

BG5k

NON-CONTACT RIP DETECTION — ALL BELT TYPES

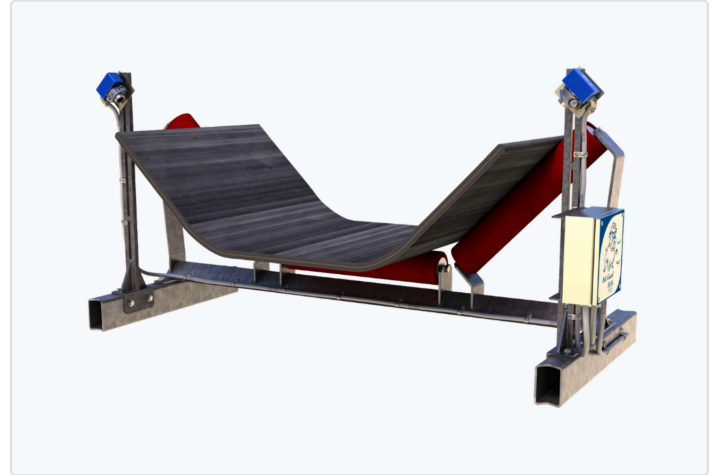
— OVERVIEW

Rip Detection via Belt-Width Monitoring

The Belt Guard BG5k detects longitudinal rips by continuously monitoring the width of the conveyor belt using two non-contact sensors. When a rip causes the torn sections to separate, overlap, or fold, the resulting change in belt width triggers an automated conveyor stop via PLC relay or Modbus command.

The system works on all belt types — fabric, PVC, and steel cord — and requires no sensor loops, no antennae, and no belt modification. It is belt manufacturer independent and can be retrofitted to any existing conveyor structure.

+ Belt Tracking: Continuous lateral position data in mm via Modbus TCP/IP or 4–20mA



— KEY BENEFITS

Why BG5k

ALL BELT TYPES

Works on fabric, PVC, and steel cord belting. The only Belt Guard rip detector that covers every belt type.

AUTOMATIC BUILDUP DETECTION SENSORS

Sensors automatically detect and report excessive buildup. Blocked probe detection alerts automatically if cleaning is required.

1-DAY INSTALLATION

Simple installation by site personnel from detailed documentation. Typical 1-day commissioning.

NON-CONTACT

Sensors monitor belt edges without touching the belt. No wear, no drag, no belt damage.

BELT TRACKING DATA

Real-time belt lateral position in mm — standard output. Detects developing mistracking before damage occurs.

MULTI-POINT DEPLOYMENT

Install multiple units along a conveyor — one after each load point — to minimise potential rip length.

How It Works

Two sensors are permanently mounted on the conveyor structure, one measuring each belt edge position. They continuously calculate belt width in real time. An operator-set tolerance window defines the acceptable range. Normal belt wander does not trigger a response because belt width remains constant during lateral movement.

01

Monitor

Two sensors continuously measure the position of each belt edge, calculating belt width and lateral tracking position in real time.

02

Detect

When a rip causes the belt to widen, narrow, or fold, the measured width deviates beyond the operator-set tolerance window (Belt Width OK Window $\pm$).

03

Halt

If the deviation persists beyond the configurable Fail Delay timer, a HALT signal is sent to the PLC via Modbus TCP or relay dry contacts, stopping the conveyor.

DETECTION LIMITATION

The BG5k requires a measurable change in belt width following a rip event. This width-change effect has not been noted on all occasions of ripping, particularly on thicker, laterally stiff steel cord belting. If no (or insufficient) belt width change occurs, the BG5k will not stop the conveyor. The BG10k provides an alternative detection method for steel cord applications where this limitation is a concern.

Capabilities

- Non-contact belt-width monitoring
- Continuous real-time belt tracking in mm
- Any belt speed — no limitation
- Automatic buildup detection sensors with blocked probe alert
- Configurable Fail Delay timer
- Belt tracking via Modbus TCP/IP or 4–20mA
- Belt manufacturer independent
- Works on fabric, PVC, and steel cord belting
- Any belt width — no limitation
- Any product type on belt
- Adjustable Belt Width OK Window $\pm$
- HALT output via Modbus TCP or relay
- No sensor loops or antennae required
- Retrofit to existing conveyor structures

What's Included

Sensing Probes

2× buildup-detecting probes with mounting hardware

Sensor Mounts

2× mounting hardware for conveyor structure attachment

Main Electrical Enclosure

316 SS, IP66/IP67, all control electronics and PLC interface

Technical Data

PARAMETER	VALUE
Belt Type	Fabric, PVC, Steel Cord
Belt Width	No limitation
Belt Speed	No limitation
Contact	Non-contact
Sensors	2× non-contact (buildup-detecting)
Power Supply	100–240VAC 50/60Hz or 24VDC
Power Consumption	12W max
Communication	Modbus TCP/IP or Control Cables
Belt Tracking Output	Modbus TCP/IP or 4–20mA
MEE Enclosure	316 SS, IP66 (Manual) / IP67 (QSG)
MEE Size (Manual)	H400 × W300 × D250mm
MEE Size (QSG)	H600 × W400 × D200mm
Operating Temp	-25°C to +70°C
Storage Temp	-40°C to +80°C
Humidity	5–95% RH
Default Width Window	±50mm (factory set)

Installation

Location: 10–20m after each load point in the carry path. Multiple units recommended on conveyors with several load points. The closer the sensor to the load point, the shorter any resulting rip.

Installation: Performed by site personnel from detailed wiring and mounting specifications. Consists of sensor mounting hardware and PLC connection. Typical 1-day installation and commissioning.

Calibration: Belt Width OK Window must be set after measuring the normal width variation over a full belt revolution. The factory default of ±50mm may require adjustment to prevent false tripping.

Ongoing Requirements

The BG5k requires very little maintenance. Sensors are buildup-detecting when powered. If a sensor becomes blocked, the device reports an unhealthy state and de-energises the HEALTHY relay. An audible buzz from each sensor confirms operational status.

If cleaning is needed: hose down or wipe the sensor face with an alcohol wipe. The MEE should be protected from direct sunlight and aggressive hose down.

Where It's Used

- Coal Handling
- Grain Terminals
- Aggregate Processing
- Cement Plants
- Port Facilities
- Fabric Belt Conveyors
- PVC Belt Systems
- Multi-Load-Point Conveyors

Particularly suited to fabric and PVC belt operations where sensor loop systems cannot be used, and as a secondary rip detection layer on steel cord systems.