH
b05.2	0DH	b26.2	4CH	b47.2	8BH	b69.1	CCH
b05.3	0EH	b26.3	4DH	b47.3	8CH	b69.2	CDH
b06.1	0FH	b27.1	4EH	b48.1	8DH	b69.3	CEH
b06.2	10H	b27.2	4FH	b48.2	8EH	b70.1	CFH
b06.3	11H	b27.3	50H	b48.3	8FH	b70.2	D0H
b07.1	12H	b28.1	51H	b49.1	90H	b70.3	D1H
b07.2	13H	b28.2	52H	b49.2	91H	b71.1	D2H
b07.3	14H	b28.3	53H	b49.3	92H	b71.2	D3H
b08.1	15H	b29.1	54H	b50.1	93H	b71.3	D4H
b08.2	16H	b29.2	55H	b50.2	94H	b72.1	D5H
b08.3	17H	b29.3	56H	b50.3	95H	b72.2	D6H
b09.1	18H	b30.1	57H	b51.1	96H	b72.3	D7H
b09.2	19H	b30.2	58H	b51.2	97H	b73.1	D8H
b09.3	1AH	b30.3	59H	b51.3	98H	b73.2	D9H
b10.1	1BH	b31.1	5AH	b52.1	99H	b73.3	DAH
b10.2	1CH	b31.2	5BH	b52.2	9AH	b74.1	DBH
b10.3	1DH	b31.3	5CH	b52.3	9BH	b74.2	DCH
b11.1	1EH	b32.1	5DH	b53.1	9CH	b74.3	DDH
b11.2	1FH	b32.2	5EH	b53.2	9DH	b75.1	DEH
b11.3	20H	b32.3	5FH	b53.3	9EH	b75.2	DFH
b12.1	21H	b33.1	60H	b54.1	9FH	b75.3	E0H
b12.2	22H	b33.2	61H	b54.2	A0H	b76.1	E1H
b12.3	23H	b33.3	62H	b54.3	A1H	b76.2	E2H
b13.1	24H	b34.1	63H	b55.1	A2H	b76.3	E3H
b13.2	25H	b34.2	64H	b55.2	A3H	b77.1	E4H
b13.3	26H	b34.3	65H	b55.3	A4H	b77.2	E5H
b14.1	27H	b35.1	66H	b56.1	A5H	b77.3	E6H
b14.2	28H	b35.2	67H	b56.2	A6H	b78.1	E7H
b14.3	29H	b35.3	68H	b56.3	A7H	b78.2	E8H
b15.1	2AH	b36.1	69H	b57.1	A8H	b78.3	E9H
b15.2	2BH	b36.2	6AH	b57.2	A9H	b79.1	EAH
b15.3	2CH	b36.3	6BH	b57.3	AAH	b79.2	EBH
b16.1	2DH	b37.1	6CH	b58.1	ABH	b79.3	ECH
b16.2	2EH	b37.2	6DH	b58.2	ACH	b80.1	EDH
b16.3	2FH	b37.3	6EH	b58.3	ADH	b80.2	EEH
b17.1	30H	b38.1	6FH	b59.1	AEH	b80.3	EFH
b17.2	31H	b38.2	70H	b59.2	AFH	b81.1	F0H
b17.3	32H	b38.3	71H	b59.3	B0H	b81.2	F1H
b18.1	33H	b39.1	72H	b60.1	B1H	b81.3	F2H
b18.2	34H	b39.2	73H	b60.2	B2H	b82.1	F3H
b18.3	35H	b39.3	74H	b60.3	B3H	b82.2	F4H
b19.1	36H	b40.1	75H	b61.1	B4H	b82.3	F5H
b19.2	37H	b40.2	76H	b61.2	B5H	b83.1	F6H
b19.3	38H	b40.3	77H	b61.3	B6H	b83.2	F7H
b20.1	39H	b41.1	78H	b62.1	B7H	b83.3	F8H
b20.2	3AH	b41.2	79H	b62.2	B8H	b84.1	F9H
b20.3	3BH	b41.3	7AH	b62.3	B9H	b84.2	FAH
b21.1	3CH	b42.1	7BH	b63.1	BAH	b84.3	FBH
b21.2	3DH	b42.2	7CH	b63.2	BBH	b85.1	FCH
b21.3	3EH	b42.3	7DH	b63.3	BCH	b85.2	FDH
				b64.1	BDH	b85.3	FEH
				b64.2	BEH	c01.1	FFH

2.3.10   Settings "FCon" (continued)

HiAd: 65H → HiBY pointer of the source
HiAd: 68H → LoBY pointer of the source

Name dd2	LoAd
c01.2	00H
c01.3	01H
c01.4	02H
c02.1	03H
c02.2	04H
c02.3	05H
c02.4	06H
c03.1	07H
c03.2	08H
c03.3	09H
c03.4	0AH
c04.1	0BH
c04.2	0CH
c04.3	0DH
c04.4	0EH
c05.1	0FH
c05.2	10H
c05.3	11H
c05.4	12H
c06.1	13H
c06.2	14H
c06.3	15H
c06.4	16H
c07.1	17H
c07.2	18H
c07.3	19H
c07.4	1AH
c08.1	1BH
c08.2	1CH
c08.3	1DH
c08.4	1EH
c09.1	1FH
c09.2	20H
c09.3	21H
c09.4	22H
c10.1	23H
c01.2	24H
c10.3	25H
c10.4	26H
c11.1	27H
c11.2	28H
c11.3	29H
c11.4	2AH
c12.1	2BH
c12.2	2CH
c12.3	2DH
c12.4	2EH
c13.1	2FH
c13.2	30H
c13.3	31H
c13.4	32H
c14.1	33H
c14.2	34H
c14.3	35H
c14.4	36H
c15.1	37H
c15.2	38H
c15.3	39H
c15.4	3AH
d1.01	3BH
d1.02	3CH
d1.03	3DH
d1.04	3EH
d1.05	3FH

Name dd2	LoAd
d1.06	40H
d1.07	41H
d1.08	42H
d1.09	43H
d1.10	44H
d1.11	45H
d1.12	46H
d2.01	47H
d2.02	48H
d2.03	49H
d2.04	4AH
d2.05	4BH
d2.06	4CH
d2.07	4DH
d2.08	4EH
d2.09	4FH
d2.10	50H
d2.11	51H
d2.12	52H
d3.01	53H
d3.02	54H
d3.03	55H
d3.04	56H
d3.05	57H
d3.06	58H
d3.07	59H
d3.08	5AH
d3.09	5BH
d3.10	5CH
d3.11	5DH
d3.12	5EH
h1.01	5FH
h1.02	60H
h1.03	61H
h1.04	62H
h1.05	63H
h1.06	64H
h1.07	65H
h1.08	66H
h1.09	67H
h1.10	68H
h1.11	69H
h1.12	6AH
h1.13	6BH
h1.14	6CH
h1.15	6DH
h1.16	6EH
h1.17	6FH
h1.18	70H
h2.01	71H
h2.02	72H
h2.03	73H
h2.04	74H
h2.05	75H
h2.06	76H
h2.07	77H
h2.08	78H
h2.09	79H
h2.10	7AH
h2.11	7BH
h2.12	7CH
h2.13	7DH
h2.14	7EH
h2.15	7FH

Name dd2	LoAd
h2.16	80H
h2.17	81H
h2.18	82H
AA1.1	83H
AA1.2	84H
AA2.1	85H
AA2.2	86H
AA3.1	87H
AA3.2	88H
AA4.1	89H
AA4.2	8AH
– [1]	8BH
– [1]	8CH
– [1]	8DH
– [1]	8EH
– [1]	8FH
– [1]	90H
AA.U	91H
bA1.1	92H
bA1.2	93H
bA2.1	94H
bA2.2	95H
bA3.1	96H
bA3.2	97H
bA4.1	98H
bA4.2	99H
bA05	9AH
bA06	9BH
bA07	9CH
bA08	9DH
bA09	9EH
bA10	9FH
bA11	A0H
bA12	A1H
bA13	A2H
bA14	A3H
bA15	A4H
bA16	A5H
bA.U	A6H
bLPS	A7H
bLS	A8H
dA1.1	A9H
dA1.2	AAH
dA1.U	ABH
dA2.1	ACH
dA2.2	ADH
dA2.U	AEH
dd1.1	AFH
dd1.2	B0H
dd1.U	B1H
dd2.1	B2H
dd2.2	B3H
dd2.U	B4H
dd3.1	B5H
dd3.2	B6H
dd3.U	B7H
L01.1	B8H
L01.2	B9H
L01.U	BAH
L02.1	BBH
L02.2	BCH
L02.U	BDH
L03.1	BEH
L03.2	BFH
L03.U	C0H
L04.1	C1H
L04.2	C2H

Name dd2	LoAd
L04.U	C3H
L05.1	C4H
L05.2	C5H
L05.U	C6H
L06.1	C7H
L06.2	C8H
L06.U	C9H
L07.1	CAH
L07.2	CBH
L07.U	CCH
L08.1	CDH
L08.2	CEH
L08.U	CFH
L09.1	D0H
L09.2	D1H
L09.U	D2H
L10.1	D3H
L10.2	D4H
L10.U	D5H
L11.1	D6H
L11.2	D7H
L11.U	D8H
L12.1	D9H
L12.2	DAH
L12.U	DBH
L13.1	DCH
L13.2	DDH
L13.U	DEH
L14.0	DFH
L14.1	E0H
L14.2	E1H
L14.3	E2H
L14.4	E3H
L14.5	E4H
L14.6	E5H
L14.7	E6H
L14.8	E7H
L14.9	E8H
SAA1	E9H
SAA2	EAH
SAA3	EBH
SAA4	ECH
SAA5	EDH
SAA6	EEH
SAA7	EFH
SAA8	F0H
SA1.1	F1H
SA1.2	F2H
SA2.1	F3H
SA2.2	F4H
SA3.1	F5H
SA3.2	F6H
SA4.1	F7H
SA4.2	F8H
SA5.1	F9H
SA5.2	FAH
SA6.1	FBH
SA6.2	FCH
SA7.1	FDH
SA7.2	FEH
SA8.1	FFH

*) reserved

2.3.10   Settings "FCon" (continued)

HiAd: 66H → HiBY pointer of the source
HiAd: 69H → LoBY pointer of the source

Name dd2	LoAd
SA8.2	00H
SbA1	01H
SbA2	02H
SbA3	03H
SbA4	04H
SbA5	05H
SbA6	06H
SbA7	07H
SbA8	08H
tA1.U	09H
tA2.U	0AH
tA3.U	0BH
tA4.U	0CH
tA5.U	0DH
tA6.U	0EH
tA7.U	0FH

HiAd: 54H → HiBY pointer of the source   **only 6DR2410**
HiAd: 56H → LoBY pointer of the source   **only 6DR2410**

Name dd2	LoAd	Name dd2	LoAd
b86.1	00H	b98.1	24H
b86.2	01H	b98.2	25H
b86.3	02H	b98.3	26H
b87.1	03H	b99.1	27H
b87.2	04H	b99.2	28H
b87.3	05H	b99.3	29H
b88.1	06H	bH0.1	2AH
b88.2	07H	bH0.2	2BH
b88.3	08H	bH0.3	2CH
b89.1	09H	bH1.1	2DH
b89.2	0AH	bH1.2	2EH
b89.3	0BH	bH1.3	2FH
b90.1	0CH	bH2.1	30H
b90.2	0DH	bH2.2	31H
b90.3	0EH	bH2.3	32H
b91.1	0FH	bH3.1	33H
b91.2	10H	bH3.2	34H
b91.3	11H	bH3.3	35H
b92.1	12H	bH4.1	36H
b92.2	13H	bH4.2	37H
b92.3	14H	bH4.3	38H
b93.1	15H	bH5.1	39H
b93.2	16H	bH5.2	3AH
b93.3	17H	bH5.3	3BH
b94.1	18H	bH6.1	3CH
b94.2	19H	bH6.2	3DH
b94.3	1AH	bH6.3	3EH
b95.1	1BH	bH7.1	3FH
b95.2	1CH	bH7.2	40H
b95.3	1DH	bH7.3	41H
b96.1	1EH	bH8.1	42H
b96.2	1FH	bH8.2	43H
b96.3	20H	bH8.3	44H
b97.1	21H	bH9.1	45H
b97.2	22H	bH9.2	46H
b97.3	23H	bH9.3	47H

Name dd2	LoAd	Name dd2	LoAd
c16.1	48H	c32.2	89H
c16.2	49H	c32.3	8AH
c16.3	4AH	c32.4	8BH
c16.4	4BH	c33.1	8CH
c17.1	4CH	c33.2	8DH
c17.2	4DH	c33.3	8EH
c17.3	4EH	c33.4	8FH
c17.4	4FH	d4.01	90H
c18.1	50H	d4.02	91H
c18.2	51H	d4.03	92H
c18.3	52H	d4.04	93H
c18.4	53H	d4.05	94H
c19.1	54H	d4.06	95H
c19.2	55H	d4.07	96H
c19.3	56H	d4.08	97H
c19.4	57H	d4.09	98H
c20.1	58H	d4.10	99H
c20.2	59H	d4.11	9AH
c20.3	5AH	d4.12	9BH
c20.4	5BH	h3.01	9CH
c21.1	5CH	h3.02	9DH
c21.2	5DH	h3.03	9EH
c21.3	5EH	h3.04	9FH
c21.4	5FH	h3.05	A0H
c22.1	60H	h3.06	A1H
c22.2	61H	h3.07	A2H
c22.3	62H	h3.08	A3H
c22.4	63H	h3.09	A4H
c23.1	64H	h3.10	A5H
c23.2	65H	h3.11	A6H
c23.3	66H	h3.12	A7H
c23.4	67H	h3.13	A8H
c24.1	68H	h3.14	A9H
c24.2	69H	h3.15	AAH
c24.3	6AH	h3.16	ABH
c24.4	6BH	h3.17	ACH
c25.1	6CH	h3.18	ADH
c25.2	6DH	h4.01	AEH
c25.3	6EH	h4.02	AFH
c25.4	6FH	h4.03	B0H
c26.1	70H	h4.04	B1H
c26.2	71H	h4.05	B2H
c26.3	72H	h4.06	B3H
c26.4	73H	h4.07	B4H
c27.1	74H	h4.08	B5H
c27.2	75H	h4.09	B6H
c27.3	76H	h4.10	B7H
c27.4	77H	h4.11	B8H
c28.1	78H	h4.12	B9H
c28.2	79H	h4.13	BAH
c28.3	7AH	h4.14	BBH
c28.4	7BH	h4.15	BCH
c29.1	7CH	h4.16	BDH
c29.2	7DH	h4.17	BEH
c29.3	7EH	h4.18	BFH
c29.4	7FH	AA5.1	C0H
c30.1	80H	AA6.1	C1H
c30.2	81H	AA7.1	C2H
c30.3	82H	AA8.1	C3H
c30.4	83H	AA9.1	C4H
c31.1	84H	blb	C5H
c31.2	85H	dA1.3	C6H
c31.3	86H	dA1.4	C7H
c31.4	87H	dA1.M	C8H
c32.1	88H	dA2.3	C9H

2.3.10   Settings "FCon" (continued)

only 6DR2410

HiAd: 54H → HiBY pointer of the source (continued)
HiAd: 56H → LoBY pointer of the source (continued)

HiAd: 55H → HiBY pointer of the source
HiAd: 57H → LoBY pointer of the source

Name dd2	LoAd
dA2.4	CAH
dA2.M	CBH
dd1.3	CCH
dd1.4	CDH
dd1.M	CEH
dd2.3	CFH
dd2.4	D0H
dd2.M	D1H
dd3.3	D2H
dd3.4	D3H
dd3.M	D4H
L01.3	D5H
L01.4	D6H
L01.M	D7H
L02.3	D8H
L02.4	D9H
L02.M	DAH
L03.3	DBH
L03.4	DCH
L03.M	DDH
L04.3	DEH
L04.4	DFH
L04.M	E0H
L05.3	E1H
L05.4	E2H
L05.M	E3H
L06.3	E4H
L06.4	E5H
L06.M	E6H
L07.3	E7H
L07.4	E8H
L07.M	E9H
L08.3	EAH
L08.4	EBH
L08.M	ECH
L09.3	EDH
L09.4	EEH
L09.M	EFH
L10.3	F0H
L10.4	F1H
L10.M	F2H
L11.3	F3H
L11.4	F4H
L11.M	F5H
L12.3	F6H
L12.4	F7H
L12.M	F8H
L13.3	F9H
L13.4	FAH
L13.M	FBH
SAA9	FCH
SA10	FDH
SA11	FEH
SA12	FFH

Name dd2	LoAd
SA13	00H
SA14	01H
SA15	02H
SA16	03H
SA9.1	04H
SA9.2	05H
S10.1	06H
S10.2	07H
S11.1	08H
S11.2	09H
S12.1	0AH
S12.2	0BH
S13.1	0CH
S13.2	0DH
S14.1	0EH
S14.2	0FH
S15.1	10H
S15.2	11H
S16.1	12H
S16.2	13H
SbA9	14H
Sb10	15H
Sb11	16H
Sb12	17H
Sb13	18H
Sb14	19H
Sb15	1AH
Sb16	1BH
tA1.M	1CH
tA2.M	1DH
tA3.M	1EH
tA4.M	1FH
tA5.M	20H
tA6.M	21H
tA7.M	22H

2.3.10 Settings "FCon" (continued)

Identifications of switchable outputs (HiBY/LoBY) which can be connected as HiBY/LoBY pointer at the input
Identifications with HiBY = 68H only for 6DR2410
Analog outputs

Output dd1	HiBY	LoBY	Output dd1	HiBY	LoBY	Output dd1	HiBY	LoBY
ncon	4AH	00H	b63.A	4AH	3FH	c17.A	68H	19H
b01.A	4AH	01H	b64.A	4AH	40H	c18.A	68H	1AH
b02.A	4AH	02H	b65.A	4AH	41H	c19.A	68H	1BH
b03.A	4AH	03H	b66.A	4AH	42H	c20.A	68H	1CH
b04.A	4AH	04H	b67.A	4AH	43H	c21.A	68H	1DH
b05.A	4AH	05H	b68.A	4AH	44H	c22.A	68H	1EH
b06.A	4AH	06H	b69.A	4AH	45H	c23.A	68H	1FH
b07.A	4AH	07H	b70.A	4AH	46H	c24.A	68H	20H
b08.A	4AH	08H	b71.A	4AH	47H	c25.A	68H	21H
b09.A	4AH	09H	b72.A	4AH	48H	c26.A	68H	22H
b10.A	4AH	0AH	b73.A	4AH	49H	c27.A	68H	23H
b11.A	4AH	0BH	b74.A	4AH	4AH	c28.A	68H	24H
b12.A	4AH	0CH	b75.A	4AH	4BH	c29.A	68H	25H
b13.A	4AH	0DH	b76.A	4AH	4CH	c30.A	68H	26H
b14.A	4AH	0EH	b77.A	4AH	4DH	c31.A	68H	27H
b15.A	4AH	0FH	b78.A	4AH	4EH	c32.A	68H	28H
b16.A	4AH	10H	b79.A	4AH	4FH	c33.A	68H	29H
b17.A	4AH	11H	b80.A	4AH	50H	d1.1A	4AH	65H
b18.A	4AH	12H	b81.A	4AH	51H	d1.2A	4AH	66H
b19.A	4AH	13H	b82.A	4AH	52H	d1.3A	4AH	67H
b20.A	4AH	14H	b83.A	4AH	53H	d1.4A	4AH	68H
b21.A	4AH	15H	b84.A	4AH	54H	d1.5A	4AH	69H
b22.A	4AH	16H	b85.A	4AH	55H	d1.6A	4AH	6AH
b23.A	4AH	17H	b86.A	68H	00H	d1.7A	4AH	6BH
b24.A	4AH	18H	b87.A	68H	01H	d1.8A	4AH	6CH
b25.A	4AH	19H	b88.A	68H	02H	d1.9A	4AH	6DH
b26.A	4AH	1AH	b89.A	68H	03H	d1.10	4AH	6EH
b27.A	4AH	1BH	b90.A	68H	04H	d1.11	4AH	6FH
b28.A	4AH	1CH	b91.A	68H	05H	d1.12	4AH	70H
b29.A	4AH	1DH	b92.A	68H	06H	d1.13	4AH	71H
b30.A	4AH	1EH	b93.A	68H	07H	d1.14	4AH	72H
b31.A	4AH	1FH	b94.A	68H	08H	d2.1A	4AH	73H
b32.A	4AH	20H	b95.A	68H	09H	d2.2A	4AH	74H
b33.A	4AH	21H	b96.A	68H	0AH	d2.3A	4AH	75H
b34.A	4AH	22H	b97.A	68H	0BH	d2.4A	4AH	76H
b35.A	4AH	23H	b98.A	68H	0CH	d2.5A	4AH	77H
b36.A	4AH	24H	b99.A	68H	0DH	d2.6A	4AH	78H
b37.A	4AH	25H	bH0.A	68H	0EH	d2.7A	4AH	79H
b38.A	4AH	26H	bH1.A	68H	0FH	d2.8A	4AH	7AH
b39.A	4AH	27H	bH2.A	68H	10H	d2.9A	4AH	7BH
b40.A	4AH	28H	bH3.A	68H	11H	d2.10	4AH	7CH
b41.A	4AH	29H	bH4.A	68H	12H	d2.11	4AH	7DH
b42.A	4AH	2AH	bH5.A	68H	13H	d2.12	4AH	7EH
b43.A	4AH	2BH	bH6.A	68H	14H	d2.13	4AH	7FH
b44.A	4AH	2CH	bH7.A	68H	15H	d2.14	4AH	80H
b45.A	4AH	2DH	bH8.A	68H	16H	d3.1A	4AH	81H
b46.A	4AH	2EH	bH9.A	68H	17H	d3.2A	4AH	82H
b47.A	4AH	2FH	c01.A	4AH	56H	d3.3A	4AH	83H
b48.A	4AH	30H	c02.A	4AH	57H	d3.4A	4AH	84H
b49.A	4AH	31H	c03.A	4AH	58H	d3.5A	4AH	85H
b50.A	4AH	32H	c04.A	4AH	59H	d3.6A	4AH	86H
b51.A	4AH	33H	c05.A	4AH	5AH	d3.7A	4AH	87H
b52.A	4AH	34H	c06.A	4AH	5BH	d3.8A	4AH	88H
b53.A	4AH	35H	c07.A	4AH	5CH	d3.9A	4AH	89H
b54.A	4AH	36H	c08.A	4AH	5DH	d3.10	4AH	8AH
b55.A	4AH	37H	c09.A	4AH	5EH	d3.11	4AH	8BH
b56.A	4AH	38H	c10.A	4AH	5FH	d3.12	4AH	8CH
b57.A	4AH	39H	c11.A	4AH	60H	d3.13	4AH	8DH
b58.A	4AH	3AH	c12.A	4AH	61H	d3.14	4AH	8EH
b59.A	4AH	3BH	c13.A	4AH	62H	d4.1A	68H	2AH
b60.A	4AH	3CH	c14.A	4AH	63H	d4.2A	68H	2BH
b61.A	4AH	3DH	c15.A	4AH	64H	d4.3A	68H	2CH
b62.A	4AH	3EH	c16.A	68H	18H	d4.4A	68H	2DH

2.3.10   Settings "FCon" (continued)

Analog outputs (continued)

Output dd1	HiBY	LoBY	Output dd1	HiBY	LoBY	Output dd1	HiBY	LoBY
d4.5A	68H	2EH	Pd25	68H	4BH	S103	68H	67H
d4.6A	68H	2FH	Pd26	68H	4CH	S113	68H	68H
d4.7A	68H	30H	Pd27	68H	4DH	S123	68H	69H
d4.8A	68H	31H	Pd28	68H	4EH	S133	68H	6AH
d4.9A	68H	32H	Pd29	68H	4FH	S143	68H	6BH
d4.10	68H	33H	Pd30	68H	50H	S153	68H	6CH
d4.11	68H	34H	Pd31	68H	51H	S163	68H	6DH
d4.12	68H	35H	Pd32	68H	52H	-1.000	4AH	DCH
d4.13	68H	36H	Pd33	68H	53H	-0.500	4AH	DDH
d4.14	68H	37H	Pd34	68H	54H	-0.200	4AH	DEH
h1.1A	4AH	8FH	Pd35	68H	55H	-0.100	4AH	DFH
h1.2A	4AH	90H	Pd36	68H	56H	-0.050	4AH	E0H
h1.3A	4AH	91H	Pd37	68H	57H	-0.020	4AH	E1H
h1.4A	4AH	92H	Pd38	68H	58H	-0.010	4AH	E2H
h2.1A	4AH	93H	Pd39	68H	59H	-0.005	4AH	E3H
h2.2A	4AH	94H	Pd40	68H	5AH	0.000	4AH	E4H
h2.3A	4AH	95H	PL01	4AH	B7H	0.001	4AH	E5H
h2.4A	4AH	96H	PL02	4AH	B8H	0.002	4AH	E6H
h3.1A	68H	38H	PL03	4AH	B9H	0.005	4AH	E7H
h3.2A	68H	39H	PL04	4AH	BAH	0.010	4AH	E8H
h3.3A	68H	3AH	PL05	4AH	BBH	0.020	4AH	E9H
h3.4A	68H	3BH	PL06	4AH	BCH	0.050	4AH	EAH
h4.1A	68H	3CH	PL07	4AH	BDH	0.100	4AH	EBH
h4.2A	68H	3DH	PL08	4AH	BEH	0.200	4AH	ECH
h4.3A	68H	3EH	PL09	4AH	BFH	0.500	4AH	EDH
h4.4A	68H	3FH	PL10	4AH	C0H	1.000	4AH	EEH
AA1.3	4AH	97H	PL11	4AH	C1H	1.050	4AH	EFH
AA2.3	4AH	98H	PL12	4AH	C2H	1.100	4AH	F0H
AA3.3	4AH	99H	PL13	4AH	C3H	2.718	4AH	F1H
AA4.3	4AH	9AH	PL14	4AH	C4H			
AE1A	4AH	9EH	PL15	4AH	C5H			
AE2A	4AH	9FH	PL16	4AH	06H			
AE3A	4AH	A0H	PL17	4AH	C7H			
AE4A	4AH	A1H	PL18	4AH	C8H			
AE5A	4AH	A2H	PL19	4AH	C9H			
AE6A	4AH	A3H	PL20	4AH	CAH			
AE7A	4AH	A4H	PL21	4AH	CBH			
AE8A	4AH	A5H	PL22	4AH	CCH			
AE9A	68H	40H	PL23	4AH	CDH			
AE10	68H	41H	PL24	4AH	CEH			
AE11	68H	42H	PL25	4AH	CFH			
Pd01	4AH	A7H	PL26	4AH	D0H			
Pd02	4AH	A8H	PL27	4AH	D1H			
Pd03	4AH	A9H	PL28	4AH	D2H			
Pd04	4AH	AAH	PL29	4AH	D3H			
Pd05	4AH	ABH	PL30	68H	5BH			
Pd06	4AH	ACH	PL31	68H	5CH			
Pd07	4AH	ADH	PL32	68H	5DH			
Pd08	4AH	AEH	PL33	68H	5EH			
Pd09	4AH	AFH	PL34	68H	5FH			
Pd10	4AH	B0H	PL35	68H	60H			
Pd11	4AH	B1H	PL36	68H	61H			
Pd12	4AH	B2H	PL37	68H	62H			
Pd13	4AH	B3H	PL38	68H	63H			
Pd14	4AH	B4H	PL39	68H	64H			
Pd15	4AH	B5H	PL40	68H	65H			
Pd16	4AH	B6H	SA13	4AH	D4H			
Pd17	68H	43H	SA23	4AH	D5H			
Pd18	68H	44H	SA33	4AH	D6H			
Pd19	68H	45H	SA43	4AH	D7H			
Pd20	68H	46H	SA53	4AH	D8H			
Pd21	68H	47H	SA63	4AH	D9H			
Pd22	68H	48H	SA73	4AH	DAH			
Pd23	68H	49H	SA83	4AH	DBH			
Pd24	68H	4AH	SA93	68H	66H			

2.3.10   **Settings "FCon"** (continued)

Binary outputs

Outputs dd1	HiBY	LoBY
AdAP	4AH	F2H
AE1!	4AH	F3H
AE2!	4AH	F4H
AE3!	4AH	F5H
AE4!	4AH	F6H
AE5!	4AH	F7H
AE6!	4AH	F8H
AE7!	4AH	F9H
AE8!	4AH	FAH
AE9!	68H	6EH
A10!	68H	6FH
A11!	68H	70H
bA13	4AH	FBH
bA23	4AH	FCH
bA33	4AH	FDH
bA43	4AH	FEH
bE01	4AH	FFH
bE02	4BH	00H
bE03	4BH	01H
bE04	4BH	02H
bE05	4BH	03H
bE06	4BH	04H
bE07	4BH	05H
bE08	4BH	06H
bE09	4BH	07H
bE10	4BH	08H
bE11	4BH	09H
bE12	4BH	0AH
bE13	4BH	0BH
bE14	4BH	0CH
Hi	4BH	0DH
Lo	4BH	0EH
nAE!	4BH	0FH
nPAR	4BH	10H
nPon	4BH	12H
nStr	4BH	13H
oPEr	68H	71H
rES1	68H	72H
rES2	68H	73H
SbE1	4BH	14H
SbE2	4BH	15H
SbE3	4BH	16H
SbE4	4BH	17H
SbE5	4BH	18H
SbE6	4BH	19H
SbE7	4BH	1AH
SbE8	4BH	1BH
SbE9	68H	74H
SbF0	68H	75H
SbF1	68H	76H
SbF2	68H	77H
SbF3	68H	78H
SbF4	68H	79H
SbF5	68H	7AH
SbF6	68H	7BH
tA11	4BH	1CH
tA12	4BH	1DH
tA13	4BH	1EH
tA14	4BH	1FH
tA15	4BH	20H
tA16	4BH	21H
tA1A	68H	7CH
tA1B	68H	7DH
tA1C	68H	7EH

Outputs dd1	HiBY	LoBY
tA1D	68H	7FH
tA1E	68H	80H
tA1F	68H	81H
tA21	4BH	22H
tA22	4BH	23H
tA23	4BH	24H
tA24	4BH	25H
tA25	4BH	26H
tA26	4BH	27H
tA2A	68H	82H
tA2B	68H	83H
tA2C	68H	84H
tA2D	68H	85H
tA2E	68H	86H
tA2F	68H	87H
tA31	4BH	28H
tA32	4BH	29H
tA33	4BH	2AH
tA34	4BH	2BH
tA35	4BH	2CH
tA36	4BH	2DH
tA3A	68H	88H
tA3B	68H	89H
tA3C	68H	8AH
tA3D	68H	8BH
tA3E	68H	8CH
tA3F	68H	8DH
tA41	4BH	2EH
tA42	4BH	2FH
tA43	4BH	30H
tA44	4BH	31H
tA45	4BH	32H
tA46	4BH	33H
tA4A	68H	8EH
tA4B	68H	8FH
tA4C	68H	90H
tA4D	68H	91H
tA4E	68H	92H
tA4F	68H	93H
tA53	4BH	36H
tA54	4BH	37H
tA55	4BH	38H
tA56	4BH	39H
tA5C	68H	96H
ta5D	68H	97H
tA5E	68H	98H
tA5F	68H	99H
tA61	4BH	3AH
tA62	4BH	3BH
tA63	4BH	3CH
tA64	4BH	3DH
tA65	4BH	3EH
tA66	4BH	3FH
tA6A	68H	9AH
tA6B	68H	9BH
tA6C	68H	9CH
tA6D	68H	9DH
tA6E	68H	9EH
tA6F	68H	9FH
tA71	4BH	40H
tA72	4BH	41H
tA73	4BH	42H
tA74	4BH	43H
tA75	4BH	45H

Outputs dd1	HiBY	LoBY
tA76	4BH	45H
tA7A	68H	A0H
tA7B	68H	A1H
tA7C	68H	A2H
tA7D	68H	A3H
tA7E	68H	A4H
tA7F	68H	A5H
tAC1	68H	A6H
tAC2	68H	A7H
tACt	4BH	46H

Example:

Connection input b22.2 with AE1A

HiAd	LoAd	Contents
64H	40H	4AH
67H	40H	9EH

2.3.11   Settings "FPoS"

Time processing of the defined functions is described by 2 bytes which contain the function identification.

HiAD: 74H

LoAd: 00H to AEH for n001 to n175[*]
        contains the function identifications described in FdEF (e.g. 5FH for c10.F/2CH for h04F)
        Special case: nPoS = 00H

HiAd: 75H[**]
LoAD: 00H to AEH for n001 to n175
        contains   40H for   b01.F to b85.F
                               c01.F to c15.F
                               d01.F to d03.F
                               h01.F to h02.F
                               nPoS
                    60H for   b86.F to bH9.F
                               c16.F to c33.F
                               d04.F
                               h03.F to h04.F

Example:

– Block n004 is set with b02.F
– Block n174 is set with c16.F

HiAd	LoAd	Contents	
74H	03H	02H	FdEF identification b02.F
75H	03H	40H	
74H	ADH	18H	FdEF identification c16.F
75H	ADH	60H	

*) **n129 for 6DR2400**
) **only 6DR2410

2.3.12   Contents of status register and process variables

● Data which can only be read by the computer

HiAd: 4AH
LoAD: with 2-byte variables   →   in-page adresses of the high byte

Name	LoAd	Byte	Type	Remarks
VERSION	00H	1	STATUS	Software version → 01H = 1st version etc.
GRT_TYP	01H	1	STATUS	Device type
AE9*)	1FH	2	LIN	
AE10*)	21H	2	LIN	Hardware analog inputs AE9 to AE11
AE11*)	23H	2	LIN	
ST14	25H	1	STATUS	Transmitter error message (... AE11, AE10, AE9)
ST15	26H	1	STATUS	SES binary outputs SbA16 (MSB) to SbA9 (LSB)
SAA9*)	27H	2	LIN	
SA10*)	29H	2	LIN	
SA11*)	2BH	2	LIN	
SA12*)	2DH	2	LIN	SES analog outputs SAA9 to SAA16
SA13*)	2FH	2	LIN	
SA14*)	31H	2	LIN	
SA15*)	33H	2	LIN	
SA16*)	35H	2	LIN	
AA9*)	37H	2	LIN	Hardware analog outputs AA9
ST4	39H	1	STATUS	Fatal errors
POINTER1	3AH	2	ADR.	Pointer for analysis of fatal errors
POINTER2	3CH	2	ADR.	Pointer for analysis of fatal errors
AA5*)	3EH	2	LIN	
AA6*)	40H	2	LIN	
AA7*)	42H	2	LIN	Hardware analog outputs AA5 to AA8
AA8*)	44H	2	LIN	
STN	46H	1	STATUS	(ALARM)
STA	47H	1	STATUS	(ALARM_old)
dx.1A	48H	2	BCD	
dx.2A	4AH	2	BCD	If d0x.F = CLoc where x = 1,2,3
dx.3A	4CH	2	BCD	
tc	4EH	2	BCD	CYCLE TIME
ST12	50H	1	STATUS	SES binary outputs SbA8 (MSB) to SbA1 (LSB)
SAA1	51H	2	LIN	
SAA2	53H	2	LIN	
SAA3	55H	2	LIN	
SAA4	57H	2	LIN	
SAA5	59H	2	LIN	SES analog outputs SAA1 to SAA8
SAA6	5BH	2	LIN	
SAA7	5DH	2	LIN	
SAA8	5FH	2	LIN	
AA4.3	61H	2	LIN	Hardware analog outputs AA4.3
AA1.3	63H	2	LIN	Hardware analog outputs AA1.3 to AA3.3
AA2.3	65H	2	LIN	
AA3.3	67H	2	LIN	
AE1	69H	2	LIN	
AE2	6BH	2	LIN	
AE3	6DH	2	LIN	
AE4	6FH	2	LIN	
AE5	71H	2	LIN	Hardware analog inputs AE1 to AE8
AE6	73H	2	LIN	
AE7	75H	2	LIN	
AE8	77H	2	LIN	
ST7	79H	1	STATUS	effective binary outputs: bA8 (MSB) to bA1 (LSB)
ST8	7AH	1	STATUS	effective binary outputs: bA16 (MSB) to bA9 (LSB)
ST9	7BH	1	STATUS	effective binary inputs: bE8 (MSB) to bE1 (BIT_0 = LSB)
ST10	7CH	1	STATUS	effective binary inputs: bE14 (BIT_5) to bE9 (LSB)
ST11	7DH	1	STATUS	Transmitter error messages
ST3	7EH	1	STATUS	Error/status messages
ST2	7FH	1	STATUS	Error/status messages

*)   **only 6DR2410**

2.3.12   Contents of status register and process variables
(continued)

● Data which can be written/read by the computer

HiAd: 49H

Name	LoAd	Byte	Type	Remarks
ST5	80H	1	STATUS	SES binary inputs: SbE8 (MSB) to SbE1 (LSB)
SA1.3	81H	2	LIN	
SA2.3	83H	2	LIN	
SA3.3	85H	2	LIN	
SA4.3	87H	2	LIN	SES analog inputs: SA1.3 to SA8.3
SA5.3	89H	2	LIN	
SA6.3	8BH	2	LIN	
SA7.3	8DH	2	LIN	
SA8.3	8FH	2	LIN	
ST6	91H	1	STATUS	SES program control of programmer
ST1	92H	1	STATUS	Control byte: parameterization, structuring, acknowledgement
ST13	93H	1	STATUS	SES binary inputs SbE16 (MSB) to SbE9 (LSB)
S09.3	94H	2	LIN	
S10.3	96H	2	LIN	
S11.3	98H	2	LIN	
S12.3	9AH	2	LIN	SES analog inputs: S09.3 to S16.3
S13.3	9CH	2	LIN	
S14.3	9EH	2	LIN	
S15.3	A0H	2	LIN	
S16.3	A2H	2	LIN	

● Status register contents

- Writing into and reading the controller via the SES

  The signals are represented in positive logic, i.e. the bits = 1 High active when the signals occur.

  HiAd: 49H, LoAd: 92H

Byte ST1	Meaning	
Bit	Parameterize/structure/acknowledge control byte	
7 (MSB)	Online parameterization → Start	1)
6	Online parameterization → End	1)
5	Structure via SES → Start	2)
4	Structure via SES → End	2)
3	Acknowledge enter key	3)
2	Acknowledge exit key	3)
1	—	4)
0 (LSB)	—	4)

MSB: most significant bit
LSB: least significant bit
1) Includes: "onPA", "AdAP"
2) Includes: "oFPA", "hdEF", "CLPA", "FdEF", "FCon", "FPoS"
3) If evaluated in software
4) No effect

*)   **only 6DR2410**

HiAd: 49H, LoAd: 80H

Byte ST5	Meaning	
Bit	SES binary inputs SbE1 to SbE8	
7	SbE8	
6	SbE7	
5	SbE6	
4	SbE5	
3	SbE4	
2	SbE3	
1	SbE2	
0	SbE1	[1]

[1]   The data source SbE1 is time-out monitored like Cbt

- Writing into and reading the controller via the SES

HiAd: 49H, LoAd: 91H

Byte ST6	Meaning	
Bit	SES program control of programmer	
7	d*.05	0 = prog. control via controller, 1 = via SES [1]
6	d*.12	1 = prog.8 via SES
5	d*.11	1 = prog.7 via SES
4	d*.10	1 = prog.6 via SES
3	d*.09	1 = prog.5 via SES
2	d*.08	1 = prog.4 via SES
1	d*.07	1 = prog.3 via SES
0	d*.06	1 = prog.2 via SES

[1]   Bit 7: only readable
* = 1, 2, 3 with programmer

- Reading of the controller via the SES

HiAd: 4AH, LoAd: 7FH

Byte ST2	Meaning	
Bit	Error/message status (enable condition for onPA/StrU–SES)	
7	Satus BLS → Blocking of structuring	[1]
6	Status BLPS → Blocking of parameterization and structuring	[1]
5		
4	Status MEM_bUSY → Storage taking place in user memory	[1]
3	Status onPA SES	[3]
2	Status StrU SES	[4]
1	Status Parameterization via front module	[2]
0	Status Structuring via front module	[2]

For enable condition
[1]   don't care
[2]   0
[3]   0   with enable "StrU"
[4]   0   with enable "onPA"

- Reading of the controller via the SES

  HiAd: 4AH, LoAd: 7EH

Byte ST3	Meaning	
Bit	Error/message status (enable condition for onPA/StrU–SES)	
7	Error Option/Err → Incorrect optioncard	
6	Error AE (MUF) → Common transmitter rror	
5	Status Power-on (PON)	1)
4		
3	Status nStr (OFFL) → Offline mode	
2	Error ncon/Err (highest priority)	2)
1	Error -PoS/Err	2)
0	Error nPoS/Err (lowest priority)	2)

1)   Is automatically detected by the controller following the first alarm scan
2)   Can be acknowledged (priority applies within these 3 errors)

HiAd: 4AH, LoAd: 39H

Byte ST4	Meaning	
Bit	Error status for fatal errors	
7	FdEF/Err1 (highest priority)	
6	FdEF/Err2	
5	hdEF/Err	
4	FCon/Err	
3	FPoS/Err1	
2	FPoS/Err2	
1	FPoS/Err3 (lowest priority)	
0	0	

- Reading of the controller via the SES

  Hardware binary outputs bA1.3 to bA16

  HiAd: 4AH, LoAd: 79H   HiAd: 4AH, LoAd: 7AH

Byte ST7		ST8
Bit		
7	bA8	bA16
6	bA7	bA15
5	bA6	bA14
4	bA5	bA13
3	bA4.3	bA12
2	bA3.3	bA11
1	bA2.3	bA10
0	bA1.3	bA9

Hardware binary inputs bE1 to bE14

HiAd: 4AH, LoAd: 7BH   HiAd: 4AH, LoAd: 7CH

Byte ST9		ST10
Bit		
7	bE8	0
6	bE7	0
5	bE6	bE14
4	bE5	bE13
3	bE4	bE12
2	bE3	bE11
1	bE2	bE10
0	bE1	bE9

HiAd: 4AH, LoAd: 7DH

Byte ST11		
Bit	MESSAGE STATUS TRANSMITTER FAULT	
7	↳ AE8	
6	↳ AE7	
5	↳ AE6	
4	↳ AE5	
3	↳ AE4	
2	↳ AE3	
1	↳ AE2	
0	↳ AE1	

- Reading of the controller via the SES

HiAd: 4AH, LoAd: 50H

Byte ST12		
Bit	SES BINARY OUTPUTS SbA1 to SbA8	
7	SbA8	
6	SbA7	
5	SbA6	
4	SbA5	
3	SbA4	
2	SbA3	
1	SbA2	
0	SbA1	

HiAd: 49H, LoAd: 93H

Byte ST13	Meaning	
Bit	SES BINARY INPUTS SbE9 to SbE16	
7	SbE16	
6	SbE15	
5	SbE14	
4	SbE13	
3	SbE12	
2	SbE11	
1	SbE10	
0	SbE9	

HiAd: 4AH, LoAd: 25H

Byte ST14		
Bit	MESSAGE STATUS TRANSMITTER FAULT	
7	x	
6	x	
5	x	
4	x	
3	x	
2	↳ AE11	
1	↳ AE10	
0	↳ AE9	

- Reading of the controller via the SES

HiAd: 4AH, LoAd: 26H

Byte ST15		
Bit	SES BINARY OUTPUTS SbA9 to SbA16	
7	SbA16	
6	SbA15	
5	SbA14	
4	SbA13	
3	SbA12	
2	SbA11	
1	SbA10	
0	SbA9	

HiAd: 4AH, LoAd: 46H

STN		
Bit	ALARM STATUS "NEW"	
7	0	2)
6	0/1	3)
5	AE I̧	
4	SbA5	4)
3	SbA4	4)
2	SbA3	4)
1	SbA2	4)
0	SbA1	4)

HiAd: 4AH, LoAd: 46H

STA		
Bit	ALARM STATUS "OLD"	1)
7	0	2)
6	1	
5	AE I̧	
4	SbA5	4)
3	SbA4	4)
2	SbA3	4)
1	SbA2	4)
0	SbA1	4)

1)   High statuses of "STN" stored since the last alarm scan
2)   Cannot be transferred in the alarm message!
3)   In normal message: 0
      In alarm message :1
4)   See also "ST12" (stored in parallel)

2.3.13   Setting of storage for Batch mode

● Copy of structuring area in batch mode

The structuring area can be copied completely. Specific writing of individual areas of the freely-connectable section is only recommended using the official SIPART software from Siemens, however, since such interventions must be in accordance with the complex internal logical relationships of the controller.

To enable a complete copy (batch mode), the following pages must be transferred taking into account the address limitations:

HiAd	LoAd	Meaning	
60	80H to A7H (6DR2400: to 9FH)	HdEF:	Structuring switches*)
60	00H to 69H	FdEF:	Function codes
50	00H to 2CH*)		
64	00H to FFH	FCon:	Links (queries) for source addresses
65	00H to FFH		
66	00H to 0FH		
67	00H to FFH		
68	00H to FFH		
69	00H to 0FH		
54	00H to FFH*)		
55	00H to 22H*)		
56	00H to FFH*)		
57	00H to 22H*)		
74	00H to AEH (6DR2400: to 80H)	**FPoS:**	**Position list**
75	00H to AEH*)		

*)   The structuring switch "SES" cannot be transmitted to the DR24 via the SES. The transmitted value is ignored internally.

● Copy of parameters

The parameters can be transmitted completely or individually.

To enable a complete copy (batch mode), the following pages must be transmitted taking into account the address limitations:

HiAd	LoAd	Meaning	
40	00H to FDH	onPA:	Online Parameter
71	00H to FFH*)		
72	00H to 29H*)		
42	00H to 9FH	oFPA:	Offline Parameter **)
73	00H to 34H*)		
42	ACH to CDH*)	CAE4/CAE5 Parameter	
43	00H to 15H	CLPA:	Offline-Parameter
43	20H to 6FH	CLPA:	Offline-Parameter
43	80H to CFH	CLPA:	Offline-Parameter
44	00H to 5FH	CLPA:	Offline-Parameter
45	00H to 5FH	CLPA:	Offline-Parameter

*)   **only 6DR2410**

**) The parameters "SES bdr" to "SES Cbt" = A0H to ABH cannot be transmitted to the controller via the SES!

2.3.14   1Representation of parameters and process variables

Compared to the controller-internal floating-point representation, the parameters are transmitted in three different compressed 2-byte representations.

- **LOG**

High Byte								Low Byte	
2^{-1}							2^{-8}	0	7-bit two's complement

Mantissa (magnitude), left adjusted   Sign   Exponent
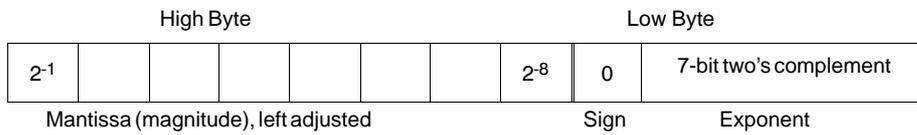
Examples:

1.		1.000	=	80H, 01H (= $0.5 \times 2^{1)}$)
2.	Smallest parameter value	= 0.100	=	CDH, 7DH (approximation)
3.	Largest parameter value	= 9984	=	9CH, 0EH
Special case: parameter		= oFF	=	00H,00H

- **FIX**

High Byte								Low Byte							
2^{+14}														2^0	Sign

Mantisse (magnitude) $0 = +$
                                                $1 = -$
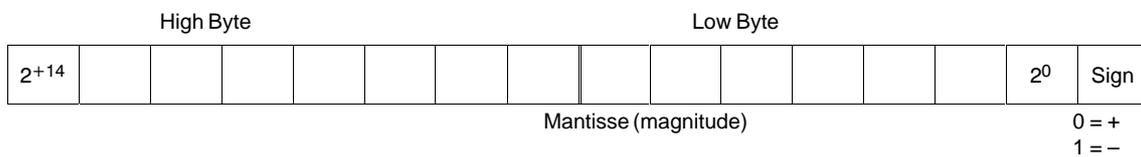
Examples:

1.		1	=	00H, 02H
2.	Smallest parameter value	= -1999	=	0FH, 9FH
3.	Largest parameter value	= 19999	=	9CH, 3EH

- **LIN**

High Byte								Low Byte							
2^0														2^{-14}	Sign

Examples:

1.		100.0 %	=	1.000	=	80H, 00H
2.	Smallest parameter value	= -199.9 %	=	-1.999	=	FFH, DFH (approximation)
3.	Largest parameter value	= 199.9 %	=	1.999	=	FFH, DEH (approximation)
4.	Special case: parameter	= AUto	=	00H, 01H		

- **Process variables (LIN)**

    The process variables are transmitted in a compressed 2-byte representation (LIN).

2.3.15   Error messages of the SIPART DR24 which can be eliminated via the SES

Explanations: ERAM   = External RAM
                        Page-Adresse   = ERAM_range whose HiAd is higher by +20H

- The error messages are arranged according to priority. If several errors occur simultaneously, they are displayed on the front module according to their priority. Most faults are also signalled in various status bytes for evaluation by the SES. The errors listed here can all be eliminated either by acknowledgement or correction.

- It is recommendable to correct the errors since only then can the desired function of the controller be guaranteed.

- An acknowledgement should be the exception.

- The following error priority exists:

  1. FdEF/Err1   →   Can be corrected via front module or SES
  2. FdEF/Err2   →   Can be corrected via front module or SES
  3. hdEF/Err   →   Can be corrected via front module or SES
  4. FCon/Err   →   Can be corrected via front module or SES
  5. FPoS/Err1   →   Can be corrected via front module or SES
  6. FPoS/Err2   →   Can be corrected via front module or SES
  7. FPoS/Err3   →   Can be corrected via front module or SES
  8. ncon/Err   →   Can be acknowledged via front module or SES
  9. -PoS/Err   →   Can be acknowledged via front module or SES
  10. nPoS/Err   →   Can be acknowledged via front module or SES

- The error messages have the following meaning:

  - FdEF/Err1   →   Illegal function code
  - FdEF/Err2   →   Illegal multiple definition of a function
  - hdEF/Err   →   Illegal structuring switch contents
  - FCon/Err   →   Illegal connection of source and destination
  - FPoS/Err1   →   Illegal positioning address
  - FPoS/Err2   →   Illegal multiple positioning of a block
  - FPoS/Err3   →   Illegal positioning of an undefined block
  - ncon/Err   →   Data sinks exist which are not yet connected (apart from those of the display units)
  - -PoS/Err   →   Blocks exist which are defined but not positioned
  - nPoS/Err   →   A position number which has not yet been positioned still exist within a positioning series

Error elimination

The signalled error disappears automatically following a successful modification, correction or acknowledgement.

FdEF/Err1:   *Via the front module:*

Pressing of Enter key leads directly to the menu "FdEF" at the position where the error was detected
→ correct in set mode using the adjustment keys.

Via the SES:

-    Read three bytes at HiAd "4AH" starting at address "39H":

1st byte: error status byte
     B7 = 1 → FdEF/Err1
     B6 = 1 → FdEF/Err2
     B5 = 1 → hdEF/Err
     B4 = 1 → FCon/Err
     B3 = 1 → FPoS/Err1
     B2 = 1 → FPoS/Err2
     B1 = 1 → FPoS/Err3
     B0 = 0

2nd byte: HiBY pointer_1 → page-address
3rd byte: LoBY pointer_1 → in-page address

-    The pointer_1 delivers the ERAM address in which the error was detected.

-    The contents of this ERAM cell can now be read by the SES and corrected according to the rules for "FdEF".

FdEF/Err2:   *Via the front module:*

Pressing of Enter key leads directly to the menu "FdEF" at the position where the error was detected
→ correct in set mode using the adjustment keys.

Via the SES:

-    Read five bytes at HiAd "4AH" starting at address "39H":

1st byte: error status byte (see FdEF/Err1)

2nd byte: HiBY pointer_1 → page address
3rd byte: LoBY pointer_1 → in-page address

4th byte: HiBY pointer_2 → page address
5th byte: LoBY pointer_2 → in-page address

-    Pointer_1 delivers the ERAM address at which the function code was found for the first time.

-    Pointer_2 delivers the ERAM address at which the function code was found illegally for the second time.

-    The contents of these ERAM cells can now be read by the SES and corrected according to the rules for "FdEF".

hdEF/Err: *Via the front module:*

Pressing of Enter key leads directly to the menu "hdEF" at the position where the error was detected
→ correct in set mode using the adjustment keys.

Via the SES:

- Read three bytes at HiAd "4AH" starting at address "39H":

1st byte: error status byte (see   FdEF/Err1)

2nd byte: HiBY pointer_1 → page address
3rd byte: LoBY pointer_1 → in-page address

- Pointer_1 delivers the ERAM address at which the error was detected.
- The contents of this ERAM cell can now be read by the SES and corrected according to the rules for "hdEF".

FCon/Err: *Via the front module:*

Pressing of Enter key leads directly to the menu "FCon" at the position where the error was detected
→ correct in set mode using the adjustment keys.

Via the SES:

- Read five bytes at HiAd "4AH" starting at address "39H":

1st byte: error status byte   (see FdEF/Err1)

2nd byte: HiBY pointer_1 → page address
3rd byte: LoBY pointer_1 → in-page address

4th byte: HiBY pointer_2 → page address
5th byte: LoBY pointer_2 → in-page address

- Pointer_1 delivers the ERAM destination address at which the page address of the faulty source was found.
- Pointer_2 delivers the ERAM destination address at which the in-page address of the faulty source was found.
- The contents of these ERAM cells deliver the source address and can now be read by the SES and corrected according to the rules for "FCon".

FPoS/Err1:   *Via the front module:*

Pressing of Enter key leads directly to the menu "FPoS" at the position where the error was detected
→ correct in set mode using the adjustment keys.

Via the SES:

- Read three bytes at HiAd "4AH" starting at address "39H":

1st byte: error status byte (see FdEF/Err1)

2nd byte: HiBY pointer_1 → page address
3rd byte: LoBY pointer_1 → in-page address

- Pointer_1 delivers the ERAM address at which the error was detected.
- The contents of this ERAM cell can now be read by the SES and corrected according to the rules for "FPoS".

FPoS/Err2:   *Via the front module:*

> Pressing of Enter key leads directly to the menu "FPoS" at the position where the error was detected
> → correct in set mode using the adjustment keys.

Via the SES:

-   Read five bytes at HiAd "4AH" starting at address "39H":

    1st byte: error status byte (see FdEF/Err1)

    2nd byte: HiBY pointer_1 → page address
    3rd byte: LoBY pointer_1 → In-Page-Adresse

    4th byte: HiBY pointer_2 → page address
    5th byte: LoBY pointer_2 → in-page address

-   Pointer_1 delivers the ERAM address at which the same block position was found for the first time.

-   Pointer_2 delivers the ERAM address at which the block position was found illegally for the second time.

-   The contents of this ERAM cell can now be read by the SES and corrected according to the rules for "FPoS".

FPoS/Err3:   *Via the front module:*

> Pressing of Enter key leads directly to the menu "FPoS" at the position where the error was detected
> → correct in set mode using the adjustment keys.

Via the SES:

-   Read five bytes at HiAd "4AH" starting at address "39H":

    1st byte: error status byte (see FdEF/Err1)

    2nd byte: HiBY pointer_1 → page address
    3rd byte: LoBY pointer_1 → in-page address

    4th byte: HiBY pointer_2 → page address
    5th byte: LoBY pointer_2 → in-page address

-   Pointer_1 delivers the ERAM address at which the associated block definition code is located.

-   Pointer_2 delivers the ERAM address at which the block position was illegally detected.

-   The contents of this ERAM cell can now be read by the SES and corrected according to the rules for "FPoS". The following applies:

-   Both ERAM cells can be corrected up to software "AO2".

-   From software "AO3" onwards, only the cell to which the pointer_2 points can be corrected accordingly. The cell to which pointer_1 points can only be read. This is automatically generated from "FdEF" from software version "AO3" onwards.

ncon/Err: *Acknowledgement via the front module:*

> By Exit key

Acknowledgement via the SES:

-   Write the value "04H" at HiAd "49H" under address "92H" (status byte "ST1")

-   *Correction via the front module:*

-   At the automatically displayed position in the "SEt" mode of the structuring mode "FCon" after pressing the Enter key.

-PoS/Err: *Acknowledgement via the front module:*
                By Exit key

             Acknowledgement via the SES:
                Write the value ”04H” at HiAd ”49H” under address ”92H” (status byte ”ST1”)

             Correction via the front module:
                At the automatically displayed position in the ”SEt” mode of the structuring mode ”FPoS”
                after pressing the Enter key.

nPoS/Err: *Acknowledgement via the front module:*
                By Exit key

             Acknowledgement via the SES:
                Write the value ”04H” at HiAd ”49H” under address ”92H” (status byte ”ST1”)

             Correction via the front module:
                At the automatically displayed position in the ”SEt” mode of the structuring mode ”FPoS”
                after pressing the Enter key.

2.3.16   Copy protection by means of a keyword

From the software version C5 onwards, the configuration, consisting of

oFPA, CLPA, HdEF, CAE4/5, FdEF, FPoS

can be write and read protected by means of a programmable keyword.

Activating the copy protection:

–   Writing 3 bytes to HiAd 7FH/LoAd 30H
    The 1st and 2nd bytes make up the keyword, the 3rd byte must be the sum of these two bytes
    e.g.: 2AH, 18H, 42H
–   Keep the keyword in a safe place
–   Written values can be reread from the address HiAd 7FH/LoAd 80H
–   The copy protection is activated the next time the device is switched on

Changing configuration when the copy protection is activated:

–   Writing the 2-byte keyword to HiAd 7FH/LoAd 30H
–   The copy protection will be disabled for 4 to 6 minutes

Deactivating the copy protection:

–   Writing the 2-byte keyword to HiAd 7FH/LoAd 30H
–   Writing FFH to HiAd 7FH/LoAd 30H: FFH removes the copy protection permanently

Effect of the copy protection:

–   When reading the configuration, 00H will be transmitted instead of the data
–   Any attempt to write onto protected areas will be acknowledged with StNoB in the response
–   If an attempt is made to disable the copy protection with the wrong keyword, an attempt can only be repeated
    after a defined time (dependent on the number of failed attempts)

    1st failed attempt: ca. 1 min.
    2nd failed attempt: ca. 5 min.
    3rd failed attempt: ca. 10 min.
    each further attempt: ca 1.5 hrs.

3   PROFIBUS

3.1   PROFIBUS Module

The PROFIBUS module 6DR2803–8P can also be used in the serial interface slot on all SIPART DR controllers. This module works as a slave and supports communication in accordance with the DP standard (cyclic services), with software version –C1 upwards also acyclic services (DP–V1). The module has been certified with the no. Z00177 by the PNO (PROFIBUS user organization). The 9–pin connector pin assignment corresponds with the standard EN50170

The device data base files (GSD) DR0200A7.GSD and DR0300A7.GSD (software version –C4 upwards) accompany this and can also be downloaded from the Internet at www.ad.siemens.de/csi/gsd PROFIBUS GSD files/Control.

Special programs (standard function blocks) are available for the Siemens PLC Simatic S5/S7 masters to allow interfacing with the SIPART DR.

The file DR0200A7.GSD is already contained in the PROFIBUS configuration tool from Siemens. It is also required when the standard function blocks (FB) are used.

The file DR0300A7.GSD is recommended (from software version –C4!) if the standard function blocks (FB) are not to be used for S5/S7 or a different master is used.

3.2   Preparations before Operation

3.2.1   Settings on the SIPART DR Device

The serial interface on the device must be configured in the following way:

- Interface on (if possible, e.g. DR19, DR21)

- Even parity

- Without LRC

- Baud rate 9600

- Parameters/process values writable (as desired)

- Station number 0–125 (each number may only be used once)

3.2.2   Configuring the Slave for the Master

The config bytes define the type and number of cyclically transmitted input/output bytes. The selection of configurations can be taken from the GSD.

At least 3 config bytes have to be sent:

- 1st Config Byte:
  0x00:   Only processing of process data (AKZ and PNU not used)
  0xF3:   8 byte input/output –> full functions of all writable/readable variables

- 2nd/ 3rd Config Byte:
  each 0x00 or 0x50 to 0x5F: define the total number of cyclically readable process data

- 4th Config Byte (optional):
  0x00:   Use of the Simatic S5 floating–point format (otherwise IEEE)

From software version –C4 onwards additional process data can be transmitted by adding up to 8 config bytes containing 0xA2 (otherwise only via job identification (AKZ) and parameter number (PNU)).

3.2.3   Parameterization of the Slave for the Master

The additional parameterization defines which process data (each 2 bytes) are transmitted cyclically in which order.

Each process variable is defined (addressed) by 2 parameter bytes.

Parameter bytes 1 to 64 set the up to 32 readable process values.

Expansion from software version –C4 onwards:

- Parameter bytes 65 to –80 set the up to 8 writable process values,

- A further byte can be added (content 0x01) for using a special time monitoring function (see there) resulting in an uneven number of parameter bytes.

3.2.4 Time Monitoring

The master can set parameters for a DP watchdog time. It becomes active when monitoring time parameters are set in the SIPART DR. This time must be < 10 sec. The device reaction when there is a time out (sum of DP watchdog and device monitoring time) then corresponds with the respective device configuration.

If the SIPART is also to react correspondingly to the "Master only transmits zeros" (e.g. PLC in stop), an uneven last parameter byte 0x01 must also be sent (software version –C4 onwards).

3.3 Transmission Procedure with job identification (AKZ) and parameter number (PNU)

1. Config-Byte=0xF3

The 8 byte input/output (each consistent across all 8 bytes) is used in the following way for reading and writing with AKZ (job identification) and PNU (parameter number):

	Master –> Slave (command)		Slave –> Master (reply)	
1. Byte	AKZ	PNU	AKZ	PNU
2. Byte	PNU		PNU	
3. Byte	Subindex (if required)		Subindex (if required)	
4. Byte	0		0	
5. Byte	Data 1 (only double word)		Data 1 (only double word)	
6. Byte	Data 2 (only double word)		Data 2 (only double word)	
7. Byte	Data 3		Data 3	
8. Byte	Data 4		Data 4	

Meaning of AKZ
0: No job
1: Read parameter
2: Write parameter (word)
3: Write parameter (double word)
4: Description element
   Read with subindex 1 – 6
6: Read parameter (element of an arrays)
7: Write parameter (element of an array)

Note:
Software version –C4 onwards
No decision
Between AKZ 2 and 3

Meaning of AKZ
0: No reply
1: Requested data in data 3 – 4
2: Requested data in data 1 – 4
3: Requested description element in data 1 – 4
4: Requested array element in data 1 – 4
8: No operating hierarchy
   (e.g. parameterization on device front)
7: Job cannot be carried out
   Data 4 then contains the following error no.:
0: Invalid parameter number (PNU)
1: Parameter not writable
2: Value range invalid
3: Incorrect subindex
4: No array
5: Incorrect data type
11: No access achieved via ST_U
18: Other error (process data buffer full)

3.4   Description of the Communication Objects

Each communication object has a parameter number (PNU) and a parameter description in the form of a data record. This description can be read out using job identification (AKZ) 4 and the subindex.

Subindex	Byte-length	Meaning	Data type
1	2	Identification/datatype	octet string
2	1	Number of array elements for parameter	unsigned char
3	4	Lower limit value	as selected PNU
4	4	Upper limit value	Parameter (Doppelwort) schreiben
5	2	Variable index/conversion index	octet string
6	4	Name	ASCII string

PNU = Parameter number

3.4.1   Interpretation of Identification

(byte 1/subindex 1)

Bit	Meaning
7	PNU as process data (PCD) suitable for cyclic reading (writing)
6	PNU is an array (a sequence of data from the same type)
5	Writable only with PNU 0 = 2/3 (bit 1 in status ST_U)
4	Writable only with PNU 0 = 1/3 (bit 0 in status ST_U)
3	–
2	Special formats ("off" / "auto" / "nop") permitted
1	Not writable
0	Limit values not relevant

PNU = Parameter number

3.4.2   Interpretation of Data Type

(byte 2/subindex 1)

Nro.	Byte length	Abbreviation	Format	Comments
3	2	int16	integer 16	
4	4	int32	integer 32	
8	4	FL	float IEEE	
10	2	os	octet string	
14	2	bs	bit string	
9	4	vs	ASCII string	
24	4	FL	float Simatic-S5 format	Only when 4th config byte = 0

Note:
1.) Order of bytes always from high to low
2). The two low mantissa bytes should be 0 when float values are written

Special formats (if permitted)
"oFF" with float values: 0x00000000
"oFF" / "auto" / "nop" with int16 values: 0x8000

3.4.3   Interpretation of Variable Index

(byte 1/subindex 5)

According to actuator-sensor profile of PNO.

Examples:

No.	Meaning	Unit
4	Time	
17	Temperature	Degree
23	Resistance	Ohms

3.4.4   Interpretation of Conversion Index

(byte 2/subindex 5)

This value contains the 10th power with which the transmitted value has to be multiplied.

e.g.:
Transmitted PNU value: 0x0064 (int16 —> 100)
Conversion index: 0XFF (–1 in 2 complement)

:—> valid value: 100 * 10Exp–1 = 10

Special cases:

– 0x7F (127) : Conversion factor: * 1/16384

Example:
int16 0x2000 = 8192 —> 8192 * 1/16384 = 0.5 = 50%

– 0xE9 (–23): Conversion factor: * 20 (msec)

3.5   Universal Communication Objects

The following objects (PNU < 100) are the same for all SIPART DR. The device–specific objects are listed from PNU 100 onwards.

PNU (dec.)	Description element (subindex)						
	1	2	3	4	5	6	
	Identification/datatype	Array number	Min. value	Max. value	Variable index/conversion index	Name	
0	00000000 / bs16	0	0	3	0 / 0	ST_U	1.)
1	00000011 / int16	0	0	0	0 / 0	MAX	2.)
2	10000001 / bs16	0	0	0	0 / 0	ST_C	3.)
3	00000011 / os2	0	0	0	0 / 0	Typ	4.)
4	00000011 / os2	0	0	0	0 / 0	V_Gr	5.)
5	00000011 / os2	0	0	0	0 / 0	V_Op	6.)
6 bis 9	00000001 / vs4	0	0	0	0 / 0	KNZ1 to KNZ4	7.)
10 bis 41	00000001 / int 16	0	0	0	0 / 0	PZ01 to PZ32	8.)
42 bis 49	00000001 / int 16	0	0	0	0 / 0	PZW1 to PZW8	9.)

PNU = Parameter number; PZ = Process value; PZW = Process value writable

1.) Control byte for parameterization/structuring (writable/readable)

Method for writing "onPA" parameters
– Filling bit 1 of the PNU 0 with 1
– Writing any parameters with bit 5 identifier possible in corresponding identification
– Filling bit 1 of the PNU 0 with 0 (––> data are transferred into device)
Method for writing "stru" parameters
– Filling bit 0 of the PNU 0 with 1
– Writing any parameters with bit 5 identifier possible in corresponding identification
– Filling bit 0 of the PNU 0 with 0 (––> data are transferred into device)
Note: Bit 0 and bit 1 can also be changed in a common write job.

2.) Highest PNU (only readable)

3.) Status C (writable/readable)

Bit	Meaning
4	Front parameterization enabled
3	Front structuring enabled
2	Write protection for job to be carried out available
1	Front access to "onPA" parameter with identifier bit 5 in identification has occurred (not with DR20!)
0	Front access to "Stru" parameter with identifier bit 4 in identification has occurred (not with DR20!)

Note: Identifiers in bit 0 / .1 / .2 can be acknowledged by filling with 0

4.) Device type (only readable):
    = 0:   SIPART DR20
    = 1:   SIPART DR22
    = 2:   SIPART DR24
    = 3:   SIPART DR21
    = 4:   SIPART DR19
    = 5:   SIPART DR19P (with time scheduler)

5.) Software version SIPART DR basic unit (only readable)

6.) Software version PROFIBUS module (only readable)

7.) The system identifier consisting of 4*4 byte ASCII is writable/readable. The data are saved on the module with no-volt protection.

8./9.) The PNUs 10 to 41 or 42 to 49 are a replica of the extended parameters for setting the read/write data in the cyclic data transfer. They only have to be filled when the master does not have extended parameter capability.
The data are then saved on the module with no-volt protection.

3.6 Writing Process Data (Cyclic)

This function is only possible with software version -C4 onwards.

These data must be written using AKZ and PNU in earlier versions.

Each config byte from the 0xA2 form creates 3 byte output with consistency over all 3 bytes. This allows one process variable for each to be written.

The PNU number of the variable to be written must be set in the extended parameters from byte no. 65.

	Master --> Slave
1.Byte	High byte process date
2.Byte	Low byte process date
3.Byte	Status: 0x80 -> sent data valid / otherwise invalid

3.7 Examples

Using job identification (AKZ) and parameter number (PNU)   (1. Config Byte = 0xF3)

1.) Reading DR2410 PNU 106 [0x6A]
(Device value: Parameter Pd01 = 3.000)

	Master -> Slave (command)		Slave -> Master (reply)	
1.Byte	1	0	2	0
2.Byte	0x6A		0x6A	
3.Byte	0		0	
4.Byte	0		0	
5.Byte	0		0x40	
6.Byte	0		0x40	
7.Byte	0		0x00	
8.Byte	0		0x00	

2.) Reading DR2410 PNU 307 [0x133]
(Device value: Hdef AA1 = 1)

	Master -> Slave (command)		Slave -> Master (reply)	
1.Byte	1	1	1	1
2.Byte	0x33		0x33	
3.Byte	0		0	
4.Byte	0		0	
5.Byte	0		0	
6.Byte	0		0	
7.Byte	0		0	
8.Byte	0		0x01	

3.)   Reading DR2410 PNU 357 [0x165]   (if not via cyclical process data)
        (device value: AE1 = 0,75 = 75 %)

	Master –> Slave (command)		Slave –> Master (reply)	
1.Byte	1	1	1	1
2.Byte	0x65		0x65	
3.Byte	0		0	
4.Byte	0		0	
5.Byte	0		0	
6.Byte	0		0	
7.Byte	0		0x30	
8.Byte	0		0x00	

4.)   Reading DR2410 PNU 109 [0x6D] / description element 1
        (reply according to device specific paramater tables)

	Master –> Slave (command)		Slave –> Master (reply)	
1.Byte	4	0	3	0
2.Byte	0x6D		0x6D	
3.Byte	1		1	
4.Byte	0		0	
5.Byte	0		0	
6.Byte	0		0	
7.Byte	0		0x20	
8.Byte	0		0x08	

5.)   Reading DR2410 PNU 394 [0x184] / array element 2
      (device value: FdeF b02.F=Abs)

	Master –> Slave (command)		Slave –> Master (command)	
1.Byte	6	1	4	1
2.Byte	0x8A		0x8A	
3.Byte	2		2	
4.Byte	0		0	
5.Byte	0		0	
6.Byte	0		0	
7.Byte	0		0	
8.Byte	0		0x01	

6.)   Writing "onpa" parameter Pd05 = 2.500 PNU 110 [0x6E] and PL01 = 1.000 PNU 122 [0x7A]

6.1.)   Writing ST_U Bit.1 = 1 –> writing of "onpa" parameters possible

	Master –> Slave (command)		Slave –> Master (reply)	
1.Byte	2	0	1	0
2.Byte	0x00		0x00	
3.Byte	0		0	
4.Byte	0		0	
5.Byte	0		0	
6.Byte	0		0	
7.Byte	0		0	
8.Byte	0x02		0x02	

6.2.)   Writing 1st parameter

	Master –> Slave (command)		Slave –> Master (reply)	
1.Byte	3	0	1	0
2.Byte	0x6E		0x6E	
3.Byte	0		0	
4.Byte	0		0	
5.Byte	0x40		0x40	
6.Byte	0x20		0x20	
7.Byte	0x00		0x00	
8.Byte	0x00		0x00	

6.3.)   Writing 2nd parameter

	Master –> Slave (command)		Slave –> Master (reply)	
1.Byte	2	0	1	0
2.Byte	0x7A		0x7A	
3.Byte	0		0	
4.Byte	0		0	
5.Byte	0		0	
6.Byte	0		0	
7.Byte	0x03		0x03	
8.Byte	0xE8		0xE8	

6.4.)   Writing ST_U Bit.1 = 0

	Master –> Slave (command)		Slave –> Master (reply)	
1.Byte	2	0	1	0
2.Byte	0		0	
3.Byte	0		0	
4.Byte	0		0	
5.Byte	0		0	
6.Byte	0		0	
7.Byte	0		0	
8.Byte	0x00		0x00	

Note:
as of software version –C4 of the modules and –B3 of the controller DR2410 it is possible to write single parameters without controlling with ST_U.

7.)   Writing DR2410 "stru" parameter L1.0 = 25 % PNU 262 [0x106] and dP11 =2 PNU 231 [0xE7]

7.1.)   Writing ST_U Bit.0 = 1 –> Writing of "stru" parameters possible

	Master –> Slave (command)		Slave –> Master (reply)	
1.Byte	2	0	1	0
2.Byte	0x00		0x00	
3.Byte	0		0	
4.Byte	0		0	
5.Byte	0		0	
6.Byte	0		0	
7.Byte	0		0	
8.Byte	0x01		0x01	

7.2.)   Writing 1. Parameter

	Master –> Slave (command)		Slave –> Master (reply)	
1.Byte	2	1	1	1
2.Byte	0x06		0x06	
3.Byte	0		0	
4.Byte	0		0	
5.Byte	0		0	
6.Byte	0		0	
7.Byte	0x10		0x10	
8.Byte	0x00		0x00	

7.3.)   Writing 2. Parameter

	Master –> Slave (command)		Slave –> Master (reply)	
1.Byte	2	0	1	0
2.Byte	0xE7		0xE7	
3.Byte	0		0	
4.Byte	0		0	
5.Byte	0		0	
6.Byte	0		0	
7.Byte	0		0	
8.Byte	0x08		0x08	

7.4.)   Writing ST_U Bit.0 = 0

	Master –> Slave (command)		Slave –> Master (reply)	
1.Byte	2	0	1	0
2.Byte	0		0	
3.Byte	0		0	
4.Byte	0		0	
5.Byte	0		0	
6.Byte	0		0	
7.Byte	0		0	
8.Byte	0x00		0x00	

8.)   Reading DR2410 process variables AE3 PNU 359 [0x167] via AKZ and PNU (device value for AE3=35 %)

	Master –> Slave (command)		Slave –> Master (reply)	
1.Byte	1	1	1	1
2.Byte	0x67		0x67	
3.Byte	0		0	
4.Byte	0		0	
5.Byte	0		0	
6.Byte	0		0	
7.Byte	0		0x16	
8.Byte	0x00		0x66	

9.) Writing DR2410 process variables SA1.3 PNU 370 [0x172] via AKZ and PNU (transmitted value = 11%)

	Master –> Slave (command)		Slave –> Master (reply)	
1.Byte	2	1	1	1
2.Byte	0x72		0x72	
3.Byte	0		0	
4.Byte	0		0	
5.Byte	0		0	
6.Byte	0		0	
7.Byte	0x07		0x07	
8.Byte	0x0A		0x0A	

10.) Reading cyclical of DR2410 of 4 process values in the following sequence:

    SAA1   PNU 345 [0x159] value: 80 %
    SAA8   PNU 352 [0x160] value: 30 %
    Analog input 1 (AE1) PNU 357 [0x165] value: –1 %
    Analog output 9 (AA9) PNU 621 [0x26D] value: 10 %

Config bytes: 0xF3 / 0x53 (for 4 (process data) / 0x00

Extended parameterization (8 additional user parameters):
(or writing once of the parameter numbers (PNU) 10 – 17)

    1.Param.   0x01
    2.Param.   0x59
    3.Param.   0x01
    4.Param.   0x60
    5.Param.   0x01
    6.Param.   0x65
    7.Param.   0x02
    8.Param.   0x6D

	Slave –> Master (reply)		
1.Byte	x	x	
2.Byte	x		
3.Byte	x		
4.Byte	x		
5.Byte	x		
6.Byte	x		
7.Byte	x		
8.Byte	x		
9.Byte	0x33		80 %
10.Byte	0x33		
11.Byte	0x13		30 %
12.Byte	0x33		
13.Byte	0xFF		–1 %
14.Byte	0x5C		
15.Byte	0x06		10 %
16.Byte	0x66		

Note:
the first 8 byte contain the reaction of a master request.
If the 1st Config byte is = 0x00   these 8 byte will be cancelled.

11.) Writing cyclical of DR2410 of 3 process values in the following sequence:

St5	PNU 369 [0x0171] value: 0x80
SA1.3	PNU 370 [0x0172] value: 40 %
SA2.3	PNU 371 [0x0173] value: 20 %
SA8.3	PNU 377 [0x0179] value: (don't care)

Config bytes: 0xF3 / 0x55 (for e.g. 6 PZDs) / 0x00 / 0xA2 / 0xA2 / 0xA2 / 0xA2

Extended parameterization (72 additional user parameters):
(or writing once of the parameter numbers (PNU) 43 – 47)

65.Param	0x01
66.Param	0x71
67.Param	0x01
68.Param	0x72
69.Param	0x01
70.Param	0x73
71.Param	0x01
72.Param	0x79

	Master –> Slave			
1.Byte	x	x		
2.Byte	x			
3.Byte	x			
4.Byte	x			
5.Byte	x			
6.Byte	x			
7.Byte	x			
8.Byte	x			
9.Byte	0x00			
10.Byte	0x80		value:	0x80
11.Byte	0x80		status:	valid
12.Byte	0x19			
13.Byte	0x99		value:	40 %
14.Byte	0x80		status:	valid
15.Byte	0x0C			
16.Byte	0xCC		value:	20 %
17.Byte	0x80		status:	valid
18.Byte	x			
19.Byte	x		value:	any
20.Byte	0x00		status:	invalid

3.8   Table of the DP communication objects

<u>Parameter "onPA"</u>

```
      |    Description element (subindex)
      |                                        |variabl/|
PNU   |Identification/|Array| min      | max    |convers.|
dez.  |datatype       |numb.| value    | value  |index   |  Name | Note
------------------------------------------------------------------------
000   | 76543210/     |     |          |        |        |       |
      |               |     |          |        |        |       |
------------------------------------------------------------------------
100   | 00100000/int16|  0  |     1    |   100  | 0 / 0  |"dd11" |
------------------------------------------------------------------------
101   | 00100000/int16|  0  |     1    |   100  | 0 / 0  |"dd12" |
------------------------------------------------------------------------
102   | 00100000/int16|  0  |     1    |   100  | 0 / 0  |"dd21" |
------------------------------------------------------------------------
103   | 00100000/int16|  0  |     1    |   100  | 0 / 0  |"dd22" |
------------------------------------------------------------------------
104   | 00100000/int16|  0  |     1    |   100  | 0 / 0  |"dd31" |
------------------------------------------------------------------------
105   | 00100000/int16|  0  |     1    |   100  | 0 / 0  |"dd32" |
------------------------------------------------------------------------
106   | 00100000/ Fl  |  0  | 0.100    |  9984  | 0 / 0  |"Pd01" |
------------------------------------------------------------------------
107   | 00100000/ Fl  |  0  | 0.100    |  9984  | 0 / 0  |"Pd02" |
------------------------------------------------------------------------
108   | 00100000/ Fl  |  0  | 0.100    |  9984  | 0 / 0  |"Pd03" |
------------------------------------------------------------------------
109   | 00100000/ Fl  |  0  | 0.100    |  9984  | 0 / 0  |"Pd04" |
------------------------------------------------------------------------
110   | 00100000/ Fl  |  0  | 0.100    |  9984  | 0 / 0  |"Pd05" |
------------------------------------------------------------------------
111   | 00100000/ Fl  |  0  | 0.100    |  9984  | 0 / 0  |"Pd06" |
------------------------------------------------------------------------
112   | 00100000/ Fl  |  0  | 0.100    |  9984  | 0 / 0  |"Pd07" |
------------------------------------------------------------------------
113   | 00100000/ Fl  |  0  | 0.100    |  9984  | 0 / 0  |"Pd08" |
------------------------------------------------------------------------
114   | 00100000/ Fl  |  0  | 0.100    |  9984  | 0 / 0  |"Pd09" |
------------------------------------------------------------------------
115   | 00100000/ Fl  |  0  | 0.100    |  9984  | 0 / 0  |"Pd10" |
------------------------------------------------------------------------
116   | 00100000/ Fl  |  0  | 0.100    |  9984  | 0 / 0  |"Pd11" |
------------------------------------------------------------------------
117   | 00100000/ Fl  |  0  | 0.100    |  9984  | 0 / 0  |"Pd12" |
------------------------------------------------------------------------
118   | 00100000/ Fl  |  0  | 0.100    |  9984  | 0 / 0  |"Pd13" |
------------------------------------------------------------------------
119   | 00100000/ Fl  |  0  | 0.100    |  9984  | 0 / 0  |"Pd14" |
------------------------------------------------------------------------
120   | 00100000/ Fl  |  0  | 0.100    |  9984  | 0 / 0  |"Pd15" |
------------------------------------------------------------------------
```

```
     |    Description element (subindex)
     |                                 |variabl/|
PNU  |Identification/|Array| min     | max   |convers.|
dez. |datatype       |numb.| value   | value |index   | Name | Note
     ------------------------------------------------------------------
121  | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd16"|
     ------------------------------------------------------------------
122  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL01"|
     ------------------------------------------------------------------
123  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL02"|
     ------------------------------------------------------------------
124  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL03"|
     ------------------------------------------------------------------
125  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL04"|
     ------------------------------------------------------------------
126  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL05"|
     ------------------------------------------------------------------
127  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL06"|
     ------------------------------------------------------------------
128  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL07"|
     ------------------------------------------------------------------
129  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL08"|
     ------------------------------------------------------------------
130  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL09"|
     ------------------------------------------------------------------
131  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL10"|
     ------------------------------------------------------------------
132  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL11"|
     ------------------------------------------------------------------
133  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL12"|
     ------------------------------------------------------------------
134  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL13"|
     ------------------------------------------------------------------
135  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL14"|
     ------------------------------------------------------------------
136  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL15"|
     ------------------------------------------------------------------
137  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL16"|
     ------------------------------------------------------------------
138  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL17"|
     ------------------------------------------------------------------
139  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL18"|
     ------------------------------------------------------------------
140  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL19"|
     ------------------------------------------------------------------
141  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL20"|
     ------------------------------------------------------------------
142  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL21"|
     ------------------------------------------------------------------
143  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL22"|
     ------------------------------------------------------------------
144  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL23"|
     ------------------------------------------------------------------
145  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL24"|
     ------------------------------------------------------------------
146  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL25"|
     ------------------------------------------------------------------
147  | 00100000/int16|  0  | -1999   | 19999 | 0 / -3 |"PL26"|
     ------------------------------------------------------------------
```

```
      |     Description element (subindex)
      |                                  |variabl/|
  PNU |Identification/|Array|  min  |  max  |convers.|
  dez.|datatype       |numb.| value | value |index   | Name | Note
```

PNU dez.	Identification/ datatype	Array numb.	min value	max value	variabl/ convers. index	Name	Note
148	00100000/int16	0	-1999	19999	0 / -3	"PL27"	
149	00100000/int16	0	-1999	19999	0 / -3	"PL28"	
150	00100000/int16	0	-1999	19999	0 / -3	"PL29"	
151	00100100/ Fl	0	1.000	9984	4 / 0	"tFi1"	** oFF
152	00100100/ Fl	0	1.000	9984	4 / 0	"tFi2"	** oFF
153	00100000/ Fl	0	1.000	9984	4 / 0	"tiA1"	
154	00100100/Fl	0	1.000	9984	4 / 0	"trA1"	** off
155	00100000/int16	0	-199.9	199.9	0 /7FH	"LAA1"	
156	00100000/int16	0	-199.9	199.9	0 /7FH	"LEA1"	
157	00100000/ Fl	0	1.000	9984	4 / 0	"tiA2"	
158	00100100/Fl	0	1.000	9984	4 / 0	"trA2"	** off
159	00100000/int16	0	-199.9	199.9	0 /7FH	"LAA2"	
160	00100000/int16	0	-199.9	199.9	0 /7FH	"LEA2"	
161	00100100/ Fl	0	1.000	9984	4 / 0	"tib1"	**prog
162	00100100/Fl	0	1.000	9984	4 / 0	"trb1"	** off
163	00100000/int16	0	-199.9	199.9	0 /7FH	"LAb1"	
164	00100000/int16	0	-199.9	199.9	0 /7FH	"LEb1"	
165	00100100/ Fl	0	1.000	9984	4 / 0	"tib2"	**prog
166	00100100/Fl	0	1.000	9984	4 / 0	"trb2"	** off
167	00100000/int16	0	-199.9	199.9	0 /7FH	"LAb2"	
168	00100000/int16	0	-199.9	199.9	0 /7FH	"LEb2"	
169	00100000/ Fl	0	0.100	100.0	0 / 0	"cPc1"	
170	00100000/ Fl	0	1.000	9984	4 / 0	"tnc1"	
171	00100100/ Fl	0	1.000	2992	4 / 0	"tvc1"	** off
172	00100000/ Fl	0	0.100	10.00	0 / 0	"vvc1"	
173	00100000/int16	0	0.0	10.0	0 /7FH	"AHc1"	
174	00100100/int16	0	0.0	100.0	0 /7FH	"Y0c1"	** Auto

```
    |     Description element (subindex)
    |                                    |variabl/|
PNU |Identification/|Array| min    | max    |convers.|
dez.|datatype       |numb.| value  | value  |index   | Name | Note
-------------------------------------------------------------------------
175 | 00100000/int16|  0  | -10.0  | 110.0  | 0 /7FH |"YAc1"|
-------------------------------------------------------------------------
176 | 00100000/int16|  0  | -10.0  | 110.0  | 0 /7FH |"YEc1"|
-------------------------------------------------------------------------
177 | 00100000/Fl   |  0  |   10   | 1000   | 4 / 0  |"tYc1"|
-------------------------------------------------------------------------
178 | 00100000/ Fl  |  0  | 0.100  | 100.0  | 0 / 0  |"cPc2"|
-------------------------------------------------------------------------
179 | 00100000/ Fl  |  0  | 1.000  | 9984   | 4 / 0  |"tnc2"|
-------------------------------------------------------------------------
180 | 00100100/ Fl  |  0  | 1.000  | 2992   | 4 / 0  |"tvc2"| off
-------------------------------------------------------------------------
181 | 00100000/ Fl  |  0  | 0.100  | 10.00  | 0 / 0  |"vvc2"|
-------------------------------------------------------------------------
182 | 00100000/int16|  0  |  0.0   | 10.0   | 0 /7FH |"AHc2"|
-------------------------------------------------------------------------
183 | 00100100/int16|  0  |  0.0   | 100.0  | 0 /7FH |"Y0c2"|** Auto
-------------------------------------------------------------------------
184 | 00100000/int16|  0  | -10.0  | 110.0  | 0 /7FH |"YAc2"|
-------------------------------------------------------------------------
185 | 00100000/int16|  0  | -10.0  | 110.0  | 0 /7FH |"YEc2"|
-------------------------------------------------------------------------
186 | 00100000/Fl   |  0  |   10   | 1000   | 4 / 0  |"tYc2"|
-------------------------------------------------------------------------
187 | 00100000/ Fl  |  0  | 0.100  | 100.0  | 0 / 0  |"cPE1"|
-------------------------------------------------------------------------
188 | 00100000/ Fl  |  0  | 1.000  | 9984   | 4 / 0  |"tnE1"|
-------------------------------------------------------------------------
189 | 00100100/ Fl  |  0  | 1.000  | 2992   | 4 / 0  |"tvE1"| off
-------------------------------------------------------------------------
190 | 00100000/ Fl  |  0  | 0.100  | 10.00  | 0 / 0  |"vvE1"|
-------------------------------------------------------------------------
191 | 00100000/int16|  0  |  0.0   | 10.0   | 0 /7FH |"AHE1"|
-------------------------------------------------------------------------
192 | 00100100/int16|  0  |  0.0   | 100.0  | 0 /7FH |"Y0E1"|** Auto
-------------------------------------------------------------------------
193 | 00100000/int16|  0  | -10.0  | 110.0  | 0 /7FH |"YAE1"|
-------------------------------------------------------------------------
194 | 00100000/int16|  0  | -10.0  | 110.0  | 0 /7FH |"YEE1"|
-------------------------------------------------------------------------
195 | 00100000/Fl   |  0  |   10   | 1000   | 4 / 0  |"tYE1"|
-------------------------------------------------------------------------
196 | 00100000/int16|  0  |   1    | 30     | 4 /-23 |"tAE1"|
-------------------------------------------------------------------------
197 | 00100000/int16|  0  |   1    | 30     | 4 /-23 |"tEE1"|
-------------------------------------------------------------------------
198 | 00100000/ Fl  |  0  | 0.100  | 100.0  | 0 / 0  |"cPE2"|
-------------------------------------------------------------------------
199 | 00100000/ Fl  |  0  | 1.000  | 9984   | 4 / 0  |"tnE2"|
-------------------------------------------------------------------------
200 | 00100100/ Fl  |  0  | 1.000  | 2992   | 4 / 0  |"tvE2"| off
-------------------------------------------------------------------------
201 | 00100000/ Fl  |  0  | 0.100  | 10.00  | 0 / 0  |"vvE2"|
-------------------------------------------------------------------------
```

```
     |    Description element (subindex)
     |                                |variabl/|
PNU  |Identification/|Array| min     | max      |convers.|
dez. |datatype       |numb.| value   | value    |index   | Name | Note
------------------------------------------------------------------------
202  | 00100000/int16|  0  |   0.0   | 10.0     | 0 /7FH |"AHE2"|
------------------------------------------------------------------------
203  | 00100100/int16|  0  |   0.0   | 100.0    | 0 /7FH |"Y0E2"|** Auto
------------------------------------------------------------------------
204  | 00100000/int16|  0  | -10.0   | 110.0    | 0 /7FH |"YAE2"|
------------------------------------------------------------------------
205  | 00100000/int16|  0  | -10.0   | 110.0    | 0 /7FH |"YEE2"|
------------------------------------------------------------------------
206  | 00100000/Fl   |  0  |   10    | 1000     | 4 / 0  |"tYE2"|
------------------------------------------------------------------------
207  | 00100000/int16|  0  |   1     | 30       | 4 /-23 |"tAE2"|
------------------------------------------------------------------------
208  | 00100000/int16|  0  |   1     | 30       | 4 /-23 |"tEE2"|
------------------------------------------------------------------------
209  | 00100000/ Fl  |  0  | 0.100   | 100.0    | 0 / 0  |"cPi1"|
------------------------------------------------------------------------
210  | 00100000/ Fl  |  0  | 1.000   | 9984     | 4 / 0  |"tni1"|
------------------------------------------------------------------------
211  | 00100100/ Fl  |  0  | 1.000   | 2992     | 4 / 0  |"tvi1"| off
------------------------------------------------------------------------
212  | 00100000/ Fl  |  0  | 0.100   | 10.00    | 0 / 0  |"vvi1"|
------------------------------------------------------------------------
213  | 00100000/int16|  0  |   0.0   | 10.0     | 0 /7FH |"AHi1"|
------------------------------------------------------------------------
214  | 00100000/Fl   |  0  |   10    | 1000     | 4 / 0  |"tYi1"|
------------------------------------------------------------------------
215  | 00100000/int16|  0  |   1     | 30       | 4 /-23 |"tAi1"|
------------------------------------------------------------------------
216  | 00100000/int16|  0  |   1     | 30       | 4 /-23 |"tEi1"|
------------------------------------------------------------------------
217  | 00100000/ Fl  |  0  | 0.100   | 100.0    | 0 / 0  |"cPi2"|
------------------------------------------------------------------------
218  | 00100000/ Fl  |  0  | 1.000   | 9984     | 4 / 0  |"tni2"|
------------------------------------------------------------------------
219  | 00100100/ Fl  |  0  | 1.000   | 2992     | 4 / 0  |"tvi2"| off
------------------------------------------------------------------------
220  | 00100000/ Fl  |  0  | 0.100   | 10.00    | 0 / 0  |"vvi2"|
------------------------------------------------------------------------
221  | 00100000/int16|  0  |   0.0   | 10.0     | 0 /7FH |"AHi2"|
------------------------------------------------------------------------
222  | 00100000/Fl   |  0  |   10    | 1000     | 4 / 0  |"tYi2"|
------------------------------------------------------------------------
223  | 00100000/int16|  0  |   1     | 30       | 4 /-23 |"tAi2"|
------------------------------------------------------------------------
224  | 00100000/int16|  0  |   1     | 30       | 4 /-23 |"tEi2"|
------------------------------------------------------------------------
225  | 00100100/ Fl  |  0  | 1.000   | 9984     | 4 / 0  |"dti1"| off
------------------------------------------------------------------------
226  | 00100100/ Fl  |  0  | 1.000   | 9984     | 4 / 0  |"dti2"| off
------------------------------------------------------------------------
```

```
    |     Description element (subindex)
    |                                       |variabl/|
PNU |Identification/|Array| min     | max   |convers.|
dez.|datatype       |numb.| value   | value |index   | Name | Note
-----------------------------------------------------------------------
402 | 00100000/int16|  0  |    1    |  100  | 0 / 0  |"dd13"|
-----------------------------------------------------------------------
403 | 00100000/int16|  0  |    1    |  100  | 0 / 0  |"dd14"|
-----------------------------------------------------------------------
404 | 00100000/int16|  0  |    1    |  100  | 0 / 0  |"dd23"|
-----------------------------------------------------------------------
405 | 00100000/int16|  0  |    1    |  100  | 0 / 0  |"dd24"|
-----------------------------------------------------------------------
406 | 00100000/int16|  0  |    1    |  100  | 0 / 0  |"dd33"|
-----------------------------------------------------------------------
407 | 00100000/int16|  0  |    1    |  100  | 0 / 0  |"dd34"|
-----------------------------------------------------------------------
408 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd17"|
-----------------------------------------------------------------------
409 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd18"|
-----------------------------------------------------------------------
410 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd19"|
-----------------------------------------------------------------------
411 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd20"|
-----------------------------------------------------------------------
412 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd21"|
-----------------------------------------------------------------------
413 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd22"|
-----------------------------------------------------------------------
414 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd23"|
-----------------------------------------------------------------------
415 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd24"|
-----------------------------------------------------------------------
416 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd25"|
-----------------------------------------------------------------------
417 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd26"|
-----------------------------------------------------------------------
418 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd27"|
-----------------------------------------------------------------------
419 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd28"|
-----------------------------------------------------------------------
420 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd29"|
-----------------------------------------------------------------------
421 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd30"|
-----------------------------------------------------------------------
422 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd31"|
-----------------------------------------------------------------------
423 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd32"|
-----------------------------------------------------------------------
424 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd33"|
-----------------------------------------------------------------------
425 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd34"|
-----------------------------------------------------------------------
426 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd35"|
-----------------------------------------------------------------------
427 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd36"|
-----------------------------------------------------------------------
428 | 00100000/ Fl  |  0  | 0.100   | 9984  | 0 / 0  |"Pd37"|
-----------------------------------------------------------------------
```

```
      |    Description element (subindex)
      |                                  |variabl/|
PNU  |Identification/|Array|  min   |  max   |convers.|
dez. |datatype       |numb.| value  | value  |index   | Name | Note
--------------------------------------------------------------------------
429  | 00100000/ Fl  |  0  | 0.100  |  9984  | 0 /  0 |"Pd38"|
--------------------------------------------------------------------------
430  | 00100000/ Fl  |  0  | 0.100  |  9984  | 0 /  0 |"Pd39"|
--------------------------------------------------------------------------
431  | 00100000/ Fl  |  0  | 0.100  |  9984  | 0 /  0 |"Pd40"|
--------------------------------------------------------------------------
432  | 00100000/int16|  0  | -1999  | 19999  | 0 / -3 |"PL30"|
--------------------------------------------------------------------------
433  | 00100000/int16|  0  | -1999  | 19999  | 0 / -3 |"PL31"|
--------------------------------------------------------------------------
434  | 00100000/int16|  0  | -1999  | 19999  | 0 / -3 |"PL32"|
--------------------------------------------------------------------------
435  | 00100000/int16|  0  | -1999  | 19999  | 0 / -3 |"PL33"|
--------------------------------------------------------------------------
436  | 00100000/int16|  0  | -1999  | 19999  | 0 / -3 |"PL34"|
--------------------------------------------------------------------------
437  | 00100000/int16|  0  | -1999  | 19999  | 0 / -3 |"PL35"|
--------------------------------------------------------------------------
438  | 00100000/int16|  0  | -1999  | 19999  | 0 / -3 |"PL36"|
--------------------------------------------------------------------------
439  | 00100000/int16|  0  | -1999  | 19999  | 0 / -3 |"PL37"|
--------------------------------------------------------------------------
440  | 00100000/int16|  0  | -1999  | 19999  | 0 / -3 |"PL38"|
--------------------------------------------------------------------------
441  | 00100000/int16|  0  | -1999  | 19999  | 0 / -3 |"PL39"|
--------------------------------------------------------------------------
442  | 00100000/int16|  0  | -1999  | 19999  | 0 / -3 |"PL40"|
--------------------------------------------------------------------------
443  | 00100000/ Fl  |  0  | 1.000  |  9984  | 4 /  0 |"tiA3"|
--------------------------------------------------------------------------
444  | 00100100/Fl   |  0  | 1.000  |  9984  | 4 /  0 |"trA3"|** off
--------------------------------------------------------------------------
445  | 00100000/int16|  0  | -199.9 | 199.9  | 0 /7FH |"LAA3"|
--------------------------------------------------------------------------
446  | 00100000/int16|  0  | -199.9 | 199.9  | 0 /7FH |"LEA3"|
--------------------------------------------------------------------------
447  | 00100000/ Fl  |  0  | 1.000  |  9984  | 4 /  0 |"tiA4"|
--------------------------------------------------------------------------
448  | 00100100/Fl   |  0  | 1.000  |  9984  | 4 /  0 |"trA4"|** off
--------------------------------------------------------------------------
449  | 00100000/int16|  0  | -199.9 | 199.9  | 0 /7FH |"LAA4"|
--------------------------------------------------------------------------
450  | 00100000/int16|  0  | -199.9 | 199.9  | 0 /7FH |"LEA4"|
--------------------------------------------------------------------------
451  | 00100100/ Fl  |  0  | 1.000  |  9984  | 4 /  0 |"tib3"|**prog
--------------------------------------------------------------------------
452  | 00100100/Fl   |  0  | 1.000  |  9984  | 4 /  0 |"trb3"|** off
--------------------------------------------------------------------------
453  | 00100000/int16|  0  | -199.9 | 199.9  | 0 /7FH |"LAb3"|
--------------------------------------------------------------------------
454  | 00100000/int16|  0  | -199.9 | 199.9  | 0 /7FH |"LEb3"|
--------------------------------------------------------------------------
455  | 00100100/ Fl  |  0  | 1.000  |  9984  | 4 /  0 |"tib4"|**prog
--------------------------------------------------------------------------
```

```
     |     Description element (subindex)
     |                                     |variabl/|
PNU  |Identification/|Array|  min    |  max   |convers.|
dez. |datatype       |numb.| value   | value  |index   | Name | Note
```

PNU dez.	Identification/ datatype	Array numb.	min value	max value	variabl/ convers. index	Name	Note
456	00100100/Fl	0	1.000	9984	4 / 0	"trb4"	** off
457	00100000/int16	0	–199.9	199.9	0 /7FH	"LAb4"	
458	00100000/int16	0	–199.9	199.9	0 /7FH	"LEb4"	
459	00100100/ Fl	0	1.000	9984	4 / 0	"tib5"	**prog
460	00100100/Fl	0	1.000	9984	4 / 0	"trb5"	** off
461	00100000/int16	0	–199.9	199.9	0 /7FH	"LAb5"	
462	00100000/int16	0	–199.9	199.9	0 /7FH	"LEb5"	
463	00100100/ Fl	0	1.000	9984	4 / 0	"tib6"	**prog
464	00100100/Fl	0	1.000	9984	4 / 0	"trb6"	** off
465	00100000/int16	0	–199.9	199.9	0 /7FH	"LAb6"	
466	00100000/int16	0	–199.9	199.9	0 /7FH	"LEb6"	
467	00100000/ Fl	0	0.100	100.0	0 / 0	"cPc3"	
468	00100000/ Fl	0	1.000	9984	4 / 0	"tnc3"	
469	00100100/ Fl	0	1.000	2992	4 / 0	"tvc3"	off
470	00100000/ Fl	0	0.100	10.00	0 / 0	"vvc3"	
471	00100000/int16	0	0.0	10.0	0 /7FH	"AHc3"	
472	00100100/int16	0	0.0	100.0	0 /7FH	"Y0c3"	** Auto
473	00100000/int16	0	–10.0	110.0	0 /7FH	"YAc3"	
474	00100000/int16	0	–10.0	110.0	0 /7FH	"YEc3"	
475	00100000/Fl	0	10	1000	4 / 0	"tYc3"	
476	00100000/ Fl	0	0.100	100.0	0 / 0	"cPc4"	
477	00100000/ Fl	0	1.000	9984	4 / 0	"tnc4"	
478	00100100/ Fl	0	1.000	2992	4 / 0	"tvc4"	off
479	00100000/ Fl	0	0.100	10.00	0 / 0	"vvc4"	
480	00100000/int16	0	0.0	10.0	0 /7FH	"AHc4"	
481	00100100/int16	0	0.0	100.0	0 /7FH	"Y0c4"	** Auto
482	00100000/int16	0	–10.0	110.0	0 /7FH	"YAc4"	

```
       |     Description element (subindex)
       |                                   |variabl/|
PNU  |Identification/|Array|  min   |  max   |convers.|
dez. |datatype       |numb.| value  | value  |index   | Name | Note
------------------------------------------------------------------------
483  | 00100000/int16|  0  | -10.0  | 110.0  | 0 /7FH |"YEc4"|
------------------------------------------------------------------------
484  | 00100000/Fl   |  0  |   10   | 1000   | 4 / 0  |"tYc4"|
------------------------------------------------------------------------
485  | 00100000/ Fl  |  0  | 0.100  | 100.0  | 0 / 0  |"cPE3"|
------------------------------------------------------------------------
486  | 00100000/ Fl  |  0  | 1.000  | 9984   | 4 / 0  |"tnE3"|
------------------------------------------------------------------------
487  | 00100100/ Fl  |  0  | 1.000  | 2992   | 4 / 0  |"tvE3"| off
------------------------------------------------------------------------
488  | 00100000/ Fl  |  0  | 0.100  | 10.00  | 0 / 0  |"vvE3"|
------------------------------------------------------------------------
489  | 00100000/int16|  0  |  0.0   | 10.0   | 0 /7FH |"AHE3"|
------------------------------------------------------------------------
490  | 00100100/int16|  0  |  0.0   | 100.0  | 0 /7FH |"Y0E3"|** Auto
------------------------------------------------------------------------
491  | 00100000/int16|  0  | -10.0  | 110.0  | 0 /7FH |"YAE3"|
------------------------------------------------------------------------
492  | 00100000/int16|  0  | -10.0  | 110.0  | 0 /7FH |"YEE3"|
------------------------------------------------------------------------
493  | 00100000/Fl   |  0  |   10   | 1000   | 4 / 0  |"tYE3"|
------------------------------------------------------------------------
494  | 00100000/int16|  0  |   1    |  30    | 4 /-23 |"tAE3"|
------------------------------------------------------------------------
495  | 00100000/int16|  0  |   1    |  30    | 4 /-23 |"tEE3"|
------------------------------------------------------------------------
496  | 00100000/ Fl  |  0  | 0.100  | 100.0  | 0 / 0  |"cPE4"|
------------------------------------------------------------------------
497  | 00100000/ Fl  |  0  | 1.000  | 9984   | 4 / 0  |"tnE4"|
------------------------------------------------------------------------
498  | 00100100/ Fl  |  0  | 1.000  | 2992   | 4 / 0  |"tvE4"| off
------------------------------------------------------------------------
499  | 00100000/ Fl  |  0  | 0.100  | 10.00  | 0 / 0  |"vvE4"|
------------------------------------------------------------------------
500  | 00100000/int16|  0  |  0.0   | 10.0   | 0 /7FH |"AHE4"|
------------------------------------------------------------------------
501  | 00100100/int16|  0  |  0.0   | 100.0  | 0 /7FH |"Y0E4"|** Auto
------------------------------------------------------------------------
502  | 00100000/int16|  0  | -10.0  | 110.0  | 0 /7FH |"YAE4"|
------------------------------------------------------------------------
503  | 00100000/int16|  0  | -10.0  | 110.0  | 0 /7FH |"YEE4"|
------------------------------------------------------------------------
504  | 00100000/Fl   |  0  |   10   | 1000   | 4 / 0  |"tYE4"|
------------------------------------------------------------------------
505  | 00100000/int16|  0  |   1    |  30    | 4 /-23 |"tAE4"|
------------------------------------------------------------------------
506  | 00100000/int16|  0  |   1    |  30    | 4 /-23 |"tEE4"|
------------------------------------------------------------------------
507  | 00100000/ Fl  |  0  | 0.100  | 100.0  | 0 / 0  |"cPi3"|
------------------------------------------------------------------------
508  | 00100000/ Fl  |  0  | 1.000  | 9984   | 4 / 0  |"tni3"|
------------------------------------------------------------------------
509  | 00100100/ Fl  |  0  | 1.000  | 2992   | 4 / 0  |"tvi3"| off
------------------------------------------------------------------------
```

```
      |    Description element (subindex)
      |                                  |variabl/|
PNU   |Identification/|Array| min    | max    |convers.|
dez.  |datatype       |numb.| value  | value  |index   | Name  | Note
      ------------------------------------------------------------------
510   | 00100000/ Fl  |  0  | 0.100  | 10.00  | 0 / 0  |"vvi3"|
      ------------------------------------------------------------------
511   | 00100000/int16|  0  |  0.0   | 10.0   | 0 /7FH |"AHi3"|
      ------------------------------------------------------------------
512   | 00100000/Fl   |  0  |   10   | 1000   | 4 / 0  |"tYi3"|
      ------------------------------------------------------------------
513   | 00100000/int16|  0  |   1    |  30    | 4 /-23 |"tAi3"|
      ------------------------------------------------------------------
514   | 00100000/int16|  0  |   1    |  30    | 4 /-23 |"tEi3"|
      ------------------------------------------------------------------
515   | 00100000/ Fl  |  0  | 0.100  | 100.0  | 0 / 0  |"cPi4"|
      ------------------------------------------------------------------
516   | 00100000/ Fl  |  0  | 1.000  | 9984   | 4 / 0  |"tni4"|
      ------------------------------------------------------------------
517   | 00100100/ Fl  |  0  | 1.000  | 2992   | 4 / 0  |"tvi4"| off
      ------------------------------------------------------------------
518   | 00100000/ Fl  |  0  | 0.100  | 10.00  | 0 / 0  |"vvi4"|
      ------------------------------------------------------------------
519   | 00100000/int16|  0  |  0.0   | 10.0   | 0 /7FH |"AHi4"|
      ------------------------------------------------------------------
520   | 00100000/Fl   |  0  |   10   | 1000   | 4 / 0  |"tYi4"|
      ------------------------------------------------------------------
521   | 00100000/int16|  0  |   1    |  30    | 4 /-23 |"tAi4"|
      ------------------------------------------------------------------
522   | 00100000/int16|  0  |   1    |  30    | 4 /-23 |"tEi4"|
      ------------------------------------------------------------------
523   | 00100000/int16|  0  |   1    | 499    | 4 /-23 |"PWt1"|
      ------------------------------------------------------------------
524   | 00100000/ Fl  |  0  | 0.100  | 1000   | 4 / 0  |"PWP1"|
      ------------------------------------------------------------------
525   | 00100000/int16|  0  |   1    | 499    | 4 /-23 |"PWt2"|
      ------------------------------------------------------------------
526   | 00100000/ Fl  |  0  | 0.100  | 1000   | 4 / 0  |"PWP2"|
      ------------------------------------------------------------------
527   | 00100000/int16|  0  |   1    | 499    | 4 /-23 |"PWt3"|
      ------------------------------------------------------------------
528   | 00100000/Fl   |  0  | 0.100  | 1000   | 4 / 0  |"PWP3"|
      ------------------------------------------------------------------
529   | 00100000/int16|  0  |   1    | 499    | 4 /-23 |"PWt4"|
      ------------------------------------------------------------------
530   | 00100000/Fl   |  0  | 0.100  | 1000   | 4 / 0  |"PWP4"|
      ------------------------------------------------------------------
531   | 00100000/int16|  0  |  0.0   | 100.0  | 0 /7FH |"SPA1"|
      ------------------------------------------------------------------
532   | 00100000/int16|  0  |  0.0   | 100.0  | 0 /7FH |"SPE1"|
      ------------------------------------------------------------------
533   | 00100000/int16|  0  |  0.0   | 100.0  | 0 /7FH |"SPA2"|
      ------------------------------------------------------------------
534   | 00100000/int16|  0  |  0.0   | 100.0  | 0 /7FH |"SPE2"|
      ------------------------------------------------------------------
535   | 00100000/int16|  0  |  0.0   | 100.0  | 0 /7FH |"SPA3"|
      ------------------------------------------------------------------
536   | 00100000/int16|  0  |  0.0   | 100.0  | 0 /7FH |"SPE3"|
      ------------------------------------------------------------------
```

```
      |    Description element (subindex)
      |                                |variabl/|
PNU   |Identification/|Array| min     | max     |convers.|
dez.  |datatype       |numb.| value   | value   |index    | Name | Note
      -------------------------------------------------------------------
537 | 00100000/int16|  0  |    0.0  | 100.0  | 0 /7FH |"SPA4"|
      -------------------------------------------------------------------
538 | 00100000/int16|  0  |    0.0  | 100.0  | 0 /7FH |"SPE4"|
      -------------------------------------------------------------------
539 | 00100000/int16|  0  |    0.0  | 100.0  | 0 /7FH |"SPA5"|
      -------------------------------------------------------------------
540 | 00100000/int16|  0  |    0.0  | 100.0  | 0 /7FH |"SPE5"|
      -------------------------------------------------------------------
541 | 00100000/int16|  0  |    0.0  | 100.0  | 0 /7FH |"SPA6"|
      -------------------------------------------------------------------
542 | 00100000/int16|  0  |    0.0  | 100.0  | 0 /7FH |"SPE6"|
      -------------------------------------------------------------------
543 | 00100000/int16|  0  |    0.0  | 100.0  | 0 /7FH |"SPA7"|
      -------------------------------------------------------------------
544 | 00100000/int16|  0  |    0.0  | 100.0  | 0 /7FH |"SPE7"|
      -------------------------------------------------------------------
545 | 00100000/int16|  0  |    0.0  | 100.0  | 0 /7FH |"SPA8"|
      -------------------------------------------------------------------
546 | 00100000/int16|  0  |    0.0  | 100.0  | 0 /7FH |"SPE8"|
      -------------------------------------------------------------------
547 | 00100000/int16|  0  |     2   | 10000  | 0 / 0  |"PEr1"|
      -------------------------------------------------------------------
548 | 00100000/int16|  0  |     1   | 10000  | 0 / 0  |"tAS1"|
      -------------------------------------------------------------------
549 | 00100000/int16|  0  |     2   | 10000  | 0 / 0  |"PEr2"|
      -------------------------------------------------------------------
550 | 00100000/int16|  0  |     1   | 10000  | 0 / 0  |"tAs2"|
      -------------------------------------------------------------------
```

Parameter "oFPA"

```
     |    Description element (subindex)
     |                                     |variabl/|
PNU  |Identification/|Array| min     | max    |convers.|
dez. |datatype       |numb.| value   | value  |index   | Name | Note
     ------------------------------------------------------------------
227  | 00010000/int16|  0  | -199.9  | 199.9  | 0 /7FH |"AA11"|
     ------------------------------------------------------------------
228  | 00010000/int16|  0  | -199.9  | 199.9  | 0 /7FH |"AE11"|
     ------------------------------------------------------------------
229  | 00010000/int16|  0  | -199.9  | 199.9  | 0 /7FH |"AA12"|
     ------------------------------------------------------------------
230  | 00010000/int16|  0  | -199.9  | 199.9  | 0 /7FH |"AE12"|
     ------------------------------------------------------------------
231  | 00010000/int16|  0  |   0     |     3  | 0 / 0  |"dP11"|
     ------------------------------------------------------------------
232  | 00010000/int16|  0  | -1999   | 19999  | 0 / 0  |"dA11"|
     ------------------------------------------------------------------
233  | 00010000/int16|  0  | -1999   | 19999  | 0 / 0  |"dE11"|
     ------------------------------------------------------------------
234  | 00010000/int16|  0  |   0     |     3  | 0 / 0  |"dP12"|
     ------------------------------------------------------------------
235  | 00010000/int16|  0  | -1999   | 19999  | 0 / 0  |"dA12"|
     ------------------------------------------------------------------
236  | 00010000/int16|  0  | -1999   | 19999  | 0 / 0  |"dE12"|
     ------------------------------------------------------------------
237  | 00010000/int16|  0  |   0     |     3  | 0 / 0  |"dP21"|
     ------------------------------------------------------------------
238  | 00010000/int16|  0  | -1999   | 19999  | 0 / 0  |"dA21"|
     ------------------------------------------------------------------
239  | 00010000/int16|  0  | -1999   | 19999  | 0 / 0  |"dE21"|
     ------------------------------------------------------------------
240  | 00010000/int16|  0  |   0     |     3  | 0 / 0  |"dP22"|
     ------------------------------------------------------------------
241  | 00010000/int16|  0  | -1999   | 19999  | 0 / 0  |"dA22"|
     ------------------------------------------------------------------
242  | 00010000/int16|  0  | -1999   | 19999  | 0 / 0  |"dE22"|
     ------------------------------------------------------------------
243  | 00010000/int16|  0  |   0     |     1  | 0 / 0  |"dP31"|
     ------------------------------------------------------------------
244  | 00010000/int16|  0  | -199    |   999  | 0 / 0  |"dA31"|
     ------------------------------------------------------------------
245  | 00010000/int16|  0  | -199    |   999  | 0 / 0  |"dE31"|
     ------------------------------------------------------------------
246  | 00010000/int16|  0  |   0     |     1  | 0 / 0  |"dP32"|
     ------------------------------------------------------------------
247  | 00010000/int16|  0  | -199    |   999  | 0 / 0  |"dA32"|
     ------------------------------------------------------------------
248  | 00010000/int16|  0  | -199    |   999  | 0 / 0  |"dE32"|
     ------------------------------------------------------------------
249  | 00010000/int32|  0  |   10    |  1000  | 0 /-3  |"PA1 "|
     ------------------------------------------------------------------
250  | 00010000/int32|  0  | 1000    | 99990  | 0 /-3  |"PE1 "|
     ------------------------------------------------------------------
251  | 00010000/int32|  0  |   10    |  1000  | 0 /-3  |"T_A1"|
     ------------------------------------------------------------------
252  | 00010000/int32|  0  | 1000    | 99990  | 0 /-3  |"T_E1"|
     ------------------------------------------------------------------
```

```
     |    Description element (subindex)
     |                                   |variabl/|
PNU  |Identification/|Array| min     | max     |convers.|
dez. |datatype       |numb.| value   | value   |index   | Name | Note
-------------------------------------------------------------------------
253  | 00010000/int32|  0  |     10  |   1000  | 0 /-3  |"PA2 "|
-------------------------------------------------------------------------
254  | 00010000/int32|  0  |   1000  |  99990  | 0 /-3  |"PE2 "|
-------------------------------------------------------------------------
255  | 00010000/int32|  0  |     10  |   1000  | 0 /-3  |"T_A2"|
-------------------------------------------------------------------------
256  | 00010000/int32|  0  |   1000  |  99990  | 0 /-3  |"T_E2"|
-------------------------------------------------------------------------
257  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"AA21"|
-------------------------------------------------------------------------
258  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"AE21"|
-------------------------------------------------------------------------
259  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"AA22"|
-------------------------------------------------------------------------
260  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"AE22"|
-------------------------------------------------------------------------
261  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"L1.0"|
-------------------------------------------------------------------------
262  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"L1.2"|
-------------------------------------------------------------------------
263  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"L1.4"|
-------------------------------------------------------------------------
264  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"L1.6"|
-------------------------------------------------------------------------
265  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"L1.8"|
-------------------------------------------------------------------------
266  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"L1.h"|
-------------------------------------------------------------------------
267  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"L2.0"|
-------------------------------------------------------------------------
268  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"L2.2"|
-------------------------------------------------------------------------
269  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"L2.4"|
-------------------------------------------------------------------------
270  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"L2.6"|
-------------------------------------------------------------------------
271  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"L2.8"|
-------------------------------------------------------------------------
272  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"L2.h"|
-------------------------------------------------------------------------
273  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"L3.0"|
-------------------------------------------------------------------------
274  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"L3.2"|
-------------------------------------------------------------------------
275  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"L3.4"|
-------------------------------------------------------------------------
276  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"L3.6"|
-------------------------------------------------------------------------
277  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"L3.8"|
-------------------------------------------------------------------------
278  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"L3.h"|
-------------------------------------------------------------------------
279  | 00010000/int16|  0  | -199.9  |  199.9  | 0 /7FH |"-1.1"|
-------------------------------------------------------------------------
```

```
      |    Description element (subindex)
      |                                |variabl/|
 PNU  |Identification/|Array|  min     |  max     |convers.|
 dez. |datatype       |numb.| value    | value    |index   |  Name  | Note
```

PNU dez.	Identification/ datatype	Array numb.	min value	max value	variabl/ convers. index	Name	Note
280	00010000/int16	0	−199.9	199.9	0 /7FH	" 0.1"	
281	00010000/int16	0	−199.9	199.9	0 /7FH	" 1.1"	
282	00010000/int16	0	−199.9	199.9	0 /7FH	" 2.1"	
283	00010000/int16	0	−199.9	199.9	0 /7FH	" 3.1"	
284	00010000/int16	0	−199.9	199.9	0 /7FH	" 4.1"	
285	00010000/int16	0	−199.9	199.9	0 /7FH	" 5.1"	
286	00010000/int16	0	−199.9	199.9	0 /7FH	" 6.1"	
287	00010000/int16	0	−199.9	199.9	0 /7FH	" 7.1"	
288	00010000/int16	0	−199.9	199.9	0 /7FH	" 8.1"	
289	00010000/int16	0	−199.9	199.9	0 /7FH	" 9.1"	
290	00010000/int16	0	−199.9	199.9	0 /7FH	"10.1"	
291	00010000/int16	0	−199.9	199.9	0 /7FH	"11.1"	
292	00010000/int16	0	−199.9	199.9	0 /7FH	"−1.2"	
293	00010000/int16	0	−199.9	199.9	0 /7FH	" 0.2"	
294	00010000/int16	0	−199.9	199.9	0 /7FH	" 1.2"	
295	00010000/int16	0	−199.9	199.9	0 /7FH	" 2.2"	
296	00010000/int16	0	−199.9	199.9	0 /7FH	" 3.2"	
297	00010000/int16	0	−199.9	199.9	0 /7FH	" 4.2"	
298	00010000/int16	0	−199.9	199.9	0 /7FH	" 5.2"	
299	00010000/int16	0	−199.9	199.9	0 /7FH	" 6.2"	
300	00010000/int16	0	−199.9	199.9	0 /7FH	" 7.2"	
301	00010000/int16	0	−199.9	199.9	0 /7FH	" 8.2"	
302	00010000/int16	0	−199.9	199.9	0 /7FH	" 9.2"	
303	00010000/int16	0	−199.9	199.9	0 /7FH	"10.2"	
304	00010000/int16	0	−199.9	199.9	0 /7FH	"11.2"	
305	00010000/int16	0	2	8	0 / 0	"StP1"	MUP1
306	00010000/int16	0	2	8	0 / 0	"StP2"	MUP2

```
    |     Description element (subindex)
    |                                    |variabl/|
PNU |Identification/|Array| min    | max    |convers.|
dez.|datatype       |numb.| value  | value  |index   | Name | Note
--------------------------------------------------------------------------
551 | 00010000/int16|  0  | -199.9 |  199.9 | 0 /7FH |"AA13"|
--------------------------------------------------------------------------
552 | 00010000/int16|  0  | -199.9 |  199.9 | 0 /7FH |"AE13"|
--------------------------------------------------------------------------
553 | 00010000/int16|  0  | -199.9 |  199.9 | 0 /7FH |"AA14"|
--------------------------------------------------------------------------
554 | 00010000/int16|  0  | -199.9 |  199.9 | 0 /7FH |"AE14"|
--------------------------------------------------------------------------
555 | 00010000/int16|  0  |   0    |    3   | 0 / 0  |"dP13"|
--------------------------------------------------------------------------
556 | 00010000/int16|  0  | -1999  | 19999  | 0 / 0  |"dA13"|
--------------------------------------------------------------------------
557 | 00010000/int16|  0  | -1999  | 19999  | 0 / 0  |"dE13"|
--------------------------------------------------------------------------
558 | 00010000/int16|  0  |   0    |    3   | 0 / 0  |"dP14"|
--------------------------------------------------------------------------
559 | 00010000/int16|  0  | -1999  | 19999  | 0 / 0  |"dA14"|
--------------------------------------------------------------------------
560 | 00010000/int16|  0  | -1999  | 19999  | 0 / 0  |"dE14"|
--------------------------------------------------------------------------
561 | 00010000/int16|  0  |   0    |    3   | 0 / 0  |"dP23"|
--------------------------------------------------------------------------
562 | 00010000/int16|  0  | -1999  | 19999  | 0 / 0  |"dA23"|
--------------------------------------------------------------------------
563 | 00010000/int16|  0  | -1999  | 19999  | 0 / 0  |"dE23"|
--------------------------------------------------------------------------
564 | 00010000/int16|  0  |   0    |    3   | 0 / 0  |"dP24"|
--------------------------------------------------------------------------
565 | 00010000/int16|  0  | -1999  | 19999  | 0 / 0  |"dA24"|
--------------------------------------------------------------------------
566 | 00010000/int16|  0  | -1999  | 19999  | 0 / 0  |"dE24"|
--------------------------------------------------------------------------
567 | 00010000/int16|  0  |   0    |    1   | 0 / 0  |"dP33"|
--------------------------------------------------------------------------
568 | 00010000/int16|  0  |  -199  |   999  | 0 / 0  |"dA33"|
--------------------------------------------------------------------------
569 | 00010000/int16|  0  |  -199  |   999  | 0 / 0  |"dE33"|
--------------------------------------------------------------------------
570 | 00010000/int16|  0  |   0    |    1   | 0 / 0  |"dP34"|
--------------------------------------------------------------------------
571 | 00010000/int16|  0  |  -199  |   999  | 0 / 0  |"dA34"|
--------------------------------------------------------------------------
572 | 00010000/int16|  0  |  -199  |   999  | 0 / 0  |"dE34"|
--------------------------------------------------------------------------
573 | 00010000/int16|  0  |   2    |    4   | 0 / 0  |"Cnt1"|
--------------------------------------------------------------------------
574 | 00010000/int16|  0  | -199.9 |  199.9 | 0 /7FH |"AA23"|
--------------------------------------------------------------------------
575 | 00010000/int16|  0  | -199.9 |  199.9 | 0 /7FH |"AE23"|
--------------------------------------------------------------------------
576 | 00010000/int16|  0  | -199.9 |  199.9 | 0 /7FH |"AA24"|
--------------------------------------------------------------------------
577 | 00010000/int16|  0  | -199.9 |  199.9 | 0 /7FH |"AE24"|
--------------------------------------------------------------------------
```

Parameter "ClPA"

```
      |    Description element (subindex)
      |                                   |variabl/|
PNU   |Identification/|Array| min      | max     |convers.|
dez.  |datatype       |numb.| value    | value   |index   | Name | Note
      -------------------------------------------------------------------
379 | 00010000/int16|  0  |      0  |       1 | 0 / 0  | "CLFo"|
      -------------------------------------------------------------------
380 | 00010000/int16|  0  |      0  |     255 | 0 / 0  | "CLCY"|
      -------------------------------------------------------------------
381 | 00010000/int16|  0  |      0  |       7 | 0 / 0  |"CLSb"|
      -------------------------------------------------------------------
382 | 00010000/int16|  0  |      0  |      40 | 0 / 0  |"CLP1"|
      -------------------------------------------------------------------
383 | 00010000/int16|  0  |      0  |      40 | 0 / 0  |"CLP2"|
      -------------------------------------------------------------------
384 | 00010000/int16|  0  |      0  |      40 | 0 / 0  |"CLP3"|
      -------------------------------------------------------------------
385 | 00010000/int16|  0  |      0  |      40 | 0 / 0  |"CLP4"|
      -------------------------------------------------------------------
386 | 00010000/int16|  0  |      0  |      40 | 0 / 0  |"CLP5"|
      -------------------------------------------------------------------
387 | 00010000/int16|  0  |      0  |      40 | 0 / 0  |"CLP6"|
      -------------------------------------------------------------------
388 | 00010000/int16|  0  |      0  |      40 | 0 / 0  |"CLP7"|
      -------------------------------------------------------------------
389 | 00010000/int16|  0  |      0  |      40 | 0 / 0  |"CLP8"|
      -------------------------------------------------------------------
390 | 01010000/os2  | 40  |  00.01  |   59.59 | 0 / 0  |"CLti"|
      -------------------------------------------------------------------
391 | 01010000/os2  | 40  |   0/0   |   FF/FF | 0 / 0  |"CLby"|
      -------------------------------------------------------------------
392 | 01010100/int16| 48  | -199.9  |   199.9 | 0 /7FH |"CLA1"| nop
      -------------------------------------------------------------------
393 | 01010100/int16| 48  | -199.9  |   199.9 | 0 /7FH |"CLA2"| nop
      -------------------------------------------------------------------
```

CAE4

```
      -------------------------------------------------------------------
578 | 00010000/int16|  0  |      0  |       7 | 0 / 0  |"Sen4"|
      -------------------------------------------------------------------
579 | 00010000/int16|  0  |      0  |       2 | 0 / 0  |"uni4"|
      -------------------------------------------------------------------
580 | 00010000/int16|  0  |      0  |      10 | 0 / 0  |"typ4"|
      -------------------------------------------------------------------
581 | 00010000/int16|  0  |      0  |   10000 | 23 /-2 |"Mr4 "|
      -------------------------------------------------------------------
582 | 00010000/int16|  0  |      0  |    4000 | 17/ -1 |"tb4 "|
      -------------------------------------------------------------------
583 | 00010000/int16|  0  |      0  |       3 | 0 / 0  |"MP4 "|
      -------------------------------------------------------------------
584 | 00010000/int16|  0  |  -1999  |   19999 | 0 / 0  |"MA4 "|
      -------------------------------------------------------------------
585 | 00010000/int16|  0  |  -1999  |   19999 | 0 / 0  |"ME4 "|
      -------------------------------------------------------------------
```

CAE5

```
    |    Description element (subindex)
    |                               |variabl/|
PNU |Identification/|Array| min     | max     |convers.|
dez.|datatype       |numb.| value   | value   |index   | Name | Note
-------------------------------------------------------------------
586 | 00010000/int16|  0  |    0    |      7  | 0 / 0  |"Sen5"|
-------------------------------------------------------------------
587 | 00010000/int16|  0  |    0    |      2  | 0 / 0  |"uni5"|
-------------------------------------------------------------------
588 | 00010000/int16|  0  |    0    |     10  | 0 / 0  |"typ5"|
-------------------------------------------------------------------
589 | 00010000/int16|  0  |    0    |  10000  | 23 /-2 |"Mr5 "|
-------------------------------------------------------------------
590 | 00010000/int16|  0  |    0    |   4000  | 17/ -1 |"tb5 "|
-------------------------------------------------------------------
591 | 00010000/int16|  0  |    0    |      3  | 0 / 0  |"MP5 "|
-------------------------------------------------------------------
592 | 00010000/int16|  0  | -1999   |  19999  | 0 / 0  |"MA5 "|
-------------------------------------------------------------------
593 | 00010000/int16|  0  | -1999   |  19999  | 0 / 0  |"ME5 "|
-------------------------------------------------------------------
```

Parameter "HdEF"

```
      |    Description element (subindex)
      |                                  |variabl/|
PNU  |Identification/|Array| min      | max    |convers.|
dez. |datatype       |numb.| value    | value  |index   | Name | Note
-----------------------------------------------------------------------
307 | 00010000/int16|  0  |    0    |     1  | 0 / 0  |"AA1m"|
-----------------------------------------------------------------------
308 | 00010000/int16|  0  |    0    |     1  | 0 / 0  |"AA2m"|
-----------------------------------------------------------------------
309 | 00010000/int16|  0  |    0    |     1  | 0 / 0  |"AA3m"|
-----------------------------------------------------------------------
310 | 00010000/int16|  0  |    0    |     1  | 0 / 0  |"AA4m"|
-----------------------------------------------------------------------
311 | 00010000/int16|  0  |    0    |     1  | 0 / 0  |"AAU "|
-----------------------------------------------------------------------
312 | 00010000/int16|  0  |    0    |     2  | 0 / 0  |"AE1m"|
-----------------------------------------------------------------------
313 | 00010000/int16|  0  |    0    |     2  | 0 / 0  |"AE2m"|
-----------------------------------------------------------------------
314 | 00010000/int16|  0  |    0    |     2  | 0 / 0  |"AE3m"|
-----------------------------------------------------------------------
315 | 00010000/int16|  0  |    0    |     4  | 0 / 0  |"AE4m"|
-----------------------------------------------------------------------
316 | 00010000/int16|  0  |    0    |     4  | 0 / 0  |"AE5m"|
-----------------------------------------------------------------------
317 | 00010000/int16|  0  |    0    |     2  | 0 / 0  |"AE6m"|
-----------------------------------------------------------------------
318 | 00010000/int16|  0  |    0    |     2  | 0 / 0  |"AE7m"|
-----------------------------------------------------------------------
319 | 00010000/int16|  0  |    0    |     2  | 0 / 0  |"AE8m"|
-----------------------------------------------------------------------
320 | 00010000/int16|  0  |    0    |     1  | 0 / 0  |"AEFr"|
-----------------------------------------------------------------------
321 | 00010000/int16|  0  |    0    |     1  | 0 / 0  |"bAtt"|
-----------------------------------------------------------------------
322 | 00010000/int16|  0  |    0    |     1  | 0 / 0  |"bAU "|
-----------------------------------------------------------------------
323 | 00010000/int16|  0  |    0    |     1  | 0 / 0  |"dA-L"|
-----------------------------------------------------------------------
324 | 00010000/int16|  0  |    0    |     1  | 0 / 0  |"dPon"|
-----------------------------------------------------------------------
325 | 00010000/int16|  0  |    0    |   254  | 0 / 0  |"nAME"|
-----------------------------------------------------------------------
326 | 00010000/int16|  0  |    0    |     6  | 0 / 0  |"oP 5"|
-----------------------------------------------------------------------
327 | 00010000/int16|  0  |    0    |     6  | 0 / 0  |"oP 6"|
-----------------------------------------------------------------------
328 | 00010010/int16|  0  |    0    |     1  | 0 / 0  |"SES "|
-----------------------------------------------------------------------
329 | 00010000/int16|  0  |    0    |     2  | 0 / 0  |"tA1U"|
-----------------------------------------------------------------------
330 | 00010000/int16|  0  |    0    |     2  | 0 / 0  |"tA2U"|
-----------------------------------------------------------------------
331 | 00010000/int16|  0  |    0    |     2  | 0 / 0  |"tA3U"|
-----------------------------------------------------------------------
332 | 00010000/int16|  0  |    0    |     2  | 0 / 0  |"tA4U"|
-----------------------------------------------------------------------
```

```
|   Description element (subindex)
|                                      |variabl/|
PNU |Identification/|Array| min   | max   |convers.|
dez.|datatype       |numb.| value | value |index   | Name | Note
------------------------------------------------------------------------
333 | 00010000/int16|  0  |    0  |     2 | 0 / 0  |"tA5U"|
------------------------------------------------------------------------
334 | 00010000/int16|  0  |    0  |     2 | 0 / 0  |"tA6U"|
------------------------------------------------------------------------
335 | 00010000/int16|  0  |    0  |     2 | 0 / 0  |"tA7U"|
------------------------------------------------------------------------
------------------------------------------------------------------------
594 | 00010000/int16|  0  |    0  |     1 | 0 / 0  |"AA5m"|
------------------------------------------------------------------------
595 | 00010000/int16|  0  |    0  |     1 | 0 / 0  |"AA6m"|
------------------------------------------------------------------------
596 | 00010000/int16|  0  |    0  |     1 | 0 / 0  |"AA7m"|
------------------------------------------------------------------------
597 | 00010000/int16|  0  |    0  |     1 | 0 / 0  |"AA8m"|
------------------------------------------------------------------------
598 | 00010000/int16|  0  |    0  |     1 | 0 / 0  |"AA9m"|
------------------------------------------------------------------------
599 | 00010000/int16|  0  |    0  |     2 | 0 / 0  |"AE9m"|
------------------------------------------------------------------------
600 | 00010000/int16|  0  |    0  |     2 | 0 / 0  |"AEAm"|
------------------------------------------------------------------------
601 | 00010000/int16|  0  |    0  |     2 | 0 / 0  |"AEBm"|
------------------------------------------------------------------------
```

Freely interconnectable area

```
     |     Description element (subindex)
     |                                    |variabl/|
PNU  |Identification/|Array| min    | max    |convers.|
dez. |datatype       |numb.| value  | value  |index   | Name  | Note
-------------------------------------------------------------------------
394  | 01010000/os2  | 106 |   00   |  00FF  | 0 / 0  |"Fdef"|
-------------------------------------------------------------------------
395  | 01010000/os2  | 250 |   00   |  00FF  | 0 / 0  |"FC_1"|
-------------------------------------------------------------------------
396  | 01010000/os2  | 250 |   00   |  00FF  | 0 / 0  |"FC_2"|
-------------------------------------------------------------------------
397  | 01010000/os2  |  28 |   00   |  00FF  | 0 / 0  |"FC_3"|
-------------------------------------------------------------------------
398  | 01010000/os2  | 250 |   00   |  00FF  | 0 / 0  |"FC_4"|
-------------------------------------------------------------------------
399  | 01010000/os2  | 250 |   00   |  00FF  | 0 / 0  |"FC_5"|
-------------------------------------------------------------------------
400  | 01010000/os2  |  28 |   00   |  00FF  | 0 / 0  |"FC_6"|
-------------------------------------------------------------------------
401  | 01010000/ os2 | 175 |   00   |  00FF  | 0 / 0  |"Fpos"|
-------------------------------------------------------------------------
-------------------------------------------------------------------------
602  | 01010000/os2  |  45 |   00   |  00FF  | 0 / 0  |"Fd_2"|
-------------------------------------------------------------------------
603  | 01010000/os2  | 128 |   00   |  00FF  | 0 / 0  |"FC_7"|
-------------------------------------------------------------------------
604  | 01010000/os2  | 163 |   00   |  00FF  | 0 / 0  |"FC_8"|
-------------------------------------------------------------------------
605  | 01010000/os2  | 128 |   00   |  00FF  | 0 / 0  |"FC_9"|
-------------------------------------------------------------------------
606  | 01010000/os2  | 163 |   00   |  00FF  | 0 / 0  |"FC_A"|
-------------------------------------------------------------------------
607  | 01010000/os2  | 175 |   00   |  00FF  | 0 / 0  |"FP_2"|
-------------------------------------------------------------------------
```

Processvalues (read only)

PNU dez.	Identification/ datatype	Array numb.	min value	max value	variabl/ convers. index	Name	Note
336	10000010/bs16	0	0	00FF	0 / 0	"ST4 "	
337	10000010/os2	0	0	FFFF	0 / 0	"Pnt1"	
338	10000010/os2	0	0	FFFF	0 / 0	"Pnt2"	
339	10000010/bs16	0	0	00FF	0 / 0	"STN "	1.)
340	10000010/os2	0	0	FFFF	0 / 0	"dx1A"	
341	10000010/os2	0	0	FFFF	0 / 0	"dx2A"	
342	10000010/os2	0	0	FFFF	0 / 0	"dx3A"	
343	10000010/os2	0	0	FFFF	0 / 0	"tc "	
344	10000010/bs16	0	0	00FF	0 / 0	"ST12"	2.)
345	10000010/int16	0	−199.9	199.9	0 /7FH	"SAA1"	
346	10000010/int16	0	−199.9	199.9	0 /7FH	"SAA2"	
347	10000010/int16	0	−199.9	199.9	0 /7FH	"SAA3"	
348	10000010/int16	0	−199.9	199.9	0 /7FH	"SAA4"	
349	10000010/int16	0	−199.9	199.9	0 /7FH	"SAA5"	
350	10000010/int16	0	−199.9	199.9	0 /7FH	"SAA6"	
351	10000010/int16	0	−199.9	199.9	0 /7FH	"SAA7"	
352	10000010/int16	0	−199.9	199.9	0 /7FH	"SAA8"	
353	10000010/int16	0	−199.9	199.9	0 /7FH	"AA43"	
354	10000010/int16	0	−199.9	199.9	0 /7FH	"AA13"	
355	10000010/int16	0	−199.9	199.9	0 /7FH	"AA23"	
356	10000010/int16	0	−199.9	199.9	0 /7FH	"AA33"	

```
      |    Description element (subindex)
      |                                  |variabl/|
PNU  |Identification/|Array| min    | max     |convers.|
dez. |datatype       |numb.| value  | value   |index   | Name | Note
----------------------------------------------------------------------
357 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH | "AE1" |
----------------------------------------------------------------------
358 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH | "AE2" |
----------------------------------------------------------------------
359 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH | "AE3" |
----------------------------------------------------------------------
360 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH | "AE4" |
----------------------------------------------------------------------
361 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH | "AE5" |
----------------------------------------------------------------------
362 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH | "AE6" |
----------------------------------------------------------------------
363 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH | "AE7" |
----------------------------------------------------------------------
364 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH | "AE8" |
----------------------------------------------------------------------
365 | 10000010/bs16 |  0  |    0   |  FFFF   | 0 / 0  |"ST7/8"| 3.)
----------------------------------------------------------------------
366 | 10000010/bs16 |  0  |    0   |  FFFF   | 0 / 0  | ST9/10| 4.)
----------------------------------------------------------------------
367 | 10000010/bs16 |  0  |    0   |  00FF   | 0 / 0  | "ST11"| 5.)
----------------------------------------------------------------------
368 | 10000010/bs16 |  0  |    0   |  FFFF   | 0 / 0  |"ST3/2"|
----------------------------------------------------------------------
----------------------------------------------------------------------
608 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH |"AE9 "|
----------------------------------------------------------------------
609 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH |"AE10"|
----------------------------------------------------------------------
610 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH |"AE11"|
----------------------------------------------------------------------
611 | 10000010/bs16 |  0  |    0   |  00FF   | 0 / 0  |"ST14"| 6.)
----------------------------------------------------------------------
612 | 10000010/bs16 |  0  |    0   |  00FF   | 0 / 0  |"ST15"| 7.)
----------------------------------------------------------------------
613 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH |"S__9"|
----------------------------------------------------------------------
614 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH |"S_10"|
----------------------------------------------------------------------
615 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH |"S_11"|
----------------------------------------------------------------------
616 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH |"S_12"|
----------------------------------------------------------------------
617 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH |"S_13"|
----------------------------------------------------------------------
618 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH |"S_14"|
----------------------------------------------------------------------
619 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH |"S_15"|
----------------------------------------------------------------------
620 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH |"S_16"|
----------------------------------------------------------------------
621 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH |"AA9" |
----------------------------------------------------------------------
622 | 10000010/int16|  0  | -199.9 |  199.9  | 0 /7FH |"AA5" |
----------------------------------------------------------------------
```

```
    |     Description element (subindex)
    |                                     |variabl/|
PNU |Identification/|Array| min     | max   |convers.|
dez.|datatype       |numb.| value   | value |index   | Name | Note
-------------------------------------------------------------------------
623 | 10000010/int16|  0  | –199.9  | 199.9 | 0 /7FH |"AA6" |
-------------------------------------------------------------------------
624 | 10000010/int16|  0  | –199.9  | 199.9 | 0 /7FH |"AA7" |
-------------------------------------------------------------------------
625 | 10000010/int16|  0  | –199.9  | 199.9 | 0 /7FH |"AA8" |
-------------------------------------------------------------------------
```

Processdata (write–/readable)

```
-------------------------------------------------------------------------
369 | 10000000/bs16 |  0  |       0 |  00FF | 0 / 0  | "ST5" | 8.)
-------------------------------------------------------------------------
370 | 10000000/int16|  0  | –199.9  | 199.9 | 0 /7FH | "SA13"|
-------------------------------------------------------------------------
371 | 10000000/int16|  0  | –199.9  | 199.9 | 0 /7FH | "SA23"|
-------------------------------------------------------------------------
372 | 10000000/int16|  0  | –199.9  | 199.9 | 0 /7FH | "SA33"|
-------------------------------------------------------------------------
373 | 10000000/int16|  0  | –199.9  | 199.9 | 0 /7FH | "SA43"|
-------------------------------------------------------------------------
374 | 10000000/int16|  0  | –199.9  | 199.9 | 0 /7FH | "SA53"|
-------------------------------------------------------------------------
375 | 10000000/int16|  0  | –199.9  | 199.9 | 0 /7FH | "SA63"|
-------------------------------------------------------------------------
376 | 10000000/int16|  0  | –199.9  | 199.9 | 0 /7FH | "SA73"|
-------------------------------------------------------------------------
377 | 10000000/int16|  0  | –199.9  | 199.9 | 0 /7FH | "SA83"|
-------------------------------------------------------------------------
378 | 10000000/bs16 |  0  |       0 |  00FF | 0 / 0  | "ST6 "| 9.)
-------------------------------------------------------------------------
-------------------------------------------------------------------------
626 | 10000000/bs16 |  0  |       0 |  00FF | 0 / 0  |"ST13" | 10.)
-------------------------------------------------------------------------
627 | 10000000/int16|  0  | –199.9  | 199.9 | 0 /7FH |"S_93" |
-------------------------------------------------------------------------
628 | 10000000/int16|  0  | –199.9  | 199.9 | 0 /7FH |"S103" |
-------------------------------------------------------------------------
629 | 10000000/int16|  0  | –199.9  | 199.9 | 0 /7FH |"S113" |
-------------------------------------------------------------------------
630 | 10000000/int16|  0  | –199.9  | 199.9 | 0 /7FH |"S123" |
-------------------------------------------------------------------------
631 | 10000000/int16|  0  | –199.9  | 199.9 | 0 /7FH |"S133" |
-------------------------------------------------------------------------
632 | 10000000/int16|  0  | –199.9  | 199.9 | 0 /7FH |"S143" |
-------------------------------------------------------------------------
633 | 10000000/int16|  0  | –199.9  | 199.9 | 0 /7FH |"S153" |
-------------------------------------------------------------------------
634 | 10000000/int16|  0  | –199.9  | 199.9 | 0 /7FH |"S163" |
-------------------------------------------------------------------------
```

Meaning of the bits:

1.) PNU 339: Status "STN" (read only)

```
    | BIT 15 : X                  | BIT  7: X
    | BIT 14 : X                  | BIT  6: X
    | BIT 13 : MUF                | BIT  5: X
    | BIT 12 : SbA5               | BIT  4: X
    | BIT 11 : SbA4               | BIT  3: X
    | BIT 10 : SbA3               | BIT  2: X
    | BIT  9 : SbA2               | BIT  1: X
    | BIT  8 : SbA1               | BIT  0: X
```

2.) PNU 344: Status "ST12" (SES binary outputs)

```
    | BIT 15 : 0                  | BIT  7: SbA8
    | BIT 14 : 0                  | BIT  6: SbA7
    | BIT 13 : 0                  | BIT  5: SbA6
    | BIT 12 : 0                  | BIT  4: SbA5
    | BIT 11 : 0                  | BIT  3: SbA4
    | BIT 10 : 0                  | BIT  2: SbA3
    | BIT  9 : 0                  | BIT  1: SbA2
    | BIT  8 : 0                  | BIT  0: SbA1
```

3.) PNU 365: Status "ST7" (binary outputs /read only)

```
    | BIT 15 : BA8                | BIT  7: BA16
    | BIT 14 : BA7                | BIT  6: BA15
    | BIT 13 : BA6                | BIT  5: BA14
    | BIT 12 : BA5                | BIT  4: BA13
    | BIT 11 : BA4                | BIT  3: BA12
    | BIT 10 : BA3                | BIT  2: BA11
    | BIT  9 : BA2                | BIT  1: BA10
    | BIT  8 : BA1                | BIT  0: BA9
```

4.) PNU 366: Status "ST9" (binary inputs /read only)

```
    | BIT 15 : BE8                | BIT  7: X
    | BIT 14 : BE7                | BIT  6: X
    | BIT 13 : BE6                | BIT  5: BE14
    | BIT 12 : BE5                | BIT  4: BE13
    | BIT 11 : BE4                | BIT  3: BE12
    | BIT 10 : BE3                | BIT  2: BE11
    | BIT  9 : BE2                | BIT  1: BE10
    | BIT  8 : BE1                | BIT  0: BE9
```

```
5.) PNU 367: Status "ST11"  (Message status transmitter fault)

     | BIT 15 : 0                      | BIT  7: AE8#
     | BIT 14 : 0                      | BIT  6: AE7#
     | BIT 13 : 0                      | BIT  5: AE6#
     | BIT 12 : 0                      | BIT  4: AE5#
     | BIT 11 : 0                      | BIT  3: AE4#
     | BIT 10 : 0                      | BIT  2: AE3#
     | BIT  9 : 0                      | BIT  1: AE2#
     | BIT  8 : 0                      | BIT  0: AE1#


------------------------------------------------------------------------

6.) PNU 611: Status "ST14"  (Message status transmitter fault)

     | BIT 15 : 0                      | BIT  7: X
     | BIT 14 : 0                      | BIT  6: X
     | BIT 13 : 0                      | BIT  5: X
     | BIT 12 : 0                      | BIT  4: X
     | BIT 11 : 0                      | BIT  3: X
     | BIT 10 : 0                      | BIT  2: AE11#
     | BIT  9 : 0                      | BIT  1: AE10#
     | BIT  8 : 0                      | BIT  0: AE9#


------------------------------------------------------------------------

7.) PNU 612: Status "ST15"  (SES binary outputs)

     | BIT 15 : 0                      | BIT  7: SbA16
     | BIT 14 : 0                      | BIT  6: SbA15
     | BIT 13 : 0                      | BIT  5: SbA14
     | BIT 12 : 0                      | BIT  4: SbA13
     | BIT 11 : 0                      | BIT  3: SbA12
     | BIT 10 : 0                      | BIT  2: SbA11
     | BIT  9 : 0                      | BIT  1: SbA10
     | BIT  8 : 0                      | BIT  0: SbA9


------------------------------------------------------------------------

8.) PNU 369: Status "ST5" (SES binary inputs / writeable)

     | BIT 15 : 0                      | BIT  7: SbE8
     | BIT 14 : 0                      | BIT  6: SbE7
     | BIT 13 : 0                      | BIT  5: SbE6
     | BIT 12 : 0                      | BIT  4: SbE5
     | BIT 11 : 0                      | BIT  3: SbE4
     | BIT 10 : 0                      | BIT  2: SbE3
     | BIT  9 : 0                      | BIT  1: SbE2
     | BIT  8 : 0                      | BIT  0: SbE1


------------------------------------------------------------------------
```

```
9.) PNU 378:  Status "ST6"  (program control / schreiben)

      | BIT 15 : 0                      | BIT  7: program control via SES
      | BIT 14 : 0                      | BIT  6: program 8 via SES
      | BIT 13 : 0                      | BIT  5: program 7 via SES
      | BIT 12 : 0                      | BIT  4: program 6 via SES
      | BIT 11 : 0                      | BIT  3: program 5 via SES
      | BIT 10 : 0                      | BIT  2: program 4 via SES
      | BIT  9 : 0                      | BIT  1: program 3 via SES
      | BIT  8 : 0                      | BIT  0: program 2 via SES


----------------------------------------------------------------------


10.) PNU 626: Status "ST13" (SES binary inputs / writeable)

      | BIT 15 : 0                      | BIT  7: SbE16
      | BIT 14 : 0                      | BIT  6: SbE15
      | BIT 13 : 0                      | BIT  5: SbE14
      | BIT 12 : 0                      | BIT  4: SbE13
      | BIT 11 : 0                      | BIT  3: SbE12
      | BIT 10 : 0                      | BIT  2: SbE11
      | BIT  9 : 0                      | BIT  1: SbE10
      | BIT  8 : 0                      | BIT  0: SbE9


----------------------------------------------------------------------
```

Excellence in
Automation & Drives:
Siemens