@ctiveIO

incremental interface ISI 5112

- **Incremental interface (ISI)**
- **Data output voltage 5V RS485**
- **Differential outputs**

I/O

Pinout

LED:	0; (8)	Load Input
	1; (9)	Load Output
	2; (10)	Increment
	3; (11)	Decrement
	4; (12)	Release
	5; (13)	Acquisition
	6; (14)	Unsused
	7; (15)	Reset
	E:	failure, red
	P:	power supply, red
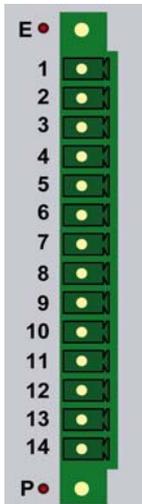
Pin	Signal	
1	A	Data output
2	/A	Data output
3	B	Data output
4	/B	Data output
5	zero	Data output
6	/zero	Data output
7	-	Reserved
8	-	Reserved
9	-	Reserved
10	-	Reserved
11	Power	VCC
12	Power	0V
13	Power	VCC
14	Power	0V

All Power VCC and Power 0V are internal connected

Attributes

Dataformat:
2 Byte Status/ Control
4 Byte Data

Applications:

available prints :
- @P5112L: ISI interface, 5V output
- @P5112R: ISI interface, 5V output

Related Applications:
24V input voltage

- @P5110: incremental interface, 5V input
- @P5111: incremental interface, 24V input

digital

interface

Electrical Data

Power supply external ....+24V= ±20%, GND required, see notes,
Operating current ....5mA at 24V
Operating current @ctiveBus ....25mA at 3,3V / 25mA at 5V
Input protection ....30V overvoltage; 5V overvoltage
Data output...5V difference signal (RS485)

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System Information

System ID 0X01C5
System address space ....48 bit in, 48 bit out

Environmental Conditions

Electromagnetic compatibility (EMC) ....EN 61000-4-2 (IEC-801-2) / EN 61000-4-4 (IEC-801-4)
Operating temperature [°C] ....0 .. +55
Storage temperature [°C] ....-20 .. +70
Humidity (rel) ....98 % (non condensing)
Protection class*...IP 20 (DIN 40 050)
*The protection class is valid only with housing and connector installed

Mechanical Data PCB

Weight ....approx. 0.05 kg including connector
Dimension ....105mm x 80mm x 12mm

Drawing (effective if mounted in @M housing)
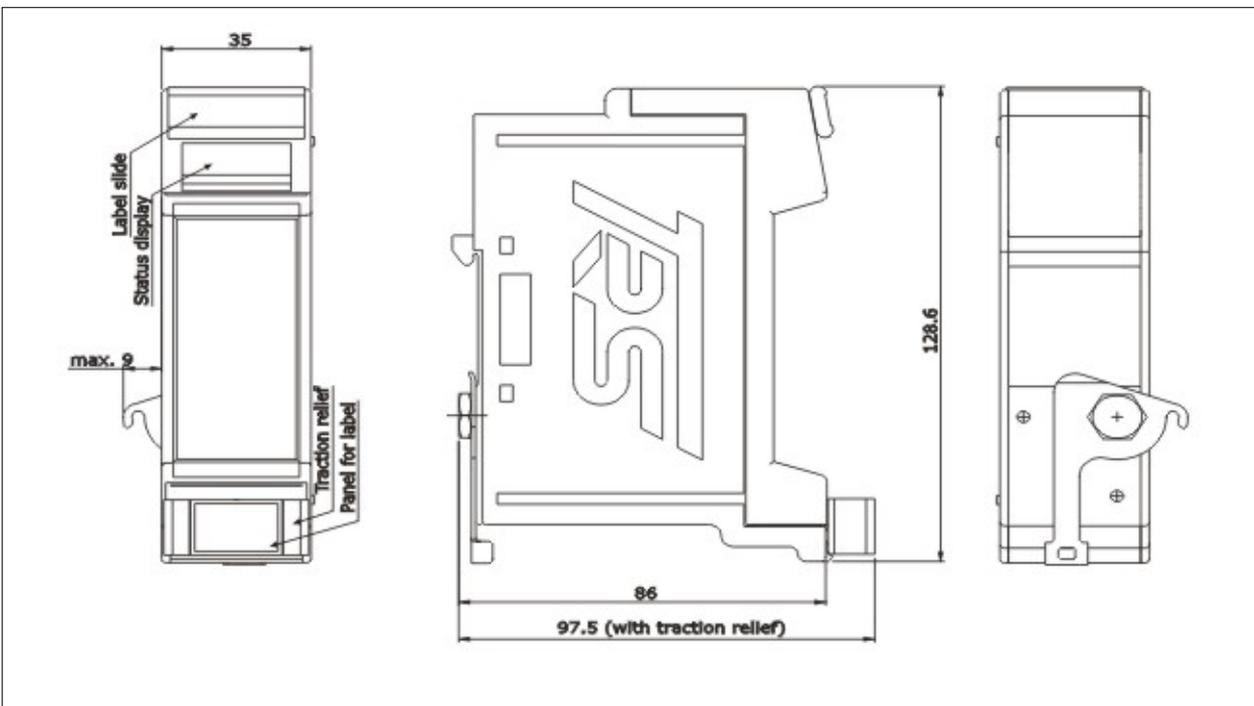
Ordering Key
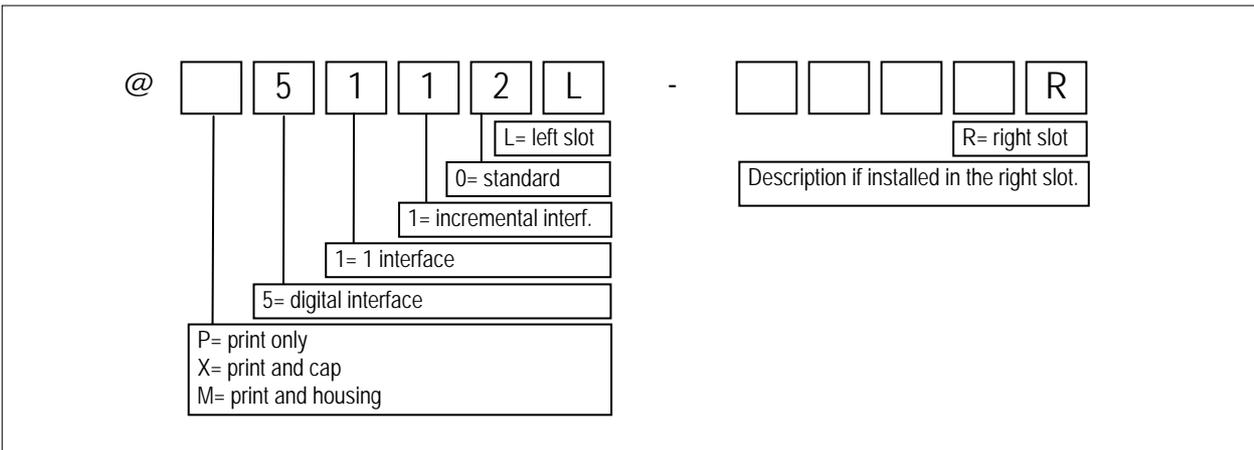
notes:

Parameter of the modul

System bus data during initialization:

Bit	Name	Description
3 - 0	STATUS / VERSION	Write: must be set to '0001' during initialization
		Read: returns the software version
7 - 4	not used	No function
23 – 8	FMAXKOEFFIZIENT[1]	Write: sets the max. allowable output frequency
		Read: returns the last valid setting
28 - 24	BITRESOLUTION[2]	Write: sets the ISI resolution (valid number of bits)
		Read: returns the last valid setting
29	DECPERM	Write: must be set to '1' to permit decrementation
		Read: returns the last valid setting
30	INCPERM	Write: must be set to '1' to permit incrementation
		Read: returns the last valid setting
31	INITLEVEL	Write: '1' to init outputdriver to a logic level of '1', else '0'.
		Read: returns the last valid setting
47 - 32	ACQUISITION[3]	Write: sets the data acquisition rate
		Read: returns the last valid setting

[1] The **FMAXKOEFFIZIENT** defines the maximal allowable incremental output frequency. A base clock of 500kHz is devided by **FMAXKOEFFIZIENT**. The ouptut frequency is calculated by the following equation:
$$FMAXKOEFFIZIENT = (500kHz / (FMAX * 4)) - 1.$$

[2] The BITRESOLUTION defines the resolution of the output.
$$BITRESOLUTION = Amount\ of\ the\ Data\ bits - 1.$$

[3] The **ACQUISITION** value defines the fixed time interval for data acquisition (incremental data). The time interval is also based on a 500kHz clock. To calculate the acquisition interval use the following equation:
$$FACQ = (500kHz / (ACQUISITION + 1)).$$

System bus data after initialization:

Bit	Name	Description
31 - 0	POSITION	Write: sets a new ISI position
		Read: returns the last written position
46 - 32	not used	No function
45	LOAD OUTPUT	Write: has no effects
		Read: is set to '1' while loading the preset value
46	LOAD INPUT	Write: must be set to '1' to preset actual ISI position
		Read: returns the last valid setting
47	MODRELEASE	Write: must be set to '1' to enable the ISI module
		Read: returns the last valid setting

To **enable** the ISI Module, the **MODRELEASE** bit must be set.

To **preset** the Module with a **POSITION** value, write down the value with **MODRELEASE** unset.

Caution !

- The Module must never be loaded with **POSITION** values greater than those defined by the **BITRESOLUTION** value. Greater values can cause indefinable results.
- Be aware that the difference between two released **POSITION** values is not greater then ((2^BITRESOLUTION) / 2) –1.

Example: .... BITRESOLUTION **12**
.... BITRESOLUTION – 1 **11**
.... Resolution: 4096
.... Max. position difference ((4096) / 2) - 1 = **2047**

I/O

digital

interface

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Example of Applikation:

@PLC-Controller + @P5100 + @P5112
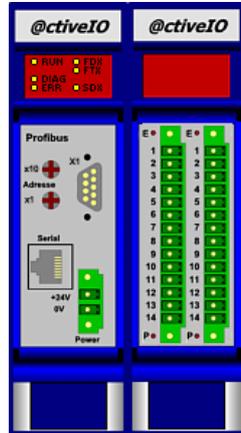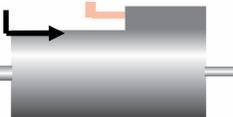
SSI encoder   **engine/decoder**

The position data of the SSI-encoder be distributed through the @P5112 module as incremental code to the engine/decoder.

Caution:

Power 0V has to be directly connected with power 0V of the interface partner and power 0V of the controller-module.

Revision change

Version	Description	Date (m/y)
00	serie 0	11/03
01	added: Systembus data **Bit 47-32** (ACQUISITION^2)	01/04