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Application Information

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Introduction:

The EURO205X Motion Coordinator can interface directly to Tamagawa "Smart Abs" absolute encoders. These encoders respond on a dedicated 2.5 Mhz RS485 serial interface when their position is requested by the controller. When set to the relevant encoder mode, the axis transmits an information request to the encoder on a fixed 250usec cycle. The data returned is available to BASIC and can be used to servo a motor.

System Requirements:

EURO205X Motion Coordinator with system software v1.6309 or higher and FPGA version 9705
 Tamagawa Seiki Co. Ltd. SA35-17/33bit-LPS-5V or SA48-17/33bit-LPS-5V or similar
 Motion Perfect 2 version yyyyyyy is useful although not essential

Wiring Configuration:

The encoder connects directly to the "Z" and "/Z" connections of the EURO205X axis. The following table gives the encoder connections to the EURO205X backplane connector:

Encoder Signal	Wire Colour	Axis 0	Axis 1	Axis 2	Axis 3
SD	Blue	A26	A24	A22	A20
/SD	Blue/Black	A25	A23	A21	A19

GND	Black + Brown/Black	C3/B3/A3	C3/B3/A3	C3/B3/A3	C3/B3/A3
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The encoder must be connected to its 5v supply and optional battery supply if that is required.

Configuring the Motion Coordinator:

Using the incremental or absolute encoder ports requires that the relevant "feature enable" codes on the EURO205X Motion Coordinator are installed:

Axis Number	Feature Code for Encoder Use
0	4
1	5
2	6
3	7

After setting the feature enable codes the axes will power up as *incremental* encoder inputs. It is necessary to set the configuration by changing the axis ATYPE using a BASIC program:

Axis ATYPE	Description
31	Tamagawa absolute encoder with stepper pulse outputs on channels A/B
32	Tamagawa absolute encoder with servo control

In either case the +/-10volt DAC's may be used from BASIC when the servo is off.

Relevant BASIC Commands:

The BASIC implements some new keywords to give the user access to the encoder data. Please refer to the Smart Abs specification for information on the encoder fields.

ENCODER_ID

This axis parameter returns the ENID parameter from the encoder (fixed at 17 decimal).

ENCODER_TURNS

This axis parameter returns the number of multi-turn counts from fields ABM0/ABM1/AMB2 of the encoder. The multi-turn data is not automatically applied to the axis MPOS after initialisation. The application programmer must apply this from BASIC using OFFPOS or DEFPOS as required.

ENCODER_STATUS

This axis parameter returns both the status field SF and the ALMC encoder error field. The ALMC field is in bits 8..15. The SF field is in bits 0..7.

ENCODER

This axis parameter returns the position within one turn of the encoder. The axis measured

position MPOS will be set to this value automatically when the ATYPE is set to 31 or 32.

Error Handling:

When the axis receives a data packet from the with a CRC error, or fails to receive a data packet from the encoder, it will set bit 2 of the AXISSTATUS axis parameter. If subsequent packets are received successfully the bit will be cleared.

If bit 2 of the ERRORMASK axis parameter is set the encoder data error will trip the WDOG enable relay.