

Compu-Spread

CS-660/160 Advanced Spreader Controller



Multi-function programmable controller for granular, and or liquids as well as joystick applications in Snow and Ice Control.

An controller can meet all winter road maintenance operations.

- **Standard Spreader:** Granular, Prewet, Gate
- **Anti-icing System:** 1 boom, and 3 boom control
- **Symmetry System:** Granular, Prewet, Anti-icing, Chute
- **Additional Functions:**
 - Spinner/Conveyor reverse,
 - Dual Channel Cross Conveyor
 - Dual-spinner, and Lane control
 - Air Gate Control
- **Joystick functions:**
 - Support up to 9 proportional functions
 - Multiple power floats with or without proximity sensor
 - Dump Limit protection with or without override
 - Low oil protection with or without override
 - Single and multi-axis safety interlock
 - Emergency raise spreader function interlock
- **Configurable intelligent inputs & light functions**
 - Up to 16 switches, 8 general purpose digital outputs
 - All inputs and outputs CAN bus connected
- **Digital IP Cameras:**
 - Security, Resolution, Intelligence, Scalability
- **Multiple Profiles:** Up to 6 operation configurations

Reliable

- Comprehensive solution for fleet application
- Automotive grade with wide temp range
- Robust and compact design for mobile applications
- High Electromagnetic Compatibility (EMC)
- Inputs and outputs with fault detection

Connected

- CAN bus connected system control components
- WiFi data transfer, soft AP for WiFi cameras&sensors
- Bluetooth & USB connections for data exchange and sensor support
- Serial communications for various mobile detector and Infrared temp sensors, GPS receiver
- Interface that allows AVL or IoT devices to monitor spreading activities in real time and retrieve spreading data for generating activity reports, remote analytics

Modular

- Modular hardware:
 - Display only, Integrated display
 - Smart IOs, Bodas RC28-14, Junction block
 - Joystick consoles with or without smart IOs
 - Standalone & Pendant Joystick console
 - CAN/sensor/valve cables
- Modular functions: Granular, Anti-icing, Joysticks, Smart IOs, parameter configuration and report package, IoT solution

Secure

- Program sequence monitoring watchdog
- Proprietary operating system, Rexroth security
- Data encryption and Certificate management

System Features

- High performance ultra-modern 32-bit TriCore technology
- Component of BODAS system for mobile applications
- Robust and compact design meeting specifications for mobile applications
- High Electromagnetic Compatibility (EMC)
- Inputs and outputs with fault detection
- Central output deactivation
- PWM solenoid currents for minimum hysteresis
- Closed-loop control of solenoid currents, i.e. not dependent on supply voltage and temperature
- Fused watchdog supervised processor for program run monitoring
- Hardware basec RAM memory supervision
- CPU internal Flash with ECC error-correcting code
- Three independent sensor power supplies
- Two-channel stop function (safety protection)
- Support up to 9 proportional joystick functions
- Joysticks supported:



- Double lock activation for critical functions
- Auto-null, Auto-Calibration, and Auto-Catch Test
- Easy to diagnose: Bootup system diagnosis, real time error detection and management
- Configurable CAN IOs for lights, or custom functions
- Dual-band, dual-mode station & softAP, WiFi 802.11/a/b/g/n, station & softAP, dual-band 2.4 & 5 GHz, hardware encryption engine for 128-bit AES, WAPI support
- Bluetooth v3.0+HS
- GNSS receiver support all four global navigation systems, GPS, GLONASS, GALILEO, BEIDOU
- Support for various infra-red temperature, liquid level, hydraulic pressure & temperature sensors
- IP67 junction block with stainless steel connectors and diagnostic LEDs
- Firmware upgradable with an USB stick or WiFi

CS-Desktop Suite

- Support CS-550s, CS550/150s, CS-660s, CS-660/160s
- Parameter management, download/upload, configuration
- Log data management, activity reporting
- Error message management
- Joystick configuration
- Auto WiFi log data and parameter download
- Spreading activity GPS waypoint mapping

Modular System



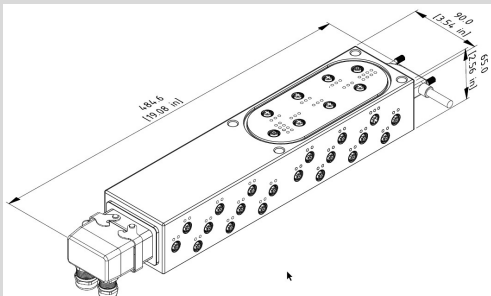
IP Camera



- Digital imaging, higher resolution, higher security protection, scalability, remote access, analytics.
- Image sensor: 1/3" progressive scan CMOS sensor
- Main Stream:1920*1080p, sub stream:704*576, 25fps/s
- H.265/H.264
- ICR(IR-CUT) filter auto switch
- 3.6mm len
- IR distance: 30m
- Infrared LED: 35pcs
- Color: 0.05LUX@F1.2
- B/W:0LUX/LED ON
- Support RTSP/FTP/PPPOE/DHCP/DDNS/NTP/UPnP
- Built-in WiFi
- Operation conditions: -30 °C ~ 60 °C (-22 °F ~ 140 °F), humidity 95% or less (non-condensing)
- Power supply; DC 10~24V
- P66 protection (water-proof, vandal-proof)

Technical Data CS-660/160 (for BODAS Controller RC 28-14/30 details refer to Rexroth data sheet RE 95 204)

General

| | | | |
|--|-----------------------|--------------------------------------|---|
| Enclosure Material | | Extruded aluminum, powder coated | |
| Weight | | 3.0 kg | 6.6 lb. mass |
| Size | Display | 252.5 mm high x 184 wide x 60.4 deep | |
| | Junction block | 484.6 mm length x 90 wide x 65 high | 19.08 in length x 3.54 wide x 2.56 high |
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|----------------------------|--|
| Mechanical Mounting | “Ram Bracket”, size 1-1/2” |
| Display Screen | 7” wide WVGA, 800 x 480 pixels, 16.7M colours, capacitive touch screen, 6H hardness Adjustable backlight, brightness of 1350 cd/m ² , Strengthen glass with thickness of 1.1mm |
| Loudspeaker | 1.5 Watt amplifier with adjustable voice feedback |

Electrical & Environmental Specifications

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|--|--|----------------------------------|
| Supply Voltage | 9-32 VDC | |
| Outputs | Proportional outputs | 28 channels, current compensated |
| | Digital Outputs | 14 channels |
| Inputs (All inputs protected and filtered) | Frequency Inputs | 5 channels |
| | Switch Inputs | 8 channels |
| | Analogue Inputs | 7 channels |
| Interfaces | 2 CAN ports, 2 serial ports | |
| GPS Tracking (when supplied) | High resolution industrial GNSS receiver support all four navigation systems, GPS, GLONASS, BEIDOU, GALILEO, and accept up to 72 satellites simultaneously | |
| WiFi Data Transfer (when supplied) | 802.11 a/b/g/n, station & softAP, dual-band 2.4&5 GHz, hardware encryption engine for 128bit AES, WAPI support | |
| Operating Temperature | -30°C to 75°C | -22°F to 185°F |
| Storage Temperature | -40°C to 85°C | -40°F to 185°F |

Compliant Standards (CS-660/160 and RC Controllers)

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|--------------------------------------|---|---|
| Electromagnetic Compatibility | 100v/m, load dump | |
| Immunity | RF Immunity: | ISO 11452-2, 400-1000 MHz, 80% mod.1kHz 1 GHz—2 GHz, 80% mod. 1 kHz 25v/m (Level 1 Severity) |
| | Conducted Immunity: | ISO 7637-2 (2004), System Pulse 1, 2a, 2b, 3b, 4 |
| RF Emissions | CISPR 25:2002-08, 30 MHz—1 GHz, according to 72/245/EC EN 55025 | |
| Electrostatic Discharge | EN 61000-4-2 ISO 10605, Contact +/- 8kV, air discharge +/- 15kV | |
| Vibration | ISO 16750-3, 10-2000Hz @ 58 m/s | |
| Shock | IEC 60068-2-72, 40G for 11 ms | |
| Moisture | DIN EN 60068-2-30Db; version 2, part 2, Hum=95% 25 to -55°C | |
| Salt Spray | DIN 50021-SS, 72h 35°C 5% NaCl | |
| Medial Resistance | ISO 16750-5, cola, coffee, paint thinner | |
| Enclosure Protection | IEC 60529 IP56 | |