

Danaher Motion

SERVOSTAR[®] S
SERVOSTAR[®] CD

SERCOS IDN Reference Manual

KOLLMORGEN

giving our customers freedom of design

Firmware Version 7.5.6-preliminary

Record of Manual Revisions

ISSUE NO.	DATE	BRIEF DESCRIPTION OF REVISION
1	05/01/1999	Initial release of SERCOS option 3.3.0
2	10/10/1999	Added new IDNs for 3.4 firmware upgrade 3.4.0
3	05/31/2000	Corrected content and updated format 3.4.0
4	06/31/2001	Updated information and added IDNs
5	01/31/2002	Added additional IDNs
6	12/13/2002	Additional IDNs
7	01/13/2008	-Added fault strings to "Manufactured table" (IDN 129) -Add IDNs for 7.5.6-preliminary firmware upgrade (IDN P264 - P278) -Changing "IENCSTART" (IDN P59) range (1 ~ 177) -Updating IDN P65 -Updating IDN P236 -Updating IDN P267

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IDNs Grouped By Function

Acceleration / Deceleration Control

Homing Acceleration	Positive Acceleration Limit Value
Negative Acceleration Limit Value	Weight Counter Balance
Quick Deceleration Rate	Acceleration/Deceleration Limit Enable

Configurable I/O

Home Switch Status	Configurable I/O: Input 1 Mode
Configurable I/O: Input 1 Status	Configurable I/O: Input 2 Mode
Configurable I/O: Input 2 Status	Configurable I/O: Input 3 Mode
Configurable I/O: Input 3 Status	Configurable I/O: Output 1 Mode
Configurable I/O: Output 1 Control/Status	Configurable I/O: Inputs Status
Configurable I/O: Inputs Polarity	

Current and Torque Control

Primary Operation Mode	Additive Torque Command
Torque Feedback Value	Bipolar Torque Limit
Amplifier Peak Current	Amplifier Rated Current
System Load Limit	Friction Torque Compensation
Weight Counter Balance	Overload Warning
Current Loop Adaptive Gain at Peak Current	Fold Back Fault Handling Mode
Current Loop Adaptive Gain at Continuous Current	Fold Back Warning Time
Current Loop Adaptive Gain at Zero Current	Dynamic Braking Mode
Torque Angle Advance at Continuous Current	Dynamic Braking Current
Torque Angle Advance at Peak Current	Bipolar Torque Limit 2

Fault & Safety Detection

Positive Position Limit Value
Position Polarity Parameter
Bipolar Torque Limit
Class 2 Diagnostic Mask
Procedure: Reset Class 1 Diagnostic
Manufacturer Class 1 Diagnostic (MC1D)
Overload Warning
Fold Back Fault Handling Mode
Dynamic Braking Mode
Motor Over Speed Trip Set Point
Hardware Limit Switch Enable/Disable
CCW Limit Switch Status
Drive Relay Status
Motor Temperature Sensor Type
Bus Under Voltage Fault Handling Mode

Negative Position Limit Value
Bipolar Velocity Limit
Diagnostic Message
Class 3 Diagnostic Mask
System Load Limit
Monitoring Window
Motor Over Temperature Warning
Fold Back Warning Time
Bipolar Torque Limit 2
Quick Deceleration Rate
CW Limit Switch Status
Drive Relay Closure Conditions
Motor Over Temperature Mode
Motor Over Temperature Relay Delay Time
Bus Under Voltage Warning Time

Feedback Devices

External (Load) Position Feedback Type
External Feedback Resolution
Motor Encoder Offset
Encoder/Resolver Relative Phase Offset
Hall Sensor Status
Procedure: Initialize Encoder
Resolver Inter-LSB Mode

Motor Feedback Resolution
Hall Sensor Inversion
Motor Encoder Type
Number of Resolver Poles
Encoder Initialization Current
Procedure: Find Marker Encoder Initialization
Feedback Status

General Features

Manufacturer Version
DC BUS Voltage
Remote Enable Switch Status
Analog Input Value
Analog Input Dead Band
Source for Analog Output Feature
Position Scale Factor for Analog Output
Tune Bandwidth
Tune Velocity

Drive Off Delay Time
Active Disable Threshold Speed
Scaled Analog Input Value
Analog Input Offset Compensation
Analog Input Low Pass Filter Corner Frequency
Current Scale Factor for Analog Output
Velocity Scale Factor for Analog Output
Tune Rotation Direction
Procedure: Tune

Monitoring and Troubleshooting

Class 1 Diagnostic (C1D)	Class 2 Diagnostic (C2D)
Class 3 Diagnostic (C3D)	Interface Status
Reference Distance 1	Following Distance
Position Window	Standstill Window
Manufacturer Class 1 Diagnostic (MC1D)	Manufacturer Class 2 Diagnostic (MC2D)
Manufacturer Class 3 Diagnostic (MC3D)	Status: In Position
Position Feedback Value 1 (Motor Feedback)	Status: Velocity feedback = 0
Maximum Length of MDT Configurable Data	Drive Disable Status
Hall Sensor Status	Position Feedback Hardware Counter
Absolute Mechanical Position Relative to Marker	Drive DIP Switch Status
DIP Switch Enable Status	Hold Mode Status
Record Sample Time	Record Channel Buffer Size
Record Channel 1 Signal	Record Channel 2 Signal
Record Channel 3 Signal	Record Trigger Signal
Record Trigger Level	Record Trigger Polarity
Record Trigger Buffer Offset	Procedure: Record
Record Data Status	Record Data Pointer
Record Data	

Motor Compatibility

Motor Peak Current	Motor Continuous Stall Current
Maximum Motor Speed	Motor Type
Number of Motor Poles	Rotor's Moment of Inertia
Linear Motor Pole Pitch	Minimum Motor Inductance
Motor Back EMF Constant	Motor Back EMF Compensation
Current Loop Adaptive Gain at Peak Current	Hall Sensor Inversion
Current Loop Adaptive Gain at Continuous Current	Motor Type
Current Loop Adaptive Gain at Zero Current	Hall Sensor Status
Torque Angle Advance at Continuous Current	Torque Angle Advance at Peak Current
Velocity Angle Advance at Maximum Speed	Velocity Angle Advance at Half Speed

Position Control

Primary Operation Mode	Homing Velocity
Homing Acceleration	Position Command Value
Positive Position Limit Value	Negative Position Limit Value
Position Feedback Value 1 (Motor Feedback)	Reference Distance 1
Position Feedback Value 2 (External Feedback)	Position Polarity Parameter
Position Window	Position Data Scaling Type
Position Loop Proportional Gain	External Feedback Resolution
Probe 1 Positive Edge Value	Probe 1 Negative Edge Value
Homing Parameter	Procedure: Drive Controlled Homing
Motor Reference Offset	Monitoring Window
Probe Control Parameter	Procedure: Probing
Probe Position Latch Status	Following Distance
Procedure: Cancel Reference Point	Status: In Position
Acceleration Feed-Forward Gain	Home Switch Status
Probe 1	Position Feedback Value Status
Probe 1 Enable	Probe 1 Positive Edge Latched Status
Absolute Mechanical Position Relative to Marker	Probe 1 Negative Edge Latched Status
Micro-Interpolator Mode	Acceleration Feed Forward Gain 2
Position Loop Derivative Gain	Position Loop Integral Gain
Position Loop Integrator Output Saturation Limit	Hardware Limit Switch Enable/Disable
Position Loop Integrator Input Saturation Limit	CW Limit Switch Status
CCW Limit Switch Status	

Systems Communication

Communication Cycle Time	Shortest AT Transmission Starting Time
Transmit/Receive Transition Time	Minimum Feedback Processing Time
AT Transmission Starting Time	Position of Data Record in MDT
MDT Length	Procedure: Communication Phase 3 Transition Check
Telegram Type Parameter	Procedure: Communication Phase 4 Transition Check
Configuration List of AT Cyclic Data	IDN List of All Operation Data
IDN List of All Operation Data for CP2	IDN List of All Operation Data for CP3
Slave Arrangement	IDN List of Invalid Operation Data for CP3
Configuration List of MDT Cyclic Data	IDN List of Invalid Operation Data for CP3
Receive to Receive Recovery Time	IDN List of All Procedure Commands
Command Value Processing Time	MDT Transmission Starting Time
Class 2 Diagnostic Mask	Class 3 Diagnostic Mask
Master Control Word	Maximum Length of AT Configurable Data
List of AT Configurable Data IDNs	List of MDT Configurable Data IDNs
IDN List of Back-up Operation Data	Procedure: Load Working Memory
Procedure: Back-up Working Memory	Overload Warning
Realtime Status (RTS) Bit 1	Realtime Control (RTC) Bit 2 Allocation
Realtime Status (RTS) Bit 1 Allocation	Realtime Status (RTS) Bit 2
Realtime Status (RTS) Bit 2 Allocation	Procedure: Clear Non-Volatile Memory
Encoder Equivalent Output Resolution	Manufacturer Class 2 Diagnostic Mask
Manufacturer Class 3 Diagnostic Mask	Control Unit Synchronization Bit Monitoring

Velocity Control

Primary Operation Mode	Velocity Command Value
Additive Velocity Command Value	Velocity Feedback Value
Homing Velocity	Velocity Data Scaling Type
Bipolar Velocity Limit	Velocity Loop Proportional Gain
Velocity Feed Forward Gain	Velocity Angle Advance at Maximum Speed
Velocity Angle Advance at Half Speed	Motor Over Speed Trip Set Point
Velocity Loop APP Input Filter	Velocity Notch Filter Center Frequency
Velocity Notch Filter Band Width	Velocity Feedback Compensation Filter
Velocity Loop Filter Mode	Velocity Low Pass Filter 1 Frequency
Velocity Low Pass Filter 2 Frequency	Velocity Loop Compensation Mode
Velocity Loop PDFF Proportional Gain	Velocity Loop PDFF Integral Gain
Velocity Loop PDFF to Feedback Gain Ratio	Velocity Loop SPP Bandwidth
Velocity Loop SPP Load to Motor Inertia Ratio	Velocity Loop SPP Tracking Factor
Velocity Loop Integral Gain	Velocity Loop Expanded Proportional Gain
Procedure: Design APP Velocity Controller	Velocity Loop APP Forward Path Polynomial
Velocity Loop APP Feedback Path Polynomial	Velocity APP Feed-forward Path Polynomial
Velocity Loop APP Output Filter	APP Velocity Controller Procedure Control
APP Velocity Procedure Acknowledgement	Step Velocity 1
Step Velocity 1 Duration	Step Velocity 2
Step Velocity 2 Duration	Procedure: Velocity Step

SERCOS IDNs

Each SERCOS interface SERVOSTAR®-supported IDN is described and listed in numerical order. Each IDN description is displayed in the following format:

IDN # IDN Name

Description:

Data Length:

Data Type:

Minimum:

Maximum:

Default:

Units:

Non-Volatile:

Write Access:

Serial Equivalent:

Availability:



All fields are not applicable to every IDN description.

IDN 1: Control Unit Cycle Time

Description: The period at which the control unit updates commands to the drive. The drive automatically overrides this value with the value of CCT (IDN 2) in CP3.

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 2,000

Maximum: 25,000

Default: None

Units: us

Non-Volatile: No

Write Access: CP 2

Serial Equivalent:

Availability: All versions

IDN 2: Communication Cycle Time

Description: The period at which MST, AT, and MDT telegrams are transmitted. The communication cycle time (CCT) may be incremented in 1 mS steps. The micro-interpolator (μ I), IDN P110, must be disabled for CCTs greater than 6 ms.

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 2,000

Maximum: 25,000

Availability: All versions

Units: μ s

Non-Volatile: No

Write Access: CP 2

Default: None - master must download.

IDN 3: Shortest AT Transmission Starting Time

Description: The time required by the drive between the end of the MST and the start of the drive's AT.

Data Length: 2 bytes

Data Type: Unsigned integer

Default: 85

Availability: All versions

Units: μ s

Non-Volatile: Yes

Write Access: Read-only

IDN 4: Transmit/Receive Transition Time

Description: The time required by the drive between the end of the MST and the start of the drive's AT.

Data Length: 2 bytes

Units: μs

Data Type: Unsigned integer

Non-Volatile: Yes

Default: 10

Write Access: Read-only

Availability: All versions

IDN 5: Minimum Feedback Processing Time

Description: The time required by the drive for acquiring and processing cyclic feedback. This time period is measured from the feedback processing point to the end of the next MST.

Data Length: 2 bytes

Units: μs

Data Type: Unsigned integer

Non-Volatile: Yes

Default: 316 μs

Write Access: Read-only

Availability: All versions

IDN 6: AT Transmission Starting Time

Description: The time at which the drive should transmit its AT during CP3 and CP4.

Data Length: 2 bytes

Units: μs

Data Type: Unsigned integer

Non-Volatile: No

Minimum: IDN 3

Write Access: CP 2

Maximum: IDN 2

Default: None - the master must download

Availability: All versions

IDN 7: Feedback Acquisition Capture Point

Description: The acquisition capture time of the feedback as determined by the Master after MST (T4). This value is automatically set to IDN 8 (T3).

Data Length: 2 bytes

Units: μs

Data Type: Unsigned integer

Non-Volatile: No

Minimum:

Write Access: CP 2

Maximum:

Serial Equivalent:

Default: None

Availability: All versions

IDN 8: Command Value Valid Time

Description: The time the drive accesses the new command values after the completion of MST (T3). T3 is automatically set to (TSCYC-TMTSY+TMTSG) in CP3.

Data Length: 2 bytes

Units: μs

Data Type: Unsigned integer

Non-Volatile: No

Minimum:

Write Access: CP 2

Maximum:

Serial Equivalent:

Default: None

Availability: All versions

IDN 9: Position of Data Record in MDT

Description: The offset (in bytes) of the drive's data record within the MDT. The offset is measured from the MDT's address field.

Data Length: 2 bytes

Units: Bytes

Data Type: Unsigned integer

Non-Volatile: No

Minimum: 1

Write Access: CP 2

Maximum: 65,531

Default: None - the master must download

Availability: All versions

IDN 10: MDT Length

Description: The length of the MDT's data field, expressed in bytes. This length does not include the MDT delimiters, address field, or CRC.

Data Length: 2 bytes

Units: Bytes

Data Type: Unsigned integer

Non-Volatile: No

Minimum: 4

Write Access: CP 2

Maximum: 65,534

Default: None - the master must download

Availability: All versions

IDN 11: Class 1 Diagnostic (C1D)

Description: Lists the current fault status of the drive. When a fault occurs, the drive decelerates to a stop and releases torque. 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 "Reset Class 1 Diagnostic (C1D)" procedure (IDN 99).

Bit	Description
LSB 0	Overload fault (IDN 114)
1	Amplifier over temperature fault
2	Motor over temperature fault
3	Reserved: Cooling system fault (set to 0)
4	Control voltage fault (analog supply failure)
5	Feedback loss fault (IDN P67)
6	Commutation fault
7	Over current fault
8	Over voltage fault
9	Under voltage fault
10	Reserved: Power supply phase fault (set to 0)
11	Excessive position deviation (IDN 159)
12	Communication interface fault (IDN 14)
13	Software limit switch fault (IDN 49, 50, 55)
14	Reserved (set to 0)
MSB 15	Manufacturer-defined fault (IDN 129)

Data Length: 2 bytes

Data Type: Binary

Non-Volatile: No

Write Access: Read-only

Availability: All versions

IDN 12: Class 2 Diagnostic (C2D)

Description: Lists warnings that may indicate an impending shutdown. When an unmasked warning condition occurs, 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 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 310)
1	Reserved: Amplifier over temperature warning
2	Motor over temperature warning (IDN 312)
3	Reserved: Cooling system warning (set to 0)
4 - 14	Reserved (set to 0)
MSB 15	Manufacturer-defined warning flags (IDN 181)

Data Length: 2 bytes

Data Type: Binary

Non-Volatile: No

Write Access: Read-only

Availability: All versions

IDN 13: Class 3 Diagnostic (C3D)

Description: IDN 13 contains status flags. When an unmasked status condition changes, 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 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
1	Reserved: Nfdbk = 0
2	Reserved: $ Nfdbk < N \text{ threshold} $
3	Reserved: $ Torque \geq Torque \text{ threshold} $
4	Reserved: $ Torque \geq Torque \text{ limit} $
5	Reserved: $ Ncmd > N \text{ limit} $
6	In Position (IDN 57)
7	Reserved: $ Power \geq Power \text{ threshold} $
8	Reserved
9	Reserved: $ Nfdbk \leq \text{Min spindle speed}$
10	Reserved: $ Nfdbk \geq \text{Max spindle speed}$
11-14	Reserved
MSB 15	Manufacturer-defined status flags (IDN 182)

Data Length: 2 bytes

Data Type: Binary

Non-Volatile: No

Write Access: Read-only

Availability: All versions

IDN 14: Interface Status

Description: IDN 14 contains the current communication phase (CP) and communication fault flags. In the event of a communication fault the drive not only decelerates to a stop and releases torque, but the drive's CP is returned to 0. The cause of the communication fault is latched in IDN 14 along with the CP in which the fault occurred. The master may retrieve this information from the drive by reading IDN 14 before issuing the fault reset procedure (IDN 99). C1D (IDN 11) bit 12 is a summary fault bit for IDN 14.

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

Data Length: 2 bytes

Non-Volatile: No

Availability: All versions

Data Type: Binary

Write Access: Read-only

IDN 15: Telegram Type Parameter

Description: 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. All standard telegram types are supported except telegram type 1. 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 IDN185 and IDN186 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	None	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 within IDN 24	Contents defined within IDN 16

Data Length: 2 bytes

Non-Volatile: No

Default: 0

Data Type: Binary

Write Access: CP 2

Availability: All versions

IDN 16: Configuration List of AT Cyclic Data

Description: An IDN list of the AT's cyclic data. The master fills this list with IDNs selected from a list of configurable AT data (IDN 187) when an application telegram has been selected through IDN 15. If a standard telegram has been selected through IDN 15, the drive fills this list with the corresponding AT cyclic data IDNs.

Data Length: 2 byte elements.

Variable length array.

Data Type: IDN

Availability: All versions

Non-Volatile: No

Write Access: CP 2

Default: Empty list.

IDN 17: IDN List of All Operation Data

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

Data Length: 2 byte elements.

Variable length array.

Non-Volatile: Yes

Write Access: Read-only

Data Type: IDN

Availability: All versions

IDN 18: IDN List of All Operation Data for CP2

Description: 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) fails if this data is not supplied by the master.

Data Length: 2 byte elements.

Variable length array.

Non-Volatile: Yes

Write Access: Read-only

Data Type: IDN

Availability: All versions

IDN 19: IDN List of All Operation Data for CP3

Description: 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) fails if this data is not supplied by the master. The contents of this list will vary depending upon whether the drive has already been configured with motor data.

Data Length: 2 byte elements.

Variable length array.

Non-Volatile: No

Write Access: Read-only

Data Type: IDN

Availability: All versions

IDN 21: IDN List of Invalid Operation Data for CP2

Description: A list of all IDNs that the CP2 to CP3 transition procedure (IDN 127) considers invalid.

Data Length: 2 byte elements.

Variable length array.

Non-Volatile: No

Write Access: Read-only

Data Type: IDN

Default: Empty list.

Availability: All versions

IDN 22: IDN List of Invalid Operation Data for CP3

Description: A list of all IDNs that the CP3 to CP4 transition procedure (IDN 128) considers invalid.

Data Length: 2 byte elements.

Variable length array.

Non-Volatile: No

Write Access: Read-only

Data Type: IDN

Default: Empty list.

Availability: All versions

IDN 24: Configuration List of MDT Cyclic Data

Description: 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. If a standard telegram has been selected through IDN 15, the drive fills this list with the corresponding MDT cyclic data IDNs.

Data Length: 2 byte elements.

Units: Empty list.

Variable length array.

Non-Volatile: No

Data Type: IDN

Write Access: CP 2

Availability: All versions

IDN 25: IDN List of All Procedure Commands

Description: An IDN list of all procedure IDNs supported by the drive.

Data Length: 2 byte elements.

Non-Volatile: Yes

Variable length array.

Write Access: Read-only

Data Type: IDN

Availability: All versions

IDN 26: Configuration List for Signal Status Word

Description: A list of IDNs that appear on the signal status word (IDN 144).

Data Length: 2 byte elements.

Units:

Variable length array.

Data Type: IDN

Non-Volatile: No

Minimum:

Write Access: Read-only

Maximum:

Serial Equivalent:

Default:

Availability: SERCOS version 1.5.0 and higher

IDN 27: Configuration List for Signal Control Word

Description: A list of IDNs that appear on the signal control word (IDN 145).

Data Length: 2 byte elements.

Units:

Variable length array.

Data Type: IDN

Non-Volatile: No

Minimum:

Write Access: Read-only

Maximum:

Serial Equivalent:

Default:

Availability: SERCOS version 1.5.0 and higher

IDN 28: MST Error Counter

Description: The MST error counter counts all invalid MST's in communication phases 3 and 4.

Data Length: 2 bytes.

Units:

Data Type: Unsigned Integer

Non-Volatile: No

Minimum:

Write Access: CP2-4,EN

Maximum:

Serial Equivalent:

Default:

Availability: All versions

IDN 29: MDT Error Counter

Description: The MDT error counter counts all invalid MDT's in communication phases other than 3 and 4.

Data Length: 2 bytes.

Data Type: Unsigned Integer

Minimum:

Maximum:

Default:

Units:

Non-Volatile: No

Write Access: Read-Only

Serial Equivalent:

Availability: SERCOS version 3.0.4 and higher

IDN 30: Manufacturer Version

Description: The master may retrieve a text string of the firmware version.

Data Length: 1 byte elements.

Variable length array.

Data Type: Text

Availability: All versions

Non-Volatile: Yes

Write Access: Read-only

Serial Equivalent: VER

IDN 32: Primary Operation Mode

Description: 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 by setting the MDT control word bits 8 and 9. The following table may be used to define the primary operation mode.

All reserved bits are not supported and must be zero.

Bit	Value	Description
0	000	No mode of operation
1	000	No mode of operation
2	000	No mode of operation
	001	Torque control
	010	Velocity control
	011	Position control using motor feedback
	100	Reserved: Position control using external feedback
	101	Position control using motor and external feedback (dual loop)
3	0	Position control with follow error (IDN 159)
	1	Position control without following error
4-13	0	Reserved
14	0	Command values are issued as cyclic data
	1	Reserved: Command values are issued through the 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

Serial Equivalent: OPMODE

Availability: All versions

Non-Volatile: No

Write Access: CP 2

Default: 3

IDN 33: Secondary Operation Mode 1

Description: Defines the drive's operational mode when the AT status word bit 8 is 1 and bit 9 is 0. The master requests a particular operation mode by setting the MDT control word bits 8 and 9. The following table may be used to define the secondary operation mode 1.

All reserved bits are not supported and must be zero.

Bit	Value	Description
0	000	No mode of operation
1	000	No mode of operation
2	000	No mode of operation
	001	Torque control
	010	Velocity control
	011	Position control using motor feedback
	100	Reserved: Position control using external feedback
	101	Position control using motor and external feedback (dual loop)
3	0	Position control with follow error (IDN 159)
	1	Position control without following error
4-13	0	Reserved
5	0	Reserved
14	0	Command values are issued as cyclic data
	1	Reserved: Command values are issued through the 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

Serial Equivalent: OPMODE

Availability: All versions

Non-Volatile: No

Write Access: CP 2

Default: 0

IDN 34: Secondary Operation Mode 2

Description: Defines the drive's operational mode when the AT status word bit 8 is 0 and bit 9 is 1. The master requests a particular operation mode by setting the MDT control word bits 8 and 9. The following table may be used to define the secondary operation mode 1.

All reserved bits are not supported and must be zero.

Bit	Value	Description
0	000	No mode of operation
1	000	No mode of operation
2	000	No mode of operation
	001	Torque control
	010	Velocity control
	011	Position control using motor feedback
	100	Reserved: Position control using external feedback
	101	Position control using motor and external feedback (dual loop)
3	0	Position control with follow error (IDN 159)
	1	Position control without following error
4-13	0	Reserved
14	0	Command values are issued as cyclic data
	1	Reserved: Command values are issued through the 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

Serial Equivalent: OPMODE

Availability: All versions

Non-Volatile: No

Write Access: CP 2

Default: 0

IDN 35: Secondary Operation Mode 3

Description: Defines the drive's operational mode when the AT status word bits 8 and 9 are both 1. The master requests a particular operation mode by setting the MDT control word bits 8 and 9. The following table may be used to define the secondary operation mode 1.

All reserved bits are not supported and must be zero.

Bit	Value	Description
0	000	No mode of operation
1	000	No mode of operation
2	000	No mode of operation
	001	Torque control
	010	Velocity control
	011	Position control using motor feedback
	100	Reserved: Position control using external feedback
	101	Position control using motor and external feedback (dual loop)
3	0	Position control with follow error (IDN 159)
	1	Position control without following error
4-13	0	Reserved
14	0	Command values are issued as cyclic data
	1	Reserved: Command values are issued through the 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

Serial Equivalent: OPMODE

Availability: All versions

Non-Volatile: No

Write Access: CP 2

Default: 0

IDN 36: Velocity Command Value

Description: The master issues the velocity command to the drive through IDN 36. IDN 36 may be used as MDT cyclic data. The velocity units depend upon the control unit cycle time (CUCT) which is presently equal to the CCT.

Data Length: 4 bytes.

Data Type: Integer

Write Access: CP 2-4, EN

Availability: All versions

Units: Counts/CUCT * 256

Non-Volatile: No

Serial Equivalent: JOG

IDN 37: Additive Velocity Command Value

Description: An additional velocity offset that is added to the velocity command (IDN 36). IDN 37 may be used as MDT cyclic data. The velocity units depend upon the CUCT, IDN 1 which is presently equal to the CCT (IDN 2).

Data Length: 4 bytes.

Data Type: Integer

Write Access: CP 2-4, EN

Availability: SERCOS version 1.5.2 and higher

Units: Counts/CUCT * 256

Non-Volatile: No

Default: 0

IDN 40: Velocity Feedback Value

Description: The master retrieves the velocity feedback from the drive through IDN 40. IDN 40 may be used as AT cyclic data. The velocity units depend upon the CUCT which is presently equal to the CCT.

Data Length: 4 bytes.

Units: Counts/CUCT * 256

Data Type: Integer

Non-Volatile: No

Write Access: Read-only

Serial Equivalent: V

Availability: All versions

IDN 41: Homing Velocity

Description: Defines the drive's velocity during the drive controlled homing procedure (IDN 148). The actual homing velocity may be limited by the bipolar velocity limit value (IDN 91).

Data Length: 4 bytes.

Units: rpm

Data Type: Integer

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: HOMESPD

Default: 100

Availability: SERCOS version 1.5.7 and higher

IDN 42: Homing Acceleration

Description: Defines the drive's maximum acceleration and deceleration during the drive controlled homing procedure (IDN 148). The homing acceleration may not be disabled through IDN P88.

Data Length: 4 bytes.

Units: rpm/s

Data Type: Unsigned Integer

Non-Volatile: Yes

Minimum: 10

Write Access: CP 2-4, EN

Maximum: 400,000

Serial Equivalent:

Default: 10,000

Availability: SERCOS version 1.5.7 and higher

IDN 44: Velocity Data Scaling Type

Description: Defines the scaling options for all velocity data. The velocity units depend upon the CUCT which is presently equal to the CCT. Only the "no scaling" option is supported.

Data Length: 2 bytes.

Non-Volatile: Yes

Data Type: Binary

Write Access: Read-only

Default: 0

Availability: All versions

IDN 47: Position Command Value

Description: The master issues position commands to the drive through IDN 47. IDN 47 may be used as MDT cyclic data.

Data Length: 4 bytes.

Units: Counts

Data Type: Integer

Non-Volatile: No

Write Access: CP 2-4, EN

Availability: All versions

IDN 49: Positive Position Limit Value

Description: The maximum position in the positive direction. The drive generates a position limit fault (IDN11, bit 13) when the drive reaches this limit and the software limit switches have been enabled through the position polarity parameter (IDN 55, bit 4).

Data Length: 4 bytes

Units: Counts

Data Type: Integer

Non-Volatile: Yes

Minimum: -2,000,000,000

Write Access: CP 2-4, EN

Maximum: 2,000,000,000

Serial Equivalent: PMAX

Default: 2,000,000,000

Availability: SERCOS version 1.5.9 and higher

IDN 50: Negative Position Limit Value

Description: The maximum position in the negative direction. The drive generates a position limit fault (IDN11, bit 13) when the drive reaches this limit and the software limit switches have been enabled through the position polarity parameter (IDN 55, bit 4).

Data Length: 4 bytes.

Units: Counts

Data Type: Integer

Non-Volatile: Yes

Minimum: -2,000,000,000

Write Access: CP 2-4, EN

Maximum: 2,000,000,000

Serial Equivalent: PMIN

Default: -2,000,000,000

Availability: SERCOS version 1.5.9 and higher

IDN 51: Position Feedback Value 1 (Motor Feedback)

Description: The master retrieves the motor's position feedback from the drive through IDN 51. IDN 51 may be used as AT cyclic data.

Data Length: 4 bytes.

Units: Counts

Data Type: Integer

Non-Volatile: No

Write Access: Read-only

Serial Equivalent: PFB

Availability: All versions

IDN 52: Reference Distance 1

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

Data Length: 4 bytes.

Units: Counts

Data Type: Integer

Non-Volatile: Yes

Write Access: CP 2-4, EN

Default: 0

Availability: SERCOS version 1.5.7 and higher

IDN 53: Position Feedback Value 2 (External Feedback)

Description: The master retrieves the external position feedback from the drive through IDN 53. IDN 53 may be used as AT cyclic data.

Data Length: 4 bytes.

Units: Counts

Data Type: Integer

Non-Volatile: No

Write Access: Read-only

Serial Equivalent: PEXT

Availability: SERCOS version 1.2.0 and higher

IDN 55: Position Polarity Parameter

Description: The polarity of position command and feedback data may be switched through IDN 55. In addition, IDN 55 enables the use of software limit switches. Software limit switches may only be enabled after homing. (Only bit 4 is supported and all other bits must be set to zero).

Bit	Description	Setting
LSB 0	Position command polarity:	0 = Not inverted 1 = Inverted
1	Reserved - Additive position command polarity:	0 = Not inverted 1 = Inverted
2	Motor feedback polarity:	0 = Not inverted 1 = Inverted
3	Reserved - External position feedback polarity:	0 = Not inverted 1 = Inverted
4	Position Limit values: Refer to IDN 49 and 50	0 = Disabled 1 = Enabled
5	Reserved – Underflow / overflow threshold: Refer to IDN 280 and 281	0 = Disabled 1 = Enabled
6-15	Reserved	Set to 0

Data Length: 2 bytes

Units:

Data Type: Binary

Non-Volatile: Yes

Write Access: CP 2-4.

Serial Equivalent: DIR or (PLIM & 0x01) << 4

Default: 1

Availability: SERCOS version 1.5.9 and higher

IDN 57: Position Window

Description: Specifies a position error threshold between the accumulated position command and the position feedback. The drive is considered "in position" if the position error is below this threshold. C3D status bit 6 (IDN 13 and IDN 336) is set when the drive is within the position window defined by IDN 57.

Data Length: 4 bytes.

Units: Counts

Data Type: Integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 32,767

Serial Equivalent: PEINPOS

Default: 100

Availability: All versions

IDN 76: Position Data Scaling Type

Description: Defines the scaling options for all position data. Only the "no scaling" option is supported with all data referenced to the motor shaft in absolute format.

Data Length: 2 bytes.

Non-Volatile: Yes

Data Type: Binary

Write Access: Read-only

Default: 0

Availability: All versions

IDN 80: Torque Command

Description: The master writes the torque command to the drive through this IDN when the drive is in torque mode. IDN 80 may be assigned as MDT cyclic data.

Data Length: 2 bytes

Units: 0.1 % of motor I_C (IDN 111)

Data Type: Integer

Non-Volatile: No

Write Access: CP 4, EN

Default: 0

Availability: All versions

IDN 81: Additive Torque Command

Description: An additional torque offset that is added to the torque command (IDN 80). IDN 81 may be used as MDT cyclic data.

Data Length: 2 bytes

Units: 0.1 % of motor I_C (IDN 111)

Data Type: Integer

Non-Volatile: No

Write Access: CP 4, EN

Default: 0

Availability: SERCOS version 1.5.3 and higher

IDN 84: Torque Feedback Value

Description: The master retrieves the motor's torque feedback from the drive through IDN 84. IDN 84 may be assigned as AT cyclic data.

Data Length: 2 bytes

Units: 0.1% of motor current (IDN 111)

Data Type: Integer

Non-Volatile: No

Write Access: Read-only

Serial Equivalent: $I * DI_{Peak}/MI_{Cont}$

Availability: SERCOS version 1.7.1 and higher

IDN 87: Transmit to Transmit Recovery Time

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

Data Length: 2 bytes

Units: μs

Data Type: Unsigned integer

Non-Volatile: Yes

Write Access: Read-only

Default: 739

Availability: SERCOS version 3.0.4 and higher

IDN 88: Receive to Receive Recovery Time

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

Data Length: 2 bytes

Units: μ s

Data Type: Unsigned integer

Non-Volatile: Yes

Write Access: Read-only

Default: 739

Availability: All versions

IDN 89: MDT Transmission Starting Time

Description: The time at which the master should transmit the MDT during CP3 and CP4.

Data Length: 2 bytes

Units: μ s

Data Type: Unsigned integer

Non-Volatile: No

Minimum: IDN 3

Write Access: CP 2

Maximum: IDN 2

Default: None - the master must download

Availability: All versions

IDN 90: Command Value Processing Time

Description: The time required by the drive from the end of the MDT to the point at which the received command values are used.

Data Length: 2 bytes

Units: μ s

Data Type: Unsigned integer

Non-Volatile: Yes

Write Access: Read-only

Default: 405

Availability: All versions

IDN 91: Bipolar Velocity Limit

Description: Limits the motor's peak velocity, in both the clockwise (CW) and counter-clockwise (CCW) directions, by setting a limit on the velocity loop command.

Data Length: 4 bytes.

Units: rpm

Data Type: Unsigned Integer

Non-Volatile: Yes

Minimum: 10

Write Access: CP 2-4

Maximum: Dependent upon motor speed (IDN 113), bus voltage (IDN 380), motor back EMF (IDN P26), and feedback resolution (IDN 116)

Serial Equivalent: Element 7: VLim Element 6: VMax

Default: Dependent upon motor speed (IDN 113), bus voltage (IDN 380), motor back EMF (IDN P26), and feedback resolution (IDN 116)

Availability: SERCOS version 1.5.7 and higher

IDN 92: Bipolar Torque Limit

Description: Defines the maximum torque limit in both the CW and CCW direction. When a configurable input mode (IDNP123, P125, or P127) is 8 and the corresponding configurable input (IDN P124, P126, or P128) is set, then bipolar torque limit 2 (IDN P84) defines the maximum torque limit in both directions.

Data Length: 2 bytes

Units: 0.1 % of motor I_C (IDN 111)

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: Minimum of IDN 109 and IDN 110

Serial Equivalent: ILIM * DIPEAK/MICONT

Default: Minimum of IDN 109 and IDN 100

Availability: SERCOS version 1.5.2 and higher

IDN 95: Diagnostic Message

Description: The master may read a text message from IDN 95 describing a latched fault.

Data Length: 1 byte elements.

Units:

Variable length array.

Data Type: Text

Non-Volatile: No

Write Access: Read-only

Availability: All versions

IDN 96: Slave Arrangement

Description: The drive's SERCOS address is contained in both the upper and lower bytes of this IDN. The drive's address may range from 0 to 31 and is selected through DIP switches 5-1. A drive with an address of 0 is a repeater on the SERCOS ring. The drive does not participate in the CP run-up but re-transmits all received data.

Data Length: 2 bytes

Write Access: Read-only

Data Type: Unsigned integer

Serial Equivalent: (ADDR << 8) | ADDR

Default: Hardware defined.

Availability: All versions

IDN 97: Class 2 Diagnostic Mask

Description: When a warning condition occurs, the corresponding warning bits are set 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 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. A masked warning does not affect the contents of IDN 12, but the C2D change bit will not be affected when the masked warning changes state. When a bit in IDN 97 is clear, then the corresponding bit in IDN 12 is masked.

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: CP 2-4, EN

Default: 0xFFFF

Availability: SERCOS version 1.3.0

IDN 98: Class 3 Diagnostic Mask

Description: IDN 13 contains status flags. When a status condition becomes true, the corresponding status bit is set 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 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. A masked status does not affect the contents of IDN 13, but the C3D change bit will not be affected when the masked status changes state. When a bit in IDN 98 is clear, then the corresponding bit in IDN 13 is masked.

Data Length: 2 bytes

Data Type: Binary

Default: 0xFFFF

Non-Volatile: No

Write Access: CP 2-4, EN

Availability: All versions

IDN 99 Procedure: Reset Class 1 Diagnostic

Description: Attempts to clear the latched faults contained in IDNs 11, 14, and 129. The reset will only clear faults that are no longer active. If all the faults are reset, the C1D status bit (AT bit 13) will reset. The fault reset procedure will fail if faults have been latched and the master has not reset the drive enable control bits (MDT bits 13-15).

Data Length: 2 bytes

Data Type: Binary

Default: 0

Non-Volatile: No

Write Access: CP 2-4, EN

Availability: All versions

IDN 100: Velocity Loop Proportional Gain

Description: Defines the velocity loop proportional gain for the proportional-integral velocity loop controller. The type of velocity loop controller is selected through the velocity loop compensation mode (IDN P96). Larger gain values may be obtained through the velocity loop expanded proportional gain (IDN P104).

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: 65,535

Availability: SERCOS version 0.1.0 and higher

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: GV (lower 16 bits)

Default: 500

IDN 104: Position Loop Proportional Gain

Description: Defines the proportional gain for the PID position loop controller.

Data Length: 2 bytes

Units: 0.01 (m/min)/mm α

0.01 (in/min)/mil α

0.01 (krpm/min)/rev

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0.01

Write Access: CP 2-4, EN

Maximum: 70.00

Serial Equivalent: GP

Default: Calculated

Availability: All versions

IDN 109: Motor Peak Current

Description: Defines the motor's peak rated current. When this IDN is modified, the drive enters an uncompensated state.

Data Length: 4 bytes

Units: milliamps RMS

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 1,000

Write Access: CP 2-4

Maximum: 350,000

Serial Equivalent: MIPEAK * 100

Default: Motor Data

Availability: All versions

IDN 110: Amplifier Peak Current

Description: Defines the drive amplifier's peak rated current. This hardware defined variable is set equal to twice the continuous rated current of the drive.

Data Length: 4 bytes

Units: milliamps RMS

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum:

Write Access: Read-only

Maximum:

Serial Equivalent: DIPEAK * 100

Default: Hardware defined

Availability: SERCOS version 1.2.0 and higher

IDN 111: Motor Continuous Stall Current

Description: Defines the motor's continuous rated current and the 100% torque reference value. When this IDN is modified, the drive will enter an uncompensated state.

Data Length: 4 bytes

Units: milliamps RMS

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 1,000

Write Access: CP 2-4

Maximum: 175,000

Serial Equivalent: MICON * 100

Default: Motor Data

Availability: All versions

IDN 112: Amplifier Rated Current

Description: Defines the drive amplifier's continuous current rating. This hardware defined variable is automatically determined by the drive.

Data Length: 4 bytes

Units: milliamps RMS

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum:

Write Access: Read-only

Maximum:

Serial Equivalent: DICONT * 100

Default: Hardware defined.

Availability: SERCOS version 1.2.0 and higher

IDN 113: Maximum Motor Speed

Description: Defines the motor's maximum recommended speed. When IDN 113 is modified, the drive enters an uncompensated state.

Data Length: 4 bytes

Units: rpm

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 100,000

Write Access: CP 2-4

Maximum: 327,670,000

Serial Equivalent: MSPEED * 10,000

Default: Motor Data

Availability: All versions

IDN 114: System Load Limit

Description: Defines the system continuous current. When the system continuous current has been exceeded for too long, the drive enters fold back. The action taken by the drive upon entering fold back depends upon the fold back mode (IDN P72). IDN 114 is reset to its default value when the motor continuous current (IDN 111) or drive continuous current (IDN 112) is modified.

Data Length: 2 bytes

Units: 0.1% of motor IC (IDN 111)

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4

Maximum: Minimum of IDN 111 and 112

Serial Equivalent: ICONT * DIPEAK/MICONT

Default: Minimum of IDN 109, 110,
111, and 112

Availability: SERCOS version 1.5.0 and higher

IDN 115: External (Load) Position Feedback Type

Description: The master defines the characteristics of the external feedback with IDN 115. Only bit 3 is supported and all reserved bits must be set to zero.

Bit	Description	Setting
LSB 0	Reserved - Feedback type:	0 = Rotational 1 = Linear
1	Reserved: Distance coded reference marks:	0 = None 1 = Present
2	Reserved: Feedback resolution:	0 = Metric 1 = Inches
3	Direction polarity:	0 = Non inverted 1 = Inverted
4	Reserved: Reference marker pulse quantity:	0 = 1 marker 1 = Multiple cyclic markers
5	Reserved: Distance coded feedback count in positive direction:	0 = Positive 1 = Negative
6	Reserved: Measuring system type:	0 = Incremental 1 = Absolute
7	Reserved: Absolute measuring system usage:	0 = Absolute 1 = Incremental
8-15	Reserved	Set to 0

Data Length: 2 bytes

Data Type: Binary

Serial Equivalent: Bit 3 = XENCDIR

Availability: SERCOS version 1.3.0 and higher

Non-Volatile: Yes

Write Access: CP 2 - 3.

Default: 0

IDN 116: Motor Feedback Resolution

Description: Defines the motor's rotary or linear feedback resolution. When this IDN is modified on encoder based systems, the drive will enter an uncompensated state. IDN 116 may not be modified on resolver based systems.

Data Length: 4 bytes

Data Type: Unsigned integer

Minimum: 400 – Regular encoder

4 - Sine encoder feedback

Maximum: 40,000,000

Units: Counts/Rev

Non-Volatile: Yes

Write Access: Encoder: CP 2-4,

Resolver: Read-only

Serial Equivalent: MENCRES * 4 or
2^{RDRES}

Default: Motor Data (encoder systems)
65536 (resolver systems)

Availability: All versions

IDN 117: External Feedback Resolution

Description: Defines the load's rotary or linear feedback resolution. IDN 115, bit 0 defines whether the external feedback type is rotary or linear.

Data Length: 4 bytes

Units: Counts/Rev

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 400

Write Access: CP 2-3

Maximum: 40,000,000

Serial Equivalent: XENCRES * 4

Default: 4096

Availability: SERCOS version 1.3.0 and higher

IDN 124: Standstill Window

Description: The standstill window defines a velocity below which the motor is not considered moving. This velocity threshold is used to set the C3D status bit "velocity feedback = 0" (IDN 13, bit 1). The "velocity feedback = 0" status bit is duplicated in IDN 331 for use as a RTS.

Data Length: 4 bytes

Units: rpm

Data Type: Unsigned integer

Non-Volatile: No

Minimum: 0

Write Access: CP 2-4, En

Maximum: 32,767

Default: 32,767

Availability: SERCOS version 1.7.2 and higher

IDN 127: Procedure: Communication Phase 3 Transition Check

Description: Ensures that the drive is ready to switch from CP2 to CP3. The master must successfully execute this procedure prior to switching the CP from 2 to 3. If the procedure fails, IDN 21 contains a list of IDNs that the drive considers invalid.

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: CP 2

Default: 0

Availability: All versions

IDN 128: Procedure: Communication Phase 4 Transition Check

Description: Ensures that the drive is ready to switch from CP3 to CP4. The master must successfully execute this procedure prior to switching the CP from 3 to 4. If the procedure fails, IDN 22 contains a list of IDNs that the drive considers invalid.

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: CP 3

Default: 0

Availability: All versions

IDN 129: Manufacturer Class 1 Diagnostic (MC1D)

Description: Lists the status of the latched manufacturer-defined drive faults. When a manufacturer-defined fault occurs, the drive decelerates to a stop and releases torque. The C1D status bit (AT 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). Bits 2-6 are depended on feedback type.

Bit	Description
LSB 0	Non-volatile data memory fault
1	Non-volatile data memory checksum fault
2	Resolver: Sw R2D Feedback fault Encoder: A/B line break fault Sine encoder: A/B out of range fault
3	Resolver: Burst pulse overflow fault Encoder: Index line break fault Sine encoder: EnDat comm error fault
4	Resolver: Resolver line break fault Encoder: Illegal halls fault Sine encoder: C/D line break fault
5	Resolver: RDC fault Encoder: Reserved Sine encoder: Hiperface comm fault
6	Reserved
7	EXCESSIVE_PCMD_VCMD fault
8	Invalid drive/motor configuration. This fault may occur under the following circumstances: A) Invalid drive/motor compensation parameters B) Invalid control loops (IDN 181, bit 4) C) An encoder has not been initialized (IDN 181, bit 5)
9	Motor over speed fault (IDN P85)
10	External feedback fault
11	Sine Encoder init fault
12	Control unit synchronization bit did not toggle (IDN P152)
13	Control unit synchronization bit changed prematurely (IDN P152)
14	External communication fault
MSB 15	Internal firmware fault. Contact factory

Data Length: 2 bytes

Data Type: Binary

Serial Equivalent: STATUS

Non-Volatile: No

Write Access: Read-only

Availability: All versions

IDN 130: Probe 1 Positive Edge Value

Description: The probing procedure (IDN 170) is used to capture the motor (or load) position when a digital input changes. IDN 130 contains the captured position when the probing procedure is configured, through the probe control parameter (IDN 169, bit 0), to capture the position on the rising edge of the digital input. IDN 130 may be configured as AT cyclic data.

Data Length: 4 bytes.

Units: Counts

Data Type: Integer

Non-Volatile: No

Write Access: Read-only

Availability: SERCOS version 1.5.7 and higher

IDN 131: Probe 1 Negative Edge Value

Description: The probing procedure (IDN 170) is used to capture the motor (or load) position when a digital input changes. IDN 131 contains the captured position when the probing procedure is configured, through the probe control parameter (IDN 169, bit 1), to capture the position on the falling edge of the digital input. IDN 131 may be configured as AT cyclic data.

Data Length: 4 bytes.

Units: Counts

Data Type: Integer

Non-Volatile: No

Write Access: Read-only

Availability: SERCOS version 1.5.7 and higher

IDN 134: Master Control Word

Description: The MDT telegram's control word is stored as IDN 134 as a diagnostic aid. IDN 134 is only updated in CP 4.

Data Length: 2 bytes.

Non-Volatile: No

Data Type: Binary

Write Access: Read-only

Availability: SERCOS version 1.5.0 and higher

IDN 136: Positive Acceleration Limit Value

Description: Defines the drive's maximum positive acceleration when the acceleration/deceleration limit enable (IDN P88) is set.

Data Length: 4 bytes.

Units: rpm/s

Data Type: Integer

Non-Volatile: Yes

Minimum: 10

Write Access: CP 2-4, EN

Maximum: 400,000

Serial Equivalent: ACC

Default: 400,000

Availability: SERCOS version 1.5.0 and higher

IDN 137: Negative Acceleration Limit Value

Description: Defines the drive's maximum deceleration (negative acceleration) when the acceleration/deceleration limit enable (IDN P88) is set. The drive alternately uses the quick deceleration limit (IDN P87) under the following conditions: position limits are encountered, a fault has occurred, or the master has requested an active disable.

The quick deceleration limit (IDN P87) is always used by the drive when those conditions occur and is independent of the deceleration limit enable (IDN P88).

Presently, the drive does not support MDT control bit 13 (halt/restart), so clearing MDT control bit 13 causes an active disable at the quick deceleration rate followed by a torque release.

Data Length: 4 bytes.

Units: rpm/s

Data Type: Integer

Non-Volatile: Yes

Minimum: -400000

Write Access: CP 2-4, EN

Maximum: -10

Serial Equivalent: DEC

Default: -400,000

Availability: SERCOS version 1.5.0 and higher

IDN 141: Motor Type

Description: The motor type IDN contains the name of the motor connected to the drive.

Data Length: 1 byte elements.

Non-Volatile: Yes

Variable length array.

Write Access: CP 2-4, EN

Data Type: Text

Serial Equivalent: Motor

Default: Motor Data

Availability: SERCOS version 1.6.8 and higher

IDN 142: Application Type

Description: Checks that the application type is valid.

Data Length: 1 byte elements

Non-Volatile: Yes

Variable length array

Write Access: Read-only

Data Type: Binary

Default: 0

Availability: SERCOS version 3.0.4 and higher

IDN 144: Signal Status Word

Description: This status word includes the drive's digital input status as configured in IDN 26. IDN 144 may be assigned as AT cyclic data.

Data Length: 2 bytes.

Units:

Data Type: Binary

Non-Volatile: No

Minimum:

Write Access: Read-only

Maximum:

Serial Equivalent:

Default:

Availability: SERCOS version 1.5.0 and higher

IDN 145: Signal Control Word

Description: This control word includes the drive's digital output status as configured in IDN 27. The Master updates the digital outputs by writing to this IDN. IDN 145 is assigned as MDT cyclic data.

Data Length: 2 bytes.

Units:

Data Type: Binary

Non-Volatile: No

Minimum:

Write Access: CP3,4,EN

Maximum:

Serial Equivalent:

Default:

Availability: SERCOS version 1.5.0 and higher

IDN 146: Procedure: Control Unit Controlled Homing

Description: This procedure latches the reference marker position within IDN 173. For an encoder system, the reference marker is the Z-index. For a resolver system, the reference marker is the resolver zero point. The operation of this procedure is configured through the homing parameter (IDN 147).

Data Length: 2 bytes

Units:

Data Type: Binary

Non-Volatile: No

Minimum:

Write Access: CP 4, EN

Maximum:

Serial Equivalent:

Default: 0

Availability: All versions

IDN 147: Homing Parameter

Description: The drive controlled homing procedure (IDN 148) is configured through IDN 41, IDN 42, IDN 52, IDN 147, and IDN 150. Only bits 0-2, and 5-7 are supported and all other bits must be set to zero.

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	Stop criteria:	0 = After position capture 1 = On home position
8-15	Reserved	Set to 0

Data Length: 2 bytes

Non-Volatile: Yes

Data Type: Binary

Write Access: CP 2-4, EN

Serial Equivalent: [IDN 147] = [IDN147] | **Default:** 4

(HOMETYPE << 5)

Availability: SERCOS version 1.5.7 and higher

IDN 148: Procedure: Drive Controlled Homing

Description: 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), reference distance 1 (IDN 52), homing parameter (IDN 147), and the reference offset (IDN 150). The homing acceleration may not be disabled through IDN P88. The homing procedure fails under the following conditions:

1. The probing procedure (IDN 170) is active.
- ~~1.~~ 2. The home switch is located on the drive (IDN 147, bit 2 is set) and is evaluated during homing (IDN 147, bit 5 is clear) and a configurable input has not been configured as a home switch input. Configurable inputs are configured through IDNs P123, P125, and P127.
3. The home switch is located on the master (IDN 147, bit 2 is clear) and will be evaluated during homing (IDN 147, bit 5 is clear) and the home enable signal (IDN 407) has not been configured as a RTC.
4. A fault occurs during drive controlled homing. IDN P69 lists failure reasons for the homing procedure.

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: CP 4, EN

Default: 0

Availability: SERCOS version 1.5.7 and higher

IDN 150: Motor Reference Offset

Description: Used during the homing to determine the motor's position feedback relative to the machine zero point. The motor reference offset is the distance from the home marker to the home position. The motor position (IDN 51) relative to the machine zero point at the homing marker is equal to the reference distance 1 (IDN 52) minus the motor reference offset (IDN 150).

Data Length: 4 bytes.

Units: Counts

Data Type: Integer

Non-Volatile: Yes

Write Access: CP 2-4, EN

Default: 0

Availability: SERCOS version 1.5.7 and higher

IDN 155: Friction Torque Compensation

Description: An additive torque value that is used when accelerating from a standstill in order to compensate for the affects of coulomb friction.

Data Length: 2 bytes

Units: 0.1 % of motor continuous current
(IDN 111)

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: Depends upon IDNs 110
and 111.

Serial Equivalent: IFRIC * DIPEAK/MICONT

Default: 0

Availability: SERCOS version 1.5.0 and higher

IDN 159: Monitoring Window

Description: 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). Following error fault monitoring may be enabled or disabled through the operational mode (IDN 32, bit 3).

Data Length: 4 bytes.

Units: Counts

Data Type: Unsigned Integer

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: PEMAX

Default: 2,147,483,647

Availability: SERCOS version 1.6.5 and higher

IDN 160: Acceleration Data Scaling Type

Description: Defines the scaling options for all acceleration data. Only the "no scaling" option is supported.

Data Length: 2 bytes.

Non-Volatile: Yes

Data Type: Binary

Write Access: Read-only

Default: 0

Availability: All versions

IDN 163: Weight Counter Balance

Description: An additive torque value used when accelerating from a standstill to compensate for the effects of coulomb friction.

Data Length: 2 bytes

Units: 0.1 % of motor I_C (IDN 111)

Data Type: Integer

Non-Volatile: Yes

Minimum: Depends upon IDNs 110 and 111.

Write Access: CP 2-4, EN

Maximum: Depends upon IDNs 110 and 111.

Serial Equivalent: IGRAV * DIPEAK/MICONT

Default: 0

Availability: SERCOS version 1.5.0 and higher

IDN 169: Probe Control Parameter

Description: The probe control parameter defines the input signal edge that will result in a position capture during the probing procedure (IDN 170). Only probing level 1 is supported. Therefore, only bits 0 and 1 are supported and only one active edge may be selected.

Bit	Description	Setting
LSB 0	Probe 1 - Capture on positive edge:	0 = Inactive 1 = Active
1	Probe 1 - Capture on negative edge:	0 = Inactive 1 = Active
2	Reserved - Probe 2 - Capture on positive edge:	0 = Inactive 1 = Active
3	Reserved - Probe 2 - Capture on negative edge:	0 = Inactive 1 = Active
4-15	Reserved	Set to 0

Data Length: 2 bytes

Units: No

Data Type: Binary

Write Access: CP 2-4, EN.

Minimum: 0

Maximum: 2

Default: 0

Availability: SERCOS version 1.5.7 and higher

IDN 170: Procedure: Probing

Description: Probing is used to capture the motor (or external) position when a digital input changes. Probing level 1 is supported. Therefore, only 1 probe input is supported that may trigger a position capture using only one edge (rising or falling, but not both) of the digital input signal. The probe control parameter (IDN 169) is used to configure the digital input edge that causes a position capture. Once the probe procedure is started by the master, it continues indefinitely until either the master cancels the probing procedure or an error occurs. The probing procedure fails under the following conditions:

The homing procedure (IDN 148) is active.

A flexible input has not been configured as a position capture input.

Flexible inputs are configured through IDNs P123, P125, and P127.

During the probing procedure, the master arms the probe trigger by setting the probe 1 enable signal (IDN 405). After the probe trigger has been armed, the next rising or falling edge (as specified in IDN 169) on the probe 1 input (IDN 401) latches the motor or external position and causes a probe latch status (IDN 179) bit to set. Any further changes in the probe 1 input are ignored until the master re-arms the probe trigger by clearing and setting the probe 1 enable signal. The master may read the captured position through either the probe 1 positive edge value (IDN 130) or the probe 1 negative edge value (IDN 131).

Data Length: 2 bytes

Data Type: Binary

Default: 0

Non-Volatile: No

Write Access: CP 4, EN

Availability: SERCOS version 1.5.7 and higher

IDN 179: Probe Position Latch Status

Description: The probe status parameter indicates whether a position has been captured and latched within IDN 130 or 131. Each supported status bit may be assigned to a RTS bit using IDN 409 or 410.

Bit	Description	Setting
LSB 0	Probe 1 - Position latched on positive edge:	0 = No 1 = Latched
1	Probe 1 - Position latched on negative edge:	0 = No 1 = Latched
2	Reserved - Probe 2 - Position latched on positive edge:	0 = No 1 = Latched
3	Reserved - Probe 2 - Position latched on negative edge:	0 = No 1 = Latched
4-15	Reserved	Set to 0

Data Length: 2 bytes

Data Type: Binary

Minimum: 0

Default: 0

Non-Volatile: No

Write Access: Read-only

Maximum: 2

Availability: SERCOS version 1.5.7 and higher

IDN 181: Manufacturer Class 2 Diagnostic (MC2D)

Description: Lists the status of the manufacturer-defined drive warnings. When an unmasked manufacturer-defined warning condition changes, the C2D change bit (AT status word, bit 12) is set, the manufactured defined warning summary bit (IDN 12, bit 15) is set, and the corresponding warning bits within MC2D are changed appropriately.

The warning bits within the MC2D are not latched and are automatically reset when the warning condition is no longer valid. The manufactured defined warning summary bit (IDN 12, bit 15) is cleared when IDN 181 is read through the service channel. The C2D change bit is reset when IDN 12 is read through the service channel. IDN P150 may be used to mask manufacturer-defined warnings and their affect on the C2D change bit and the manufacturer-defined warning summary bit.

Bit	Warning Description
LSB 0	Hardware CW limit switch (IDN P136)
1	Hardware CCW limit switch (IDN P137)
2	Hardware CW limit switch disabled (IDN P135) or not routed (IDN P123, P125, P127)
3	Hardware CCW limit switch disabled (IDN P135) or not routed (IDN P123, P125, P127)
4	Invalid controller warning
5	Encoder not initialized warning
6-12	Reserved
13	PLL unlocked
14	AT telegram processing over-run
15	MDT telegram processing over-run

Data Length: 2 bytes

Data Type: Binary

Serial Equivalent: Bit 0 = CW, bit 1 = CCW

Non-Volatile: No

Write Access: Read-only

Availability: All versions

IDN 182: Manufacturer Class 3 Diagnostic (MC3D)

Description: Lists the status of the manufacturer-defined drive statuses. When an unmasked manufacturer-defined status condition changes, the C3D change bit (AT status word, bit 11) is set, the manufactured defined status summary bit (IDN 13, bit 15) is set, and the corresponding status bits within MC3D are changed appropriately. The status bits within the MC3D are not latched and are automatically reset when the status condition is no longer valid. The manufactured defined status summary bit (IDN 13, bit 15) is cleared when IDN 182 is read through the service channel. The C3D change bit is reset when IDN 13 is read through the service channel. IDN P151 may be used to mask manufacturer-defined statuses and their affect on the C3D change bit and the manufacturer-defined status summary bit.

Bit	Description
0	Hold Mode Active (IDN P153)
1-15	Reserved

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: Read-only

Availability: All versions

IDN 185: Maximum Length of AT Configurable Data

Description: 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.

Units: Bytes

Data Type: Unsigned Integer

Non-Volatile: Yes

Write Access: Read-only

Default: 8

Availability: SERCOS version 1.2.0 and higher

IDN 186: Maximum Length of MDT Configurable Data

Description: 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

Units: Bytes

Data Type: Unsigned Integer

Non-Volatile: Yes

Write Access: Read-only

Default: 8

Availability: SERCOS version 1.2.0 and higher

IDN 187: List of AT Configurable Data IDNs

Description: 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
36	Velocity command value
37	Additive velocity command
40	Velocity feedback value
47	Position command value
51	Position feedback value 1 (motor)
53	Position feedback value 2 (external)
81	Additive torque command value
84	Torque feedback value
130	Probe 1 positive edge value
131	Probe 1 negative edge value
144	Signal status word
P146	Inputs status
P161	Analog input value

Data Length: 2 byte elements.

Non-Volatile: Yes

Variable length array.

Data Type: IDN

Write Access: Read-only

Availability: SERCOS version 1.2.0 and higher

IDN 188: List of MDT Configurable Data IDNs

Description: 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
37	Additive velocity command value
47	Position command value
80	Torque command value
81	Additive torque command value
145	Signal control word

Data Length: 2 byte elements.

Non-Volatile: Yes

Variable length array.

Write Access: Read-only

Data Type: IDN

Availability: SERCOS version 1.2.0 and higher

IDN 189: Following Distance

Description: Defines the position error as the position command value minus the motor (or external) feedback value.

Data Length: 4 bytes.

Units: Counts

Data Type: Integer

Non-Volatile: No

Write Access: Read-only

Serial Equivalent: PE

Availability: All versions

IDN 191: Procedure: Cancel Reference Point

Description: The drive resets the "position feedback value status" (IDN 403). This procedure fails if the homing procedure (IDN 148) is active.

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: CP 2-4, EN

Default: 0

Availability: SERCOS version 1.5.7 and higher

IDN 192: IDN List of Back-up Operation Data

Description: Contains a list of IDNs that the master may use to create a back-up data set for the drive.

Data Length: Variable length array
of 2 byte elements.

Non-Volatile: Yes

Write Access: Read-only.

Data Type: IDN

Serial Equivalent: Dump

Availability: SERCOS version 1.7.3 and higher

IDN 207: Drive Off Delay Time

Description: Sets the amount of time that the drive remains enabled after the "drive off" control bit (MDT control word, bit 15) has been reset (active disable) and the motor speed is below the active disable threshold speed (IDN P16).

Data Length: 2 bytes

Units: 0.1 ms

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0.0 ms

Write Access: CP 2-4, En

Maximum: 6553.5 ms

Serial Equivalent: DisTime

Default: 10.0 ms

Availability: SERCOS version 1.6.9 and higher

IDN 256: Multiplication Factor 1

Description: Multiplication factor used with the sine encoder option and to set the interpolation level of the drive.

Data Length: 4 bytes

Non-Volatile: No

Data Type: Binary

Write Access: CP 2-4

Serial Equivalent: MSININIT

Default: 1

Availability: SERCOS version 2.0.9 and higher

IDN 262: Procedure: Load Defaults

Description: Loads defaults values for drive operational parameters.

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: CP 2-4

Serial Equivalent: RSTVAR

Default: 0

Availability: SERCOS version 2.1.0 and higher

IDN 263: Procedure: Load Working Memory

Description: Loads all data saved in non-volatile memory into "active" system memory.

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: CP 2-4

Serial Equivalent: LOAD

Default: 0

Availability: SERCOS version 1.5.8 and higher

IDN 264: Procedure: Back-up Working Memory

Description: Stores all data necessary for operation into non-volatile memory. Previously saved operation data will be over written.

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: CP 2-4, EN

Serial Equivalent: SAVE

Default: 0

Availability: SERCOS version 1.5.8 and higher

IDN 267: Password

Description: Sets the password for the password-protected IDN's. IDN 279 lists the password protected IDNs in the drive. There are two password levels: Factory (high level) and Master (low level).

Data Length: 2 byte elements
Variable length array.

Units: N/A

Data Type: Text

Non-Volatile: No

Minimum:

Write Access: CP 2-4, En

Maximum:

Serial Equivalent: password

Default:

Availability: SERCOS version 2.0.0 and higher

IDN 271: Drive ID

Description: Sets an identifying number for a drive on a ring.

Data Length: 4 bytes

Units: N/A

Data Type: Unsigned long

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, En

Maximum: 2³²-1

Serial Equivalent: N/A

Default: 0

Availability: SERCOS version 2.1.0 and higher

IDN 279: IDN List of Password Protected Data

Description: Lists IDNs that are password-protected. For these IDNs, the master needs to update IDN 267 before changing them.

Data Length: 2 byte elements
Variable length array.

Units: N/A

Data Type: IDN

Non-Volatile: No

Minimum:

Write Access: Read only

Maximum:

Serial Equivalent:

Default:

Availability: SERCOS version 2.0.0 and higher

IDN 288: IDN List of Programmable Data in CP2

Description: A list of all IDNs that may be written in communication phase 2.

Data Length: 2 byte elements.
Variable length array.

Non-Volatile: Yes

Write Access: Read-only

Data Type: IDN

Availability: SERCOS version 1.6.5 and higher

IDN 289: IDN List of Programmable Data in CP3

Description: A list of all IDNs that may be written in communication phase 3.

Data Length: 2 byte elements.
Variable length array.

Non-Volatile: Yes

Write Access: Read-only

Data Type: IDN

Availability: SERCOS version 1.6.5 and higher

IDN 296: Velocity Feed Forward Gain

Description: Defines a multiplier of the velocity command, which is generated by the position profile, that is added to the velocity loop command in order to reduce the velocity dependent following error.

Data Length: 2 bytes

Units: 0.1%

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 2000

Serial Equivalent: GPVFR

Default: 0

Availability: SERCOS version 1.5.8 and higher

IDN 301: Realtime Control (RTC) Bit 1 Allocation

Description: Assigns a control signal IDN to RTC bit 1 (MDT control word bit 6). Two RTC bits are defined within the MDT control word (bits 6 and 7) and are updated every communication cycle by the master. The following rules govern the assignment and use of a RTC bit (i.e., writing IDN 301 or 303):

Only certain control signal IDNs of type binary may be assigned to the RTC allocation IDNs. The exception is IDN 0, which indicates that the corresponding RTC bit is undefined.

RTC bits 1 and 2 are not allocated to the same IDN. The exception is IDN 0.

A service channel writes to an IDN allocated as a RTC bit generates a write-protect error (i.e., the RTC bit's IDN is write-protected when the RTC bit assignment is made).

The master adheres to the following timing rules when allocating and deallocating RTC bits. The rules depend upon whether the previous or next RTC bit assignment uses IDN 0.

Case: IDN 301/303 = 0 -> IDN 301/303 = RTC bit IDN (allocation)

The master defines the RTC bit within the MDT control word prior to writing IDN 301/303 element 7.

Case: IDN 301/303 = RTC bit IDN -> IDN 301/303 = 0 (de-allocation)

The previously-assigned RTC bit remains valid in the MDT control word until the drive's service channel busy bit is reset.

Case: IDN 301/303 = RTC bit IDN -> IDN 301/303 = RTC bit IDN (reallocation)

The state of the current RTC bit remains valid in the MDT control word until the master transmits the write request of the RTC allocation IDN element 7. When the drive sets the busy bit, the master begins to transmit the new RTC bit within the MDT.



In the period between writing IDN 301/303 element 7 until the busy bit is reset, the master ensures that RTC bit value transmitted within the MDT control word does not lead to invalid operation states. Generally, this is only possible when the RTC bit has not been assigned. The transition from an active RTC bit assignment to another RTC bit assignment is only safe when IDN 0 is assigned to the RTC bit as an intermediate step.

The drive follows these following timing rules when a RTC bit is allocated and deallocated:

A new RTC bit assignment is evaluated by the drive prior to the service channel busy bit being reset.

The evaluation of the previous RTC bit within the drive ceases before the service channel busy bit is reset.

Data Length: 2 bytes

Data Type: IDN

Default: 0

Non-Volatile: No

Write Access: CP 4, EN

Availability: SERCOS version 1.5.7 and higher

IDN 303: Realtime Control (RTC) Bit 2 Allocation

Description: Assigns a control signal IDN to RTC bit 2 (MDT control word bit 7). Two RTC bits are defined within the MDT control word (bits 6 and 7) and are 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: CP 4, EN

Default: 0

Availability: SERCOS version 1.5.7 and higher

IDN 304: Realtime Status (RTS) Bit 1

Description: The value of the IDN assigned to RTS bit 1.

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: Read-only

Default: 0

Availability: SERCOS version 1.2.0 and higher

IDN 305: Realtime Status (RTS) Bit 1 Allocation

Description: Assigns a status signal IDN to RTS bit 1 (AT status word bit 6). Two RTS bits are defined within the AT status word (bits 6 and 7) and updated by the drive during CP 4. The following rules govern the assignment and use of a RTS bit (i.e., writing IDN 305 or 307):

Only certain status signal IDNs of type binary are assigned to the RTS allocation IDNs. The exception is IDN 0, which indicates that the RTS bit is undefined.

The master no longer evaluates a previous RTS assignment after transmitting a write request for element 7 of a RTS bit allocation IDN.

The previously assigned RTS bit remains valid until the service channel busy bit is set.

The master does not start evaluating a new RTS 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: CP 4, EN

Default: 0

Availability: SERCOS version 0.2.0 and higher

IDN 306: Realtime Status (RTS) Bit 2

Description: The value of the IDN assigned to RTS bit 2.

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: Read-only

Default: 0

Availability: SERCOS version 1.2.0 and higher

IDN 307: Realtime Status (RTS) Bit 2 Allocation

Description: Assigns a status signal IDN to RTS bit 2 (AT status word bit 7). Two RTS bits are defined within the AT status word (bits 6 and 7) and updated by the drive during CP 4. For further information refer to IDN 305.

Data Length: 2 bytes

Non-Volatile: No

Data Type: IDN

Write Access: CP 4, EN

Default: 0

Availability: SERCOS version 0.2.0 and higher

IDN 310: Overload Warning

Description: The overload warning bit is set when the system load level (IDN 114) has been exceeded for too long and the drive enters fold back. In fold back, the drive current is gradually limited (in an exponential fashion) to the value defined in IDN 114. The amount of time that the drive remains in fold back, without issuing a fault is defined by the fold back mode (IDN P72) and the fold back warning time (IDN P73). IDN 310 duplicates the C2D over load warning bit (IDN 12, bit 0) and is useful for assigning the over load warning signal to a RTS bit.

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: Read-only

Serial Equivalent: FOLD

Default: 0

Availability: SERCOS version 1.3.0 and higher

IDN 312: Motor Over Temperature Warning

Description: The motor over temperature warning bit becomes set when the motor thermostat opens indicating an over heated motor. The amount of time that may elapse, without issuing a fault, is defined by the motor over temperature mode (IDN P140). IDN 312 duplicates the C2D motor over temperature warning bit (IDN 12, bit 2) and is useful for assigning the motor over temperature warning signal to a RTS bit.

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: Read-only

Serial Equivalent: THERM

Default: 0

Availability: SERCOS version 1.5.0 and higher

IDN 331: Status: Velocity Feedback = 0

Description: A status signal IDN that is set when the velocity feedback (IDN 40) is within the standstill window (IDN 124). IDN 331 duplicates the C3D "Nfdbk = 0" status bit (IDN 13, bit 1) and may be assigned to a RTS.

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: Read-only

Availability: SERCOS version 1.7.2 and higher

IDN 336: Status: In Position

Description: A status signal IDN that is set when the motor feedback is following the commanded position within the range set 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.

Data Length: 2 bytes

Data Type: Binary

Default: 0

Non-Volatile: No

Write Access: Read-only

Serial Equivalent: INPOS the "in position" status signal to a RTS bit.

Availability: SERCOS version 0.2.0 and higher

IDN 348: Acceleration Feed-Forward Gain

Description: Defines a multiplier of the acceleration command, which is generated by the position profile, that is added to the current loop command in order to reduce the acceleration dependent following error.

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: 2000

Default: 0

Units: 0.1%

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: GPAFR

Availability: SERCOS version 1.5.8 and higher

IDN 380: DC BUS Voltage

Description: Defines the drive's DC bus voltage and compensates the current controller. When this IDN is modified, the drive enters a "no-compensation" state, requiring execution of the reset procedure (IDN 99).

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 10

Maximum: 850

Default: Drive Data

Units: Volts

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: VBUS

Availability: SERCOS version 1.5.8 and higher

IDN 400: Home Switch Status

Description: Contains the state of the home switch. The digital input used as home switch input is assigned through the use of IDNs P123, P125, or P127. IDN 400 is useful for assigning the home switch signal to a RTS bit.

Data Length: 2 bytes

Data Type: Binary

Default: 0

Non-Volatile: No

Write Access: Read-only

Serial Equivalent: IN1, IN2, or IN3

Availability: SERCOS version 1.5.7 and higher

IDN 401: Probe 1

Description: Contains the state of the probe 1 input. The digital input used as a probe is assigned through the use of IDN P123, P125, or P127. IDN 401 is useful for assigning the probe signal to a RTS bit.

Data Length: 2 bytes

Data Type: Binary

Default: 0

Non-Volatile: No

Write Access: Read-only

Availability: SERCOS version 1.5.7 and higher

IDN 403: Position Feedback Value Status

Description: When the drive switches the position feedback values to the coordinates referred to the machine zero point, the drive sets bit 0 of this IDN in order to inform the control unit that all actual position values are based on the zero point of the machine.

Bit 0 is reset when either the drive controlled homing procedure (IDN 148) or the "Cancel reference point" procedure (IDN 191) is started or when the drive loses its reference to the zero point of the machine. The Position feedback value status may be assigned to a RTS. Structure of position feedback value status:

Bit	Description
LSB 0	0 - Position feedback value not referenced to machine zero point 1 - Position feedback value referenced to machine zero point
1-15	Not used

Data Length: 2 bytes

Data Type: Binary

Default: 0

Non-Volatile: No

Write Access: Read-only

Availability: SERCOS version 1.5.7 and higher

IDN 405: Probe 1 Enable

Description: Arms the position capture mechanism so that the next valid probing signal edge captures the current position into IDN 130 or 131. Refer to IDN 170 for more information. The probe 1 enable signal may be assigned to a RTC.

Data Length: 2 bytes

Data Type: Binary

Default: 0

Non-Volatile: No

Write Access: CP 2-4, EN

Availability: SERCOS version 1.5.7 and higher

IDN 407: Homing Enable

Description: Enables the homing mechanism so that the next valid home signal edge determines the home position. The homing enable signal is assigned to a RTC.

Data Length: 2 bytes

Data Type: Binary

Minimum:

Maximum:

Default: 0

Units:

Non-Volatile: No

Write Access: CP2-4, EN

Serial Equivalent:

Availability: SERCOS version 1.5.7 and higher

IDN 408: Reference Marker Pulse Registered Status

Description: Reads the marker pulse status. The Marker pulse signal is assigned to a RTS.

Data Length: 2 bytes

Data Type: Binary

Minimum:

Maximum:

Default: 0

Units:

Non-Volatile: No

Write Access: CP 2-4, EN

Serial Equivalent:

Availability: All versions

IDN 409: Probe 1 Positive Edge Latched Status

Description: 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 is only 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 captures the current position and the "probe 1 positive edge latched status" is set when the captured data is available in IDN 130. Once the latched status has been set, no more position captures 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 resets the latch status.

IDN 409 duplicates information found in the probe status (IDN 179, bit 0) and is useful for assigning the "probe 1 positive edge latched status" to a RTS bit.

Data Length: 2 bytes

Data Type: Binary

Default: 0

Non-Volatile: No

Write Access: Read-only

Availability: SERCOS version 1.5.7 and higher

IDN 410: Probe 1 Negative Edge Latched Status

Description: 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 is only 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 captures the current position and the "probe 1 negative edge latched status" is set when the captured data is available in IDN 131. Once the latched status has been set, no more position captures 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 resets the latch status.

IDN 410 duplicates information found in the probe status (IDN 179, bit 1) and is useful for assigning the "probe 1 negative edge latched status" to a RTS bit.

Data Length: 2 bytes

Data Type: Binary

Default: 0

Non-Volatile: No

Write Access: Read-only

Availability: SERCOS version 1.5.7 and higher

IDN P15: (32, 783) Drive Disable Status

Description: Indicates drive conditions that prevent a drive from being enabled. A set bit indicates an active condition that may prevent the drive from being enabled.

Bit	Description
LSB 0	Remote Enable input
1	Master enable input (MDT enable bits)
2	DIP switch enable input (DIP switch 8)
3	Active faults (IDN 11)
4	Velocity loop design failure
5	Encoder not initialized.
6-14	Reserved (set to zero)
15	CP less than 4

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: Read-only

Serial Equivalent: Status word 1 (bits 0 - 5)

Availability: SERCOS version 1.6.5 and higher

IDN P16: (32, 784) Active Disable Threshold Speed

Description: When the motor speed drops below the active disable threshold speed during an active disable process, the drive off delay time (IDN 207) begins to count down. After the drive off delay time has expired, the drive is disabled.

Data Length: 4 bytes

Units: rpm

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, En

Maximum: 14,999

Serial Equivalent: DisSpeed

Default: 50

Availability: SERCOS version 1.6.9 and higher

IDN P17: (32, 785) Procedure: Clear Non-Volatile Memory

Description: When this procedure executes successfully the drive nulls its non-volatile memory and enters a "no-compensation" state. The "no-compensation" state may be cleared through the fault reset procedure (IDN 99).

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: CP 2-4

Default: 0

Serial Equivalent: CLREEPROM

Availability: SERCOS version 1.5.0 and higher

IDN P20: (32, 788) PWM Switching Frequency

Description: Sets the drive's PWM switching frequency. This IDN is password-protected (Master password), so the master needs to set the password (IDN 267) before writing to this IDN.

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 8

Maximum: 64

Default: Hardware defined.

Units: kHz

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: PWMFRQ

Availability: SERCOS version 2.0.0 and higher

IDN P22: (32, 790) Number of Motor Poles

Description: The number of motor poles is used for commutation control and represents the number of individual magnetic poles of the motor (not pole pairs). When this IDN is modified, the drive will enter a "no-compensation" state, which may be cleared through the fault reset procedure (IDN 99).

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 2

Maximum: 80

Default: Motor Data

Units: Poles

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: MPOLES

Availability: All versions

IDN P23: (32, 791) Rotor's Moment of Inertia

Description: The motor rotor inertia (IDN P23) in conjunction with the load to motor moment of inertia ratio (IDN P101) defines the system's moment of inertia. The load to motor moment of inertia ratio (IDN P101), the motor inertia (IDN P23), and the closed loop bandwidth (IDN P100) are used to define the standard pole placement (SPP) velocity controller.

Data Length: 4 bytes

Data Type: Unsigned integer

Minimum: 1

Maximum: 2,000,000,000

Default: Motor Data

Units: $K_g \cdot m^2 \cdot 10^{-6}$

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: MJ

Availability: All versions

IDN P24: (32, 792) Linear Motor Pole Pitch

Description: Defines the pole pitch for a linear motor. The pole pitch for a linear motor is the length of one electrical cycle (360 electrical degrees).

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 1

Maximum: 500

Default: 16

Units: mm per 360 electrical degrees

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: MPITCH

Availability: SERCOS version 1.5.8 and higher

IDN P25: (32, 793) Minimum Motor Inductance

Description: The minimum line-to-line motor inductance is used to design the current loop controller and as an input to the torque angle control algorithms. When this IDN is modified, the drive enters a "no-compensation" state, which may be cleared through the fault reset procedure (IDN 99).

Data Length: 2 bytes

Units: milli-Henries * 10⁻²

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 1

Write Access: CP 2-4

Maximum: 32,767

Serial Equivalent: MLMIN

Default: Motor Data

Availability: All versions

IDN P26: (32, 794) Motor Back EMF Constant

Description: The back EMF constant is used to design the current loop controller. When this IDN is modified, the drive enters a "no-compensation" state, which may be cleared through the fault reset procedure (IDN 99).

Data Length: 2 bytes

Units: Volts (RMS) / krpm

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 1

Write Access: CP 2-4

Maximum: 3900

Serial Equivalent: MBEMF

Default: Motor Data

Availability: All versions

IDN P27: (32, 795) Motor Back EMF Compensation

Description: Defines the amount of back EMF compensation, as a percentage, that is applied to the motor command.

Data Length: 2 bytes

Units: Percent

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 1

Write Access: CP 2-4, EN

Maximum: 100

Serial Equivalent: MBEMFCOMP

Default: Motor Data

Availability: SERCOS version 1.5.7 and higher

IDN P28: (32, 796) Current Loop Adaptive Gain at Peak Current

Description: Defines the current loop adaptive gain value at peak motor current (IDN 109). The current based adaptive gain algorithm increases current loop stability by reducing the current loop gain as the motor current increases. The current loop adaptive gain is configured by defining the gain values at peak motor current (IDN P28), continuous motor current (IDN P29), and zero motor current (typically 100%). All other gains between zero, continuous, and peak motor current are interpolated linearly. When this IDN is modified, the drive enters a "no-compensation" state, which may be cleared through the fault reset procedure (IDN 99).

Data Length: 2 bytes

Units: Percent * 10.

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 1 to 10 percent

Write Access: CP 2-4

Maximum: 100 to 1000 percent

Serial Equivalent: MLGAINP

Default: 4 to 40 percent

Availability: All versions

IDN P29: (32, 797) Current Loop Adaptive Gain at Continuous Current

Description: Defines the current loop adaptive gain value at continuous motor current (IDN 111). The current based adaptive gain algorithm increases current loop stability by reducing the current loop gain as the motor current increases. The current loop adaptive gain is configured by defining the gain values at peak motor current (IDN P28), continuous motor current (IDN P29), and zero motor current (typically 100%).

All other gains between zero, continuous, and peak motor current are interpolated linearly. When this IDN is modified, the drive will enter a "no-compensation" state, which may be cleared through the fault reset procedure (IDN 99).

Data Length: 2 bytes

Units: Percent * 10.

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 1 to 10 percent

Write Access: CP 2-4

Maximum: 100 to 1000 percent

Serial Equivalent: MLGAINC

Default: 8 to 80 percent

Availability: All versions

IDN P30: (32, 798) Current Loop Adaptive Gain at Zero Current

Description: Defines the current loop adaptive gain value at zero motor current. The current based adaptive gain algorithm increases current loop stability by reducing the current loop gain as the motor current increases. The current loop adaptive gain is configured by defining the gain values at peak motor current (IDN P28), continuous motor current (IDN P29), and zero motor current (IDN P30, typically 100%). All other gains between zero, continuous, and peak motor current are interpolated linearly. When this IDN is modified, the drive enters a "no-compensation" state, which may be cleared through the fault reset procedure (IDN 99).

Data Length: 2 bytes

Units: Percent * 10.

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 1 to 10 percent

Write Access: CP 2-4

Maximum: 100 to 1000 percent

Serial Equivalent: MLGainZ

Default: 10 to 100 percent

Availability: SERCOS version 1.6.9 and higher

IDN P31: (32, 799) Torque Angle Advance at Continuous Current

Description: Defines the torque related commutation angle advance at the motor's continuous current rating (IDN 111). Torque angle advance helps to increase reluctance torque.

For surface magnet motors the typical advance value is 5 electrical degrees. For motors with embedded magnets, the typical advance value ranges from 8 to 10 electrical degrees.

Data Length: 2 bytes

Units: Electrical degrees.

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 45

Serial Equivalent: MTANGLC

Default: 10

Availability: All versions

IDN P32: (32, 800) Torque Angle Advance at Peak Current

Description: Defines the torque related commutation angle advance at the motor's peak current rating (IDN 109). Torque angle advance helps to increase reluctance torque. For surface magnet motors the typical advance value is 10 electrical degrees. For motors with embedded magnets, the typical advance value ranges from 23 to 25 electrical degrees.

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: 45

Default: 23

Units: Electrical degrees.

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: MTANGLP

Availability: All versions

IDN P33: (32, 801) Velocity Angle Advance at Maximum Speed

Description: Defines the velocity related commutation angle advance at the motor's maximum speed (IDN 113). The velocity angle advance is configured by defining the angle advance at maximum motor speed (IDN P33) and half motor speed (IDN P34). The angle advance between full and half speed is linearly interpolated.

After non-volatile memory has been cleared, IDN P33 is set to 10. The drive's configuration algorithm bases the default velocity angle advance values on the maximum motor speed (IDN 113) and the number of motor poles (IDN P22). However, if the master changes any of the velocity angle advance values, the changed values are not modified during the drive's configuration process.

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: 90

Default: Calculated from motor data.

Units: Electrical degrees.

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: MVANGLF

Availability: All versions

IDN P34: (32, 802) Velocity Angle Advance at Half Speed

Description: Defines the velocity related commutation angle advance at half the motor's maximum speed (IDN 113). The velocity angle advance is configured by defining the angle advance at maximum motor speed (IDN P33) and half motor speed (IDN P34). The angle advance between full and half speed is linearly interpolated.

After non-volatile memory has been cleared, IDN P34 is set to 5. The drive's configuration algorithm bases the default velocity angle advance values on the maximum motor speed (IDN 113) and the number of motor poles (IDN P22). However, if the master changes any of the velocity angle advance values, the changed values are not modified during the drive's configuration process.

Data Length: 2 bytes

Units: Electrical degrees.

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 90

Serial Equivalent: MVANGLH

Default: Calculated from motor data.

Availability: All versions

IDN P35: (32, 803) Hall Sensor Inversion

Description: Allows the master to invert the polarity of the hall sensor feedback signals used by the drive. A hall channel is inverted if the corresponding bit in IDN P35 is set.

Bit	Description
LSB 0	Phase A inversion
1	Phase B inversion
2	Phase C inversion
3-15	Reserved (set to 0)

Data Length: 2 bytes

Default: 0 (no channels inverted)

Data Type: Binary

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4

Maximum: 7

Serial Equivalent: MHINVX

Availability: All versions

IDN P36: (32, 804) Motor Encoder Offset

Description: Specifies the distance from electrical zero to the index marker. The process of determining the encoder offset depends upon the motor's encoder type (IDN P37). If the system has hall sensors and a marker pulse, the "find index marker" procedure (IDN P62) is used to determine the motor encoder offset. If the system only has a marker pulse (no hall sensors), the "encoder initialization" procedure (IDN P60) is executed first to find an electrical zero and then the "find index marker" procedure (IDN P62) is used to determine the motor encoder offset.

Data Length: 4 bytes

Units: Encoder counts

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4

Maximum: Motor encoder resolution
(IDN 116) - 1

Serial Equivalent: MENCOff

Default: Motor data
(120 degrees if undefined)

Availability: SERCOS version 1.5.4 and higher

IDN P37: (32, 805) Motor Encoder Type

Description: Specifies whether an encoder based system includes a marker pulse and/or hall sensors and is used to determine the encoder initialization method.

Motor Encoder Definitions (IDN P37)			
Encoder Type	Marker	Halls	Encoder Initialization Method
0	Yes	Yes	IDN P62 Procedure
1	Yes	No	IDN P60 and IDN P62 Procedures
3	No	No	IDN P60 Procedure
6	No	Yes	IDN P60 Procedure

All unlisted encoder types are not supported. For encoder types 0 and 1, the "find index marker" procedure is only required if the encoder offset (IDN P36) is unknown. When this IDN is modified, the drive will enter a "no-compensation" state, which may be cleared through the reset procedure (IDN 99).

Data Length: 2 bytes

Default: Motor data (0 if undefined)

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4

Maximum: 6

Serial Equivalent: MENCTYPE

Availability: All versions

IDN P38: (32, 806) Encoder/Resolver Relative Phase Offset

Description: Defines the encoder/resolver phase relative to the "standard" commutation table. This IDN can be used to compensate for resolver offset and should be set to 0 when no resolver offset is present. Modifying the phase offset will not change the value of the absolute mechanical position relative to the marker (IDN P64) or the feedback hardware counter (IDN P63), nor will a modification create a physical change in the position of the motor shaft.

Data Length: 2 bytes

Units: Electrical degrees.

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4

Maximum: 359

Serial Equivalent: MPHASE

Default: Motor data

Availability: SERCOS version 0.2.0 and higher

IDN P39: (32, 807) Number of Resolver Poles

Description: Defines the number of poles within the feedback device and is used for commutation and velocity feedback scaling. When this IDN is modified, the drive will enter a "no-compensation" state, which may be cleared through the reset procedure (IDN 99).

Data Length: 2 bytes

Units: Individual poles (not pole pairs)

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0 (encoder systems),
2 (resolver systems)

Write Access: CP 2-4

Maximum: 60

Serial Equivalent: MRESPOLES

Default: Motor data

Availability: SERCOS version 1.5.0 and higher

IDN P43: (32, 811) Motor Type

Description: Specifies the type of motor the drive is controlling.

Motor Type	Description
0	Permanent magnet rotary motor
1	Reserved Do not use
2	Permanent magnet linear motor

Data Length: 2 bytes

Default: 0

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4

Maximum: 2

Serial Equivalent: MOTORTYPE

Availability: SERCOS version 1.4.0 and higher

IDN P44: (32, 812) Motor Feedback Direction

Description: Specifies the motor feedback direction.

Motor Feedback Direction	Description
0	Normal commutation direction, normal velocity direction
1	Inverted commutation direction, normal velocity direction.
2	Normal commutation direction, inverted velocity direction.
3	Inverted commutation direction, inverted velocity direction

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: 3

Default: 0

Units:

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: MFBDIR

Availability: SERCOS version 3.0.4 and higher

IDN P45: (32, 813) Current Used During Zero

Description: Specifies the C-B phase current for ZERO mode (A=0).

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: 177

Default: 25

Units: : % of MICON

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: IZERO

Availability: SERCOS version 3.0.4 and higher

IDN P46: (32, 814) Calibration of Current Loop

Description: Automatic calibration of the current loop at drive enable. To accomplish this, it applies zero volts to the motor for 50 ms.



The motor must be at or near rest or the results can be unpredictable.

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: 1

Default: 0

Units:

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: AUTONULL

Availability: SERCOS version 3.0.4 and higher

IDN P47: (32,815) Burnin Mode

Description: Enables or disables the burn-in mode.

0 = disable

1 = enable

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: 4

Default: 0

Units:

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: BURNIN

Availability: SERCOS version 3.0.7 and higher

IDN P53: (32, 831) Procedure: Initialize Read of Position Feedback Hardware Counter

Description: Initialize read of the position feedback directly from the feedback hardware counter. This procedure should be executed only for absolute encoder feedback device. For encoder and resolver feedbacks no need of execution this procedure. When this procedure would completed , position feedback hardware counter can be read via IDN P63.

Data Length: 2 bytes

Data Type: Binary

Write Access: Read-only

Units: Counts.

Non-Volatile: No

Serial Equivalent:

Availability: SERCOS version 3.1.4 and higher

IDN P55: (32, 823) Position Feedback Offset

Description: Specifies the position feedback offset added to the internal cumulative position counter to give the value of PFB.

Data Length: 4 bytes.

Default: Counts

Data Type: Integer

Non-Volatile: No

Minimum: -2147483647

Write Access: CP 2-4

Maximum: 2147483647

Serial Equivalent: PFBOFF

Availability: SERCOS version 3.0.4 and higher

IDN P56: (32, 824) Hall Sensor Status

Description: Indicates the hall switch values on encoder feedback systems.

Bit	Description
LSB 0	Phase A
1	Phase B
2	Phase C
3-15	Reserved (set to 0)

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: Read-only

Serial Equivalent: HALLS

Availability: SERCOS version 1.0.2 and higher

IDN P57: (32, 825) Procedure: Enable Zero Mode

Description: The drive rotates the motor to an electrical null by placing the IZERO (IDN P45) current from the motor's C terminal to terminal B.

Data Length: 2 bytes

Units:

Data Type: Binary

Non-Volatile:

Minimum:

Write Access:

Maximum:

Serial Equivalent: ZERO

Default:

Availability: SERCOS version 3.0.5 and higher

IDN P58: (32, 826) Zero Mode State

Description: Boolean variable. When the drive is in zero state (enabled and IDN P57 is running), it equals 1. Otherwise, it equals 0.

Data Length: 2 bytes

Units:

Data Type: Boolean

Non-Volatile: No

Minimum: 0

Write Access: Read-only

Maximum: 1

Serial Equivalent: ZERO

Default: 0

Availability: SERCOS version 3.0.5 and higher

IDN P59: (32, 827) Encoder Initialization Current

Description: Defines the B-C phase current during the encoder initialization procedure (IDN P60).

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 1

Maximum: 177

Default: 25

Units: Percent of motor I_C (IDN 111)

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: IENCSTART

Availability: SERCOS version 1.1.0 and higher

IDN P60: (32, 828) Procedure: Initialize Encoder

Description: The encoder initialization procedure is used to initialize encoder systems that do not have hall sensors and/or a marker pulse (refer to IDN P37). The initialization process rotates the motor to a known electrical position by placing current (IDN P59) from motor terminal B to motor terminal C. For encoder systems with no halls (encoder types 1 and 3), the drive may not be enabled until this procedure has been started or the motor has been previously rotated to a known electrical position. To initialize the encoder, the master should:

Start the procedure with the drive disabled.

Wait for the "encoder not initialized" warning bit (IDN 181, bit 5) to go low.

Enable the drive. At this point the drive automatically rotates to find a known electrical position.

Monitor the procedure change bit and/or the procedure status for completion.

Set the position command by reading the drive's feedback (IDN 51).

Cancel the procedure.

The encoder initialization procedure may fail under the following conditions:

If the homing procedure (IDN 148), step procedure (IDN P184), or tune procedure (IDN P188) are active.

The drive is enabled when the procedure starts.

Data Length: 2 bytes

Data Type: Binary

Write Access: CP 4, En

Availability: SERCOS version 1.1.0 and higher

Default: 0

Non-Volatile: No

Serial Equivalent: ENCSTART

IDN P62: (32, 830) Procedure: Find Marker Encoder Initialization

Description: Determines the distance from electrical zero to the index marker (IDN P36) for encoder based systems that have a marker (IDN P37). For systems that do not have halls, the initialize encoder procedure (IDN P60) must be executed first to determine the electrical zero position. The initialization process requires rotating the motor until the encoder index is found.

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: CP 4

Serial Equivalent: ENCINIT

Default: 0

Availability: SERCOS version 1.3.0 and higher

IDN P63: (32, 831) Position Feedback Hardware Counter

Description: Returns the position feedback directly from the feedback hardware counter. For resolver based systems, the position ranges from 0 to 65,535 counts per electrical revolution. The number of resolver electrical revolutions per mechanical revolution is equal to the number of resolver poles (IDN P39) divided by 2. For encoder based systems, the position is based upon the quadrature pulse input and ranges from -2048 to 2048 counts.

Data Length: 2 bytes

Units: Counts.

Data Type: Integer

Non-Volatile: No

Write Access: Read-only

Serial Equivalent: HWPOS

Availability: SERCOS version 1.5.8 and higher

IDN P64: (32, 832) Absolute Mechanical Position Relative to Marker

Description: Returns the absolute position of the feedback device. The absolute position always ranges from 0 to 65,535 counts per mechanical revolution and the resolution depends upon the feedback resolution (IDN 116). On encoder based systems, IDN P64 does not return meaningful or useful data until the encoder has been initialized. Refer to the encoder type (IDN P37), encoder initialization procedure (IDN P60), and the find marker procedure (IDN P62) for more information on initializing encoder systems.

Data Length: 2 bytes

Units: Counts.

Data Type: Unsigned integer

Non-Volatile: No

Write Access: Read-only

Serial Equivalent: PRD

Availability: SERCOS version 1.5.5 and higher

IDN P65: (32, 833) Encoder Equivalent Output Resolution

Description: Returns the resolution of the encoder Equivalent output channel. For encoder based systems the encoder equivalent output resolution may not be modified and is equal to the encoder resolution (IDN 116). For resolver based systems the encoder Equivalent output resolution may be set to 2048, 4096, 8192, and 16384 counts per revolution.

Encoder equivalent output resolutions of 8192 and 16384 counts per revolution are only available when the bipolar velocity limit (IDN 91) is less than 6100 rpm (resolver resolution equal to 16384 or 65535) on resolver based systems.

Data Length: 4 bytes

Units: Counts/revolution

Data Type: Unsigned integer

Non-Volatile: Yes

Serial Equivalent: ENCOUT * 4

Write Access: Resolver: CP 2-4,

Encoder-based: Read-only

Default: 4096

Availability: SERCOS version 1.5.0 and higher

IDN P66: (32, 834) Resolver Inter-LSB Mode

Description: Specifies the operational mode of the inter-LSB algorithm. The inter-LSB algorithm interpolates between the least significant bits (LSBs) of the resolver feedback, which improves performance when the resolver resolution is low, the bandwidth is high, and the command velocity is low.

ILSB Mode	Description
0	Algorithm disabled
1	Algorithm enabled for velocity feedback
2	Reserved

Data Length: 2 bytes

Non-Volatile: Yes

Data Type: Unsigned integer

Write Access: CP 2-4

Minimum: 0

Serial Equivalent: ILSBMODE

Maximum: 2

Default: 0

Availability: SERCOS version 1.5.9 and higher

IDN P67: (32, 835) Feedback Status

Description: Contains the primary feedback type and the condition that caused a feedback loss fault (IDN 11, bit 5) to occur.

Bit	Description
LSB 0	Resolver line break
1	Resolver to digital converter error bit (following error)
2	Reserved (set to zero)
3	Encoder line break: A/B input
4	Encoder line break: Index input
5	Illegal hall sensor state
6	Sine encoder line break: C/D input
7	Sine encoder A/B lines out of range
8	Sine encoder burst overflow
9-12	Reserved (set to zero)
13	Feedback type:
14	000 = Resolver
15	001 = Encoder
	010 = Sine Encoder
	011 = Tachometer

Data Length: 2 bytes

Units:Non-Volatile: No

Data Type: Binary

Write Access: Read-only.

Serial Equivalent: Status2, word 1 (bits 0 - 12)

Availability: SERCOS version 1.6.5 and higher

IDN P68: (32, 836) Index Position

Description: Determines the position of the marker signal in the encoder simulation for resolver-based systems. variable Range: 0, 45, 90, 135, 180, 225, 270, 315

Data Length: 2 bytes

Units:Mechanical degrees

Data Type: Decimal

Non-Volatile: Yes

Minimum:

Write Access: CP 2-4, EN.

Maximum:

Serial Equivalent: INDEXPOS

Default: 0

Availability: SERCOS version 2.2.3 and higher

IDN P69: (32, 837) Home Diagnostic

Description: Lists failure reasons for the homing procedure (IDN 148).

Description	Error Code
Success	0x000000
Invalid opmode	0x000001
Encoder was not initialized	0x000002
ENCINIT command is executing now	0x000004
BURNIN command is executing now	0x000008
Drive in zero mode	0x000010
Limit switch hold	0x000020
Drive in hold mode	0x000040
KAL layer detected that drive inactive	0x000080
Move pending	0x000100
Capture error occurred	0x000200
Home command towards limit	0x000400
CID_BIT is set	0x000800
Drive inactive	0x001000
IDN 170 is running	0x002000
IDN P60 is running	0x004000
IDN P184 is running	0x008000
IDN P188 is running	0x010000
No home switch	0x020000
No rtc signal assigned	0x040000
Failed to change opmode	0x080000
Home command paused	0x100000
Home command halted	0x200000
Home command canceled	0x400000

Data Length: 4 bytes

Data Type: Binary

Minimum:

Maximum:

Default:

Units:

Non-Volatile: No

Write Access: Read-only.

Serial Equivalent:

Availability: SERCOS version 2.2.3 and higher

IDN P72: (32, 840) Fold Back Fault Handling Mode

Description: When the system continuous current or load limit (IDN 114) has been exceeded for too long, the drive enters fold back and sets the overload warning bit (IDN 12, bit 0 and IDN 310). In fold back the drive current is gradually limited (in an exponential fashion) to the system load limit (IDN 114). The amount of time that the drive remains in fold back without issuing a fault, is defined by the fold back mode (IDN P72) and the fold back time (IDN P73).

Mode	Fold Back Fault Handling
0	No fault is issued
1	Issue a fault after the time limit set by IDN P73 has expired
2	Issue a fault immediately upon detection

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: 2

Availability: SERCOS version 1.5.0 and higher

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: FOLDMODE

Default: 0

IDN P73: (32, 841) Fold Back Warning Time

Description: The fold back warning time specifies the amount of time to wait before issuing an over load shut down fault (IDN 11, bit 0) after detecting a system overload (IDN 12, bit 0). The fold back warning time is only valid when the fold back fault handling mode (IDN P72) has been configured to use a programmable warning time (IDN P72 = 1).

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 1

Maximum: 300

Default: 30

Units: Seconds

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: FOLDTIME

Availability: SERCOS version 1.5.2 and higher

IDN P74: (32, 842) Fold Back Delay Time

Description: The delay time for drive foldback. This is the amount of time that the system current can exceed IDN 112 before the drive will enter to foldback state. The time units assume a worst-case scenario where the drive is applying peak current IDN 110. A current level of less than IDN 110 can be allowed for a longer time.

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 1

Maximum: 32767

Default: 1000

Units: Seconds

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: FOLDD

Availability: SERCOS version 3.0.4 and higher

IDN P75: (32, 843) Fold Back Reset Time

Description: The recovery time for drive foldback. After the drive enters the foldback state fault (IDN 11, bit 0) and the current folds back to IDN 112, this is the amount of time the current is held at IDN 112 or below before it is allowed to exceed IDN 112 again.

Data Length: 2 bytes

Units: Seconds

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 1

Write Access: CP 2-4, EN

Maximum: 32767

Serial Equivalent: FOLDR

Default: 1000

Availability: SERCOS version 3.0.4 and higher

IDN P76: (32, 844) Fold Back Time Constant

Description: The time constant for drive foldback. After the drive enters to foldback state fault (IDN 11, bit 0), this variable defines how long it will take the drive to reduce the system current level to IDN 112.

Data Length: 2 bytes

Units: Seconds

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 1

Write Access: CP 2-4, EN

Maximum: 32767

Serial Equivalent: FOLDT

Default: 1450

Availability: SERCOS version 3.0.4 and higher

IDN P77: (32, 845) Dynamic Braking Mode

Description: Sets the mode of dynamic braking operation. See also IDN P78.

Mode	Description
0	No braking operation
1	Brake on fault only
2	Brake on fault and/or drive disable



Faults do not include Over Voltage or Power Stage Faults!

Data Length: 2 bytes

Default: 0

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 2

Serial Equivalent: STOPMODE

Availability: SERCOS version 2.0.0 and higher

IDN P78: (32, 846) Dynamic Braking Current

Description: Sets the current command for the braking function. See also IDN P77.

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: Minimum of IDN 111 and 112

Default: Depends upon IDN 112

Units: 0.1 % of motor I_C (IDN 111)

Non-Volatile: Yes

Write Access: CP 2-4, En

Serial Equivalent: ISTOP * DIPEAK/MICONT

Availability: SERCOS version 2.0.0 and higher

IDN P79: (32, 847) Phase A Current Offset

Description: Sets the user value of the current offset of phase A.

Data Length: 2 bytes

Data Type: Integer

Minimum: -1000

Maximum: 1000

Default: 46

Units: 0.1 % of motor I_C (IDN 111)

Non-Volatile: Yes

Write Access: CP 2-4, En

Serial Equivalent: IAOFF

Availability: : SERCOS version 3.0.4 and higher

IDN P80: (32, 848) Phase B Current Offset

Description: Sets the user value of the current offset of phase C.

Data Length: 2 bytes

Data Type: Integer

Minimum: -1000

Maximum: 1000

Default: 46

Units: 0.1 % of motor I_C (IDN 111)

Non-Volatile: Yes

Write Access: CP 2-4, En

Serial Equivalent: ICOFF

Availability: SERCOS version 3.0.4 and higher

IDN P84: (32, 852) Bipolar Torque Limit 2

Description: Defines the maximum torque limit in both the clockwise and counter-clockwise direction when a configurable input mode (IDNP123, P125, or P127) is 8 and the corresponding configurable input (IDN P124, P126, or P128) is set. Otherwise, the bipolar torque limit (IDN 92) defines the maximum torque limit in both directions.

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: Minimum of IDN 109
and IDN 110.

Default: 0.1 * Minimum of IDN 109
and IDN 110.

Units: 0.1 % of motor I_C (IDN 111)

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: ILim2 * DIPEAK/MICONT

Availability: SERCOS version 1.6.9 and higher

IDN P85: (32, 853) Motor Over Speed Trip Set Point

Description: Exceeding the motor over speed set point causes a motor over speed fault (IDN 129, bit 9). The default value is 20% above the maximum system velocity (IDN 91 maximum value), but the set point may be reduced by the master for system protection.

Data Length: 4 bytes

Units: rpm

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 10

Write Access: CP 2-4

Maximum: IDN 91 maximum value * 1.2

Serial Equivalent: VOSPD

Default: IDN 91 maximum value * 1.2

Availability: SERCOS version 1.5.9 and higher

IDN P86: (32,854) Velocity Control Loop User Gain

Description: EXT STX velocity control loop user gain.

Data Length: 2 bytes

Units: RPM

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 10

Write Access: CP 2-4

Maximum: 32767

Serial Equivalent: VG

Default: 1024

Availability: SERCOS version 3.0.3 and higher

IDN P87: (32, 855) Quick Deceleration Rate

Description: Defines the drive's deceleration (negative acceleration) limit under the following conditions: position limits are encountered, a fault has occurred, or the master has requested an active disable. The quick deceleration rate is always used by the drive when those conditions occur and is independent of the acceleration or deceleration limit enable (IDN P88). Presently, the drive does not support MDT control bit 13 (halt/restart), so clearing MDT control bit 13 causes an active disable at the quick deceleration rate followed by a torque release.

Data Length: 4 bytes

Units: rpm/second

Data Type: Integer

Non-Volatile: Yes

Minimum: -1000

Write Access: CP 2-4, EN

Maximum: -32,767,000

Serial Equivalent: DECSTOP * -1000

Default: -5,000,000

Availability: SERCOS version 1.5.0 and higher

IDN P88: (32, 856) Acceleration/Deceleration Limit Enable

Description: Enables or disables the use of acceleration (IDN 136) or deceleration (IDN137) ramp limits. The ramp limit enable is associated with IDN 136 and IDN 137 and does not affect motor deceleration under the following conditions: position limits are encountered, a fault has occurred, or the master has requested an active disable.

Under these conditions, the quick deceleration rate (IDN P87) is always used as the ramp limit, independent of the ramp limit enable setting. Presently, the drive does not support MDT control bit 13 (halt/restart), so clearing MDT control bit 13 causes an active disable at the quick deceleration rate followed by a torque release.

Data Length: 2 bytes

Default: 0

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0 (ramp limits disabled)

Write Access: CP 2-4

Maximum: 1 (ramp limits enabled)

Serial Equivalent: PROFMODE

Availability: SERCOS version 1.5.0 and higher

IDN P89: (32, 857) Velocity Loop APP Input Filter

Description: Defines the filter at the input of the advanced pole placement (APP) velocity controller. The array represented by this IDN includes five integers that represent the polynomial coefficients, and two shift parameters, one that scales each polynomial. The type of velocity loop controller is selected through the velocity loop compensation mode (IDN P96). The APP controller is not updated until the “design APP velocity controller” procedure (IDN P105) is executed successfully.

The array contents have the following definition:

Array Element	Description	Element Range
1,2,3,5,6	Polynomial coefficients	-32,768 to 32,767
4, 7	Polynomial coefficient shift factor	0 to 32,767

Data Length: 2 byte elements.

Default: 1 0 0 0 0 0

Variable length array.

Non-Volatile: Yes

Data Type: Integer

Write Access: CP 2-4, EN

Serial Equivalent: VFI

Availability: SERCOS version 2.0.0 and higher

IDN P90: (32, 858) Velocity Notch Filter Center Frequency

Description: Sets the center frequency of the notch filter used in the velocity loop. This IDN only affects the system when the velocity loop filter mode (IDN P93) is 3 and the advance pole placement velocity loop compensation mode (IDN P96) is inactive.

Data Length: 2 bytes

Units: Hz

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 30

Write Access: CP 2-4, EN

Maximum: 1000

Serial Equivalent: NOTCHHZ

Default: 500

Availability: SERCOS version 1.5.7 and higher

IDN P91: (32, 859) Velocity Notch Filter Band Width

Description: Sets the bandwidth, measured at the 3 dB points, of the notch filter used in the velocity loop. This IDN only affects the system when the velocity loop filter mode (IDN P93) is 3 and the advance pole placement velocity loop compensation mode (IDN P96) is inactive.

Data Length: 2 bytes

Units: Hz

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 1

Write Access: CP 2-4, EN

Maximum: 100

Serial Equivalent: NOTCHBW

Default: 1

Availability: SERCOS version 1.5.7 and higher

IDN P92: (32, 860) Velocity Feedback Compensation Filter

Description: Enables or disables the use of a 400 Hz low pass filter in the velocity feedback loop. This IDN only affects the system when the high frequency SPP velocity loop compensation mode (IDN P96) is inactive.

Data Length: 2 bytes

Default: Based upon hardware

Data Type: Unsigned integer

Non-Volatile: No

Minimum: 0 (LPF disabled)

Write Access: CP 2-4

Maximum: 1 (LPF enabled)

Serial Equivalent: COMPFILT

Availability: SERCOS version 1.5.2 and higher

IDN P93: (32, 861) Velocity Loop Filter Mode

Description: Specifies the type and number of filters that affect the PI, PDFF, and SPP velocity loop controllers. The filters are not used when the APP velocity loop controller is active. The velocity loop controller is selected through the velocity loop compensation mode (IDN P96).

Mode	Description
0	No filtering
1	A single first order low pass filter. The cutoff frequency is defined through IDN P94
2	Two first order low pass filters. The cutoff frequencies are defined through IDN P94 and IDN P95
3	Notch filter. The center frequency is selected through IDN P90. The bandwidth is selected through IDN P91

Data Length: 2 bytes

Default: 0

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 3

Serial Equivalent: FILTMODE

Availability: SERCOS version 0.1.0 and higher

IDN P94: (32, 862) Velocity Low Pass Filter 1 Frequency

Description: Sets the cut-off frequency of the first low pass filter used in the velocity loop. This IDN only affects the system when the velocity loop filter mode (IDN P93) is 1 or 2 and the advance pole placement velocity loop compensation mode (IDN P96) is inactive.

Data Length: 2 bytes

Units: Hz

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 20 Hz steps

Write Access: CP 2-4, EN

Maximum: 800 in 20 Hz steps.

Serial Equivalent: LPFHZ1

Default: 500

Availability: SERCOS version 0.1.0 and higher

IDN P95: (32, 863) Velocity Low Pass Filter 2 Frequency

Description: Sets the cut-off frequency of the second low pass filter used in the velocity loop. This IDN only affects the system when the velocity loop filter mode (IDN P93) is 2 and the advance pole placement velocity loop compensation mode (IDN P96) is inactive.

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 20 Hz steps

Maximum: 800 in 20 Hz steps.

Default: 500

Units: Hz

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: LPFHZ2

Availability: SERCOS version 0.1.0 and higher

IDN P96: (32, 864) Velocity Loop Compensation Mode

Description: Defines the type of velocity loop controller used by the drive.

Mode	Velocity Loop Controller	Loop Variables
0	Proportional Integral (PI)	IDN 100 Velocity loop PI proportional gain IDN P103 Velocity loop PI integral gain
1	Pseudo Derivative Feedback with Feed Forward (PDFF)	IDN P97 Velocity loop PDFF proportional gain IDN P98 Velocity loop PDFF integral gain IDN P99 Velocity loop PDFF to feedback gain ratio
2	Low Frequency Standard Pole Placement (SPP)	IDN P23 Motor rotor moment of inertia IDN P100 Velocity loop SPP bandwidth (≤ 200 Hz) IDN P101 Velocity loop SPP load to motor inertia ratio IDN P102 Velocity loop SPP tracking factor
3	Advanced Pole Placement (APP)	IDN P89 Velocity loop APP input filter IDN P105 Procedure: Design APP velocity controller IDN P106 Velocity loop APP forward path polynomial IDN P107 Velocity loop APP feedback path polynomial IDN P108 Velocity loop APP feed forward path polynomial IDN P109 Velocity loop APP output filter
4	High Frequency Standard Pole Placement (SPP)	IDN P23 Motor rotor moment of inertia IDN P100 Velocity loop SPP bandwidth (≤ 400 Hz) IDN P101 Velocity loop SPP load to motor inertia ratio IDN P102 Velocity loop SPP tracking factor

Successfully executing the tune procedure may modify the velocity loop variables.

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: 4

Availability: SERCOS version 0.1.0 and higher

Default: 2

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: COMPMODE

IDN P97: (32, 865) Velocity Loop PDFF Proportional Gain

Description: Defines the velocity loop proportional gain for the "pseudo derivative feedback with feed forward" velocity loop controller. The type of velocity loop controller is selected through the velocity loop compensation mode (IDN P96).

Data Length: 4 bytes

Default: 1000

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 1,000,000,000

Serial Equivalent: KV

Availability: SERCOS version 0.1.0 and higher

IDN P98: (32, 866) Velocity Loop PDFF Integral Gain

Description: Defines the velocity loop integral gain for the "pseudo derivative feedback with feed forward" velocity loop controller. The type of velocity loop controller is selected through the velocity loop compensation mode (IDN P96).

Data Length: 2 bytes

Default: 1000

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 65,535

Serial Equivalent: KVI

Availability: SERCOS version 0.1.0 and higher

IDN P99: (32, 867) Velocity Loop PDFF to Feedback Gain Ratio

Description: Defines the velocity loop feed forward to feedback gain ratio for the "pseudo derivative feedback with feed forward" velocity loop controller. The type of velocity loop controller is selected through the velocity loop compensation mode (IDN P96).

Data Length: 2 bytes

Units: Percent * 0.1

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 1000 → 100 %

Serial Equivalent: KVFR

Default: 0

Availability: SERCOS version 0.1.0 and higher

IDN P100: (32, 868) Velocity Loop SPP Bandwidth

Description: Defines the velocity control loop bandwidth for the SPP velocity loop controllers. The type of velocity loop controller is selected through the velocity loop compensation mode (IDN P96).

Data Length: 2 bytes

Units: Hz

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 10

Write Access: CP 2-4, EN

Maximum: 200 (low freq SPP),
400 (high freq SPP)

Serial Equivalent: BW

Default: 20

Availability: SERCOS version 0.1.0 and higher

IDN P101: (32, 869) Velocity Loop SPP Load to Motor Inertia Ratio

Description: Defines the velocity loop's estimated load moment of inertia relative to the motor's moment of inertia. This IDN is used to design the velocity SPP controllers. The type of velocity loop controller is selected through the velocity loop compensation mode (IDN P96).

Data Length: 2 bytes

Units: % of the motor inertia (IDN P23)

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 10,000

Serial Equivalent: LMJR

Default: 0

Availability: SERCOS version 0.1.0 and higher

IDN P102: (32, 870) Velocity Loop SPP Tracking Factor

Description: Defines the velocity loop's damping factor for the SPP velocity loop controllers. The type of velocity loop controller is selected through the velocity loop compensation mode (IDN P96). As the damping factor approaches zero, the system's overshoot is diminished while sacrificing some tracking ability. As the damping factor approaches 200, the system may overshoot more but will have improved steady state tracking ability.

Data Length: 2 bytes

Default: 100

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 200

Serial Equivalent: TF

Availability: SERCOS version 0.1.0 and higher

IDN P103: (32, 871) Velocity Loop Integral Gain

Description: Defines the velocity loop integral gain for the proportional-integral velocity loop controller. The type of velocity loop controller is selected through the velocity loop compensation mode (IDN P96).

Data Length: 2 bytes

Default: 20

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 65,535

Serial Equivalent: GVI

Availability: SERCOS version 0.1.0 and higher

IDN P104: (32, 870) Velocity Loop Proportional Gain

Description: Defines the velocity loop proportional gain for the proportional-integral velocity loop controller. The type of velocity loop controller is selected through the velocity loop compensation mode (IDN P96). The least significant 16 bits of IDN P104 are duplicated within IDN 100.

Data Length: 4 bytes

Default: 500

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 1,000,000,000

Serial Equivalent: GV

Availability: SERCOS version 1.7.5 and higher

IDN P105: (32, 873) Procedure: Design APP Velocity Controller

Description: This procedure is used to tune the drive for the APP mode (IDN P96, mode 3). With the APP algorithm utilized in the drive, the interaction of the variables is too dramatic to allow variables to be changed one by one. Therefore, as pole placement algorithm IDNs are written, the new values are buffered without changing the actual values used by the control loops. Once all desired new values have been acquired, the operator runs “design APP velocity controller” procedure, and all parameters of APP mode are written to the control loops simultaneously.

Data Length: 2 bytes

Default: 0

Data Type: Binary

Non-Volatile: No

Write Access: CP 2-4, EN

Serial Equivalent: REFRESH

Availability: SERCOS version 2.0.0 and higher

IDN P106: (32, 874) Velocity Loop APP Forward Path Polynomial

Description: Defines the velocity loop APP controller's forward path polynomial. The type of velocity loop controller is selected through the velocity loop compensation mode (IDN P96). The APP controller is not updated until the "design APP velocity controller" procedure (IDN P105) is executed successfully. The array contents have the following definition:

Array Element	Description	Element Range
1-5	Polynomial coefficients.	-32,768 to 32,767
6	Polynomial coefficient shift factor.	0 to 15

Data Length: 2 byte elements.

Variable length array.

Default: 0 0 0 0 0

Availability: SERCOS version 1.7.6 and higher

Data Type: Integer

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: VD

IDN P107: (32, 875) Velocity Loop APP Feedback Path Polynomial

Description: Defines the velocity loop APP controller's feedback path polynomial. The type of velocity loop controller is selected through the velocity loop compensation mode (IDN P96). The APP controller is not updated until the "design APP velocity controller" procedure (IDN P105) is executed successfully. The array contents have the following definition:

Array Element	Description	Element Range
1, 3, 5, 7	Polynomial coefficients.	-2,147,483,647 to 2,147,483,647
2, 4, 6, 8	Polynomial coefficient shift factor.	0 to 32,767

Data Length: 4 byte elements.

Variable length array.

Default: 0 0 0 0 0 0 0 0

Availability: SERCOS version 1.7.6 and higher

Data Type: Integer

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: VH

IDN P108: (32, 876) Velocity APP Feed-forward Path Polynomial

Description: Defines the velocity loop APP controller's feed-forward path polynomial. The type of velocity loop controller is selected through the velocity loop compensation mode (IDN P96). The APP controller is not updated until the "design APP velocity controller" procedure (IDN P105) is executed successfully. The array contents have the following definition:

Array Element	Description	Element Range
1, 3, 5	Polynomial coefficients.	-2,147,483,647 to 2,147,483,647
2, 4, 6	Polynomial coefficient shift factor.	0 to 32,767

Data Length: 4 byte elements.

Variable length array.

Default: 0 0 0 0 0 0

Availability: SERCOS version 1.7.6 and higher

Data Type: Integer

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: VR

IDN P109: (32, 877) Velocity Loop APP Output Filter

Description: Defines the filter at the output of the APP velocity controller. The array represented by this IDN includes five integers that represent the polynomial coefficients, and two shift parameters, one that scales each polynomial. The type of velocity loop controller is selected through the velocity loop compensation mode (IDN P96). The APP controller is not updated until the "design APP velocity controller" procedure (IDN P105) is executed successfully. The array contents have the following definition:

Array Element	Description	Element Range
1,2,3,5,6	Polynomial coefficients	-32,768 to 32,767
4, 7	Polynomial coefficient shift factor	0 to 32,767

Data Length: 2 byte elements.

Variable length array.

Default: 1 0 0 0 0 0 0

Availability: SERCOS version 2.0.0 and higher

Data Type: Integer

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: VF

IDN P110: (32, 878) Micro-Interpolator Mode

Description: The drive's fine μ I generates intermediate commands at the position loop servo rate by curve fitting a cubic spline between the commands sent by the master every CUCT (IDN 1). Therefore, when the μ I is active, the drive expects the master to generate command data one time step CUCT ahead of its actual use. The μ I mode (IDN P110) specifies whether the μ I is enabled and the type of integration technique used by the μ I to generate intermediate position, velocity feed forward, and acceleration feed forward commands. The master should match the μ I algorithm with its own coordinate generation algorithm to ensure that the resulting motion is smooth.

In order to have the μ I active, position and velocity commands (IDNs 36 and 47) must be assigned as cyclic data within the MDT telegram. The CUCT must be no greater than 6 mS. In addition, the control unit synchronization bit - MDT control word, bit 10 (CUSB) monitoring must be enabled (IDN P152) if the CUCT (IDN 1) differs from the CCT (IDN 2). If the μ I mode is non-zero then these conditions must be met in order to successfully execute the CP2 to CP3 transition procedure (IDN 127).

Mode	Description
0	μ I inactive.
1	Trapezoidal rule integration algorithm
2	Zero order hold (delay)
3	Forward difference integration algorithm

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: 3

Default: 0

Non-Volatile: No

Write Access: CP 2

Availability: SERCOS version 1.5.0 and higher

IDN P111: (32, 879) Commanded Position

Description: This IDN displays the position command from the master.

Data Length: 4 bytes

Data Type: Signed long

Minimum: -2^{32}

Maximum: $2^{31}-1$

Default: 0

Units: Counts

Non-Volatile: No

Write Access: CP 2-4, EN

Serial Equivalent: PCMD

Availability: SERCOS version 2.1.0 and higher

IDN P115: (32, 883) Acceleration Feed Forward Gain 2

Description: Defines a multiplier of the acceleration command, which is generated by the position profile, that is fed through the velocity loop in order to reduce the acceleration dependent following error.

Data Length: 2 bytes

Units: 0.1%

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: -10,000 to -1000.0 %

Write Access: CP 2-4, EN

Maximum: 10,000 to 1000.0 %

Serial Equivalent: GPAFR2

Default: 0

Availability: SERCOS version 1.5.7 and higher

IDN P116: (32, 884) Position Loop Derivative Gain

Description: Defines the position loop derivative gain for the proportional-integral-derivative position loop controller. Setting the derivative gain to 1,000 results in unity gain on the derivative term.

Data Length: 2 bytes

Default: 0

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 32,767

Serial Equivalent: GPD

Availability: SERCOS version 1.5.7 and higher

IDN P117: (32, 885) Position Loop Integral Gain

Description: Defines the position loop integral gain for the proportional-integral-derivative position loop controller. When the integral gain is set to 10,000 then the integral gain equals the proportional gain (integral term: $GP * GPI/10000$).

Data Length: 2 bytes

Default: 0

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 10,000

Serial Equivalent: GPI

Availability: SERCOS version 1.5.7 and higher

IDN P118: (32, 886) Position Loop Integrator Input Saturation Limit

Description: Limits the input of the position loop integrator by setting the input saturation. When used with the integrator output saturation limit (IDN P119), the master is able to make the position loop integrator effective only near the target position and the integrator is not dominant in the loop dynamics farther from the target position.

Data Length: 4 bytes

Units: Counts

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 1,000,000

Serial Equivalent: GPISATIN

Availability: SERCOS version 1.5.9 and higher

IDN P119: (32, 887) Position Loop Integrator Output Saturation Limit

Description: Limits the output of the position loop integrator by setting the output saturation. When used with the integrator input saturation limit (IDN P118), the master is able to make the position loop integrator effective only near the target position and the integrator is not dominant in the loop dynamics farther from the target position.

Data Length: 4 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: 1,000,000

Default: 0

Units: Counts

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: GPISATOUT

Availability: SERCOS version 1.5.9 and higher

IDN P120: (32, 888) Drive DIP Switch Status

Description: Retrieves the settings of the DIP switches located on the top of the drive. Switch 10 is closest to the 7 segment LED display. If a DIP switch is vertical, when facing the front of the drive, its logic level is 0 (low). If a DIP switch is leaning to the right, when facing the front of the drive, its logic level is 1 (high).

Bit	Switch	Description	Setting
LSB 0	1	SERCOS address	LSB of SERCOS address
1	2		Bit 1 of SERCOS address
2	3		Bit 2 of SERCOS address
3	4		Bit 3 of SERCOS address
4	5		MSB of SERCOS address
5	6	SERCOS/Serial baud rate	0 = 2 MBits/S (SERCOS) 9600 baud (Serial) 1 = 4 MBits/S (SERCOS) 19200 baud (Serial)
6	7	Hold Mode	0 = Disabled 1 = Enabled
7	8	Drive Disable	0 = Enable 1 = Disable
8	9	SERCOS transmitter power	0 = Low 1 = High
9	10	Firmware load.	0 = Normal operations 1 = Ember
10-15		Reserved	Set to 0

Data Length: 2 bytes

Data Type: Binary

Serial Equivalent: DIP

Non-Volatile: Yes

Write Access: Read-only

Availability: SERCOS version 1.5.0 and higher

IDN P121: (32, 889) DIP Switch Enable Status

Description: Indicates the DIP switch enable status. This IDN must be 1 (DIP switch 8 off or low) in order for the drive to be enabled by the master. IDN P121 may be assigned to a RTS bit.

Data Length: 2 bytes

Data Type: Binary

Serial Equivalent: DIPEN

Non-Volatile: Yes

Write Access: Read-only

Availability: SERCOS version 0.2.0 and higher

IDN P122: (32, 890) Remote Enable Switch Status

Description: Indicates the state of the external hardware enable input signal. IDN P122 must be 1 in order for the drive to be enabled by the master. IDN P122 may be assigned to a RTS bit.

Data Length: 2 bytes

Data Type: Binary

Serial Equivalent: REMOTE

Non-Volatile: Yes

Write Access: Read-only

Availability: SERCOS version 0.2.0 and higher

IDN P123: (32, 891) Configurable I/O: Input 1 Mode

Description: Sets the functionality of digital input 1 which may be read through IDN P124. The following functions are available:

Mode	Description
0	No special function
1	CW limit switch (IDN P136)
2	CCW limit switch (IDN P137)
3-7	Reserved
8	Second bipolar torque limit (IDN P84)
9	Reserved
10	Home switch (IDN 400)
11	Reserved
12-15	Reserved
16	Probe input (IDN 401)
17	Reserved
18	Open fault relay. Refer to IDN P138

Except for mode 0, each function may only be assigned to one digital input. Mode 18 adds an external signal to the fault relay safety chain.

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: 18

Availability: SERCOS version 1.5.7 and higher

Default: 1

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: IN1MODE

IDN P124: (32, 892) Configurable I/O: Input 1 Status

Description: Returns the state of digital input 1 located on user connector C3, pin 9. A '1' indicates that the digital input is on or is conducting current. IDN P124 may be assigned as a RTS.

Data Length: 2 bytes

Data Type: Binary

Serial Equivalent: IN1

Non-Volatile: No

Write Access: Read-only

Availability: SERCOS version 0.2.0 and higher

IDN P125: (32, 893) Configurable I/O: Input 2 Mode

Description: Sets the functionality of digital input 2 which may be read through IDN P126. The following functions are available:

Mode	Description
0	No special function
1	CW limit switch (IDN P136)
2	CCW limit switch (IDN P137)
3-7	Reserved
8	Second bipolar torque limit (IDN P84)
9	Reserved
10	Home switch (IDN 400)
11-15	Reserved
16	Probe input (IDN 401)
17	Reserved
18	Open fault relay. Refer to IDN P138

Except for mode 0, each function may only be assigned to one digital input. Mode 18 adds an external signal to the fault relay safety chain.

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: 18

Availability: SERCOS version 1.5.7 and higher

Default: 1

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: IN2MODE

IDN P126: (32, 894) Configurable I/O: Input 2 Status

Description: Returns the state of digital input 1 located on user connector C3, pin 10. A '1' indicates that the digital input is on or is conducting current. IDN P126 may be assigned as a RTS.

Data Length: 2 bytes

Data Type: Binary

Serial Equivalent: IN2

Non-Volatile: No

Write Access: Read-only

Availability: SERCOS version 0.2.0 and higher

IDN P127: (32, 895) Configurable I/O: Input 3 Mode

Description: Sets the functionality of digital input 3 which may be read through IDN P128. The following functions are available:

Mode	Description
0	No special function
1	CW limit switch (IDN P136)
2	CCW limit switch (IDN P137)
3-7	Reserved
8	Second bipolar torque limit (IDN P84)
9	Reserved
10	Home switch (IDN 400)
11-15	Reserved
16	Probe input (IDN 401)
17	Reserved
18	Open fault relay. Refer to IDN P138

Except for mode 0, each function may only be assigned to one digital input. Mode 18 adds an external signal to the fault relay safety chain.

Data Length: 2 bytes

Default: 1

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 18

Serial Equivalent: IN3MODE

Availability: SERCOS version 1.5.7 and higher

IDN P128: (32, 896) Configurable I/O: Input 3 Status

Description: Returns the state of digital input 3 located on user connector C3, pin 11. A '1' indicates that the digital input is on or is conducting current. IDN P128 may be assigned as a RTS.

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: Read-only

Serial Equivalent: IN3

Availability: SERCOS version 0.2.0 and higher

IDN P129: (32,897) Configurable I/O: Input 4 Mode

Description: Sets the functionality of digital input 4 which may be read through IDN P128.
The following functions are available:

Mode	Description
0	No special function
1	CW limit switch (IDN P136)
2	CCW limit switch (IDN P137)
3-7	Reserved
8	Second bipolar torque limit (IDN P84)
9-17	Reserved
18	Open fault relay. Refer to IDN P138

Except for mode 0, each function may only be assigned to one digital input. Mode 18 adds an external signal to the fault relay safety chain.

Data Length: 2 bytes

Default: 1

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 18

Serial Equivalent: IN4MODE

Availability: SERCOS version 3.0.4 and higher

IDN P130: (32,898) Configurable I/O: Input 4 Status

Description: Returns the state of digital input 4 located on the extended I/O connector j11 pin.
B3 indicates that the digital input is on or is conducting current. IDN P130 may be assigned as a RTS.

Data Length:

Non-Volatile:

Data Type:

Write Access:

Serial Equivalent: IN4

Availability: SERCOS version 3.0.4 and higher

IDN P131: (32, 899) Configurable I/O: Output 1 Mode

Description: Sets the functionality of digital output 1 which may be read through IDN P132. The following functions are available:

Mode	Description
0	No special function. The master may directly modify the output through IDN P132
1-2	Reserved
3	Output on when the drive is in fold back (IDN 12, bit 0)
4-9	Reserved
10	Output on if the drive is enabled

Data Length: 2 bytes

Default: 6

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 10

Serial Equivalent: O1MODE

Availability: SERCOS version 1.3.0 and higher

IDN P132: (32, 900) Configurable I/O: Output 1 Control/Status

Description: Allows the master to read the state of digital output 1 located on user connector C3, pin 12. A '1' indicates that the digital output is on or is conducting current. IDN P132 is write protected whenever the digital output 1 mode (IDN P131) is non-zero.

Data Length: 2 bytes

Write Access: CP 2-4, EN (when IDN P131 is 0)
Read-only (when IDN P131 is non-zero)

Data Type: Binary

Minimum: No

Serial Equivalent: O1

Availability: SERCOS version 1.0.0 and higher

IDN P135: (32, 903) Hardware Limit Switch Enable/Disable

Description: Enables or disables the use of the hardware limit switches. One or two digital inputs must also be assigned as hardware limit switch inputs through the flexible input mode IDNs P123, P125, or P127 in order for the hardware limit switches to function.

Data Length: 2 bytes

Default: 0

Data Type: Binary

Non-Volatile: Yes

Minimum: 0 (HW limit switches enabled)

Write Access: CP 2-4, EN

Maximum: 1 (HW limit switches disabled)

Serial Equivalent: LIMDIS

Availability: SERCOS version 0.2.0 and higher

IDN P136: (32, 904) CW Limit Switch Status

Description: Returns the state of the CW (clockwise) limit switch input. A '1' indicates that the CW limit has been reached and the switch is open. And conversely, a '0' indicates that the CW limit has not been reached and the switch is closed. The data returned by IDN P136 is not meaningful unless one of the flexible input mode IDNs P123, P125, or P127 has been assigned as the CW limit switch input (mode 1). IDN P136 may be assigned as a RTS.

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: Read-only

Serial Equivalent: CWLIM

Availability: SERCOS version 0.2.0 and higher

IDN P137: (32, 905) CCW Limit Switch Status

Description: Returns the state of the CCW (counter-clockwise) limit switch input. A '1' indicates that the CCW limit has been reached and the switch is open. And conversely, a '0' indicates that the CCW limit has not been reached and the switch is closed. The data returned by IDN P137 is not meaningful unless one of the flexible input mode IDNs P123, P125, or P127 has been assigned as the CCW limit switch input (mode 2). IDN P137 may be assigned as a RTS.

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: Read-only

Serial Equivalent: CCWLIM

Availability: SERCOS version 0.2.0 and higher

IDN P138: (32, 906) Drive Relay Closure Conditions

Description: Specifies the conditions that will cause the "drive-up / drive ready" relay to open.

Mode	Description
0	Relay closed when no faults exist
1	Relay closed when the drive is enabled
2	Relay closed when the drive is enabled or is above the disable speed threshold while actively disabling

When the drive is actively disabling, mode 2 causes the relay to open when the motor speed is below the disable threshold, whereas mode 1 does not open the relay until the active disable timer has expired. In addition, a digital input is added to the fault relay safety chain through flexible input mode 18 (IDN P123, P125, or P127).

The relay opens when one or more of the following conditions occurs:

A fault exists.

The drive is disabled (IDN P138 is 1).

The drive is disabled or is actively disabling and is considered stopped (IDN P138 is 2).

Flexible input mode 18 (IDNs P123, P125, or P127) is active and the corresponding digital input signal goes low.

Data Length: 2 bytes

Default: 0

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 2

Serial Equivalent: RELAYMODE

Availability: SERCOS version 1.5.0 and higher

IDN P139: (32, 907) Drive Relay Status

Description: Returns the status of the fault / "drive up" relay. A '1' indicates that the relay is closed and a '0' indicates that the relay is open. IDN P139 may be assigned as a RTS.

Data Length: 2 bytes

Default: Hardware defined.

Data Type: Binary

Non-Volatile: No

Minimum:

Write Access: Read-only

Maximum:

Serial Equivalent: RELAY

Availability: SERCOS version 1.5.0 and higher

IDN P140: (32, 908) Motor Over Temperature Mode

Description: Specifies the operation of the drive when a motor over temperature condition is detected (IDN 312). The amount of time that may elapse, without issuing a C1D fault (IDN 11, bit 2), is defined by the motor over temperature mode (IDN P140).

Mode	C1D Fault	Disable Drive	Open Fault Relay	Notes
0	Immediately	Immediately	Immediately	
1	After 2 minutes	After 2 minutes	Immediately	
2	No	No	Immediately	
3	No	No	No	
4	No	No	No	Warning also issued over RS-232
5	No	No	After IDN P142 time	Warning also issued over RS-232

Data Length: 2 bytes

Default: 0

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 5

Serial Equivalent: THERMODE

Availability: SERCOS version 1.5.0 and higher

IDN P141: (32, 909) Motor Temperature Sensor Type

Description: Defines the type of motor over temperature sensor.

Type	Description
0	PTC (Positive Temperature Coefficient)
1	NTC (Negative Temperature Coefficient)

Data Length: 2 bytes

Default: 0

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 1

Serial Equivalent: THERMTYPE

Availability: SERCOS version 1.5.2 and higher

IDN P142: (32, 910) Motor Over Temperature Relay Delay Time

Description: Sets the number of seconds the drive will wait after a motor over temperature condition (IDN 312) has occurred before opening the fault relay. The delay time is only used when the motor over temperature mode (IDN P140) is set to 5.

Data Length: 2 bytes

Units: Seconds

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 1

Write Access: CP 2-4, EN

Maximum: 300

Serial Equivalent: THERMTIME

Default: 30

Availability: SERCOS version 1.5.2 and higher

IDN P143: (32, 911) Motor Over Temperature Threshold

Description: Sets the thermostat voltage trip point.

Data Length: 2 bytes

Units: Volts

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 5000

Serial Equivalent: THERMTRIP

Default: 3500

Availability: SERCOS version 3.0.4 and higher

IDN P144: (32, 912) Bus Under Voltage Fault Handling Mode

Description: Specifies the operation of the drive when a bus under voltage condition is detected. The amount of time that may elapse, without issuing a C1D fault (IDN 11, bit 9), is defined by the motor over temperature mode (IDN P140) and the under voltage warning time (IDN P145).

Mode	Description
0	Issue an immediate under voltage fault
1	Never issue an under voltage fault
2	If the drive is enabled, issue an under voltage fault after the under voltage warning time (IDN P145) has expired
3	Issue an immediate under voltage fault if drive active Clear fault procedure (IDN 99) will be able to clear under voltage fault even if fault condition exists.

Data Length: 2 bytes

Default: 0

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 3

Serial Equivalent: UVMODE

Availability: SERCOS version 1.5.2 and higher

IDN P145: (32, 913) Bus Under Voltage Warning Time

Description: Sets the number of seconds a bus under voltage condition can be present while the drive is enabled before issuing a fault (IDN 11, bit 9) and shutting down the drive. The delay time is only used when the bus under voltage fault handling mode (IDN P144) is set to 2.

Data Length: 2 bytes

Units: Seconds

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 1

Write Access: CP 2-4, EN

Maximum: 300

Serial Equivalent: UVTIME

Default: 30

Availability: SERCOS version 1.5.2 and higher

IDN P146: (32, 914) Configurable I/O: Inputs Status

Description: Returns the state of the digital inputs located on user connector C3 (pins 9,10 and 11) as well as the state of the external hardware enable input signal (pin 8). All the signals are represented in inverted form, i.e. a '0' indicates that the digital input is on or is conducting current. IDN P146 may be assigned as AT cyclic data.

Bit	Description
LSB 0	Remote enable switch status (IDN P122)
1	Input 1 status (IDN P124)
2	Input 2 status (IDN P126)
3	Input 3 status (IDN P128)
4	Reserved
5-15	Not used

Data Length: 2 bytes

Data Type: Binary

Minimum:

Maximum:

Availability: SERCOS version 2.0.1 and higher

Non-Volatile: No

Write Access: Read-only

Serial Equivalent: ($\sim$ REMOTE) | ($\sim$ IN1<<1) |
($\sim$ IN2<<2) | ($\sim$ IN3<<3)

IDN P147: (32, 915) Configurable I/O: Inputs Polarity

Description: Allows the master to invert the polarity of the configurable inputs which are located on connector C3 (pins 9,10, and 11). An input signal is inverted if the corresponding bit in IDN P147 is set.

Bit	Description
LSB 0	Input 1 inversion
1	Input 2 inversion
2	Input 3 inversion
3	Input 4 inversion
4	Input 5 inversion
5	Input 6 inversion
6-15	Reserved (set to 0)

Data Length: 2 bytes

Data Type: Binary

Write Access: CP 2-4, EN

Availability: SERCOS version 2.0.6 and higher

Non-Volatile: Yes

Serial Equivalent: ININV1, ININV2, ININV3

IDN P148: (32, 916) O1 Trigger Level

Description: Used to define the trip level for O1MODE (IDN P131). Range is dependent on O1MODE (IDN P131).

0	N/A
1	Absolute: 0 to 15000 RPM (mm/sec for linear motors)
2	Absolute: 0 to 1000 (0.1 percent of DIPEAK)
3	N/A
4	Absolute: 0 to 15000 RPM (mm/sec for linear motors)
5 – 7	N/A
8	Absolute: 0 to 15000 RPM (mm/sec for linear motors)
9	(-2,147,483,647) to 2,147,483,647 counts
10	N/A

Data Length: 2 bytes

Data Type: Unsigned integer

Write Access: CP2-4

Availability: SERCOS version 3.0.4 and higher

Non-Volatile: Yes

Serial Equivalent: O1TRIG

IDN P149: (32, 917) O1 Reset Level

Description: Used to define the reset level for O1MODE (IDN P131). Range is dependent on O1MODE (IDN P131).

Data Length: 2 bytes

Data Type: Unsigned Integer

Minimum:

Maximum:

Default: IDN P85

Units: rpm or mm/sec

Non-Volatile: No

Write Access: CP2-4

Serial Equivalent: O1RST

Availability: SERCOS version 3.0.4 and higher

IDN P150: (32, 918) Manufacturer Class 2 Diagnostic Mask

Description: IDN P150 is used to mask manufacturer-defined warnings (IDN 181) and their effect on the C2D change bit (AT status word, bit 12) and the manufacturer-defined warning summary bit (IDN 12, bit 15). A masked manufacturer warning does not affect the contents of IDN 181, but the C2D change bit and the manufacturer-defined warning summary bit is not effected when the masked warning changes state. When a bit in IDN P150 is clear, then the corresponding bit in IDN 181 is masked.

Data Length: 2 bytes

Data Type: Binary

Write Access: CP 2-4, EN

Default: 0xFFFF

Non-Volatile: No

Availability: SERCOS version 1.3.0 and higher

IDN P151: (32, 919) Manufacturer Class 3 Diagnostic Mask

Description: IDN P151 is used to mask manufacturer-defined status signals (IDN 182) and their effect on the C3D change bit (AT status word, bit 11) and the manufacturer defined status signal summary bit (IDN 13, bit 15). A masked manufacturer status signal does not affect the contents of IDN 182, but the C3D change bit and the manufacturer-defined status signal summary bit is not effected when the masked status signal changes state. When a bit in IDN P151 is clear, then the corresponding bit in IDN 182 is masked.

Data Length: 2 bytes

Default: 0xFFFF

Data Type: Binary

Non-Volatile: No

Write Access: CP 2-4, EN

Availability: SERCOS version 1.3.0 and higher

IDN P152: (32, 920) Control Unit Synchronization Bit Monitoring

Description: The CUSB must be toggled by the master every CUCT according to SERCOS 7.3.2.3. The CUSB is used to synchronize commands coming from the master with the drive's μ I. In addition, the CUSB provides a watchdog on the commands coming from the master. The drive monitors the CUSB in CP4 and issues a manufacturer fault (IDN 129, bits 12 or 13) and returns to CP0 when the CUSB toggles incorrectly.

IDN P152 allows the monitoring of the CUSB to be disabled under certain conditions to support masters that do not toggle the CUSB. CUSB monitoring may be disabled if the drive's μ I (IDN P110) is inactive or the CUCT (IDN 1) is equal to the CCT (IDN 2). If the master has disabled CUSB monitoring, by setting P152 to 0 in CP2, and these conditions are not true, then the CP2 to CP3 transition procedure (IDN 127) fails.

Data Length: 2 bytes

Default: 1 (CUSB monitoring active)

Data Type: Binary

Non-Volatile: No

Write Access: CP 2

Availability: SERCOS version 1.5.0 and higher

IDN P153: (32, 921) Hold Mode Status

Description: If the drive is in a hold mode (IDN 182, bit 1), the condition which caused the drive to enter hold mode has its corresponding bit set to 1 in IDN P153.

Bit	Description
LSB 0	Reserved: Halt/Restart bit low (MDT bit 13)
1	Hold DIP switch (DIP switch 7 = 1)
2	Drive is in an active disable process waiting for the drive off delay time (IDN 207) to expire
3	Hardware limit switch active
4	Configurable input mode 19 active
5	Internal hold request during homing process
6-15	Reserved (set to zero)

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: Read-only

Serial Equivalent: Status word 5

Availability: SERCOS version 1.6.8 and higher

IDN P155: (32, 923) APP Velocity Controller Procedure Control

Description: Allows the user to initiate or cancel execution of the “Design APP Velocity Controller” procedure (IDN P105) using the realtime bits. This IDN may be employed to update the APP velocity controller coefficient as fast as possible in realtime rather than using the asynchronous service channel protocol. IDN P155 may be assigned to a RTC. Structure of the IDN:

Bit	Description
LSB 0	1 – Starts the procedure command execution in the drive (equal to setting IDN P105 to 3) 0 – Cancels the procedure (equal to setting IDN P105 to 0)
1-15	Not used

Data Length: 2 bytes

Default: 0

Data Type: Binary

Non-Volatile: No

Write Access: CP 2-4, EN

Serial Equivalent: REFRESH

Availability: SERCOS version 2.0.8 and higher

IDN P156: (32, 924) APP Velocity Procedure Acknowledgement

Description: Bit 0 of the IDN P156 is used for monitoring completion status of the “Design APP Velocity Controller” procedure (IDN P105). Bit 0 is always reset when canceling the procedure command (IDN P105). IDN P156 may be assigned to a RTS. Structure of the IDN:

Bit	Description
LSB 0	1 – Indicates change in the status of the procedure command (IDN P105) 0 – The procedure command not completed or has not been started
1-15	Not used

Data Length: 2 bytes

Default: 0

Data Type: Binary

Non-Volatile: No

Write Access: Read-only

Availability: SERCOS version 2.0.8 and higher

IDN P159: (32, 927) MOTIONLINK Status Summary

Description: Contains the status summary of the drive. **MOTIONLINK** uses this IDN.

Data Length: 2 bytes

Units:

Data Type: Binary

Non-Volatile: No

Minimum:

Write Access: Read-only

Maximum:

Serial Equivalent: STAT

Default:

Availability: SERCOS version 1.5.0 and higher

IDN P160: (32, 928) Scaled Analog Input Value

Description: Contains the scaled analog input, in millivolts, after compensating for offset (IDN P164), dead band (IDN P165), filtering (IDN P166), and analog input circuit attenuation.

Data Length: 2 bytes

Units: Millivolts

Data Type: Integer

Non-Volatile: No

Write Access: Read-only

Serial Equivalent: ANIN

Availability: SERCOS version 1.5.0 and higher

IDN P161: (32, 929) Analog Input Value

Description: Returns the Equivalent analog to digital conversion of the analog input signal, as a two's complement number, after compensating for offset (IDN P164), dead band (IDN P165), and filtering (IDN P166).

When the analog offset is 0, the dead band is 0, and the analog input filter is set to 10 kHz, then the analog input voltage in millivolts: $VIN = [IDN M161] * 0.75352$. IDN P161 may be assigned as AT cyclic data.

Data Length: 2 bytes

Units: ADC counts

Data Type: Integer

Non-Volatile: No

Write Access: Read-only

Serial Equivalent: ANIN / 0.75352

Availability: SERCOS version 1.7.3 and higher

IDN P163: (32, 931) Procedure: Zero the Analog Input Value

Description: Zeros the analog input value (IDN P161) and updates the analog input offset compensation (IDN P164) upon its completion.

Data Length: 2 bytes

Data Type: Binary

Minimum:

Maximum:

Default: 0

Units:

Non-Volatile: No

Write Access: CP 2-4, En

Serial Equivalent: ANZERO

Availability: SERCOS version 2.1.0 and higher

IDN P164: (32, 932) Analog Input Offset Compensation

Description: Defines an offset value that is added to the analog input value (IDN P160 and P161) to compensate for offset or drift.

Data Length: 2 bytes

Data Type: Integer

Minimum: -10,000

Maximum: 10,000

Default: 0

Units: mV

Non-Volatile: Yes

Write Access: CP 2-4, En

Serial Equivalent: ANOFF

Availability: SERCOS version 1.7.3 and higher

IDN P165: (32, 933) Analog Input Dead Band

Description: If the absolute value of analog input voltage (IDN P160 or P161) is less than the dead band voltage, the analog input value is set to 0.

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: 10,000

Default: 0

Units: mV

Non-Volatile: Yes

Write Access: CP 2-4, En

Serial Equivalent: ANDB

Availability: SERCOS version 1.7.3 and higher

IDN P166: (32, 934) Analog Input Low Pass Filter Corner Frequency

Description: Defines the 3 dB point of a single pole low pass filter for the analog input. The filter gain, at a corner frequency of 10 kHz, is 1.

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 1

Maximum: 10,000

Default: 10,000 (unity gain)

Units: Hz

Non-Volatile: Yes

Write Access: CP 2-4, En

Serial Equivalent: ANLPFHZ

Availability: SERCOS version 1.7.3 and higher

IDN P167: (32, 935) Analog Input Position Command Offset Mode

Description: Sets a mode that allows an offset on the master digital position command according to the analog input. The scaling is according to IDN P168.

Data Length: 2 bytes

Default: 1

Data Type: Unsigned integer

Non-Volatile: No

Minimum: 0

Write Access: CP 2-4, En

Maximum: 1

Serial Equivalent:

Availability: SERCOS version 1.7.3 and higher

IDN P168: (32, 936) Analog Input to Position Command Offset Scaling

Description: Sets a scaling factor for the analog input position command offset feature. The value of IDN P168 is added to the master's digital position command when the analog input is 10 V.

Data Length: 4 bytes

Default: 10

Data Type: Signed long

Non-Volatile: No

Minimum: 10

Write Access: CP 2-4, En

Maximum: 0x1000,0000

Availability: SERCOS version 1.7.3 and higher

IDN P170: (32, 938) Source for Analog Output Feature

Description: Sets the source for the analog output feature at user connector C3 pin 13.

Bit	Description
LSB 0	Tachometer (velocity feedback IDN 40) scaled identical to IDN P173
1	I monitor (Equivalent current) scaled identical to IDN P171
2	Velocity Error scaled identical to IDN P173
3	Torque Command Output scaled to IDN P171
4	Reserved
5	Position following error scaled to IDN P172
6	User value according to IDN P175
7	Not used
8	Position feedback (IDN 51) scaled to IDN P172
9-15	Not used

Data Length: 2 bytes

Default: 0

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, En

Maximum: 8

Serial Equivalent: ANOUT

Availability: SERCOS version 2.0.1 and higher

IDN P171: (32, 939) Current Scale Factor for Analog Output

Description: Defines an analog current scale factor that scales the analog output (IDN P170) for modes 1 or 3. The value written is the motor current per 10 volts of analog output. This variable may be either higher or lower than the application current limit (IDN 92), but the actual analog output will be limited by the IDN 92.

Data Length: 4 bytes

Units: 0.1 % of motor I_C (IDN 111) / 10V

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: Depends upon IDNs 110 and 111.

Write Access: CP 2-4, En

Maximum: Depends upon IDNs 110 and 111.

Serial Equivalent: ISCALE * DIPEAK/MICONT

Default: Depends upon IDNs 110 and 111.

Availability: SERCOS version 2.0.1 and higher

IDN P172: (32, 940) Position Scale Factor for Analog Output

Description: Defines a position scale factor that scales the analog output (IDN P170) for modes 5 or 8. The value written is the motor position movement in counts per 10 volts of analog output.

Data Length: 2 bytes.

Units: Counts per 10 volts

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 10

Write Access: CP 2-4, EN

Maximum: 2,147,483,647

Serial Equivalent: PSCALE

Default: 2048

Availability: SERCOS version 2.0.1 and higher

IDN P173: (32, 941) Velocity Scale Factor for Analog Output

Description: Defines an analog velocity scale factor that scales the analog output (IDN P170) for modes 0 or 2. The value written is the motor velocity per 10 V of analog output. This variable may be either higher or lower than the velocity limit (IDN 91), but the actual analog output is limited by IDN 91.

Data Length: 2 bytes

Units: rpm / 10 volts

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 10

Write Access: CP 2-4, En

Maximum: 32767

Serial Equivalent: VSCALE

Default: Depends upon IDN 91.

Availability: SERCOS version 2.0.1 and higher

IDN P175: (32, 943) Analog Output User Value

Description: Sets the user analog output value when P170 is 6.

Data Length: 2 bytes

Default: 0

Data Type: Signed integer

Non-Volatile: No

Minimum: -32768

Write Access: CP 2-4, En

Maximum: 32767

Availability: SERCOS version 2.1.0 and higher

IDN P177: (32, 945) Analog Output Value

Description: Reads the analog output value.

Data Length: 2 bytes

Default: 0

Data Type: Signed integer

Non-Volatile: No

Minimum: -32768

Write Access: Read only

Maximum: 32767

Availability: SERCOS version 2.1.1 and higher

IDN P180: (32, 948) Step Velocity 1

Description: Specifies one of two velocity commands used by the step procedure (IDN P184). The step velocity 1 command is issued to the velocity controller for the time specified by the step velocity duration 1 (IDN P181).

Data Length: 4 bytes

Units: rpm

Data Type: Integer

Non-Volatile: No

Write Access: CP 2-4, En

Serial Equivalent: STEP argument 2

Default: 100

Availability: SERCOS version 1.6.5 and higher

IDN P181: (32, 949) Step Velocity 1 Duration

Description: Specifies the amount of time that the step procedure (IDN P184) issues the step velocity 1 (IDN P180) command to the velocity controller.

Data Length: 2 bytes

Units: milliseconds

Data Type: Unsigned integer

Non-Volatile: No

Minimum: 0

Write Access: CP 2-4, En

Maximum: 32,767

Serial Equivalent: STEP argument 1

Default: 1000

Availability: SERCOS version 1.6.5 and higher

IDN P182: (32, 950) Step Velocity 2

Description: Specifies the second velocity command issued by the step procedure (IDN P184) to the velocity controller to create a square wave step command. The step velocity 2 command is issued to the velocity controller for the time specified by the step velocity duration 2 (IDN P183).

Data Length: 4 bytes

Units: rpm

Data Type: Integer

Non-Volatile: No

Minimum:

Write Access: CP 2-4, En

Maximum:

Serial Equivalent: Step argument 4

Default: 0

Availability: SERCOS version 1.6.5 and higher

IDN P183: (32, 951) Step Velocity 2 Duration

Description: Specifies the amount of time that the step procedure (IDN P184) issues step velocity 2 (IDN P182) command to the velocity controller.

Data Length: 2 bytes

Units: milliseconds

Data Type: Unsigned integer

Non-Volatile: No

Minimum: 0

Write Access: CP 2-4, En

Maximum: 32,767

Serial Equivalent: STEP argument 3

Default: 0

Availability: SERCOS version 1.6.5 and higher

IDN P184: (32, 952) Procedure: Velocity Step

Description: The drive enters an internal velocity mode and automatically performs velocity steps using internally generated square wave velocity commands. This procedure is intended to be used in conjunction with the record procedure (IDN P198) to capture the drive's response while tuning. The step procedure is configured through step velocity 1 (IDN P180), step velocity 1 duration (P181), step velocity 2 (P182), and step velocity 2 duration (IDN P183).

The step procedure fails under the following conditions:

- The drive is disabled or is enabled and moving when the procedure is started.

- The homing procedure (IDN 148), the encoder initialization procedure (IDN P60), or the tune procedure (IDN P188) are active.

- A drive fault is active or is encountered during operation.

The velocity step procedure runs until the requested step has finished (velocity 2 and velocity 2 duration are both zero), the drive is disabled, or the procedure is canceled. When the drive is continuously stepping, the master pauses the procedure before issuing the cancel command. When the step procedure is paused, the drive stops its present motion and holds its position. The master then reads the drive's position feedback and updates its position command appropriately prior to canceling the step procedure.

Data Length: 2 bytes

Default: 0

Data Type: Binary

Non-Volatile: No

Write Access: CP 4, En

Serial Equivalent: STEP

Availability: SERCOS version 1.6.5 and higher

IDN P185: (32, 953) Tune Bandwidth

Description: Sets the bandwidth used during the tune procedure (IDN P188).

Data Length: 2 bytes

Units: Hz

Data Type: Unsigned Integer

Non-Volatile: No

Minimum: 10

Write Access: CP 2-4, En

Maximum: 100

Serial Equivalent: TUNE argument 1

Default: 10

Availability: SERCOS version 1.6.5 and higher

IDN P186: (32, 954) Tune Rotation Direction

Description: Specifies the motor's direction of rotation (as viewed from the output shaft) during a tune procedure (IDN P188). Under low load inertia conditions, the motor shaft only moves in one direction even with a bi-directional configuration.

Dir	Description
0	Bi-directional
1	Clockwise
2	Counter-clockwise

Data Length: 2 bytes

Default: 0

Data Type: Unsigned integer

Non-Volatile: No

Minimum: 0

Write Access: CP 2-4, En

Maximum: 2

Serial Equivalent: TUNE argument 2

Availability: SERCOS version 1.6.5 and higher

IDN P187: (32, 955) Tune Velocity

Description: Specifies the motor's maximum speed during the tune procedure (IDN P188). The velocity is always limited to 0.7 of the bipolar velocity limit (IDN 91).

Data Length: 4 bytes

Units: rpm

Data Type: Unsigned integer

Non-Volatile: No

Minimum: 350

Write Access: CP 2-4, En

Serial Equivalent: TUNE argument 3

Default: 500

Availability: SERCOS version 1.6.5 and higher

IDN P188: (32, 956) Procedure: Tune

Description: The drive enters an internal velocity mode and automatically performs velocity steps in closed loop, while maintaining position and velocity constraints, in order to capture the system dynamics and set tuning constants. The tune procedure is configured through the tune bandwidth (IDN P185), tune rotation direction (IDN P186), and the tune velocity (IDN P187).

The tune procedure fails under the following conditions:

The drive is disabled or is enabled and moving.

The homing procedure (IDN 148), encoder initialization procedure (IDN P60), velocity step procedure (IDN P184), or the record procedure (IDN P198) is active.

The tune algorithm was unable to finish, which may be due to current saturation, a motor that cannot rotate, or unsuccessful controller design.

A drive fault is active or is encountered during operation.

Recommendations on the use of tune:

Start with a low bandwidth and increase the bandwidth after each successful tuning iteration.

The tune algorithm is more accurate at higher tune speeds.

Data Length: 2 bytes

Default: 0

Data Type: Binary

Non-Volatile: No

Write Access: CP4, En

Serial Equivalent: TUNE

Availability: SERCOS version 1.6.5 and higher

IDN P189: (32, 957) Record Sample Time

Description: The record sample time defines the time period between consecutively recorded data points. The actual sample time used by the record procedure (IDN P198) is rounded to the nearest 0.5 μ s.

Data Length: 4 bytes

Units: μ s

Data Type: Unsigned integer

Non-Volatile: No

Minimum: 500

Write Access: CP 2-4, En

Maximum: 5,000,000

Serial Equivalent: RECORD argument 1

Default: 500

Availability: SERCOS version 1.7.1 and higher

IDN P190: (32, 958) Record Channel Buffer Size

Description: The record channel buffer size defines the number of signal samples that are stored on each channel.

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 1

Maximum: 1024

Default: 1024

Units: Data points

Non-Volatile: No

Write Access: CP 2-4, En

Serial Equivalent: RECORD argument 2

Availability: SERCOS version 1.7.1 and higher

IDN P191: (32, 959) Record Channel 1 Signal

Description: Specifies the variable that is recorded on channel 1. Up to four words of data may be recorded among all three channels.

Signal	Description	Size (words)
0	Phase A current	1
1	Phase C current	1
2	Velocity feedback	1
3	Absolute position feedback	1
4	Current loop command	1
5	Velocity loop command	1
6	Motor current	2
7	Analog input	1
8	Configurable input 1	1
9	Configurable input 2	1
10	Configurable input 3	1
11	In position flag	1
12	Position error	2
13	External position feedback	2
14	External velocity feedback	1
15	Profile generator stop flag	1
16	Configurable output 1	1
17	Position command	2
18	Position feedback	2

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: 18

Availability: SERCOS version 1.7.1 and higher

Default: 5

Non-Volatile: No

Write Access: CP 2-4, En

Serial Equivalent: RECORD argument 3

IDN P192: (32, 960) Record Channel 2 Signal

Description: Specifies the variable that is recorded on channel 2. Up to four words of data may be recorded among all three channels.

Signal	Description	Size (words)
0	Phase A current	1
1	Phase C current	1
2	Velocity feedback	1
3	Absolute position feedback	1
4	Current loop command	1
5	Velocity loop command	1
6	Motor current	2
7	Analog input	1
8	Configurable input 1	1
9	Configurable input 2	1
10	Configurable input 3	1
11	In position flag	1
12	Position error	2
13	External position feedback	2
14	External velocity feedback	1
15	Profile generator stop flag	1
16	Configurable output 1	1
17	Position command	2
18	Position feedback	2

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: 18

Availability: SERCOS version 1.7.1 and higher

Default: 2

Non-Volatile: No

Write Access: CP 2-4, En

Serial Equivalent: RECORD argument 4

IDN P193: (32, 961) Record Channel 3 Signal

Description: Specifies the variable that is recorded on channel 3. Up to four words of data may be recorded among all three channels. If the word count of the signals assigned to channels 1 through 3 exceed four words, then channel 3 data is not recorded.

Signal	Description	Size (words)
0	Phase A current	1
1	Phase C current	1
2	Velocity feedback	1
3	Absolute position feedback	1
4	Current loop command	1
5	Velocity loop command	1
6	Motor current	2
7	Analog input	1
8	Configurable input 1	1
9	Configurable input 2	1
10	Configurable input 3	1
11	In position flag	1
12	Position error	2
13	External position feedback	2
14	External velocity feedback	1
15	Profile generator stop flag	1
16	Configurable output 1	1
17	Position command	2
18	Position feedback	2

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: 18

Availability: SERCOS version 1.7.1 and higher

Default: 18

Non-Volatile: No

Write Access: CP 2-4, En

Serial Equivalent: RECORD argument 5

IDN P194: (32, 962) Record Trigger Signal

Description: Specifies the signal or condition that triggers the recording mechanism to capture data.

Signal	Description	Trigger Level (IDN P195)
0	Absolute position feedback	0 to 65535
1	Phase A current	-32767 to 32767
2	Phase C current	-32767 to 32767
3	Velocity feedback	-32767 to 32767
4	Current loop command	-32767 to 32767
5	Velocity loop command	-32767 to 32767
6	Trigger immediately	Not used
7	Trigger on next serial command	Not used
8	Remote input	Not used
9	CW limit switch	Not used
10	CCW limit switch	Not used
11	Configurable input 1	Not used
12	Configurable input 2	Not used
13	Configurable input 3	Not used
14	Configurable output 1	Not used
15	Position command	-2^{32} to $+2^{32} - 1$
16	Position feedback	-2^{32} to $+2^{32} - 1$

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: 16

Availability: SERCOS version 1.7.1 and higher

Default: 3

Non-Volatile: No

Write Access: CP 2-4, En

Serial Equivalent: RECTRIG argument 1

IDN P195: (32, 963) Record Trigger Level

Description: Specifies the value that the trigger signal (IDN P194) must pass through in order for the recording mechanism to capture data. The trigger level range depends upon the selected trigger signal. Refer to the trigger signal IDN description for range information. The record procedure clips trigger levels that exceed the maximum range to the range limit for trigger signals 0 through 5.

Data Length: 4 bytes

Data Type: Integer

Write Access: CP 2-4, En

Availability: SERCOS version 1.71 and higher

Default: 50

Non-Volatile: No

Serial Equivalent: RECTRIG argument 2

IDN P196: (32, 964) Record Trigger Polarity

Description: Specifies the direction the trigger signal (IDN P194) must be changing when it crosses the record trigger level (IDN P195) in order for the recording mechanism to capture data. When a binary signal has been assigned as a trigger signal (signals 8 -14), the trigger polarity specifies the logic level the signal must achieve in order to capture data.

Data Length: 2 bytes

Default: 1

Data Type: Unsigned integer

Non-Volatile: No

Minimum: 0 (decreasing)

Write Access: CP 2-4, En

Maximum: 1 (increasing)

Serial Equivalent: RECTRIG argument 4

Availability: SERCOS version 1.71 and higher

IDN P197: (32, 965) Record Trigger Buffer Offset

Description: The trigger buffer offset defines the number of data points stored before the data point that satisfies the data capture conditions (trigger level and polarity).

Data Length: 2 bytes

Units: Data points

Data Type: Unsigned integer

Non-Volatile: No

Minimum: 0

Write Access: CP 2-4, En

Maximum: 1023

Serial Equivalent: RECTRIG argument 3

Default: 0

Availability: SERCOS version 1.71 and higher

IDN P198: (32, 966) Procedure: Record

Description: Captures the data of up to 3 realtime signals. The following IDNs are used to configure the capture process before the record procedure is started.

IDN P189 Sample time-defines the time period between consecutive recorded data points

IDN P190 Channel buffer size - Defines the number of signal samples recorded

IDN P191 Channel 1 signal

IDN P192 Channel 2 signal

IDN P193 Channel 3 signal

IDN P194 Trigger signal

IDN P195 Trigger level

IDN P196 Trigger polarity

IDN P197 Trigger Offset-determines the amount of data stored before the trigger point

The record procedure runs until the requested data has been captured. After the record procedure returns a successful procedure status, the record data status (IDN P199) indicates which channels have available data. The recorded data must be read from IDN P201 before the record procedure is canceled.

The record procedure fails if the tune procedure is active.

Data Length: 2 bytes

Default: 0

Data Type: Binary

Non-Volatile: No

Write Access: CP 2-4, En

Availability: SERCOS version 1.7.1 and higher

IDN P199: (32, 967) Record Data Status

Description: Indicates the availability of recorded data.

Bit	Field Description
0	1 = Channel 1 data available
1	1 = Channel 2 data available
2	1 = Channel 3 data available
3-5	Reserved
6	1 = Recording data
7	1 = Waiting for trigger
8-15	Reserved

Data Length: 2 bytes

Default: 0

Data Type: Binary

Non-Volatile: No

Write Access: Read-only

Availability: SERCOS version 1.7.1 and higher

IDN P200: (32, 968) Record Data Pointer

Description: Defines the record channel and the starting buffer position of the data contained within the record data IDN (IDN P201).

Bit	Field Description
0-10	Buffer offset
11	Reserved
12	00 — Channel 1 01 — Channel 2 10 — Channel 3
13	00 — Channel 1 01 — Channel 2 10 — Channel 3
14	Reserved
15	Auto-increment buffer offset after reading record data. (0/1 = off/on)

Data Length: 2 bytes

Default: 0

Data Type: Binary

Non-Volatile: No

Write Access: CP 2-4, En

Availability: SERCOS version 1.7.1 and higher

IDN P201: (32,969) Record Data

Description: Contains the record data specified by the record pointer (IDN P200). Record data is only available while the record procedure (IDN P198) is active.

Data Length: 4 byte elements.

Default: Null

Variable length array.

Non-Volatile: No

Data Type: Integer

Write Access: Read-only

Availability: SERCOS version 1.7.1 and higher

IDN P209: (32,977) Harmonic Correction Operation Mode

Description: Sets the harmonic correction operation mode.

Data Length: 2 bytes

Non-Volatile: Yes

Data Type: Integer

Write Access: CP2-4,En

Minimum: 0

Serial Equivalent: HCMODE

Maximum: 4

Availability: SERCOS version 2.1.4 and higher

IDN P210: (32,978) Harmonic Correction Vector 1

Description: Sets the properties of the harmonic correction vector 1.

Data Length: 2 byte elements.

Non-Volatile: Yes

Variable length array.

Write Access: CP2-4,En

Data Type: Integer

Serial Equivalent: HC1

Availability: SERCOS version 2.1.4 and higher

IDN P211: (32,979) Harmonic Correction Vector 2

Description: Sets the properties of the harmonic correction vector 2.

Data Length: 2 byte elements.

Non-Volatile: No

Variable length array.

Write Access: CP2-4,En

Data Type: Integer

Serial Equivalent: HC2

Availability: SERCOS version 2.1.4 and higher

IDN P212: (32,980) Harmonic Correction Vector 3

Description: Sets the properties of the harmonic correction vector 3.

Data Length: 2 byte elements.

Non-Volatile: No

Variable length array.

Write Access: CP2-4,En

Data Type: Integer

Serial Equivalent: HC3

Availability: SERCOS version 2.1.4 and higher

IDN P213: (32,981) Procedure: Configure Harmonic Correction.

Description: This procedure configures the harmonic correction feature after IDN's P210 – P212 or P214 – P222 have been updated.

Data Type: Integer

Non-Volatile: No

Write Access: CP2-4,En

Availability: SERCOS version 2.1.6 and higher

IDN P214: (32,982) Harmonic Number for Harmonic Correction 1

Description: Sets the harmonic number for the harmonic correction 1 vector.

Data Length: 2 bytes.

Data Type: Unsigned Integer

Minimum: 1

Maximum: 1000

Default: 1

Non-Volatile: Yes

Write Access: CP2-4.En

Availability: SERCOS version 2.1.6 and higher

IDN P215: (32,983) Harmonic Phase Offset for Harmonic Correction 1

Description: Sets the harmonic phase offset for the harmonic correction 1 vector.

Data Length: 2 bytes.

Data Type: Unsigned Integer

Minimum: 0

Maximum: 359

Default: 0

Non-Volatile: Yes

Write Access: CP2-4.En

Availability: SERCOS version 2.1.6 and higher

IDN P216: (32,984) Harmonic Amplitude for Harmonic Correction 1

Description: Sets the harmonic amplitude for the harmonic correction 1 vector.

Data Length: 2 bytes.

Data Type: Unsigned Integer

Minimum: 0

Maximum: 16384

Default: 0

Non-Volatile: Yes

Write Access: CP2-4.En

Availability: SERCOS version 2.1.6 and higher

IDN P217: (32,985) Harmonic Number for Harmonic Correction 2

Description: Sets the harmonic number for the harmonic correction 2 vector.

Data Length: 2 bytes.

Data Type: Unsigned Integer

Minimum: 1

Maximum: 1000

Default: 1

Non-Volatile: Yes

Write Access: CP2-4.En

Availability: SERCOS version 2.1.6 and higher

IDN P218: (32,986) Harmonic Phase Offset for Harmonic Correction 2

Description: Sets the harmonic phase offset for the harmonic correction 2 vector.

Data Length: 2 bytes.

Data Type: Unsigned Integer

Minimum: 0

Maximum: 359

Default: 0

Non-Volatile: Yes

Write Access: CP2-4.En

Availability: SERCOS version 2.1.6 and higher

IDN P219: (32,987) Harmonic Amplitude for Harmonic Correction 2

Description: Sets the harmonic amplitude for the harmonic correction 2 vector.

Data Length: 2 bytes.

Data Type: Unsigned Integer

Minimum: 0

Maximum: 16384

Default: 0

Non-Volatile: Yes

Write Access: CP2-4.En

Availability: SERCOS version 2.1.6 and higher

IDN P220: (32,988) Harmonic Number for Harmonic Correction 3

Description: Sets the harmonic number for the harmonic correction 3 vector.

Data Length: 2 bytes.

Data Type: Unsigned Integer

Minimum: 1

Maximum: 1000

Default: 1

Non-Volatile: Yes

Write Access: CP2-4.En

Availability: SERCOS version 2.1.6 and higher

IDN P221: (32,989) Harmonic Phase Offset for Harmonic Correction 3

Description: Sets the harmonic phase offset for the harmonic correction 3 vector.

Data Length: 2 bytes.

Data Type: Unsigned Integer

Minimum: 0

Maximum: 359

Default: 0

Non-Volatile: Yes

Write Access: CP2-4.En

Availability: SERCOS version 2.1.6 and higher

IDN P222: (32,990) Harmonic Amplitude for Harmonic Correction 3

Description: Sets the harmonic amplitude for the harmonic correction 3 vector.

Data Length: 2 bytes.

Default: 0

Data Type: Unsigned Integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP2-4.En

Maximum: 16384

Availability: SERCOS version 2.1.6 and higher

IDN P225: (32, 993) Procedure: Start Sine Zero Process

Description: Starts sine zero process to calculate sine/cosine offset and gain. After starting this procedure, rotate the motor slowly by hand or by command. If the process is successful, the value of sine zero parameters (IDN P227) updates with values calculated by sine zero procedure.

Data Length:

Units:

Data Type:

Non-Volatile:

Minimum:

Write Access: CP 4, EN

Maximum:

Serial Equivalent: SININIT

Default:

Availability: SERCOS version 3.07 and higher

IDN P226: (32,994) Status of Sine Zero

Description: Displays status of Sine zero procedure (IDN P225).

0 – Idle.

1 – Process Running .

2 – Process Running. Speed too fast.

3 – Completed.

4 – Default Values Loaded

5 – Process failed

7 – Process canceled by user

Data Length: 1 byte

Units:

Data Type: integer

Non-Volatile: No

Minimum: 0

Write Access: Read only

Maximum: 7

Serial Equivalent: SININITST

Default: 0

Availability: SERCOS version 3.07 and higher

IDN P227: (32,995) Sine Zero Parameters

Description: Vector of 4 parameters :

[Sine Offset]
[Cosine Offset]
[Sine Gain Fix]
[Sine Gain Shr]

The drive fills this parameters after executing SINZERO(IDN P225), but you can put in other values.

Data Length: 8 bytes

Data Type: Array of 4 Integers

Minimum: -32768, -32768, 0, 0

Maximum: 32767, 32767, 32767, 32767

Default: 0, 0, 0, 0

Units:

Non-Volatile: Yes

Write Access: CP 2-4,EN

Serial Equivalent: SINPARAM

Availability: SERCOS version 3.07 and higher

IDN P230: (32,998) Probe 1 Automatic Re-Trigger Mode

Description: Enables or disables the mode that allows automatic re-trigger of probe 1 by the drive.

Data Length: 2 bytes.

Data Type: Unsigned Integer

Minimum: 0

Maximum: 1

Default: 0

Units:

Non-Volatile: No

Write Access: CP2-4.En

Serial Equivalent:

Availability: SERCOS version 2.2.1 and higher

IDN P231: (32,999) Motor Foldback Disable

Description: Enables/disables the motor current foldback function.

Data Length: 1 byte

Data Type: Unsigned Integer

Minimum: 0

Maximum: 1

Default: 1

Units:

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: MFOLDDIS

Availability: SERCOS version 3.07 and higher

IDN P232: (33,000) Motor Foldback Delay

Description: The delay time for motor foldback. This is the amount of time the system current can exceed IDN 111 before the drive enters the motor foldback state. The time units assumes a worst-case scenario where the drive is applying IDN 109 current. A current level of less than IDN 109 can be allowed for a longer time period.

Data Length: 2 bytes

Data Type: Unsigned Integer

Minimum: 1

Maximum: 2400

Default: 1200

Units:Seconds

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: MFOLDD

Availability: SERCOS version 3.07 and higher

IDN P233: (33, 001) Motor Fold Back Recovery Time

Description: The recovery time for motor foldback. After the drive places the motor in foldback, and the current folds back to IDN 111, this is the amount of time that the current is held at IDN 111 or below before it is allowed to exceed IDN 111 again.

Data Length: 2 bytes

Data Type: Unsigned Integer

Minimum: 1

Maximum: 3600

Default: 1800

Units:Seconds

Non-Volatile: Yes

Write Access: CP 2-4, EN

Serial Equivalent: MFOLDER

Availability: SERCOS version 3.07 and higher

IDN P234:(33,002) Motor Foldback Time Constant

Description: The time constant for motor foldback. After the drive places the motor in the Foldback state, this variable defines how long it takes the drive to reduce the system current level to IDN 111.

Data Length: 2 bytes

Data Type: Unsigned Integer

Minimum: 1

Maximum: 1200

Default: 600

Units:Seconds

Non-Volatile: Yes

Write Access: CP 2-4,EN

Serial Equivalent: MFOLDT

Availability: SERCOS version 3.07 and higher

IDN P235:(33,003) Motor Foldback Status

Description: Displays the status of the motor foldback circuit. When the system current level exceeds MICONTR for too long, the drive enters motor foldback mode, MFOLD changes from 0 to 1, and the drive current is limited gradually (in exponential fashion) to the value of MICONTR (IDN 111).

0 = motor foldback OFF (inactive)

1 = motor foldback ON (drive is limiting output current)

Data Length: 1 bytes

Data Type: Unsigned Integer

Minimum: 1

Maximum: 0

Default:

Units:

Non-Volatile:

Write Access: Read Only

Serial Equivalent: MFOLD

Availability: SERCOS version 3.20 and higher

IDN P236: (33,004) Encoder Init Mode

Description: Sets the encoder initialization mode for the IDN P60 encoder initialization process.

- 0 – soft exponential ramp (Motor rotates clockwise and counter-clockwise several times. Fault occurs if unsuccessful.)
- 1 – hard step (Motor jerks into position. Fault occurs if unsuccessful.)
- 2 – Soft Wake no shake algorithm, see IENCSTART(IDN P59), INITGAIN(IDN P254), INITTIME(IDN P254).
- 3 – Wake no shake algorithm depends on XVAR parameters (Serial only).

Data Length: 2 bytes

Data Type: Unsigned Integer

Minimum: 0

Maximum: 3

Default: 0

Units:

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: INITMODE

Availability: SERCOS version 3.07 and higher

IDN P237: (33,005) Encoder Simulation Index Offset

Description: Encoder simulation index offset, with Sine Encoder feedback.

Data Length: 4 bytes

Data Type: Integer

Minimum: -2147483648

Maximum: 2147483647

Default: 0

Units: Counts

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: ZPOS

Availability: SERCOS version 3.07 and higher

IDN P238: (33,006) PBOFF Status

Description: Switch variable that defines if Position Feedback Offset (IDN P55) was updated.

Data Length: 1 byte

Data Type: integer

Minimum: 0

Maximum: 1

Default: 0

Units: Boolean

Non-Volatile: No

Write Access: Read only

Serial Equivalent: N/A

Availability: SERCOS version 3.07 and higher

IDN P239: (33,007) Fault History

Description: Contains the last four fault messages of the drive. The most recent fault is sent first. Up to 4 fault messages are output by the drive, with each fault message followed by a CR-LF. A time stamp in the format of hours:minutes is displayed along with each fault, indicating the time at which the fault occurred (refer to TRUN IDN P240 for more time stamp information).

Data Length: 4 lines

Data Type: String

Minimum:

Maximum:

Default:

Units:

Non-Volatile: Yes

Write Access: Read only

Serial Equivalent: FLTHIST

Availability: SERCOS version 3.07 and higher

IDN P240: (33,008) Run Time Counter

Description: Current run time counter. Provides a relative incremental run time counter. Error log stamps include the value of this counter at the time of the error. The clock is a very coarse counter and is incremented every 15 minutes. It is intended for use by factory Quality Assurance personnel. This clock has a resolution of 15 minutes and is reset only when the CLREEPROM command is used.

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0000:00

Maximum: 9999:45

Default:

Units: minutes

Non-Volatile: yes

Write Access: Read only

Serial Equivalent: TRUN

Availability: SERCOS version 3.07 and higher

IDN P241: (33,009) Procedure: Clear Fault History

Description: Clear fault history procedure. Clears the fault history buffer, which contains up to four faults.

Data Length:

Data Type:

Minimum:

Maximum:

Default:

Units:

Non-Volatile:

Write Access: CP2-CP4, EN

Serial Equivalent: FLTCLR

Availability: SERCOS version 3.07 and higher

IDN P242: (33,010) Configurable I/O: Input 5 Mode

Description: Sets the functionality of digital input 5 which may be read through IDN P243. The following functions are available:

Mode	Description
0	No special function
1	CW limit switch (IDN P136)
2	CCW limit switch (IDN P137)
3-7	Reserved
8	Second bipolar torque limit (IDN P84)
9-17	Reserved
18	Open fault relay. Refer to IDN P138

Except for mode 0, each function may only be assigned to one digital input. Mode 18 adds an external signal to the fault relay safety chain.

Data Length: 2 bytes

Default: 1

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 18

Serial Equivalent: IN5MODE

Availability: SERCOS version 3.07 and higher

IDN P243: (33,011) Configurable I/O: Input 5 Status

Description: Returns the state of digital input 5 located on extended I/O connector J11, pin A3. A '1' indicates that the digital input is on or is conducting current. IDN P243 may be assigned as a RTS.

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: Read-only

Serial Equivalent: IN5

Availability: SERCOS version 3.07 and higher

IDN P244: (33,012) Configurable I/O: Input 6 Mode

Description: Sets the functionality of digital input 6 which may be read through IDN P244. The following functions are available:

Mode	Description
0	No special function
1	CW limit switch (IDN P136)
2	CCW limit switch (IDN P137)
3-7	Reserved
8	Second bipolar torque limit (IDN P84)
9-17	Reserved
18	Open fault relay. Refer to IDN P138

Except for mode 0, each function may only be assigned to one digital input. Mode 18 adds an external signal to the fault relay safety chain.

Data Length: 2 bytes

Default: 1

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4, EN

Maximum: 18

Serial Equivalent: IN6MODE

Availability: SERCOS version 3.07 and higher

IDN P245: (33,013) Configurable I/O: Input 6 Status

Description: Returns the state of digital input 6 located on extended I/O connector j11 pin B4. A '1' indicates that the digital input is on or is conducting current. IDN P245 may be assigned as a RTS.

Data Length: 2 bytes

Non-Volatile: No

Data Type: Binary

Write Access: Read-only

Serial Equivalent: IN6

Availability: SERCOS version 3.07 and higher

IDN P246: (33,014) Absolute Position Mode

Description: Sets the way of handling absolute position from ENDAT encoders

0 – handle absolute position as unsigned value

1 – handle absolute position as signed value

2 - Handle absolute position as unsigned value, reversed direction.

3 - Handle absolute position as signed value, reversed direction.

Data Length: 2 bytes

Units: n/a

Data Type: Unsigned Char

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4

Maximum: 3

Serial Equivalent: ABSPOSMOD

Default: 0

Availability: SERCOS version 3.1.6 and higher

IDN P247: (33,015) Encoder Wake no Shake process Time

Description: Defines time for encoder initialization wake no shake process.

Data Length: 2 bytes

Data Type: Integer

Minimum: 108

Maximum: 16,000

Default: 108

Units: ms

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: INITTIME

Availability: SERCOS version 3.1.7 and higher

IDN P248: (33,016) Software Resolver Bandwidth

Description: Defines the bandwidth of software resolver mechanism.

High values will provide faster dynamics of the resolver conversion but also suffer from higher feedback noise levels.

Data Length: 2 bytes

Data Type: Unsigned Integer

Minimum: 200

Maximum: 1200

Default: 375

Units: Hz

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: RESBW

Availability: SERCOS version 3.2.0 and higher

IDN P249: (33,017) Under Voltage Recovery Mode

Description: Defines how the drive will recover from an under voltage (UV) fault:

0 = recover by clear faults condition (IDN 99) after the UV condition clears

1 = automatically recover when the UV condition clears

Data Length: 2 bytes

Data Type: Unsigned Char

Minimum: 0

Maximum: 1

Default: 0

Units: n/a

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: UVRECOVER

Availability: SERCOS version 3.2.0 and higher

IDN P250: (33,018) Motor Torque Constant

Description: Defines the motor torque constant (Kt) in metric units.

This value is used for current loop controller design, BEMF compensation algorithm (see also MBEMFCOMP – IDN P27), and standard pole-placement velocity controller design (COMPMODE = 2 or 4). When this variable is changed, the drive will enter a no-comp state, requiring a CONFIG command (see CONFIG).

Modifying MKT automatically updates MBEMF (IDN P27) and MKTI (IDN P251).

Data Length: 2 bytes

Units: Rotary: Nm/Amp*10⁻³

Linear: N / Amp*10⁻³

Data Type: Unsigned Integer

Non-Volatile: Yes

Minimum: 16

Write Access: CP 2-4

Maximum: 64506

Serial Equivalent: MKT

Default: 0

Availability: SERCOS version 3.2.0 and higher

IDN P251: (33,019) Motor Torque Constant

Description: Defines the motor torque constant (Kt) in imperial units.

This value is used for current loop controller design, BEMF compensation algorithm (see also MBEMFCOMP – IDN P27), and standard pole-placement velocity controller design (COMPMODE = 2 or 4). When this variable is changed, the drive will enter a no-comp state, requiring a CONFIG command (see CONFIG).

Modifying MKTI automatically updates MBEMF (IDN P27) and MKT (IDN P250).

MKTI is not available for linear motors (MOTORTYPE=2).

Data Length: 2 bytes

Units: Lbf*ft / Amp * 10⁻³

Data Type: Unsigned Integer

Non-Volatile: Yes

Minimum: 12

Write Access: CP 2-4

Maximum: 47578

Serial Equivalent: MKTI

Default: 0

Availability: SERCOS version 3.2.0 and higher

IDN P252: (33,020) Velocity Over Speed Sensitivity

Description: Defines the velocity over speed sensitivity. That determine how many consecutive background cycles of over speed are needed to latch over speed fault and to disable the drive

Data Length: 2 bytes

Units: n/a

Data Type: Char

Non-Volatile: Yes

Minimum: 1

Write Access: CP 2-4

Maximum: 40

Serial Equivalent: VOSPDSSENS

Default: 20

Availability: SERCOS version 3.2.0 and higher

IDN P253: (33,021) In Position Flag

Description: indicates if the actual position (IDN 51) is following the commanded position (IDN P11) within the following error set by IDN 57.

Data Length: 2 bytes

Data Type: Unsigned Integer

Minimum: 1

Maximum: 0

Non-Volatile: No

Write Access: Read only

Serial Equivalent: INPOS

Availability: SERCOS version 3.2.0 and higher

IDN P254: (33,022) Encoder Wake no Shake process Gain.

Description: Defines gain for encoder initialization wake-no-shake process.

Data Length: 2 bytes

Data Type: Unsigned Integer

Minimum: 100

Maximum: 10000

Default: 1000

Units: n/a

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: INITGAIN

Availability: SERCOS version 3.2.0 and higher

IDN P255: (33,023) Dual Feedback Mode

Description: Defines dual feedback mode.

0 - motor feedback (default).

1- External feedback.

2- External feedback with loss detection.

Dual feedback is not available in gear mode (OPMODE=4).

Data Length: 2 bytes

Data Type: Unsigned Char

Minimum: 0

Maximum: 2

Default: 0

Units: n/a

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: DUALFB

Availability: SERCOS version 3.2.0 and higher

IDN P256: (33,024) Procedure: Convert

Description: Converts the internal velocity structure to VD, VH, VR, VF, and VFI (it actually overrides those variables)

Data Length: 2 bytes

Write Access: Write only

Availability: SERCOS version 3.2.0 and higher

Non-Volatile: No

Serial Equivalent: CONVERT

IDN P257: (33,025) Procedure: Save Parameters to ENDAT encoder.

Description: Saves parameters MPHASE (IDN P38) and PFBOFF (IDN P55) to ENDAT encoder.

Data Length: 2 bytes

Non-Volatile: No

Write Access: Write only

Serial Equivalent: HSAVE

Availability: SERCOS version 3.2.0 and higher

IDN P258: (33,026) Capture type

Description: Defines capture type, When drive in dual feedback mode and bit 1 is set the capture done on external index.

Bit	Description
LSB 0	Capture on switch
1	Capture on index
2 - 15	Reserved (set to 0)

Data Length: 2 bytes

Units: n/a

Data Type: Unsigned integer

Non-Volatile: No

Minimum: 1

Write Access: CP 2-4

Maximum: 3

Serial Equivalent:

Default: 1

Availability: SERCOS version 3.2.4 and higher

IDN P259: (33,027) Active Disable Delay Time

Description: Sets the amount of time that the drive waits before start active disable process in case of fault. This IDN have no affect if active disable process activated via remote input or (MDT control word, bit 15).

Data Length: 2 bytes

Units: ms

Data Type: Unsigned integer

Non-Volatile: Yes

Minimum: 0

Write Access: CP 2-4

Maximum: 1000

Serial Equivalent: DISDELAY

Default: 0

Availability: SERCOS version 3.3.0 and higher

IDN P260: (33,028) Encoder Simulation Output Mode

Description: Sets the encoder Simulation output mode

- 0 - encoder simulation A/B (default)
- 1 - encoder simulation pulse up pulse down
- 2 - AqB inverted to BqA

Data Length: 2 bytes

Data Type: Unsigned Char

Minimum: 0

Maximum: 2

Default: 0 - Resolver

2 – Encoder, Sine-Encoder

Units: n/a

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: ENCOUTMOD

Availability: SERCOS version 3.3.1 and higher

IDN P261: (33,029) Interpolation Factor for Encoder Output

Description: Sets the second interpolation factor for the equivalent encoder output. For encoder motor feedback only binary values accepted 1,2,4,16,32,64,128.

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 1

Maximum: 128

Default: 1

Units: n/a

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: SININTOUT

Availability: SERCOS version 3.3.1 and higher

IDN P262: (33,030) Zero Mode

Description: Sets the Zero mode for Zero procedure P57.

- 1 – Regular resolver zero mode.
- 2 – AKM resolver zero mode.

Data Length: 2 bytes

Data Type: Integer

Minimum: 1

Maximum: 2

Default: 1

Units: n/a

Non-Volatile: No

Write Access: CP 2-4

Serial Equivalent: ZERO

Availability: SERCOS version 3.3.1 and higher

IDN P263: (33,031) Torque limit velocity

Description: Current limit velocity.

Set the velocity threshold in which below is allowed to switch from ILIM value(IDN 92) to ILIM2(IDN P84), for INxMODE = 31.

Data Length: 2 bytes

Data Type: Integer

Minimum: 0

Maximum: VLIM

Default: 1

Units: RPM

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: ILIMVEL

Availability: SERCOS version 3.3.4 and higher

IDN P264: (33,032) external offset

Description: Set an offset that is added to the internal accumulated position feedback from the external encoder to give the value of PEXT.

Data Length: 4 bytes

Data Type: Long

Minimum: -2147483648

Maximum: 2147483647

Default: 0

Units: Counts

Non-Volatile: No

Write Access: CP 2-4

Serial Equivalent: PEXTOFF

Availability:

IDN P265: (33,033) Bits 14/15

Description: Set the bits 14/15 of the status word.

If 0(default) use legacy behavior of status word bits 14,15. If 1 use the new behavior.

Data Length: 2 bytes

Data Type: Integer

Minimum: 0

Maximum: 1

Default: 0

Units: n/a

Non-Volatile: No

Write Access: CP 2-4

Serial Equivalent:

Availability: SERCOS version 3.4.6 and higher

IDN P266: (33,034) Pcmd/Vcmd validity monitoring

Description: Set the status of the Sercos - Invalid Pcmd/Vcmd protection (according to ACC/DEC and VLIM).

0 - disable (default).
1 - enable.

Data Length: 2 bytes

Data Type: Integer

Minimum: 0

Maximum: 1

Default: 0

Units: n/a

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: PCMDVCMD

Availability: SERCOS version 3.5.2 and higher

IDN P267: (33,035) LPF cutoff frequency

Description: Sets the LPF cutoff frequency of the deceleration profile.

Default deceleration profile is linear and motor decelerates speed to zero at the DECSTOP rate. HOLDLPFHZ changes deceleration profile from linear to parabolical.

0 - filter disabled (transparent) (default).
1 to 2395 is the frequency in Hz.

See HOLD (IDN P153) and DECSTOP (IDN P87) command.

Data Length: 2 bytes

Data Type: Integer

Minimum: 0

Maximum: 2395

Default: 0

Units: Hz

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: HOLDLPFHZ

Availability: SERCOS version 3.5.2 and higher

IDN P268: (33,036) HOMESTATE RESET

Description: Set the option to reset homestate from SERCOS

Data Length: 2 bytes

Data Type: Integer

Minimum: 1

Maximum: 1

Default: 1

Units: n/a

Non-Volatile: Yes

Write Access: Write only

Serial Equivalent:

Availability: SERCOS version 3.5.4 and higher

IDN P269: (33,037) Quick Deceleration rate

Description: Set or read the Quick Deceleration rate

Data Length: 4 bytes

Units: Rotary: RPM/sec

Linear: mm/sec²

Data Type: Long

Non-Volatile: Yes

Minimum: -400 000

Write Access: CP 2-4

Maximum: -10

Serial Equivalent: DECSTOPHR

Default: 0

Availability: SERCOS version 3.5.4 and higher

IDN P270: (33,038) Manufacture Version

Description: Set or read the number of Manufacture version.

Data Length: 4 bytes

Units: n/a

Data Type: Long

Non-Volatile: Yes

Minimum: -2147483648

Write Access: CP 2-4

Maximum: 2147483647

Serial Equivalent: MFRVER

Default: 0

Availability: SERCOS version 3.6.0 and higher

IDN P271: (33,039) Drive saturation

Description: Reflects drive saturation. A foldback occurs when IFOLD goes below ILIM.

Data Length: 4 bytes

Units: % of DIPEAK * 0.1

Data Type: Long

Non-Volatile: No

Minimum: 0

Write Access: Read Only

Maximum: 4294967296

Serial Equivalent: IFOLD

Default: n/a

Availability: SERCOS version 3.6.1 and higher

IDN P272: (33,040) Manufacture Label

Description: Set or read the string of Manufacture label.

Data Length: array of 20 chars.

Units: Rotary: characters

Data Type: Long

Non-Volatile: Yes

Minimum: 0 char

Write Access: CP 2-4

Maximum: 20 char

Serial Equivalent: MFRLABEL

Default: 0 char

Availability: SERCOS version 3.6.0 and higher

IDN P273: (33,041) GPAFR flag

Description: Set or read the flag of position loop feedforward acceleration gain. See GPAFR (IDN 348) and GPAFR2 (IDN P115).

GPAFRDIS flag - added to ignore GPAFR, GPAFR2 when a MI, MA(serial i/f) or MH command is performed. This function is called in response to the GPAFRDIS command, when flag is (set serial) MA, MI performed with GPAFR, GPAFR2 = 0.

Data Length: 2 bytes

Data Type: Unsigned Char

Minimum: 0

Maximum: 1

Default: 0

Units: n/a

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: GPAFRDIS

Availability: SERCOS version 3.6.0 and higher

IDN P274: (33,042) ATC flag

Description: This function is called in response to the ATCVEN message, to set or query the GPAFRDIS flag

Data Length: 2 bytes

Data Type: Unsigned Char

Minimum: 0

Maximum: 1

Default: 0

Units: n/a

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: ATCVEN

Availability: SERCOS version 3.6.0 and higher

IDN P275: (33,043) Enable delay time

Description: Release breaks after drive is enabled.

Active disable enable delay time, expressed in mS.

In active disable, when the motor is enabled, a delay is done between the output and the enable. This way the brakes are released after the drive is enabled.

Data Length: 2 bytes

Data Type: Unsigned integer

Minimum: 0

Maximum: 65535

Default: 0

Units: ms

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: ENTIME

Availability: SERCOS version 3.4.0 and higher

IDN P276: (33,044) Scale-Down factor

Description: sets the value of a scale-down factor for the encoder equivalent output channel (ENCOUT – IDN P65) for encoder and sine-encoder based systems only.

For encoder-based systems:

$$\text{ENCOUT} = \text{MENCRES} / \text{ENCOUTO}.$$

For sine encoder-based systems:

$$\text{ENCOUT} = \text{MENCRES} * \text{SININTOUT} / \text{ENCOUTO}.$$

Data Length: 2 bytes

Data Type: Unsigned Char

Minimum: 1

Maximum: 16

Default: 1

Units: n/a

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: ENCOUTO

Availability:

IDN P277: (33,045) Current Loop coefficients

Description: sets direct parameter values for an extended current loop controller setting. Non zero values will override automatic current controller design, a CONFIG command is required following CURRCOEF. Setting the coefficients back to zero (their default), will return to the automatic current controller.

CURRCOEF [d1] [d2] [d_shr] [r0] [r1] [h0] [h1] [round] [rh_shr] [out_shr]

d1 , d2 - negated coefficients of controller filter "d".

r0 , r1 - coefficients of forward filter "r".

h0 , h1 - coefficients feedback filter "h".

* The above parameters are in the range [-32767 .. 32767]

round - not in effect.

Total shifts for the d coefficients is : rh_shr + d_shr.

Total shifts for the h,r coefficients is : rh_shr.

out_shr : should be set to (4,5,6,7) for (8,16,32,64) KHz respectively according to PWM frequency.

Data Length: Array

Data Type: Integer

Minimum: see above

Maximum: see above

Default: 0 0 0 0 0 0 0 0 0 0

Units: n/a

Non-Volatile: Yes

Write Access: CP 2-4

Serial Equivalent: CURRCOEF

Availability: SERCOS version 3.6.0 and higher

IDN P278: (33,046) Direction definition

Description: sets the direction defined as positive rotation for the motor as seen when looking at the motor shaft end.

0 = positive motion is counter-clockwise (CCW)

1 = positive motion is clockwise (CW)

DIR command was expanded. The command now takes up to 3 arguments. The command is backward compatible. There are 10 bits for 10 possible parameters that may be subject to inversion according to the SERCOS spec. For now only 4 are supported.

Position command, Velocity command and Torque command may be inverted using the first argument.

Position feedback may be inverted using the second parameter only for SERCOS i/f.

First parameter: Position command, Velocity command and Torque command.

cmdnd	Position	Velocity	Torque
0	1	1	1
1	0	0	0
2	0	1	0
3	0	1	1
4	1	0	0
5	1	0	1
6	1	1	0
7	0	0	1

Second parameter: External position feedback, Motor Position feedback, Velocity feedback and Torque feedback.

cmdnd	External	Motor	Velocity	Torque
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

Third parameter: Position additive command, Velocity additive command and Torque additive command (not supported yet). 0 - non inverted, 1 - inverted.

Data Length: Array	Units: n/a	
Data Type: Integer	Non-Volatile: Yes	
Minimum: see above	Write Access: CP 2-4	
Maximum: see above	Serial Equivalent: DIR	
Default: 1 0 0	Availability: SERCOS version 3.6.0 and higher	

Glossary of Terms & Acronyms

Availability	Denotes the SERVOSTAR drive version that each IDN is applicable to. If no information is displayed, the IDN is considered valid for all versions.
APP	Advanced Pole Placement
AT	Amplifier Telegram
C1D	Class 1 Diagnostic - Fault
C2D	Class 2 Diagnostic - Warning
C3D	Class 3 Diagnostic - Status
CCT	Communication Cycle Time
CCW	Counter-Clockwise - CW and CCW are viewed from the output end of the motor.
CP	Communication Phase
CUCT	Control Unit Cycle Time
CUSB	Control Unit Synchronization Bit (MDT Control Word Bit 10)
CW	Clockwise - CW And CCW are viewed from the output end of the motor.
Data Length	Lists the IDN data element length in bytes. Possible entries for this field are 2, 4, 1 V, 2 V, and 4 V. A 'V' following the number of bytes indicates a variable length data element. For example, "2 V" indicates that the IDN may contain a variable number of 2 byte words.
Data Type	Indicates how the data should be interpreted and displayed. Possible entries for this field are binary, integer, unsigned integer, text, and IDN.
Default	The default value for element 7 of an IDN. IDNs may assume their default values due to a reset procedure or after a firmware upgrade. A default entry of "motor data" indicates that the default value is determined by a motor data sheet. If an IDN does not have a default value, then the "default" field is not listed within the IDN description.
Description	A short explanation of the IDN purpose.
IC	Continuous Current
IDN	The Identification Number. An IDN preceded by the prefix 'P', specifies a product-specific (manufacturer) IDN in short-hand notation. The actual IDN number for a product-specific IDN, may be obtained by adding 32768 to the short-hand numeric value. For convenience, the actual IDN number is given in parenthesis following the short hand notation. For example, P2 is a manufacturer specific IDN whose actual IDN number is 32770.
IDN Name	A descriptive title of the IDN.
IP	Peak Current
LSB	Least Significant Bit

Maximum	This field, together with minimum, indicates the range of IDN element 7 data. In general, IDN elements 5 and 6 are not supported if the range fields are not listed within the IDN description. The ranges of some IDNs are dependent upon the value of other IDNs.
MDT	Master Data Telegram
Minimum	This field, together with maximum, indicates the range of IDN element 7 data. In general, IDN elements 5 and 6 are not supported if the range fields are not listed within the IDN description. The ranges of some IDNs are dependent upon the value of other IDNs.
MSB	Most Significant Bit
MST	Master Synchronization Telegram
Non-Volatile	Indicates whether the IDN data may be saved to non-volatile memory. IDN data that resides in non-volatile memory is restored to the IDN upon powering up the drive. IDN data that does not reside in non-volatile memory is assigned default values when the drive is powered-up.
PDFF	Pseudo-Derivative Feed Forward
RTC	Realtime Control Bit
RTS	Realtime Status Bit
Serial Equivalent	Lists an equation of equivalent protocol commands that may be issued through the RS-232/485 serial port to obtain the IDN data. Evaluating the equation results in the contents of the IDN. If no serial equivalent commands are available, then field values are not listed within the description.
SPP	Standard Pole Placement
Units	Specifies the units of IDN element 7 and of the minimum, maximum, and default fields. To obtain the final value of the IDN, multiply the value read from the IDN by the units of the IDN. IDNs with data types of binary, text, or IDN do not have units and no units are listed with the IDN description.
Write Access	Lists the CPs during which an IDN may be written. In general, an IDN may be read through the service channel during all CPs above CP1. Writing to an IDN may be restricted during some CPs or while the drive is enabled.
μl	Micro-Interpolator