Orientalmotor

(RoHS) **RoHS-Compliant**

Universal Controller
SCX11

The **SCX11** universal controller is a highly functional and sophisticated controller, equipped with program editing and execution functions. Use the **SCX11** as a stored program controller to connect to any of Oriental Motor's standard pulse input drivers. The **SCX11** is also able to control the motor via various serial ports such as USB, RS-232C and **CAN**open.

■ Features

● 100 Sequence Programs can be Stored

The **SCX11** can store up to 100 programs and execute various operations, from simple movements like "repeated positioning operation" to complicated controls like "operation by calculating the value based on external inputs".

● Easy Operation

The convenient and easy-to-use PC software, "Immediate Motion Creator for **CM/SCX** Series", is provided with the **SCX11**. Easily start an operation with the click of a button or start key by setting the travel amount and speed. The GUI allows for easy program creation by selecting commands from the command list. Other functions available include, real time monitor for the teaching position, current position and I/O status, system parameter setting and I/O assignment.

PC software "Immediate Motion Creator for **CM/SCX** Series" (Included)
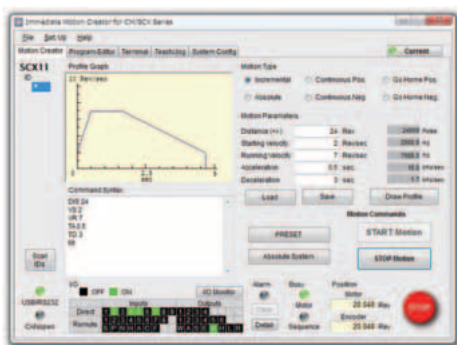
● USB Port as Standard Equipment

The **SCX11** has a mini USB port on the front panel which can directly connect to a PC through a commercially available mini USB cable. No special cable or converter is required.

● Changeover from **SCX10** is Possible

Functions like serial communication, I/O signals, commands etc. are the same as the **SCX10**, so changeover is easy.

● Intelligent Setting

Program data for speed and travel amounts by setting the "User Unit" parameter. Data can be programmed in units such as "mm", "inch" and "revolution".
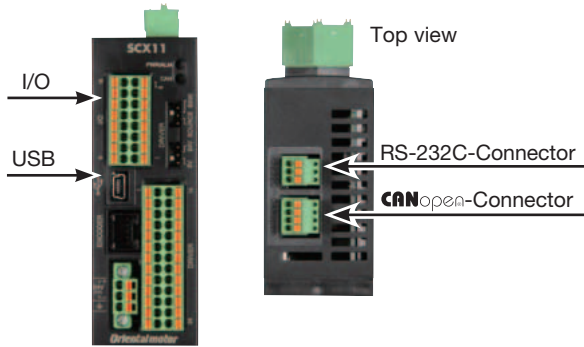

100 mm (3.94 in.) 200 mm (7.87 in.)
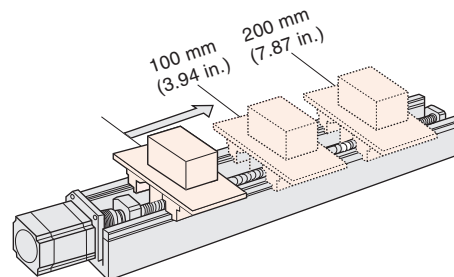
● External Encoder Input

The **SCX11** has a function for external encoder inputs which enables continuous monitoring of the feedback position and position error. Line driver, open collector and TTL inputs are compatible.


Driver   Motor
Encoder
RS-232C-Connector
CANopen-Connector
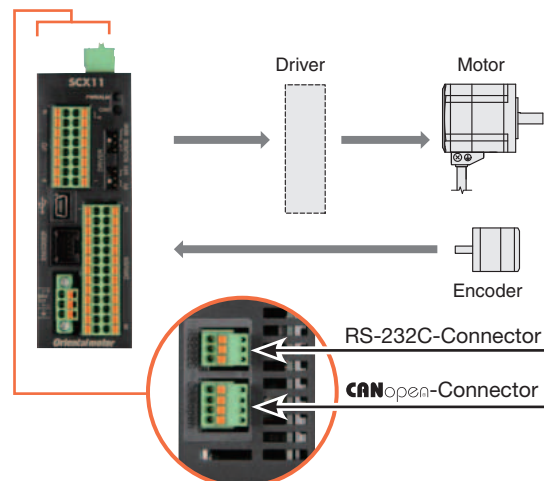
● **Various Interfaces for Operation**

Top view

I/O

USB

RS-232C-Connector

CANopen-Connector

◇ **Stand-Alone Operation Using Sensors and Switches**
The **SCX11** can operate as a stand-alone controller, without a PC or programmable controller by utilizing 9 general inputs and 4 general outputs to select the desired sequences.

Start Switch

General Inputs

Driver

Sensor 1

Sensor 2

Motor

Lamp

Buzzer

General Outputs
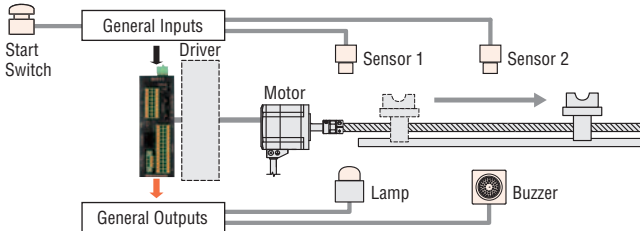
◇ **Direct Command Operation via CANopen**
The **SCX11** has a standard built-in interface for CANopen.
✽ CANopen for the **SCX11** is certified by CiA (CAN in Automation).

Master

CANopen

Driver

Driver

Driver

Other Device
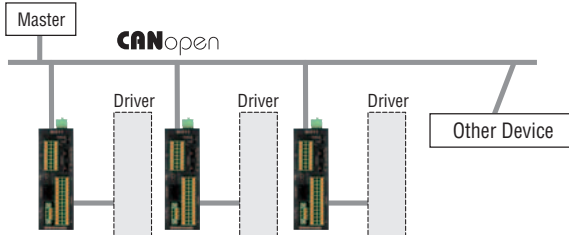
◇ **Operation Using a PC**
The **SCX11** can connect to a PC via RS-232C or USB✽. The **SCX11** can also be connected via an RS-232C daisy chain connection for multi-axis control with another **SCX11** or other products such as the **ASX** Series all-in-one closed loop α_{STEP} motor or **SCX10** controller.

Driver

Driver

Driver

RS-232C

PC

RS-232C daisy chain
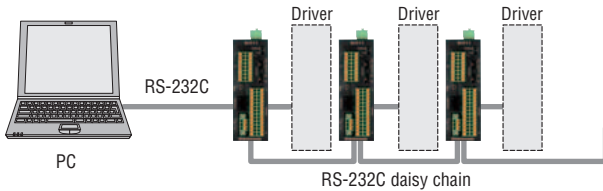
✽ Multi-axis control via USB is configured with multiple USB ports.

◇ **Operation Using a Programmable Controller**
The **SCX11** can communicate a wide variety of signals via I/O to a programmable controller. Serial communications is also available, if the programmable controller has a USB or RS-232C interface built-in.

Start Stop

Driver

Motor

Programmable controller

Alarm signal
Position completion signal
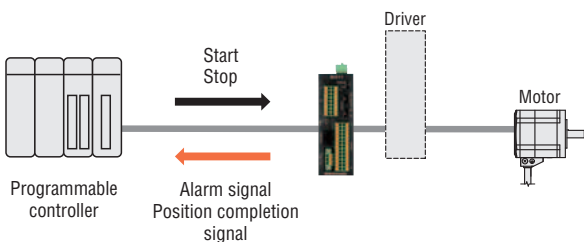
● **Two Types of Operations**

◇ **Executing Sequence Operation [Stored Program Function]**
This function is available for conditional branching using general-purpose I/O, wait processes using internal timers and other operations based on sequence control including setting the positioning and speed data. The **SCX11** can store up to 100 different programs that can be selected and executed via USB, RS-232C, CANopen and I/O port.
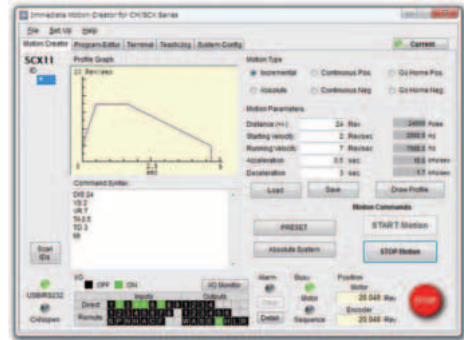

[Example program]

```
     Seq 1
     [ 1 ]       V S   1        : Starting Velocity✽
     [ 2 ]       V R   9        : Running Velocity✽
     [ 3 ]       T A   1        : Acceleration Time
     [ 4 ]       T D   2        : Deceleration Time
     [ 5 ]       D I S   2      : Incremental Motion Distance✽
     [ 6 ]       L O O P   3    : Begin Counted LOOP Block
     [ 7 ]       M I            : Move Incremental Distance
     [ 8 ]       M E N D        : Wait for Motion End
     [ 9 ]       W A I T   1    : Wait for Specified Time
     [ 10 ]      E N D L        : End of LOOP Block
     [ 11 ]      M A   O        : Move to Absolute Position
     [ 12 ]      M E N D        : Wait for Motion End
     [ 13 ]      E N D          : End Sequence
```

✽ Set the speed and travel amount as the unit of the actual motion such as "mm", "inch" and "revolution".

◇ **Direct Command Operation**
Operate a motor directly by sending commands via the serial port (USB, RS-232C, CANopen) from a PC or programmable controller. This function is suitable for applications where positioning data is updated frequently or managed all at once by the PC or programmable controller.

```
>DIS=60
 DIS=60 mm
>VR=5
 VR=5 mm/sec.
>VS=1
 VS=1 mm/sec.
>TA=0.5
 TA=0.5
>TD=0.5
 TD=0.5
>MI
>
```


Velocity

DIS (▨ part)

VR

VS

Time

TA

TD
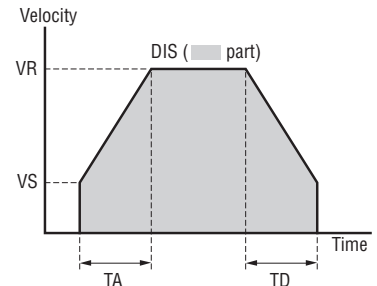
[Example Commands]

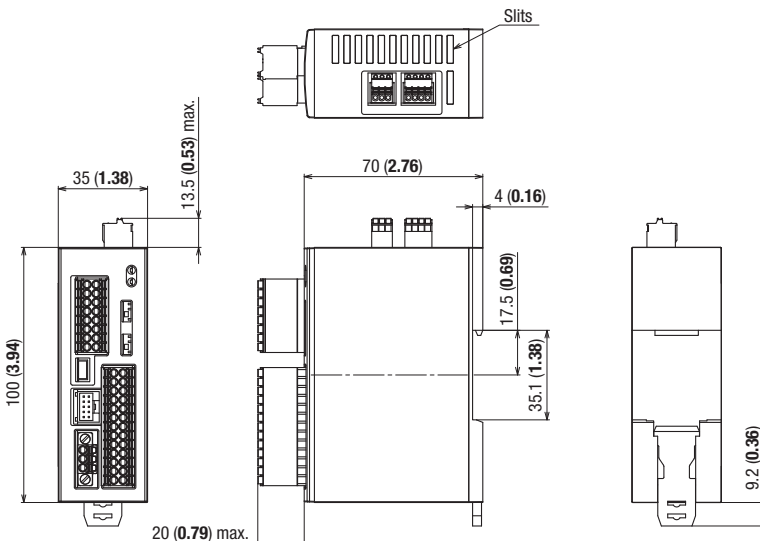|	
D I S	: Incremental Motion Distance
V R	: Running Velocity
V S	: Starting Velocity
T A	: Acceleration Time
T D	: Deceleration Time
M I	: Move Incremental Distance
M A	: Move to Absolute Position
M C P	: Move Continuously, Positive
M C N	: Move Continuously, Negative
M G H P	: Seek Mechanical Home Position
A L M C L R	: Clear Alarm Condition

Product Line

Product Name	List Price
SCX11	$349.00

Specifications

Product Name		SCX11
Operation Mode		Immediate command / stored program
Sequence Programs	Number of Sequence Programs	Max.100
	Program Size	6 kB maximum for total compiled sequences, 6 kB maximum for 1 sequence (text data)
	Programming Method	Immediate Motion Creator for **CM/SCX** Series [supplied software] or general terminal software
	Function Example	Subroutines, math/logical operators, user variables
Control	Number of Control Axis	Single axis
	Control Modes	Positioning operation (INDEX operation) Return to mechanical home operation (HOME operation) Continuous operation (SCAN operation) 1-pulse operation (JOG operation)
	Operating Mode	Incremental / absolute
	Starting Velocity	0~1.24 MHz (1 Hz increments)
	Speed Range	1 Hz~1.24 MHz (1 Hz increments)
	Acceleration Time	0.001~500 sec (0.001 sec increments)
	Position Range	−2,147,483,648~+2,147,483,647 pulses maximum
	Mode for Mechanical Home Seeking	3 sensor mode, 2 sensor mode, 1 sensor mode (+LS, −LS, home, sensor, timing) Sensor-less mode (for ESMC controller)
	Features	User unit, teaching positions, linked motion, multi axis operation, external encoder input, protective functions
Driver Interface	Pulse Output	1 pulse mode/2 pulse mode Line driver output (line receiver input /photo-coupler input compatible)
	Input	5 signals photo-coupler input Input voltage 4.25-26.4 VDC, input resistance 3 kΩ Built-in 5/24 VDC power supply sink logic/source logic compatible
	Output	8 signals photo-coupler open-collector outputs 30 VDC 20 mA or less Built-in 5/24 VDC power supply sink logic/source logic compatible
	Encoder Input	A-phase, B-phase, Index max. frequency 1 MHz
External Encoder Input		A-phase, B-phase, Index max. frequency 1 MHz Line-driver, open collector and TTL compatible Built-in 5 VDC power supply
I/O	Input	9 signals (configurable) photo-coupler inputs, input voltage 4.25-26.4 VDC, input resistance 5.4 kΩ
	Output	4 signals (configurable) photo-coupler open-collector outputs 30 VDC 20 mA or less
Serial Communications	USB	USB2.0 compatible virtual COM port) mini USB terminal 9600, 19200, 38400, 57600, 115200 bps (9600 is default.)
	RS-232C	Start-stop synchronous method, NRZ (non-return zero), full-duplex 8 bits, 1 stop bit, no parity 9600, 19200, 38400, 57600, 115200 bps (9600 is default.) daisy-chain compatible (up to 36 axis)
	CANopen	CiA 301 ver4.02 compliant 10 kbps, 20 kbps, 50 kbps, 125 kbps, 250 kbps, 500 kbps, 800 kbps, 1 Mbps
Power Input	Voltage	24 VDC±10%
	Current	0.26 A
Mass		0.18 kg (0.40 lb.)
Environmental Condition	Ambient Temperature	0~50°C (+32~+122°F) (non-freezing)
	Ambient Humidity	20~85% (non-condensing)

●When using the **SCX11** with either the **CSK** Series or **UMK** Series 2-phase motor driver packages, the **SCX11** and the driver need to be set to "2-Pulse input mode", CW and CCW pulse input.

Dimensions Unit = mm (in.)

35 (**1.38**)
13.5 (**0.53**) max.
100 (**3.94**)
20 (**0.79**) max.
Slits
70 (**2.76**)
4 (**0.16**)
17.5 (**0.69**)
35.1 (**1.38**)
9.2 (**0.36**)

For more information, please read the "Operating Manual" for this product, or please contact the nearest Oriental Motor sales office.

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