## LS2ER/50-060B







#### LIGHT CURTAINS TYPE 2 ACCORDING TO IEC 61496-1 AND 2

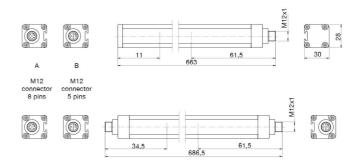
- Compact housing (28 x 30 mm) and no dead zone on cap
- Resolution 30, 40, 50, 90 mm for hand protection and presence control and 2, 3, 4 beams for body protection/access control
- Controlled distance up to: 3, 4,10, 12 m
- Base, Standard versions and Master, Slave version to connect up to 3 sets in cascade configuration
- Selectable Automatic/Manual Restart and EDM integrated functions (Standard models)
- Selectable controlled distance
- IP69K protection models (LS2\_K) and models with integrated heating system to reach -25°C operating temperature(LS2\_H)
- Standard M12 da 5 and 8 poles connectors











#### **Detection properties**

Effective Aperture Angle

Nominal sensing distance ≤ 12m Resolution 50mm 610mm controlled height 16 number of rays ±5°

#### **Application**

Function Principle Emitter + Receiver

Operating Voltage       18,2 28,8 Vcc         Load current       ≤ 400mA         Time delay before availability       2s         Interference to external light       according to IEC 61496-2         Power Consumption - Receiver       2W (no load)         Power Consumption - Emitter       1W         Equivalent Resistive Load       ≥ 60 Ω         Capacitive Load       ≥ 0.82 μF         Cabel Length (Power Supply/Output)       ≤ 100m         Cable Length for Master Slave Interconnections       ≤ 50m         Mechanical data       Dimensions         Connections       M12-5 poles (emitter) M12-5 poles (receiver)         Operating temperature       -10°C + +55°C (no condensation)         Storage temperature       -25°C + +70°C (no condensation)         humidity       95% (no condensation)	Available functions	Automatic Restart
Type         2           SLL         1           SLLCL         1           PFL         a           OPPH         2,856-08           Deary         95,10%           MITTER         NOI           CFF         80%           Output type           Cutput type         2 x PNP-ND (CSSD safety cutput)           Response time         Bms           Bectrical data           Operating Variage         18.2 - 28.8 Voc           Load current         ± 400 mA           Time delay before availability         28           Interference to external light         according to IEC 61486-2           Power Consumption - Receiver         2W (no issed)           Power Consumption - Fertiter         IW           Equivalent Resistive Load         ± 80 ft           Capacitiva Load         ±	Safety parameters	
SILCL		2
PEH         c           Dearg         98.10%           MTTFG         100           OFF         80%           Output         80%           Output Type         2 x PNP-NO (CSST) safety output)           Response time         8ms           Electrical data         0           Operating Woltage         10,2 28,8 Woc           Load current         \$ 400mA           Time delay before availability         2s           Interference to cotemal light         according to IEC 61/498-2           Power Consumption - Receive         2W(no load)           Power Consumption - Emitter         1W           Equivalent Resistive Load         2 .0.82 µF           Cable Length for Master Slave         \$100m           Cable Length for Master Slave         \$50m           Interconnections         28mm (front)x x0mm           Mechanical data         2mm (front)x x0mm           Connections         M12-5 poles (receiver)           Operating temperature         -10°C ++55°C (no condensation)           Storage temperature         -25°C + -20°C (no condensation)           burnfility         95% (no condensation)           Test/Approvals         CE. cULus. TUV           EMC compatibility	SIL	1
PFHd         2,86E-08           newg         83,10%           MTTFd         100           CFF         80%           Output         0 80%           Output type         2 x PNP-NO (OSSD safety output)           Response time         6ms           Electrical data         6ms           Operating Valtage         18.2 28.8 Voc           Linad current         < 4,00msA	SILCL	1
Description         93,10%           MTTFd         100           CFF         80%           Output type         2 x PNP-NO (OSSD safety output)           Response time         6ms           Electrical data         6ms           Operating Voltage         13,2 28,8 Vec           Load current         ≤ 400mA           Time delay before availability         2s           Interference to external light         according to IF C 61496-2           Power Consumption - Receiver         2W(no load)           Power Consumption - Emitter         1W           Equivalent Resistive Load         ≥ 50 Ω           Capacitive Load         ≥ 0.82 µF           Cable Length (Power Supply/Output)         ≤ 100m           Cable Length (Power Supply/Output)         ≤ 100m           Wechanical data         2mm (tront) x 30mm           Connections         M12-5 poles (emitter) M12-5 poles (receiver)           Operating temperature         -10°C + +55°C (no condensation)           Storage temperature         -25°C + +70°C (no condensation)           Test/Approvals         CE, cULus, TÜV           EMC compatibility         According to 2014/30/EU Directive	PL	С
MTFEd         80%           Outputs         80%           Output type         2 x PNP-NO (OSSD safety output)           Response time         6ms           Electrical data         9 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x	PFHd	2,85E-08
CFF         80%           Outputs         Output type         2 x PNP-NO (OSSD sefety output)           Response time         8ms           Electrical data         Bms           Operating Voltage         19,2 28,8 Vcc           Load current         ≤ 400mA           Time delay before availability         2s           Interference to external light         according to IEC 61496-2           Power Consumption - Receiver         2W (no load)           Power Consumption - Emitter         1W           Equivalent Resistive Load         ≥ 60 Ω           Capacitive Load         ≥ 0.82 μF           Cabil Length (Power Supply/Output)         ≤ 100m           Mechanical data         Dimensions         ≤ 50m           Mechanical data         Dimensions         28mm (tront) x 30mm           Connections         M12-5 poles (emitter) H12-5 poles (receiver)           Operating temperature         -10°C + ±58°C (no condensation)           Storage temperature         -25°C + ×70°C (no condensation)           Interting temperature         -25°C + ×70°C (no condensation)           Power Compatibility         According to 2014/30/EU Directive	Dcavg	93,10%
Output spa         2 x PNP-ND (OSSD safety output)           Response time         Bms           Electrical data         Bms           Electrical data         Frequency of the part	MTTFd	100
Durput type         2 x PNP-NO (DSSD safety output)           Response time         6ms           Electrical data         Figure 19,2 mg safety output)           Operating Voltage         19,2 mg safety output)           Load current         ≤ 400mA           Time delay before availability         2s           Interference to external light         according to IEC 61498-2           Power Consumption - Receiver         2W (no load)           Power Consumption - Emitter         1W           Equivalent Resistive Load         ≥ 60 Ω           Capacitive Load         ≥ 0.82 μF           Cabe Length (Power Supply/Output)         ≤ 100m           Cable Length for Master Slave Interconnections         ≥ 50m           Hechanical data         28mm (front) x 30mm           Connections         M12-5 poles (emitter) M12-5 poles (receiver)           Operating temperature         -10°C x + 55°C (no condensation)           Storage temperature         -25°C x + 70°C (no condensation)           Interference to texternal light         According to 2014/30/EU Directive	CFF	80%
Durput type         2 x PNP-NO (OSSD safety output)           Response time         8ms           Electrical data         Fraction of the part	Outputs	
Electrical data  Operating Voltage  Load current  ≤ 400mA  Time delay before availability  2s  Interference to external light  Power Consumption - Receiver  Power Consumption - Emitter  TW  Equivalent Resistive Load  ≥ 60 Ω  Capacitive Load  ≥ 0,82 μF  Cabel Length (Power Supply/Output)  Cable Length for Master Slave Interconnections  Mechanical data  Dimensions  28mm (front] x 30mm  Connections  M12-5 poles (emitter) M12-5 poles (receiver)  Operating temperature  -10°C ++55°C (no condensation)  Storage temperature  -25°C ++70°C (no condensation)  Test/Approvals  Approvals  CE, cULus, TŪV  EMC compatibility  According to 2014/30/EU Directive		2 x PNP-N0 (OSSD safety output)
Operating Voltage       19.2 28.8 Vcc         Load current       ≤ 400mA         Time delay before availability       2s         Interference to external light       according to IEC 61498-2         Power Consumption - Receiver       2W (no load)         Power Consumption - Emitter       1W         Equivalent Resistive Load       ≥ 80 Ω         Capacitive Load       ≥ 0.82 μF         Cabel Length (Power Supply/Output)       ≤ 100m         Cable Length for Master Slave Interconnections         Interconnections       28mm (front) x 30mm         Mechanical data         Dimensions       28mm (front) x 30mm         Connections         M12-5 poles (emitter) M12-5 poles (receiver)         Operating temperature       -10°C + +55°C (no condensation)         Storage temperature       -25°C + +70°C (no condensation)         Test/Approvals         Approvals       CE, cULus, TÜV         EMC compatibility       According to 2014/30/EU Directive	Response time	6ms
Load current ≤ 400mA   Time delay before availability 2s   Interference to external light according to IEC 81498-2   Power Consumption - Receiver 2W (no load)   Power Consumption - Emitter 1W   Equivalent Resistive Load ≥ 60 Ω   Capacitive Load ≥ 0.82 μF   Cabel Length (Power Supply/Output) ≤ 100m   Cable Length for Master Slave Interconnections 250m   Mechanical data Dimensions 28mm (front) x 30mm   Connections M12-5 poles (emitter) M12-5 poles (receiver)   Operating temperature -10°C + +55°C (no condensation)   Storage temperature -25°C + +70°C (no condensation)   humidity 95% (no condensation)   Test/Approvals CE, cULus, TÜV   EMC compatibility According to 2014/30/EU Directive	Electrical data	
Time delay before availability     2s       Interference to external light     according to IEC 61496-2       Power Consumption - Receiver     2W (no load)       Power Consumption - Emitter     1W       Equivalent Resistive Load     ≥ 60 Ω       Capacitive Load     ≥ 0.82 μF       Cabel Length (Power Supply/Output)     ≤ 100m       Cable Length for Master Slave Interconnections     ≤ 50m       Mechanical data     Dimensions       Dimensions     28mm (front) x 30mm       Connections     M12-5 poles (emitter) M12-5 poles (receiver)       Operating temperature     -10°C + +55°C (no condensation)       Storage temperature     -25°C + +70°C (no condensation)       Humidity     95% (no condensation)       Test/Approvals     CE, cULus, TÜV       EMC compatibility     According to 2014/30/EU Directive	Operating Voltage	19,2 28,8 Vcc
Interference to external light     according to IEC 61496-2       Power Consumption - Receiver     2W (no load)       Power Consumption - Emitter     1W       Equivalent Resistive Load     ≥ 60 Ω       Capacitive Load     ≥ 0.82 μF       Cabel Length (Power Supply/Output)     ≤ 100m       Cable Length for Master Slave Interconnections     ≤ 50m       Mechanical data     Dimensions       Dimensions     28mm (front) x 30mm       Connections     M12-5 poles (emitter) M12-5 poles (receiver)       Operating temperature     -10°C ÷ +55°C (no condensation)       Storage temperature     -25°C ÷ +70°C (no condensation)       Humidity     95% (no condensation)       Test/Approvals     CE, cULus, TÜV       EMC compatibility     According to 2014/30/EU Directive	Load current	≤ 400mA
Power Consumption - Receiver       2W (no load)         Power Consumption - Emitter       1W         Equivalent Resistive Load       ≥ 60 Ω         Capacitive Load       ≥ 0.82 μF         Cabel Length (Power Supply/Output)       ≤ 100m         Cable Length for Master Slave Interconnections       ≥ 50m         Mechanical data       Dimensions       28mm (front) x 30mm         Connections       M12-5 poles (emitter) M12-5 poles (receiver)         Operating temperature       -10°C ÷ +55°C (no condensation)         Storage temperature       -25°C ÷ +70°C (no condensation)         humidity       95% (no condensation)         Test/Approvals       CE, cULus, TÜV         EMC compatibility       According to 2014/30/EU Directive	Time delay before availability	2s
Power Consumption - Emitter       1W         Equivalent Resistive Load       ≥ 60 Ω         Capacitive Load       ≥ 0.82 μF         Cabel Length (Power Supply/Output)       ≤ 100m         Cable Length for Master Slave Interconnections       ≤ 50m         Mechanical data         Dimensions       28mm (front) × 30mm         Connections       M12-5 poles (emitter) M12-5 poles (receiver)         Operating temperature       -10°C ÷ +55°C (no condensation)         Storage temperature       -25°C ÷ +70°C (no condensation)         humidity       95% (no condensation)         Test/Approvals         Approvals       CE, cULus, TÜV         EMC compatibility       According to 2014/30/EU Directive	Interference to external light	according to IEC 61496-2
Equivalent Resistive Load  ≥ 60 Ω  Capacitive Load  ≥ 0.82 μF  Cabel Length (Power Supply/Output)  ≤ 100 m  Cable Length for Master Slave Interconnections  Mechanical data  Dimensions  28mm (front) x 30 mm  Connections  M12-5 poles (emitter) M12-5 poles (receiver)  Operating temperature  -10°C ÷ +55°C (no condensation)  Storage temperature  -25°C ÷ +70°C (no condensation)  humidity  95% (no condensation)  Test/Approvals  Approvals  CE, cULus, TÜV  EMC compatibility  According to 2014/30/EU Directive	Power Consumption - Receiver	2W (no load)
Capacitive Load       ≥ 0.82 μF         Cabel Length (Power Supply/Output)       ≤ 100 m         Cable Length for Master Slave Interconnections       ≤ 50 m         Mechanical data         Dimensions       28mm (front) x 30mm         Connections       M12-5 poles (emitter) M12-5 poles (receiver)         Operating temperature       -10°C ÷ +55°C (no condensation)         Storage temperature       -25°C ÷ +70°C (no condensation)         humidity       95% (no condensation)         Test/Approvals         Approvals       CE, cULus, TÜV         EMC compatibility       According to 2014/30/EU Directive	Power Consumption - Emitter	1W
Cable Length (Power Supply/Output)  Cable Length for Master Slave Interconnections  Mechanical data  Dimensions  28mm (front) x 30mm  Connections  M12-5 poles (emitter) M12-5 poles (receiver)  Operating temperature  -10°C ÷ +55°C (no condensation)  Storage temperature  -25°C ÷ +70°C (no condensation)  humidity  95% (no condensation)  Test/Approvals  Approvals  CE, cULus, TÜV  EMC compatibility  According to 2014/30/EU Directive	Equivalent Resistive Load	≥ 60 Ω
Cable Length for Master Slave Interconnections  Mechanical data  Dimensions  28mm (front) × 30mm  Connections  M12-5 poles (emitter) M12-5 poles (receiver)  Operating temperature  -10°C ÷ +55°C (no condensation)  Storage temperature  -25°C ÷ +70°C (no condensation)  humidity  95% (no condensation)  Test/Approvals  Approvals  CE, cULus, TÜV  EMC compatibility  According to 2014/30/EU Directive	Capacitive Load	≥ 0,82 µF
Interconnections         Mechanical data         Dimensions       28mm (front) x 30mm         Connections       M12-5 poles (emitter) M12-5 poles (receiver)         Operating temperature       -10°C ÷ +55°C (no condensation)         Storage temperature       -25°C ÷ +70°C (no condensation)         humidity       95% (no condensation)         Test/Approvals         Approvals       CE, cULus, TÜV         EMC compatibility       According to 2014/30/EU Directive	Cabel Length (Power Supply/Output)	≤100m
Dimensions 28mm (front) x 30mm  Connections M12-5 poles (emitter) M12-5 poles (receiver)  Operating temperature -10°C ÷ +55°C (no condensation)  Storage temperature -25°C ÷ +70°C (no condensation)  humidity 95% (no condensation)  Test/Approvals  Approvals  CE, cULus, TÜV  EMC compatibility According to 2014/30/EU Directive		≤ 50 m
Dimensions 28mm (front) x 30mm  Connections M12-5 poles (emitter) M12-5 poles (receiver)  Operating temperature -10°C ÷ +55°C (no condensation)  Storage temperature -25°C ÷ +70°C (no condensation)  humidity 95% (no condensation)  Test/Approvals  Approvals  CE, cULus, TÜV  EMC compatibility According to 2014/30/EU Directive	Mechanical data	
Operating temperature  -10°C ÷ +55°C (no condensation)  Storage temperature  -25°C ÷ +70°C (no condensation)  humidity  95% (no condensation)  Test/Approvals  Approvals  CE, cULus, TÜV  EMC compatibility  According to 2014/30/EU Directive		28mm (front) x 30mm
Storage temperature  -25°C ÷ +70°C (no condensation)  humidity  95% (no condensation)  Test/Approvals  Approvals  CE, cULus, TÜV  EMC compatibility  According to 2014/30/EU Directive	Connections	M12-5 poles (emitter) M12-5 poles (receiver)
humidity 95% (no condensation)  Test/Approvals  Approvals  CE, cULus, TÜV  EMC compatibility  According to 2014/30/EU Directive	Operating temperature	-10°C ÷ +55°C (no condensation)
Test/Approvals  Approvals  CE, cULus, TÜV  EMC compatibility  According to 2014/30/EU Directive	Storage temperature	-25°C ÷ +70°C (no condensation)
Approvals CE, cULus, TÜV  EMC compatibility According to 2014/30/EU Directive	humidity	95% (no condensation)
Approvals CE, cULus, TÜV  EMC compatibility According to 2014/30/EU Directive	Test/Approvals	
		CE, cULus, TÜV
Shocks and vibrations according to IEC 61496-1	EMC compatibility	According to 2014/30/EU Directive
	Shocks and vibrations	according to IEC 61496-1

IP65, IP67

Degree of protection

Supplied Accessories ST 204 4S

#### **Generical Data**

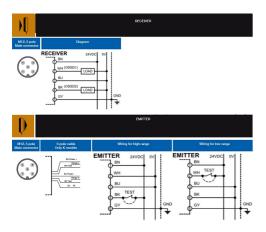
Dimensions 28mm (front) x 30mm

Operating Temperature  $-10^{\circ}\text{C} \div +55^{\circ}\text{C}$  (no condensation)

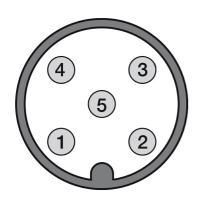
Humidity 95% (no condensation)

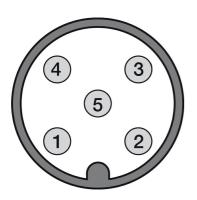
Mechanical Protection IP65, IP67

## **ELECTRICAL DIAGRAMS OF THE CONNECTIONS**



# **CONNECTOR**





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## date of printing

29/04/2022 16:36:47