

SECTION 5 - SERCOS PROGRAMMING

This section gives information on the settings needed in order to communicate to the drive over the SERCOS ring. It also details the Operation Data and Procedure Commands that can be transmitted over the SERCOS Communication ring.

5.1 SERCOS SETUP

For the Delta S driver to communicate over the SERCOS ring, the baud rate and device ID have to be configured. Refer to [Section 4](#) on how to set parameters using the drives Keypad.

PARAMETER	IDN	NAME	SETTINGS	DATA TYPE
HP-60	34508	SERCOS Loop Baudrate	0X02, 0X04, 0X08, 0X10	Hexadecimal
HP-61	34509	SERCOS Loop Device ID	0 - 254	Decimal

A Device ID of Zero will put the Device in repeater mode and it will not recognize commands over SERCOS.

5.2 IDENTIFICATION NUMBERS

The Delta S has an extensive list of SERCOS Identification Numbers (IDN) to access the Operation Data and Procedure Commands that can be transmitted over the SERCOS Communication ring.

5.2.1 IDN LIST

IDN	NAME
(SERCOS SPECIFIC)	
00001	Control Unit Cycle Time (t_{Ncyc})
00002	Communication Cycle Time (t_{Scyc})
00003	Shortest AT Transmission Starting Time (t_{1min})
00004	Transmit/Receive Transition Time (t_{ATMT})
00005	Minimum Feedback Processing Time (t_5)
00006	AT Transmission Starting Time (t_1)
00007	Feedback Acquisition Capture Point (t_4)
00008	Command Value Valid Time (t_3)
00009	Position of Data Record in MDT
00010	Length of MDT
00011	Class 1 diagnostic (C1D)
00012	Class 2 diagnostic (C2D)
00013	Class 3 diagnostic (C3D)
00014	Interface Status
00015	Telegram Type Parameter
00016	Configuration List of AT
00017	IDN - List of all Operation Data
00018	IDN - List of Operation Data for Phase 2
00019	IDN - List of Operation Data for Phase 3
00021	IDN - List of Invalid Operation Data for Phase 2
00022	IDN - List of Invalid Operation Data for Phase 3
00024	Configuration List of MDT

5.2.1 IDN LIST (cont'd)

IDN	NAME
(SERCOS SPECIFIC)	
00025	IDN - List of all Procedure Commands
00028	MST Error Counter
00029	MDT Error Counter
00030	Manufacturer Version
00032	Primary Operation Mode
00036	Velocity Command Value
00040	Velocity Feedback Value
00043	Velocity Polarity Parameter
00044	Velocity Data Scaling Type
00047	Position Command Value
00051	Position Feedback Value 1 (Motor Feedback)
00053	Position Feedback Value 2 (Auxiliary Encoder Feedback)
00055	Position Polarity Parameters
00057	Position Window
00076	Position Data Scaling Type
00080	Torque Command Value
00082	Positive Torque Limit
00083	Negative Torque Limit
00084	Torque Feedback Value
00085	Torque Polarity Parameter
00086	Torque/Force Data Scaling Type
00088	Receive to Receive Recovery Time ($t_{M\text{TSY}}$)
00089	MDT Transmission Starting Time (t_2)
00090	Command Value Proceeding Time ($t_{M\text{TSG}}$)
00091	Bipolar Velocity Limit Value
00092	Bipolar Torque Limit Value
00095	Diagnostic Message
00096	Slave Arrangement (SLKN)
00097	Mask Class 2 Diagnostics
00098	Mask Class 3 Diagnostics
00099	Reset Class 1 Diagnostics
00124	Standstill Window
00125	Velocity Threshold
00126	Torque Threshold
00127	Phase 3 Transition Check
00128	Phase 4 Transition Check
00129	Product Specific Class 1 Diagnostics
00130	Probe 1 Value Positive Edge
00131	Probe 1 Value Negative Edge
00132	Probe 2 Value Positive Edge
00133	Probe 2 Value Negative Edge
00134	Master Control Word
00135	Drive Status Word
00138	Bipolar Acceleration Limit Value
00140	Controller Type
00142	Application Type
00143	SERCOS Interface Version
00157	Velocity Window
00159	Monitoring Window
00169	Probe Control Parameter
00170	Probing Cycle Procedure Command
00179	Probe Status
00185	Length of the configurable Data Record in the AT

5.2.1 IDN LIST (cont'd)

IDN NAME (SERCOS SPECIFIC)

00186	Length of the configurable Data Record in the MDT
00187	IDN -List of configurable Data Record in the AT
00188	IDN - List of configurable Data Record in the MDT
00189	Following Distance
00206	Drive On Delay Time
00207	Drive Off Delay Time
00300	Real-time Control Bit 1
00301	Allocation of Real-time Control Bit 1
00302	Real-time Control Bit 2
00303	Allocation of Real-time Control Bit 2
00304	Real-time Status Bit 1
00305	Allocation of Real-time Status Bit 1
00306	Real-time Status Bit 2
00307	Allocation of Real-time Status Bit 2
00401	Probe 1
00402	Probe 2
00405	Probe 1 Enable
00406	Probe 2 Enable
00409	Probe 1 Positive Latched
00410	Probe 1 Negative Latched
00411	Probe 2 Positive Latched
00412	Probe 2 Negative Latched

(IIS SPECIFIC)

33000	Digital Outputs
33020	Output Function
33040	Digital Output Hardware State
33100	PLS Source
33101	Current PLS Angle
33103	PLS Cycle
33104	PLS Preset
33105	PLS Offset
33106	PLS Advance
33107	Clear PLS
33108	Set PLS Angle
33109	PLS Mask
33110	PLS Output
33111	Set PLS State
33112	Clear PLS State
33200	Probe Source
33500	Digital Inputs
33501	Digital Input 1
33502	Digital Input 2
33503	Digital Input 3
33504	Digital Input 4
33505	Digital Input 5
33506	Digital Input 6
33507	Digital Input 7
33508	Digital Input 8
33509	Digital Input 9
33510	Digital Input 10
33511	Digital Input 11

5.2.1 IDN LIST (cont'd)

IDN	NAME
(IIS SPECIFIC)	
33512	Digital Input 12
33513	Digital Input 13
33514	Digital Input 14
33515	Digital Input 15
33516	Digital Input 16
33517	Digital Input 1 Configuration
33600	Analog Input 1
33601	Analog Input 2
33700	Alarm History
34202	Load Inertia Ratio
34203	High Frequency Response
34204	Position Loop DC Gain
34207	Zero Speed Gain Reduction
34208	Feed Forward Gain
34209	Secondary Filter
34302	Motor Code
34303	Resolver Cable Length
34304	Gear Ratio Denominator For the Encoder Output
34305	Gear Ratio Numerator For the Encoder Output
34315	Absolute Position Clear
34316	Brake Mode
34318	Auxiliary Encoder Input Pulse Type
34319	Pulse Output Pulse Type
34325	Monitor Output Function
34328	Holding Brake Threshold
34330	External Regen Resistor Value
34331	External Regen Resistor Wattage
34334	Torque Limit Switchover
34337	Positive Absorption Torque Limit
34339	Negative Absorption Torque Limit
34501	Amplifier Software Number
34504	Motor Peak Current
34505	% Motor Torque
34506	% Motor Temp
34507	% Rated Absorption
34508	SERCOS Loop Baud Rate
34509	SERCOS Loop Device ID
34510	SERCOS Loop Attenuation
34511	Keyboard Lock
34601	Autotune Rotation Amount
34602	Autotune Target Response
34603	Autotune Maximum Speed
34801	Autotune Command
34807	Drive Alarms
34808	Alarm History Details
34809	Read Motor Parameters

5.2.2 IDN BY FUNCTION

IDN	NAME
Position Control	
00032	Primary Operation Mode
00047	Position Command Value
00051	Position Feedback Value 1 (Motor Feedback)
00053	Position Feedback Value 2 (Auxiliary Encoder Feedback)
00055	Position Polarity Parameters
00057	Position Window
00076	Position Data Scaling Type
00138	Bipolar Acceleration Limit Value
00159	Monitoring Window
00189	Following Distance
Velocity Control	
00032	Primary Operation Mode
00036	Velocity Command Value
00040	Velocity Feedback Value
00043	Velocity Polarity Parameter
00044	Velocity Data Scaling Type
00091	Bipolar Velocity Limit Value
00124	Standstill Window
00125	Velocity Threshold
00138	Bipolar Acceleration Limit Value
00157	Velocity Window
Torque Control	
00032	Primary Operation Mode
00080	Torque Command Value
00082	Positive Torque Limit
00083	Negative Torque Limit
00084	Torque Feedback Value
00085	Torque Polarity Parameter
00086	Torque/Force Data Scaling Type
00092	Bipolar Torque Limit Value
00126	Torque Threshold
Communications	
00001	Control Unit Cycle Time (t_{Ncyc})
00002	Communication Cycle Time (t_{Scyc})
00003	Shortest AT Transmission Starting Time (t_{1min})
00004	Transmit/Receive Transition Time (t_{ATMT})
00005	Minimum Feedback Processing Time (t_5)
00006	AT Transmission Starting Time (t_1)
00007	Feedback Acquisition Capture Point (t_4)
00008	Command Value Valid Time (t_3)
00009	Position of Data Record in MDT
00010	Length of MDT
00014	Interface Status
00015	Telegram Type Parameter
00016	Configuration List of AT
00017	IDN - List of all Operation Data

5.2.2 IDN BY FUNCTION (cont'd)

IDN	NAME
00018	IDN - List of Operation Data for Phase 2
00019	IDN - List of Operation Data for Phase 3
00021	IDN - List of Invalid Operation Data for Phase 2
00022	IDN - List of Invalid Operation Data for Phase 3
00024	Configuration List of MDT
00025	IDN - List of all Procedure Commands
00088	Receive to Receive Recovery Time ($t_{M\text{TSY}}$)
00089	MDT Transmission Starting Time (t_2)
00090	Command Value Proceeding Time ($t_{M\text{TSG}}$)
00096	Slave Arrangment (SLKN)
00127	Phase 3 Transition Check
00128	Phase 4 Transition Check
00134	Master Control Word
00135	Drive Status Word
00185	Length of the configurable Data Record in the AT
00186	Length of the configurable Data Record in the MDT
00187	IDN - List of configurable Data Record in the AT
00188	IDN - List of configurable Data Record in the MDT
00206	Drive On Delay Time
00207	Drive Off Delay Time
00300	Real-time Control Bit 1
00301	Allocation of Real-time Control Bit 1
00302	Real-time Control Bit 2
00303	Allocation of Real-time Control Bit 2
00304	Real-time Status Bit 1
00305	Allocation of Real-time Status Bit 1
00306	Real-time Status Bit 2
00307	Allocation of Real-time Status Bit 2

Diagnostics

00011	Class 1 diagnostic (C1D)
00012	Class 2 diagnostic (C2D)
00013	Class 3 diagnostic (C3D)
00028	MST Error Counter
00029	MDT Error Counter
00095	Diagnostic Message
00097	Mask Class 2 Diagnostics
00098	Mask Class 3 Diagnostics
00099	Reset Class 1 Diagnostics
00129	Product Specific Class 1 Diagnostics
33700	Alarm History
34501	Amplifier Software Number
34504	Motor Peak Current
34505	% Motor Torque
34506	% Motor Temp
34507	% Rated Absorption
34807	Drive Alarms
34808	Alarm History Details

Probes

00130	Probe 1 Value Positive Edge
00131	Probe 1 Value Negative Edge
00132	Probe 2 Value Positive Edge

5.2.2 IDN BY FUNCTION (cont'd)

IDN	NAME
00133	Probe 2 Value Negative Edge
00169	Probe Control Parameter
00170	Probing Cycle Procedure Command
00179	Probe Status
00401	Probe 1
00402	Probe 2
00405	Probe 1 Enable
00406	Probe 2 Enable
00409	Probe 1 Positive Latched
00410	Probe 1 Negative Latched
00411	Probe 2 Positive Latched
00412	Probe 2 Negative Latched

Inputs/Outputs

33000	Digital Outputs
33020	Output Function
33040	Digital Output Hardware State
33100	PLS Source
33101	Current PLS Angle
33102	PLS Info
33103	PLS Cycle
33104	PLS Preset
33105	PLS Offset
33106	PLS Advance
33107	Clear PLS
33108	Set PLS Angle
33109	PLS Mask
33110	PLS Output
33111	Set PLS State
33112	Clear PLS State
33200	Probe Source
33500	Digital Inputs
33501	Digital Input 1
33502	Digital Input 2
33503	Digital Input 3
33504	Digital Input 4
33505	Digital Input 5
33506	Digital Input 6
33507	Digital Input 7
33508	Digital Input 8
33509	Digital Input 9
33510	Digital Input 10
33511	Digital Input 11
33512	Digital Input 12
33513	Digital Input 13
33514	Digital Input 14
33515	Digital Input 15
33516	Digital Input 16
33517	Digital Input 1 Configuration
33600	Analog Input 1
33601	Analog Input 2

5.2.2 IDN BY FUNCTION (cont'd)

IDN	NAME
Adjust Parameters	
34202 (AJ2)	Load Inertia Ratio
34203 (AJ3)	High Frequency Response
34204 (AJ4)	Position Loop DC Gain
34207 (AJ7)	Zero Speed Gain Reduction
34208 (AJ8)	Feed Forward Gain
34209 (AJ9)	Secondary Filter
User Parameters	
00082 (HP-36)	Positive Torque Limit
00083 (HP-38)	Negative Torque Limit
00092 (UP-11)	Torque Feedback Value
34302 (UP-02)	Motor Code
34303 (UP-03)	Resolver Cable Length
34304 (UP-04)	Gear Ratio Denominator For the Encoder Output
34305 (UP-05)	Gear Ratio Numerator For the Encoder Output
34315 (UP-15)	Absolute Position Clear
34316	Brake Mode
34318 (UP-18)	Auxiliary Encoder Input Pulse Type
34319 (UP-19)	Pulse Output Pulse Type
34325 (UP-25)	Monitor Output Function
34328 (UP-28)	Holding Brake Threshold
34330 (UP-30)	External Regen Resistor Value
34331 (UP-31)	External Regen Resistor Wattage
34334 (HP-34)	Torque Limit Switchover
34337 (HP-37)	Positive Absorption Torque Limit
34339 (HP-39)	Negative Absorption Torque Limit
Auto Tune	
34601	Autotune Rotation Amount
34602	Autotune Target Response
34603	Autotune Maximum Speed
34801	Autotune Command
Miscellaneous	
00030	Manufacturer Version
00140	Controller Type
00142	Application Type
00143	SERCOS Interface Version
34508 (HP60)	SERCOS Loop Baud Rate
34509 (HP61)	SERCOS Loop Device ID
34510 (HP59)	SERCOS Loop Attenuation
34809	Read Motor Parameters
34511	Keyboard Lock

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC

00001: CONTROL UNIT CYCLE TIME, (t_{Ncyc})

The control unit cycle time defines the cyclic interval during which the control unit makes new command values available. The control unit cycle time (t_{Ncyc}) must be set equal to the communication cycle time (t_{Scyc}). This value is calculated and loaded into the drive by the Master Control Unit in Phase 2. This value becomes active in phase 3.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	500-5000	1 uSec	Phases 2, 3 and 4	Phase 2

00002: COMMUNICATION CYCLE TIME, (t_{Scyc})

The communication cycle time of the interface defines the intervals during which the cyclic data are transferred. The communication cycle can be set from 500uSec to 5000 uSec in steps of 250 uSec. This value is calculated and loaded into the drive by the Master Control Unit in Phase 2. This value becomes active in phase 3.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	500-5000	1 uSec	Phases 2, 3 and 4	Phase 2

00003: SHORTEST AT TRANSMISSION STARTING TIME, (t_{1min})

Indicates the time requirement of the drive between the end of the reception of the MST and the start of the transmission of the AT. Read by the Master Controller in Phase 2, t_{1min} is used to calculate the AT Transmission Starting Time, t_1 (IDN 00006).

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	15	1 uSec	Phases 2, 3 and 4	None

00004: TRANSMIT/RECEIVE TRANSITION TIME, (t_{ATMT})

Time required by the drive to switch from transmitting the AT to receiving the MDT. Read by the Master Controller in Phase 2 and is used to determine the MDT starting time, t_2 (IDN 00089).

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	0	1 uSec	Phases 2, 3 and 4	None

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00005: MINIMUM FEEDBACK PROCESSING TIME, (t_5)

Time required by the drive between the start of feedback acquisition and the arrival of the next MST. This value is loaded by the Master Controller in Phase 2 and becomes active in Phase 3.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	150	1 uSec	Phases 2, 3 and 4	None

00006: AT TRANSMISSION STARTING TIME, (t_1)

The time the drive sends the AT after the end of the MST. This value is loaded by the Master Controller in Phase 2 and becomes active in Phase 3. ($t_1 \geq t_{1min}$)

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	15-5000	1 uSec	Phases 2, 3 and 4	Phase 2

00007: FEEDBACK ACQUISITION CAPTURE POINT, (t_4)

The time the drive captures the AT Data. This value is loaded by the Master Controller in Phase 2 and becomes active in Phase 3.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	0 -(tScyc - t5)	1 uSec	Phases 2, 3 and 4	Phase 2

00008: COMMAND VALUE VALID TIME, (t_3)

The time the drive can start using the data sent in the MDT. Set by the Master Controller in Phase 2.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	0-5000	1 uSec	Phases 2, 3 and 4	Phase 2

00009: POSITION OF DATA RECORD IN MDT

The position within the MDT that the drives command data can be obtained. Set by the Master Controller in Phase 2.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	0-65535	1 byte	Phases 2, 3 and 4	Phase 2

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00010: LENGTH OF MDT

The length of the MDT, expressed in bytes, includes data records for all drives. Set by the Master Controller in Phase 2.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	4-65534	1 byte	Phases 2, 3 and 4	Phase 2

00011: CLASS 1 DIAGNOSTICS (C1D)

Indicates a Drive Shutdown Error.

A Drive error situation leads to the following.

- a) Drive safely decelerates to and releases torque when stopped.
- b) The shutdown error Bit (Bit 13) is set to 1 in the drive status. IDN 99 must be issued and no Class 1 diagnostic errors exist to clear the error bit.

Bit supported by drive:

BIT NUMBER	DESCRIPTION
Bit 0:	Reserved
Bit 1:	Reserved
Bit 2:	Motor Over-Temperature Fault
Bit 3:	Reserved
Bit 4:	Power Stage Voltage Fault
Bit 5:	Feedback Fault
Bit 6:	Reserved
Bit 7:	Over Current Fault
Bit 8:	Over Voltage Fault
Bit 9:	Under Voltage Fault
Bit 10:	Reserved
Bit 11:	Excessive Position Deviation
Bit 12:	Communication Error
Bit 13:	Reserved
Bit 14:	Reserved
Bit 15:	Manufacturer Specific Fault

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes	0-65535	1 byte	Phases 2, 3 and 4	None

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00012: CLASS 2 DIAGNOSTICS (C2D)

Indicates a Drive Shutdown Warning.

The shutdown warning Bit (Bit 12) is set to 1 in the drive status.
When this IDN is read the warning bit is cleared and this IDN is reset to 0.

Currently Class 2 Diagnostics are not supported by the drive. All bits are reserved for future use.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes	0-65535	1 byte	Phases 2, 3 and 4	None

00013: CLASS 3 DIAGNOSTICS (C3D)

Drive operation status flags.

The status flag Bit (Bit 11) is set to 1 in the drive status when a change in C3D occurs. When this IDN is read the status bit (Bit 11) in the drive status is cleared.

Bit supported by drive:

BIT NUMBER	DESCRIPTION
Bit 0:	$n_{feedback} = n_{command}$ (See: Velocity Window IDN 00157)
Bit 1:	$n_{feedback} = 0$ (See: Standstill Window IDN 00124)
Bit 2:	$ n_{feedback} < n_x $ (See: Velocity Threshold IDN 00125)
Bit 3:	$ T \geq T_x $ (See: Torque Threshold IDN 00126)
Bit 4:	$ T \geq T_{limit} $ (See: Torque Limit IDN 00082, IDN 00083, and IDN 00092)
Bit 5:	$ n_{command} > n_{limit} $ (See: Velocity Limit IDN 00091)
Bit 6:	In Position (See: Position Window IDN 00057)
Bit 7 - 15:	Reserved

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes	0-65535	1 byte	Phases 2, 3 and 4	None

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00014: INTERFACE STATUS

Status of the SERCOS Interface. When an interface error occurs, the error and the phase the error occurred is recorded. Can only be cleared by the Reset Class 1 Diagnostics (IDN 00099).

Bit supported by drive:

BIT NUMBER	DESCRIPTION
Bit 2 - 0:	Phase Error Occurred
Bit 3:	MST Failure
Bit 4:	MDT Failure
Bit 5:	Invalid Phase (Phase > 4)
Bit 6:	Error During Phase Upshift (Invalid Sequence)
Bit 7:	Error During Phase Downshift (Not To Phase 0)
Bit 8:	Phase Switching without Ready Acknowledge
Bit 9:	Switching to Uninitialized Operating Mode
Bit 9 - 15:	Reserved

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes	0-65535	1 byte	Phases 2, 3 and 4	None

00015: TELEGRAM TYPE PARAMETER

Selects the Telegram Configuration Type of the AT and the MDT cyclic data. Set by the Master Controller in Phase 2.

TYPE	CONFIGURATION
0	No AT or MDT IDNs
1	IDN 80 (Torque Command) in the MDT
2	IDN 36 (Velocity Command) in the MDT and IDN 40 (Velocity Feedback) in the AT
3	IDN 36 (Velocity Command) in the MDT and IDN 51 (Position Feedback) in the AT
4	IDN 47 (Position Command) in the MDT and IDN 51 (Position Feedback) in the AT
5	IDN 47 (Position Command) , IDN 36 (Velocity Command) in the MDT and IDN 51 (Position Feedback), IDN 40 (Velocity Feedback) in the AT
6	IDN 36 (Velocity Command) in the MDT
7	User Defined At and MDT (See IDNs 16 and 24)

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes	0-7		Phases 2, 3 and 4	Phase 2

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00016: CONFIGURATION LIST OF AT

List of IDNs that are to be included in the User Defined AT Cyclic Data. Set by the Master Controller in Phase 2. Only Valid if Telegram Type 7 is selected for IDN 00015. (Refer to **IDN 00185** and **IDN 00187**.)

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	IDN	Variable			Phases 2, 3 and 4	Phase 2

00017: IDN - LIST OF ALL OPERATION DATA

Returns the list of all valid operation Data IDN's

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	IDN	Variable			Phases 2, 3 and 4	None

00018: IDN - LIST OF OPERATION DATA FOR PHASE 2

Returns the list of all IDN's that must be written by the Master in Phase 2.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	IDN	Variable			Phases 2, 3 and 4	None

IDN's 00001, 00002, 00006, 00007, 00008, 00009, 00010, 00015, 00032 and 00089 must be written.

00019: IDN - LIST OF OPERATION DATA FOR PHASE 3

Returns the list of all IDN's that must be written by the Master in Phase 3.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	IDN	Variable			Phases 2, 3 and 4	None

00021: IDN - LIST OF INVALID OPERATION DATA FOR PHASE 2

Returns the list of all operation Data IDN's for Phase 2 that is considered invalid by the drive and will need to be written before switchover to phase 3 can be made.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	IDN	Variable			Phases 2, 3 and 4	None

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00022: IDN - LIST OF INVALID OPERATION DATA FOR PHASE 3

Returns the list of all operation Data IDN's for Phase 3 that is considered invalid by the drive and will need to be written before switchover to phase 4 can be made.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	IDN	Variable			Phases 2, 3 and 4	None

00024: CONFIGURATION LIST OF MDT

List of IDNs that are to be included in the User Defined MDT Cyclic Data. Set by the Master Controller in Phase 2. Only Valid if Telegram Type 7 is selected for IDN 00015. (Refer to **IDN 00186** and **IDN 00188**.)

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	IDN	Variable			Phases 2, 3 and 4	Phase 2

00025: IDN - LIST OF ALL PROCEDURE COMMANDS

Returns the list of all valid Procedure Command IDN's on drive.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	IDN	Variable			Phases 2, 3 and 4	None

00028: MST ERROR COUNTER

The MST error counter counts all invalid MST's in Communication Phase 3 and 4. In the case where more than 2 consecutive MST's are invalid, only the first two are counted. The MST error counter counts up to a maximum of $2^{16} - 1$. This means that if a value of 65535 is set in the counter, there may have been a noisy transmission over a long period of time.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	0-65535		Phases 2, 3 and 4	Phases 2, 3 and 4

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00029: MDT ERROR COUNTER

The MDT error counter counts all invalid MDT's in Communication Phase 3 and 4. In the case where more than 2 consecutive MDT's are invalid, only the first two are counted. The MDT error counter counts up to a maximum of $2^{16} - 1$. This means that if a value of 65535 is set in the counter, there may have been a noisy transmission over a long period of time.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	0-65535		Phases 2, 3 and 4	Phases 2, 3 and 4

00030: MANUFACTURER VERSION

Identifies the current software version number in the drive.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Text	Variable			Phases 2, 3 and 4	None

00032: PRIMARY OPERATION MODE

The drive operation mode defined by this ID Number becomes active when the Primary Operation mode is set in the Control word of the MDT. Must be configured in phase 2.

VALUES	VALID MODES
0	No Command Mode
1	Torque Control Mode using Cyclic command values
2	Velocity Control Mode using Cyclic command values
3	Position Control using Cyclic command values
16385	Torque Control ignoring Cyclic command values
16386	Velocity Control ignoring Cyclic command values

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes	0-65535		Phases 2, 3 and 4	Phases 2

00036: VELOCITY COMMAND VALUE

In the velocity control operating mode in the drive, the control unit transfers the velocity command values to the drive. The velocity is commanded as a percent of maximum velocity.

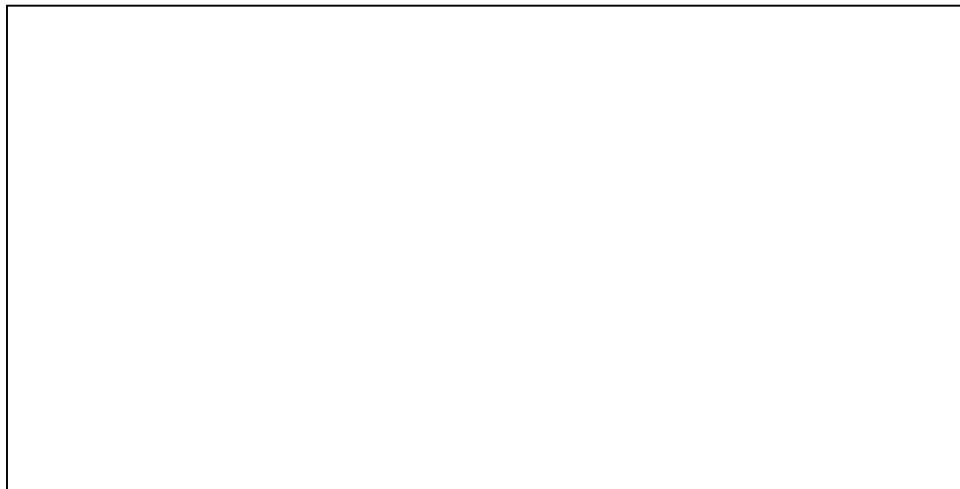
IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	4 bytes	-100.00 - +100.00	0.01%	Phases 2, 3 and 4	Phase 4

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00040: VELOCITY FEEDBACK VALUE

The velocity feedback value is transferred from the drive to the control unit in order to allow the control unit to periodically display the velocity.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	4 bytes	-100.00 - +100.00			



5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00044: VELOCITY DATA SCALING TYPE

Defines the scaling option for all velocity data. Only the "No scaling Method is currently supported by the drive.

Bit supported by drive:

BIT NUMBER	DESCRIPTION
Bit 2-0:	Scaling method 000 - no scaling
All others:	Reserved

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

00047: POSITION COMMAND VALUE

During the position control drive operation mode, the position command values are transferred from the control unit to the drive according to the time pattern of the control unit cycle.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	4 bytes	$-2^{31} - +2^{31} - 1$	1 bit	Phases 2, 3 and 4	Phase 4

00051: POSITION FEEDBACK VALUE 1 (MOTOR FEEDBACK)

The position feedback value 1 is transferred from the drive to the control unit.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	4 bytes	$-2^{31} - +2^{31} - 1$	1 bit	Phases 2, 3 and 4	None

00053: POSITION FEEDBACK VALUE 2 (AUXILARY ENCODER FEEDBACK)

The position feedback value 2 is transferred from the drive to the control unit.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	4 bytes	$-2^{31} - +2^{31} - 1$	1 bit	Phases 2, 3 and 4	None

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00055: POSITION POLARITY PARAMETERS

This parameter is used to switch polarities of reported position data for specific applications. Polarities are switched outside (i.e. on the input and output) of a closed loop system. The motor shaft turns clockwise (when viewed from the output shaft) when there is a positive position command difference and no inversion is programmed (see **Figure 5.2**).

Bit supported by drive:

BIT NUMBER	DESCRIPTION
Bit 0:	Position command value 0 - Non-inverted 1 - Inverted
Bit 1:	Reserved
Bit 2:	Position feedback value 1 0 - Non-inverted 1 - Inverted
Bit 3:	Position feedback value 2 0 - Non-inverted 1 - Inverted
Bit 4-15:	Reserved

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	Phases 2, 3 and 4

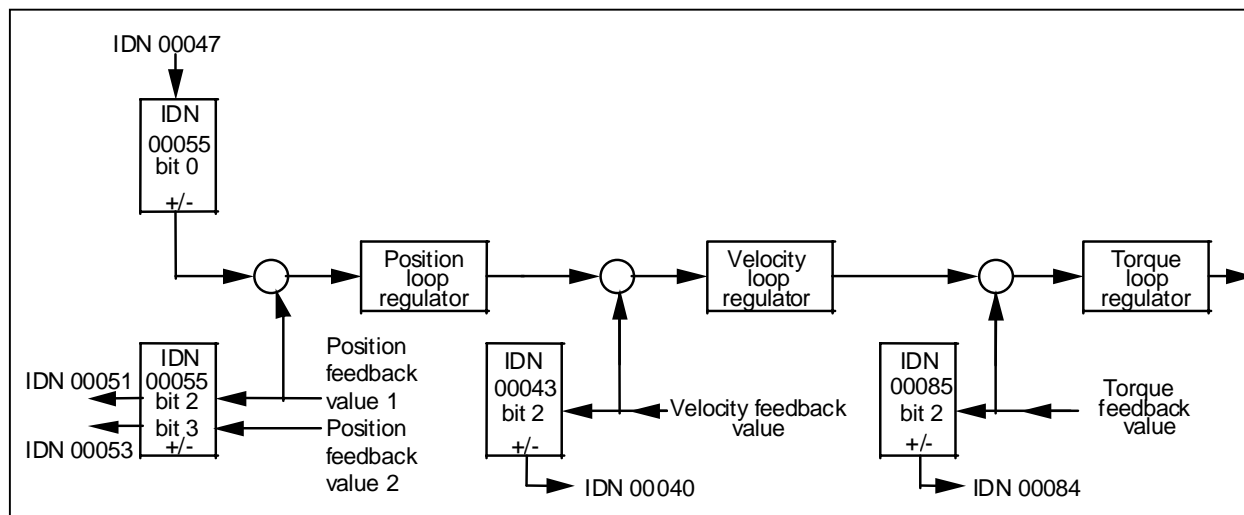


Figure 5.2 - Position Polarity Parameter

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00057: POSITION WINDOW

When the difference between the position command value and the position feedback value is within the range of the position window, then the drive sets the status "in position" in C3D (IDN 00013).

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	4 bytes	0 - $+2^{31} - 1$	1 bit	Phases 2, 3 and 4	Phases 2, 3 and 4

00076: POSITION DATA SCALING TYPE

Defines the scaling option for all position data. Only the "No scaling" method is currently supported by the drive.

Bit supported by drive:

BIT NUMBER	DESCRIPTION
Bit 2-0:	Scaling method 000 - no scaling
All others:	Reserved

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

00080: TORQUE COMMAND VALUE

During the torque control operation mode of the drive, torque command values are transferred from the control unit to the drive.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	2 bytes	-100.00 - +100.00	0.01%	Phases 2, 3 and 4	Phase 4

00082: POSITIVE TORQUE LIMIT (HP-36)

The positive torque limit value limits the maximum torque in the positive direction. If the torque limit is exceeded the drive sets the status $T \geq T_{limit}$ in C3D (IDN 00013). For this limit to take effect. Torque Limits must be set active in IDN 34334 and the bipolar torque limit IDN 00092 must be set to 0.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	2 bytes	0.00 - 100.00	0.01%	Phases 2, 3 and 4	Phases 2, 3 and 4

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00083: NEGATIVE TORQUE LIMIT (HP-38)

The negative torque limit value limits the maximum torque in the negative direction. If the torque limit is exceeded the drive sets the status $T \geq T_{limit}$ in C3D (IDN 00013). For this limit to take effect. Torque Limits must be set active in IDN 34334 and the bipolar torque limit IDN 00092 must be set to 0.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	2 bytes	0.00 - 100.00	0.01%	Phases 2, 3 and 4	Phases 2, 3 and 4

00084: TORQUE FEEDBACK VALUE

The torque feedback value is transferred from the drive to the control unit.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	2 bytes	-100.00 - +100.00	0.01%	Phases 2, 3 and 4	None

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00085: TORQUE POLARITY PARAMETER

This parameter is used to switch polarities of reported torque data for specific applications. Polarities are not switched internally but externally (on the input and output) of a closed loop system. The motor shaft turns clockwise when there is a positive torque command difference and no inversion (see [Figure 5.3](#)).

Bit supported by drive:

BIT NUMBER	DESCRIPTION
Bit 0:	Torque command value 0 - Non-inverted 1 - Inverted
Bit 1:	Reserved
Bit 2:	Torque feedback value 0 - Non-inverted 1 - Inverted
Bit 15-3:	Reserved

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	Phases 2, 3 and 4

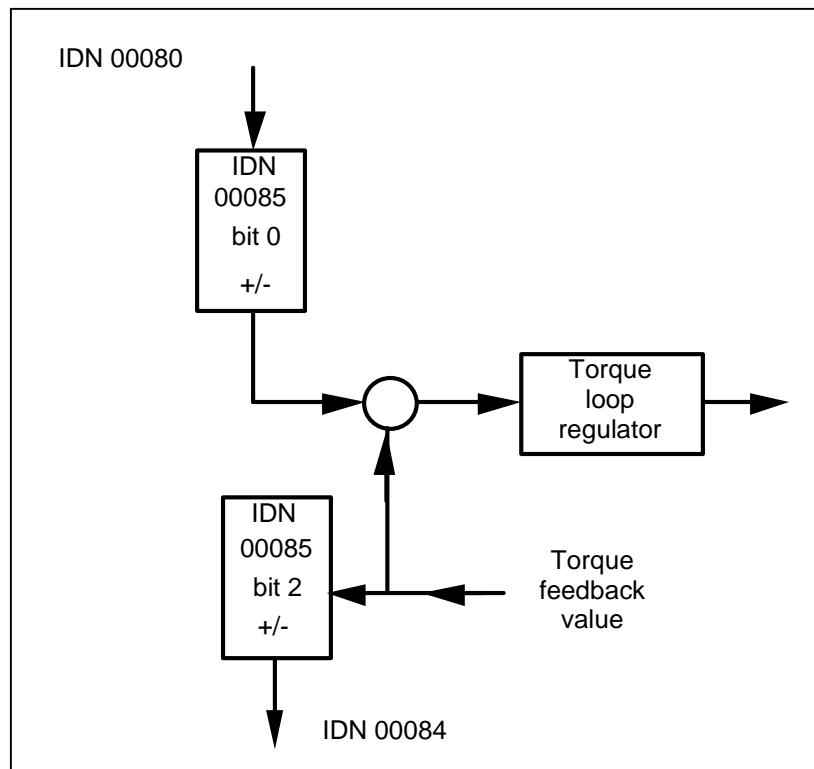


Figure 5.3 - Torque Polarity Parameter

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00086: TORQUE DATA SCALING TYPE

Defines the scaling option for all torque data. Only the "Percentage Scaling" method is currently supported by the drive.

Bit supported by drive:

BIT NUMBER	DESCRIPTION
Bit 2-0:	Scaling method 000 - Percentage scaling
Bit 3-15:	Reserved

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

00088: RECEIVE TO RECEIVE RECOVERY TIME (t_{mts})

Recovery time of the slave after reception of a MDT to switch over to receive the next MST. The master reads this time during CP₂ to ensure that the interval will be sufficient between the end of the MDT and the beginning of the MST.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	0	1 μ s	Phases 2, 3 and 4	None

00089: MDT TRANSMISSION STARTING TIME (t_2)

The MDT transmission starting time determines when the master shall send its MDT during CP₃ and CP₄, following the MST. This parameter is transferred by the master to the slave during CP₂ and becomes active during CP₃.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal Number	2 bytes	1 - 5000	1 μ s	Phases 2, 3 and 4	Phase 2

00090: COMMAND VALUE PROCEEDING TIME (t_{mtsg})

The time required by the slave to make command values available for a drive after receipt of a MDT. This time is read by the master during CP₂ in order to calculate correctly the command value valid time t_3 (IDN 00008).

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	1	1 μ s	Phases 2, 3 and 4	None

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00091: BIPOLAR VELOCITY LIMIT VALUE

The bipolar velocity limit value describes the maximum allowable velocity in both directions. If the velocity limit value is exceeded, the drive responds by setting the status ' $n_{\text{command}} > n_{\text{limit}}$ ' in C3D (IDN 00013).

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	4 bytes	0-+100.00	0.01%	Phases 2, 3 and 4	Phases 2, 3 and 4

00092: BIPOLAR TORQUE LIMIT VALUE (UP-11)

The bipolar torque limit value limits the maximum torque symmetrically in both directions. If the torque limit value is exceeded, the drive sets the status ' $T \geq T_{\text{limit}}$ ' in C3D (IDN 00013).

For this limit to take effect. Torque Limits must be set active in IDN 34334. If this value is set = 0, then IDN 00082, IDN 00084, IDN 34337, and IDN 34339 are valid.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	2 bytes	0-+100.00	0.01%	Phases 2, 3 and 4	Phases 2, 3 and 4

00095: DIAGNOSTIC MESSAGE

Not currently supported at this time.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Text	Variable			Phases 2, 3 and 4	None

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

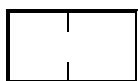
00096: SLAVE ARRANGEMENT (SLKN)

During initialization, the master needs to recognize which physical slaves and their associated drives are present in order to optimize the automatic timeslot computation. The master can request this information from the drives during CP₂. By this entry the master recognizes other drives which belong to the same physical slave. Valid drive addresses are all decimal values from 1 to 254, in accordance with hexadecimal values (01)_H through (FE)_H.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes		1 μs	Phases 2, 3 and 4	Phases 2, 3 and 4

SLKN:

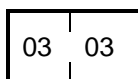
Since each Delta S is configured with one drive per slave, then "Next Drives Address" = "Drive Address".



┌ Next Drives Address (1 through 255)
 └ Drive Address (1 through 255)

Example:

A drive with an address of "03" has a value of:



00097: MASK CLASS 2 DIAGNOSTIC

By means of this mask, warnings in class 2 diagnostic can be masked with respect to their effect on the change bit in drive status. When changing masked warnings, the change bit for class 2 diagnostic is not set in the drive status. The mask does not affect the operation data of class 2 diagnostic (see **IDN 00012**). Setting a bit to 0 masks the effects of the correspond C2D bit on the Class 2 diagnostic change bit.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	Phases 2, 3 and 4

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00098: MASK CLASS 3 DIAGNOSTIC

By means of this mask, condition flags in C3D can be masked with respect to their effect on the change bit in drive status. When masked condition flags change, the change bit for C3D is not set in the drive status. The mask does not affect the operation data of C3D (see **IDN 00013**). Setting a bit to 0 masks the effects of the correspond C3D bit on the Class 3 diagnostic change bit.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	Phases 2, 3 and 4

00099: RESET CLASS 1 DIAGNOSTIC

When this procedure command is received by the drive via the service channel and no error exists, C1D, the interface status, the manufacturer's C1D, the drive shutdown error (drive status bit 13), and the drive shutdown mechanism in the drive are all reset (see **IDN 00011**, **IDN 00014**, and **IDN 00129**).

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Procedure Command	Binary	2 bytes			Phases 2, 3 and 4	Phases 2, 3 and 4

00124: STANDSTILL WINDOW

The standstill window describes the amount of the deviation of the velocity from 0. If the velocity feedback value is within the standstill window the drive sets the status $n_{feedback} = 0$ in C3D (**IDN 00013**).

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	4 bytes	0-+100.00	0.01%	Phases 2, 3 and 4	Phases 2, 3 and 4

00125: VELOCITY THRESHOLD (n_x)

If the velocity feedback value falls below the velocity threshold n_x , the drive sets the status ' $n_{feedback} < n_x$ ' in C3D (**IDN 00013**).

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	4 bytes	0-+100.00	0.01%	Phases 2, 3 and 4	Phases 2, 3 and 4

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00126: TORQUE THRESHOLD (T_x)

If the torque feedback value exceeds the torque threshold T_x , the drive sets the status ' $T \geq T_x$ ' in C3D (IDN 00013).

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	4 bytes	0-+100.00	0.01%	Phases 2, 3 and 4	Phases 2, 3 and 4

00127: CP₃ TRANSITION CHECK

The master uses this procedure command to instruct the slave to check that all necessary parameters have been transferred for CP₃. Otherwise, this procedure command results in an error (see IDN 00021). After the procedure command is performed correctly, the control unit has to cancel the procedure command. The control unit can then activate CP₃ in the MST.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Procedure Command	Binary	2 bytes			Phases 2, 3 and 4	Phases 2

00128: CP₄ TRANSITION CHECK

The master uses this procedure command to instruct the slave to check that all necessary parameters have been transferred for CP₄. Otherwise, this procedure command results in an error (see IDN 00022). After the procedure command is performed correctly, the control unit has to cancel the procedure command. The control unit can then activate CP₄ in the MST.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Procedure Command	Binary	2 bytes			Phases 2, 3 and 4	Phases 3

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00129: MANUFACTURER CLASS 1 DIAGNOSTIC

If an error is set in the manufacturer class 1 diagnostic, the manufacturer-specific error bit in class 1 diagnostic (see **IDN 00011**) is set as well. The drive cancels the manufacturer-specific error and resets to '0' only if the error in manufacturer class 1 diagnostic has been eliminated and on receiving the command 'reset class 1 diagnostic' (see **IDN 00099**) via the service channel.

Bits supported by drive:

BIT NUMBER	DESCRIPTION
Bit 0:	Regen Resistor Over-Temperature Fault
Bit 1:	Regen Resistor Open Fault
Bit 2:	Brake Sequence Fault
Bit 3:	Motor Code Invalid
Bit 4:	Cycle of Power Required
Bit 5:	Dual Port Communication Error
Bit 6:	Driver Processor Watchdog Error
Bit 7 - 14:	Reserved
Bit 15:	Fatal System Error

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

00130: PROBE VALUE 1 POSITIVE EDGE

Based on the configure Probe Feedback Source (IDN 33100) the drive stores position feedback value in the measuring cycle in this parameter following the positive edge of the input signal of probe 1 (see **IDN 00401**). This allows the control unit to read 'probe value 1 positive edge' at a later time.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	4 bytes	$-2^{31} - +2^{31} - 1$		Phases 2, 3 and 4	None

00131: PROBE VALUE 1 NEGATIVE EDGE

Based on the configure Probe Feedback Source (IDN 33100) the drive stores position feedback value in the measuring cycle in this parameter following the negative edge of the input signal of probe 1 (see **IDN 00401**). This allows the control unit to read 'probe value 1 negative edge' at a later time.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	4 bytes	$-2^{31} - +2^{31} - 1$		Phases 2, 3 and 4	None

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00132: PROBE VALUE 2 POSITIVE EDGE

Based on the configured Probe Feedback Source (IDN 33100) the drive stores position feedback value in the measuring cycle in this parameter following the positive edge of the input signal of probe 2 (see **IDN 00402**). This allows the control unit to read 'probe value 2 positive edge' at a later time.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	4 bytes	$-2^{31} - +2^{31} - 1$		Phases 2, 3 and 4	None

00133: PROBE VALUE 2 NEGATIVE EDGE

Based on the configured Probe Feedback Source (IDN 33100) the drive stores position feedback value in the measuring cycle in this parameter following the negative edge of the input signal of probe 2 (see **IDN 00402**). This allows the control unit to read 'probe value 2 negative edge' at a later time.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	4 bytes	$-2^{31} - +2^{31} - 1$		Phases 2, 3 and 4	None

00134: MASTER CONTROL WORD

Allows reading of the master control word on the control unit screen, via the service channel. (This can be useful during start-up and error recovery.)

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

00135: DRIVE STATUS WORD

Allows reading of the drive status word on the control unit screen, via the service channel. (This can be useful during start-up and error recovery.)

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00138: BIPOLAR ACCELERATION LIMIT VALUE

The bipolar acceleration parameter limits the maximum acceleration ability of the drive symmetrically to the programmed value in both directions.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	4 bytes	4000	Rev/sec/sec	Phases 2, 3 and 4	Phases 2, 3 and 4

00140: CONTROLLER TYPE

The operation data of the controller type contains the name of the company and the manufacturer controller type.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Text	Variable	DELTA-S		Phases 2, 3 and 4	None

00142: APPLICATION TYPE

The operation data of the application type contains the type of the drive application (e.g., main spindle drive, round axis).

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Text	Variable			Phases 2, 3 and 4	Phases 2, 3 and 4

00143: SYSTEM INTERFACE VERSION

The operation data of SYSTEM interface version contains the version of the SYSTEM Interface specification.

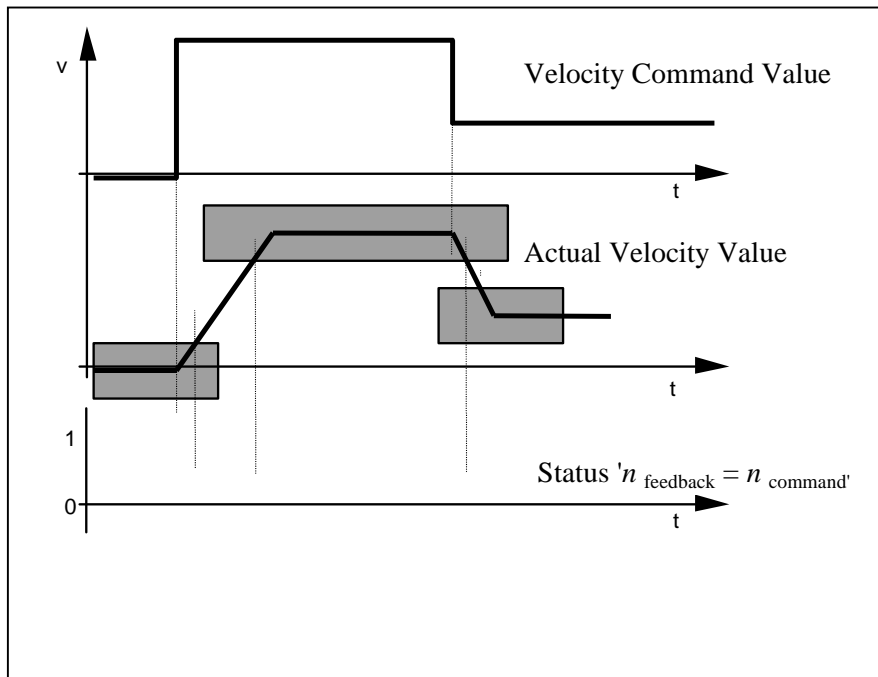
IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Text	Variable			Phases 2, 3 and 4	None

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00157: VELOCITY WINDOW

The velocity window" relates the current velocity to the velocity command value (IDN 00036). If the current velocity feedback value falls within the calculated velocity window, the drive sets the status ' n feedback = n command' in C3D (IDN 00013).

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	4 bytes	0-100.00	0.01%	Phases 2, 3 and 4	Phases 2, 3 and 4



5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00169: PROBE CONTROL PARAMETER

This parameter fixes which probes and which edges are activated for the probing cycle procedure command. Only 1 edge (either rising or falling) can be selected for each probe input.

Bits supported by drive:

BIT NUMBER	DESCRIPTION
Bit 0:	0 - positive edge is not active 1 - positive edge is active
Bit 1:	0 - negative edge is not active 1 - negative edge is active
Bit 2:	0 - positive edge is not active 1 - positive edge is active
Bit 3:	0 - negative edge is not active 1 - negative edge is active
Bit 4 -15:	Reserved

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	Phases 2, 3 and 4

00170: PROBING CYCLE PROCEDURE COMMAND

When the master sets and enables the probing cycle procedure command, the drive reacts on the following parameters:

- Probe 1/2 enable (IDN 00405/00406); and
- Probe 1/2 (IDN 00401/00402) as programmed in the probe control parameter (IDN 00169).

While the procedure command is activated the control unit can start multiple measurements.

If the control unit does not want any more measurements the control unit cancels the procedure command.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Procedure Command	Binary	2 bytes			Phases 2, 3 and 4	Phases 4

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00179: PROBE STATUS

Indicates the latch status of Probe1 and Probe 2

Bits supported by drive:

BIT NUMBER	DESCRIPTION
Bit 0:	0 - positive edge is not latched 1 - positive edge is latched
Bit 1:	0 - negative edge is not latched 1 - negative edge is latched
Bit 2:	0 - positive edge is not latched 1 - positive edge is latched
Bit 3:	0 - negative edge is not latched 1 - negative edge is latched
Bit 4 -15:	Reserved

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

00185: LENGTH OF THE CONFIGURABLE DATA RECORD IN THE AT

This parameter indicates the maximum length, in bytes, which can be processed in the configurable data record of the AT.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes		1 Byte	Phases 2, 3 and 4	None

00186: LENGTH OF THE CONFIGURABLE DATA RECORD IN THE MDT

This parameter indicates the maximum length, in bytes, which can be processed in the configurable data record of the MDT.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes		1 Byte	Phases 2, 3 and 4	None

00187: IDN-LIST OF CONFIGURABLE DATA IN THE AT

In this list the IDNs of operation data that can be processed by the drive cyclically as feedback values.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	IDN	Variable			Phases 2, 3 and 4	Phases 2, 3 and 4

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00188: IDN-LIST OF CONFIGURABLE DATA IN THE MDT

In this list the IDNs of operation data that can be processed by the drive cyclically as command values.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	IDN	Variable			Phases 2, 3 and 4	Phases 2, 3 and 4

00189: FOLLOWING DISTANCE

The drive uses the operation data of this IDN to store the distance between position command value and the position feedback value 1. Calculation of the following distance:
following distance = position command value - position feedback value 1

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	4 bytes	$-2^{31} - +2^{31} - 1$		Phases 2, 3 and 4	None

00206: DRIVE ON DELAY TIME

When "drive on" and "drive enable" are set (bits 14 and 15 of the master control word) torque is activated at once, but the drive follows the command values after this waiting time has elapsed.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	$0 - 2^{16} - 1$	1 ms	Phases 2, 3 and 4	Phases 2, 3 and 4

00207: DRIVE OFF DELAY TIME

After "drive off" (bit 15 of the master control word) is reset and n_{min} is reached, the torque remains activated in the drive until this waiting time is elapsed.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	$0 - 2^{16} - 1$	1 ms	Phases 2, 3 and 4	Phases 2, 3 and 4

00300: REAL-TIME CONTROL BIT 1

Contains the state of the control signal defined in IDN 00301 in Bit 0.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00301: ALLOCATION OF REAL-TIME CONTROL BIT 1

Assigns a control signal to the real-time control bit 1 by writing the IDN of the control signal to this IDN. After the allocation the assigned signal appears in the real-time control bit 1. Valid IDN's are (IDN 00405, 00406).

Writing a value of zero disables Real Time Control Bit 1. (Default)

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	IDN	2 bytes			Phases 2, 3 and 4	Phases 2, 3 and 4

00302: REAL-TIME CONTROL BIT 2

Contains the state of the control signal defined in IDN 00303 in Bit 0.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

00303: ALLOCATION OF REAL-TIME CONTROL BIT 2

Assigns a control signal to the real-time control bit 2 by writing the IDN of the control signal to this IDN. After the allocation the assigned signal appears in the real-time control bit 2. Valid IDN's are (IDN 00405, 00406).

Writing a value of zero disables Real Time Control Bit 2. (Default)

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	IDN	2 bytes			Phases 2, 3 and 4	Phases 2, 3 and 4

00304: REAL-TIME STATUS BIT 1

Contains the state of the status signal defined in IDN 00305 in Bit 0.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00305: ALLOCATION OF REAL-TIME STATUS BIT 1

Assigns a control signal to the real-time status bit 1 by writing the IDN of the control signal to this IDN. After the allocation the assigned signal appears in the real-time status bit 1. Valid IDN's are (IDN 00401, 00402, 00409, 00410, 00410, 00412, 33501 - 33516).

Writing a value of zero disables real time status bit 1. (Default)

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	IDN	2 bytes			Phases 2, 3 and 4	Phases 2, 3 and 4

00306: REAL-TIME STATUS BIT 2

Contains the state of the status signal defined in IDN 00307 in Bit 0.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

00307: ALLOCATION OF REAL-TIME STATUS BIT 2

Assigns a control signal to the real-time status bit 2 by writing the IDN of the control signal to this IDN. After the allocation the assigned signal appears in the real-time status bit 2. Valid IDN's are (IDN 00401, 00402, 00409, 00410, 00410, 00412, 33501 - 33516).

Writing a value of zero disables real time status bit 2. (Default)

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	IDN	2 bytes			Phases 2, 3 and 4	Phases 2, 3 and 4

00401: PROBE 1

Contains the state of the Probe 1 Input in Bit 0.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00402: PROBE 2

Contains the state of the Probe 2 Input in Bit 0.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

00405: PROBE 1 ENABLE

Probe 1 enable is checked by the drive only if the procedure commands "probing cycle" (IDN 00170) is active. For a new probing cycle with the same edge of probe 1 the control unit has to reset probe 1 enable to "0" and set it to "1". (For more details see IDN 00179.)

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	Phases 4

00406: PROBE 2 ENABLE

Probe 2 enable is checked by the drive only if the procedures command "probing cycle" (IDN 00170) is active. For a new probing cycle with the same edge of probe 2 the control unit has to reset probe 2 enable to "0" and set it to "1". (For more details see [IDN 00179](#).)

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	Phases 4

00409: PROBE 1 POSITIVE LATCHED

This parameter is used to assign an IDN to probe 1 positive latched. This allows assigning the status "probe 1 positive latched" to a real-time status bit (see [IDN 00305](#)). Bit 0 of this parameter is set by the drive only if the procedure command "probing cycle" (IDN 00170) is active, the signal "probe 1 enable" (IDN 00405) is set to 1 and the positive edge of "probe 1" (IDN 00401) is announced. Simultaneously the drive stores the position feedback value in "probe 1 positive edge" (IDN 00130). The drive resets this bit when the control unit cancels the procedure command "probing cycle" or when probe 1 enable is reset to 0. Bit 0 is defined for operation data only. (For more details see [IDN 00179](#).)

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

5.2.3 IDN DESCRIPTION - SERCOS SPECIFIC (cont'd)

00410: PROBE 1 NEGATIVE LATCHED

This parameter is used to assign an IDN to probe 1 negative latched. This allows assigning the status "probe 1 negative latched" to a real-time status bit (see **IDN 00305**). Bit 0 of this parameter is set by the drive only if the procedure command "probing cycle" (IDN 00170) is active, the signal "probe 1 enable" (IDN 00405) is set to 1 and the negative edge of "probe 1" (IDN 00401) is announced. Simultaneously the drive stores the position feedback value in "probe 1 negative edge" (IDN 00131). The drive resets this bit when the control unit cancels the procedure command "probing cycle" or when probe 1 enable is reset to 0. Bit 0 is defined for operation data only. (For more details see **IDN 00179**.)

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

00411: PROBE 2 POSITIVE LATCHED

This parameter is used to assign an IDN to probe 2 positive latched. This allows assigning the status "probe 2 positive latched" to a real-time status bit (see IDN 00305). Bit 0 of this parameter is set by the drive only if the procedure command "probing cycle" (IDN 00170) is active, the signal "probe 2 enable" (IDN 00406) is set to 1 and the positive edge of "probe 2" (IDN 00402) is announced. Simultaneously the drive stores the position feedback value in "probe 2 positive edge" (IDN 00132). The drive resets this bit when the control unit cancels the procedure command "probing cycle" or when probe 2 enable is reset to 0. Bit 0 is defined for operation data only. (For more details see **IDN 00179**.)

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

00412: PROBE 2 NEGATIVE LATCHED

This parameter is used to assign an IDN to probe 2 negative latched. This allows assigning the status "probe 2 negative latched" to a real-time status bit (see **IDN 00305**). Bit 0 of this parameter is set by the drive only if the procedure command "probing cycle" (IDN 00170) is active, the signal "probe 2 enable" (IDN 00406) is set to 1 and the negative edge of "probe 2" (IDN 00402) is announced. Simultaneously the drive stores the position feedback value in "probe 2 negative edge" (IDN 00133). The drive resets this bit when the control unit cancels the procedure command "probing cycle" or when probe 2 enable is reset to 0. Bit 0 is defined for operation data only. (For more details see **IDN 00179**.)

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

5.2.4 IDN DESCRIPTION - IIS SPECIFIC

33000: DIGITAL OUTPUTS

The state of the digital output can be set via this parameter. If the corresponding bit in the Output Function (IDN 33020) is set to 0 then the bit will be written to the Digital Output hardware. See IDN 33040 for the hardware output bit structure.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary		0-65535		Phases 2, 3 and 4	Phase 4

33020: OUTPUT FUNCTION

Determines the controlling function for the Digital Output.

Bit = 0: corresponding bit in IDN 33000 is written to output.

Bit = 1: corresponding bit in IDN 33040 is written to output.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary		0-65535		Phases 2, 3 and 4	Phases 2, 3 and 4

33040: DIGITAL OUTPUT HARDWARE STATE

The state of the Digital Output Hardware can be viewed by this parameter. The hardware state is determined by the states of IDN 33000, IDN 33020, IDN 33109 and IDN 33110.

Bit supported by drive:

BIT NUMBER	DESCRIPTION
Bit 0:	Output 1 (Brake Output)
Bit 1:	Output 2
Bit 2:	Output 3
Bit 3:	Output 4
Bit 4:	Output 5
Bit 5:	Output 6
Bit 6:	Output 7
Bit 7:	Output 8
Bit 8:	Output 9
Bit 9:	Output 10
Bit 10:	Output 11
Bit 11:	Output 12
Bit 12:	Output 13
Bit 13:	Output 14
Bit 14:	Output 15
Bit 15:	Output 16

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

5.2.4 IDN DESCRIPTION - IIS SPECIFIC (cont'd)

33100: PLS SOURCE

Determines which source the PLS Angle follows. Setting the PLS source initializes the PLS Angle, resets the PLS Mask (IDN 33109), PLS Preset (IDN 33109) and PLS Offset, and Clears the PLS Bit table.

Bit 0 = 0 PLS Angle follows Position Feedback 1
 Bit 1 = 0 PLS Angle follows Position Feedback 2

Note: The PLS Angle will not follow any source until IDN 33100 is written to.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes	0-1		Phases 2, 3 and 4	Phases 2, 3 and 4

33101: CURRENT PLS ANGLE

Reads the current PLS Angle from the drive. The PLS Angle is only updated after a PLS Source has been selected.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	4 bytes	0 - PLS Cycle	1 bit	Phases 2, 3 and 4	None

33103: PLS CYCLE

Sets the size of the PLS Cycle.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	4 bytes	4 to 2 ²³	1 bit	Phases 2, 3 and 4	Phases 2, 3 and 4

33104: PLS PRESET

Sets the current PLS Angle to the PLS Preset Value.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	2 bytes	0 - PLS Cycle	1 bit	Phases 2, 3 and 4	Phases 2, 3 and 4

5.2.4 IDN DESCRIPTION - IIS SPECIFIC (cont'd)

33105: PLS OFFSET

Offsets the PLS Angle by the PLS Offset value.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	2 bytes	$-2^{31} - +2^{31} - 1$	1 bit	Phases 2, 3 and 4	Phases 2, 3 and 4

33106: PLS ADVANCE

Reserved

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	2 bytes		1 bit	Phases 2, 3 and 4	Phases 2, 3 and 4

33107: CLEAR PLS

Clears the corresponding bits in the PLS output table. See [IDN 33040](#) for bit definition.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	Phases 2, 3 and 4

33108: SET PLS ANGLE

For all bits set in the "PLS output bits" sets corresponding bits to 1 between the On Angle and Off Angle. Of Mode = Reset then all other corresponding bits in the cycle are set to 0.

Structure: PLS output bits 2 bytes (See [IDN 33040](#) for bit definition)
 Mode 2 bytes (Append: Bit 0 = 1, Reset: Bit 0 = 0)
 On Angle 4 bytes ($0 \leq \text{Range} < \text{PLS CYCLE}$ (IDN 33103))
 Off Angle 4 bytes ($0 \leq \text{Range} < \text{PLS CYCLE}$ (IDN 33103))

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Text	Variable			Phases 2, 3 and 4	Phases 2, 3 and 4

5.2.4 IDN DESCRIPTION - IIS SPECIFIC (cont'd)

33109: PLS MASK

Enables the corresponding bits in the PLS Output to follow the PLS Bit table.
 (See **IDN 33040** for bit definition.)

Bit = 0: PLS Output bit disabled. Corresponding PLS Output Bit holds last state.

Bit = 1: PLS Output bit Enabled. Corresponding PLS Output Bit updates as PLS Angle is updated.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	Phases 2, 3 and 4

33110: PLS OUTPUT

The state of the PLS Outputs can be read via this parameter. (See **IDN 33040** for bit definition.)

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

33111: SET PLS STATE

By definition of the PLS MASK (**IDN 33109**), if a PLS Output bit is disabled in the PLS Mask the bit will hold its last state. This IDN allows the last state of the bit to be forced to 1. If a bit = 1 in this operation data and its corresponding bit in the PLS Mask = 0, then the PLS Output bit will be set = 1.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	Phase 4

33112: CLEAR PLS STATE

By definition of the PLS MASK (**IDN 33109**), if a PLS Output bit is disabled in the PLS Mask the bit will hold its last state. This IDN allows the last state of the bit to be forced to 0. If a bit = 1 in this operation data and its corresponding bit in the PLS Mask = 0, then the PLS Output bit will be set = 0.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	Phase 4

5.2.4 IDN DESCRIPTION - IIS SPECIFIC (cont'd)

33500: DIGITAL INPUTS

Reads the State of the Digital Inputs on the Drive.

Bit supported by drive:

BIT NUMBER	DESCRIPTION
Bit 0:	Input 1 (See IDN 33517)
Bit 1:	Input 2
Bit 2:	Input 3
Bit 3:	Input 4
Bit 4:	Input 5
Bit 5:	Input 6
Bit 6:	Input 7
Bit 7:	Input 8
Bit 8:	Input 9
Bit 9:	Input 10
Bit 10:	Input 11
Bit 11:	Input 12
Bit 12:	Input 13
Bit 13:	Input 14
Bit 14:	Input 15
Bit 15:	Input 16

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

33501 - 33516: DIGITAL INPUT0 - DIGITAL INPUT15

Read the State of the signal on the Drive into Bit 0. This IDN was created so that the digital inputs could be mapped to the Real Time Status Bits.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes			Phases 2, 3 and 4	None

33517: DIGITAL INPUT 0 CONFIGURATION

Allows mapping of the Probe bits into the Digital Input 0 Bit.

Valid Values:

- 0: Brake Input
- 1: Probe 1 State
- 2: Probe 2 State

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes	0 - 2		Phases 2, 3 and 4	Phases 2, 3 and 4

5.2.4 IDN DESCRIPTION - IIS SPECIFIC (cont'd)

33600: ANALOG INPUT 1

Read the counts from the Analog Input 1. The value of the A/D is shifted up to a 16-bit value so that the range is the same for either the 10-bit (standard) or the 14-bit (optional) A/D.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	2 bytes	$-2^{15} - +2^{15} - 1$	10-bit or 14-bit A/D shifted up.	Phases 2, 3 and 4	None

33601: ANALOG INPUT 2

Read the counts from the Analog Input 2. The value of the A/D is shifted up to a 16bit value.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	2 bytes	$-2^{15} - +2^{15} - 1$	10-bit or 14-bit A/D shifted up.	Phases 2, 3 and 4	None

33700: ALARM HISTORY

The drive maintains a list of the up to 15 Alarm Faults Codes and details about the state of the drive when the faults happened. This IDN returns only the list of up to 15 faults. See [IDN 34808](#) if the details of the faults are desired.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	Variable 2 byte each			Phases 2, 3 and 4	None

34202: LOAD INERTIA RATIO (AJ2)

Sets the baseline frequency response of the drive using the ratio of the load inertia/motor inertia for a rigidly coupled load. If the load is not rigidly coupled, the value entered may vary from the calculated value. If the value is set too high, the motor and the drive may become unstable and oscillate. This parameter is set automatically during auto tuning.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	0~100	1 Times	Phases 2, 3 and 4	Phases 2, 3 and 4

5.2.4 IDN DESCRIPTION - IIS SPECIFIC (cont'd)

34203: HIGH FREQUENCY RESPONSE (AJ3)

Sets the high frequency response of the driver. The higher the number, the more responsive. If the value is set too high, the motor may become unstable and oscillate. The value in IDN 34203 is unit less and works in concert with IDN 34202 (AJ2). This parameter is set automatically during auto tuning.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	0.1~20.0	0.1	Phases 2, 3 and 4	Phases 2, 3 and 4

34204: POSITION LOOP DC GAIN (AJ4)

Sets the DC gain of the position control loop. A higher value in IDN 34204 results in stiffer, faster response. If the value is set too high, the motor and drive may become unstable and oscillate. This parameter is set automatically during auto tuning.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	1~200	1 rad/sec	Phases 2, 3 and 4	Phases 2, 3 and 4

34207: ZERO SPEED GAIN REDUCTION (AJ7)

Set the amount of gain reduction at zero speed. The gain is reduced when the motor is below the speed set in IDN 34207 and at the set values when the speed is above IDN 34207.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	0	0~10000	1	Phases 2, 3 and 4	Phases 2, 3 and 4

34208: FEED FORWARD GAIN (AJ8)

Sets the feed forward gain in the position loop. A value of 1.0 results in 0.0 following error. Less than 1.0 will produce a lag between the actual motor position and the commanded position and greater than 1.0 produces a lead. The lead or lag will be proportion to speed at non- 1.0 setting.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	0~2.0	1 Time	Phases 2, 3 and 4	Phases 2, 3 and 4

5.2.4 IDN DESCRIPTION - IIS SPECIFIC (cont'd)

34209: SECONDARY FILTER (AJ9)

Sets the notch frequency of a velocity loop anti-resonance filter. This filter can be used to cancel machine or servo resonance.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	400~20000	1 rad/s	Phases 2, 3 and 4	Phases 2, 3 and 4

34302: MOTOR CODE (UP-02)

Sets the internal driver parameters corresponding to the motor code. See [Appendix A](#) for motor codes. The driver power must be cycled to register a change in this parameter value. Power must be turned off then ON for this change to take effect. Writing the same value as already stored in the drive does not require the power to be cycled.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Hexidecimal	2 bytes	0000~FFFF		Phases 2, 3 and 4	Phases 2, 3 and 4

34303: RESOLVER CABLE LENGTH (UP-03)

Set the driver resolver cable length compensation.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	0~120	1 Meter	Phases 2, 3 and 4	Phases 2, 3 and 4

34304: GEAR RATIO DENOMINATOR FOR THE PULSE OUTPUT (UP-04)

The output pulse (APD and BPD) is multiplied by UP05/UP04 and then sent to the APD and BPD output pins of the encoder output. This balue is the ratio of the desired output counts of the encoder output and the internal raw processing counts of the driver.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	1~32767		Phases 2, 3 and 4	Phases 2, 3 and 4

34305: GEAR RATIO NUMERATOR FOR THE PULSE OUTPUT (UP-05)

Combined with parameter 0204H.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	1~32767		Phases 2, 3 and 4	Phases 2, 3 and 4

5.2.4 IDN DESCRIPTION - IIS SPECIFIC (cont'd)

34315: ABSOLUTE POSITION CLEAR (UP-05)

Sets the Absolute Position based on the following type:

- 0: Makes current position of motor equal to 0.
- 1: Makes the current motor shaft rotation the 0 rotation while preserving the MARKER.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2 bytes	0 - 1		Phases 2, 3 and 4	Phases 2, 3 and 4

34316: BRAKE MODE

Selects the type of brake sequencing to be done when the drive is disabled. Also, defines the Mode of Input 0 and Output 0. Refer to [Sections 10](#) and [11](#) for more details.

- 0: No Brake
- 1: Dynamic Brake
- 2: Mechanical Holding Brake

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Hexidecimal	2	0~2		Phases 2, 3 and 4	Phases 2, 3 and 4

34318: AUXILIARY ENCODER INPUT PULSE TYPE (UP-18)

Sets the type of pulse sequence and polarity of the Auxiliary Encoder Pulse inputs.

- 00: Pulse, Pulse Decoding where FMA increments position and FMB decrements position.
- 01: Quadrature decoding of FMA and FMB with FMA Leading FMB for incrementing command position. Quadrature decoding effectively multiplies the input frequency by 4 times.
- 02: Pulse and direction decoding where FMA is pulse train and FMB is direction. FMB OFF increments the position and ON decrements the position.
- 10: Pulse, Pulse Decoding where FMB increments position and FMA decrements position.
- 11: Quadrature decoding of FMA and FMB with FMB Leading FMA for incrementing command position. Quadrature decoding effectively multiplies the input frequency by 4 times.
- 12: Pulse and direction decoding where FMA is pulse train and FMB is direction. FMB ON increments the position and OFF decrements the Position.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Hexidecimal	2	00 - 12		Phases 2, 3 and 4	Phases 2, 3 and 4

5.2.4 IDN DESCRIPTION - IIS SPECIFIC (cont'd)

34319: PULSE OUTPUT PULSE TYPE (UP-19)

Sets the type of pulse output sequence and polarity of the pulse output. The pulse output pulse train is coded as the incremental position scaled by Gear Ratio parameters 0205H and 0204H.

0x00: Pulse, Pulse encoding where APD pulse when the actual position increments and BPD pulses when the actual position decrements.

0x01: Quadrature encoding of APD and BPD with APD Leading BPD for incremental actual position. Each edge of the two pulse Trains are counted as an output bit change.

0x10: Pulse, Pulse encoding where BPD pulse when the actual position increments and APD pulses when the actual position decrements.

0x11: Quadrature encoding of APD and BPD with BPD Leading APD for Incremental actual position. Each edge of the two pulse Trains are counted as an output bit change.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Hexadecimal Number	2	0x00~0x11		Phases 2, 3 and 4	Phases 2, 3 and 4

34325: MONITOR OUTPUT FUNCTION

Selects the speed and torque output and polarity of the monitor test point.

The first byte selects the MON output function.

0xX0: TORQUE

0xX1: SPEED

The second byte selects the polarity of the monitor output.

0x0X: NORMAL

0x1X: INVERT

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Hexadecimal Number	2	0x00~0x11		Phases 2, 3 and 4	Phases 2, 3 and 4

34328: HOLDING BRAKE THRESHOLD (UP-28)

When IDN34316 is set to 0, IDN 34328 has no effect. When IDN 34316 is set to 1, the mechanical break is applied when the motor speed falls below UP28. UP28 is scaled in % of rated speed.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2	0~100	0.1%	Phases 2, 3 and 4	Phases 2, 3 and 4

5.2.4 IDN DESCRIPTION - IIS SPECIFIC (cont'd)

34330: EXTERNAL REGEN RESISTOR VALUE (UP-30)

Value of the optional external regen resistor. When the regen resistor is used, the value is entered to allow the driver to calculate the average power into the regen resistor. When the internal regen is used, enter 0.0.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2	0~100	0 ohm	Phases 2, 3 and 4	Phases 2, 3 and 4

34331: EXTERNAL REGEN RESISTOR WATTAGE (UP-31)

Power rating of the optional external regen resistor. When the external regen resistor is used, the power rating in Kw of the resistor is entered to allow the driver to calculate the average power into the regen resistor. When the internal regen is used, enter 0.0.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2	0~327.67	0.01 Kwatts	Phases 2, 3 and 4	Phases 2, 3 and 4

34334: TORQUE LIMIT SELECTION (HP-34)

Determines whether torque limits are active.

Bit supported by drive:

BIT NUMBER	DESCRIPTION
Bit 0:	0: Torque Limits Disabled 1: Torque Limits Enabled (See IDN 00082, 00083, 00092, 34337 and 34339)
Bit 1 - 15:	Reserved

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Binary	2			Phases 2, 3 and 4	Phases 2, 3 and 4

34337: POSITIVE ABSORPTION TORQUE LIMIT (HP-37)

Limits the positive absorption torque. Torque Limits must be set active in IDN 34334 and the bipolar torque limit IDN 00092 must be set to 0.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	2 bytes	0-+100.00	0.01%	Phases 2, 3 and 4	Phases 2, 3 and 4

5.2.4 IDN DESCRIPTION - IIS SPECIFIC (cont'd)

34339: NEGATIVE ABSORPTION TORQUE LIMIT (HP-39)

Limits the positive absorption torque. Torque Limits must be set active in IDN 34334 and the bipolar torque limit IDN 00092 must be set to 0.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Signed Decimal	2 bytes	0-+100.00	0.01%	Phases 2, 3 and 4	Phases 2, 3 and 4

34501: AMPLIFIER SOFTWARE NUMBER

Reads the software revision number of the amplifier control board.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2			Phases 2, 3 and 4	None

34504: MOTOR PEAK CURRENT

Reads the peak value of the AC Current Output to the motor.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Decimal	2	-160.0 -160.0	0.1 %	Phases 2, 3 and 4	None

34506: % MOTOR TEMP

Reads the calculated motor temperature as a percent of maximum temperature. The electronic motor thermal limit alarm activates at 110% (AL-17).

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2	0 - 110	1 %	Phases 2, 3 and 4	None

34507: % RATED ABSORPTION

For the drive DS-8.5 and DS-17.5, reads the value (motor absorption torque/motor rated torque)*100%. For the drive DS-35 and up the display is % rating of the regeneration resistor capacity.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2	0 - 100%	1 %	Phases 2, 3 and 4	None

5.2.4 IDN DESCRIPTION - IIS SPECIFIC (cont'd)

34508: SERCOS LOOP BAUD RATE (HP 60)

Reads the current value of the Baud Rate set in the drive keypad menu.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Hexadecimal	2	0x02, 0x04, 0x06, 0x10	Mega bits/Sec	Phases 2, 3 and 4	None

34509: SERCOS LOOP DEVICE ID (HP 61)

Reads the current value of the Device ID set in the drive keypad menu.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2	0-254		Phases 2, 3 and 4	None

34510: SERCOS LOOP ATTENUATION (HP 59)

Reads the current value of the SERCOS Transmitter power attenuation set in the drive keypad menu.

Defined as:

- 0: Low Attenuation
- 1: High Attenuation

(This IDN use is currently reserved. Value set to Zero)

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2	0-1		Phases 2, 3 and 4	None

34601: AUTOTUNE ROTATION AMOUNT

Define the amount of reciprocal rotation should be used when executing the auto tune procedure (IDN 34801).

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2	0 - 300	Revs	Phases 2, 3 and 4	Phases 2, 3 and 4

5.2.4 IDN DESCRIPTION - IIS SPECIFIC (cont'd)

34602: AUTOTUNE TARGET RESPONSE

Define the desired frequency response desired when executing the autotune procedure (IDN 34801). If this value is set too high, unstable operation may occur.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	1 - 1000	1 Hz	Phases 2, 3 and 4	Phases 2, 3 and 4

34603: AUTOTUNE MAXIMUM SPEED

Define the speed of the reciprocal rotation when executing the autotune procedure (IDN 34801).

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	2 bytes	1 - 4000	RPM	Phases 2, 3 and 4	Phases 2, 3 and 4

34801: AUTOTUNE COMMAND

Starts the Autotune Procedure. Set IDN 34601, 34602, 34603 before executing this Procedure. See [Section 8](#).

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Procedure Command	2 bytes	0-3		Phases 2, 3 and 4	Phases 4

34807: DRIVE ALARMS

Returns a list of the drives current alarms.

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	Variable 2 byte each			Phases 2, 3 and 4	None

5.2.4 IDN DESCRIPTION - IIS SPECIFIC (cont'd)

34808: ALARM HISTORY DETAILS

Returns the list of the last 15 alarms along with details of the systems at the time of the alarm.

The structure of each alarm is:

OFFSET	PARAMETER	DATA SIZE
+0	Alarm Code	2 bytes
+2	Current Command Value	2
+4	Current Detection Value	2
+6	Machine Phase Angle	2
+8	Resolver Position	4
+12	Detection Phase	2
+14	Old Detection Phase	2
+16	Speed	2
+18	Reserved	4
+22	Power On Count	4
+26	Power On Time	4
+30	Number Of Histories	2

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Decimal	480 bytes			Phases 2, 3 and 4	None

5.2.4 IDN DESCRIPTION - IIS SPECIFIC (cont'd)

34809: MOTOR PARAMETERS

All lists of parameters are store in the drive for all valid motor codes. This IDN returns the list of Motor Parameters Specific to the current motor code in IDN 34302. If IDN 34302 is changed, the new motor parameters are not valid until after the power is cycled on the drive.

Motor Parameter List:

PARAMETER NUMBER	PARAMETER DESCRIPTION
Mot 1	Current Loop Kp
Mot 2	Current LoopTi
Mot 3	Velocity Loop Kp
Mot 4	Velocity Loop Ti
Mot 5	Motor Current Limit
Mot 6	Motor Thermal Time Constant
Mot 7	Motor Rated Current
Mot 8	Current Detection Scale Value
Mot 9	Number of Poles
Mot 10	Rated RPM
Mot 11	Motor Max RPM
Mot 12	Short Time Overload POG
Mot 13	Short Time Overload POK
Mot 14	Phase Order Selection
Mot 15	Motor Sensor
Mot 16	Upper Digits of Encoder Split Count
Mot 17	Lower Digits of Encoder Split Count
Mot 18	Encoder Shift
Mot 19	Electronic Thermal Detection
Mot 20	Spare

IDN TYPE	DATA TYPE	DATA LENGTH	SETTING RANGE	SCALING/ RESOLUTION	READ ACCESS	WRITE ACCESS
Operation Data	Unsigned Decimal	Variable 2 bytes each			Phases 2, 3 and 4	None