

FUNCTIONAL SAFETY · CONTROL BLOCK INTEGRATION

AB+ KEYENCE SAFETY

Motion. Logic. Safety. HMI. — One Platform.

PLUG-AND-PLAY GL-R LIGHT CURTAINS & GS-M DOOR SWITCHES



One cable. One connection point. Keyence GL-R light curtains and GS-M door switches land on the Control Block's M12 safety ports over a single **GC-Link** cable — no relay panels, no terminal-by-terminal wiring, no miswires. The PLe / Cat 4 / SIL3 safety controller is built into every Control Block.

TYPE 4 **SIL 3** **PL E** **CAT 4** **IP65 / 67**

Functional safety that plugs straight into the Control Block — validated Keyence GL-R curtains and GS-M door switches connect over GC-Link to the safety controller already inside the platform.

MOTION

Safety gates motion directly. A blocked curtain or open door drops the Control Block's motion outputs in hardware — no PLC round-trip, with fault detection and automatic motor shutdown.

LOGIC

Configured, not wired. The built-in GC-1000 safety controller is set up by drag-and-drop and simulated before any device is wired, then runs alongside AutoCode on one platform.

SAFETY

PLe · Cat 4 · SIL3 across light curtains, door switches, E-stop and light tower. GC-Link single-cable wiring eliminates the miswires that defeat safety circuits.

HMI

See what tripped. Door, lock and per-beam curtain status plus event history surface on the Control Block display — operators find the open access point at a glance.

Why it's plug-and-play

The safety controller is already inside the Control Block, so Keyence's GC-Link devices connect over a single cable into dedicated M12 ports for light curtains, door switches, remote E-stop and light tower. Every cable shown is an **off-the-shelf Keyence part** — order it directly from your Keyence rep, not from Autoblocks, for shorter lead times and lower cost. And any additional safety I/O lands on the **external safety terminal blocks on the back of the Control Block**, so there is no relay panel to build and nothing to wire terminal by terminal.

SAFETY RATING

PL e

Cat 4 · SIL 3 · Type 4

GC-LINK

1 Cable

Plug & play · no miswires

DEVICES

2 Families

GL-R curtains · GS-M switches

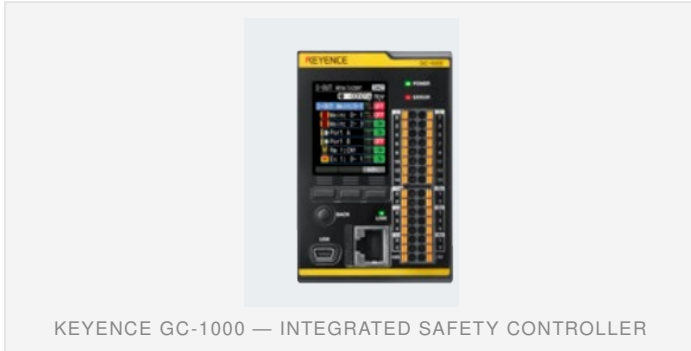
CONTROLLER

GC-1000

Built into the Control Block

Integration / GC-Link / Controller

The safety controller is already inside. Every Control Block integrates a Keyence GC-Series safety controller (GC-1000) rated PLe / Cat 4 / SIL3. You don't add a controller — you add devices. Keyence GL-R and GS-M devices connect through GC-Link, where wiring collapses to a single cable that runs from the device straight to the controller and clicks into place.



INTEGRATED SAFETY CONTROLLER

INTEGRATED SAFETY CONTROLLER	GC-1000
Safety inputs	16
Safety outputs (PNP)	6
AUX / test outputs	4 / 4
GC-Link ports	2
USB / Ethernet	Yes / Yes
Expansion units	Max. 10
Rating	PLe · Cat 4 · SIL3

EXPANSION & REMOTE I/O

EXPANSION / REMOTE I/O	PART NO.
Safety I/O unit (8 in / 4 out)	GC-S84
Safety input unit (16 in)	GC-S16
Safety relay output unit	GC-S1R
AUX output unit (16)	GC-A16
Bus extension unit	GC-B30
Remote I/O · 5-pin (curtains, E-stop)	GC-R45
Remote I/O · 8-pin (locking interlocks)	GC-R48

Expandable to 212 safety inputs / 46 outputs. Remote I/O modules add IP65/67 M12 ports out at the cell (cascade up to 4, 120 m).



GC-LINK CONNECTION CABLES

GL-R LIGHT CURTAIN — GC-LINK	PART NO.
A · Sensor main-unit cable (per Tx/Rx)	GL-RPC03PS
B · Extension cable (7 m)	GL-RCC7S
C · Main-controller cable (1 set, Tx+Rx)	GL-RCG03S

GS-M DOOR SWITCH — GC-LINK	PART NO.
A · 8-pin extension (to switch)	GS-P8LC1 / P8CC1 / CC3 / CC5
D · Y-connector / E · end terminal	GS-Y11 / GS-Y12
B · 5-pin cascade extension	GS-P5CC1 / CC3 / CC5 / CC10
C · Main-controller cable	GS-P5CG03

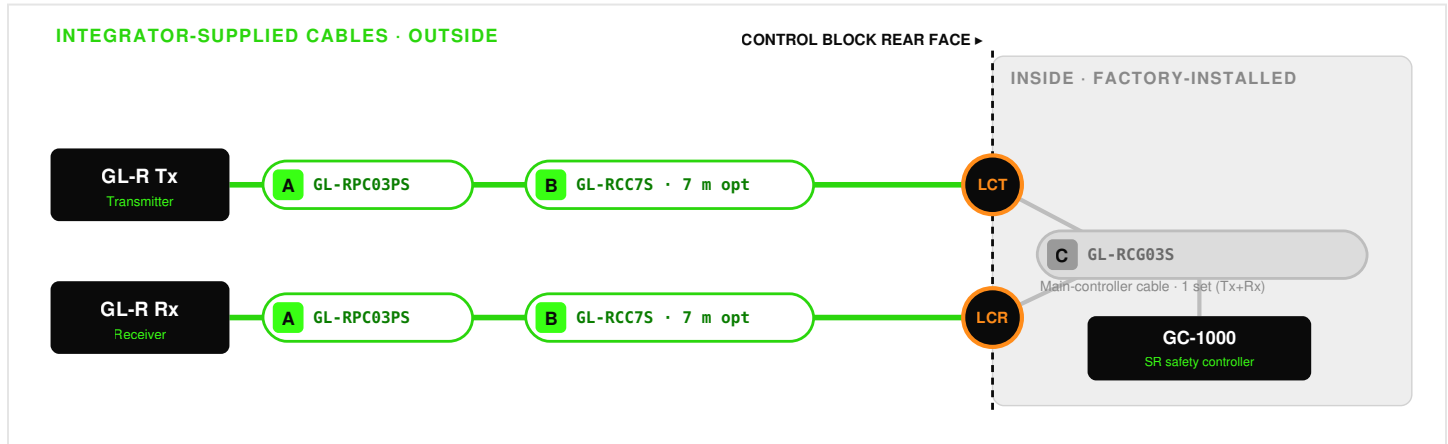
PLUG-AND-PLAY COMPATIBILITY RULES

GC-Link door switches must be the **PNP locking** models — **GS-M51P, GS-M91P, GS-ML51P**. The GL-R curtain uses one **GL-RCG03S** set at the controller (covers Tx + Rx). GS-M switches cascade up to **16 units** (incl. 4 locking) on a GC-Link port; the Control Block door-interlock port daisy-chains up to **8**.

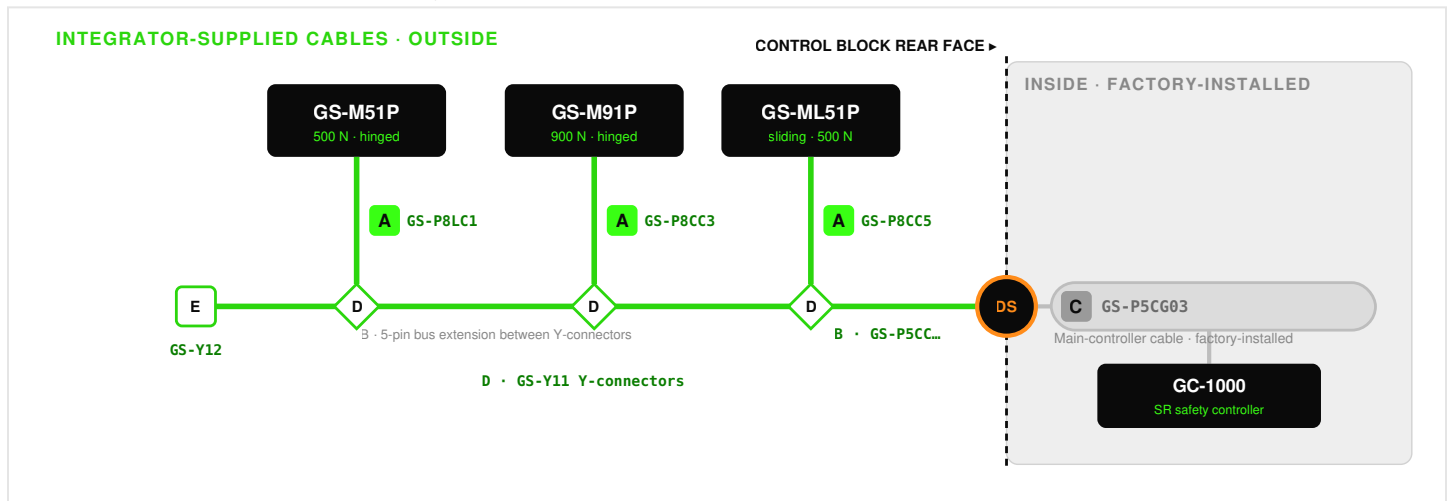
Wiring / Plug-and-Play / Back Panel

The hard part is already done. Each device's main-controller connection cable — the "C" cable — is factory-installed inside the Control Block and lands on the embedded GC-1000 safety controller. The integrator only wires the cables **outside** the box: from the device to the labeled M12 safety port on the back panel — **LCT / LCR** for light curtains, **DS** for door switches. No relay panel, no controller to mount, no GC-Link "C" cable to buy.

SAFETY LIGHT CURTAIN → LCT / LCR PORTS



DOOR INTERLOCK SWITCHES, CASCADED → DS PORT



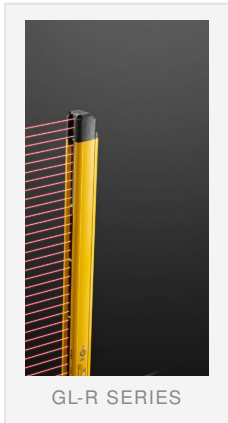
A · device / sensor cable B · bus extension D Y-connector · E end terminator

C · main-controller cable — **factory-installed, inside the Control Block**

Back-panel ports per Control Block external wiring reference PF-3945-T24-120-CB. The DS port daisy-chains up to 8 interlocks at the panel; the RS port expands the GC-Link bus for additional safety devices. Order the external A / B / D / E cables from the matrices on the following pages.

GL-R / Safety Light Curtains

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Type 4 · SIL3 · PLe finger/hand/body protection. Recessed lens, 3 mm impact-resistant housing, IP65/67, detection range to 15 m, with built-in EDM and series connection. Choose detection capability by hazard distance, then length by guarded height. All connect to the Control Block via GC-Link (page 3).

GL-RF · ø14 mm finger

GL-RH · ø25 mm hand

GL-RL · ø45 mm body

MODEL	AXES	PROT. HT. MM	MODEL	AXES	PROT. HT. MM	MODEL	AXES	PROT. HT. MM
GL-R23F	23	220	GL-R08H	8	140	GL-R04L	4	120
GL-R31F	31	300	GL-R12H	12	220	GL-R06L	6	200
GL-R39F	39	380	GL-R16H	16	300	GL-R08L	8	280
GL-R47F	47	460	GL-R20H	20	380	GL-R10L	10	360
GL-R55F	55	540	GL-R24H	24	460	GL-R12L	12	440
GL-R63F	63	620	GL-R28H	28	540	GL-R14L	14	520
GL-R71F	71	700	GL-R32H	32	620	GL-R16L	16	600
GL-R79F	79	780	GL-R36H	36	700	GL-R18L	18	680
GL-R87F	87	860	GL-R40H	40	780	GL-R20L	20	760
GL-R95F	95	940	GL-R44H	44	860	GL-R22L	22	840
GL-R103F	103	1020	GL-R48H	48	940	GL-R24L	24	920
GL-R111F	111	1100	GL-R52H	52	1020	GL-R26L	26	1000
GL-R119F	119	1180	GL-R56H	56	1100	GL-R28L	28	1080
GL-R127F	127	1260	GL-R60H	60	1180	GL-R30L	30	1160
GL-R143F	143	1420	GL-R64H	64	1260	GL-R32L	32	1240
GL-R159F	159	1580	GL-R72H	72	1420			
GL-R175F	175	1740	GL-R80H	80	1580			
GL-R191F	191	1900	GL-R88H	88	1740			
GL-R207F	207	2060	GL-R96H	96	1900			

UNIT CONNECTION CABLE (PER TX / RX)

CONDUCTORS	PNP / NPN	5 M	10 M
5-core	PNP	GL-RP5P	GL-RP10P
5-core	NPN	GL-RP5N	GL-RP10N
7-core	PNP	GL-RP5PS	GL-RP10PS
7-core	NPN	GL-RP5NS	GL-RP10NS
11-core	PNP	GL-RP5PM	GL-RP10PM
11-core	NPN	GL-RP5NM	GL-RP10NM

EXTENSION CABLE

CONDUCTORS / CONNECTOR	5 M	10 M	20 M
5-core · M12 5-pin	GL-RC5	GL-RC10	GL-RC20
7-core · M12 8-pin	GL-RC5S	GL-RC10S	GL-RC20S
11-core · M14 12-pin	GL-RC5M	GL-RC10M	GL-RC20M

SERIES CONNECTION

SERIES-CONNECTION CABLE (PNP/NPN SHARED)	LENGTHS
GL-RS008 / 015 / 05 / 1 / 3 / 5 / 10	0.08 / 0.15 / 0.5 / 1 / 3 / 5 / 10 m

MOUNTING BRACKETS

BRACKET	PART NO.
Adjustable-angle (2 pc)	GL-RB01 / GL-RB02
Straight (2 pc)	GL-RB11
L-shaped (2 pc)	GL-RB12
No-dead-zone (2 pc)	GL-RB21
Anti-vibration (2 pc)	GL-RB31 / GL-RB32

OPTIONAL ACCESSORIES

ACCESSORY	PART NO.
Dedicated Type-4 safety relay	GL-T11R
Power supply (100–240 VAC → 24 VDC)	SL-U2
GL-T11R connection cable	GL-RPT03PM / 3PM / 5PM / 10PM
Battery laser alignment tool	GL-R11P
PC interface unit (+ USB)	GL-R1UB (OP-51580 / OP-86941)
Front protection cover	GL-RA160 ... GL-RA1920
Corner mirror	SL-M12H ... SL-M64H
Detection test pieces ø14 / ø25	OP-88865 / OP-88866

Unit-connection / extension cables apply to standalone or hardwired wiring. For plug-and-play GC-Link connection to the Control Block, use the GC-Link cable set (GL-RPC03PS · GL-RCC7S · GL-RCG03S) shown on pages 2–3.

GS-M / Safety Door Switches

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Hybrid door interlocks — PLe · Cat 4 · SIL3. A built-in permanent magnet latches the door while a coded actuator verifies closure; power-to-lock models hold the door for process protection. Forgiving alignment ($\pm 4^\circ$, ± 5 mm), IP65/67, only 5 W. Two hinged holding forces plus a sliding-door style.



MAIN UNIT SELECTION

STYLE / HOLDING	STD. PNP	STD. NPN	ADVANCED PNP
Hinged · 500 N (GS-M5)	GS-M51P	GS-M51N	GS-M53P
Hinged · 900 N (GS-M9)	GS-M91P	GS-M91N	GS-M93P
Sliding · 500 N (GS-ML5)	GS-ML51P	GS-ML51N	GS-ML53P

Advanced-function types add EDM + manual reset (no dedicated relay needed). PNP locking models GS-M51P / M91P / ML51P are the GC-Link-compatible variants.

CODED ACTUATORS (ORDER SEPARATELY)

ACTUATOR	LOW CODING	HIGH CODING
For GS-M5	GS-MA5M	GS-MA5U
For GS-M9	GS-MA9M	GS-MA9U
For GS-ML5	GS-MAL5M	GS-MAL5U

MOUNTING BRACKETS

BRACKET (FRAME SIZE)	PART NO.
Hinged GS-M5 · 30–40 / 40–45 mm	GS-MB11 / GS-MB13
Hinged GS-M9 · 30–40 / 40–45 mm	GS-MB21 / GS-MB23
Hinged diff-frame · M5 / M9	GS-MB12 / GS-MB22
Sliding GS-ML5 · 30–40 mm	GS-MB31

M12 CONNECTION CABLES

M12 CABLE	3 M	5 M	10 M	20 M
8-pin straight	GS-P8C3	GS-P8C5	GS-P8C10	—
8-pin L-shaped	GS-P8L3	—	—	—
12-pin straight	GS-P12C3	GS-P12C5	GS-P12C10	GS-P12C20
12-pin L-shaped	GS-P12L3	—	—	—

EXTENSION, CASCADE & WIRING-SAVING

EXTENSION / ACCESSORY	PART NO.
8-pin extension (straight)	GS-P8CC1 / CC3 / CC5 / CC10
8-pin extension (L) · 12-pin (L)	GS-P8LC1 / GS-P12LC1
5-pin easy-wiring (no lock input)	GS-P5C5 / C10 · GS-P5CC1 / CC3 / CC5 / CC10
M12 8-pin → 5-pin converter	GS-CC1
Wiring-saving unit (2-port)	GS-T01
Y-connector · end terminal PNP / NPN	GS-Y11 · GS-Y12 / GS-Y13N

CASCADE

Cascade up to **20** GS-M5 / GS-ML5 or **16** GS-M9 down to a single OSSD pair. The GS-T01 wiring-saving unit fans out **8** AUX door-status signals for HMI / PLC indication. For GC-Link cascade cabling, see page 3.



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autoblocks.co/safety

AUTOBLOCKS, INC.
333 Route 46 W, Building B · Fairfield, NJ 07004
autoblocks.co · info@autoblocks.co