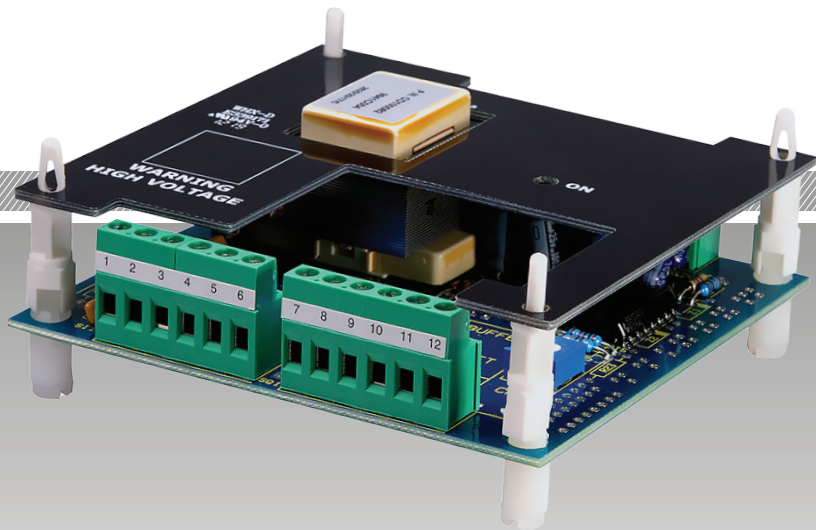


BUFFER BOARD

Option CON113



SPRINT ELECTRIC

Please read this information before installing or using the product.

Install, use and maintain this product following the procedures provided.

The manual(s) cannot provide all details, variations and contingencies required for your installation, operation and maintenance of this product or the apparatus with this product installed. For further help or information, refer to your local Supplier sales office.

Application area

The equipment described is intended for industrial (non-consumer) motor speed control.

Intended users

To safely enable the user to obtain maximum benefit from the equipment:

- Ensure this information is available to all persons required to install, configure or service the described equipment or any other associated operation.
- Always store the manual in a conveniently accessible area for quick reference.
- Make it available for the next user/owner of the product.

This product is of the restricted sales distribution class according to IEC 61800-3 and has a "professional equipment" designation as defined in EN 61000-3-2.

Safety

Ensure all users and operators understand the included WARNINGS, CAUTIONS and NOTES, which alert the user to safety issues. COMPLY WITH WARNINGS AND CAUTIONS AT ALL TIMES. Each of these carries a special meaning and should be read carefully:



WARNING!

A WARNING is given when non-compliance with the warning may result in personal injury and/or equipment damage.






CAUTION!

A CAUTION is given when non-compliance with the caution may result in permanent equipment damage.

NOTE A note provides specific information to make important instructions clear.

Symbols

|  Attention |  Electrostatic Discharge (ESD) |  Electric Shock Hazard |
|--|---|---|
| See the instructions for use. Specific warnings not found on the label. | This equipment contains ESD sensitive parts. Observe static control precautions when handling, installing and servicing this product. | Disconnect the mains supply before working on the unit. Do not touch presets, switches and jumpers! Always use the correct insulated adjustment tools. |



WARNING!

Only qualified personnel must install, operate and maintain this equipment.

A qualified person is someone technically competent and familiar with all safety information, established safety practices, installation, operation, maintenance and the hazards involved with this equipment and any associated machinery.

Hazards

This equipment can endanger life through rotating machinery and high voltages.



WARNING!

PERSONAL INJURY AND/OR ELECTRICAL SHOCK HAZARD

- Always isolate all power supplies from the equipment before starting any work.
- Never perform high voltage resistance checks on the wiring without first disconnecting the product from the circuit under test.
- Use guarding and additional safety systems to prevent injury and electric shock.
- Metal parts may reach 90°C during operation.



CAUTION!

EQUIPMENT DAMAGE HAZARD

- We thoroughly test our products. However, before installation and start-up, inspect all equipment for transit damage, loose parts, packing materials, etc.
- Installation must observe the required environmental conditions for safe and reliable operation.
- In a domestic environment, this product may cause radio interference, requiring adequate measures to be taken. Obtain the permission of the supply authority before connecting to the low voltage supply.

General risks

Installation

- Ensure mechanically secure fixings are in use as recommended.
- Ensure cooling airflow around the product is as recommended.
- Ensure cables/wire terminations are as recommended and are torqued correctly.
- Ensure the product rating is correct - do not exceed the rating.

Application risk

Electromechanical safety is the responsibility of the user. The integration of this product into other apparatus or systems is not the manufacturer's or distributor of the product's responsibility. It is the user's responsibility to ensure the compliance of the installation with any regulations in force.

Health and safety at work

Electrical devices can constitute a safety hazard. Thorough personnel training is an aid to SAFETY and productivity. SAFETY awareness not only reduces the risk of accidents and injuries in your plant but also has a direct impact on improving product quality and costs. If you have any doubts about the SAFETY of your system or process, consult an expert immediately. Do not proceed without doing so. If in doubt, refer to the Supplier.

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Disposal

This product contains materials that are consignable waste under the Hazardous Waste Regulations 2005. Metal and plastic materials can be recycled, however, disposal of the printed circuit board requires compliance with all valid environmental control laws.



Products that must be recycled in accordance with the WEEE Regulations are marked with the symbol opposite. Contact us when recycling the product.

SPRINT ELECTRIC LTD. does not accept any liability whatsoever for the installation, fitness for purpose or application of its products. It is the users responsibility to ensure that the unit is correctly used and installed.

Health and Safety at Work
Devices constitute a safety hazard. It is the responsibility of the user to ensure compliance with any Acts or By-Laws in force. **ONLY skilled persons should install this equipment.**



1 Introduction

APPLICATION AREA: Industrial (non-consumer) "Motor speed control utilising DC Motors". This product conforms to IP00 protection.

The Sprint-Electric Buffer Board has five Operational Amplifier channels, with dedicated inputs and outputs, to provide a generic PID control function:

- CHANNEL 1 and CHANNEL 2 Differential Amplifier
- CHANNEL 3 and CHANNEL 4 Summing Amplifier or Comparator
- CHANNEL 5 Adjustable Ramp

Use this versatile buffer board with a feedback transducer such as a dancer potentiometer, load cell, pressure sensor, etc. For example, use it in conjunction with an analogue dancing arm to calculate a drive speed reference to maintain dancer position.

| Features | Specification | |
|--|-----------------------|----------------|
| Mains powered | Supply voltage | 110 or 240 Vac |
| Adjustable response rate | Dimensions | W 96 mm |
| Internal preset and externally adjustable references | | H 100 mm |
| -10/0/+10 V feedback input and output | | D 45 mm |
| Fully isolated circuit | | |

Follow these installation instructions and the drive's Product Manual to maintain EMC compliance. Further measures may be necessary. EMC behaviour is the responsibility of the manufacturer of the system or installation using this component.

This component is hazardous. Please obtain expert help if you are not qualified to install this equipment. Make safety a priority. The Buffer Board is a complex component and is for use by professional installers only.

Read about the general risks and warnings at the front of this manual.

CE This apparatus complies with the protection requirements of the relevant EU Directives.

2 Installation



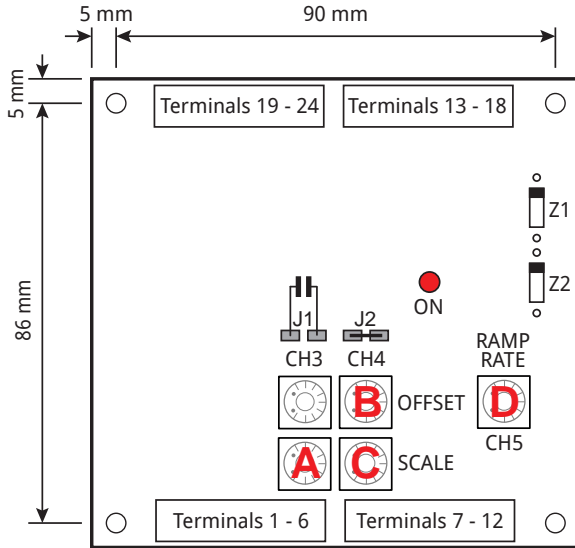
WARNING!

ELECTRIC SHOCK HAZARD

Disconnect the mains supply before working on the unit.
DO NOT TOUCH PRESETS, SWITCHES AND JUMPERS!
 Always use the correct insulated adjustment tools.

Mount the unit in a suitable enclosure.

Do not allow contact of the enclosure with the drive board electronics.



Fixing screws: M4 x 20 mm

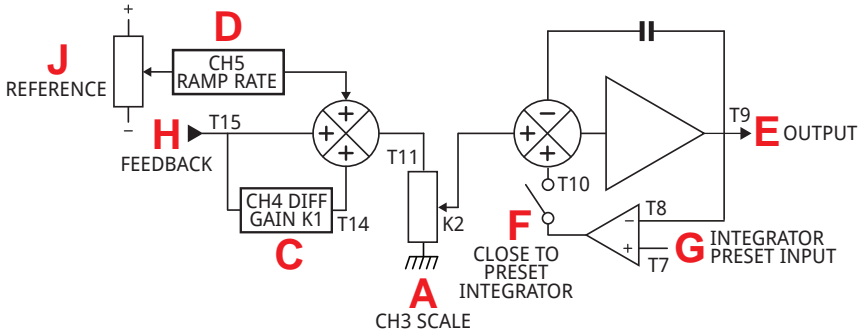


Mechanical dimensions

2.1 Power supplies

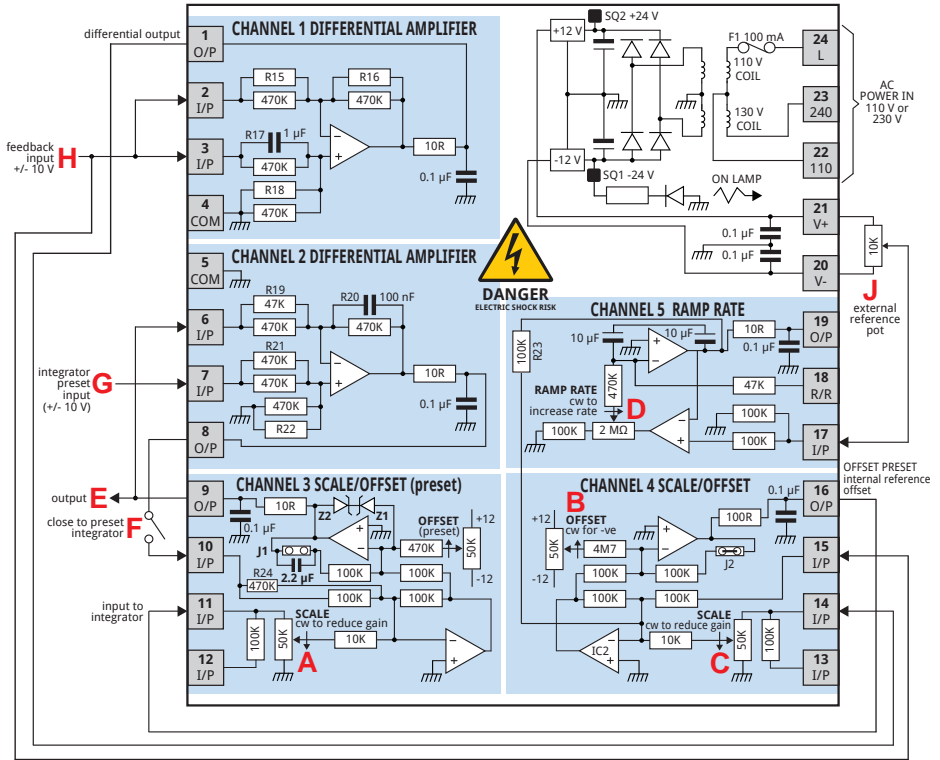
| AC Power supply input 110 / 240 Vac | | Regulated supply output | Unregulated +/-24 V supply output |
|-------------------------------------|---|--------------------------------|-----------------------------------|
| Line | T24 | +12 V T21 | Pads SQ1 and SQ2 |
| Neutral | T23 for supplies in the range 200 - 264 V | -12 V T20 | |
| | T22 for supplies in the range 100 - 130 V | Maximum current output: 25 mA. | |

3 Channel information



| Channels | Default operating mode | |
|------------------------|---|---------------|
| CHANNEL 1 CHANNEL 2 | Differential amplifier having unity gain. Fit extra resistors to the board to change the gains. | |
| CHANNEL 3 | Integrator circuit: | |
| OFFSET | Use to zero integrator drift - usually set mid-way (unless factory preset and sealed) | preset |
| SCALE | Set TOTAL GAIN, K2 | A |
| CHANNEL 4 | Summing amplifier: | |
| OFFSET | Use as an on-board reference offset - mid-way for centre position | B |
| SCALE | Sets the differential gain - start at minimum gain, K1 | C |
| CHANNEL 5 | An adjustable ramp that accepts +/-10 V signals. The ramp time is adjustable between 2 and 30 seconds for a 0 to +/-10 V input. It sets the rate of the reference change - a long ramp time gives a gradual change to a new reference value. To reset the output to zero, connect R/R (T18) to O/P (T19). | D |

4 Block diagram



Options: If the system is unstable and slowly oscillates, try adding another 1 μF at the **J1** position (CHANNEL 3). The bipolar capacitor sets the integrator time constant.

If required, fit Zeners to clamp the output swing of the final stage - **Z1 Z2** positions (CHANNEL 3).

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We accept no liability whatsoever for the installation, fitness for purpose or application of this product.

It is the user's responsibility to ensure the unit is correctly used and installed.

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The information in this publication was correct at the time of going to print.

We reserve the right to modify or improve the product without notification.

The contents of this manual shall not become part of or modify any prior existing agreement, commitment, or relationship. The sales contract contains the entire obligation of Sprint Electric. The warranty contained in the contract between the parties is the sole warranty of Sprint Electric. Any statements contained herein do not create new warranties or modify the existing warranty.

We will be under no liability for any defect arising from fair wear and tear, negligence, wilful damage, misuse, abnormal working conditions, failure to follow the manufacturer's instructions, unauthorised alteration or repair of hardware, unauthorised or accidental alteration of software or configuration, lost profits, commercial loss, economic loss, or loss arising from personal injury. We may, at our discretion, raise a charge for any faults repaired that fall outside the warranty cover.