# JOHNSON CONTROLS

Series SC-9100
Easy DDC Controller

Introduction

SC 9100 is a preconfigured, controller, designed for the control of heating, ventilation or air conditioning installations. The SC-9100 is a unique controller with multiple standard applications, which can be chosen from the controller's memory during installation. Parameters can be adapted to fit the exact requirements. Other application programs may be created on quantity order.

The display shows in clear text the inputs, outputs and main control information. The controller is protected to avoid unauthorized use (password). The SC 9100 is a full stand-alone controller, and may be connected to a communication bus as part of a JOHNSON CONTROLS Supervisory System.

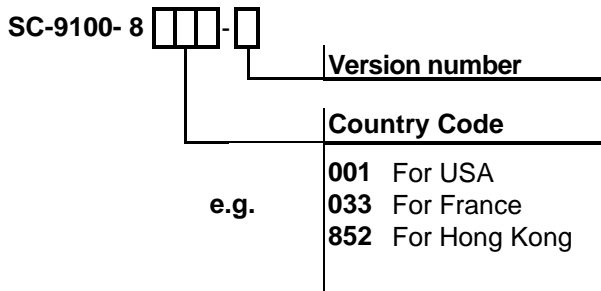*The room command module SC-9180 may be connected to the SC-9100 to provide remote set point and real time clock.*
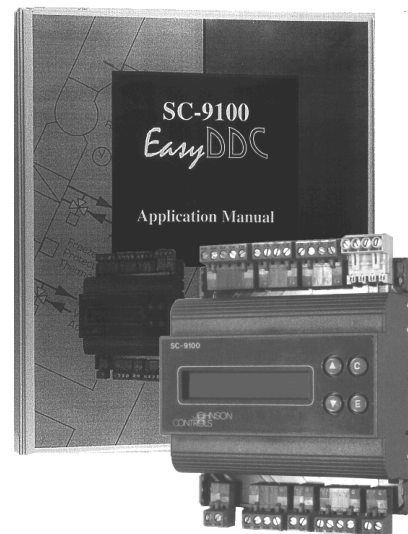
Series SC-9100 Easy DDC Controller and Application Manual

Features and Benefits	
❑ **Ready-to-use connection diagrams**	No extra engineering required
❑ **Great number of application programs available from a single controller**	The most adapted solution for your application is ready to use.
❑ **Clear alpha-numeric backlighted display**	Provides easy reading of the control information
❑ **Removable connectors, DIN rail mounting or screw mounting**	Simplifies the installation
❑ **Communication bus**	Possibility to integrate the SC 9100 into a Johnson Controls supervisory system
❑ **Real time clock option using SC-9180 room command module**	Accuracy of digital clock and easy reading through LCD display

*O*rdering data

SC-9100- 8 ☐☐☐-☐

| Version number |
| Country Code |

e.g.

001 For USA
033 For France
852 For Hong Kong

*A*ccessories:

SC-9100-MK: Panel mount kit

*A*pplication Overview

Hardware: 4 analog inputs (2 x 0/10 V or NTC, 2 x NTC)
2 digital inputs (potential free contacts)
3 analog outputs (0/10 V)
2 triacs outputs (24 VAC, 0,5 A)
1 relay output (24 VAC, 2 A)

Software:
SC-9100 contains PI modules, ON/OFF, calculations (e.g. set point reset by outside tempera-ture), logic controls (e.g. frost protection, clock)

Applications:
The SC-9100 applications are divided into categories and are stored in memory, available when it is first installed.

*A*pplication Notes

You will find all the available applications fully described in the "Application Note" bulletins. Which can be found in the "Application Manual".

*S*ensors and Actuators

The sensors and actuators, which are to be used in connection with the SC-9100, are defined in the "Application Note" bulletins.

Sensor Series:
- TS-91
- RS-91

Valves and Actuators:
- VB
- VG
- VA
- RA
- M-91 and M-92

Auxiliary devices:
- Frost protection 270XT
- Room command module SC-9180

*I*nstallation

**Tools required:**
screwdriver, insulation stripping tool.

Wiring:
Before connecting or disconnecting any wires, ensure that all power supplies have been switched off to prevent equipment damage and avoid electrical shock. Separate extra low voltage (safe) wiring from power line voltage wiring.
The 24 V supply must be stable and not shared with other switched inductive loads.

*N*ote

These controllers are designed for use as an operating control. When an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to wire a separate back-up control (a freeze protection thermostat for instance) in order not to use the SC-9100 both as an operating and a safety device.
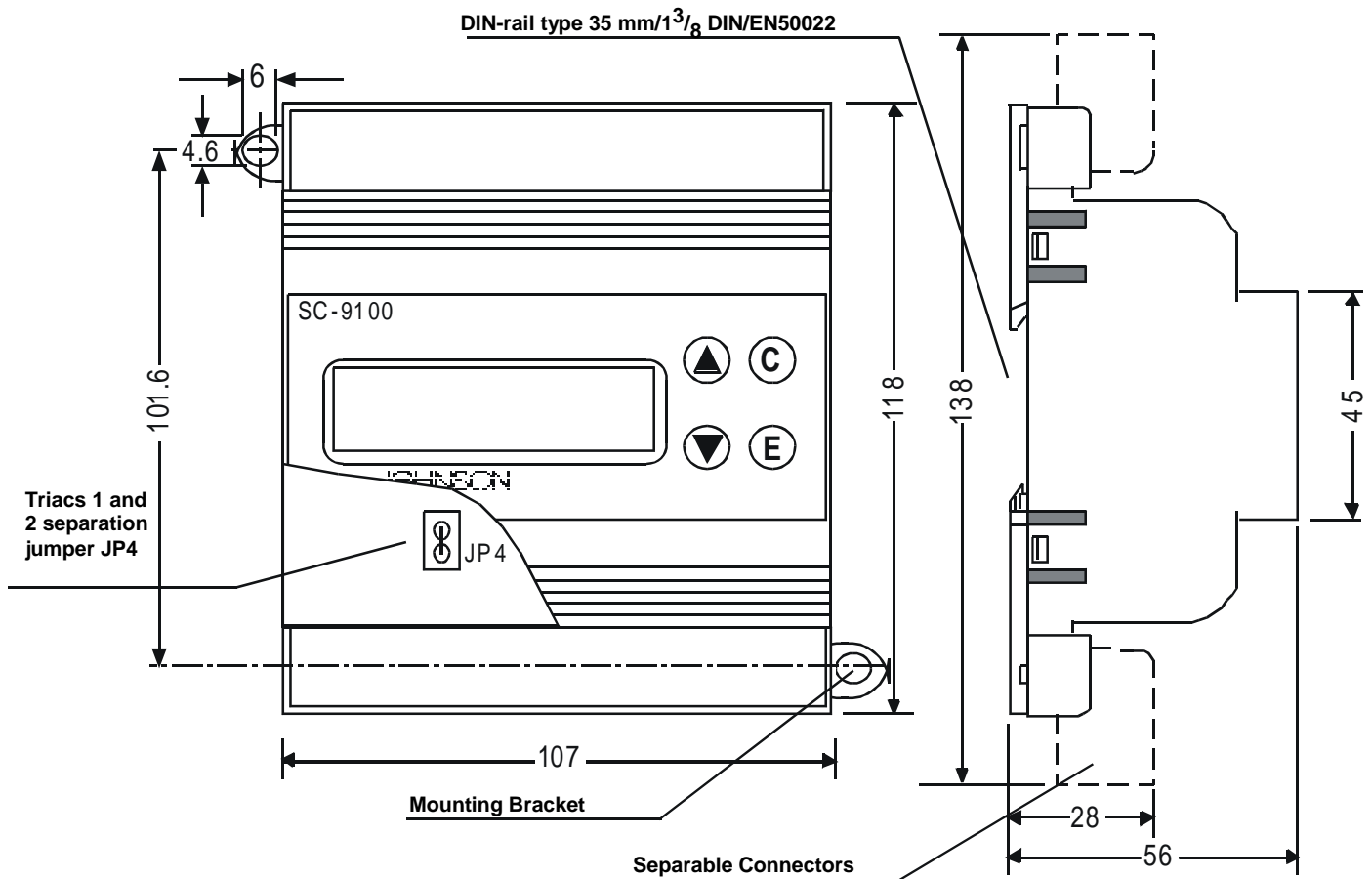
Connection Diagram
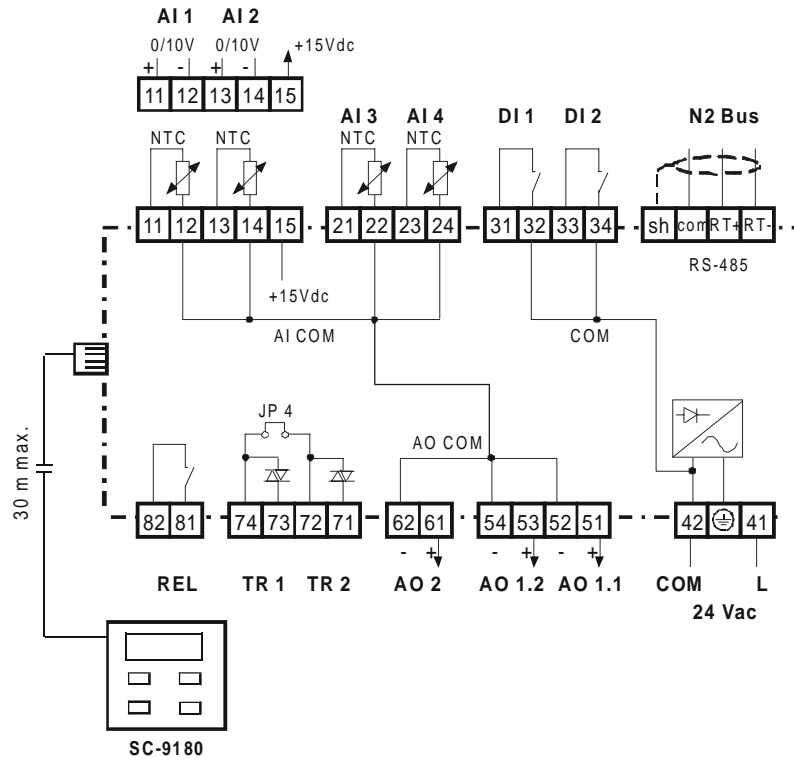
Note:

AI = Analog Input (0 to 10 V or NTC)
DI = Digital Input (Potential free contact)
REL = Relay Output (24 Vac, 2A max.)
TR = Triac Output (24 Vac, 0.5A max.)
AO = Analog Output (0 to 10 V)

*D*imensions:

DIN-rail type 35 mm/1³/₈ DIN/EN50022

SC-9100

Triacs 1 and
2 separation
jumper JP4

JP4

Mounting Bracket

Separable Connectors

6

4.6

101.6

107

118

138

45

28

56

*O*peration

Front panel:

(▲) = "Up" key, used to increase a value, to scroll among a set of possible values or to change to next page.

(▼) = "Down" key, used to decrease a value, to scroll among a set of possible values or to change to previous page.

(C) = Used to decrease the access level or to abandon a modification operation without confirming modifications.

(E) = Used to start a modification operation or to finish it by confirming modification. Used also to verify the status of alarms.

When the SC-9100 is switched ON for the first time, it asks the user to choose one application. After the application is loaded from the internal library, the SC 9100 will display as a first or default

window the status of the main controlled parameters.

*I*ntegration:

SC-9100 belongs to the Johnson Controls System 91 and is fully compatible with JC Supervisory Systems.

Example

```
┌─────────────────────┐
│ D A T    S P    O A T │   (▲)(C)
│ 1 9      2 0     5    │   (▼)(E)
└─────────────────────┘
```

Default First Window

DAT = Discharge Air Temperature
SP = Set Point
OAT = Outdoor Air Temperature

If one of the outputs is in manual mode, the First Window will display a blinking "m" on the second line.

Example of one SC 9100 window
(heating valve output in manual mode)

```
┌─────────────────────┐
│ H E A T I N G   V A L V E │   (▲)(C)
│ " m "           1 0 0 % │   (▼)(E)
└─────────────────────┘
```

Specifications

Supply Voltage:	24 VAC, + 15 % - 10 %, 50 - 60 Hz
Power Consumption:	4 VA
Ambient Operating Conditions:	0 - 50 °C, 10 - 90 %, RH non condensing
Storage Environment:	- 20 °C to + 70 °C, no condensation
Terminations:	Separable terminal blocks for 1 x 1,5 mm²/14AWG
Serial Interface:	Optically isolated RS-485 interface for N2 bus - 9600 baud rate
Controller Addressing:	0 - 255 selectable on DIP switches (6) and jumpers (2) (Only required if connected to a communication bus)
Inputs:	Analog (4) AI 1 / AI 2: 0 - 10 VDC or passive NTC for 0 - 40 °C or 20 - 120 °C AI 3 / AI 4: Passive NTC for 0 - 40 °C or 20 - 120 °C Digital (2) Freely configurable, for potential free contracts.
Outputs:	Analog (3) AO1.1 / AO1.2 0 - 10 VDC, max. 10 mA. Only one output is active at one time AO 2: 0 - 10 VDC, max. 10 mA. Triacs (2) TR 1 / TR 2: Isolated triacs rated at 24 V AC, max. 0.5 A* (1) PAT or (2) DAT, or (2) ON/OFF outputs *) Leakage current 1 mA max. Relays (1) REL SPST Isolated contact for 24 V AC, max. 2 A Voltage (1) 15 V out: Constant voltage 15 VDC, max. 15 mA, to supply external transducers
Mounting:	Wall-mount or DIN-rail mount
Housing:	Material: ABS Polycarbonate (self extinguishing)
Dimensions:	108 x 118 x 56 mm (B x H x D)
Weight:	0.35 kg
Protection class:	IP30 (EN 60529)
C€ Compliance:	EMC (89/336 EEC) according to the standard EN 50081-1 and EN 50082-1

The performance specifications are nominal and conform to acceptable industry standards. For applications at conditions beyond these specifications, consult the local Johnson Controls office or representative. Johnson Controls shall not be liable for damages resulting from misapplication or misuse of its products.