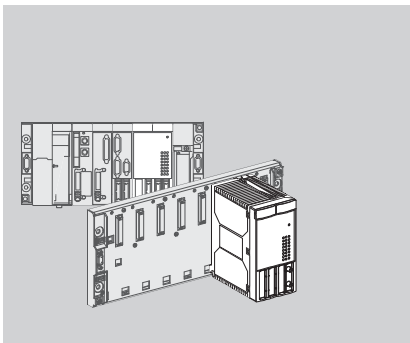


# Modicon Premium PLCs TSX CSY 84 / 85 / 164

SERCOS \* Motion Control

Reminder

Edition June 2009



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## **TSX CSY 84/85/164 module using PL7**

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## Implicitly Exchanged Input Variables

The following 32 input bits and the input word are implicitly exchanged between the processor and the axis control module:

Address	Type	Symbol	Description
%lxy.i.ERR	Bit	ERR	Channel fault
%lxy.i.0	Bit	RAMPING	Indicates whether the axis is accelerating or decelerating
%lxy.i.1	Bit	STEADY	The speed is steady
%lxy.i.2	Bit	STOPPING	The movement is decelerating to a stop
%lxy.i.3	Bit	PROFILE_END	The last profile command has been sent to the module
%lxy.i.4	Bit	IN_POSITION	The axis is within the in-position band
%lxy.i.5	Bit	AXIS_HOMING	The axis is homing. For an imaginary axis, this bit is inactive
%lxy.i.6	Bit	AXIS_HOMED	The axis position reading is referenced off the home position
%lxy.i.7	Bit	AXIS_NOT_FOLLOWING	The drive is not recognizing module commands
%lxy.i.8	Bit	HOLDING	The axis is holding
%lxy.i.9	Bit	RESUMING	The axis is moving after a hold
%lxy.i.10	Bit	DRIVE_ENABLED	The drive is enabled
%lxy.i.11	Bit	DRIVE_DIAG	The drive is performing a class 3 diagnostic
%lxy.i.12	Bit	DRIVE_WARNING	The drive is performing a class 2 diagnostic
%lxy.i.13	Bit	DRIVE_FAULT	The drive is performing a class 1 diagnostic
%lxy.i.14	Bit	DRIVE_DISABLED	The drive is disabled

<b>Address</b>	<b>Type</b>	<b>Symbol</b>	<b>Description</b>
%lx.y.i.15	Bit	AXIS_SUMMARY_FAULT	Drive fault
%lx.y.i.16	Bit	AXIS_COMM_OK	Communication between the module and the drive is OK
%lx.y.i.17	Bit	AXIS_IS_LINKED	The axis belongs to a set of axes
%lx.y.i.18	Bit	AXIS_IN_COMMAND	The axis is active and can be controlled
%lx.y.i.19	Bit	/	Reserved
%lx.y.i.20	Bit	AXIS_AT_TARGET	The axis is within the in-position band for the target position
%lx.y.i.21	Bit	AXIS_POS_LIMIT	The axis has reached the positive limit
%lx.y.i.22	Bit	AXIS_NEG_LIMIT	The axis has reached the negative limit
%lx.y.i.23	Bit	AXIS_WARNING	MotionWarning status returned by the drive
%lx.y.i.24	Bit	BIAS_REMAIN	Offset added to the command position
%lx.y.i.25	Bit	AXIS_MANUAL_MODE	0 : automatic mode (by default) 1 : manual mode
%lx.y.i.26	Bit	DRIVE_REALTIME_BIT1	Drive bit
%lx.y.i.27	Bit	DRIVE_REALTIME_BIT2	Drive bit
%lx.y.i.28	Bit	AXIS_HOLD	The axis is stopped and waiting for a command
%lx.y.i.29	Bit	AXIS_HALT	The axis has stopped.
%lx.y.i.30	Bit	AXIS_FASTSTOP	The axis has faststopped

Address	Type	Symbol	Description
%lxy.i.31	Bit	AXIS_READY	The axis is ready to respond to a command
%lxy.i.32	Bit	CONF_OK	The channel is configured
%lFxy.i.0	Floating point	POSITION	Actual position

## Implicitly Exchanged Output Variables

The following 32 output bits and the output word are implicitly exchanged between the processor and the axis control module:

Address	Type	Symbol	Description
%Qxy.i.0	Bit	/	Reserved
%Qxy.i.1	Bit	/	Reserved
%Qxy.i.2	Bit	CONTROL_ACQUIRE	Rising edge: Acquires command of controlled axes and links them to the MotionSet. The AXIS_IN_COMMAND (MotionStatus) bit is set to 1 if the operation was performed correctly. Associated ALLOW bit: ALLOW_ACQUIRE
%Qxy.i.3	Bit	/	Reserved
%Qxy.i.4	Bit	CONTROL_JOG_POS	Rising edge: performs continuous movements in positive direction. Falling edge: stops the movement in progress
%Qxy.i.5	Bit	CONTROL_JOG_NEG	Rising edge: performs continuous movements in negative direction. Falling edge: stops the movement in progress
%Qxy.i.6	Bit	REALTIME_CONTROL_BIT1	Rising edge: activates the IDN command when configured in the drive.



Address	Type	Symbol	Description
%Qxy.i.7	Bit	REALTIME_CONTROL_BIT2	Rising edge: activates the IDN command when configured in the drive.
%Qxy.i.8	Bit	/	Reserved
%Qxy.i.9	Bit	/	Reserved
%Qxy.i.10	Bit	CONTROL_ENABLE	Rising edge: Enables the controlled axes. The DRIVE_ENABLED (MotionStatus) bit is set to 1 if the operation was performed correctly. Associated ALLOW bit: ALLOW_ENABLE
%Qxy.i.11	Bit	CONTROL_FOLLOW	Rising edge: Turns following on for the FollowerSet or a member of a FollowerSet. The AXIS_IS_LINKED (MotionStatus) bit is set to 1 when the following is active. Associated ALLOW bit: ALLOW_FOLLOW
%Qxy.i.12	Bit	CONTROL_RESUME	Rising edge: Resumes from a hold. The AXIS_HOLD (MotionStatus) bit is set to 0 when the resume starts. Associated ALLOW bit: ALLOW_RESUME
%Qxy.i.13	Bit	CONTROL_INC_POS	Rising edge: performs incremental movements in positive direction.
%Qxy.i.14	Bit	CONTROL_INC_NEG	Rising edge: performs incremental movements in negative direction.
%Qxy.i.15	Bit	CONTROL_CLEAR_FAULT	Rising edge: Clears motion faults (MotionFault). The AXIS_SUMMARY_FAULT (MotionStatus) bit is set to 0 if the operation was performed correctly.
%Qxy.i.16	Bit	/	Reserved
%Qxy.i.17	Bit	/	Reserved

Address	Type	Symbol	Description
%Qxy.i.18	Bit	ALLOW_ACQUIRE	Falling edge: Releases the controlled axes. The <b>AXIS_IN_COMMAND</b> (MotionStatus) bit is clear when the axes are released. Inhibit action (clear): Prevents acquisition of controlled axes by this MotionSet. Associated CONTROL bit: <b>CONTROL_ACQUIRE</b>
%Qxy.i.19	Bit	/	Reserved
%Qxy.i.20	Bit	/	Reserved
%Qxy.i.21	Bit	/	Reserved
%Qxy.i.22	Bit	/	Reserved
%Qxy.i.23	Bit	/	Reserved
%Qxy.i.24	Bit	/	Reserved
%Qxy.i.25	Bit	/	Reserved
%Qxy.i.26	Bit	ALLOW_ENABLE	Falling edge: Disables the controlled axes. The <b>DRIVE_DISABLED</b> (MotionStatus) bit is set to 1 when the axes are disabled. Inhibit action (clear): Prevents enabling of the MotionSet. Associated CONTROL bit: <b>CONTROL_ENABLE</b>
%Qxy.i.27	Bit	ALLOW_FOLLOW	Falling edge: Turns following off for a FollowerSet or a member of a FollowerSet. The <b>AXIS_IS_LINKED</b> (MotionStatus) bit is set to 0 when the following is inactive. Inhibit action (clear): Turns following off. Associated CONTROL bit: <b>CONTROL_FOLLOW</b>

Address	Type	Symbol	Description
%Qxy.i.28	Bit	ALLOW_RESUME	Falling edge: Issues a hold command to the controlled axes. The AXIS_HOLD (MotionStatus) bit is set to 1 when the motion profile is holding with 0 commanded speed. Inhibit action (clear): Turns resuming off. Hold state remains whenever axes are enabled. Associated CONTROL bit: CONTROL_RESUME
%Qxy.29	Bit	ALLOW_MOVE	Falling edge: Issues a halt. The AXIS_HALT (MotionStatus) bit is set when the halt process starts. Inhibit action (clear): Turns off movement commands. Halt state remains whenever axes are enabled.
%Qxy.i.30	Bit	ALLOW_NOT_FASTSTOP	Falling edge: Issues a FastStop command to the controlled axes. The AXIS_FASTSTOP (MotionStatus) bit is set to 1. Inhibit action (clear): Turns off movements and remains in FastStop when the axes are enabled. Rising edge: Cancels FastStop if the axes are supplied. The AXIS_FASTSTOP (MotionStatus) bit is clear.
%Qxy.i.31	Bit	ALLOW_NOT_FAULT	Falling edge: Triggers a user error. The AXIS_SUMMARY_FAULT (MotionStatus) bit is set to 1. Inhibit action (clear): Keeps user error asserted.
%QDxy.i.0	Double word	REMOTE_POSITION	Simulated position

## Adjustment Parameters for the SERCOS® Function

With channel 0, the following parameters are exchanged by the WRITE\_PARAM and READ\_PARAM commands:

Address	Type	Symbol	Description
%MWxy.i.35	Word	CYCLE_TIME	SERCOS® ring cycle time (see chapter 6, SERCOS® Function Configuration)
%MWxy.i.36	Word	BAUD_RATE	Ring flow rate (in Bauds)
%MWxy.i.37	Word	OPTICAL_POWER	Optical power in the fiber

## Adjustment Parameters for an Individual Axis

With channels 1 to 16, the following parameters are exchanged by the WRITE\_PARAM and READ\_PARAM commands:

Address	Type	Symbol	Description
%MWxy.i.35:X0	Bit	ENABLE_ROLLOVER	Enables rollover mode
%MWxy.i.35:X1	Bit	TEST_POSITION_BAND	Enables position test
%MWxy.i.35:X2	Bit	Reserved	Always clear
%MWxy.i.35:X3	Bit	Reserved	Always clear
%MWxy.i.35:X4	Bit	DISABLE_LIMITS_CHECKING	Disables limits checking
%MWxy.i.35:X5	Bit	/	Reserved
%MWxy.i.35:X6	Bit	_FREEWHEEL_STOP	0 = fast stop then release of torque at stop on fault 1 = freewheel stop on fault
%MFxy.i.36	Floating point	ACCEL	Acceleration value

<b>Address</b>	<b>Type</b>	<b>Symbol</b>	<b>Description</b>
%MFxy.i.38	Floating point	DECEL	Deceleration value
%MWxy.i.40	Word	ACCEL_TYPE	Acceleration type
%MFxy.i.41	Floating point	IN_POSITION_BAND	Value of the in-position band
%MFxy.i.43	Floating point	ENABLE_POSITION_BAND	Value of the monitoring window
%MFxy.i.45	Floating point	ROLLOVER_MAX	Maximum rollover
%MFxy.i.47	Floating point	ROLLOVER_MIN	Minimum rollover
%MFxy.i.49	Floating point	ACCEL_MAX	Maximum acceleration
%MFxy.i.51	Floating point	DECEL_MAX	Maximum deceleration
%MFxy.i.53	Floating point	SPEED_MAX	Maximum speed
%MFxy.i.55	Floating point	POSITION_MAX	Maximum position
%MFxy.i.57	Floating point	POSITION_MIN	Minimum position
%MFxy.i.59	Floating point	SCALE_NUMERATOR	Scaling factor numerator (*)
%MFxy.i.61	Floating point	SCALE_DENOMINATOR	Scaling factor denominator (*)
%MWxy.i.63	Word	ACCEL_UNITS	Acceleration unit
%MWxy.i.64	Word	SPEED_UNITS	Velocity unit
%MWxy.i.65	Word	POSITION_UNITS	Position unit

(\*) See Configuration of an Individual Axis and the GetGearRatio Function.

## Adjustment Parameters for a Set of Follower Axes

With channels 21 to 24, the following parameters are exchanged by the WRITE\_PARAM and READ\_PARAM commands (on modules TSX CSY 84/164) and MOD\_PARAM (on module TSX CSY 164):

Address	Type	Symbol	Description
%MWxy.i.35	Word	MASTER_CHANNEL	Number of the master axis
%MWxy.i.36	Word	SLAVE_CHANNEL_1	Number of slave axis 1
%MWxy.i.37	Word	FOLL_DESCRIPTION_1	Definition of slave axis 1
%MWxy.i.37:X0	Bit	FOLL_WHERE_1	0 = Controller
%MWxy.i.37:X1	Bit	FOLL_TYPE_1	0 = Gearing; 1 = Camming
%MWxy.i.37:X2	Bit	FOLL_POSITION_1	0 = following the actual position; 1 = following the commanded position
%MWxy.i.37:X3	Bit	FOLL_FOLLOW_ON_HALT_1	1 = stop the follower axis if master/slave link is removed
%MWxy.i.37:X4	Bit	/	Always clear
%MWxy.i.37:X5	Bit	/	Always clear
%MWxy.i.37:X6	Bit	FOLL_HALT_MASTER_1	1 = normal master stop in the event of a slave error
%MWxy.i.37:X7	Bit	FOLL_BIAS_REMAINS_1	1 = dynamic offset on position of master

Address	Type	Symbol	Description
%MWxy.i.37:X8 to %MWxy.i.37:X10	Bit	FOLL_START_1	Start condition: 0 = immediate 1 = master position reaches trigger in negative direction 2 = master position reaches trigger in positive direction 3 = master position $\geq$ trigger 4 = master position $\leq$ trigger
%MWxy.i.37:X11	Bit	FOLL_FAULT_MASTER	0 = nothing, 1 = and if X6 = 1 disable and fast stop of the master on fault from the slave
%MWxy.i.37:X12	Bit	FOLL_FAULT_SLAVE	0 = nothing, 1 = disable and fast stop of the slave on fault from the master
%MWxy.i.37:X13 to %MWxy.i.37:X15	Bit	/	Always clear
%MFxy.i.38	Floating point	NUMERATOR_1	Numerator of slave axis 1
%MFxy.i.40	Floating point	DENOMINATOR_1	Denominator of slave axis 1
%MFxy.i.42	Floating point	TRIGGER_POSITION_1	Value of trigger for slave axis 1
%MWxy.i.44	Word	SLAVE_CHANNEL_2	Number of slave axis 2
%MWxy.i.45	Word	FOLL_DESCRIPTION_2	Definition of slave axis 2. The description of the bits is identical to the description for slave axis 1.

Address	Type	Symbol	Description
%MFxy.i.46	Floating point	NUMERATOR_2	Numerator of slave axis 2
%MFxy.i.48	Floating point	DENOMINATOR_2	Denominator of slave axis 2
%MFxy.i.50	Floating point	TRIGGER_POSITION_2	Value of trigger for slave axis 2
%MWxy.i.52	Word	SLAVE_CHANNEL_3	Number of slave axis 3
%MWxy.i.53	Word	FOLL_DESCRIPTION_3	Definition of slave axis 3. The description of the bits is identical to the description for slave axis 1.
%MFxy.i.54	Floating point	NUMERATOR_3	Numerator of slave axis 3
%MFxy.i.56	Floating point	DENOMINATOR_3	Denominator of slave axis 3
%MFxy.i.58	Floating point	TRIGGER_POSITION_3	Value of trigger for slave axis 3
%MWxy.i.60	Word	SLAVE_CHANNEL_4	Number of slave axis 4
%MWxy.i.61	Word	FOLL_DESCRIPTION_4	Definition of slave axis 4. The description of the bits is identical to the description for slave axis 1.
%MFxy.i.62	Floating point	NUMERATOR_4	Numerator of slave axis 4
%MFxy.i.64	Floating point	DENOMINATOR_4	Denominator of slave axis 4
%MFxy.i.66	Floating point	TRIGGER_POSITION_4	Value of trigger for slave axis 4
%MWxy.i.68	Word	SLAVE_CHANNEL_5	Number of slave axis 5



Address	Type	Symbol	Description
%MWxy.i.69	Word	FOLL_DESCRIPTION_5	Definition of slave axis 5. The description of the bits is identical to the description for slave axis 1.
%MFxy.i.70	Floating point	NUMERATOR_5	Numerator of slave axis 5
%MFxy.i.72	Floating point	DENOMINATOR_5	Denominator of slave axis 5
%MFxy.i.74	Floating point	TRIGGER_POSITION_5	Value of trigger for slave axis 5
%MWxy.i.76	Word	SLAVE_CHANNEL_6	Number of slave axis 6
%MWxy.i.77	Word	FOLL_DESCRIPTION_6	Definition of slave axis 6. The description of the bits is identical to the description for slave axis 1.
%MFxy.i.78	Floating point	NUMERATOR_6	Numerator of slave axis 6
%MFxy.i.80	Floating point	DENOMINATOR_6	Denominator of slave axis 6
%MFxy.i.82	Floating point	TRIGGER_POSITION_6	Value of trigger for slave axis 6

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## Constant Words

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Address	Type	Symbol	Description
%KWxy.i.0	Word	CHANNEL_ID	Channel identification
%KWxy.i.2	Word	SERCOS_ADD	SERCOS® address of the axis (only for a real axis or a remote axis)

**WRITE\_CMD Parameters**

The command to be carried out is defined in the word %MWxy.i.26 and the result is available in the words %MWxy.i.19 to %MWxy.i.24

Address	Type	Symbol	Meaning
%MWxy.i.19	Word	ERROR_CMD	WRITE_CMD command writing fault
%MDxy.i.20	Double Word	RETURN_CMD_1	Return 1 of the function
%MFxy.i.22	Floating point	RETURN_CMD_2	Return 2 of the function
%MFxy.i.24	Floating point	RETURN_CMD_3	Return 3 of the function
%MWxy.i.26	Word	ACTION_CMD	Action to perform
%MDxy.i.27	Double Word	PARAM_CMD_1	Parameter 1
%MDxy.i.29	Double Word	PARAM_CMD_2	Parameter 2
%MFxy.i.31	Floating point	PARAM_CMD_3	Parameter 3
%MFxy.i.33	Floating point	PARAM_CMD_4	Parameter 4

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## TRF\_RECIFE Parameters

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The command to be carried out is defined in the word %MWxy.i.10 and the result is available in the words %MWxy.i.3 to %MWxy.i.8.

Address	Type	Symbol	Meaning
%MWxy.i.10	Word	ACTION_TRF	Action to perform
%MWxy.i.3	Word	ERROR_TRF	TRF_RECIFE command writing fault
%MDxy.i.4	Double Word	RETURN_TRF_1	Feedback 1 of the function
%MFxy.i.6	Floating point	RETURN_TRF_2	Feedback 2 of the function
%MFxy.i.8	Floating point	RETURN_TRF_3	Feedback 3 of the function
%MDxy.i.11	Double Word	PARAM_TRF_1	Parameter 1
%MDxy.i.13	Double Word	PARAM_TRF_2	Parameter 2
%MFxy.i.15	Floating point	PARAM_TRF_3	Parameter 3
%MFxy.i.17	Floating point	PARAM_TRF_4	Parameter 4

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## Motion Control Functions

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Function	Code	Feedback	Parameters
ForcedHome	6039	None	None
Home	6034	None	Parameter 3: direction Parameter 4: speed
Unhome	6038	None	None

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**Move Functions**

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<b>Function</b>	<b>Code</b>	<b>Feedback</b>	<b>Parameters</b>
MoveImmed	513	None	Parameter 1: type Parameter 3: position Parameter 4: speed
MoveImmedInterpo	905	None	Parameter 1 : axis Group ID Parameter 2 : speed type Parameter 3 : position Parameter 4 : speed
MoveQueue	520	None	Parameter 1: type Parameter 3: position Parameter 4: speed

## Adjustment Functions

Function	Code	Feedback	Parameters
DisableRollover	412	None	None
EnableRollover	411	None	None
GetAbsFollowerBias	1526	Feedback 1: Position	Parameter 1: Axis identifier
GetAccel	1041	Feedback 2: Acceleration	None
GetAccelMax	1116	Feedback 2: Acceleration	None
GetActualSpeed	5065	Feedback 1: Speed	None
GetCamProfile	1530	Feedback 1: Profile identifier	Parameter 1: Axis identifier
GetDecel	1042	Feedback 2: Deceleration	None
GetDecelMax	1117	Feedback 2: Deceleration	None
GetDefaultSpeed	1065	Feedback 1: Speed	None
GetEnableMode	1524	Feedback 1: Mode	None
GetEnablePositonBand	1538	Feedback 2: Position	None
GetFollowerBias	1527	Feedback 2: Position	Parameter 1: Axis identifier
GetFollowerMode	1529	Feedback 1: Follower mode	Parameter 1: Axis identifier
GetFollowerRatio	1114	Feedback 2: Numerator Feedback 3: Denominator	Parameter 1: Axis identifier
GetInPositionBand	1035	Feedback 2: Position	None
GetMasterOffset	1532	Feedback 2: Position	Parameter 1: Axis identifier

Function	Code	Feedback	Parameters
GetMasterTriggerPosition	1531	Feedback 2: Position	Parameter 1: Axis identifier
GetOpticalPower	1547	Feedback 2: Percentage	None
GetPositionLimit	1505	Feedback 2: Position	Parameter 1: direction
GetRolloverLimit	1539	Feedback 2: Position	Parameter 1: direction
GetSpeedLimit	1066	Feedback 2: Speed	None
GetSpeedOverride	1513	Feedback 2: Percentage	None
GetUnrolledCommandedPosition	547	Feedback 2: Position	None
GetUnrolledPosition	546	Feedback 2: Position	None
Length	534	Feedback 1: Table length	None
LookUpFollowerPosition	537	Feedback 2: Slave position	Parameter 3: Master position
SetAccel	2041	None	Parameter 3: Acceleration
SetAccelMax	2116	None	Parameter 3: Acceleration
SetDecel	2042	None	Parameter 3: Deceleration
SetDecelMax	2117	None	Parameter 3: Deceleration
SetDefaultSpeed	2065	None	Parameter 1: speed
SetEnableMode	2524	None	Parameter 1: mode
SetEnablePositionBand	2538	None	Parameter 3: position

<b>Function</b>	<b>Code</b>	<b>Feedback</b>	<b>Parameters</b>
SetFollowerRatio	2114	None	Parameter 1: Axis identifier Parameter 3: numerator Parameter 4: denominator
SetInPositionBand	2035	None	Parameter 3: position
SetMasterOffset	2532	None	Parameter 1: Axis identifier Parameter 3: position
SetMasterTrigger Position	2531	None	Parameter 1: Axis identifier Parameter 3: position
SetOpticalPower	2547	None	Parameter 3: percentage
SetPosition	2053	None	Parameter 3: position
SetPositionLimit	2505	None	Parameter 1: direction Parameter 3: position
SetRolloverLimit	2539	None	Parameter 1: direction Parameter 3: position
SetSpeedLimit	2066	None	Parameter 3: speed
SetSpeedOverride	2513	None	Parameter 3: percentage
SetFunctionalMode	2572	None	Parameter 1: 0 = AUTOMATIC mode 1 = MANUAL mode

## Diagnostic Functions

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Function	Code	Feedback	Parameters
GetActualPhase	550	Feedback 1: phase	None
GetAxisId	523	Feedback 1: Axis identifier	None
GetCombinedControl	1534	Feedback 1: Motion Control bits	None
GetCommandedPhase	1545	Feedback 1: phase	None
GetCommanded Position	1053	Feedback 2: position	None
GetControl	1525	Feedback 1: Motion Control bits	None
GetLoopDiagnostic Mode	1546	Feedback 1: diagnostic mode	None
GetMotionFault	5510	Feedback 1: List of faults	None
GetMotionWarning	5511	Feedback 1: List of warnings	None
GetMoveQueueLength	9510	Return 1: Length	None
GetNumberInSet	541	Feedback 1: No. of axes	None
GetNumberOfDrivesIn Ring	548	Return 1: No. of drives	None
GetSercosAddress	549	Feedback 1: address	Parameter 1: axis
IsLoopUp	543	Feedback 1: 0 / 1	None
SetCommandedPhase	2545	None	Parameter 1: phase
SetLoopDiagnostic Mode	2546	None	Parameter 1: diagnostic mode



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## Configuration functions

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Function	Code	Feedback	Parameters
GetAccelType	1540	Feedback 1: Acceleration type	None
GetGearRatio	1500	Feedback 2: numerator Feedback 3: denominator	None
GetInterpType	530	Feedback 1: Interp. type	None
GetMaster	1528	Feedback 1: Axis identifier	None
SetAccelType	2540	None	Parameter 1: Acceleration type
SetCoord	533	None	Parameter 1: Table length Parameter 3: Master position Parameter 4: Slave position
SetFollowerConfig	420	None	Parameter 1: Axis identifier Parameter 2: Follower mode Parameter 3: Profile numerator or Identifier Parameter 4: denominator
SetGearRatio	2500	None	Parameter 3: numerator Parameter 4: denominator
SetInterpType	531	None	Parameter 1: Interp. type
SetMaster	2528	None	Parameter 1: Axis identifier
SetIDN3022	570	None	Parameter 3: Declaration of the master axis

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**Read/Write Functions for IDN Parameters**


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<b>Function</b>	<b>Code</b>	<b>Feedback</b>	<b>Parameters</b>
GetIDN_P	1557	Feedback 1: SERCOS® parameter	Parameter 1: identifier
GetIDN_S	1556	Feedback 1: SERCOS® parameter	Parameter 1: identifier
GetIDN_UP	1559	Feedback 1: SERCOS® parameter	Parameter 1: identifier
GetIDN_US	1558	Feedback 1: SERCOS® parameter	Parameter 1: identifier
SetIDN_P	2557	None	Parameter 1: identifier Parameter 2: SERCOS® parameter
SetIDN_S	2556	None	Parameter 1: identifier Parameter 2: SERCOS® parameter
SetIDN_UP	2559	None	Parameter 1: identifier Parameter 3: SERCOS® parameter
SetIDN_US	2558	None	Parameter 1: identifier Parameter 3: SERCOS® parameter

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## List of TRF\_RECIPE command codes

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The actions that can be performed on **the TSX CSY 84 module** using the TRF\_RECIPE service are:

Function	ACTION_TRF (%MWxy.i.10)	Meaning
Real axis (1)	16001	Loading of drive parameters in the PLC memory.
Real axis (1)	26001	Unloading of drive parameters from the PLC memory.

Key

(1)	PARAM_TRF_1 to PARAM_TRF_4 = 0
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The actions that can be performed on **the TSX CSY 164 module** using the TRF\_RECIPE service are:

Function	ACTION_TRF (%MWxy.i.10)	Meaning
Independent axis	14200	Monitoring stopped at a given moment.
Independent axis	16200	Re-reading of monitoring parameters for a given moment.
Independent axis	26200	Start monitoring of a TRF_RECIPE function on channel 0.

The actions that can be performed on **the TSX CSY 85 module** using the TRF\_RECIPE service are:

Function	ACTION_TRF (%MWxy.i.10)	Meaning
Set of follower axes	14905	Achieving minimum possible constant speed.
Set of follower axes	16901	Trajectory Calculation Result.
Set of follower axes	26900	Trajectory Calculation Function.

**Module Faults Accessible via Word %MWxy.MOD.2**

Bits %MWxy.MOD.2:X0 to %MWxy.MOD.2:X15 enable module faults to be diagnosed:

Bit	Meaning
0	Internal fault: module failure
1	Functional fault: external fault, communication fault or application fault (see the channel status word %MWxy.i.2)
2	Terminal block fault
3	Module self-testing
4	Reserved
5	Configuration fault: hardware and software configuration different
6	Module missing or off
7 to 15	Reserved

**Channel Faults Accessible via Word %MWxy.i.2**

Bits %MWxy.i.2:X0 to %MWxy.i.2:X15 are used to diagnose the channel faults:

Bit	Meaning
0	External fault 0: drive fault
1	External fault 1: communication fault with the axis
2	Reserved
3	External fault 2
4	Internal fault
5	Configuration fault: hardware and software configuration different
6	Communication fault
7	Application fault: configuration, adjustment or command fault
8	Fan fault (channel 0 only)
9	Overtemperature (channel 0 only)

Bit	Meaning
10	Temperature sensor fault (channel 0 only)
11	Creation of move in progress object
12	Configuration fault (except for channel 0)
13	Reserved
14	Channel LED status: steady
15	Channel LED status: flashing

### Faults Accessible via Word %MWxy.i.3 (TSX CSY 85)

Word %MWxy.i.3 (where i is between 21 and 24 for groups of channels) contains the codes for errors that occur following a TRF\_RECIPÉ instruction:

Bit	Meaning
9501	For a type 1, 2 or 10 interpolation, one of the parameters ParF1 or ParF2 equals zero.
9502	The maximum number of points for a trajectory has been reached. The TSX CSY 85 permits a maximum of 10,000 points.
9503	More axes have been defined than are permitted.
9504	Two consecutive identical points have been found in the table for interpolation types other than 12.
9505	The number of points defined for at least one cam is insufficient in relation to the number of points on the trajectory.
9506	Use of circular type interpolation although more than two axes have been defined (types 10, 11 and 12).
9507	A cam corresponding to one of the axes has not been configured.
9508	Circular link with angle of 180° (type 10)
9509	Circular link with angle of 0° (type 10)
9510	A trajectory has been defined with a number of points greater than the maximum number permitted (60 by default).
9511	The radius is less than half the distance between points Pn-1 and Pn.

Bit	Meaning
9512	Circle impossible. If the type is 11, the start point is the same as the end point. If the type is 12, the start point is the same as the end point and the same as the center of the circle.
9513	Radius equals 0 (type 11)
9514	Link too long: Next segment = 0 (types 1, 2 or 10)
9515	The number of points in the linear segment is set to 0 (types 0, 1 or 10).
9516	The number of points in the third-degree polynomial interpolation segment is set to 0 (type 1).
9517	The number of points in the circular interpolation segment is set to 0 (type 10).
9518	The number of points in the circular interpolation segment is set to 0 (type 11 or 12).
9519	The center position set in the table differs from the position calculated by the module by more than 50% of the radius of the circle (type 12).
9520	Group not configured
9521	At least one of the axes in the group has not been configured.
9522	The number of points in the fifth-degree polynomial interpolation segment is set to 0 (type 2).
9523	The number of points in the interpolation table equals zero (first word in the table).
9524	Not enough memory to calculate interpolation.
9525	As the length of the next segment is zero, the link cannot be made.
9526	The master table is empty, so the interpolation calculation has not been made.
9527	The number of words per point is incorrect in the interpolation table.
9528	The type of interpolation requested does not exist (parameter type other than 0, 1, 2, 10, 11 or 12).
9002	Error code already exists but may occur if the SERCOS ring has not been configured correctly.

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## Programming Faults Accessible via Word %IWxy.i.2

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Word %IWxy.i.2 indicates a programming fault. The LSB indicates the error type feedback code and the MSB indicates the address of the field register that caused the error.

Error code	Description
1	Attempt to assign value out of range
2	Attempt to assign incompatible units
3	Unit not supported or unknown
4	Drive fault during upload
5	Drive fault during download
6	Unexpected null pointer to object
7	Failed to set units in drive
8	Units not set
9	String too big to fit into MotionString
A	Invalid index into a collection
B	Invalid value in command
C	Invalid value for an enumeration
D	Invalid token in input
E	Invalid feedback channel for command
F	Invalid feedback device for command
10	Invalid feedback clocking rate
11	Invalid feedback power source
12	Invalid feedback resolution
13	Invalid holding register address
14	Holding register database not configured
15	Holding register database empty
16	Holding register block too big

<b>Error code</b>	<b>Description</b>
17	Holding register block does not correspond to the database
18	Cannot grant access to holding register block
19	Cannot release access to holding register block
1A	File open failed
1B	File write failed
1C	File read failed
1D	File close failed
1E	File seek failed
1F	Malformed input
20	Clear fault function failed to clear faults
21	Missing tag in tags.cfg
22	No axis object available
23	Too many axes in configuration
24	Duplicate axes in configuration
25	Missing or invalid axis
26	Axis object or config file not found
27	Value has different number of coordinates from axis
28	Motion axis not active
29	A move fault has occurred on the motion controller
2A	Drive is not enabled
2B	Command timed out
2C	Only one SERCOS® ring may be configured
2D	Axis rename failed
2E	Cannot perform command as currently configured
2F	Invalid object type
30	Drive must be disabled to perform command



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<b>Error code</b>	<b>Description</b>
31	Drive must be enabled to perform command
32	Command not allowed at this time
33	Command cannot be completed due to drive fault

**WRITE\_CMD Command Writing Faults**

The %MWxy.i.19 word signals a possible error while explicitly writing a WRITE\_CMD command

The following table lists the error codes and descriptions of errors.

**Programming errors**

<b>Error code</b>	<b>Description</b>
1	Attempt to assign value out of range
2	Attempt to assign incompatible units
3	Unit not supported or unknown
4	Drive fault during download
5	Drive fault during upload
7	Failed to set units in drive
8	Units not set
11	Invalid value in command
12	Invalid value for an enumeration
32	Clear fault function failed to clear faults
34	No axis object available
35	Too many axes in configuration
36	Duplicate axes in configuration
37	Missing or invalid axis
38	Axis object or config file not found
39	Value has different number of coordinates from axis
40	Motion axis not active
41	A move fault has occurred on the motion controller
42	Drive is not enabled
43	Command timed out
44	Only one SERCOS® ring may be configured
45	Axis rename failed

<b>Error code</b>	<b>Description</b>
46	Cannot perform command as currently configured
47	Invalid object type
48	Drive must be disabled to perform command
49	Drive must be enabled to perform command
50	Command not allowed at this time
51	Command cannot be completed due to drive fault
60	Manual mode refused for axis linked to a co-ordinated or follower set
61	Auto control refused for an axis in manual mode
62	Follower set with slaves in cam profile
63	Deceleration for one of the slaves or for the master is greater than the maximum deceleration configured.
64	Refusal of TRF_ RECIPE 26200: the instance is already active
65	Refusal of TRF_ RECIPE 26200: the alarm trigger value is greater than the fault trigger value
66	Refusal of TRF_ RECIPE 26200: one of the trigger values is negative
67	Refusal of TRF_ RECIPE 26200: one of the denominators is invalid
68	Refusal of TRF_ RECIPE 16200 or 14200: the instance is inactive

### Communication errors

<b>Error code</b>	<b>Description</b>
1000	Target not responding
1001	Garbled communications
1002	SERCOS® error
1003	No opcode echo from drive

<b>Error code</b>	<b>Description</b>
1004	SERCOS® loop not ready
1005	SERCOS® error
1006	SERCOS® read failed (cyclic channel)

**Drive errors**

<b>Error code</b>	<b>Description</b>
4000	RMS current fault
4001	Drive overtemperature condition
4002	Drive overtemperature condition
4005	Resolver or encoder feedback fault
4006	General drive fault (phase error)
4007	Drive short circuit fault
4009	Drive voltage fault
4011	Following error fault
4012	Drive has detected communications fault
4013	Hardware end-of-travel fault
4015	Homing, digital output or control conflict fault (from 2 sources)
4016	SERCOS® master has detected communication fault
5001	The watchdog expired and all axes disabled

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## Faults Accessible via the GetMotionFault Command

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The following table lists the motion faults contained in the MotionFault data type:

Name	Bit	Description
MF_MOVE_BUT_NOT_ENABLED	0	A move command has reached the motion interpolator but the drive is disabled. This should only occur if the drive becomes disabled as a move command is starting.
MF_SURV_FAULT	1	Two monitored axes have a position displacement greater than the fault trigger value.
MF_MEMBER_FAULT	2	Fault on a member of validated set.
MF_SERCOS_RATE_TOO_FAST	3	Too many channels are configured relative to chosen cycle time.
MF_CONTROL_CONFLICT	10	Conflicting control with configuration drive tool.
MF_DRIVE_FAULT	13	A drive fault has occurred. Use the GetIDN_S_ and GetIDN_P function with the SERCOS® Standard IDN S-0-0011 parameter to determine the cause.
MF_REQUESTED_FAULT	15	The MotionControl ALLOW_NOT_FAULT bit is not set. The axis remains faulty until the ALLOW_NOT_FAULT bit is set and a ClearFault function is issued.
MF_COMM_FAULT	16	The SERCOS® communication fiber-optic loop lost communication to the drive.
MF_AXIS_MANUAL_MODE	19	Axis is in Manual mode. Impossible to enable a group with an axis in Manual mode
MF_AXIS_LIMIT_FAULT	21	The axis reached a positive or negative software position limit.
MF_PHASE3_CONFIG_PROBLEM	23	Configuration problem phase 3
MF_PHASE0_SERCOS_ERROR	24	Phase 0 error.
MF_PHASE1_SERCOS_ERROR	25	Phase 1 error.

Name	Bit	Description
MF_PHASE2_SERCOS_ERROR	26	Phase 2 error.
MF_PHASE3_SERCOS_ERROR	27	Phase 3 error.
MF_PHASE4_SERCOS_ERROR	28	Phase 4 error.
MF_MOVE_WHILE_HALT	29	A move command has reached the interpolator but the MotionControl ALLOW_MOVE bit is clear. This should only happen if the drive is stopped at the exact moment when a move command starts.

## Faults Accessible via the GetMotionWarning Command

The following table lists the motion warnings contained in the MotionWarning data type:

Name	Bit	Description
MW_SURV_WARNING	0	If 2 axes have a position displacement greater than the fault trigger value, the module triggers a fault on the 2 faulty axes.
MW_SURV_WARNING_PROP	1	If 2 axes have a position difference greater than the error trigger value, the module triggers a fault on the 2 faulty axes, stops all the axes of the list and triggers a warning (MW_SURV_WARNING_PROP) on the non-faulty axes.
MW_STOP_BY_SET	2	Axis invalidated by the set following a fault.
MW_AXIS_IS_LINKED	17	The motion command was not performed because the axis is already a member of a CoordinatedSet or FollowerSet.

**Case of a CoordinatedSet or FollowerSet of axes:**

<b>Name</b>	<b>Bit</b>	<b>Description</b>
MW_AXIS_IS_MOVING	3	The motion control command was not performed because the motion axis was moving.
MW_MEMBER_WARNING	4	Alarm on a member of the set.
MW_MEMBER_FAULT	5	Fault on a member of invalidated set.
MW_AXIS_NOT_HOMED	6	the axis is not referenced
MW_CANNOT_ENABLE	10	The drive will refuse confirmation.
MW_ACQUIRE_DISALLOWED	18	The CoordinatedSet or FollowerSet could not acquire control of its members because one or more of the motion axis members is already a member of a CoordinatedSet or FollowerSet.
MW_AXIS_POS_LIMIT	21	Motion abandoned whose target is greater than the maximum position.
MW_AXIS_NEG_LIMIT	22	Motion abandoned whose target is less than the maximum position.
MW_SIMULTANEOUS_MANUAL_CMDS	24	Several manual commands arrived simultaneously
MW_AXIS_MANUAL_MODE	25	Axis is in Manual mode.
MW_STOP_TO_MANUAL_MODE	26	Axis has stopped to switch to Manual mode.
MW_NOT_ALLOWED_AT_THIS_TIME	31	Not enough conditions (Mode, Value...)

**User Notes**

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**T\_CSY\_CMD type ODDT implicit exchange objects****List of implicit exchange input objects**

(r = rack no.; m = module position on the rack; c = channel no.)

Symbol	Type	Access	Meaning	Address
CH_ERROR	EBOOL	R	Channel default bit	%lr.m.c.ERR
PROFILE_END	EBOOL	R	The last profile command has been sent to the module	%lr.m.c.3
IN_POSITION	EBOOL	R	The axis is within the in-position band	%lr.m.c.4
AXIS_HOMED	EBOOL	R	The axis position reading is referenced off the home position	%lr.m.c.6
HOLDING	EBOOL	R	The axis is holding in wait position	%lr.m.c.8
RESUMING	EBOOL	R	The axis is moving after a hold	%lr.m.c.9
DRIVE_ENABLED	EBOOL	R	The drive is enabled	%lr.m.c.10
DRIVE_FLT	EBOOL	R	The drive is performing a class 1 diagnostic	%lr.m.c.13
AXIS_SUMMARY_FLT	EBOOL	R	Drive fault	%lr.m.c.15
AXIS_IN_CMD	EBOOL	R	The axis is active and can be controlled	%lr.m.c.18
AXIS_HOLD	EBOOL	R	The axis is stopped and waiting for a command	%lr.m.c.28
AXIS_HALT	EBOOL	R	The axis has stopped	%lr.m.c.29
AXIS_FASTSTOP	EBOOL	R	The axis has faststopped	%lr.m.c.30
AXIS_READY	EBOOL	R	The axis is ready to respond to a command	%lr.m.c.31

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**List of implicit exchange output objects**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
CONTROL_ACQUIRE	EBOOL	RW	Control acquisition	%Qr.m.c.2
CONTROL_ENABLE	EBOOL	RW	Control enable	%Qr.m.c.10
CONTROL_RESUME	EBOOL	RW	Resumes control after a stop	%Qr.m.c.12
CONTROL_CLEAR_FLT	EBOOL	RW	Fault clear control	%Qr.m.c.15
ALLOW_ACQUIRE	EBOOL	RW	Acquisition enable control	%Qr.m.c.18
ALLOW_ENABLE	EBOOL	RW	Disables axis control	%Qr.m.c.26
ALLOW_RESUME	EBOOL	RW	Authorizes a movement to continue after a stop using the HOLD command	%Qr.m.c.28
ALLOW_MOVE	EBOOL	RW	Authorizes a movement to continue after a stop using the HALT command	%Qr.m.c.29

**T\_CSY\_CMD type ODDT explicit exchange objects****Explicit exchange execution flags: EXCH\_STS**

Symbol	Type	Access	Meaning	Address
CMD_IN_PROGR	BOOL	R	Exchange of command parameters in progress	%MWr.m.c.0.1

**Explicit exchange report: EXCH\_RPT**

Symbol	Type	Access	Meaning	Address
CMD_ERR	BOOL	R	Command parameters exchange fault	%MWr.m.c.1.1

**WRITE\_CMD interface words**

Symbol	Type	Access	Meaning	Address
ERROR_CMD	INT	RW	Error during WRITE_CMD	%MWr.m.c.19
RETURN_CMD_1	DINT	RW	Return 1 of the function	%MDr.m.c.20
RETURN_CMD_2	REAL	RW	Return 2 of the function	%MFr.m.c.22
RETURN_CMD_3	REAL	RW	Return 3 of the function	%MFr.m.c.24
ACTION_CMD	INT	RW	Action to be carried out	%MWr.m.c.26
PARAM_CMD_1	DINT	RW	Parameter 1	%MDr.m.c.27
PARAM_CMD_2	DINT	RW	Parameter 2	%MDr.m.c.29
PARAM_CMD_3	REAL	RW	Parameter 3	%MFr.m.c.31
PARAM_CMD_4	REAL	RW	Parameter 4	%MFr.m.c.33

## T\_CSY\_RING type ODDT implicit exchange objects

### List of implicit exchange input objects

Symbol	Type	Access	Meaning	Address
CH_ERROR	EBOOL	R	Channel default bit	%lr.m.c.ERR
RAMPING	EBOOL	R	Indicates whether the axis is accelerating or decelerating	%lr.m.c.0
STEADY	EBOOL	R	The speed is steady	%lr.m.c.1
STOPPING	EBOOL	R	The movement is decelerating to a stop	%lr.m.c.2
PROFILE_END	EBOOL	R	The last profile command has been sent to the module	%lr.m.c.3
IN_POSITION	EBOOL	R	The axis is within the in-position band	%lr.m.c.4
AXIS_HOMING	EBOOL	R	The axis is homing. For an imaginary axis, this bit is inactive.	%lr.m.c.5
AXIS_HOMED	EBOOL	R	The axis position reading is referenced off the home position	%lr.m.c.6
AXIS_NOT_FOLLOWING	EBOOL	R	The drive is not recognizing module commands	%lr.m.c.7
HOLDING	EBOOL	R	The axis is holding in wait position	%lr.m.c.8
RESUMING	EBOOL	R	The axis is moving after a hold	%lr.m.c.9
DRIVE_ENABLED	EBOOL	R	The drive is enabled	%lr.m.c.10
DRIVE_DIAG	EBOOL	R	The drive is performing a class 3 diagnostic	%lr.m.c.11
DRIVE_WARNING	EBOOL	R	The drive is performing a class 2 diagnostic	%lr.m.c.12

Symbol	Type	Access	Meaning	Address
DRIVE_FLT	EBOOL	R	The drive is performing a class 1 diagnostic	%I.r.m.c.13
DRIVE_DISABLED	EBOOL	R	The drive is disabled	%I.r.m.c.14
AXIS_SUMMARY_FLT	EBOOL	R	Drive fault	%I.r.m.c.15
AXIS_COM_OK	EBOOL	R	Communication between the drive and the module is OK	%I.r.m.c.16
AXIS_IS_LINKED	EBOOL	R	The axis belongs to a set of axes	%I.r.m.c.17
AXIS_IN_CMD	EBOOL	R	The axis is active and can be controlled	%I.r.m.c.18
AXIS_AT_TARGET	EBOOL	R	The axis is within the in-position band for the target position	%I.r.m.c.20
AXIS_POS_LIMIT	EBOOL	R	The axis has reached the positive limit	%I.r.m.c.21
AXIS_NEG_LIMIT	EBOOL	R	The axis has reached the negative limit	%I.r.m.c.22
AXIS_WARNING	EBOOL	R	"Motion Warning" status returned by the drive	%I.r.m.c.23
AXIS_HOLD	EBOOL	R	The axis is stopped and waiting for a command	%I.r.m.c.28
AXIS_HALT	EBOOL	R	The axis has stopped	%I.r.m.c.29
AXIS_FASTSTOP	EBOOL	R	The axis has faststopped	%I.r.m.c.30
AXIS_READY	EBOOL	R	The axis is ready to respond to a command	%I.r.m.c.31
CONF_OK	EBOOL	R	The channel is configured	%I.r.m.c.32

**List of implicit exchange output objects**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
CONTROL_ACQUIRE	EBOOL	RW	Control acquisition	%Qr.m.c.2
CONTROL_ENABLE	EBOOL	RW	Control enable	%Qr.m.c.10
CONTROL_FOLLOW	EBOOL	RW	Follow control for an axis or a set of follower axes	%Qr.m.c.11
CONTROL_RESUME	EBOOL	RW	Resumes control after a stop	%Qr.m.c.12
CONTROL_CLEAR_FLT	EBOOL	RW	Fault clear control	%Qr.m.c.15
ALLOW_ACQUIRE	EBOOL	RW	Acquisition enable control	%Qr.m.c.18
ALLOW_ENABLE	EBOOL	RW	Disables axis control	%Qr.m.c.26
ALLOW_FOLLOW	EBOOL	RW	Cancels follow control for an axis or a set of follower axes	%Qr.m.c.27
ALLOW_RESUME	EBOOL	RW	Authorizes a movement to continue after a stop using the HOLD command	%Qr.m.c.28
ALLOW_MOVE	EBOOL	RW	Authorizes a movement to continue after a stop using the HALT command	%Qr.m.c.29
ALLOW_NOT_FASTSTOP	EBOOL	RW	Control after a Faststop	%Qr.m.c.30
ALLOW_NOT_FLT	EBOOL	RW	Enables fault control	%Qr.m.c.31

**Settings report word**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
PARAM_RPT	INT	R	Settings report word. Indicates a programming error. The least significant byte contains the error codes and the most significant byte contains the address in the registers of the field which caused the error.	%IW.r.m.c.2

**T\_CSY\_RING type ODDT explicit exchange objects****Explicit exchange execution flags: EXCH\_STS**

Symbol	Type	Access	Meaning	Address
STS_IN_PROGR	BOOL	R	Reading channel's status words	%MWr.m.c.0.0
CMD_IN_PROGR	BOOL	R	Exchange of command parameters in progress	%MWr.m.c.0.1
ADJ_IN_PROGR	BOOL	R	Exchange of adjustment parameters in progress	%MWr.m.c.0.2
TRF_IN_PROGR	BOOL	R	TRF_RECIPÉ function executing	%MWr.m.c.0.3
RECONF_IN_PROGR	BOOL	R	Module reconfiguration in progress	%MWr.m.c.0.15

**Explicit exchange report: EXCH\_RPT**

Symbol	Type	Access	Meaning	Address
STS_ERR	BOOL	R	Fault reading channel's status words (1 = failure)	%MWr.m.c.1.0
CMD_ERR	BOOL	R	Command parameters exchange fault (1 = failure)	%MWr.m.c.1.1
ADJ_ERR	BOOL	R	Adjustment parameters exchange fault (1 = failure)	%MWr.m.c.1.2
TRF_ERR	BOOL	R	Fault during execution of TRF_RECIPÉ function	%MWr.m.c.1.3
RECONF_ERR	BOOL	R	Fault during channel reconfiguration (1 = failure)	%MWr.m.c.1.15



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**Fault channel words**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
EXT_FLT0	BOOL	R	External fault 0: drive fault	%MWr.m.c.2.0
EXT_FLT1	BOOL	R	External fault 1: communication fault with the axis	%MWr.m.c.2.1
EXT_FLT2	BOOL	R	External fault 2	%MWr.m.c.2.3
INT_FLT	BOOL	R	Internal fault	%MWr.m.c.2.4
CONF_FLT	BOOL	R	Configuration fault: hardware and software configuration different	%MWr.m.c.2.5
COM_FLT	BOOL	R	Communication fault	%MWr.m.c.2.6
APPLI_FLT	BOOL	R	Application fault: configuration, adjustment or command fault	%MWr.m.c.2.7
FAN_STOPPED	BOOL	R	Fan fault (channel 0 only)	%MWr.m.c.2.8
OVER_TEMP	BOOL	R	Overtemperature (channel 0 only)	%MWr.m.c.2.9
SENSOR_FLT	BOOL	R	Temperature sensor fault (channel 0 only)	%MWr.m.c.2.10
PROCESS_CONF	BOOL	R	Creation of move object in progress	%MWr.m.c.2.11
PROCESS_CONF_FAILED	BOOL	R	Configuration fault (except for channel 0)	%MWr.m.c.2.12

**WRITE\_CMD interface words**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
ERROR_CMD	INT	RW	Error during WRITE_CMD	%MWr.m.c.19
RETURN_CMD_1	DINT	RW	Return 1 of the function	%MDr.m.c.20
RETURN_CMD_2	REAL	RW	Return 2 of the function	%MFr.m.c.22
RETURN_CMD_3	REAL	RW	Return 3 of the function	%MFr.m.c.24
ACTION_CMD	INT	RW	Action to be carried out	%MWr.m.c.26
PARAM_CMD_1	DINT	RW	Parameter 1	%MDr.m.c.27
PARAM_CMD_2	DINT	RW	Parameter 2	%MDr.m.c.29
PARAM_CMD_3	REAL	RW	Parameter 3	%MFr.m.c.31
PARAM_CMD_4	REAL	RW	Parameter 4	%MFr.m.c.33

**READ\_PARAM, WRITE\_PARAM interface words**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
CYCLE_TIME	INT	RW	SERCOS ring cycle time	%MWr.m.c.35
BAUD_RATE	INT	RW	SERCOS bus flow rate (in bauds)	%MWr.m.c.36
OPTICAL_POWER	INT	RW	Optical power in the fiber	%MWr.m.c.37

## T\_CSY\_TRF type ODDT explicit exchange objects

### TRF\_RECIPE function execution flags

Symbol	Type	Access	Meaning	Address
TRF_IN_PROGR	BOOL	R	TRF_RECIPE function executing	%MWr.m.c.0.3

### Explicit exchange report: EXCH\_RPT

Symbol	Type	Access	Meaning	Address
TRF_ERR	BOOL	R	Fault during execution of TRF_RECIPE function	%MWr.m.c.1.3

### TRF\_RECIPE function object

Symbol	Type	Access	Meaning	Address
ERROR_TRF	INT	R	Write error of the TRF_RECIPE function	%MWr.m.c.3
RETURN_TRF_1	DINT	R	Return 1 of the TRF_RECIPE function	%MDr.m.c.4
RETURN_TRF_2	REAL	R	Return 2 of the TRF_RECIPE function	%MFr.m.c.6
RETURN_TRF_3	REAL	R	Return 3 of the TRF_RECIPE function	%MFr.m.c.8
ACTION_TRF	INT	R	Action to perform by the TRF_RECIPE function	%MWr.m.c.10
PARAM_TRF_1	DINT	R	Parameter 1 of the TRF_RECIPE function	%MDr.m.c.11
PARAM_TRF_2	DINT	R	Parameter 2 of the TRF_RECIPE function	%MDr.m.c.13
PARAM_TRF_3	REAL	R	Parameter 3 of the TRF_RECIPE function	%MFr.m.c.15
PARAM_TRF_4	REAL	R	Parameter 4 of the TRF_RECIPE function	%MFr.m.c.17

**T\_CSY\_IND type ODDT implicit exchange objects****List of implicit exchange input objects**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
CH_ERROR	EBOOL	R	Channel default bit	%I.r.m.c.ERR
RAMPING	EBOOL	R	Indicates whether the axis is accelerating or decelerating	%I.r.m.c.0
STEADY	EBOOL	R	The speed is steady	%I.r.m.c.1
STOPPING	EBOOL	R	The movement is decelerating to a stop	%I.r.m.c.2
PROFILE_END	EBOOL	R	The last profile command has been sent to the module	%I.r.m.c.3
IN_POSITION	EBOOL	R	The axis is within the in-position band	%I.r.m.c.4
AXIS_HOMING	EBOOL	R	The axis is homing. For an imaginary axis, this bit is inactive.	%I.r.m.c.5
AXIS_HOMED	EBOOL	R	The axis position reading is referenced off the home position	%I.r.m.c.6
AXIS_NOT_FOLLOWING	EBOOL	R	The drive is not recognizing module commands	%I.r.m.c.7
HOLDING	EBOOL	R	The axis is holding in wait position	%I.r.m.c.8
RESUMING	EBOOL	R	The axis is moving after a hold	%I.r.m.c.9
DRIVE_ENABLED	EBOOL	R	The drive is enabled	%I.r.m.c.10
DRIVE_DIAG	EBOOL	R	The drive is performing a class 3 diagnostic	%I.r.m.c.11
DRIVE_WARNING	EBOOL	R	The drive is performing a class 2 diagnostic	%I.r.m.c.12

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
DRIVE_FLT	EBOOL	R	The drive is performing a class 1 diagnostic	%I.r.m.c.13
DRIVE_DISABLED	EBOOL	R	The drive is disabled	%I.r.m.c.14
AXIS_SUMMARY_FLT	EBOOL	R	Drive fault	%I.r.m.c.15
AXIS_COM_OK	EBOOL	R	Communication between the drive and the module is OK	%I.r.m.c.16
AXIS_IS_LINKED	EBOOL	R	The axis belongs to a set of axes	%I.r.m.c.17
AXIS_IN_CMD	EBOOL	R	The axis is active and can be controlled	%I.r.m.c.18
AXIS_AT_TARGET	EBOOL	R	The axis is within the in-position band for the target position	%I.r.m.c.20
AXIS_POS_LIMIT	EBOOL	R	The axis has reached the positive limit	%I.r.m.c.21
AXIS_NEG_LIMIT	EBOOL	R	The axis has reached the negative limit	%I.r.m.c.22
AXIS_WARNING	EBOOL	R	"Motion Warning" status returned by the drive	%I.r.m.c.23
BIAS_REMAIN	EBOOL	R	Offset added to the command position	%I.r.m.c.24
AXIS_MANUAL_MODE	EBOOL	R	Operation of axis in manual mode	%I.r.m.c.25
DRIVE_REALTIME_BIT1	EBOOL	R	Drive bit	%I.r.m.c.26
DRIVE_REALTIME_BIT2	EBOOL	R	Drive bit	%I.r.m.c.27
AXIS_HOLD	EBOOL	R	The axis is stopped and waiting for a command	%I.r.m.c.28
AXIS_HALT	EBOOL	R	The axis has stopped	%I.r.m.c.29

Symbol	Type	Access	Meaning	Address
AXIS_FASTSTOP	EBOOL	R	The axis has faststopped	%I.r.m.c.30
AXIS_READY	EBOOL	R	The axis is ready to respond to a command	%I.r.m.c.31
CONF_OK	EBOOL	R	The channel is configured	%I.r.m.c.32

### List of implicit exchange output objects

Symbol	Type	Access	Meaning	Address
CONTROL_ACQUIRE	EBOOL	RW	Control acquisition	%Qr.m.c.2
CONTROL_JOG_POS	EBOOL	RW	Manual mode: Visual move command to move axis in positive direction	%Qr.m.c.4
CONTROL_JOG_NEG	EBOOL	RW	Manual mode: Visual move command to move axis in negative direction	%Qr.m.c.5
REAL_TIME_CTRL_BIT1	EBOOL	RW	Drive bit	%Qr.m.c.6
REAL_TIME_CTRL_BIT2	EBOOL	RW	Drive bit	%Qr.m.c.7
OPERATION_MODE_1	EBOOL	RW	Operation mode selection	%Qr.m.c.8
OPERATION_MODE_2	EBOOL	RW	Operation mode selection	%Qr.m.c.9
CONTROL_ENABLE	EBOOL	RW	Control enable	%Qr.m.c.10
CONTROL_FOLLOW	EBOOL	RW	Follow control for an axis or a set of follower axes	%Qr.m.c.11
CONTROL_RESUME	EBOOL	RW	Resumes control after a stop	%Qr.m.c.12
CONTROL_INC_POS	EBOOL	RW	Manual mode: Incremental move command to move axis in positive direction	%Qr.m.c.13

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
CONTROL_INC_NEG	EBOOL	RW	Manual mode: Incremental move command to move axis in negative direction	%Qr.m.c.14
CONTROL_CLEAR_FLT	EBOOL	RW	Fault clear control	%Qr.m.c.15
ALLOW_ACQUIRE	EBOOL	RW	Acquisition enable control	%Qr.m.c.18
ALLOW_ENABLE	EBOOL	RW	Disables axis control	%Qr.m.c.26
ALLOW_FOLLOW	EBOOL	RW	Cancels follow control for an axis or a set of follower axes	%Qr.m.c.27
ALLOW_RESUME	EBOOL	RW	Authorizes a movement to continue after a stop using the HOLD command	%Qr.m.c.28
ALLOW_MOVE	EBOOL	RW	Authorizes a movement to continue after a stop using the HALT command	%Qr.m.c.29
ALLOW_NOT_FASTSTOP	EBOOL	RW	Control after a Faststop	%Qr.m.c.30
ALLOW_NOT_FLT	EBOOL	RW	Enables fault control	%Qr.m.c.31

### Actual position

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
POSITION	REAL	R	Actual position	%IFr.m.c.0

**Settings report word**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
PARAM_RPT	INT	R	Settings report word. Indicates a programming error. The least significant byte contains the error codes and the most significant byte contains the address in the registers of the field which caused the error.	%IW.r.m.c.2

**Simulated position**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
REMOTE_POSITION	DINT	RW	External setpoint: Simulated position. Real and Imaginary Axis: position increment in manual mode	%QDr.m.c.0



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## T\_CSYS\_IND type ODDT explicit exchange objects

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### Explicit exchange execution flags: EXCH\_STS

Symbol	Type	Access	Meaning	Address
STS_IN_PROGR	BOOL	R	Reading channel's status words	%MWr.m.c.0.0
CMD_IN_PROGR	BOOL	R	Exchange of command parameters in progress	%MWr.m.c.0.1
ADJ_IN_PROGR	BOOL	R	Exchange of adjustment parameters in progress	%MWr.m.c.0.2
RECONF_IN_PROGR	BOOL	R	Module reconfiguration in progress	%MWr.m.c.0.15

### Explicit exchange report: EXCH\_RPT

Symbol	Type	Access	Meaning	Address
STS_ERR	BOOL	R	Fault reading channel's status words (1 = failure)	%MWr.m.c.1.0
CMD_ERR	BOOL	R	Command parameters exchange fault (1 = failure)	%MWr.m.c.1.1
ADJ_ERR	BOOL	R	Adjustment parameters exchange fault (1 = failure)	%MWr.m.c.1.2
RECONF_ERR	BOOL	R	Fault during channel reconfiguration (1 = failure)	%MWr.m.c.1.15

**TRF\_RECIPE function objects**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
ERROR_TRF	INT	R	Write error of the TRF_RECIPE function	%MWr.m.c.3
RETURN_TRF_1	DINT	R	Return 1 of the TRF_RECIPE function	%MDr.m.c.4
RETURN_TRF_2	REAL	R	Return 2 of the TRF_RECIPE function	%MFr.m.c.6
RETURN_TRF_3	REAL	R	Return 3 of the TRF_RECIPE function	%MFr.m.c.8
ACTION_TRF	INT	R	Action to perform by the TRF_RECIPE function	%MWr.m.c.10
PARAM_TRF_1	DINT	R	Parameter 1 of the TRF_RECIPE function	%MDr.m.c.11
PARAM_TRF_2	DINT	R	Parameter 2 of the TRF_RECIPE function	%MDr.m.c.13
PARAM_TRF_3	REAL	R	Parameter 3 of the TRF_RECIPE function	%MFr.m.c.15
PARAM_TRF_4	REAL	R	Parameter 4 of the TRF_RECIPE function	%MFr.m.c.17

**WRITE\_CMD interface words**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
ERROR_CMD	INT	RW	Error during WRITE_CMD	%MWr.m.c.19
RETURN_CMD_1	DINT	RW	Return 1 of the function	%MDr.m.c.20
RETURN_CMD_2	REAL	RW	Return 2 of the function	%MFr.m.c.22
RETURN_CMD_3	REAL	RW	Return 3 of the function	%MFr.m.c.24
ACTION_CMD	INT	RW	Action to be carried out	%MWr.m.c.26
PARAM_CMD_1	DINT	RW	Parameter 1	%MDr.m.c.27

**Fault channel words**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
EXT_FLT0	BOOL	R	External fault 0: drive fault	%MWr.m.c.2.0
EXT_FLT1	BOOL	R	External fault 1: communication fault with the axis	%MWr.m.c.2.1
EXT_FLT2	BOOL	R	External fault 2	%MWr.m.c.2.3
INT_FLT	BOOL	R	Internal fault	%MWr.m.c.2.4
CONF_FLT	BOOL	R	Configuration fault: hardware and software configuration different	%MWr.m.c.2.5
COM_FLT	BOOL	R	Communication fault	%MWr.m.c.2.6
APPLI_FLT	BOOL	R	Application fault: configuration, adjustment or command fault	%MWr.m.c.2.7
PROCESS_CONF	BOOL	R	Creation of move object in progress	%MWr.m.c.2.11
PROCESS_CONF_FAILED	BOOL	R	Configuration fault (except for channel 0)	%MWr.m.c.2.12

Symbol	Type	Access	Meaning	Address
PARAM_CMD_2	DINT	RW	Parameter 2	%MDr.m.c.29
PARAM_CMD_3	REAL	RW	Parameter 3	%MFr.m.c.31
PARAM_CMD_4	REAL	RW	Parameter 4	%MFr.m.c.33

**READ\_PARAM, WRITE\_PARAM interface words**

Symbol	Type	Access	Meaning	Address
FUNCTION_VALIDATION	INT	RW	Word containing the selective validation bits	%MWr.m.c.35
ACCEL	REAL	RW	Acceleration value	%MFr.m.c.36
DECEL	REAL	RW	Deceleration value	%MFr.m.c.38
ACCEL_TYPE	INT	RW	Acceleration type	%MWr.m.c.40
IN_POSITION_BAND	REAL	RW	Value of the in-position band	%MFr.m.c.41
ENABLE_POSITION_BAND	REAL	RW	Value of the monitoring window	%MFr.m.c.43
ROLLOVER_MAX	REAL	RW	Maximum rollover	%MFr.m.c.45
ROLLOVER_MIN	REAL	RW	Minimum rollover	%MFr.m.c.47
ACCEL_MAX	REAL	RW	Maximum acceleration	%MFr.m.c.49
DECEL_MAX	REAL	RW	Maximum deceleration	%MFr.m.c.51
SPEED_MAX	REAL	RW	Maximum speed	%MFr.m.c.53
POSITION_MAX	REAL	RW	Maximum position	%MFr.m.c.55
POSITION_MIN	REAL	RW	Minimum position	%MFr.m.c.57
SCALE_NUMERATOR	REAL	RW	Scale factor numerator (configuration of an independent axis and GetGearRation function)	%MFr.m.c.59

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
SCALE_DENOMINATOR	REAL	RW	Scale factor denominator (configuration of an independent axis and GetGearRation function)	%MFr.m.c.61
ACCEL_UNIT	INT	RW	Acceleration unit.	%MWr.m.c.63
SPEED_UNIT	INT	RW	Velocity unit	%MWr.m.c.64
POSITION_UNIT	INT	RW	Position unit	%MWr.m.c.65

**T\_CSY\_FOLLOW type ODDT implicit exchange objects****List of implicit exchange input objects**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
CH_ERROR	EBOOL	R	Channel default bit	%I.r.m.c.ERR
RAMPING	EBOOL	R	Indicates whether the axis is accelerating or decelerating	%I.r.m.c.0
STEADY	EBOOL	R	The speed is steady	%I.r.m.c.1
STOPPING	EBOOL	R	The movement is decelerating to a stop	%I.r.m.c.2
PROFILE_END	EBOOL	R	The last profile command has been sent to the module	%I.r.m.c.3
IN_POSITION	EBOOL	R	The axis is within the in-position band	%I.r.m.c.4
AXIS_HOMING	EBOOL	R	The axis is homing. For an imaginary axis, this bit is inactive.	%I.r.m.c.5
AXIS_HOMED	EBOOL	R	The axis position reading is referenced off the home position	%I.r.m.c.6
AXIS_NOT_FOLLOWING	EBOOL	R	The drive is not recognizing module commands	%I.r.m.c.7
HOLDING	EBOOL	R	The axis is holding in wait position	%I.r.m.c.8
RESUMING	EBOOL	R	The axis is moving after a hold	%I.r.m.c.9
DRIVE_ENABLED	EBOOL	R	The drive is enabled	%I.r.m.c.10
DRIVE_DIAG	EBOOL	R	The drive is performing a class 3 diagnostic	%I.r.m.c.11
DRIVE_WARNING	EBOOL	R	The drive is performing a class 2 diagnostic	%I.r.m.c.12

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
DRIVE_FLT	EBOOL	R	The drive is performing a class 1 diagnostic	%I.r.m.c.13
DRIVE_DISABLED	EBOOL	R	The drive is disabled	%I.r.m.c.14
AXIS_SUMMARY_FLT	EBOOL	R	Drive fault	%I.r.m.c.15
AXIS_COM_OK	EBOOL	R	Communication between the drive and the module is OK	%I.r.m.c.16
AXIS_IS_LINKED	EBOOL	R	The axis belongs to a set of axes	%I.r.m.c.17
AXIS_IN_CMD	EBOOL	R	The axis is active and can be controlled	%I.r.m.c.18
AXIS_AT_TARGET	EBOOL	R	The axis is within the in-position band for the target position	%I.r.m.c.20
AXIS_POS_LIMIT	EBOOL	R	The axis has reached the positive limit	%I.r.m.c.21
AXIS_NEG_LIMIT	EBOOL	R	The axis has reached the negative limit	%I.r.m.c.22
AXIS_WARNING	EBOOL	R	"Motion Warning" status returned by the drive	%I.r.m.c.23
AXIS_HOLD	EBOOL	R	The axis is stopped and waiting for a command	%I.r.m.c.28
AXIS_HALT	EBOOL	R	The axis has stopped	%I.r.m.c.29
AXIS_FASTSTOP	EBOOL	R	The axis has faststopped	%I.r.m.c.30
AXIS_READY	EBOOL	R	The axis is ready to respond to a command	%I.r.m.c.31
CONF_OK	EBOOL	R	The channel is configured	%I.r.m.c.32

## List of implicit exchange output objects

Symbol	Type	Access	Meaning	Address
CONTROL_ACQUIRE	EBOOL	RW	Control acquisition	%Qr.m.c.2
CONTROL_ENABLE	EBOOL	RW	Control enable	%Qr.m.c.10
CONTROL_FOLLOW	EBOOL	RW	Follow control for an axis or a set of follower axes	%Qr.m.c.11
CONTROL_RESUME	EBOOL	RW	Resumes control after a stop	%Qr.m.c.12
CONTROL_CLEAR_FLT	EBOOL	RW	Fault clear control	%Qr.m.c.15
ALLOW_ACQUIRE	EBOOL	RW	Acquisition enable control	%Qr.m.c.18
ALLOW_ENABLE	EBOOL	RW	Disables axis control	%Qr.m.c.26
ALLOW_FOLLOW	EBOOL	RW	Cancels follow control for an axis or a set of follower axes	%Qr.m.c.27
ALLOW_RESUME	EBOOL	RW	Authorizes a movement to continue after a stop using the HOLD command	%Qr.m.c.28
ALLOW_MOVE	EBOOL	RW	Authorizes a movement to continue after a stop using the HALT command	%Qr.m.c.29
ALLOW_NOT_FASTSTOP	EBOOL	RW	Control after a Faststop	%Qr.m.c.30
ALLOW_NOT_FLT	EBOOL	RW	Enables fault control	%Qr.m.c.31

## Actual position

Symbol	Type	Access	Meaning	Address
POSITION	REAL	R	Actual position	%IFr.m.c.0



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**Settings report word**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
PARAM_RPT	INT	R	Settings report word. Indicates a programming error. The least significant byte contains the error codes and the most significant byte contains the address in the registers of the field which caused the error.	%IWm.c.2

**T\_CSY\_FOLLOW type ODDT explicit exchange objects****Explicit exchange execution flags: EXCH\_STS**

Symbol	Type	Access	Meaning	Address
STS_IN_PROGR	BOOL	R	Reading channel's status words	%MWr.m.c.0.0
CMD_IN_PROGR	BOOL	R	Exchange of command parameters in progress	%MWr.m.c.0.1
ADJ_IN_PROGR	BOOL	R	Exchange of adjustment parameters in progress	%MWr.m.c.0.2
RECONF_IN_PROGR	BOOL	R	Module reconfiguration in progress	%MWr.m.c.0.15

**Explicit exchange report: EXCH\_RPT**

Symbol	Type	Access	Meaning	Address
STS_ERR	BOOL	R	Fault reading channel's status words (1 = failure)	%MWr.m.c.1.0
CMD_ERR	BOOL	R	Command parameters exchange fault (1 = failure)	%MWr.m.c.1.1
ADJ_ERR	BOOL	R	Adjustment parameters exchange fault (1 = failure)	%MWr.m.c.1.2
RECONF_ERR	BOOL	R	Fault during channel reconfiguration (1 = failure)	%MWr.m.c.1.15

**Fault channel words**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
EXT_FLT0	BOOL	R	External fault 0: drive fault	%MWr.m.c.2.0
EXT_FLT1	BOOL	R	External fault 1: communication fault with the axis	%MWr.m.c.2.1
EXT_FLT2	BOOL	R	External fault 2	%MWr.m.c.2.3
INT_FLT	BOOL	R	Internal fault	%MWr.m.c.2.4
CONF_FLT	BOOL	R	Configuration fault: hardware and software configuration different	%MWr.m.c.2.5
COM_FLT	BOOL	R	Communication fault	%MWr.m.c.2.6
APPLI_FLT	BOOL	R	Application fault: configuration, adjustment or command fault	%MWr.m.c.2.7
PROCESS_CONF	BOOL	R	Creation of move object in progress	%MWr.m.c.2.11
PROCESS_CONF_FAILED	BOOL	R	Configuration fault (except for channel 0)	%MWr.m.c.2.12

**WRITE\_CMD** interface words

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
ERROR_CMD	INT	RW	Error during WRITE_CMD	%MWr.m.c.19
RETURN_CMD_1	DINT	RW	Return 1 of the function	%MDr.m.c.20
RETURN_CMD_2	REAL	RW	Return 2 of the function	%MFr.m.c.22
RETURN_CMD_3	REAL	RW	Return 3 of the function	%MFr.m.c.24
ACTION_CMD	INT	RW	Action to be carried out	%MWr.m.c.26
PARAM_CMD_1	DINT	RW	Parameter 1	%MDr.m.c.27
PARAM_CMD_2	DINT	RW	Parameter 2	%MDr.m.c.29
PARAM_CMD_3	REAL	RW	Parameter 3	%MFr.m.c.31
PARAM_CMD_4	REAL	RW	Parameter 4	%MFr.m.c.33

**READ\_PARAM, WRITE\_PARAM interface words**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
MASTER_CHANNEL	INT	RW	Number of the master axis (1 to 16, N is not accessible)	%MWr.m.c.35
SLAVE_CHANNEL_1	INT	RW	Number of slave axis 1	%MWr.m.c.36
FOLL_DESCRIPTION_1	INT	RW	Description of slave axis 1. This word comprises the significant bits described below- which have variable names and three unnamed bits which act on the start conditions: - bits 8, 9 and 10 set to zero = immediate start - bit 8 set to one and bits 9 and 10 set to zero = master position reached in negative threshold direction - bit 9 set to one and bits 8 and 10 set to zero = master position reached in positive threshold direction - bits 8 and 9 set to one and bit 10 set to zero = master position > threshold - bits 8 and 9 set to zero and bit 10 set to one = master position < threshold	%MWr.m.c.37
FOLL_WHERE_1	BOOL	R	0 = controller	%MWr.m.c.37.0

Symbol	Type	Access	Meaning	Address
FOLL_TYPE_1	BOOL	R	0 = Ratio Mode 1 = Cam Mode	%MWr.m.c.37.1
FOLL_POSITION_1	BOOL	R	0 = Following the actual position 1 = Following the commanded position	%MWr.m.c.37.2
FOLL_FOL_ON_HALT_1	BOOL	R	1 = stop the follower axis if master/slave link is removed	%MWr.m.c.37.3
FOLL_HALT_MASTER_1	BOOL	R	1 = stop the master in the event of a following error	%MWr.m.c.37.6
FOLL_BIAS_REMAIN_1	BOOL	R	1 = dynamic offset on position of master	%MWr.m.c.37.7
NUMERATOR_1	REAL	RW	Numerator for slave axis 1	%MFr.m.c.38
DENOMINATOR_1	REAL	RW	Denominator for slave axis 1	%MFr.m.c.40
TRIGGER_POSITION_1	REAL	RW	Value of trigger for slave axis 1	%MFr.m.c.42
SLAVE_CHANNEL_2	INT	RW	Number of slave axis 2	%MWr.m.c.44

Symbol	Type	Access	Meaning	Address
FOLL_DESCRIPTION_2	INT	RW	<p>Description of slave axis 2. This word comprises the significant bits described below- which have variable names and three unnamed bits which act on the start conditions:</p> <ul style="list-style-type: none"> <li>- bits 8, 9 and 10 set to zero = immediate start</li> <li>- bit 8 set to one and bits 9 and 10 set to zero = master position reached in negative threshold direction</li> <li>- bit 9 set to one and bits 8 and 10 set to zero = master position reached in positive threshold direction</li> <li>- bits 8 and 9 set to one and bit 10 set to zero = master position &gt; threshold</li> <li>- bits 8 and 9 set to zero and bit 10 set to one = master position &lt; threshold</li> </ul>	%MWr.m.c.45
FOLL_WHERE_2	BOOL	R	0 = controller	%MWr.m.c.45.0
FOLL_TYPE_2	BOOL	R	0 = Ratio Mode 1 = Cam Mode	%MWr.m.c.45.1
FOLL_POSITION_2	BOOL	R	0 = Following the actual position 1 = Following the commanded position	%MWr.m.c.45.2

Symbol	Type	Access	Meaning	Address
FOLL_FOL_ON_HALT_2	BOOL	R	1 = stop the follower axis if master/slave link is removed	%MWr.m.c.45.3
FOLL_HALT_MASTER_2	BOOL	R	1 = stop the master in the event of a following error	%MWr.m.c.45.6
FOLL_BIAS_REMAIN_2	BOOL	R	1 = dynamic offset on position of master	%MWr.m.c.45.7
NUMERATOR_2	REAL	RW	Numerator for slave axis 2	%MFr.m.c.46
DENOMINATOR_2	REAL	RW	Denominator for slave axis 2	%MFr.m.c.48
TRIGGER_POSITION_2	REAL	RW	Value of trigger for slave axis 2	%MFr.m.c.50
SLAVE_CHANNEL_3	INT	RW	Number of slave axis 3	%MWr.m.c.52



Symbol	Type	Access	Meaning	Address
FOLL_DESCRIPTION_3	INT	RW	<p>Description of slave axis 3. This word comprises the significant bits described below- which have variable names and three unnamed bits which act on the start conditions:</p> <ul style="list-style-type: none"> <li>- bits 8, 9 and 10 set to zero = immediate start</li> <li>- bit 8 set to one and bits 9 and 10 set to zero = master position reached in negative threshold direction</li> <li>- bit 9 set to one and bits 8 and 10 set to zero = master position reached in positive threshold direction</li> <li>- bits 8 and 9 set to one and bit 10 set to zero = master position &gt; threshold</li> <li>- bits 8 and 9 set to zero and bit 10 set to one = master position &lt; threshold</li> </ul>	%MWr.m.c.53
FOLL_WHERE_3	BOOL	R	0 = controller	%MWr.m.c.53.0
FOLL_TYPE_3	BOOL	R	0 = Ratio Mode 1 = Cam Mode	%MWr.m.c.53.1
FOLL_POSITION_3	BOOL	R	0 = Following the actual position 1 = Following the commanded position	%MWr.m.c.53.2

Symbol	Type	Access	Meaning	Address
FOLL_FOL_ON_HALT_3	BOOL	R	1 = stop the follower axis if master/slave link is removed	%MWr.m.c.53.3
FOLL_HALT_MASTER_3	BOOL	R	1 = stop the master in the event of a following error	%MWr.m.c.53.6
FOLL_BIAS_REMAIN_3	BOOL	R	1 = dynamic offset on position of master	%MWr.m.c.53.7
NUMERATOR_3	REAL	RW	Numerator for slave axis 3	%MFr.m.c.54
DENOMINATOR_3	REAL	RW	Denominator for slave axis 3	%MFr.m.c.56
TRIGGER_POSITION_3	REAL	RW	Value of trigger for slave axis 3	%MFr.m.c.58
SLAVE_CHANNEL_4	INT	RW	Number of slave axis 4	%MWr.m.c.60

Symbol	Type	Access	Meaning	Address
FOLL_DESCRIPTION_4	INT	RW	<p>Description of slave axis 4. This word comprises the significant bits described below- which have variable names and three unnamed bits which act on the start conditions:</p> <ul style="list-style-type: none"> <li>- bits 8, 9 and 10 set to zero = immediate start</li> <li>- bit 8 set to one and bits 9 and 10 set to zero = master position reached in negative threshold direction</li> <li>- bit 9 set to one and bits 8 and 10 set to zero = master position reached in positive threshold direction</li> <li>- bits 8 and 9 set to one and bit 10 set to zero = master position &gt; threshold</li> <li>- bits 8 and 9 set to zero and bit 10 set to one = master position &lt; threshold</li> </ul>	%MWr.m.c.61
FOLL_WHERE_4	BOOL	R	0 = controller	%MWr.m.c.61.0
FOLL_TYPE_4	BOOL	R	0 = Ratio Mode 1 = Cam Mode	%MWr.m.c.61.1
FOLL_POSITION_4	BOOL	R	0 = Following the actual position 1 = Following the commanded position	%MWr.m.c.61.2

Symbol	Type	Access	Meaning	Address
FOLL_FOL_ON_HALT_4	BOOL	R	1 = stop the follower axis if master/slave link is removed	%MWr.m.c.61.3
FOLL_HALT_MASTER_4	BOOL	R	1 = stop the master in the event of a following error	%MWr.m.c.61.6
FOLL_BIAS_REMAIN_4	BOOL	R	1 = dynamic offset on position of master	%MWr.m.c.61.7
NUMERATOR_4	REAL	RW	Numerator for slave axis 4	%MFr.m.c.62
DENOMINATOR_4	REAL	RW	Denominator for slave axis 4	%MFr.m.c.64
TRIGGER_POSITION_4	REAL	RW	Value of trigger for slave axis 4	%MFr.m.c.66
SLAVE_CHANNEL_5	INT	RW	Number of slave axis 5	%MWr.m.c.68

Symbol	Type	Access	Meaning	Address
FOLL_DESCRIPTION_5	INT	RW	<p>Description of slave axis 5. This word comprises the significant bits described below- which have variable names and three unnamed bits which act on the start conditions:</p> <ul style="list-style-type: none"> <li>- bits 8, 9 and 10 set to zero = immediate start</li> <li>- bit 8 set to one and bits 9 and 10 set to zero = master position reached in negative threshold direction</li> <li>- bit 9 set to one and bits 8 and 10 set to zero = master position reached in positive threshold direction</li> <li>- bits 8 and 9 set to one and bit 10 set to zero = master position &gt; threshold</li> <li>- bits 8 and 9 set to zero and bit 10 set to one = master position &lt; threshold</li> </ul>	%MWr.m.c.69
FOLL_WHERE_5	BOOL	R	0 = controller	%MWr.m.c.69.0
FOLL_TYPE_5	BOOL	R	0 = Ratio Mode 1 = Cam Mode	%MWr.m.c.69.1
FOLL_POSITION_5	BOOL	R	0 = Following the actual position 1 = Following the commanded position	%MWr.m.c.69.2

Symbol	Type	Access	Meaning	Address
FOLL_FOL_ON_HALT_5	BOOL	R	1 = stop the follower axis if master/slave link is removed	%MWr.m.c.69.3
FOLL_HALT_MASTER_5	BOOL	R	1 = stop the master in the event of a following error	%MWr.m.c.69.6
FOLL_BIAS_REMAIN_5	BOOL	R	1 = dynamic offset on position of master	%MWr.m.c.69.7
NUMERATOR_6	REAL	RW	Numerator for slave axis 6	%MFr.m.c.70
DENOMINATOR_6	REAL	RW	Denominator for slave axis 6	%MFr.m.c.72
TRIGGER_POSITION_6	REAL	RW	Value of trigger for slave axis 6	%MFr.m.c.74
SLAVE_CHANNEL_6	INT	RW	Number of slave axis 6	%MWr.m.c.76

Symbol	Type	Access	Meaning	Address
FOLL_DESCRIPTION_6	INT	RW	<p>Description of slave axis 6. This word comprises the significant bits described below- which have variable names and three unnamed bits which act on the start conditions:</p> <ul style="list-style-type: none"> <li>- bits 8, 9 and 10 set to zero = immediate start</li> <li>- bit 8 set to one and bits 9 and 10 set to zero = master position reached in negative threshold direction</li> <li>- bit 9 set to one and bits 8 and 10 set to zero = master position reached in positive threshold direction</li> <li>- bits 8 and 9 set to one and bit 10 set to zero = master position &gt; threshold</li> <li>- bits 8 and 9 set to zero and bit 10 set to one = master position &lt; threshold</li> </ul>	%MWr.m.c.77
FOLL_WHERE_6	BOOL	R	0 = controller	%MWr.m.c.77.0
FOLL_TYPE_6	BOOL	R	0 = Ratio Mode 1 = Cam Mode	%MWr.m.c.77.1
FOLL_POSITION_6	BOOL	R	0 = Following the actual position 1 = Following the commanded position	%MWr.m.c.77.2

Symbol	Type	Access	Meaning	Address
FOLL_FOL_ON_HALT_6	BOOL	R	1 = stop the follower axis if master/slave link is removed	%MWr.m.c.77.3
FOLL_HALT_MASTER_6	BOOL	R	1 = stop the master in the event of a following error	%MWr.m.c.77.6
FOLL_BIAS_REMAIN_6	BOOL	R	1 = dynamic offset on position of master	%MWr.m.c.77.7
NUMERATOR_6	REAL	RW	Numerator for slave axis 6	%MFr.m.c.78
DENOMINATOR_6	REAL	RW	Denominator for slave axis 6	%MFr.m.c.80
TRIGGER_POSITION_6	REAL	RW	Value of trigger for slave axis 6	%MFr.m.c.82



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## T\_CSY\_COORD type ODDT implicit exchange objects

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### List of implicit exchange input objects

Symbol	Type	Access	Meaning	Address
CH_ERROR	EBOOL	R	Channel default bit	%lr.m.c.ERR
RAMPING	EBOOL	R	Indicates whether the axis is accelerating or decelerating	%lr.m.c.0
STEADY	EBOOL	R	The speed is steady	%lr.m.c.1
STOPPING	EBOOL	R	The movement is decelerating to a stop	%lr.m.c.2
PROFILE_END	EBOOL	R	The last profile command has been sent to the module	%lr.m.c.3
IN_POSITION	EBOOL	R	The axis is within the in-position band	%lr.m.c.4
AXIS_HOMING	EBOOL	R	The axis is homing. For an imaginary axis, this bit is inactive.	%lr.m.c.5
AXIS_HOMED	EBOOL	R	The axis position reading is referenced off the home position	%lr.m.c.6
AXIS_NOT_FOLLOWING	EBOOL	R	The drive is not recognizing module commands	%lr.m.c.7
HOLDING	EBOOL	R	The axis is holding in wait position	%lr.m.c.8
RESUMING	EBOOL	R	The axis is moving after a hold	%lr.m.c.9
DRIVE_ENABLED	EBOOL	R	The drive is enabled	%lr.m.c.10
DRIVE_DIAG	EBOOL	R	The drive is performing a class 3 diagnostic	%lr.m.c.11
DRIVE_WARNING	EBOOL	R	The drive is performing a class 2 diagnostic	%lr.m.c.12

Symbol	Type	Access	Meaning	Address
DRIVE_FLT	EBOOL	R	The drive is performing a class 1 diagnostic	%I.r.m.c.13
DRIVE_DISABLED	EBOOL	R	The drive is disabled	%I.r.m.c.14
AXIS_SUMMARY_FLT	EBOOL	R	Drive fault	%I.r.m.c.15
AXIS_COM_OK	EBOOL	R	Communication between the drive and the module is OK	%I.r.m.c.16
AXIS_IS_LINKED	EBOOL	R	The axis belongs to a set of axes	%I.r.m.c.17
AXIS_IN_CMD	EBOOL	R	The axis is active and can be controlled	%I.r.m.c.18
AXIS_AT_TARGET	EBOOL	R	The axis is within the in-position band for the target position	%I.r.m.c.20
AXIS_POS_LIMIT	EBOOL	R	The axis has reached the positive limit	%I.r.m.c.21
AXIS_NEG_LIMIT	EBOOL	R	The axis has reached the negative limit	%I.r.m.c.22
AXIS_WARNING	EBOOL	R	"Motion Warning" status returned by the drive	%I.r.m.c.23
AXIS_HOLD	EBOOL	R	The axis is stopped and waiting for a command	%I.r.m.c.28
AXIS_HALT	EBOOL	R	The axis has stopped	%I.r.m.c.29
AXIS_FASTSTOP	EBOOL	R	The axis has faststopped	%I.r.m.c.30
AXIS_READY	EBOOL	R	The axis is ready to respond to a command	%I.r.m.c.31
CONF_OK	EBOOL	R	The channel is configured	%I.r.m.c.32

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**List of implicit exchange output objects**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
CONTROL_ACQUIRE	EBOOL	RW	Control acquisition	%Qr.m.c.2
CONTROL_ENABLE	EBOOL	RW	Control enable	%Qr.m.c.10
CONTROL_FOLLOW	EBOOL	RW	Follow control for an axis or a set of follower axes	%Qr.m.c.11
CONTROL_RESUME	EBOOL	RW	Resumes control after a stop	%Qr.m.c.12
CONTROL_CLEAR_FLT	EBOOL	RW	Fault clear control	%Qr.m.c.15
ALLOW_ACQUIRE	EBOOL	RW	Acquisition enable control	%Qr.m.c.18
ALLOW_ENABLE	EBOOL	RW	Disables axis control	%Qr.m.c.26
ALLOW_FOLLOW	EBOOL	RW	Cancels follow control for an axis or a set of follower axes	%Qr.m.c.27
ALLOW_RESUME	EBOOL	RW	Authorizes a movement to continue after a stop using the HOLD command	%Qr.m.c.28
ALLOW_MOVE	EBOOL	RW	Authorizes a movement to continue after a stop using the HALT command	%Qr.m.c.29
ALLOW_NOT_FASTSTOP	EBOOL	RW	Control after a Faststop	%Qr.m.c.30
ALLOW_NOT_FLT	EBOOL	RW	Enables fault control	%Qr.m.c.31

**Settings report word**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
PARAM_RPT	INT	R	Settings report word. Indicates a programming error. The least significant byte contains the error codes and the most significant byte contains the address in the registers of the field which caused the error.	%IWr.m.c.2

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## T\_CSY\_COORD type ODDT explicit exchange objects

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### Explicit exchange execution flags: EXCH\_STS

Symbol	Type	Access	Meaning	Address
STS_IN_PROGR	BOOL	R	Reading channel's status words	%MWr.m.c.0.0
CMD_IN_PROGR	BOOL	R	Exchange of command parameters in progress	%MWr.m.c.0.1
ADJ_IN_PROGR	BOOL	R	Exchange of adjustment parameters in progress	%MWr.m.c.0.2
RECONF_IN_PROGR	BOOL	R	Module reconfiguration in progress	%MWr.m.c.0.15

### Explicit exchange report: EXCH\_RPT

Symbol	Type	Access	Meaning	Address
STS_ERR	BOOL	R	Fault reading channel's status words (1 = failure)	%MWr.m.c.1.0
CMD_ERR	BOOL	R	Command parameters exchange fault (1 = failure)	%MWr.m.c.1.1
ADJ_ERR	BOOL	R	Adjustment parameters exchange fault (1 = failure)	%MWr.m.c.1.2
RECONF_ERR	BOOL	R	Fault during channel reconfiguration (1 = failure)	%MWr.m.c.1.15

## Fault channel words

Symbol	Type	Access	Meaning	Address
EXT_FLT0	BOOL	R	External fault 0: drive fault	%MWr.m.c.2.0
EXT_FLT1	BOOL	R	External fault 1: communication fault with the axis	%MWr.m.c.2.1
EXT_FLT2	BOOL	R	External fault 2	%MWr.m.c.2.3
INT_FLT	BOOL	R	Internal fault	%MWr.m.c.2.4
CONF_FLT	BOOL	R	Configuration fault: hardware and software configuration different	%MWr.m.c.2.5
COM_FLT	BOOL	R	Communication fault	%MWr.m.c.2.6
APPLI_FLT	BOOL	R	Application fault: configuration, adjustment or command fault	%MWr.m.c.2.7
PROCESS_CONF	BOOL	R	Creation of move object in progress	%MWr.m.c.2.11
PROCESS_CONF_FAILED	BOOL	R	Configuration fault (except for channel 0)	%MWr.m.c.2.12

**WRITE\_CMD interface words**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
ERROR_CMD	INT	RW	Error during WRITE_CMD	%MWr.m.c.19
RETURN_CMD_1	DINT	RW	Return 1 of the function	%MDr.m.c.20
RETURN_CMD_2	REAL	RW	Return 2 of the function	%MFr.m.c.22
RETURN_CMD_3	REAL	RW	Return 3 of the function	%MFr.m.c.24
ACTION_CMD	INT	RW	Action to be carried out	%MWr.m.c.26
PARAM_CMD_1	DINT	RW	Parameter 1	%MDr.m.c.27
PARAM_CMD_2	DINT	RW	Parameter 2	%MDr.m.c.29
PARAM_CMD_3	REAL	RW	Parameter 3	%MFr.m.c.31
PARAM_CMD_4	REAL	RW	Parameter 4	%MFr.m.c.33
PARAM_CMD_5	REAL	RW	Parameter 5	%MFr.m.c.35
PARAM_CMD_6	REAL	RW	Parameter 6	%MFr.m.c.37
PARAM_CMD_7	REAL	RW	Parameter 7	%MFr.m.c.39
PARAM_CMD_8	REAL	RW	Parameter 8	%MFr.m.c.41
PARAM_CMD_9	REAL	RW	Parameter 9	%MFr.m.c.43
PARAM_CMD_10	REAL	RW	Parameter 10	%MFr.m.c.45
PARAM_CMD_11	REAL	RW	Parameter 11	%MFr.m.c.47
PARAM_CMD_12	REAL	RW	Parameter 12	%MFr.m.c.49
PARAM_CMD_13	REAL	RW	Parameter 13	%MFr.m.c.51
PARAM_CMD_14	REAL	RW	Parameter 14	%MFr.m.c.53
PARAM_CMD_15	REAL	RW	Parameter 15	%MFr.m.c.55
PARAM_CMD_16	REAL	RW	Parameter 16	%MFr.m.c.57
PARAM_CMD_17	REAL	RW	Parameter 17	%MFr.m.c.59
PARAM_CMD_18	REAL	RW	Parameter 18	%MFr.m.c.61

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**T\_CSY\_CAM type ODDT implicit exchange objects**

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**List of implicit exchange input objects**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
CH_ERROR	EBOOL	R	Channel default bit	%I.r.m.c.ERR



## T\_CSY\_CAM type ODDT explicit exchange objects

### Explicit exchange execution flag: EXCH\_STS

Symbol	Type	Access	Meaning	Address
STS_IN_PROGR	BOOL	R	Reading channel's status words	%MWr.m.c.0.0
CMD_IN_PROGR	BOOL	R	Exchange of command parameters in progress	%MWr.m.c.0.1
ADJ_IN_PROGR	BOOL	R	Exchange of adjustment parameters in progress	%MWr.m.c.0.2
TRF_IN_PROGR	BOOL	R	TRF_RECIPÉ function executing	%MWr.m.c.0.3
RECONF_IN_PROGR	BOOL	R	Module reconfiguration in progress	%MWr.m.c.0.15

### Explicit exchange report: EXCH\_RPT

Symbol	Type	Access	Meaning	Address
STS_ERR	BOOL	R	Fault reading channel's status words (1 = failure)	%MWr.m.c.1.0
CMD_ERR	BOOL	R	Command parameters exchange fault (1 = failure)	%MWr.m.c.1.1
ADJ_ERR	BOOL	R	Adjustment parameters exchange fault (1 = failure)	%MWr.m.c.1.2
TRF_ERR	BOOL	R	Fault during execution of TRF_RECIPÉ function	%MWr.m.c.1.3
RECONF_ERR	BOOL	R	Fault during channel reconfiguration (1 = failure)	%MWr.m.c.1.15

## Fault channel words

Symbol	Type	Access	Meaning	Address
EXT_FLT0	BOOL	R	External fault 0: drive fault	%MWr.m.c.2.0
EXT_FLT1	BOOL	R	External fault 1: communication fault with the axis	%MWr.m.c.2.1
EXT_FLT2	BOOL	R	External fault 2	%MWr.m.c.2.3
INT_FLT	BOOL	R	Internal fault	%MWr.m.c.2.4
CONF_FLT	BOOL	R	Configuration fault: hardware and software configuration different	%MWr.m.c.2.5
COM_FLT	BOOL	R	Communication fault	%MWr.m.c.2.6
APPLI_FLT	BOOL	R	Application fault: configuration, adjustment or command fault	%MWr.m.c.2.7
PROCESS_CONF	BOOL	R	Creation of move object in progress	%MWr.m.c.2.11
PROCESS_CONF_FAILED	BOOL	R	Configuration fault (except for channel 0)	%MWr.m.c.2.12

## TRF\_RECIPE function object

Symbol	Type	Access	Meaning	Address
ERROR_TRF	INT	R	Write error of the TRF_RECIPE function	%MWr.m.c.3
RETURN_TRF_1	DINT	R	Return 1 of the TRF_RECIPE function	%MDr.m.c.4
RETURN_TRF_2	REAL	R	Return 2 of the TRF_RECIPE function	%MFr.m.c.6

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
RETURN_TRF_3	REAL	R	Return 3 of the TRF_RECIPE function	%MFr.m.c.8
ACTION_TRF	INT	R	Action to perform by the TRF_RECIPE function	%MWr.m.c.10
PARAM_TRF_1	DINT	R	Parameter 1 of the TRF_RECIPE function	%MDr.m.c.11
PARAM_TRF_2	DINT	R	Parameter 2 of the TRF_RECIPE function	%MDr.m.c.13
PARAM_TRF_3	REAL	R	Parameter 3 of the TRF_RECIPE function	%MFr.m.c.15
PARAM_TRF_4	REAL	R	Parameter 4 of the TRF_RECIPE function	%MFr.m.c.17

#### **WRITE\_CMD interface words**

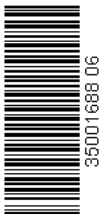
<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
ERROR_CMD	INT	RW	Error during WRITE_CMD	%MWr.m.c.19
RETURN_CMD_1	DINT	RW	Return 1 of the function	%MDr.m.c.20
RETURN_CMD_2	REAL	RW	Return 2 of the function	%MFr.m.c.22
RETURN_CMD_3	REAL	RW	Return 3 of the function	%MFr.m.c.24
ACTION_CMD	INT	RW	Action to be carried out	%MWr.m.c.26
PARAM_CMD_1	DINT	RW	Parameter 1	%MDr.m.c.27
PARAM_CMD_2	DINT	RW	Parameter 2	%MDr.m.c.29
PARAM_CMD_3	REAL	RW	Parameter 3	%MFr.m.c.31
PARAM_CMD_4	REAL	RW	Parameter 4	%MFr.m.c.33

**IODDT T\_GEN\_MOD applicable for all modules****List of objects**

<b>Symbol</b>	<b>Type</b>	<b>Access</b>	<b>Meaning</b>	<b>Address</b>
MOD_ERROR	EBOOL	R	Module error bit	%I.r.m.MOD.ERR
EXCH_STS	INT	R	Channel exchange control word	%MWr.m.c.0
STS_IN_PROGR	BOOL	R	Counting channel error bit	%MWr.m.c.0.0
EXCH_RPT	INT	R	Exchange report word	%MWr.m.c.1
STS_ERR	BOOL	R	Fault reading channel's status words	%MWr.m.c.1.0
MOD_FLT	INT	R	Module internal error word	%MWr.m.c.2
MOD_FAIL	BOOL	R	Internal fault, module failed	%MWr.m.c.2.0
CH_FLT	BOOL	R	Faulty channel(s)	%MWr.m.c.2.1
BLK	BOOL	R	Terminal block fault	%MWr.m.c.2.2
CONF_FLT	BOOL	R	Hardware or software configuration fault	%MWr.m.c.2.5
NO_MOD	BOOL	R	Module missing or off	%MWr.m.c.2.6







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