



IDN Reference Guide

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Modicon

Square D

Telemecanique

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GENERAL INFORMATION

DRIVE CONFIGURATION

Configure the address, baud rate and optical power on the drive to operate properly with the SERCOS master. These values can be adjusted through a terminal emulator program such as the terminal in the man-machine interface (MMI) UNILINK software or the Microsoft Windows® Hyper Terminal by the use of the following commands.

1. Change the desired parameters by using the commands `addr`, `sbaud`, and `slen`, as explained below.
2. Type `save` to save the new values.
3. Type `coldstart` to reset the amplifier.

Changing the Drive Address

In the terminal program, use the command `addr #` where # is the new drive address. The SERCOS address can also be changed via key operation on the front panel of the Lexium 17 D. (Please refer to the “Digital Servo Amplifier Lexium 17 D manual.”) The drive address can be set between 0 and 63. An address of zero designates the drive as a repeater on the SERCOS ring.

Changing the Baud Rate and Optical Power

In the terminal program, change the SERCOS baud rate by using the command `sbaud 2` for a baud rate of 2 MBaud or `sbaud 4` for a baud rate of 4 MBaud. The default is 4 MBaud. Change the optical power by using the command `SLEN #` where # is the length of plastic optical cable, in meters, from 1 to 45 meters. The default is 5 meters. This parameter can be used to set the optical range (in meters) for a standardized 1mm² plastic optical fiber cable. Also new is the command `SLEN 0` for very short lengths .

The baud rate and the optical power can also be changed via the UNILINK man-machine interface (MMI). Please refer to the user’s manual “UNILINK for LEXIUM.”

If the optical power is not adjusted properly, there will be errors in the telegram transmission, and the red error LED on the drive will light. In normal communication, the green transmit and receive LEDs will blink rapidly, causing the LEDs to appear faintly lit.

MDT CONTROL BITS 13 - 15

The following table gives a detailed description of the operation of the drive in regard to bits 13, 14 and 15 of the MDT Control Word. Please note that the three bits are ordered in the table according to priority.

Enable Drive	Drive On/Off	Halt/Restart	Description
14	15	13	
0	x	x	When the “Enable Drive” bit changes from 1 to 0, the power stage is disabled and the motor coasts to a stop.
1	0	x	When the “Drive On/Off” bit changes from 1 to 0, the drive decelerates at the quick deceleration rate (IDN P3022). The power stage is disabled when the internal velocity command is zero and the velocity feedback is below 5 RPM.
1	1	0	When the “Enable Drive” bit and the “Drive On/Off” bits are set, the power stage is enabled. When the “Halt/Restart” bit changes from 1 to 0, the drive decelerates at the acceleration limit value defined by IDN 137 or IDN 42.
1	1	1	When the “Halt/Restart” bit changes from 0 to 1, the drive follows the master’s command values. In velocity mode, accelerations are limited by IDN 136 or IDN 137, and the velocity command is limited by IDN 38, IDN 39 or IDN 91. In position mode, the drive monitors the position command and sets a fault if successive position commands exceed the velocity limit (IDN 38, IDN 39 or IDN 91). In position mode, it is the master’s responsibility to limit successive position commands in order to maintain the desired acceleration and velocity limits.

SERCOS IDN SET

IDN FORMAT

The IDN set supported by the Lexium 17D is listed in numerical order with a short description for each IDN. The descriptions use the following format.

IDN x	Name
Description:	
Data Length:	Non-Volatile:
Data Format:	Write Access:
Minimum:	Run-Up Check:
Maximum:	Cyclic Transfer:
Default:	Serial Equiv.:
Units:	Version:

Not all IDN descriptions require all of the fields listed above. Only the applicable fields are filled within an IDN description. The field definitions are as follows:

IDN x: The identification number. An IDN preceded by the prefix 'P' is a product specific IDN (manufacturer IDN) in a short hand notation. The actual IDN may be obtained by adding 32768 to the short hand numeric value. For convenience, the actual IDN is given in parentheses following the short hand notation. For example, P2 is a manufacturer specific IDN whose actual IDN is 32770.

Name: A descriptive title of the IDN.

Description: A short description of the purpose of the IDN.

Data Length: The length of IDN element 7, in bytes. Possible entries for this field are as follows:

- 2 bytes - The length of the operating data is 2 bytes.
- 4 bytes - The length of the operating data is 4 bytes.
- 1 byte var. - The length of the operating data is variable. The length of one data element is 1 byte.
- 2 bytes var. - The length of the operating data is variable. The length of one data element is 2 bytes.
- 4 bytes var. - The length of the operating data is variable. The length of one data element is 4 bytes.

Data Format: The format for interpreting and displaying the operating data. Possible entries for this field are binary, unsigned decimal, signed decimal, hexadecimal, text and IDN.

Minimum / Maximum: The allowable range of IDN element 7 data. IDN element 7 is checked for range compliance in the service channel. In general, if the range is blank in the IDN description, this means that IDN elements 5 and 6 are not supported. The ranges of some IDNs are dependent upon the value of other IDNs, drive parameters or motor parameters.

Default: The default value for IDN element 7 data. An IDN will revert to its default value after a firmware upgrade. The default may be a fixed value, or it may be stored in non-volatile memory. A blank "Default" field indicates that the IDN does not have a default value.

Units: The units of IDN element 7 data and of the minimum, maximum, and default fields. The units of some IDNs are obtained from the operating data of other IDNs. IDNs of data type "binary", "text", or "IDN" do not have units and the "Units" field is left blank in the IDN description.

Non-Volatile: Indicates whether the IDN operation data can be saved in non-volatile memory. Possible entries for this field are as follows:

(blank) - The operating data is stored in volatile memory and is lost when logic power is removed.

Yes - The operating data may be stored in non-volatile memory and will be retained after power down.

Write Access: The communication phases (CPx) during which an IDN may be written. In general an IDN may be read through the service channel during communication phases CP2 and above. However writing to an IDN may be restricted during some communication phases or while the drive is enabled. An entry of "Read-only" indicates that the IDN cannot be written during any communication phase.

Run-Up Check: The communication phases (CPx) during which the validity of the operating data is checked.

Possible entries for this field are as follows:

(blank) - The validity of the operating data is not checked.

CP2 - The validity of the operating data will be checked in the procedure "S-0-0127 Communication phase 3 transition check."

CP3 - The validity of the operating data will be checked in the procedure "S-0-0128 Communication phase 4 transition check."

Cyclic Transfer: Indicates whether cyclic transfer is possible for IDN element 7. Possible entries for this field are as follows:

(blank) - The operating data is not cyclic.

MDT - The IDN may be transferred within the MDT as cyclic data.

AT - The IDN may be transferred within the AT as cyclic data.

Serial Equivalent: An equation of equivalent protocol commands that may be issued through the RS-232/485 serial port to obtain the IDN data. The contents of the IDN can be obtained by evaluating the equation. If no serial equivalent commands are available, then the field is blank in the IDN description.

Version: The version in which the IDN was implemented.

IDN DESCRIPTION ABBREVIATIONS:

AqB	Incremental encoder signaling scheme. The A and B signals are in quadrature.
AT	Amplifier telegram.
C1D	Class 1 diagnostic (fault).
C2D	Class 2 diagnostic (warning).
C3D	Class 3 diagnostic (status).
CCT	Communication cycle time (IDN 2).
CCW	Counter clockwise. CW and CCW are viewed from the output end of the motor.
CUCT	Control unit cycle time (IDN 1).
CUSB	Control unit synchronization bit (MDT control word bit 10).
CW	Clockwise. CW and CCW are viewed from the output end of the motor.
CPx	Communication phase.
IC	Continuous current.
IDN	Identification number.
IP	Peak current.
LSB	Least significant bit.
MDT	Master data telegram.
MSB	Most significant bit.
MST	Master synchronization telegram.
PFB	Position feedback.
ROD	Refer to AqB.
RTC	Real time control bit.
RTS	Real time status bit.
SC	Sercos Service channel
μI	Micro-Interpolator.

IDN SET

IDN 2 Communication Cycle Time

The period at which MST, AT, and MDT telegrams are transmitted. The “Communication Cycle Time” (CCT) may be varied from 1 ms to 8 ms, in 1 ms increments. Linear interpolator is applied to the command every 250 μ s when the CCT is 1, 2, 3 or 4 ms. For the interpolation method please refer to IDN P3040.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Unsigned decimal	Write Access:	CP2
Minimum:	1000	Run-Up Check:	CP2
Maximum:	8000	Cyclic Transfer:	
Default:	2000	Serial Equiv:	
Units:	μ s	Version:	1.38 (Interpolation for 1ms) 1.42 (Interpolation method)

IDN 3 Shortest AT Transmission Starting Time

The time required by the drive between the end of the MST and the beginning of the drive's AT.

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	40	Serial Equiv:	
Units:	μ s	Version:	

IDN 4 Transmit/Receive Transition Time

The time required by the drive between the end of the AT and the beginning of the next MDT.

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	40	Serial Equiv:	
Units:	μ s	Version:	

IDN 5 Minimum Feedback Processing Time

The time required by the drive for receiving and processing cyclic feedback. This time period is measured from the beginning of the feedback acquisition to the end of the next MST.

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	200	Serial Equiv:	
Units:	μs	Version:	

IDN 6 AT Transmission Starting Time (T1)

The time at which the drive should transmit its AT during CP3 and CP4, measured from the end of the MST. The “AT Transmission Starting Time” must be downloaded from the master during CP2. IDN 6 is limited by the “Shortest AT Transmission Starting Time” (IDN 3), the “MDT Transmission Starting Time” (IDN 89) and the “Transmit/Receive Transition Time” (IDN 4), according to the following equation:

$$\text{IDN 3} < \text{IDN 6} < \text{IDN 89} - \text{IDN 4}$$

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Unsigned decimal	Write Access:	CP2
Minimum:		Run-Up Check:	CP2
Maximum:		Cyclic Transfer:	
Default:	None	Serial Equiv:	
Units:	μs	Version:	

IDN 7 Feedback Acquisition Capture Point

The time at which the drive should latch the feedback values after the end of the MST. The “Feedback Acquisition Capture Point” is limited by the CCT (IDN 2) and the “Minimum Feedback Processing Time” (IDN 5) according to the following equation.

$$\text{IDN 7} \leq \text{IDN 2} - \text{IDN 5}$$

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Unsigned decimal	Write Access:	CP2
Minimum:		Run-Up Check:	CP2
Maximum:		Cyclic Transfer:	
Default:	IDN 2 – IDN 5	Serial Equiv:	
Units:	μs	Version:	

IDN 8 Command Value Valid Time

The time at which the drive is allowed to access the new command values after the MST. The “Command Value Valid Time” is limited by the “MDT Transmission Starting Time” (IDN 89), the “Command Value Processing Time” (IDN 90) and the CCT (IDN 2) according to the following equation.

$$\text{IDN 89} + \text{MDT Transmission Time} + \text{IDN 90} < \text{IDN 8} \leq \text{IDN 2}$$

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Unsigned decimal	Write Access:	CP2
Minimum:		Run-Up Check:	CP2
Maximum:		Cyclic Transfer:	
Default:	IDN 2	Serial Equiv:	
Units:	μs	Version:	

IDN 9 Position of Data Record in MDT

The offset of the drive's data record within the MDT. The offset is measured in bytes from the MDT's address field. The data record position within the MDT must be downloaded from the master during CP2 and becomes active during CP3. The value must be greater than zero and must be an odd number not exceeding 65531.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Unsigned decimal	Write Access:	CP2
Minimum:		Run-Up Check:	CP2
Maximum:		Cyclic Transfer:	
Default:	None	Serial Equiv:	
Units:	Bytes	Version:	

IDN 10 Length of MDT

The length of the MDT's data field, expressed in bytes. This length does not include the MDT delimiters, address field, or cyclic redundancy check (CRC). The MDT length must be downloaded from the master during CP2 and becomes active during CP3. The MDT length must be an even number, and it must be greater than or equal to 4, but not exceeding 65534.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Unsigned decimal	Write Access:	CP2
Minimum:		Run-Up Check:	CP2
Maximum:		Cyclic Transfer:	
Default:	None	Serial Equiv:	
Units:	Bytes	Version:	

IDN 11 Class 1 Diagnostic (C1D)

The current fault status of the drive. When a fault occurs, the drive decelerates to a stop and is disabled. The C1D status bit (AT bit 13) is set, and the corresponding fault bits are set within IDN 11. All faults are latched within IDN 11 and are reset through the “Procedure: Reset Class 1 Diagnostic” (IDN 99). IDN 99 performs a coldstart automatically when required. Those faults which require a coldstart are noted in the table below. The error messages which appear on the front panel of the drive are also shown below.

Bit	Description	Coldstart	LED Error
LSB 0	Overload fault (IDN 114).	no	F15
1	Amplifier over temperature fault (IDN 203).	no	F01
2	Motor over temperature fault.	yes	F06
3	Cooling system fault (IDN 205).	no	F13
4	Control voltage fault ($\pm 15V$).	yes	F07
5	Feedback loss fault.	yes	F04
6	Commutation fault. Set to 0.	yes	F25
7	Over current fault.	yes	F14
8	Over voltage fault.	no	F02
9	Under voltage fault.	no	F05
10	Power supply phase fault.	no	F12, F19
11	Excessive position deviation (IDN 159).	no	F03
12	Communication interface fault (IDN 14).	no	F29
13	Software limit switch fault (IDN 49 and 50).	no	F24
14	Reserved. Set to 0.		
MSB 15	Manufacturer defined fault (IDN 129).	IDN 129	

Data Length: 2 bytes
 Data Type: Binary
 Minimum:
 Maximum:
 Default: 0
 Units:

Non-Volatile: No
 Write Access: Read-only
 Run-Up Check:
 Cyclic Transfer:
 Serial Equiv: ERRCODE
 Version:

IDN 12 Class 2 Diagnostic (C2D)

Warning flags that may indicate an impending shutdown. When an unmasked warning condition changes state, the corresponding warning bits are changed within IDN 12, and the C2D change bit (AT status word, bit 12) is set. The warning bits within IDN 12 are not latched and will automatically reset when the warning condition is no longer valid. The C2D change bit is reset when IDN 12 is read through the service channel. IDN 97 may be used to mask warnings and their affect on the C2D change bit.

Bit	Description
LSB 0	Overload warning (IDN 114 and 310).
1	Reserved: Amplifier over temperature warning.
2	Reserved: Motor over temperature warning (IDN 312).
3	Reserved: Cooling system warning (set to 0).
4	Reserved.
5	Reserved: Positioning velocity $\geq n$ Limit (IDN 315).
6	Reserved.
7	Reserved.
8	Reserved.
9	Reserved.
10	Reserved.
11	Reserved.
12	Reserved.
13	Target position outside of travel range (IDN 323).
14	Reserved.
MSB 15	Reserved: Manufacturer defined warning flags (IDN 181).

Data Length: 2 bytes
 Data Type: Binary
 Minimum:
 Maximum:
 Default:
 Units:

Non-Volatile: No
 Write Access: Read-only
 Run-Up Check:
 Cyclic Transfer:
 Serial Equiv:
 Version:

IDN 13 Class 3 Diagnostic (C3D)

Status flags for the drive. When an unmasked status condition changes state, the corresponding status bit changes within IDN 13, and the C3D change bit (AT status word, bit 11) is set. The status bits within IDN 13 are not latched and will automatically reset when the status condition is no longer valid. The C3D change bit is reset when IDN 13 is read through the service channel. IDN 98 may be used to mask particular status conditions and their affect on the C3D change bit.

Bit	Description
LSB 0	Reserved: Nfdbk = Ncmd (IDN 330).
1	Reserved: Nfdbk = 0 (IDN 124 and IDN 331).
2	Reserved: $ Nfdbk < N\ threshold $ (IDN 332).
3	Reserved: $ Torque \geq Torque\ threshold $ (IDN 333).
4	Reserved: $ Torque \geq Torque\ limit $ (IDN 334).
5	Reserved: $ Ncmd > N\ limit $ (IDN 335).
6	In Position (IDN 57 and IDN 336).
7	Reserved: $ Power \geq Power\ threshold $ (IDN 337).
8	Reserved.
9	Reserved: $ Nfdbk \leq \text{Min spindle speed}$ (IDN 339).
10	Reserved: $ Nfdbk \geq \text{Max spindle speed}$ (IDN 340).
11	Reserved: In Coarse Position (IDN 341).
12	Reserved: Target Position Attained (IDN 342)
13	Reserved: Interpolator Halted (IDN 343).
14	Reserved.
MSB 15	Manufacturer defined status flags (IDN 182).

Data Length: 2 bytes
Data Type: Binary
Minimum:
Maximum:
Default:
Units:

Non-Volatile: No
Write Access: Read-only
Run-Up Check:
Cyclic Transfer:
Serial Equiv:
Version:

IDN 14 Interface Status

The communication phase (CPx) and communication fault flags. In the event of a communication fault the drive decelerates to a stop and is disabled, and the drive's communication phase returns to 0. The communication interface fault summary bit (IDN 11, bit 12) is set. The cause of the communication fault is latched within IDN 14 along with the communication phase in which the fault occurred. The master may retrieve this information from the drive by reading IDN 14 before issuing a "Reset Class 1 Diagnostic" procedure (IDN 99).

If both bit 3 and bit 4 (MST and MDT failures) are set, this could indicate a signal loss (e.g. a broken optical fiber cable). In this case, the MST and MDT error counters (IDN 28 and IDN 29) will not be incremented.

Bit	Description
2 – 0	Communication Phase (CPx).
3	MST failure.
4	MDT failure.
5	Invalid phase (CP > 4)
6	Error during phase advance.
7	Error during phase regression.
8	Reserved: Phase switch without proper acknowledgment.
9	Switching to an uninitialized operation mode.
10	Reserved: Duplicate drive addresses.
11 - 15	Reserved.

Data Length: 2 bytes
Data Type: Binary
Minimum:
Maximum:
Default:
Units:

Non-Volatile: No
Write Access: Read-only
Run-Up Check:
Cyclic Transfer:
Serial Equiv:
Version:

IDN 15 Telegram Type Parameter

The master uses IDN 15 to select the contents of the AT and MDT cyclic data fields. Selecting a pre-defined or standard telegram type completely defines the contents and order of cyclic data within the AT and MDT. Within IDN 15, the Lexium 17D supports values 1 through 7 (indicated in bold-face type in the table below). Telegram type 7, or the application type telegram, allows the master to define the contents and order of the AT and MDT cyclic data. The IDNs that may be transferred as cyclic data within the AT and MDT are listed in IDN 187 and IDN 188 respectively. The maximum amount of AT and MDT cyclic data that the drive can transfer is specified in IDN 185 and IDN 186 respectively. When the application telegram is selected, the master writes the desired cyclic data IDNs for the AT into IDN 16 and for the MDT into IDN 24.

IDN 15 Value	Telegram Type	Telegram Cyclic Data	
		MDT (Commands)	AT (Feedback)
0	Standard telegram 0	Reserved: None	Reserved: None
1	Standard telegram 1	Torque (IDN 80)	None
2	Standard telegram 2	Velocity (IDN 36)	Velocity (IDN 40)
3	Standard telegram 3	Velocity (IDN 36)	Motor Position (IDN 51)
11			External Position (IDN 53)
4	Standard telegram 4	Position (IDN 47)	Motor Position (IDN 51)
12			External Position (IDN 53)
5	Standard telegram 5	Pos/Vel (IDN 47/36)	Motor Pos/Vel (IDN 51/40)
13			External Pos/Vel (IDN 53/40)
6	Standard telegram 6	Velocity (IDN 36)	None
7	Application telegram	Contents defined in IDN 24	Contents defined in IDN 16

Data Length: 2 bytes
 Data Type: Binary
 Minimum:
 Maximum:
 Default: 4
 Units:

Non-Volatile: No
 Write Access: CP2
 Run-Up Check: CP2
 Cyclic Transfer:
 Serial Equiv:
 Version: 1.38 (Telegram Type 1); 1.58 (IDN 53 for standard telegram 1-6)

IDN 16 Configuration List of AT Cyclic Data

An IDN list of the AT's cyclic data. The master fills this list with IDNs in CP2 selected from a list of configurable AT data (IDN 187) when an application telegram has been selected through IDN 15.

Data Length: 2 byte elements, variable length array
 Data Type: IDN
 Minimum:
 Maximum:
 Default: Empty list.
 Units:

Non-Volatile: No
 Write Access: CP2
 Run-Up Check: CP2
 Cyclic Transfer:
 Serial Equiv:
 Version:

IDN 17 IDN List of All Operation Data

An IDN list of all data IDNs that are supported by the drive.

Data Length: 2 byte elements, variable length array
 Data Type: IDN
 Minimum:
 Maximum:
 Default:
 Units:

Non-Volatile: Yes
 Write Access: Read-only
 Run-Up Check:
 Cyclic Transfer:
 Serial Equiv:
 Version:

IDN 18 IDN List of Operation Data for CP2.

An IDN list of all data that must be written by the master during CP2. The drive's CP2 to CP3 transition procedure (IDN 127) will fail if this data is not supplied by the master. IDN 16 and IDN 24 are not included in this list, but they need to be written by the master in CP2 if the application telegram (type 7) is selected. If IDN 16 and IDN 24 are not written during CP2, then the application telegram will be empty.

Data Length:	2 byte elements, variable length array	Non-Volatile:	Yes
Data Type:	IDN	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	
Units:		Version:	

IDN 19 IDN List of Operation Data for CP3.

An IDN list of all data that must be written by the master during CP3. The drive's CP3 to CP4 transition procedure (IDN 128) will fail if this data is not supplied by the master.

Data Length:	2 byte elements, variable length array	Non-Volatile:	Yes
Data Type:	IDN	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	
Units:		Version:	

IDN 21 IDN List of Invalid Operation Data for CP2.

A list of all IDNs which are considered invalid by the CP2 to CP3 transition procedure (IDN 127).

Data Length:	2 byte elements, variable length array	Non-Volatile:	No
Data Type:	IDN	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	Empty list.	Serial Equiv:	
Units:		Version:	

IDN 22 IDN List of Invalid Operation Data for CP3.

A list of all IDNs which are considered invalid by the CP3 to CP4 transition procedure (IDN 128).

Data Length:	2 byte elements, variable length array	Non-Volatile:	No
Data Type:	IDN	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	Empty list.	Serial Equiv:	
Units:		Version:	

IDN 24 Configuration List of MDT Cyclic Data

An IDN list of the MDT's cyclic data. The master fills this list with IDNs selected from a list of configurable MDT data (IDN 188) when an application telegram has been selected through IDN 15.

Data Length:	2 byte elements, variable length array	Non-Volatile:	No
Data Type:	IDN	Write Access:	CP2
Minimum:		Run-Up Check:	CP2
Maximum:		Cyclic Transfer:	
Default:	Empty list.	Serial Equiv:	
Units:		Version:	

IDN 25 IDN List of All Procedure Commands

An IDN list of all procedure IDNs that are supported by the drive.

Data Length:	2 byte elements, variable length array	Non-Volatile:	Yes
Data Type:	IDN	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	
Units:		Version:	

IDN 28 MST Error Counter

A count of all invalid MSTs in CP3 and CP4. In the case where more than two consecutive MST's are invalid, only two are counted, and the drive returns to CP0. The MST error counter counts to a maximum of 65535 and does not roll over to 0. If a value of 65535 is in the counter, there may have been a noisy transmission over a long period of time. The MST error counter is cleared on the transition from CP2 to CP3.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	
Units:		Version:	

IDN 29 MDT Error Counter

A count of all invalid MDTs in CP4. In the case where more than two consecutive MDTs are invalid, only two are counted, and the drive returns to CP0. The MDT error counter counts to a maximum of 65535 and does not roll over to 0. If a value of 65535 is in the counter, there may have been a noisy transmission over a long period of time. The MDT error counter is cleared on the transition from CP2 to CP3.

Data Length: 2 bytes
 Data Type: Unsigned decimal
 Minimum:
 Maximum:
 Default:
 Units:

Non-Volatile: No
 Write Access: CP2, CP3, CP4
 Run-Up Check:
 Cyclic Transfer:
 Serial Equiv:
 Version:

IDN 30 Manufacturer Version

A text string of the SERCOS firmware version.

Data Length: 1 byte elements, variable length array
 Data Type: Text
 Minimum:
 Maximum:
 Default:
 Units:

Non-Volatile: Yes
 Write Access: Read-only
 Run-Up Check:
 Cyclic Transfer:
 Serial Equiv: VER *
 Version:

IDN 32 Primary Operation Mode

Defines the drive's operational mode when the AT status word bits 8 and 9 are both 0. The master requests a particular operation mode through the MDT control word (bits 8 and 9). The master can switch between the operation modes defined within this IDN and the mode defined within the secondary operation mode 1 (IDN 33) with this bits in realtime. Switch into position control during fast moving, could result a jerk. The following table may be used to define the primary operation mode. All reserved bits are not supported and must be zero. When the drive powers-up the operational mode is undefined, and the master must define a primary operational mode in CP3. The gain for bit 3 is defined by IDN 296, Velocity Feed Forward Gain. It is not possible to select position control with motor feedback in IDN 32 and position control using external feedback in IDN 33, also the reverse setting of this IDNs is not possible and will be checked by the drive (refer to IDN 117). For position control with external feedback 2, all position data, e.g. also IDN 51, are used for the external feedback.

Bit	Value	Description
3 – 0	0000	Reserved: No mode of operation.
	0001	Torque control
	0010	Velocity control
	x011	Position control using motor feedback.
	x100	Position control using external feedback.
3	x101	Reserved: Position control using motor and external feedback.
	0	Position control with following error.
4 – 13	1	Position control without following error (IDN 296).
	0	Reserved.
14	0	Command values are issued as cyclic data.
	1	Reserved: Command values are issued through service channel.
15	0	Bits 0-14 are as defined above.
	1	Reserved: Bits 0-14 are defined by the manufacturer.

Data Length: 2 bytes
 Data Type: Binary
 Minimum:
 Maximum:
 Default: 3
 Units:

Non-Volatile: No
 Write Access: CP2, CP3
 Run-Up Check: CP3
 Cyclic Transfer:
 Serial Equiv:
 Version: 1.38 (Torque Control); 1.58 (position control with external feedback)

IDN 33 Secondary Operation Mode 1

Defines the drive's operational mode when the AT status word bit 9 is clear and bit 8 is set. The master requests a particular operation mode through the MDT control word (bits 8 and 9). The master can switch between the operation modes defined within this IDN and the mode defined within the primary operation mode (IDN 32) with this bits in realtime. Switch into position control during fast moving, could result a jerk. The following table may be used to define the secondary operation mode 1. All reserved bits are not supported and must be zero. The gain for bit 3 is defined by IDN 296, Velocity Feed Forward Gain. It is not possible to select position control with motor feedback in IDN 32 and position control using external feedback in IDN 33, also the reverse setting of this IDNs is not possible and will be checked by the drive (refer to IDN 117). For position control with external feedback 2, all position data, e.g. also IDN 51, are used for the external feedback.

Bit	Value	Description
3 - 0	0000	No mode of operation.
	0001	Torque control
	0010	Velocity control
	x011	Position control using motor feedback.
	x100	Position control using external feedback.
	x101	Reserved: Position control using motor and external feedback.
3	0	Position control with following error.
	1	Position control without following error (IDN 296).
4 - 13	0	Reserved.
14	0	Command values are issued as cyclic data.
	1	Reserved: Command values are issued through service channel.
15	0	Bits 0-14 are as defined above.
	1	Reserved: Bits 0-14 are defined by the manufacturer.

Data Length: 2 bytes
 Data Type: Binary
 Minimum:
 Maximum:
 Default: 0
 Units:

Non-Volatile: No
 Write Access: CP2, CP3
 Run-Up Check: CP3
 Cyclic Transfer:
 Serial Equiv:
 Version: 1.38 (Torque Control); 1.58 (position control with external feedback)

IDN 36 Velocity Command Value

The master issues the velocity command to the drive through IDN 36. The velocity scaling type is fixed (IDN 44), and the scaling parameters are adjustable (IDN 45 and 46).

Data Length:	4 bytes	Non-Volatile:	No
Data Type:	Signed decimal	Write Access:	CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	MDT
Default:		Serial Equiv:	J
Units:	IDN 44, 45, 46 (Default: RPM / 10000)	Version:	

IDN 38 Positive Velocity Limit Value

Establishes the maximum acceptable velocity command in the positive direction. In velocity mode and during homing, velocity commands that exceed the positive velocity limit are clamped to the positive velocity limit. In position mode, the velocity is monitored, and if the positive velocity exceeds the positive velocity limit, a fault is generated (IDN 129, bit 10).

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Signed Decimal	Write Access:	CP2, CP3, CP4
Minimum:	0	Run-Up Check:	
Maximum:	IDN 113	Cyclic Transfer:	
Default:	3000 RPM	Serial Equiv:	
Units:	IDN 44, 45, 46 (Default: RPM / 10000)	Version:	

IDN 39 Negative Velocity Limit Value

Establishes the maximum acceptable velocity command in the negative direction. In velocity mode and during homing, velocity commands that exceed the negative velocity limit are clamped to the negative velocity limit. In position mode, the velocity is monitored, and if the negative velocity exceeds the negative velocity limit, a fault is generated (IDN 129, bit 10).

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Signed Decimal	Write Access:	CP2, CP3, CP4
Minimum:	- IDN 113	Run-Up Check:	
Maximum:	0	Cyclic Transfer:	
Default:	- 3000 RPM	Serial Equiv:	VLIMN
Units:	IDN 44, 45, 46 (Default: RPM / 10000)	Version:	

IDN 40 Velocity Feedback Value

The master retrieves the velocity feedback from the drive through IDN 40. The velocity scaling type is fixed (IDN 44), and the scaling parameters are adjustable (IDN 45 and 46).

Data Length:	4 bytes	Non-Volatile:	No
Data Type:	Signed decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	AT
Default:		Serial Equiv:	V
Units:	IDN 44, 45, 46 (Default: RPM / 10000)	Version:	

IDN 41 Homing Velocity

The drive's velocity during the “Drive-Controlled Homing” procedure command (IDN 148). The actual homing velocity may be limited by the Bipolar, Positive, or Negative Velocity Limit Values (IDN 91, 38, 39 respectively). The velocity scaling type is fixed (IDN 44), and the scaling parameters are adjustable (IDN 45 and 46).

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Signed decimal	Write Access:	CP2, CP3, CP4
Minimum:	0	Run-Up Check:	
Maximum:	$2^{31} - 1$	Cyclic Transfer:	
Default:	23 RPM	Serial Equiv:	$VREF * 32 / (140 * IDN 45 * 10^{IDN 46})$
Units:	IDN 44, 45, 46 (Default: RPM / 10000)	Version:	

IDN 42 Homing Acceleration

The drive's maximum acceleration and deceleration during the “Drive Controlled Homing” procedure (IDN 148). The homing acceleration is defined as the number of milliseconds to reach the homing velocity.

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Signed decimal	Write Access:	CP2, CP3, CP4
Minimum:	1	Run-Up Check:	
Maximum:	32767	Cyclic Transfer:	
Default:	10	Serial Equiv:	ACCR, DECR
Units:	IDN 160, 161, 162	Version:	1.51 (rotational scaling)

IDN 43 Velocity Polarity Parameter

The velocity polarity parameter is used to switch the polarities of velocity data. Polarities are not switched internally but externally, this means on the in- and output of a closed loop system. The motor shaft turns clockwise when there is a positive velocity command and no inversion.

Bit		Description
0	Velocity command value	0 = non-inverted 1 = inverted
1	Reserved: Additive velocity command value	0 = non-inverted 1 = Reserved (inverted)
2	Velocity feedback value	0 = non-inverted 1 = inverted
15-7	Reserved.	

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Binary	Write Access:	CP2
Minimum:	0	Run-Up Check:	
Maximum:	0005H	Cyclic Transfer:	
Default:	0	Serial Equiv:	SERCSET (bits 12-15)
Units:		Version:	1.51

IDN 44 Velocity Data Scaling Type

Defines the scaling options for all velocity data. The scaling types which are supported are indicated in bold-face type. If preferred rotational scaling is selected, the velocity scaling factor (IDN 45) will set to 1 and the velocity data scaling exponent (IDN 46) will set to -4 (refer to IDN 45 and 46).

Bit		Description
2 – 0	Scaling Method	000 = Reserved: No Scaling 001 = Reserved: Linear Scaling 010 = Rotational Scaling
3	Standard Scaling Type	0 = Preferred Scaling 1 = Parameter Scaling
4	Units for Linear Scaling	0 = Meters (m) 1 = Inches (in)
4	Units for Rotational Scaling	0 = Revolutions (R) 1 = Reserved
5	Time Units	0 = Minutes (min) 1 = Reserved: Seconds (s)
6	Data Reference	0 = At the Motor Shaft 1 = At the Load
15-7	Reserved.	

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Binary	Write Access:	CP2, CP3
Minimum:	0002H	Run-Up Check:	
Maximum:	000AH	Cyclic Transfer:	
Default:	000AH	Serial Equiv:	
Units:		Version:	1.54 (Preferred scaling)

IDN 45 Velocity Data Scaling Factor

The scaling factor for all velocity data in the drive. The exponent is defined with IDN 46, so that the LSB weight of all rotational velocity data is derived from the following equation:

$$\text{LSB Weight} = \text{factor (IDN 45)} \bullet 10^{\text{exponent (IDN 46)}} \left\{ \frac{\text{unit (Revolutions)}}{\text{time unit (Minutes)}} \right\}$$

The scaling may be defined within the following range: 1x10⁻⁵ to 1x100. IDN 45 and IDN 46 must be integers. If preferred rotational scaling is selected in IDN 44, the velocity scaling factor (IDN 45) and the velocity data scaling exponent (IDN 46) will fixed set to there default values (refer to IDN 44). By the velocity scaling it is possible to get a rounding error in the LSBits.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Unsigned decimal	Write Access:	CP2, CP3
Minimum:	1	Run-Up Check:	
Maximum:	10 ^(IDN 46)	Cyclic Transfer:	
Default:	1	Serial Equiv:	
Units:		Version:	1.54 (Preferred scaling settings)

IDN 46 Velocity Data Scaling Exponent

The scaling exponent for all velocity data in the drive. Refer to IDN 45.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Signed decimal	Write Access:	CP2, CP3
Minimum:	- 5	Run-Up Check:	
Maximum:	- log (IDN 45)	Cyclic Transfer:	
Default:	- 4	Serial Equiv:	
Units:		Version:	

IDN 47 Position Command Value

The master issues position commands to the drive as cyclic data through IDN 47. Position commands written via the service channel do not take affect. The “Position Command Value” has a fixed scaling type (IDN 76) and a fixed resolution (IDN 79).

Data Length:	4 bytes	Non-Volatile:	No
Data Type:	Signed decimal	Write Access:	CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	MDT
Default:		Serial Equiv:	
Units:	IDN 76, 77, 78, 79	Version:	

IDN 49 Positive Position Limit Switch

This IDN defines the maximum position in positive direction. The positive position limit switch is active, when the limit switch is enabled (Refer to IDN 55 and P3004). If linear scaling is selected in IDN 76, the positive limit switch will be automatically calculated, with the feed constant IDN 123 and enabled with the enable bit in IDN 55. When the position command value reaches the limit switch, the drive decelerates to a stop and in the LED the error “F24” ant the warning “n07” are flashing and the fault bit 13 in IDN 11 and also the warning bits in IDN 323 and IDN 12 Bit 13 are set. With linear position scaling the maximum value is 1024 feed constant.

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Signed decimal	Write Access:	CP2, CP3, CP4
Minimum:	$-2^{31}+1$	Run-Up Check:	
Maximum:	$2^{31}-1$	Cyclic Transfer:	
Default:	0	Serial Equiv:	SWE2
Units:	IDN 76, 77, 78, 79	Version:	1.38 (1.51 direct active)

IDN 50 Negative Position Limit Switch

This IDN defines the minimum position in negative direction. The positive position limit switch is active, when the limit switch is enabled (Refer to IDN 55 and P3004). If linear scaling is selected in IDN 76, the positive limit switch will be automatically calculated, with the feed constant IDN 123 and enabled with the enable bit in IDN 55. When the position command value reach the limit switch, the drive decelerate to a stop and in the LED the error “F24” ant the warning “n06” are flashing and the fault bit 13 in IDN 11 and also the warning bits in IDN 323 and IDN 12 Bit 13 are set. With linear position scaling the maximum value is 1024 feed constant.

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Signed decimal	Write Access:	CP2, CP3, CP4
Minimum:	$-2^{31}+1$	Run-Up Check:	
Maximum:	$2^{31}-1$	Cyclic Transfer:	
Default:	0	Serial Equiv:	SWE1
Units:	IDN 76, 77, 78, 79	Version:	1.38 (1.51 direct active)

IDN 51 Position Feedback Value 1 (Motor Feedback)

The master retrieves the motor's position feedback from the drive through IDN 51. The scaling type and the resolution will be defined within IDN 76, 77, 78 and 79.

Data Length:	4 bytes	Non-Volatile:	No
Data Type:	Signed decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	AT
Default:		Serial Equiv:	PFB
Units:	IDN 76, 77, 78, 79	Version:	

IDN 52 Reference Distance 1

The distance from the machine zero point to the home position, referenced through the motor feedback.

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Signed decimal	Write Access:	CP2, CP3, CP4
Minimum:	$-2^{31} + 1$	Run-Up Check:	
Maximum:	$2^{31} - 1$	Cyclic Transfer:	
Default:	0	Serial Equiv:	ROFFS
Units:	IDN 76, 77, 78, 79	Version:	

IDN 53 Position Feedback Value 2 (External Feedback)

The external position feedback of the drive from an external rotary encoder, in rotational position resolution within IDN 79. For linear position scaling this IDN is in counts, not in SERCOS units (refer to IDN 76 and 79).

Data Length:	4 bytes	Non-Volatile:	No
Data Type:	Signed decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	AT
Default:		Serial Equiv:	PFB0
Units:	IDN 76, 79	Version:	1.51 (rotational Sercos units)

IDN 54 Reference Distance 2

The distance from the machine zero point to the home position for the secondary feedback. If homing is done the position feedback value 2 (IDN 53) contains the value of this IDN (refer to 148).

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Signed decimal	Write Access:	CP2, CP3, CP4
Minimum:	$-2^{31} + 1$	Run-Up Check:	
Maximum:	$2^{31} - 1$	Cyclic Transfer:	
Default:	0	Serial Equiv:	ROFFS0
Units:	IDN 76, 79	Version:	1.54

IDN 55 Position Polarity Parameter

The position polarity parameter is used to switch the polarities of position data. Polarities are not switched internally but externally, this means on the in- and output of a closed loop system. The motor shaft turns clockwise when there is a positive position command difference and no inversion. Bit 4 disable or enable the SW-Limit switches. If linear scaling of the position data is selected (refer to IDN 76), these Bit will automatic set and it is not possible to disable the position limit values (refer to IDN 49 and 50). If the Position limit switches are set, the drive set a software limit switch fault (Bit 13 in IDN 11), if the drive reach the not allowed area. A new value in bit 4 will not become active until the parameter is saved to non-volatile memory and a coldstart or warmstart (IDN128) procedure is initiated

Bit		Description
0	Position command value	0 = non-inverted 1 = inverted
1	Reserved: Additive position command value	0 = non-inverted 1 = Reserved (inverted)
2	Position feedback value 1	0 = non-inverted 1 = inverted
3	Position feedback value 2	0 = non-inverted 1 = inverted
4	Position limit values	0 = disabled 1 = enabled
15-5	Reserved	

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Binary	Write Access:	CP2
Minimum:	0	Run-Up Check:	
Maximum:	001D H	Cyclic Transfer:	
Default:	0	Serial Equiv:	SERCSET (Bits 4 - 11)
Units:		Version:	1.51

IDN 57 Position Window

Defines the maximum absolute distance between the position command value and the position feedback value. When the following error is within the “Position Window,” the drive sets the status flag “In Position” (IDN 13, bit 6). This function is only active while the drive is in position control. The “In Position” flag may be selected as a RTS bit through IDN 336 (refer to IDN 159, 189, 336).

Data Length:	4 bytes	Non-Volatile:	No
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	7FFF FFFF	Serial Equiv:	
Units:	IDN 76, 77, 78, 79	Version:	

IDN 59 Position Switch Flag Parameter

The position switch flag parameter depends on the position feedback value, the settings of the “Position Switch Polarity Parameter” (IDN P3043) and the “Kind of Position Switch Parameter” (IDN P3044). The behavior of the position switch flag bits are described below (please refer also to the IDNs P3043 and P3044). A digital output may also be configured to duplicate a position switch flag through the “Digital Output 1 Mode” (P3005), the “Digital Output 1 Trigger” (P3007), the “Digital Output 2 Mode” (P3006) and the “Digital Output 2 Trigger” (P3008).

- The corresponding bits of IDN P3043 and P3044 are set to “0”, which is the default. Then the associated flag bit is set to “0” if the position feedback value is smaller than the position switching point. The associated flag is set to “1” if the position feedback value is greater than or equal to the position switching point.
- The corresponding bits of IDN P3043 is set to “1” and of IDN P3044 is set to “0”. Then the associated flag bit is set to “1” if the position feedback value is smaller than the position switching point. The associated flag is set to “0” if the position feedback value is greater than or equal to the position switching point
- If the corresponding bit of IDN P3044 is set to “1”, then the associated flag is checked once according to the polarity setting of IDN P3043 and latched till the associated flag is enabled again.

Bit	Description
LSB 0	Position switch point 1 (IDN 60)
1	Position switch point 2 (IDN 61)
2	Position switch point 3 (IDN 62)
3	Position switch point 4 (IDN 63)
4	Position switch point 5 (IDN 64)
5	Position switch point 6 (IDN 65)
6	Position switch point 7 (IDN 66)
7	Position switch point 8 (IDN 67)
8 – 15	Reserved.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	Read-only
Minimum:	0000H	Run-Up Check:	
Maximum:	00FFH	Cyclic Transfer:	AT
Default:		Serial Equiv:	M POSRSTAT
Units:		Version:	1.45

IDN 60 Position Switch Point 1

IDN 61 Position Switch Point 2

IDN 62 Position Switch Point 3

IDN 63 Position Switch Point 4

IDN 64 Position Switch Point 5

IDN 65 Position Switch Point 6

IDN 66 Position Switch Point 7

IDN 67 Position Switch Point 8

Each position switch point IDN defines a feedback position that determines the state of a corresponding position status flag within IDN 59 (refer to IDN 59).

Data Length:	4 bytes	Non-Volatile:	No
Data Type:	Signed decimal	Write Access:	CP2, CP3, CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	MDT (60 + 61)
Default:	0	Serial Equiv:	P1, P2, P3, P4, P5, P6, P7 and P8
Units:	IDN 76, 77, 78, 79	Version:	1.45 (add P3 - P8); 1.51 cyclic data

IDN 76 Position Data Scaling Type

Defines the scaling options for all position data. The supported scaling types are indicated in bold-face type. The following scaling types are available : 0001(Hex), 0081(Hex), 0009(Hex), 0089(Hex), 000A(Hex) and 008A(Hex). If linear scaling is selected without modulo format on (bit 7 = 1), the software limit switches are automatic switched on (refer to IDN 49, 50, 55 and P3004). If modulo format is selected, the drive operates without interpolation. If rotational scaling is selected and the rotational position resolution (IDN 79) is different from 1048576 or 65536 the modulo format must switch on, this will check during runup. A change of bit 7 will initiate a warmstart procedure (refer to IDN128) during runup. With set the operation mode within IDN 32 or 33 to position control with external feedback, this IDN will set to 004A(Hex) as a fixed setting. The drive can only operate with a fixed rotational scaling for the position data in this case (refer to IDN 79).

Bit		Value	Description
2 - 0	Scaling Method	000	Reserved: No Scaling
		001	Linear Scaling
		010	Rotational Scaling
3	Standard Scaling Type	0	Preferred Scaling
		1	Parameter Scaling
4	Reserved: Units for Linear Scaling	0	Meters (m)
		1	Inches (in)
4	Units for Rotational Scaling	0	Degrees
		1	Reserved
5	Reserved		
6	Data Reference	0	At the Motor Shaft
		1	At the Load (Only for rotational scaling)
7	Processing Format	0	Absolute Format
		1	Modulo Format (See IDN 103)
15-8	Reserved.		

Data Length: 2 bytes
Data Type: Binary
Minimum: 0001H
Maximum: 008AH
Default: 000AH
Units:

Non-Volatile: Yes
Write Access: CP2
Run-Up Check: CP3
Cyclic Transfer:
Serial Equiv: SERCSET (Bits 24 – 31)
Version: 1.38 (Linear Scaling); 1.54 (Modulo Format, SERCSET); 1.58 (position control with external feedback)

IDN 77 Linear Position Data Scaling Factor

This parameter defines the scaling factor for all position data in the drive, when linear scaling in IDN 76 is selected.

$$\text{LSB Weight} = \text{factor (IDN 77)} \cdot 10^{\text{exponent (IDN 78)}} \{m\} = 1 \cdot 10^{-7} \text{ m}$$

Data Length: 2 bytes
Data Type: Unsigned decimal
Minimum:
Maximum:
Default: 1
Units:

Non-Volatile: Yes
Write Access: Read-only
Run-Up Check:
Cyclic Transfer:
Serial Equiv:
Version: 1.38

IDN 78 Linear Position Data Scaling Exponent

This parameter defines the scaling exponent for all position data in the drive, when linear scaling in IDN 76 is selected. Refer to IDN 77.

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Signed decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	-7	Serial Equiv:	
Units:		Version:	1.38

IDN 79 Rotational Position Resolution

The rotational position resolution for all position data in the drive. The LSB weight of rotational position data is determined by the following equation:

$$\text{LSB Weight} = \frac{360^{\circ}}{\text{IDN 79}}$$

If the rotational position resolution is different from 65536 or 1048576, it is necessary that the modulo format is switched on in IDN 76. Only the values 65536 and 1048576 could save in the non-volatile memory. If position control with external feedback is selected, the drive will calculate the rotational position resolution with the resolution of the rotational feedback 2 (IDN 117). This value for IDN 79 is then write protected and could only read by the master.

By using parameter 121 and 122 the minimum changes to min: 100 x (IDN 122/IDN 121)
and the maximum to max: 100 000 000 x (IDN 122/IDN 121)

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2
Minimum:	100	Run-Up Check:	
Maximum:	100 000 000	Cyclic Transfer:	
Default:	1048576	Serial Equiv:	PRBASE
Units:	Counts / Revolution	Version:	1.51 (1048576 or 65536); 1.54 (100 – 100 000 000); 1.58 (position control with external feedback)

IDN 80 Torque Command Value

The master issues torque commands to the drive as cyclic data through IDN 80. Torque commands written via the service channel do not take affect.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Signed decimal	Write Access:	CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	MDT
Default:		Serial Equiv:	ICMD • (1000 / MICONT)
Units:	IDN 86	Version:	1.38

IDN 81 Torque Setpoint (Additive)

This is an additional function for controlling the torque in the drive in order to minimize the following error. This value is added to the torque setpoint. This function can be used in position and speed control. However, it should not be used in conjunction with acceleration precontrol P3052, as both write internal variable "IVORCMD" (see also IDN P3052).

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Signed decimal	Write Access:	CP2, CP3, CP4
Minimum:	-2 ¹⁵	Run-Up Check:	
Maximum:	2 ¹⁵ -1	Cyclic Transfer:	MDT
Default:		Serial Equiv.:	M IVORCMD
Units:	Defined in IDN 86	Version:	2.60

IDN 84 Torque Feedback Value

The master retrieves the motor's torque feedback from the drive through IDN 84.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Signed decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	AT
Default:		Serial Equiv:	I • (1000 / MICONT)
Units:	IDN 86	Version:	

IDN 86 Torque/Force Data Scaling Type

Defines the scaling options for all torque or force data. The scaling types which are supported are indicated in bold-face type. The weight of the LSB for percentage scaling is defined as 0.1% of the motor's continuous current (IDN 111).

Bit		Description
2 – 0	Scaling Method	000 = Percentage Scaling 001 = Reserved: Linear Scaling (force) 010 = Reserved: Rotational Scaling (torque)
3	Reserved: Standard Scaling Type	0 = Preferred Scaling 1 = Parameter Scaling
4	Reserved: Units for Force	0 = Newton (N) 1 = Pound Force (lbf)
4	Reserved: Units for Torque	0 = Newton-Meter (Nm) 1 = Inch Pound Force (in-lbf)
5	Reserved	
6	Data Reference	0 = At the Motor Shaft 1 = Reserved: At the Load
15-7	Reserved.	

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Binary	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0	Serial Equiv:	
Units:		Version:	

IDN 88 Receive to Receive Recovery Time

The time required by the drive between the end of the MDT and the beginning of the MST.

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	50	Serial Equiv:	
Units:	μs	Version:	

IDN 89 MDT Transmission Starting Time

The time at which the master should transmit the MDT, after the end of the MST, during CP3 and CP4. The MDT Transmission Starting Time must be downloaded from the master during CP2. The “MDT Transmission Starting Time” is limited by the CCT (IDN 2), the “Transmit/Receive Transmission Time” (IDN 4) the “AT Transmission Starting Time” (IDN 6) and the “Receive to Receive Recovery Time” (IDN 88) according to the following restrictions.

$$\text{IDN 89} \geq \text{IDN 6} + \text{AT Transmission Time} + \text{AT Jitter} + \text{IDN 4} + \text{MDT Jitter}$$

$$\text{IDN 89} \leq \text{IDN 2} - \text{max IDN 88 from all drives} - \text{MDT Transmission Time} \\ - \text{MST Transmission Time} - \text{MDT Jitter} - \text{CCT Jitter}$$

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Unsigned decimal	Write Access:	CP2
Minimum:		Run-Up Check:	CP2
Maximum:		Cyclic Transfer:	
Default:	None	Serial Equiv:	
Units:	μs	Version:	

IDN 90 Command Value Processing Time

The minimum time required by the drive from the end of the MDT to the point at which the received command values may be used by the drive.

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	50	Serial Equiv:	
Units:	μs	Version:	

IDN 91 Bipolar Velocity Limit

Establishes the maximum acceptable velocity command in both the clockwise and counter-clockwise directions. In velocity mode and during homing, velocity commands that exceed the bipolar velocity limit are clamped to the bipolar velocity limit. In position mode, the velocity is monitored, and if the velocity exceeds the bipolar velocity limit, a fault is generated (IDN 129, bit 10).

The “Bipolar Velocity Limit” (IDN 91) is linked to the “Positive and Negative Velocity Limit Values” (IDN 38 and IDN 39). When a value is written to IDN 91, the same value is also written to IDN 38 and IDN 39 (with the

appropriate signs). IDN 38 and IDN 39 must have the same absolute value in order for IDN 91 to be valid. If they do not have the same absolute value when IDN 91 is read, then the drive will return error message 7008, "Invalid Data" for IDN 91.

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Signed decimal	Write Access:	CP2, CP3, CP4
Minimum:	0	Run-Up Check:	
Maximum:	IDN 113	Cyclic Transfer:	
Default:	3000 RPM	Serial Equiv:	VLIM, VLIMN
Units:	IDN 44,45,46 (Default: RPM / 10 000)	Version:	

IDN 92 Bipolar Torque Limit

Defines the maximum torque limit in both the clockwise and counter-clockwise directions.

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:	0	Run-Up Check:	
Maximum:	Minimum of IDN 109 and IDN 110	Cyclic Transfer:	
Default:	Minimum of IDN 109 and IDN 110	Serial Equiv:	(IPEAK)
Units:	IDN 86	Version:	

IDN 95 Diagnostic Message

The master may read a text message that describes the status of the drive.

Data Length:	1 byte elements, variable length array	Non-Volatile:	No
Data Type:	Text	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	SSTAT
Units:		Version:	

IDN 96 Slave Arrangement

The SERCOS address of the drive is contained in both the upper and lower bytes of this IDN. The drive's address may range from 0 to 63 and may be selected through the front panel of the drive. A drive with an address of zero is a repeater on the SERCOS ring and does not participate in the communication phase run-up. A new drive has a default address of zero.

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Hexadecimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	(ADDR << 8) ADDR
Units:		Version:	

IDN 97 Class 2 Diagnostic Mask

A mask for the C2D (IDN 12). When a warning condition within IDN 12 changes state, the C2D change bit (AT status word, bit 12) is set. The warning bits within IDN 12 are not latched (i.e. they will automatically set or reset as warning conditions change). The C2D change bit is reset when IDN 12 is read through the service channel. IDN 97 may be used to mask the effect of a particular warning condition on the C2D change bit: when a masked warning changes state, the C2D change bit will not be set. However, the warning bits in IDN 12 will continue to change state according to the warning conditions. When a bit in IDN 97 is clear, the corresponding bit in IDN 12 is masked.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	CP2, CP3, CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	1111 1111 1111 1111	Serial Equiv:	
Units:		Version:	

IDN 98 Class 3 Diagnostic Mask

A mask for the C3D (IDN 13). When a status condition within IDN 13 changes state, the C3D change bit (AT status word, bit 11) is set. The status bits within IDN 13 are not latched (i.e. they will automatically set or reset as status conditions change). The C3D change bit is reset when IDN 13 is read through the service channel. IDN 98 may be used to mask the effect of a particular status condition on the C3D change bit: when a masked status changes state, the C3D change bit will not be set. However, the status bits in IDN 13 will continue to change state according to the status conditions. When a bit in IDN 98 is clear, the corresponding bit in IDN 13 is masked.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	CP2, CP3, CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	1111 1111 1111 1111	Serial Equiv:	
Units:		Version:	

IDN 99 Procedure: Reset Class 1 Diagnostic

Attempts to clear the latched faults contained in IDN 11, IDN 14 and IDN 129. Faults that are still active are not cleared. If all the faults are cleared successfully, the C1D status bit (AT bit 13) is also cleared. Some faults specified in IDN 11 and IDN 129 require a coldstart, which IDN 99 performs automatically when required. The IDN 99 procedure will not reset faults if MDT bits 14 and 15 are set while CP3 or CP4.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	CP2, CP3, CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0	Serial Equiv:	
Units:		Version:	

IDN 100 Velocity Loop Proportional Gain

The proportional gain for the proportional-integral velocity loop controller. Typical gain values are between 10 and 20. If the gain is too low, then the drive may respond slowly or have poor damping. If the value is too high, then the drive may whistle or run roughly.

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:	0	Run-Up Check:	
Maximum:	200	Cyclic Transfer:	
Default:	1	Serial Equiv:	GV * 100
Units:		Version:	

IDN 101 Velocity Loop Integral Action Time

The integral action time for the proportional-integral velocity loop controller. When IDN 101 is zero, the integrator is switched off. If the value is too low, then the drive may run roughly or may have a large overshoot when coupled to a high-inertia load. If the value is too high, the drive response may be sluggish.

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:	0	Run-Up Check:	
Maximum:	10 000	Cyclic Transfer:	
Default:	100	Serial Equiv:	GVTN * 10
Units:	0.1 ms	Version:	

IDN 103 Modulo Value

If the modulo format is on (IDN 76 bit 7 = 1), the modulo value determines at which numeric value the position data roll over to 0. The following conditions for the modulo value will check during runup:

1. If linear scaling and modulo format is selected within IDN 76 and the feed constant IDN 123 is smaller than 2^{20} , the modulo value must be smaller than $1024 * IDN 123$.
2. If rotational scaling and modulo format is selected within IDN 76 and rotational position resolution IDN 79 is smaller than 2^{20} , the modulo value must be smaller than $1024 * IDN 79$.
3. If rotational scaling and modulo format is selected within IDN 76 and rotational position resolution IDN 79 is greater than 2^{20} , the modulo value must be smaller than $2^{50} / IDN 79$.

Data Length:	4 bytes	Non-Volatile:	No
Data Type:	Unsigned decimal	Write Access:	CP2, CP3
Minimum:	1	Run-Up Check:	CP3
Maximum:	$2^{31}-1$	Cyclic Transfer:	
Default:	$2^{31}-1$	Serial Equiv:	ERND
Units:	IDN 76, 77, 78, 79	Version:	1.54

IDN 104 Position Loop Proportional Gain

The proportional gain for the proportional-integral position loop controller. If the value is too low, the settling time may be too long, and the drive may be too sluggish. If the value is too high, the drive may be noisy and may oscillate.

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:	60	Run-Up Check:	
Maximum:	60 000	Cyclic Transfer:	
Default:	900	Serial Equiv:	GP * 6000
Units:	0.01 (m/min)/mm \equiv 0.01 (in/min)/mil \equiv 0.01 (kRPM)/rev	Version:	

IDN 105 Position Loop Integral Action Time

The integral time for the proportional-integral position loop controller.

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:	10	Run-Up Check:	
Maximum:	2 000	Cyclic Transfer:	
Default:	500	Serial Equiv:	GPTN * 10
Units:	0.1 ms	Version:	

IDN 106 Current Loop Proportional Gain 1

The proportional gain for the torque producing current (D) within the proportional-integral current loop controller.

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:	1	Run-Up Check:	
Maximum:	3 000	Cyclic Transfer:	
Default:	100	Serial Equiv:	MLGQ * 100
Units:		Version:	

IDN 107 Current Loop Integral Action Time 1

The integral time for the torque producing current within the proportional-integral current loop controller.

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:	200	Run-Up Check:	
Maximum:	10 000	Cyclic Transfer:	
Default:	600	Serial Equiv:	KTN * 1000
Units:	μ s	Version:	

IDN 108 Feedrate Override

The feedrate override is activated only with drive controlled procedure commands. In such a case, the velocity command is calculated by the drive internally. This IDN 108 has multiplying effects on the velocity command value.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:	0	Run-Up Check:	
Maximum:	10000	Cyclic Transfer:	
Default:	10000	Serial Equiv:	
Units:	0.01%	Version:	1.42

IDN 109 Motor Peak Current

The motor's peak current. If the motor peak current is less than that of the amplifier, the amplifier is automatically limited to the level of the motor peak current.

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3
Minimum:	0.1 * IDN 110	Run-Up Check:	
Maximum:	2 * IDN 110	Cyclic Transfer:	
Default:	IDN 110	Serial Equiv:	MIPEAK * 1000
Units:	mA	Version:	

IDN 110 Amplifier Peak Current

The amplifier's peak current. This value is defined by the hardware and is set to twice the continuous rated current of the drive.

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	Hardware defined	Serial Equiv:	DIPEAK * 1000
Units:	mA	Version:	

IDN 111 Motor Continuous Stall Current

The current at which the motor produces the continuous standstill torque, according to the motor specification sheet. This parameter is used as a reference for all torque data and for determining motor-related current values from torque data.

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3
Minimum:	0.1 * IDN 112	Run-Up Check:	
Maximum:	2.0 * IDN 112	Cyclic Transfer:	
Default:	IDN 112	Serial Equiv:	MICONT * 1000
Units:	mA	Version:	

IDN 112 Amplifier Rated Current

The amplifier's continuous current rating. This hardware-defined variable is automatically determined by the drive.

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	Hardware defined	Serial Equiv:	DICONT * 1000
Units:	mA	Version:	

IDN 113 Maximum Motor Speed

The motor's maximum recommended speed, as listed in the motor specification sheet provided by the manufacturer.

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3
Minimum:	0	Run-Up Check:	
Maximum:	12000 RPM	Cyclic Transfer:	
Default:	3000 RPM	Serial Equiv:	MSPEED
Units:	IDN 44,45,46 (Default: RPM / 10000)	Version:	

IDN 114 System Load Limit

The system's continuous load rating. The continuous load rating is defined as a percentage of the system's continuous current. When the load limit is exceeded, the drive sets the overload warning bit in the C2D (IDN 12, bit 0). If the load limit is exceeded by 15%, the drive sets the overload shutdown bit in C1D (bit 0).

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:	0	Run-Up Check:	
Maximum:	100	Cyclic Transfer:	
Default:	80	Serial Equiv:	I2TLIM
Units:	% of min (IDN 111, 112, or P3020)	Version:	

IDN 116 Resolution of Rotational Feedback 1 (Motor Feedback)

The motor's rotary feedback resolution (refer to IDN 79).

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	Read-only
Minimum:	65536	Run-Up Check:	
Maximum:	1048576	Cyclic Transfer:	
Default:	1048576	Serial Equiv:	2^PRBASE
Units:	Counts	Version:	

IDN 117 Resolution of Rotational Feedback 2 (External Feedback)

The resolution of the rotational feedback 2 contains the cycles per revolution of an rotary encoder as an external feedback (IDN 53). The resolution of the external position feedback depends on this parameter and the multiplication factor 2 (IDN 257). The resolution could be calculated with the following calculation rule: resolution = external feedback (IDN117) x 4 x multiplication factor 2 (IDN 257). The maximum resolution is set within IDN 79 divide by 4, the drive checks during runup, that the setting will not give a bigger value. In this case the drive automatically calculates a new multiplication factor 2 (IDN 257).

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2
Minimum:	12	Run-Up Check:	
Maximum:	262144 (16384)	Cyclic Transfer:	
Default:	0	Serial Equiv:	FB2RES
Units:	Lines per revolution	Version:	1.51; 1.58 (position control with external feedback)

IDN 119 Current Loop Proportional Gain 2

The proportional gain for the field producing current (D) within the proportional-integral current loop controller. This gain has the same value within the proportional gain 1 in the torque producing loop controller (see also IDN 106).

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	Read-only
Minimum:	1	Run-Up Check:	
Maximum:	3 000	Cyclic Transfer:	
Default:	100	Serial Equiv:	MLGD * 100
Units:		Version:	1.38

IDN 120 Current Loop Integral Action Time 2

The integral time for the field producing current within the proportional-integral current loop controller. This time has the same value within the integral action time 1 in the torque producing loop controller (see also IDN 107).

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	Read-only
Minimum:	200	Run-Up Check:	
Maximum:	10 000	Cyclic Transfer:	
Default:	600	Serial Equiv:	KTN * 1000
Units:	µs	Version:	1.38

IDN 121 Load Gearbox Input Revolutions

Revolutions must be entered as integers. Permitted factors between input and output revolutions are 0.01 to 100.

Formula: **Gear ratio** = $\frac{\text{input revolutions}}{\text{output revolutions}}$

- Simple example for ratio 1:

$$100 = \frac{100 \text{ Motor revolutions}}{1 \text{ Load revolutions}}$$

- Simple example for ratio 2:

$$0.01 = \frac{1 \text{ Motor revolutions}}{100 \text{ Load revolutions}}$$

Example: If the motor completes 770 revolutions and the load 17.5, the gear ratio is 42.5 and therefore lies within the permissible range.

The IDNs would have the following settings, for example:

IDN 121 = 85

IDN 122 = 2

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:		Write Access:	CP2, CP3
Minimum:	IDN 122/100	Run-Up Check:	
Maximum:	IDN 122 x 100	Cyclic Transfer:	
Default:	1	Serial Equiv:	GEARI
Units:		Version:	2.60
IDN Type:	FB		

IDN 122 Load Gearbox Output Revolutions

Revolutions must be entered as integers. Permitted factors between input and output revolutions are 0.01 to 100. See also IDN 121 for a more detailed description and examples.

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:		Write Access:	CP2, CP3
Minimum:	IDN 121/100	Run-Up Check:	
Maximum:	IDN 121 x 100	Cyclic Transfer:	
Default:	1	Serial Equiv:	GEARO
Units:		Version:	2.60
IDN Type:	FB		

IDN 123 Feed Constant

The feed constant describes the machine element which converts a rotational motion into a linear motion. The feed constant indicates the linear distance during one revolution of the feed spindle. This IDN is only active when linear scaling in IDN 76 is selected. This IDN also describes the feed at linear rotational speed scaling. The maximum is now 10 000 000.

By using parameter 121 and 122 the minimum changes to min: 100 x (IDN 122/IDN 121)
and the maximum to max: 100 000 000 x (IDN 122/IDN 121)

Data Length:	4 bytes	Non-Volatile:	No
Data Type:	Unsigned decimal	Write Access:	CP2
Minimum:	100	Run-Up Check:	
Maximum:	10 000 000	Cyclic Transfer:	
Default:	100 000	Serial Equiv:	
Units:	IDN 76, 77, 78	Version:	1.38

IDN 127 Procedure: Communication Phase 3 Transition Check

Ensures that the drive is ready to switch from CP2 to CP3. The master must successfully execute this procedure prior to switching from CP2 to CP3. If the procedure fails, IDN 21 will contain a list of IDNs that the drive considers invalid.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	CP2
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0	Serial Equiv:	
Units:		Version:	

IDN 128 Procedure: Communication Phase 4 Transition Check

Ensures that the drive is ready to switch from CP3 to CP4. The master must successfully execute this procedure prior to switching from CP3 to CP4. If the procedure fails, IDN 22 will contain a list of IDNs that the drive considers invalid.

If any of the macros have been changed in CP2 or CP3, the drive will re-compile the macro program and perform a warm start, which may take **up to 3 minutes**. During the warm start, the LED on the front panel of the drive add with the three dots will flashing. During the warmstart IDN 182 Bit 1 is set, it will cleared after the warmstart. Alternatively, the serial interface may be used to save all values and reset the drive before the CP4 transition check procedure is executed. (For an explanation of the macros, please consult our applications department.)

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	CP3
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0	Serial Equiv:	
Units:		Version:	

IDN 129 **Manufacturer Class 1 Diagnostic (MC1D)**

Lists the status of the latched manufacturer defined drive faults. When a manufacturer defined fault occurs, the drive decelerates to a stop and disables. The C1D status bit (AT status bit 13) is set, IDN 11 bit 15 is set, and the corresponding manufacturer-defined fault bit is set within IDN 129. All manufacturer defined faults are latched within IDN 129 and are reset through the “Reset Class 1 Diagnostic” procedure (IDN 99). IDN 99 performs a coldstart automatically when required. Those faults which require a coldstart are noted in the table below. The error messages which appear on the front panel of the drive are also shown below.

Bit	Description	Coldstart	LED Error
LSB 0	Reserved		
1	Non-volatile memory check-sum fault	yes	F09, F10
2	Warning fault (actual warning is mask to a fault)	no	F24
3	Motor brake fault	yes	F11
4	Supply voltage not present	no	F16
5	A/D converter fault	yes	F17
6	Regeneration fault	yes	F18
7	System fault	yes	F32
8	Reserved		
9	Motor over speed fault	no	F08
10	Excessive position command difference	No	F28
11	Non-permissible software-enable (no hardware-enable; no SERCOS control)	No	F29
12 – 15	Reserved		

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0	Serial Equiv:	ERRCODE
Units:		Version:	1.51 (add bit 2 and F28 for bit 10)

IDN 130 **Probe 1 Positive Edge Value**

The “Probing” procedure (IDN 170) is used to capture the motor position (IDN 51) when a digital input changes. IDN 130 will contain the captured position when the “Probe Control Parameter” (IDN 169, bit 0) is configured for probe 1 to capture the position on the rising edge of the digital input.

Data Length:	4 bytes	Non-Volatile:	No
Data Type:	Signed decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	AT
Default:		Serial Equiv:	LATCH32
Units:	IDN 76, 77, 78, 79	Version:	

IDN 131 Probe 1 Negative Edge Value

The “Probing” procedure (IDN 170) is used to capture the motor position (IDN 51) when a digital input changes. IDN 131 will contains the captured position when the “Probe Control Parameter” (IDN 169, bit 1) is configured for probe 1 to capture the position on the falling edge of the digital input.

Data Length:	4 bytes	Non-Volatile:	No
Data Type:	Signed decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	AT
Default:		Serial Equiv:	LATCH32N
Units:	IDN 76, 77, 78, 79	Version:	

IDN 132 Probe 2 Positive Edge Value

The “Probing” procedure (IDN 170) is used to capture the external position (IDN 53) when a digital input changes. IDN 132 will contains the captured position when the “Probe Control Parameter” (IDN 169, bit 2) is configured for probe 2 to capture the position on the rising edge of the digital input.

Data Length:	4 bytes	Non-Volatile:	No
Data Type:	Signed decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	AT
Default:		Serial Equiv:	LATCHX32
Units:	IDN 76, 79	Version:	1.51 (rotational Sercos units)

IDN 133 Probe 2 Negative Edge Value

The “Probing” procedure (IDN 170) is used to capture the external position (IDN 53) when a digital input changes. IDN 133 will contains the captured position when the “Probe Control Parameter” (IDN 169, bit 3) is configured for probe 2 to capture the position on the falling edge of the digital input.

Data Length:	4 bytes	Non-Volatile:	No
Data Type:	Signed decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	AT
Default:		Serial Equiv:	LATCHX32N
Units:	IDN 76, 79	Version:	1.51 (rotational Sercos units)

IDN 134 Master Control Word

The drive’s control word within the MDT is stored within IDN 134 as a diagnostic aid.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	
Units:		Version:	

IDN 135 Drive Status Word

The AT telegram status word is stored within IDN 135 as a diagnostic aid.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	
Units:		Version:	

IDN 136 Positive Acceleration Limit Value

Defines the drive's maximum positive acceleration when the drive is in velocity mode. The positive acceleration limit is defined as the number of milliseconds to reach the maximum velocity limit from standstill (IDN 38, 39, 91).

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Signed decimal	Write Access:	CP2, CP3, CP4
Minimum:	1	Run-Up Check:	
Maximum:	32767	Cyclic Transfer:	
Default:	10	Serial Equiv:	ACC
Units:	IDN 160, 161, 162	Version:	1.51 (rotational scaling)

IDN 137 Negative Acceleration Limit Value

Defines the drive's maximum deceleration (negative acceleration) when the drive is in velocity mode. The drive alternatively uses the quick deceleration limit (IDN P3022) under the following conditions: position limits are encountered, a fault has occurred, or the master has requested an active disable (MDT control word, bit 15). The quick deceleration limit (IDN P3022) is always used by the drive when those conditions occur. The negative acceleration limit is defined as the number of milliseconds to go from the maximum velocity limit to standstill (IDN 38, 39, 91).

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Signed decimal	Write Access:	CP2, CP3, CP4
Minimum:	-32767	Run-Up Check:	
Maximum:	-1	Cyclic Transfer:	
Default:	-10	Serial Equiv:	DEC
Units:	IDN 160, 161, 162	Version:	1.51 (rotational scaling)

IDN 138 Bipolar Acceleration Limit Value

This parameter limits acceleration symmetrically to the programmed value in both directions.

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:	0	Run-Up Check:	
Maximum:	32767	Cyclic Transfer:	
Default:	10	Serial Equiv:	ACC, DEC
Units:	IDN 160, 161, 162	Version:	2.60
IDN Type:			

IDN 140 Controller Type

The master may use this IDN to read the text description of the controller type. If you read IDN 140 via the service channel, you will see “SR 603”, for example, for a Servostar 603.

Data Length:	1-byte element array	Non-Volatile:	Yes
Data Type:	Text	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	
Units:		Version:	2.60
IDN Type:			

IDN 141 Motor Type

The master may use this IDN to read or write the motor type text describing. The master can select the motor that is used from the motor database of the drive.

Data Length:	1 byte elements, variable length array	Non-Volatile:	Yes
Data Type:	Text	Write Access:	CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	“NN”	Serial Equiv:	MNAME
Units:		Version:	1.38

IDN 142 Application Type

The master may use this IDN to store text describing the drive’s application.

Data Length:	1 byte elements, variable length array	Non-Volatile:	Yes
Data Type:	Text	Write Access:	CP2, CP3, CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	“DRIVE0”	Serial Equiv:	ALIAS
Units:		Version:	

IDN 143 SYSTEM Interface Version

Contains the version number of the SERCOS specification. The drive conforms this version of the specification.

Data Length:	1 byte elements, variable length array	Non-Volatile:	Yes
Data Type:	Text	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	“V01.02”	Serial Equiv:	
Units:		Version:	

IDN 147 Homing Parameter

The “Drive Controlled Homing” procedure (IDN 148) is configured through IDN 41, IDN 42 and IDN 147. Only the bits 0, 5 and 6 are supported, if the home switch is evaluated to the drive bit 1 must set to 0 and bit 2 must set 1. All other reserved bits must be set as indicated by the bold type within the following table. To the different homing types refer also to IDN P3027. If the position control is set on the external encoder , bit 3 must be set to 1.

Bit	Description	Setting
LSB 0	Homing direction	0 = CW 1 = CCW
1	Home switch polarity	0 = Active on rising edge 1 = Active on falling edge
2	Home switch location	0 = Master 1 = Drive
3	Reserved: Feedback source	0 = Motor 1 = External
4	Reserved: Home enable evaluation	Set to 0
5	Home switch evaluation	0 = Evaluate 1 = Not evaluated
6	Marker pulse evaluation	0 = Evaluate 1 = Not evaluated
7	Reserved: Stop condition	0 = After position capture 1 = On home position (IDN 52, 54)
8 – 15	Reserved.	Set to 0

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Binary	Write Access:	CP2, CP3, CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0085H	Serial Equiv:	
Units:		Version:	1.54 (bits 5 and 6)

IDN 148 Procedure: Drive Controlled Homing

The drive automatically enters an internal position mode and homes the drive. Homing is configured through the “Homing Velocity” (IDN 41), “Homing Acceleration” (IDN 42) and the “Homing Parameter” (IDN 147). The homing procedure should fail under the following conditions:

- 1) The drive is disabled, or the master clears any of the enable bits (MDT bits 13-15) during drive-controlled homing.
- 2) The “Probing” procedure (IDN 170) is active.
- 3) The home switch is located on the drive (IDN 147, bit 2 is set) and will be evaluated during homing (IDN 147, bit 5 is clear) and a configurable input has not been configured as a home switch input.
- 4) A fault occurs during drive controlled homing.

The master should not cancel the drive controlled homing procedure until it has aligned its position command with the drive’s present position command. The master may abort drive controlled homing by first stopping the drive through the start/stop bit (MDT control bit 13), aligning its position command with the drive and then canceling the procedure.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0	Serial Equiv:	
Units:		Version:	

IDN 159 Monitoring Window

The monitoring window defines the maximum position error. When the absolute distance between the active position command and active position feedback exceeds the monitoring window, an “excessive position deviation” fault is generated (IDN 11, bit 11).

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Signed decimal	Write Access:	CP2, CP3, CP4
Minimum:	0	Run-Up Check:	
Maximum:	7FFF FFFFH	Cyclic Transfer:	
Default:	262144	Serial Equiv:	PEMAX
Units:	IDN 76, 77, 78, 79	Version:	

IDN 160 Acceleration Data Scaling Type

Defines the scaling options for all acceleration data. The scaling types which are supported are indicated in bold face type. The rotational parameter scaling setting (IDN 160 = 000AH), could not save in the EEPROM (refer to IDN 161, 162). For the no scaling option, all acceleration data are scaled in ms, to reach the bipolar velocity limit. A new value will not become active until the parameter is saved to non-volatile memory and a coldstart or warmstart (IDN128) procedure is initiated

Bit		Description
2 - 0	Scaling Method	000 = No Scaling 001 = Reserved: Linear Scaling 010 = Rotational Scaling
3	Standard Scaling Type	0 = Preferred Scaling 1 = Parameter Scaling
4	Reserved: Units for Linear Scaling	0 = Meters (m) 1 = Inches (in)
4	Units for Rotational Scaling	0 = Radian (rad) 1 = Reserved
5	Time Units	0 = Seconds (s) 1 = Reserved
6	Data Reference	0 = At the Motor Shaft 1 = Reserved: At the Load
15-7	Reserved.	

Data Length: 2 bytes
Data Type: Binary
Minimum: 0
Maximum: 000AH
Default: 0
Units:

Non-Volatile: Yes
Write Access: CP2, CP3
Run-Up Check:
Cyclic Transfer:
Serial Equiv: ACCUNIT
Version: 1.51 (rotational scaling)

IDN 161 Acceleration Data Scaling Factor

This parameter defines the scaling factor for all acceleration data in the drive, when rotational parameter scaling in IDN 160 is selected (Refer to IDN 160, 162).

$$\text{LSB Weight} = \text{factor (IDN 161)} \cdot 10^{\text{exponent (IDN 162)}} \left\{ \frac{\text{rad}}{\text{s}^2} \right\}$$

$$\text{Preferred scaling (default)} = 1 \cdot 10^{-3} \frac{\text{rad}}{\text{s}^2}$$

Data Length: 2 bytes
Data Type: Unsigned decimal
Minimum:
Maximum:
Default: 1
Units:

Non-Volatile: Yes
Write Access: Read-only
Run-Up Check:
Cyclic Transfer:
Serial Equiv:
Version: 1.51

IDN 162 Acceleration Data Scaling Exponent

This parameter defines the scaling exponent for all acceleration data in the drive, when rotational parameter scaling in IDN 160 is selected (Refer to IDN 160, 161).

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Signed decimal	Write Access:	CP2, CP3
Minimum:	-3	Run-Up Check:	
Maximum:	0	Cyclic Transfer:	
Default:	-3	Serial Equiv:	
Units:		Version:	1.51

IDN 169 Probe Control Parameter

The probe control parameter defines the input signal edge that will result in a position capture during the “Probing” procedure (IDN 170). Each probe may be used to capture positions on both probe signal edges, but the probe edges must be separated by at least 2 milliseconds. The table below describe the fixed settings if only the digital input 2 is used for the latched function, for the other settings please refer also to IDN P3018.

Bit	Description	Setting
LSB 0	Probe 1 – Capture motor position on positive edge	0 = Inactive. 1 = Active.
1	Probe 1 – Capture motor position on negative edge	0 = Inactive. 1 = Active.
2	Probe 2 – Capture external position on positive edge	0 = Inactive. 1 = Active.
3	Probe 2 – Capture external position on negative edge	0 = Inactive. 1 = Active.
4 - 15	Reserved.	Set to 0.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	CP2, CP3, CP4
Minimum:	0	Run-Up Check:	
Maximum:	15	Cyclic Transfer:	
Default:	0	Serial Equiv:	
Units:		Version:	2.04 (IDN P3018)

IDN 170 Procedure: Probing

Probing is used to capture position data when a digital input changes. Each probe may trigger a position capture using both edges (rising and/or falling) of the digital input signal, as long as the edges are separated by at least 2 milliseconds. The “Probe Control Parameter” (IDN 169) is used to configure the digital input edges that will trigger a position capture. Once the probe procedure is started by the master (set IDN 170 to 3), it will continue indefinitely until either the master cancels the probing procedure or a probing error occurs. The probing procedure will fail under the following conditions:

- 1) The “Homing” procedure (IDN 148) is active.
- 2) A digital input has not been configured as a position capture input (IDN P3001).

During the probing procedure, the master arms the probe trigger by setting a “Probe Enable” signal (IDN 405 or IDN 406). After the probe trigger has been armed, the next rising and/or falling edge(s) (as specified in IDN 169) on the probe inputs (IDN 401 or IDN 402) will latch the motor position and cause the corresponding “Probe Position Latch Status” (IDN 179) bits to set. Any further changes in the probe input are ignored until the

master re-arms the probe trigger by clearing and setting the probe enable signal. The master may read captured positions through the “Probe Positive Edge Value” (IDN 130 and IDN 132) and the “Probe Negative Edge Value” (IDN 131 and IDN 133).

The drive supports two physical probe input that must be pre-configured through IDN P3001 and IDN P3000 before starting the probe procedure. It will be select with IDN P3018, Probe 1 with the physical input 2 and Probe 2 with the physical input 1 and all combination for the feedback types for both probes.

Although it is possible to use only one physical probe input (digital input 2) with the two logical probes that are operated independently. Logical probe 1 supports capturing the motor feedback while logical probe 2 supports capturing the external feedback.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0	Serial Equiv:	
Units:		Version:	2.04 (IDN P3018)

IDN 179 Probe Position Latch Status

The probe status parameter indicates whether a position has been captured and latched within one of the “Probe Edge Value” IDNs (IDNs 130 through 133). IDN 179 duplicates the information found in IDNs 409 through 412.

Bit	Description	Setting
LSB 0	Probe 1 – Position latched on positive edge (IDN 130)	0 = No. 1 = Latched.
1	Probe 1 – Position latched on negative edge (IDN 131)	0 = No. 1 = Latched.
2	Probe 2 – Position latched on positive edge (IDN 132)	0 = No. 1 = Latched.
3	Probe 2 – Position latched on negative edge (IDN 133)	0 = No. 1 = Latched.
4 - 15	Reserved.	Set to 0.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0	Serial Equiv:	
Units:		Version:	

IDN 182 Manufacturer Class 3 Diagnostic (MC3D)

Lists of the manufacturer defined status flags for the drive. If a status condition is set or reset within IDN182, the manufacturer class 3 diagnostic bit (IDN 13 bit 15) is set as well. When IDN 182 is read via the service channel, the bit 15 of IDN 13 will reset to 0.

Bit	Description	Setting
LSB 0	Hardware enable	0 = not exist 1 = exist
1	Warmstart (IDN 128)	0 = not running 1 = still running
2 – 15	Reserved	

Data Length: 2 bytes
Data Type: Binary
Minimum:
Maximum:
Default: 0
Units:

Non-Volatile: No
Write Access: Read-only
Run-Up Check:
Cyclic Transfer:
Serial Equiv:
Version:

IDN 185 Maximum Length of AT Configurable Data

Defines the maximum length, in bytes, of the AT's cyclic data field. The master may use this IDN to determine how many IDNs may be placed within the application telegram (refer to IDN 15).

Data Length: 2 bytes
Data Type: Unsigned decimal
Minimum:
Maximum:
Default: 24
Units: Bytes

Non-Volatile: Yes
Write Access: Read-only
Run-Up Check:
Cyclic Transfer:
Serial Equiv:
Version:

IDN 186 Maximum Length of MDT Configurable Data

Defines the maximum length, in bytes, of the MDT's cyclic data field. The master may use this IDN to determine how many IDNs may be placed within an application telegram (refer to IDN 15).

Data Length: 2 bytes
Data Type: Unsigned decimal
Minimum:
Maximum:
Default: 12
Units: Bytes

Non-Volatile: Yes
Write Access: Read-only
Run-Up Check:
Cyclic Transfer:
Serial Equiv:
Version:

IDN 187 List of AT Configurable Data IDNs

Lists all the IDNs that may be transferred as AT cyclic data. The master may use this IDN to determine the IDNs that may be placed within an application telegram (refer to IDN 15). The following IDNs may be assigned as AT cyclic data:

IDN	Description
40	Velocity Feedback Value
51	Position Feedback Value 1 (motor)
53	Position Feedback Value 2 (external)
59	Position Switch Flag Parameter
84	Torque Feedback Value
130	Probe 1 Positive Edge Value
131	Probe 1 Negative Edge Value
132	Probe 2 Positive Edge Value
133	Probe 2 Negative Edge Value
189	Following Distance
P3012	Difference Probe Edge Value 1
P3013	Difference Probe Edge Value 2
P3030	Configurable I/O: Digital Input 1 Status
P3031	Configurable I/O: Digital Input 2 Status
P3032	Configurable I/O: Digital Input 3 Status
P3033	Configurable I/O: Digital Input 4 Status
P3034	Analog Input 1 Value
P3035	Analog Input 2 Value
P3050	Analog Output 1 Value
P3051	Analog Output 2 Value

Data Length: 2 byte elements, variable length array Non-Volatile: Yes
Data Type: IDN Write Access: Read-only
Minimum: Run-Up Check:
Maximum: Cyclic Transfer:
Default: Serial Equiv:
Units: Version:

IDN 188 List of MDT Configurable Data IDNs

Lists all the IDNs that may be transferred as MDT cyclic data. The master may use this IDN to determine the IDNs that may be placed within an application telegram (refer to IDN 15). The following IDNs may be assigned as MDT cyclic data:

IDN	Description
36	Velocity Command Value
47	Position Command Value
60	Position Switch Point 1
61	Position Switch Point 2
80	Torque Command Value
P3036	Configurable I/O: Digital Output 1 Control/Status
P3037	Configurable I/O: Digital Output 2 Control/Status

Data Length: 2 byte elements, variable length array Non-Volatile: Yes
Data Type: IDN Write Access: Read-only
Minimum: Run-Up Check:
Maximum: Cyclic Transfer:
Default: Serial Equiv:
Units: Version:

IDN 189 Following Distance

The distance between the position command value and the appropriate position feedback value (1 or 2). The drive calculates this value by subtracting the position feedback value (1 or 2) from the position command value.

Data Length:	4 bytes	Non-Volatile:	No
Data Type:	Signed decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	AT
Default:		Serial Equiv:	PE
Units:	IDN 76, 77, 78, 79	Version:	

IDN 192 IDN List of Back-up Operation Data

A list of all IDNs which are essential for drive operation. The master may use this list to back-up the drive parameters. If the drive is replaced, the IDNs within this list may be reloaded into the replacement drive using the order defined within IDN 288 and IDN 289 or direct the order of the list within this IDN.

Data Length:	2 byte elements, variable length array	Non-Volatile:	Yes
Data Type:	IDN	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	
Units:		Version:	

IDN 196 Motor Rated Current

The motor's rated current. If the motor rated current is less than that of the amplifier, the amplifier is automatically limited to the level of the motor rated current.

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3
Minimum:	0.1 * IDN 112	Run-Up Check:	
Maximum:	2 * IDN 112	Cyclic Transfer:	
Default:	IDN 112	Serial Equiv:	MICONT * 1000
Units:	MA	Version:	1.38

IDN 203 Amplifier Shutdown Temperature

When the amplifier temperature (heat sink temperature) exceed the value of the amplifier shutdown temperature, the drive sets the fault bit for amplifier over temperature fault in C1D (IDN 11 bit 1).

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:	200	Run-Up Check:	
Maximum:	850	Cyclic Transfer:	
Default:	800	Serial Equiv:	MAXTEMPH • 10
Units:	IDN 208	Version:	1.38

IDN 205 Cooling Error Shutdown Temperature

When the temperature inside the drive housing exceed the value of the cooling error shutdown temperature, the drive sets the fault bit for cooling system fault in C1D (IDN 11 bit 3).

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:	100	Run-Up Check:	
Maximum:	800	Cyclic Transfer:	
Default:	700	Serial Equiv:	MAXTEMPE • 10
Units:	IDN 208	Version:	1.38

IDN 208 Temperature Data Scaling Type

Defines the scaling options for all temperature data. The scaling types which are supported are indicated in bold-face type.

Bit		Description
0	Scaling Method	0 = 0,1 °C 1 = Reserved: 0,1° F
15-1	Reserved.	

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Binary	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0000H	Serial Equiv:	
Units:		Version:	1.38

IDN 256 Multiplication Factor 1

Multiplication factor 1 defines the drive-internal multiplication of a rotary encoder for position value 1 (IDN 51).

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	
Units:		Version:	2.60

IDN 257 Multiplication Factor 2

The multiplication factor 2 defines the drive internal multiplication of an rotary encoder as an external feedback for the position feedback value 2 (IDN 53). If the resolution of the rotational feedback 2 (IDN 117) is not a result of 2^x , the drive may use an additional scaling for IDN 53. If the master write IDN 117 the drive calculate automatic the “Multiplication factor 2” (IDN 257), for the external feedback, and an additional scaling factor if necessary, to scale the external rotary encoder to the rotational position resolution set within IDN 79 (refer to IDN 53, 79 and 117). The drive also do the automatic calculation for position control with external feedback.

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	256	Serial Equiv:	EXTMUL
Units:		Version:	1.51

IDN 262 Procedure: Load Default Values

This procedure loads the manufacturer’s default parameters into volatile memory. The parameters stored in non-volatile memory remain unchanged. The default parameters allow the drive to operate without problems, but the operation is not necessarily optimized.

This procedure will normally modify the macro program, and the drive will re-compile the macro program and perform a warm start in the CP4 transition check, which may take **up to 3 minutes**. During the warm start, the LED on the front panel of the drive add with the three dots will flashing. During the warmstart IDN 182 Bit 1 is set, it will cleared after the warmstart. Alternatively, the serial interface may be used to save all values and reset the drive before the CP4 transition check procedure is executed. (For an explanation of the macros, please consult our applications department.)

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	CP2, CP3
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0	Serial Equiv:	RSTVAR
Units:		Version:	

IDN 264 Procedure: Back-up Working Memory

This command saves all data essential for drive operation from the active memory to the non-volatile memory. IDN 192 defines which data is essential for drive operation. Previously saved data is overwritten.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	CP2, CP3, CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0	Serial Equiv:	SAVE
Units:		Version:	

IDN 271 Drive ID

The master may store a unique drive identification number within this IDN. The identification number is saved to non-volatile memory when the “Back-up Working Memory” procedure (IDN 264) is executed. The identification number is reset to zero when the “Load Default Values” procedure (IDN 262) is executed.

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:	0	Run-Up Check:	
Maximum:	32 767	Cyclic Transfer:	
Default:	0	Serial Equiv:	UID
Units:		Version:	

IDN 288 IDN List of Data Programmable in CP2

A list of all IDNs that may be written by the master in CP2. The IDNs are listed in the order that the master should write them to avoid data dependency problems. Data dependency problems may arise, for example, when the range of one IDN depends upon an IDN that has not yet been written.

Data Length:	2 byte elements, variable length array	Non-Volatile:	Yes
Data Type:	IDN	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	
Units:		Version:	

IDN 289 IDN List of Data Programmable in CP3

A list of all IDNs that may be written by the master in CP3. The IDNs are listed in the order that the master should write them to avoid data dependency problems. Data dependency problems may arise, for example, when the range of one IDN depends upon an IDN that has not yet been written.

Data Length:	2 byte elements, variable length array	Non-Volatile:	Yes
Data Type:	IDN	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	
Units:		Version:	

IDN 296 Velocity Feed Forward Gain

Defines a multiplier for an additive velocity command that is generated from the position profile. Velocity feed forward helps to reduce the velocity dependent following error. Velocity feed forward is added to the velocity command when the active operational mode defined by IDN 32 and/or IDN 33 has bit 3 set and is in position control mode.

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:	0	Run-Up Check:	
Maximum:	2000	Cyclic Transfer:	
Default:	1000	Serial Equiv:	GPPFFV
Units:	0.1%	Version:	

IDN 298 Home Switch Distance

The distance the home switch is from the “optimal” location after homing. The “optimal” location is defined as half the distance between successive marker pulses (encoder) or null points (resolvers). The home switch distance may be used to ensure that the home switch is located correctly to avoid inconsistent homing. The home switch distance is not valid until homing has completed successfully (IDN 403 is set).

Data Length:	4 bytes	Non-Volatile:	No
Data Type:	Signed decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0	Serial Equiv:	
Units:	IDN 76, 77, 78, 79	Version:	

IDN 301 Allocation of Real-time Control Bit 1

Assigns a control signal IDN to the real-time control bit 1 (RTC bit 1, MDT control word bit 6). Two RTC bits are defined within the MDT control word (bits 6 and 7) and may be updated every communication cycle by the master. The following rules govern the assignment and use of RTC bit:

1. Only certain control signal IDNs of type binary may be assigned to the real time control allocation IDNs. The exception is IDN 0, which indicates that the real time control bit is undefined. The following IDNs may be assigned as RTC signals: IDN 0, IDN 405 (IDN P3039 = 0), IDN 406 (IDN P3039 = 0) and IDN P3038 (IDN P3039 = 1).
2. A new RTC bit assignment must be valid within the drive, before the service channel busy bit is being reset. After the service channel busy bit from the drive is reset, the master can operate with the RTC bit 1 in the master control word.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	IDN	Write Access:	CP2, CP3, CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0	Serial Equiv:	
Units:		Version:	1.42

IDN 303 Allocation of Real-time Control Bit 2

Assigns a control signal IDN to the real-time control bit 2 (RTC bit 2, MDT control word bit 7). Two RTC bits are defined within the MDT control word (bits 6 and 7) and may be updated every communication cycle by the master. For further information refer to IDN 301.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	IDN	Write Access:	CP2, CP3, CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0	Serial Equiv:	
Units:		Version:	1.42

IDN 304 Real-Time Status Bit 1

The value of the IDN assigned to RTS bit 1.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	
Units:		Version:	

IDN 305 Allocation of Real-time Status Bit 1

The IDN of a real-time status signal that appears in real-time status bit 1 (AT status word, bit 6). Two real time status bits are defined within the AT status word (bits 6 and 7) and are continuously updated by the drive during CP4. The following rules govern the assignment and use of a real time status bit (i.e. writing IDN 305 or 307):

1. Only status signal IDNs of type binary may be assigned to the real time status allocation IDNs. The exception is IDN 0, which indicates that the real time status bit is undefined. The following IDNs may be assigned as RTS signals: IDN 0, IDN 336, IDN 400, IDN 403, IDN 409, IDN 410, IDN 411 and IDN 412.
2. The master should no longer evaluate a previous real time status assignment after transmitting a write request for element 7 of a real time status bit allocation IDN. The previously assigned real time status bit will remain valid until the service channel busy bit is set.
3. The master should not start evaluating a new real time status bit assignment until the service channel busy bit is reset by the drive.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	IDN	Write Access:	CP2, CP3, CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0	Serial Equiv:	
Units:		Version:	1.58 (IDN 400)

IDN 306 Real-Time Status Bit 2

The value of the IDN assigned to RTS bit 2.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	
Units:		Version:	

IDN 307 Allocation of Real-time Status Bit 2

The IDN of a real-time status signal that appears in real-time status bit 2 (AT status word, bit 7). Two real time status bits are defined within the AT status word (bits 6 and 7) and are continuously updated by the drive during CP4. For further information, refer to IDN 305.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	IDN	Write Access:	CP2, CP3, CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0	Serial Equiv:	
Units:		Version:	

IDN 323 Status “Target position outside of travel range”

A warning signal IDN that is set (Bit 0 = 1) when the target position is outside of the travel range. This IDN will set if the HW- or SW-Limit Switch is active. The drive show this with flashing the warning “n10” or “n07” for outside of positive range or “n11” or “n06” outside of negative range. IDN 323 duplicates the C2D “Target position outside of travel range” warning bit (IDN 12, bit 13).

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	
Units:		Version:	

IDN 336 Status “In Position”

A status signal IDN that is set when the difference between the position command value and the position feedback value falls within the range defined by the “Position Window” (IDN 57). IDN 336 duplicates the C3D “In Position” status bit (IDN 13, bit 6) and may be assigned to a RTS bit (AT status word bit 6 or 7) through IDN 305 or IDN 307.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	
Units:		Version:	

IDN 380 DC Bus Voltage

The master retrieves the drive’s DC bus voltage through this IDN.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Unsigned decimal	Write Access:	Read-only
Minimum:	0	Run-Up Check:	
Maximum:	900	Cyclic Transfer:	
Default:		Serial Equiv:	VBUS
Units:	Volt	Version:	1.38

IDN 384 Amplifier Temperature

The master retrieves the amplifier temperature (heat sink temperature) from the drive through this IDN.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Unsigned decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	TEMPH • 10
Units:	IDN 208	Version:	1.38

IDN 392 Velocity Feedback Filter Time Constant

The velocity feedback is passed through a first order low pass filter before being applied to the velocity loop. The filter is useful for improving the step response and operational smoothness, particularly for very small, highly dynamic motors. If the filter's time constant is too low, then the motor may run roughly. If the filter's time constant is too high, then the motor's response may be soft and unstable. The filter's time constant may be adjusted in intervals of 100 μ s.

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:	0	Run-Up Check:	
Maximum:	65500	Cyclic Transfer:	
Default:	400	Serial Equiv:	GVFBT
Units:	μ s	Version:	

IDN 400 Home Switch Status

Contains the state of the home switch. The digital input used as home switch input is assigned through the use of digital input mode IDNs (IDN P3000, IDN P3001, IDN P3002 or IDN P3003).

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	IN1, IN2, IN3, IN4
Units:		Version:	

IDN 401 Probe 1

Contains the state of the probe 1 input. The digital input used as a probe is assigned through the use of IDN P3001. The drive updates the probe 1 IDN only when the probing procedure (IDN 170) is active and the probe 1 enable (IDN 405) is set.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0	Serial Equiv:	IN2
Units:		Version:	

IDN 402 Probe 2

Contains the state of the probe 2 input. The digital input used as a probe is assigned through the use of IDN P3001. The drive updates the probe 2 IDN only when the probing procedure (IDN 170) is active and the probe 2 enable (IDN 406) is set.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0	Serial Equiv:	IN2
Units:		Version:	

IDN 403 Position Feedback Status

The position feedback status flag is set by the drive during homing when the position feedback is referenced to the machine zero point. The status flag is reset after power-up, and when the “Drive Controlled Homing” procedure (IDN 148) is started. IDN 403 may be assigned to a RTS bit (AT status word bit 6 or 7) through IDN 305 or IDN 307.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0	Serial Equiv:	
Units:		Version:	

IDN 405 Probe 1 Enable

Used to arm the position capture mechanism so that the next valid probing signal edge captures the current position into IDN 130 or 131. IDN 405 may be assigned to a RTC bit (MDT control word bit 6 or 7) through IDN 301 or IDN 303. This IDN is write-protected while it is assigned to a RTC bit and could only reset to 0 via the SC. Refer to IDN 170 for more information.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	CP2, CP3, CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	
Units:		Version:	1.42 (use for a RTC bit)

IDN 406 Probe 2 Enable

Used to arm the position capture mechanism so that the next valid probing signal edge captures the current position into IDN 132 or 133. IDN 406 may be assigned to a RTC bit (MDT control word bit 6 or 7) through IDN 301 or IDN 303. This IDN is write-protected while it is assigned to a RTC bit and could only reset to 0 via the SC. Refer to IDN 170 for more information.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	CP2, CP3, CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	
Units:		Version:	1.42 (use for a RTC bit)

IDN 409 Probe 1 Positive Edge Latched Status

Indicates whether captured position data has been latched within IDN 130 after the rising edge of the probe 1 input signal (IDN 401). Position data can only be latched on the positive edge of probe 1 if the “Probing” procedure (IDN 170) is active and the “Probe Control Parameter” (IDN 169) has been configured to use the positive edge of probe 1. Additionally, probe 1 must be armed by setting the “Probe 1 Enable” (IDN 405). After arming probe 1, the next probe 1 rising edge will capture the current position and the “probe 1 positive edge latched status” will set when the captured data is available in IDN 130. Once the latched status has been set, no more position captures will occur on the rising edges of the probe 1 input until the master re-arms probe 1 by clearing and setting the probe 1 enable. Clearing the probe 1 enable signal will reset the latch status.

IDN 409 duplicates information found in the probe status (IDN 179, bit 0). IDN 409 may be assigned to a RTS bit (AT status word bit 6 or 7) through IDN 305 or IDN 307.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:	0	Serial Equiv:	
Units:		Version:	

IDN 410 Probe 1 Negative Edge Latched Status

Indicates whether captured position data has been latched within IDN 131 after the falling edge of the probe 1 input signal (IDN 401). Position data can only be latched on the negative edge of probe 1 if the probing procedure (IDN 170) is active and the “Probe Control Parameter” (IDN 169) has been configured to use the negative edge of probe 1. Additionally, probe 1 must be armed by setting the “Probe 1 Enable” (IDN 405). After arming probe 1, the next probe 1 falling edge will capture the current position and the “probe 1 negative edge latched status” will set when the captured data is available in IDN 131. Once the latched status has been set, no more position captures will occur on the falling edges of the probe 1 input until the master re-arms probe 1 by clearing and setting the probe 1 enable. Clearing the probe 1 enable signal will reset the latch status.

IDN 410 duplicates information found in the probe status (IDN 179, bit 1). IDN 410 may be assigned to a RTS bit (AT status word bit 6 or 7) through IDN 305 or IDN 307.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	

Default: 0
Units:

Serial Equiv:
Version:

IDN 411 Probe 2 Positive Edge Latched Status

Indicates whether captured position data has been latched within IDN 132 after the rising edge of the probe 2 input signal (IDN 402). Position data can only be latched on the positive edge of probe 2 if the “Probing” procedure (IDN 170) is active and the “Probe Control Parameter” (IDN 169) has been configured to use the positive edge of probe 2. Additionally, probe 2 must be armed by setting the “Probe 2 Enable” (IDN 406). After arming probe 2, the next probe 2 rising edge will capture the current position and the “probe 2 positive edge latched status” will set when the captured data is available in IDN 132. Once the latched status has been set, no more position captures will occur on the rising edges of the probe 2 input until the master re-arms probe 2 by clearing and setting the probe 2 enable. Clearing the probe 2 enable signal will reset the latch status.

IDN 411 duplicates information found in the probe status (IDN 179, bit 2). IDN 411 may be assigned to a RTS bit (AT status word bit 6 or 7) through IDN 305 or IDN 307.

Data Length: 2 bytes
Data Type: Binary
Minimum:
Maximum:
Default: 0
Units:

Non-Volatile: No
Write Access: Read-only
Run-Up Check:
Cyclic Transfer:
Serial Equiv:
Version:

IDN 412 Probe 2 Negative Edge Latched Status

Indicates whether captured position data has been latched within IDN 133 after the falling edge of the probe 2 input signal (IDN 402). Position data can only be latched on the negative edge of probe 2 if the probing procedure (IDN 170) is active and the “Probe Control Parameter” (IDN 169) has been configured to use the negative edge of probe 2. Additionally, probe 2 must be armed by setting the “Probe 2 Enable” (IDN 406). After arming probe 2, the next probe 2 falling edge will capture the current position and the “probe 2 negative edge latched status” will set when the captured data is available in IDN 133. Once the latched status has been set, no more position captures will occur on the falling edges of the probe 2 input until the master re-arms probe 2 by clearing and setting the probe 2 enable. Clearing the probe 2 enable signal will reset the latch status.

IDN 412 duplicates information found in the probe status (IDN 179, bit 3). IDN 412 may be assigned to a RTS bit (AT status word bit 6 or 7) through IDN 305 or IDN 307.

Data Length: 2 bytes
Data Type: Binary
Minimum:
Maximum:
Default: 0
Units:

Non-Volatile: No
Write Access: Read-only
Run-Up Check:
Cyclic Transfer:
Serial Equiv:
Version:

IDN P3000 (35 768) Configurable I/O: Digital Input 1 Mode

IDN P3001 (35 769) Configurable I/O: Digital Input 2 Mode

IDN P3002 (35 770) Configurable I/O: Digital Input 3 Mode

IDN P3003 (35 771)

Configurable I/O: Digital Input 4 Mode

Determines the functionality of digital inputs 1 through 4. The digital inputs may be read directly through IDNs P3030 through P3033. The following table describes the functions that are available. A new input mode will not be active until the parameter set is saved to non-volatile memory and a coldstart or warmstart (IDN128) procedure is initiated.

INx-Mode	Description	Active Edge	Digital Input			
			1	2	3	4
0	Reserved	–				
1	Reset		x			
2	PSTOP	Active low			x	x
3	NSTOP	Active low			x	x
4	PSTOP+Intg.Off	Active low			x	
5	NSTOP+Intg.Off	Active low				x
6	PSTOP+NSTOP	Active low			x	
7	P/NSTOP+Intg.Off	Active low			x	
8	SETP.1/SETP.2		x	x	x	x
9	MT_No_Bit		x	x	x	x
10	Intg.Off	Rising	x	x	x	x
11	v/Torq.Contr.	Active high	x	x	x	x
12	Reference	IDN 147	x	x	x	x
13	ROD/SSI	Low/High	x	x	x	x
14	FError_clear		x	x	x	x
15	Start_MT Next		x	x	x	x
16	Start_MT No x		x	x	x	x
17	Start_MT IO		x	x	x	x
18	Ipeak2x		x	x	x	x
19	Reserved					
20	Start_Jog v=x		x	x	x	x
21	U_Mon.off	High	x	x	x	x
22	MT Restart		x	x	x	x
23	Start2_MT No x		x	x	x	x
24	Switch over OPMODE		x	x	x	x
25	Zero_latch		x	x	x	x
26	Position Latch	IDN 169	x	x		
27	Emergency Stop		x	x	x	x
28	Reserved					
29	Reserved					
30	Command Buffer 1		x	x	x	x
31	Command Buffer 2		x	x	x	x
32	Brake		x	x	x	x
33	see 30		x	x	x	x
34	see 31		x	x	x	x
35	Select Velocity/Current Entry		x	x	x	x
36	Give Offset to Gearing Function		x	x	x	x
37	Change source of actual position at EXTPOS=1		x	x	x	x
38	Enable signal for following motion task		x			
39	Constant Speed for defined time		x	x	x	x
40	Additional hardware input (enable)		x	x	x	x
41	Fast emergency stop		x	x	x	x

Data Length: 2 bytes
 Data Type: Unsigned decimal
 Minimum:
 Maximum:
 Default:
 Units:

Non-Volatile: Yes
 Write Access: CP2, CP3
 Run-Up Check:
 Cyclic Transfer:
 Serial Equiv: InxMODE (x = 1, 2, 3, or 4).
 Version: 2.04 (IN1MODE = 26)

IDN P3004 (35 772) Position Switch Configuration

Extends the functionality of the “Position Switch Points” (IDNs 60 through 63). A new position switch configuration will not be active until the parameter set is saved to non-volatile memory and a coldstart or warmstart (IDN128) procedure is initiated.

Bit	Description	Setting
LSB 0	Control of negative SW-Limit switch (IDN 50 and 55)	0 = Control switched off 1 = Control active
1	Reserved.	0
2	IDN 50 is working as a SW-Limit switch	0 = Only report 1 = SW-Limit switched on
3	Reserved	0
4	Control of positive SW-Limit switch (IDN 49 and 55)	0 = Control switched off 1 = Control active
5	Reserved.	0
6	IDN 49 is working as a SW-Limit switch	0 = Only report 1 = SW-Limit switched on
7	Reserved.	0
8	Enable extended function for “Position Switch Point 1” (IDN 60).	0 = Disabled. 1 = Enabled.
9	Switch point 1 digital output polarity. Note: A digital output mode (IDN 3005 or 3006) must be set to 14.	0 = PFB (IDN 51) > IDN 60 1 = PFB (IDN 51) < IDN 60
10 – 11	Reserved.	0
12	Enable extended function for “Position Switch Point 2” (IDN 61).	0 = Disabled. 1 = Enabled.
13	Switch point 2 digital output polarity. Note: A digital output mode (IDN 3005 or 3006) must be set to 15.	0 = PFB (IDN 51) > IDN 61 1 = PFB (IDN 51) < IDN 61
14 – 15	Reserved.	0

Data Length: 2 bytes
 Data Type: Binary
 Minimum:
 Maximum:
 Default:
 Units:

Non-Volatile: Yes
 Write Access: CP2, CP3
 Run-Up Check:
 Cyclic Transfer:
 Serial Equiv: SWCNFG
 Version: 1.38(SW Limit Switch)

IDN P3005 (35 773) Configurable I/O: Digital Output 1 Mode

IDN P3006 (35 774)**Configurable I/O: Digital Output 2 Mode**

Sets the functionality of the digital outputs. The digital outputs may be read through IDN P3036 and IDN P3037. A new digital output mode will not be active until the parameter set is saved to non-volatile memory and a coldstart or warmstart (IDN128) procedure is initiated. The following functions are available:

Mode	Description	Logic
0	Reserved	–
1	V_act<x	
2	V_act>x	
3	Mains-RTO	High
4	Regen off	Low
5	Sw_limit	
6	Pos.>x	
7	InPos	High
8	I_act<x	
9	I_act>x	
10	Ferror	
11	I ² t	High
12	Posreg.1	
13	Posreg.2	
14	Posreg.3	High
15	Posreg.4	High
16	Next-InPos	
17	Error/Warn	
18	Error	
19	DC_Link>x	
20	DC_Link>x	
21	ENABLE	High
22	Zero_pulse	High
23	Slot-DPR	
24	Ref_OK	High
25-27	Reserved	
28	Posreg.0	
29	Posreg.5	
30	OR-Operation of all Posreg.	
31-34	Reserved	
35	Internal Enable	
36	Logical OR: DRVSTAT - x	
37	Logical AND: DRVSTAT - x	
38	Logical OR: TRJSTAT -x	
39	Logical AND: TRJSTAT -x	
40	Logical OR: POSRSTAT -x	
41	Logical AND: POSRSTAT - x	
42		
43	The sign of the actual speed	
44	Velocity In-Position (active high)	
45	Velocity In-Position (active low)	
46	Current in Window (low active)	
47	Current not in Window (low active)	

Data Length: 2 bytes
 Data Type: Unsigned decimal
 Minimum:
 Maximum:
 Default:
 Units:

Non-Volatile: Yes
 Write Access: CP2, CP3
 Run-Up Check:
 Cyclic Transfer:
 Serial Equiv: O1MODE, O2MODE
 Version: 1.45 (add 40 and 41)

IDN P3007 (35 775)
IDN P3008 (35 776)

Configurable I/O: Digital Output 1 Trigger
Configurable I/O: Digital Output 2 Trigger

Sets a help or trigger value to the functionality of the digital outputs (refer to P3005 and P3006).

Data Length: 2 bytes
 Data Type: Binary
 Minimum:
 Maximum:
 Default: 0
 Units:

Non-Volatile: Yes
 Write Access: CP2, CP3, CP4
 Run-Up Check:
 Cyclic Transfer:
 Serial Equiv: OXTRIG
 Version: 1.45

IDN P3010 (35 778)

Feedback Type

Sets the motor feedback type. A new feedback type will not be active until the parameter set is saved to non-volatile memory and a coldstart or warmstart (IDN128) procedure is initiated.

Mode	Function	Comments
0	Resolver	The 6SM series motors have 2-pole hollow-shaft resolvers. 2, 4 or 6-pole resolvers are supported. Cycle time 62.5 µs.
1	Reserved	
2	HIPERFACE® With Zero Pulse	HIPERFACE® compatible feedback interface with a commutation track (e.g. SNS 50 from Stegmann). The rotor position after power-on is transmitted asynchronously as an absolute value to the servo amplifier (error ±3°). The axis must be rotated through a full turn in order to evaluate the zero pulse. A reset is not possible during the zeroing movement. The encoder emulation is valid only after the zeroing movement has completed. Cycle time 125 µs.
3	Resolver, EnDAT oder Hiperface	
4	EnDat	High-resolution absolute encoder (single or multi-turn) with a EnDat compatible feedback interface (e.g. ECN 1313 or EQN 1325 from Heidenhain). Cycle time 125 µs.
5	Reserved.	
6	Sine/Cosine Encoder	
7	Sine/Cosine Encoder	
8	RS422 & Wake&Shake	
9	RS422 Feedback Device; MPHASE is loaded out of the EEPROM	
10	Without Feedback Device (sensorless)	
11	Sine encoder feedback with hall's	
12	RS422 feedback device with hall's	
13-15	Reserved	
16	Start-up with resolver (commutation), then switch over to Sine/Cosine encoder (FBTYPE=7)	

Data Length: 2 bytes
 Data Type: Unsigned decimal
 Minimum:
 Maximum:
 Default:
 Units:

Non-Volatile: Yes
 Write Access: CP2, CP3
 Run-Up Check:
 Cyclic Transfer:
 Serial Equiv: FBTYPE
 Version:

IDN P3011 (35 779) Encoder Emulation Mode

Sets the signaling format for the encoder emulation on connector X5. A new emulation mode will not become active until the parameter set is saved to non-volatile memory and a coldstart or warmstart (IDN128) procedure is initiated.

Mode	Function	Comments
0	Input	The interface is used as an input.
1	AqB (ROD)	Incremental encoder emulation. Incremental encoder compatible pulses (max. 250 kHz) are transmitted as two signals (A and B) with a 90° electrical phase difference (quadrature). A zero marker pulse is also transmitted. If an encoder with a commutation track is used, then the output of the zero marker pulse is inhibited until the zero pulse from the encoder has been evaluated.
2	SSI	Synchronous serial interface (SSI) for absolute encoder emulation. The standard SSI absolute encoder format transmits 24 bits. The upper 12 bits are fixed to zero and the lower 12 bits contain position information. For 'N' pole resolver feedback systems, the transmitted position refers to the position within 2/N turns of the motor. If an encoder with a commutation track is used as feedback, then the upper 12 bits are set to 1 (invalid data) until homing is performed.

Data Length: 2 bytes
 Data Type: Unsigned decimal
 Minimum:
 Maximum:
 Default:
 Units:

Non-Volatile: Yes
 Write Access: CP2, CP3
 Run-Up Check:
 Cyclic Transfer:
 Serial Equiv: ENCMODE
 Version:

IDN P3012 (35 780) Difference Probe Edge Value 1

The amount of the difference between two latched values of probe 1 is stored here. Which latched values are used to calculate the edge difference is defined with the IDN P3014 "Probe Difference control parameter". The value will direct computed when a new value is latched (refer to IDN P3014).

Data Length: 4 bytes
 Data Type: Signed decimal
 Minimum: 0
 Maximum: 7FFF FFFFH
 Default: 0
 Units: IDN 76, 77, 78, 79

Non-Volatile: No
 Write Access: Read-only
 Run-Up Check:
 Cyclic Transfer: AT
 Serial Equiv:
 Version: 1.51

IDN P3013 (35 781)

Difference Probe Edge Value 2

The amount of the difference between two latched values of probe 2 is stored here. Which latched values are used to calculate the edge difference is defined with the IDN P3014 “Probe Difference control parameter”. The value will direct computed when a new value is latched (refer to IDN P3014).

Data Length:	4 bytes	Non-Volatile:	No
Data Type:	Signed decimal	Write Access:	Read-only
Minimum:	0	Run-Up Check:	
Maximum:	7FFF FFFFH	Cyclic Transfer:	AT
Default:	0	Serial Equiv:	
Units:	IDN 76, 79	Version:	1.51

IDN P3014 (35 782)

Probe Difference Control Parameter

This parameter is used to define the calculation rule of the difference probe edge function, for IDN’s P3012 and P3013.

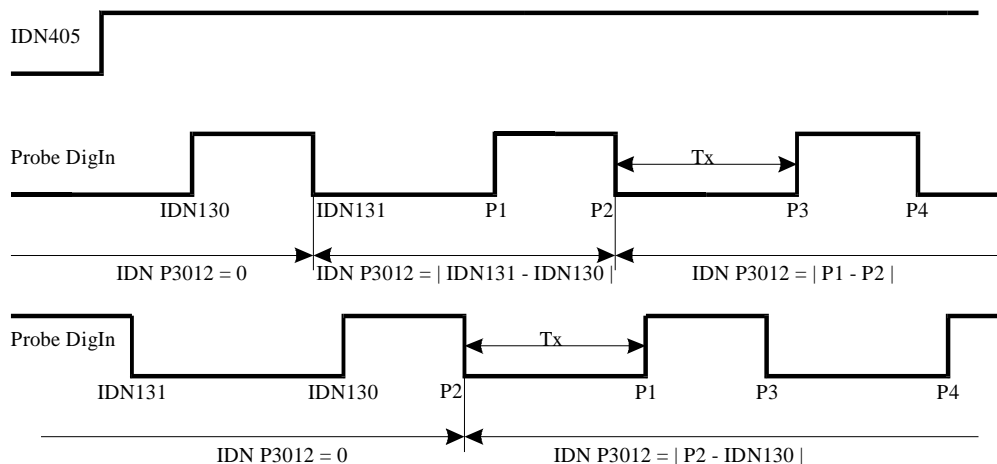
Value	Description
0	Difference probe edge function is off
1	Compute distance between one positive edge and one negative edge
2	Compute distance between one negative edge and one positive edge
3	Compute distance between two successive positive edges
4	Compute distance between two successive negative edges
5	Compute distance between the first positive and negative edge
6	Compute distance between the first negative and positive edge

So that this function works correct, the following conditions must be consider:

1. The probe command must be activate (IDN 170 = 3).
2. Probe 1 must be enable with a positive edge for IDN 405 (also for feedback type 2 and probe 2) or with a positive edge for IDN P 3038.
3. Both edges for Probe 1 must be active (IDN 169 Bit 0 and 1 = 1).
4. The conditions for the times between the edges must consider the rules in each application example.

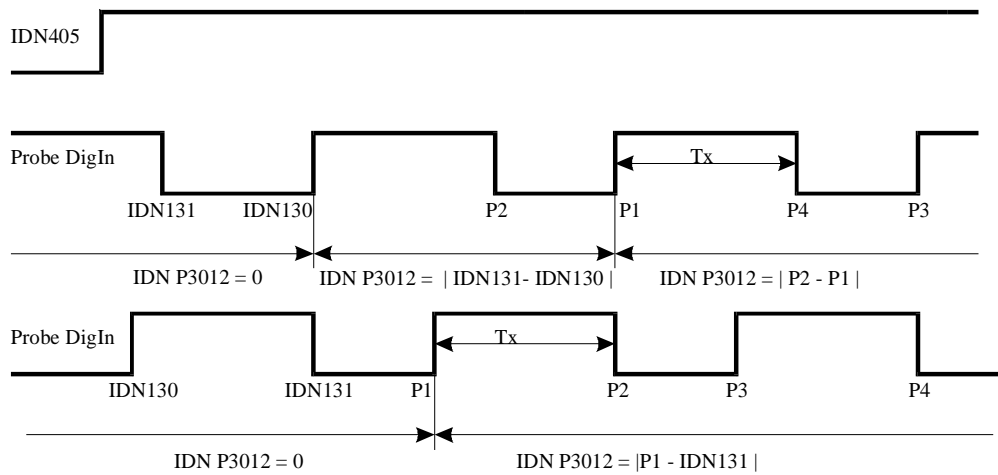
The application examples explain the calculation rule for the IDN P3012 “Difference Probe Edge Value 1”, but the rules are valid for IDN P3013 “Difference Probe Edge Value 2”, in the same way.

Application Example : IDN P3014 = 1



Condition for Tx : $Tx \geq T_{S_{cyc}} + 250 \mu s$

Application Example : IDN P3014 = 2



Condition for Tx : $T_x \geq T_{Scyc} + 250 \mu s$

Application Example : IDN P3014 = 3

IDN P3012 = $|IDN130 - P1|$ after the measure time for P1 in all drawings in the application example 1 & 2.

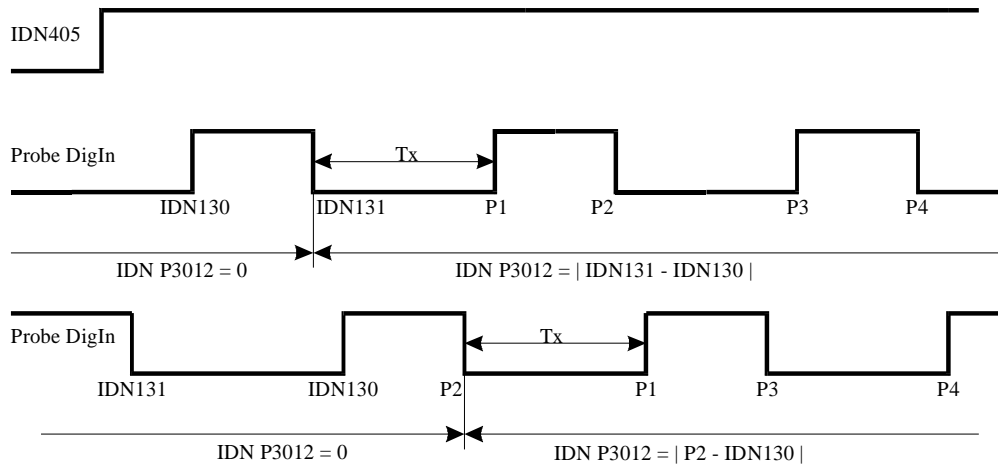
The condition for the time between P1 and P3 : $T_x \geq T_{Scyc} + 250 \mu s$

Application Example : IDN P3014 = 4

IDN P3012 = $|IDN131 - P2|$ after the measure time for P2 in all drawings in the application example 1 & 2.

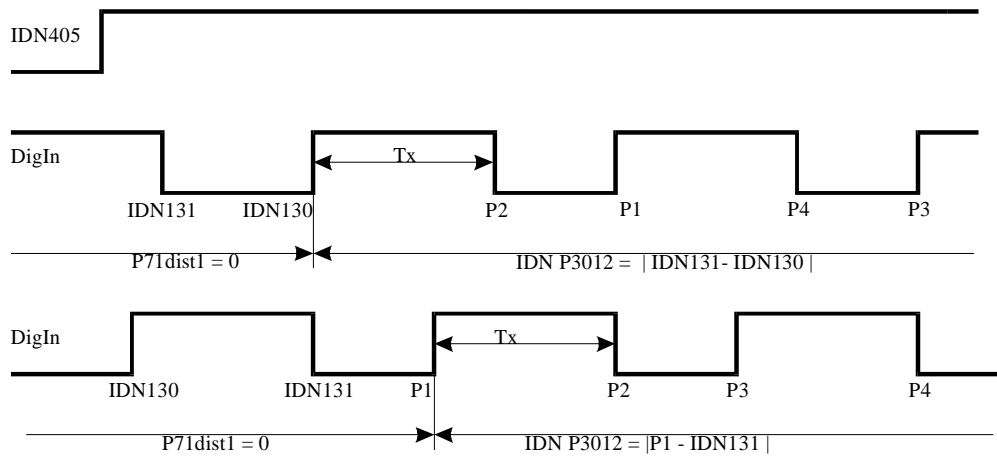
The condition for the time between P2 and P4 : $T_x \geq T_{Scyc} + 250 \mu s$

Application Example : IDN P3014 = 5



Condition for Tx : $T_x \geq T_{Scyc} + 250 \mu s$

Application Example : IDN P3014 = 6



Condition for Tx : $T_x \geq T_{S_{cyc}} + 250 \mu s$

Data Length: 2 bytes
 Data Type: Unsigned decimal
 Minimum: 0
 Maximum: 6
 Default: 0
 Units:

Non-Volatile: No
 Write Access: CP2, CP3, CP4
 Run-Up Check:
 Cyclic Transfer:
 Serial Equiv:
 Version: 1.51

IDN P3015 (35 783) Hardware Limit Switch Consequence

This parameter define the consequence off the Hardware Limit Switch, if the corresponding digital inputs (IDN P3002 and/or P3003) are set to the limit switches. If the hardware limit switch consequence is set to 0, then the Limit switch consequence is a warning. Else if the IDN P3015 is set to 1, then the switch consequence is a fault and the drive ramp down with setting the following fault bits, in IDN 11 bit 15 and in IDN 129 the bit 2. After the reset class 1 diagnostic command (IDN 99) the drive could enable again and move back in the valid range. During the procedure drive controlled homing (IDN 148), the hardware limit switch could use in the normal way (refer to IDN P3027).

Data Length: 2 bytes
 Data Type: Unsigned decimal
 Minimum: 0
 Maximum: 1
 Default: 0
 Units:

Non-Volatile: Yes
 Write Access: CP2, CP3, CP4
 Run-Up Check:
 Cyclic Transfer:
 Serial Equiv: SERCSET (Bit 0)
 Version: 1.51

IDN P3016 (35 784)

Reset Command Consequence

This parameter defines the consequence of the reset class 1 diagnostic command (IDN 99), for faults which require a coldstart. If this IDN is set, faults which require a coldstart will not clear. The reset command will abort with the SC message "Command execution not possible" (refer to IDN 11, 99 and 129).

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:	0	Run-Up Check:	
Maximum:	1	Cyclic Transfer:	
Default:	0	Serial Equiv:	SERCSET (Bit 1)
Units:		Version:	1.51

IDN P3017 Position Actual-Value Encoder Type

State	Position control via/Type of position actual-value encoder	Reading-in of external encoder (PFB0)
EXTPOS =0	Feedback type can be configured using FBTYPE , position actual-value encoder in PI mode, speed controller only has P component.	No external encoder can be read in via X1 (Drive 400 X2) or X5 (Drive 400 X4).
EXTPOS =1	Feedback via external source can be configured using GEARMODE , position actual-value encoder in PI mode, speed controller working in PI mode.	External encoder can be configured using GEARMODE , called via PFB0
EXTPOS =2	Feedback type can be configured using FBTYPE , position actual-value encoder in PI mode, speed controller only has P component.	External encoder can be configured using GEARMODE , called via PFB0
EXTPOS =3	Feedback type can be configured using FBTYPE , position actual-value encoder in P mode, speed controller only has PI component.	External encoder can be configured using GEARMODE , called via PFB0
EXTPOS =4	Feedback type can be configured using FBTYPE , position actual-value encoder in P mode, speed controller only has PI component.	No external encoder can be read in via X1 (Drive 400 X2) or X5 (Drive 400 X4).

The EXTPOS command determines the feedback source for the internal position actual-value encoder. In most applications, position data for switching and position control is taken from one source. This source is defined with the **FBTYPE** parameter and can be a resolver, an Endat/Hiperface encoder or another encoder. In some situations, it may be useful to take position data for switching and position control from different sources. In such situations, the **FBTYPE** parameter continues to determine the source for switching and the source for position control is set using the **GEARMODE** parameter. The EXTPOS configuration variable is used to define the source for the position data for the position actual-value encoder (**FBTYPE** for switching unit or **GEARMODE** for external encoder). It can also be used to define the type of position control (P/PI).

PI position actual-value encoder parameters:

The PI position actual-value encoder can be configured using the following parameters:

- GP**: Proportional gain (position) (IDN 104)
- GPTN**: Integral time (position) (IDN 105)
- GPFFV**: Feed forward (position) (IDN 296)
- GPV**: Proportional gain (speed) (IDN P3024)

P position actual-value encoder/PI speed controller parameters:

The P position actual-value encoder can be configured using the following parameters:

GP: Proportional gain (position) (IDN 104)

GPFFV: Feed forward (position) (IDN 296)

The standard speed-controller parameters can be used to configure the downstream speed controller.

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3
Minimum:	0	Run-Up Check:	
Maximum:	4	Cyclic Transfer:	
Default:	4	Serial Equiv:	EXTPOS
Units:		Version:	2.60
IDN Type:			

IDN P3018 Configuration of Latch Inputs

The configuration variable EXTLATCH defines the source of the position data when using latch functions. Set **IN1MODE=26** or **IN2MODE=26** to use digital input 1 or 2 as a latch input. A rising/falling edge on this input initiates the saving of the internal position in a latch register. The source of the position data is determined by the settings of the **IN1MODE** and EXTLATCH variables. If only digital input 2 has been configured for the latch function (**IN2MODE=26**), the EXTLATCH variable has no function. Both the position of the motor encoder (Resolver/EnDAT/Hiperface) (probe 1) and that of the external encoder (probe 2) are saved on an edge on digital input 2. If both inputs (input 1 and input 2) have been configured for the latch function, the EXTLATCH variable can be used to define the position sources for the individual latch inputs.

State	Latch with input 1	Latch with input 2
EXTLATCH =0	Resolver/EnDAT/Hiperface determined by FBTYPE	Resolver/EnDAT/Hiperface determined by FBTYPE
EXTLATCH =1	External encoder	Resolver/EnDAT/Hiperface determined by FBTYPE
EXTLATCH =2	External encoder	External encoder

IDN P3000 (IN1MODE) = 26 IDN P3001 (IN2MODE) = 26		IDN P3000 (IN1MODE) = 26 IDN P3001 (IN2MODE) = 26		
IDN P3031 (IN2)	IDN P3030 (IN1)	IDN P3031 (IN2)	IDN P3030 (IN1)	IDN P3018 (EXTLATCH)
Probe1 = Motor Fbk. Probe2 = ext. Fbk.	No Latch Function	Probe1 = Motor Fbk.	Probe2 = Motor Fbk.	0
		Probe1 = Motor Fbk.	Probe2 = ext. Fbk. (inc. Encoder)	1
		Probe1 = ext. Fbk. (inc. Encoder)	Probe2 = ext. Fbk. (inc. Encoder)	2

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3
Minimum:	0	Run-Up Check:	
Maximum:	2	Cyclic Transfer:	
Default:	0	Serial Equiv:	EXTLATCH
Units:		Version:	2.04
IDN Type:	FB		

IDN P3019 FPGA Configuration

The FPGA command determines which FPGA program is to be loaded during initialization.

FPGA = 0 Program with follow-up counter in encoder simulation X5 (Drive 400 X4)

FPGA = 1 Program with up/down counter (this program permits the use of a sincos motor as a slave in a master/slave application).

FPGA = 3 Program, which permits synchronization of the connected amplifiers on more recent CAN versions (FW >= 4.56).

FPGA = 4 As a replacement for the default program, this setting generates the output of 3 additional bits for SSI output. 12-bit revolutions and 15 bits in the revolution.

There is another FPGA program, which can be used to read SSI encoders. This program is loaded automatically if **GEARMODE=7** (read SSI) is set in advance, and, therefore, does not need to be preselected via the FPGA variable.

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3
Minimum:	0	Run-Up Check:	
Maximum:	4	Cyclic Transfer:	
Default:	0	Serial Equiv:	FPGA
Units:		Version:	2.04
IDN Type:	CT:FS		

IDN P3020 (35 788) System Rated Current

Allows setting the rated output current of the drive/motor system.

Data Length:	4 bytes	Non-Volatile:	yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3
Minimum:	10% of IDN 112.	Run-Up Check:	
Maximum:	Minimum of IDN 111 and IDN 112.	Cyclic Transfer:	
Default:	50% of the minimum of IDN 112.	Serial Equiv:	ICONT
Units:	MA	Version:	

IDN P3021 (35 789) Over Speed

The maximum motor speed threshold. If the maximum motor speed is exceeded, then an over speed fault (IDN 129, bit 9) occurs.

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:	0	Run-Up Check:	
Maximum:	1.2 * IDN 113	Cyclic Transfer:	
Default:	36 000 000	Serial Equiv:	VOSPD * 10 000
Units:	0.0 001 RPM	Version:	

IDN P3022 (35 790) Quick Deceleration Rate

The drive uses the quick deceleration rate during an active disable (MDT control bit 15, a fault or a limit switch). The quick deceleration limit is defined as the number of milliseconds required to decelerate from the maximum velocity limit (IDN 38, 39, 91) to a standstill.

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Signed decimal	Write Access:	CP2, CP3, CP4
Minimum:	1	Run-Up Check:	
Maximum:	32767	Cyclic Transfer:	
Default:	10	Serial Equiv:	DECSTOP
Units:	IDN 160, 161, 162	Version:	1.51 (rotational scaling)

IDN P3023 Speed Controller 2nd Time Constant

Filter time constant downstream of speed controller (BQMODE1). The component to be filtered can be changed using **GVFILT**.

Data Length:	4 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:		Run-Up Check:	
Maximum:	30.0	Cyclic Transfer:	
Default:	1	Serial Equiv:	GVT2
Units:	ms	Version:	2.60

IDN P3024 Speed Controller Proportional Gain

Speed controller gain when using the PI position actual-value encoder. This parameter is only used on the PI position actual-value encoder (**EXTPOS=0.2**).

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:	0.1	Run-Up Check:	
Maximum:	60.0	Cyclic Transfer:	
Default:	3	Serial Equiv:	GPV
Units:	ms	Version:	2.60

IDN P3026 (35 794)

Non-Volatile Memory Data Checksum

A checksum of the data stored within non-volatile memory. The checksum is updated after a “Back-up Working Memory” procedure (IDN 264) has been executed successfully.

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	
Units:		Version:	

IDN P3027 (35 795)

Manufacturer Homing Modes

Selection of manufacturer defined homing modes. Use IDN 41, IDN 42 and IDN 147 to set the homing velocity, acceleration and direction. This IDN contains the saved serial command NREF after reset. Write this P IDN or write IDN 147 through the service channel, could change the used homing mode for the drive controlled homing (IDN 148). After or while homing with SERCOS the parameter NREF contains the value of this IDN. A following SAVE command can save this value permanent.

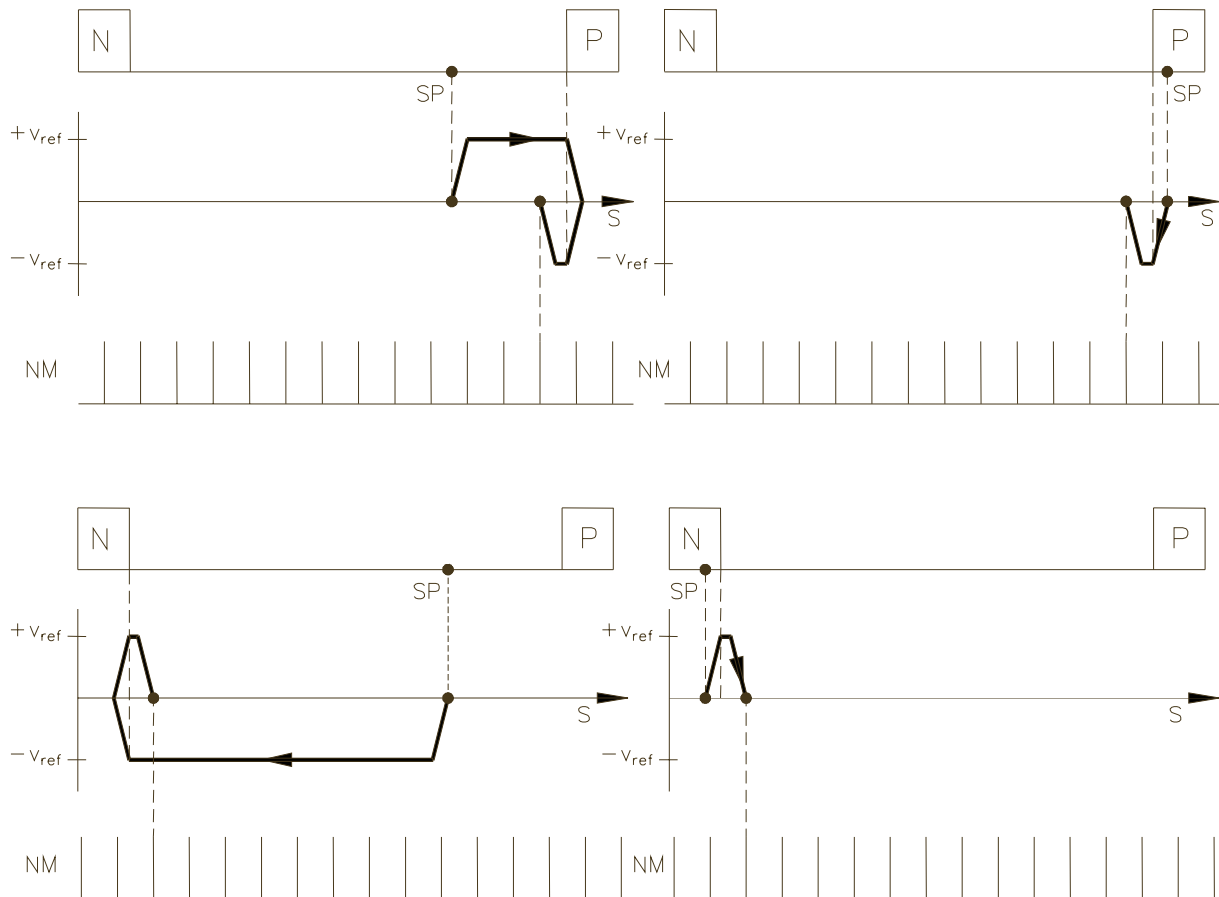
Mode	Function	IDN 147 (bits 7-0)
0	Set reference point to the actual position	1110 0xxx
1	Traverse to the reference switch with zero-mark recognition	1000 010x
2	Move to hardware limit-switch, with zero-mark recognition	1000 010x
3	Move to reference switch, without zero-mark recognition	1100 010x
4	Move to hardware limit-switch, without zero-mark recognition	1100 010x
5	Move to the next zero-mark of the feedback unit	1010 0xxx
6	Set reference at actual position, without losing target position	1110 0xxx
7	Move to mechanical stop with zero-mark recognition	1000 010x
8	Move to absolute SSI-position	
9	Move to mechanical stop without zero-mark recognition	

For an explanation of the homing modes 0, 3, 4, 5 and 6 please refer to the manual UNILINK.

Standard SERCOS homing (mode 1): For an explanation of the standard homing mode, please refer to the IEC 61491 Standard. This is the default value also for IDN 147 (refer to IDN 147).

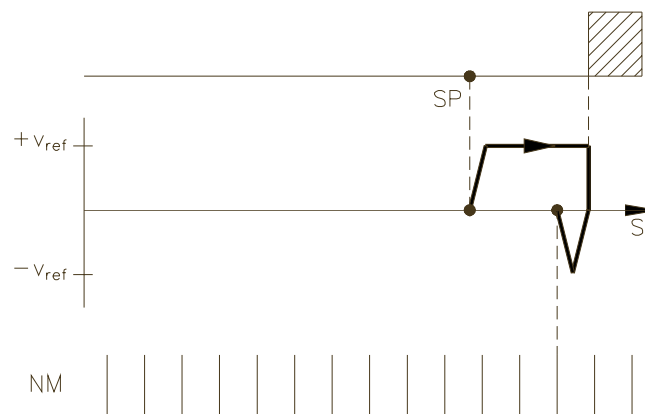
Hardware Limit Switch Homing (mode 2): This homing mode uses a hardware limit switch as the home switch. The following diagrams show this homing option, without reference switch, in both the positive and the negative directions of motion with zero mark of the feedback.

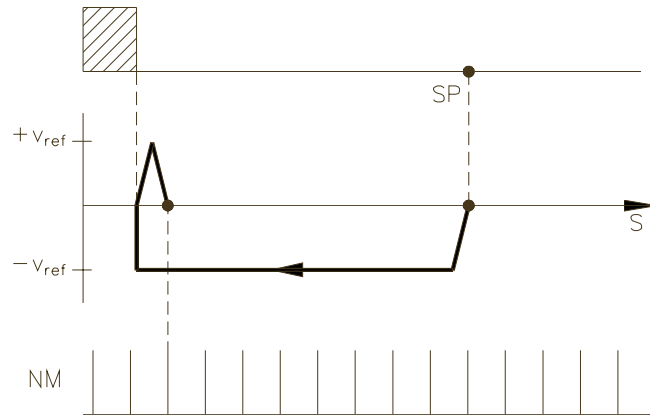
Warning: Hardware limit switches must be present and connected. The appropriate limit switch functions must be switched on, i.e. digital input 3 must be PSTOP (IDN P3002, mode 2) and/or digital input 4 must be NSTOP (IDN P3003, mode 3).



Homing to the next index (mode 5): For an explanation of the homing mode 5, please refer to the manual UNILINK.

Mechanical Stop Homing (mode 7): This homing mode uses the mechanical stop instead of a separate homing switch or a hardware limit switch. Set the maximum current (torque) limit through IDN 92, to limit the torque applied against the mechanical stop. The mechanical stop must be fixed in place and hardware limit switches must be disabled in the direction of the mechanical stop. It is not possible to re-enable or disable hardware limit switches in CP4. When motion toward the stop is no longer possible, the following error increases and triggers a movement back to the first zero mark. The following diagrams show this homing option, in both the positive and the negative directions of motion.





Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:	0	Run-Up Check:	
Maximum:	7	Cyclic Transfer:	
Default:	1	Serial Equiv:	NREF
Units:		Version:	1.38 (Homing type 5) 1.54 (Homing type (0, 3, 4, 6))
IDN Type:	PS:VE		

IDN P3028 HW & SW Enable Sequence

This IDN can be used to define the sequence of the SW and HW enable. By default, the HW enable for SERCOS must be set before the SW enable, otherwise an F29 error will be generated (bit 11 is set in IDN 129). In order for the SW enable to precede the HW enable, IDN P3028 must be set to 1.

Data Length:	2 bytes	Non-Volatile:	Yes
Data Type:	Unsigned decimal	Write Access:	CP2, CP3, CP4
Minimum:	0	Run-Up Check:	
Maximum:	1	Cyclic Transfer:	
Default:	0	Serial Equiv:	SERCSET Bit 2
Units:		Version:	2.60
IDN Type:	SC		

- | | |
|---------------------------|---|
| IDN P3030 (35 798) | Configurable I/O: Digital Input 1 Status |
| IDN P3031 (35 799) | Configurable I/O: Digital Input 2 Status |
| IDN P3032 (35 800) | Configurable I/O: Digital Input 3 Status |
| IDN P3033 (35 801) | Configurable I/O: Digital Input 4 Status |

Reflects the state of a digital input (connector X3 pins 11 - 14) in the least significant bit of the IDN.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	AT
Default:		Serial Equiv:	IN1, IN2, IN3, IN4
Units:		Version:	

IDN P3034 (35 802) Analog Input 1 Value

IDN P3035 (35 803)

Analog Input 2 Value

Returns the differential voltage at an analog input, which may vary from +10V to -10V. Analog input 1 is located on connector X3 (pins 4 and 5). Analog input 2 is located on connector X3 (pins 6 and 7).

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Signed decimal	Write Access:	Read-only
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	AT
Default:		Serial Equiv:	ANIN1, ANIN2
Units:	mV	Version:	

IDN P3036 (35 804) **Control/Status**

Configurable I/O: Digital Output 1

IDN P3037 (35 805) **Control/Status**

Configurable I/O: Digital Output 2

The master may set and read the state of a digital output in the least significant bit of the corresponding digital output control/status IDN.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	CP2, CP3, CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	MDT
Default:	0	Serial Equiv:	O1, O2
Units:		Version:	

IDN P3038 (35 806)

Probe 1 and 2 Enable

Used to arm the position capture mechanism for probe 1 and 2 so that the next valid probing signal edge captures the current position into IDN 130 and 132 or 131 and 133. This IDN could only be used if the IDN P3039 is set to 1 by the master. IDN P3038 may be assigned to a RTC bit (MDT control word bit 6 or 7) through IDN 301 or IDN 303. This IDN is write-protected while it is assigned to a RTC bit.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Binary	Write Access:	CP2, CP3, CP4
Minimum:	0	Run-Up Check:	
Maximum:	1	Cyclic Transfer:	
Default:	0	Serial Equiv:	
Units:		Version:	1.42

IDN P3039 (35 807)

Probe 1 and 2 Control Parameter

The master may use this IDN to configure the probe enable IDNs. If this IDN is set to 0, the master can enable both probes with IDN 405 and 406 and if it is set to 1, the master can enable both probes with IDN P3038 at the same time. The following rules govern the assignment and use of this IDN:

1. This IDN can not set to 0, if the IDN P3038 is actual assign to a real time control bit through IDN 301 or 303.
2. This IDN can not set to 0, if the IDN P3038 is actual set to 1.
3. This IDN can not set to 1, if the IDN 405 or 406 is actual assign to a real time control bit through IDN 301 or 303.
4. This IDN can not set to 1, if the IDN 405 or 406 is actual set to 1.

Data Length: 2 bytes
Data Type: Binary
Minimum: 0
Maximum: 1
Default: 0
Units:

Non-Volatile: No
Write Access: CP2, CP3, CP4
Run-Up Check:
Cyclic Transfer:
Serial Equiv:
Version: 1.42

IDN P3040 (35 808)

Interpolation Method

The master may determine the fine interpolation method within the drive with this IDN. If this IDN is set to 1 the drive work, by a 3 ms and 4 ms cycle time, with a spline interpolation for the command values instead of a liner interpolation.

Data Length: 2 bytes
Data Type: Binary
Minimum: 0
Maximum: 1
Default: 0
Units:

Non-Volatile: No
Write Access: CP2, CP3, CP4
Run-Up Check:
Cyclic Transfer:
Serial Equiv:
Version: 1.42; 1.58 (3ms)

IDN P3041 (35 809)

Position Switch On/Off Parameter

This IDN must set to “1”, to use the whole function for the position switch flag parameter (IDN 59) and may, if it is select, the duplication of IDN 59 to a digital output. The value “0” switch off the whole position switch function (refer to IDN 59, P3042, 3043 and P3044). A new value will not become active until the parameter is saved to non-volatile memory and a coldstart or warmstart (IDN128) procedure is initiated (refer to IDN 59, P3042, 3043 and P3044).

Data Length: 2 bytes
Data Type: Binary
Minimum: 0
Maximum: 1
Default: 0
Units:

Non-Volatile: Yes
Write Access: CP2, CP3
Run-Up Check:
Cyclic Transfer:
Serial Equiv: WPOS
Version: 1.45

IDN P3042 (35 810)

Position Switch Enable/Disable Parameter

This IDN could use to enable or disable the check of each position switch point for the position switch flag parameter (IDN 59) (refer to IDN 59, P3041, 3043 and P3044).

Bit	Description	Setting
LSB 0	Position switch point 1 (IDN 60)	0 = Disable 1 = Enable Position Switch Flag
1	Position switch point 2 (IDN 61)	
2	Position switch point 3 (IDN 62)	
3	Position switch point 4 (IDN 63)	
4	Position switch point 5 (IDN 64)	
5	Position switch point 6 (IDN 65)	
6	Position switch point 7 (IDN 66)	
7	Position switch point 8 (IDN 67)	
8 – 15		Reserved.

Data Length: 2 bytes
Data Type: Binary
Minimum: 0000H
Maximum: 00FFH
Default: 0
Units:

Non-Volatile: Yes
Write Access: CP2, CP3, CP4
Run-Up Check:
Cyclic Transfer:
Serial Equiv: WPOSE
Version: 1.45

IDN P3043 (35 811)

Position Switch Polarity Parameter

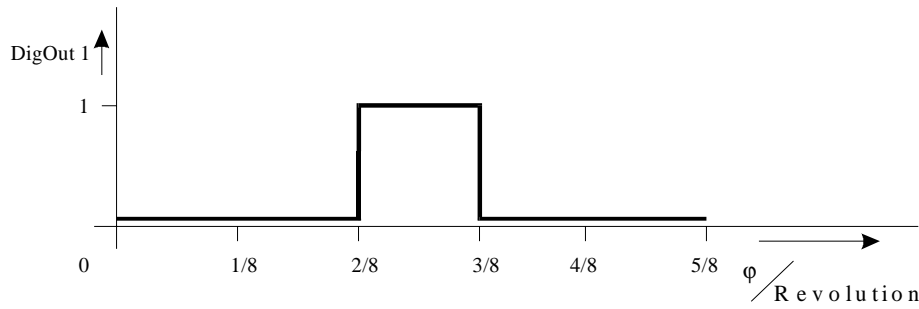
With this IDN it is possible to select the polarity for each position switch flag to the corresponding flag bit (IDN 59) or the digital output (refer to IDN 59, P3041, 3042 and P3044).

Bit	Description	Setting
LSB 0	Position switch point 1 (IDN 60)	0 = The flag will set to “1” if the position feedback is greater than or equal to the position switch point. 1 = The flag will set to “0” if the position feedback value is smaller than the position switching point.
1	Position switch point 2 (IDN 61)	
2	Position switch point 3 (IDN 62)	
3	Position switch point 4 (IDN 63)	
4	Position switch point 5 (IDN 64)	
5	Position switch point 6 (IDN 65)	
6	Position switch point 7 (IDN 66)	
7	Position switch point 8 (IDN 67)	
8 – 15		Reserved.

With this functionality it is possible to implement a cam function with a positive or negative polarity.

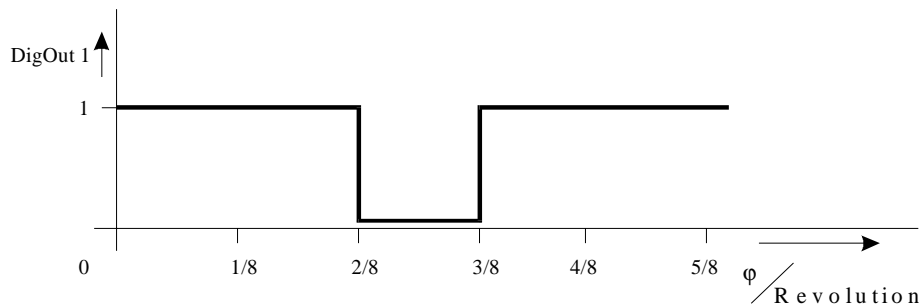
Application Example : Positive Cam Function

IDN 60 = 2/8 Revolution IDN P3041 = 0001_{Hex} IDN P3042 = 0003_{Hex}
IDN 61 = 3/8 Revolution IDN P3043 = 0002_{Hex} IDN P3044 = 0
IDN P3005 = 41 IDN P3007 = 0003_{Hex}



Application Example : Negative Cam Function

IDN 60 = 2/8 Revolution IDN P3041 = 0001_{Hex} IDN P3042 = 0003_{Hex}
 IDN 61 = 3/8 Revolution IDN P3043 = 0001_{Hex} IDN P3044 = 0
 IDN P3005 = 40 IDN P3007 = 0003_{Hex}



Data Length: 2 bytes Non-Volatile: Yes
 Data Type: Binary Write Access: CP2, CP3, CP4
 Minimum: 0000H Run-Up Check:
 Maximum: 00FFH Cyclic Transfer:
 Default: 0 Serial Equiv: WPOSP
 Units: Version: 1.45

IDN P3044 (35 812) Kind Of Position Switch Parameter

With this IDN it is possible to select the kind of the position check for each position switch flag to the corresponding flag bit (IDN 59) or the digital output (refer to IDN 59, P3041, 3042 and P3043).

Bit	Description	Setting
LSB 0	Position switch point 1 (IDN 60)	0 = The position check is operating the hole time. 1 = The position flag is check once. The corresponding bit in IDN 59 will set and latched and the corresponding enable bit in P3042 will reset.
1	Position switch point 2 (IDN 61)	
2	Position switch point 3 (IDN 62)	
3	Position switch point 4 (IDN 63)	
4	Position switch point 5 (IDN 64)	
5	Position switch point 6 (IDN 65)	
6	Position switch point 7 (IDN 66)	
7	Position switch point 8 (IDN 67)	
8 – 15		Reserved.

Data Length: 2 bytes Non-Volatile: Yes
 Data Type: Binary Write Access: CP2, CP3, CP4
 Minimum: 0000H Run-Up Check:
 Maximum: 00FFH Cyclic Transfer:
 Default: 0 Serial Equiv: WPOSX
 Units: Version: 1.45

IDN P3045 Current Integral Precharging

This parameter is used to define the integral component of the current controller. This may be necessary for smooth switching to torque control mode when under load.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Signed decimal	Write Access:	CP2, CP3, CP4
Minimum:	-1640	Run-Up Check:	
Maximum:	1640	Cyclic Transfer:	
Default:	0	Serial Equiv:	
Units:		Version:	2.60
IDN Type:	CT		

IDN P3046 Motor Number

The “MNUMBER no.” command is used to load a motor data record (with motor number no.) from the motor database. If “MNUMBER 0” is entered, instead of a data record being loaded, the MNUMBER variable will simply be set to 0. This setting indicates the presence of a customer-specific motor data record.

Data Length:	2 bytes	Non-Volatile:	No
Data Type:	Signed decimal	Write Access:	CP2, CP3
Minimum:	0	Run-Up Check:	
Maximum:	$2^{15} - 1$	Cyclic Transfer:	
Default:	0	Serial Equiv:	MNUMBER
Units:		Version:	2.60
IDN Type:	VE		

IDN P3047 Digital CAM Configuration

This IDN activates digital camming with velocity feed forward.

Variables P1...P16 contain the position values for position thresholds 1...16. The normalizing of the position is determined by the settings of **PGEARI**, **PGEARO** and **PRBASE**. (See also IDN 60+61.)

P1 is defined in IDN 60 and the length is entered in IDN 61.

P2 = IDN 60+ IDN 61

Data Length:	2 bytes	Non-Volatile:	
Data Type:	Signed decimal	Write Access:	CP2, CP3, CP4
Minimum:	0	Run-Up Check:	
Maximum:	1	Cyclic Transfer:	
Default:	0	Serial Equiv:	
Units:		Version:	2.60
IDN Type:			

IDN P3048/3049 Digital CAM Feed Forward 1/2 Time

Feed forward factors in ms for the digital CAM. Path feed forward is calculated on the basis of the current velocity. See also IDN P3047.

Feed forward = Current speed * Time

P1 = IDN60 – Feed forward

P2 = IDN60 + IDN61 – Feed forward

Data Length:	2 bytes	Non-Volatile:	
Data Type:	Signed decimal	Write Access:	CP2, CP3, CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	
Units:	ms	Version:	2.60
IDN Type:			

IDN P3050/3051 Analog Output 1/2

The analog outputs of the controller can be read out with this IDN. The Drive.exe setup software must be used to order to configure the analog outputs.

Data Length:	2 bytes	Non-Volatile:	
Data Type:	Signed decimal	Write Access:	Read-only
Minimum:	-10 000	Run-Up Check:	
Maximum:	10 000	Cyclic Transfer:	AT
Default:		Serial Equiv:	MONITOR1, MONITOR2
Units:	mV	Version:	2.60
IDN Type:	IO		

IDN P3052 Acceleration Precontrol Enable

If this IDN is set to 1, automatic acceleration precontrol is activated. See also IDN 81.

Data Length:	2 bytes	Non-Volatile:	
Data Type:	Signed decimal	Write Access:	CP2, CP3, CP4
Minimum:		Run-Up Check:	
Maximum:		Cyclic Transfer:	
Default:		Serial Equiv:	
Units:		Version:	2.60