

castxpert LB 452

**GAMMAcast Detectors
LB 6739, LB 6750, LB 6752**

Technical Data
47344TI

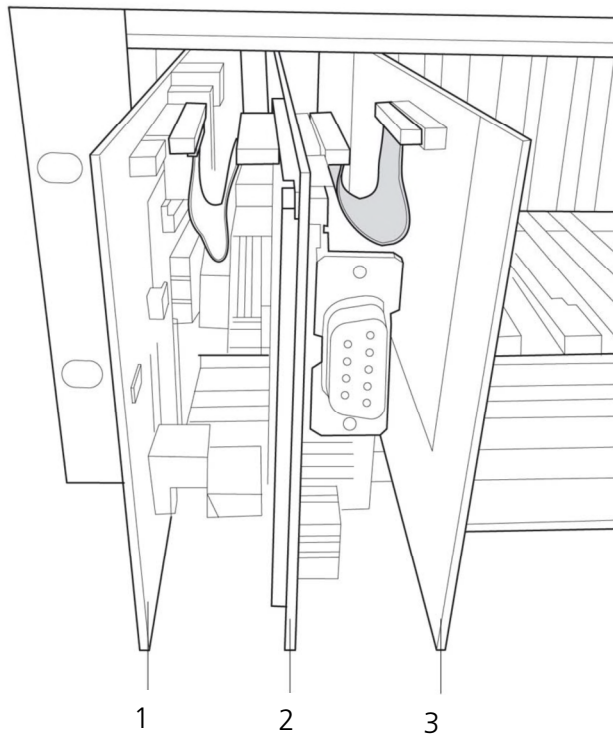
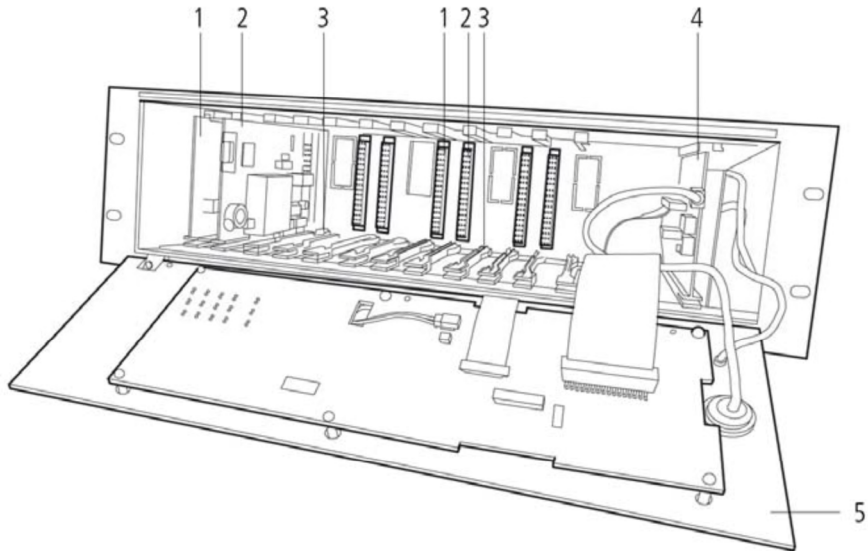
Rev. Nr.: 01, 03/2012

castxpert LB 452: Technical Data

Mechanical Arrangement	
Rack	19", 3 HU Control unit with 7" color display and touch screen
Max. Bestückung	4 measuring channels
Weight	approx. 4-6 kg depending on equipment
IP code	IP 20
Connections	USB-Port for connection of USB flash drive or external keyboard Ethernet (RJ-45 plug) Input operating voltage control unit (90 ... 264 V _{AC} , 50/60 Hz) 4 outputs operating voltage (supply of measuring channels)
Power consumption	Control unit including one measuring channel: approx. 30 W Every further measuring channel: approx. 15 W
Operating Temp.	0 ... +50°C
Storage Temp.	-20 ... +70°C
Control Unit	Display control Configuration of measuring channels Fuses: 2 times (Si1 and Si2) 1A/T/250 V according to IEC60127-2/1
Measuring Unit	
Basic Module (mandatory)	CPU with separate power supply unit and connection (90-264 V _{AC} , 50/60 Hz) Detector connection Current output 4...20 mA (level) with monitored current signal (can be switched on/off): Floating Switchable source- (max. impedance 500 Ω) or sink- (max. 24 VA, 500 Ω; min. 12 V _{DC} , 250 Ω) mode Configurable error current in error case: 2 mA, 22 mA or freeze of last value 2 digital inputs: floating, for external empty and full adjust Relay output for error signal: Single pole double throw (SPDT), max. 33 V _{AC} , 46 V _{DC} , 5 A, non-inductive Fuses: 2 times (Si1 and Si2) 1A/T/250 V according to IEC60127-2/1 1 times (Si3) 5A/T/250 V according to IEC60127-3
Extension Module (option)	Current output 4...20 mA with monitored current signal (can be switched on/off): Floating Switchable source- (max. impedance 500 Ω) or sink- (max. 24 V _{DC} , 500 Ω; min. 12 V _{DC} , 250 Ω) mode Configurable error current in error case: 2 mA, 22 mA or freeze of last value Possible configurations: <ul style="list-style-type: none"> ▪ Level (with free-adjustable additional time constant) ▪ Detector temperature ▪ Detector count rate 2 digital Inputs: floating, for external selection of up to 4 calibration curves 2 relay outputs for alarm signal: Alarm relay 1: Single pole double throw (SPDT) Alarm relay 2: Single pole single throw, normally open (SPST NO) each max. 33 V _{AC} , 46 V _{DC} , 5 A, non-inductive Possible alarm configurations: <ul style="list-style-type: none"> ▪ High level ▪ Low level ▪ Detector temperature

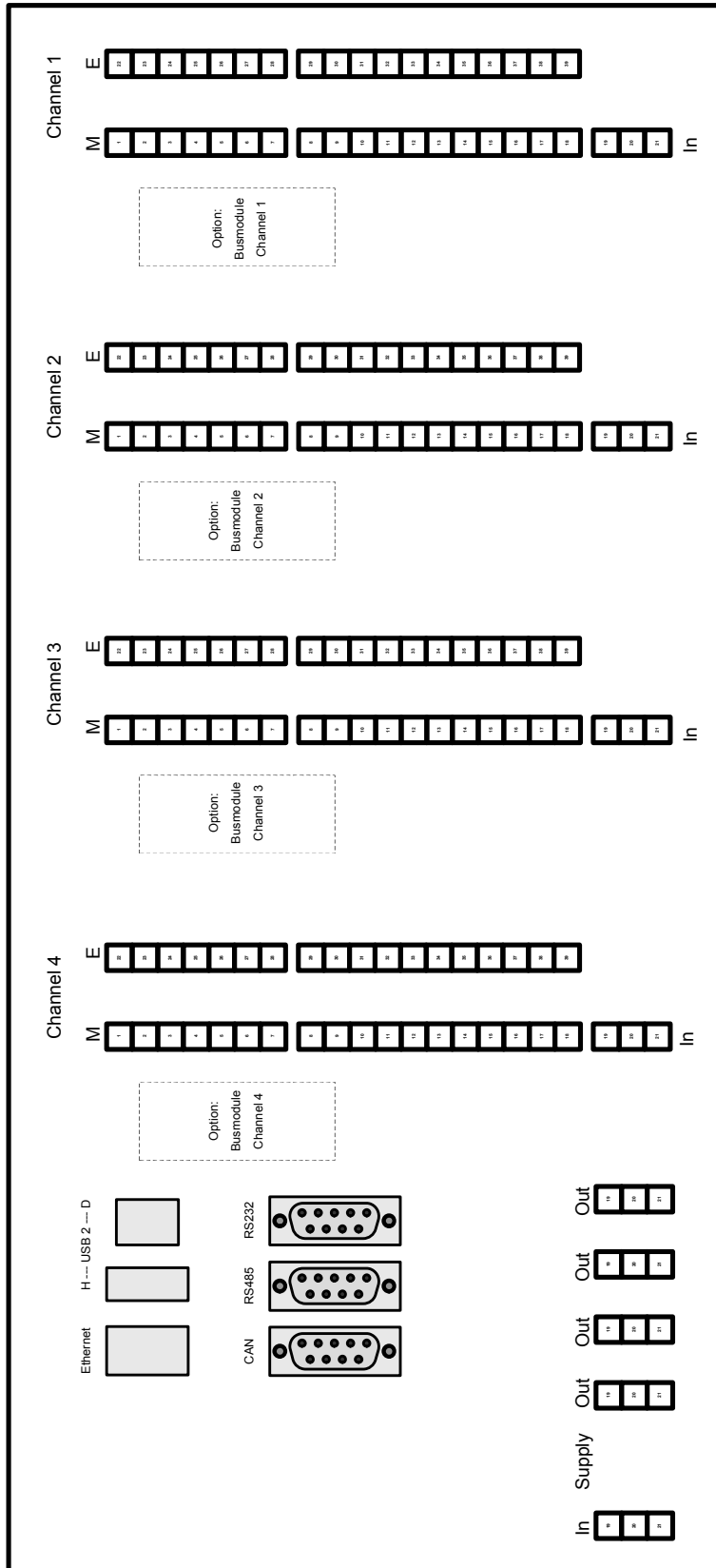
	<ul style="list-style-type: none"> ▪ Digital input confirmation Pulse output: Detector pulses looped through, max. amplitude 12 V Fuses: 2 times (Si3 und Si4) 5A/T/250 V according to IEC60127-3 1 times (Si5) 50mA/T/250V according to IEC60127-3
Bus Module (option)	Supply of GSD-file Output cyclic data: Level, detector value (CPS), detector temperature, actual calibration index, system status (RUN/ERROR/WARNING/STOP) Input cyclic data: Calibration index, empty and full adjust Profibus DP: Parameter access via DPV1 read/write services Automatic baudrate detection (9.600 bit/s ... 12 Mbit/s) Profibus-RS-485-connection integrated potential separation with DC/DC converter and optocoupler Profibus connection with 9-pin D-Sub connection Profinet IO (in preparation): complete Profinet IO device implementation (slave) with RT classification Fast Ethernet transmission 100 MBit/s with Full-Duplex Integrated potential separation Profinet IO connection with RJ45 standard plug
Overall System	
Software	Data input using touch screen Operating languages: Bulgarian, Chinese (option), Czech, English, French, German, Hungarian, Italian, Japanese (option), Korean (option), Portugese, Rumanian, Russian, Spanish Cycle time: 0,005 s (5 ms) Two time constants for filtering the raw signal: Lower measuring range: fast reaction time Upper measuring range: calmer signal Freely adjustable point of changeover Plausibility-check to avoid adjustment errors Minimal ratio empty to full count rate Maximal tolerance to the last adjustment Calibration: Stores up to 8 different calibration curves Linear calibration or multi point calibration as polygonal line (e.g. for AOS-Source) Two adjustment modes Compensation for natural background radiation Access to detector control and service (depending on connected detector) Test mode: Current outputs, digital in- and outputs, calibration Password protection to avoid unauthorized change of settings Data log on internal memory card (option) or via Ethernet separately for each measuring channel smallest log interval: 0.5 s Date/time, pulses, level, detector temperature, error status, index of the active calibration curve Data export to USB flash drive: Data log, error log, change log Export and import of all measuring channel settings using USB flash drive Software updates (control unit, measuring unit, detector) using USB flash drive

castxpert LB 452: Overview Inside

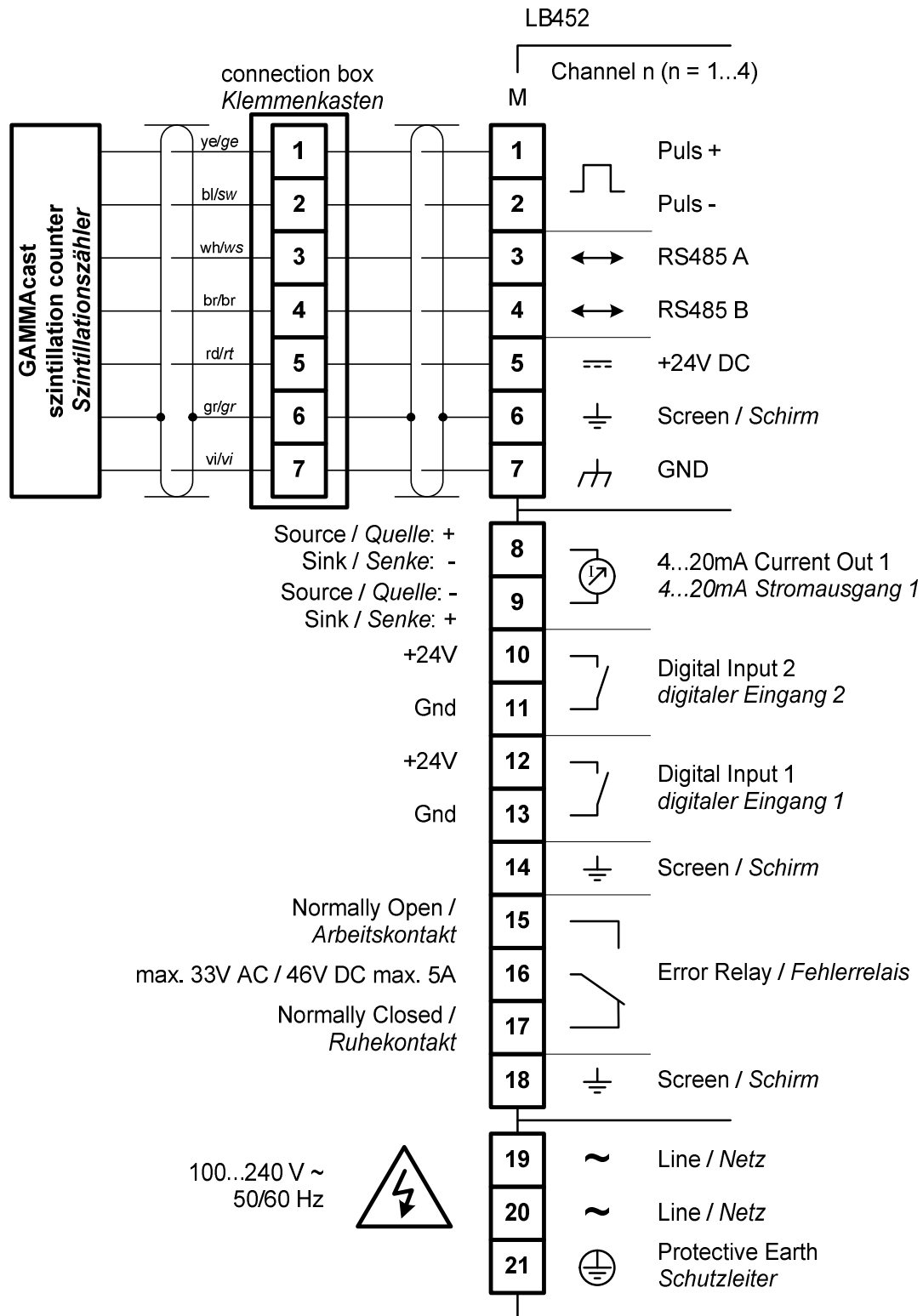


1	50502-01-S	Extension Module
2	50498-01-S	Basic Module
3	53799-S	(Slot for) Bus Module
4	53772-S	System Control Unit
5	53779-S	Front Panel with Display

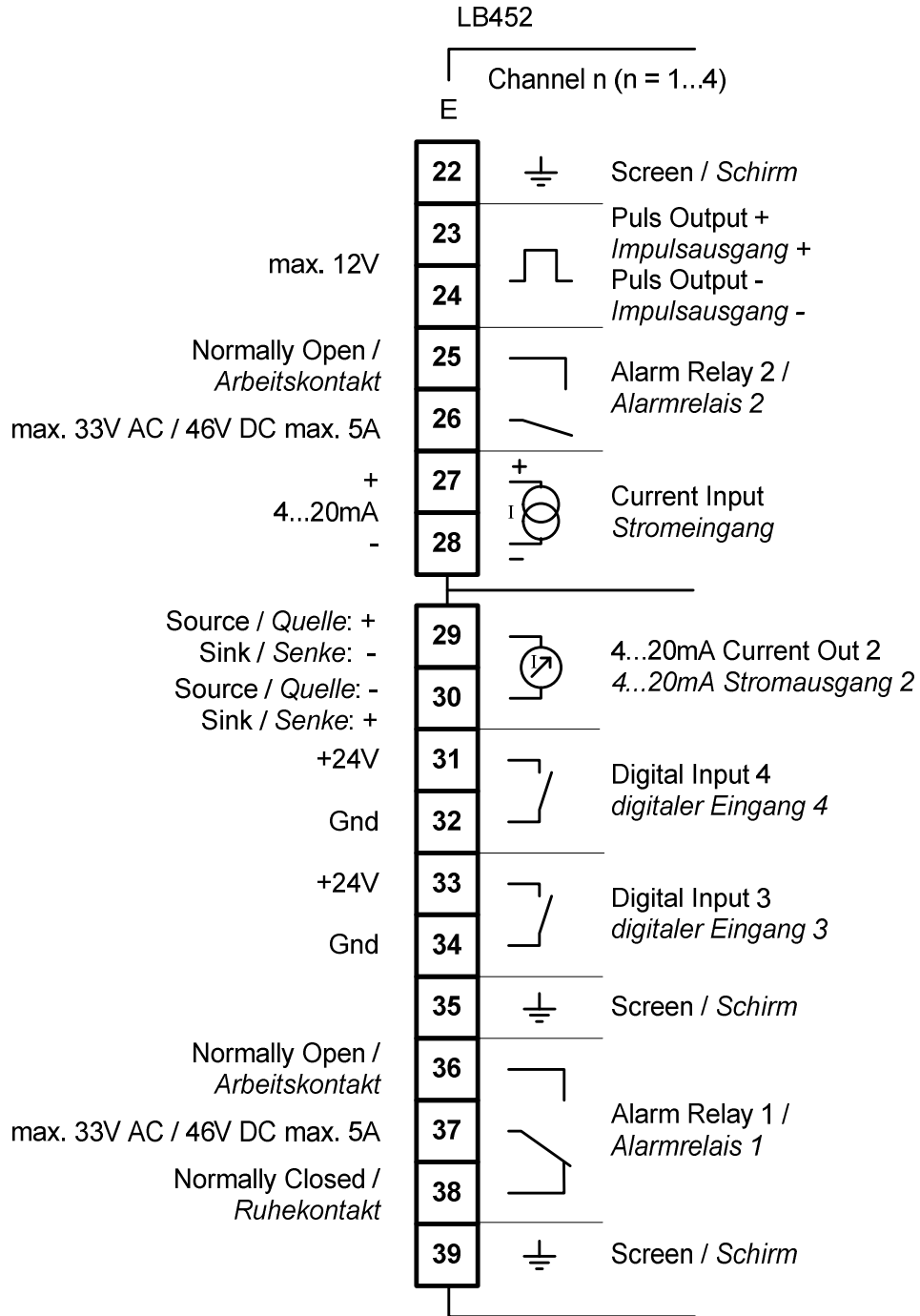
castxpert LB 452 Connections: Overview Backside



castxpert LB 452 Connections: Measuring Channel Basic Module



castxpert LB 452 Connections: Measuring Channel Extension Module



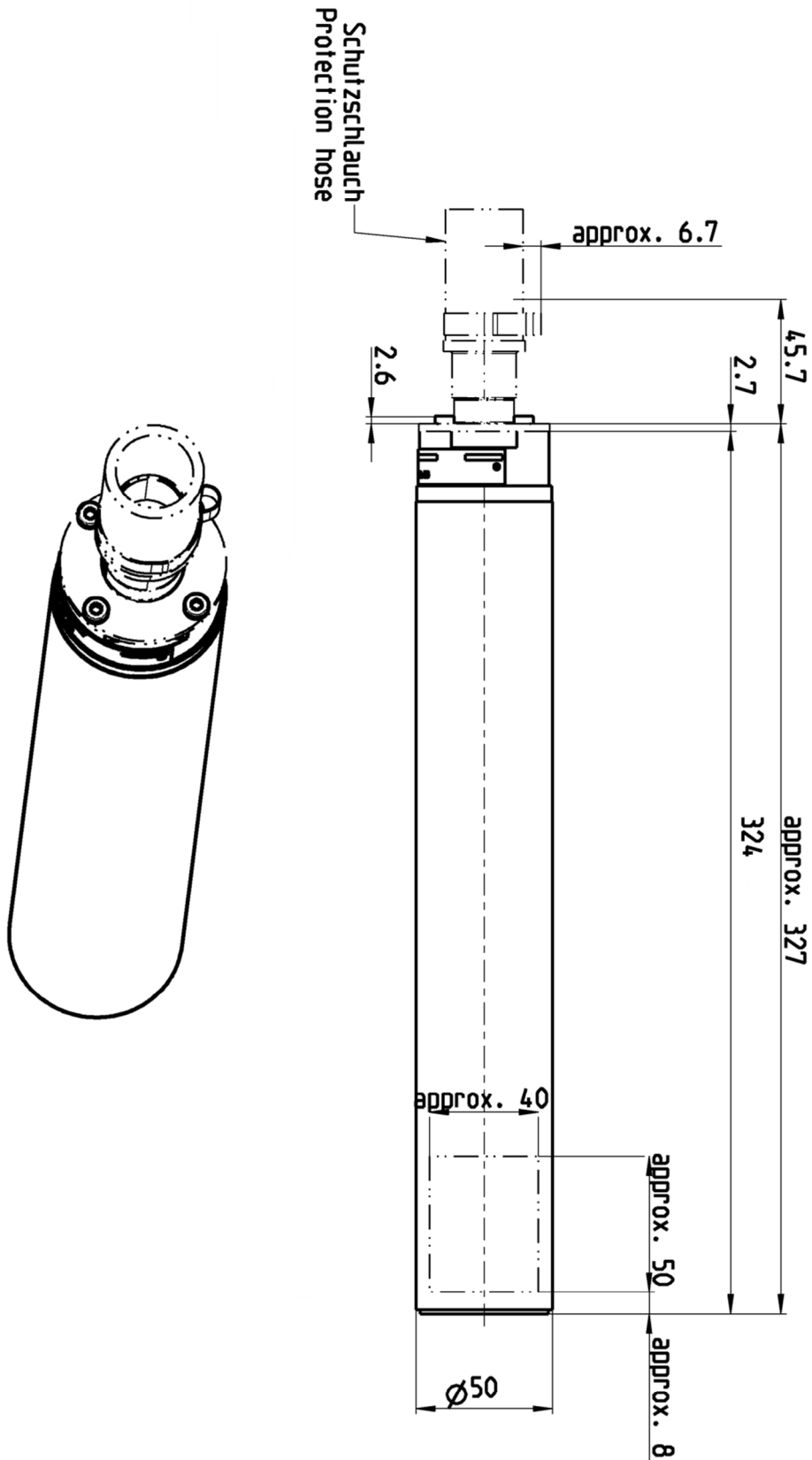
GAMMAcast LB 6739 / LB 6750: Technical Data

Mechanical Arrangement	
Scintillator	LB 6739: CsI-crystal; Ø 40 mm or Ø 25 mm, H: 50 mm LB 6750: CsI-crystal: Ø 35 mm, H: 50 mm
Gain	LB 6739: 1" Photomultiplier Tube LB 6750: Photodiode
Operating temp.	-20 ... +50°C ambient temperature A water cooling is required at higher temperatures (option)
Storage temp.	-20 ... +70°C
Power	15...32 V _{DC} , approx. 1,2 W
Output signal	Pulses, max. 10 V
Communication	RS 485
Water cooling (option)	Connection: R¼ Max. pressure: 6 bar Required cooling water quality: Drinking water (or filtered process water without suspended particles)
IP class	IP 66 / IP 67
Connections	Detector – terminal box resp. detector – evaluation unit: Special cable with PlugProtect connector (straight or 90° angled) Open ends or HeavyCon plug Terminal box – evaluation unit: 6-wired, screened (6 x 1.5 mm ²) max. length 1000 m
Weight	Approx. 2 kg With water cooling approx. 3 kg
Software	Measuring the Temperature in the detector Saving the extreme values of the temperature Possibility to record the plateau curve to set up the correct high voltage supply for the photomultiplier (either using LB 452 or the Detector Service Modem) Saving the last three recorded plateau curves Error log (Saved in the detector itself)

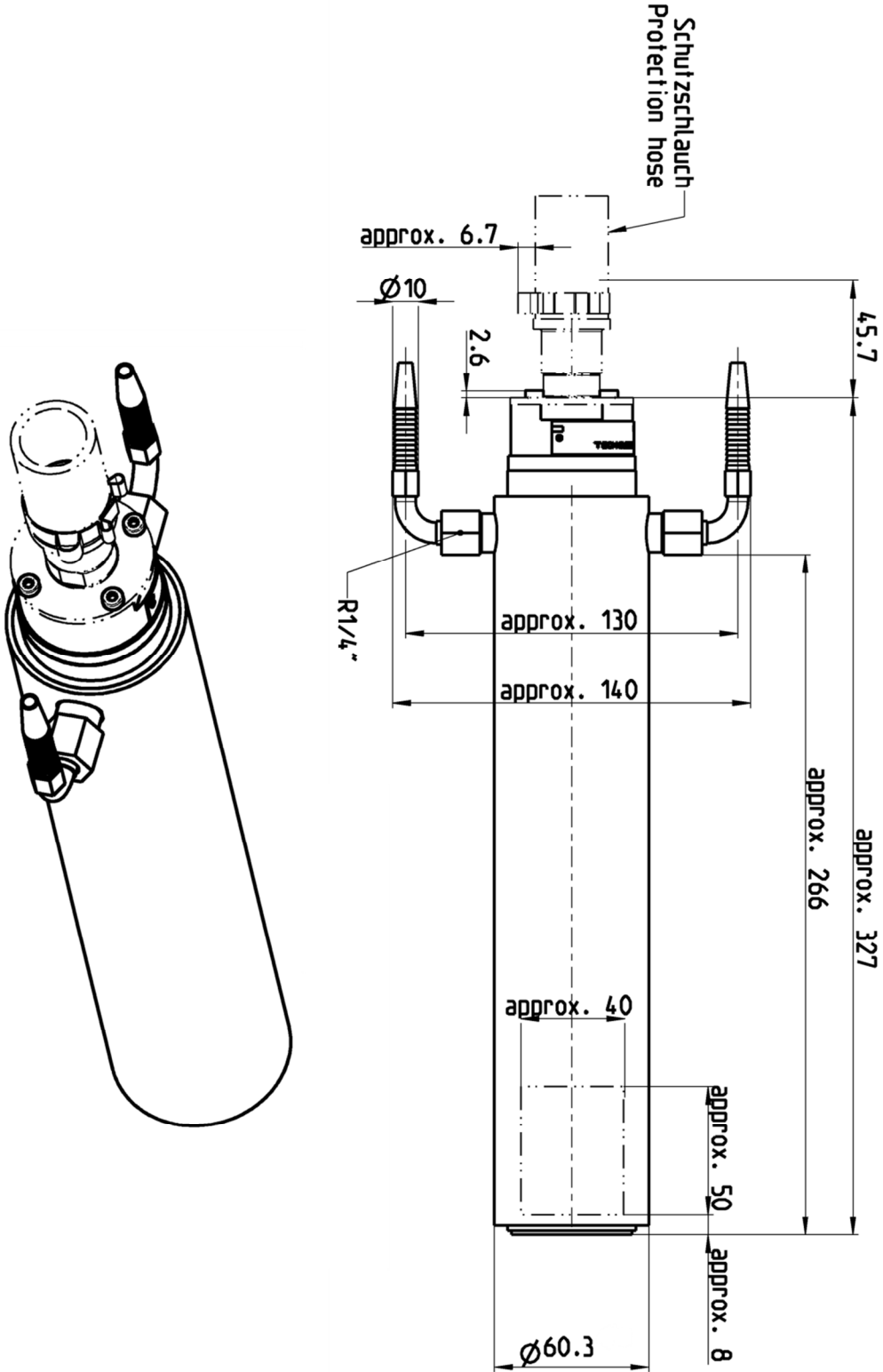
GAMMAcast LB 6752: Technical Data

Mechanical Arrangement	
Scintillallator	Organic polymer scintillator, 150x100x50 mm ³ or 150x100x25 mm ³
Gain	2" Photomultiplier tube
Operating temp.	-20...+50°C ambient temperature Use water cooling at higher temperatures
Storage temp.	-20...+65°C
Power	15...32 V _{DC} , approx. 1,2 W
Output signal	Pulses, max. 10 V
Communication	RS 485
Water cooling (option)	Connection: R¼ Max. pressure: 6 bar Required cooling water quality: Drinking water (or filtered process water without suspended particels)
IP class	IP 66 / IP 67
Connections	Detector – terminal box resp. detector – evaluation unit: Special cable with PlugProtect connector (straight or 90° angled) Open ends or HeavyCon plug Terminal box – evaluation unit: 6-wired, screened (6 x 1.5 mm ²) max. length 1000 m
Weight	Approx. 24 kg
Software	Measuring the Temperature in the detector Saving the extreme values of the temperature Possibility to record the plateau curve to set up the correct high voltage supply for the photomultiplier (either using LB 452 or the Detector Service Modem) Saving the last three recorded plateau curves Error log (Saved in the detector itself)

GAMMAcast LB 6739 and LB 6750: Dimension drawing without water cooling
 (all dimensions in mm)

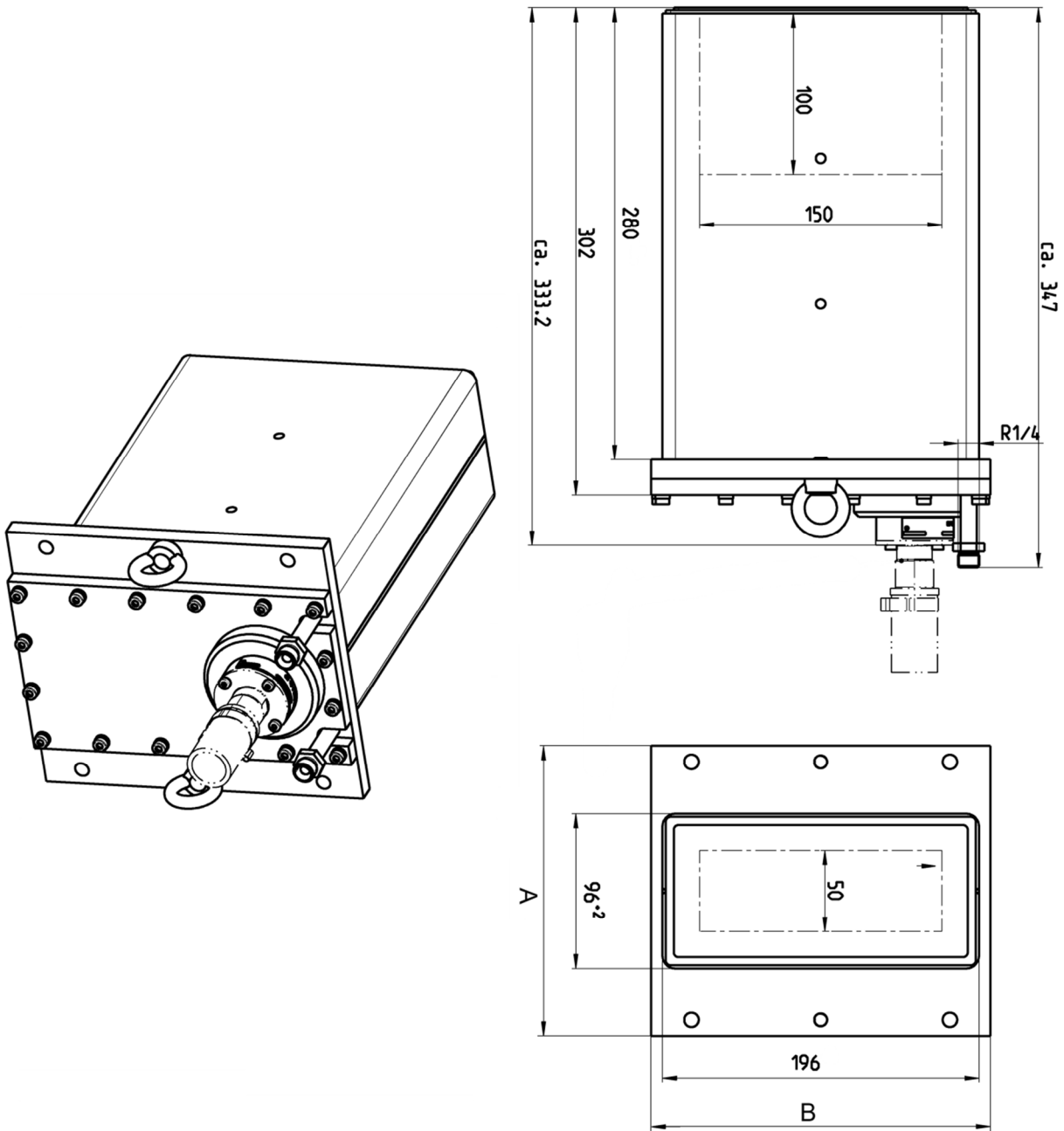


GAMMAcast LB 6739 and LB 6750: Dimension drawing with water cooling
 (all dimensions in mm)



GAMMAcast LB 6752: Dimension drawing

(all dimensions in mm)

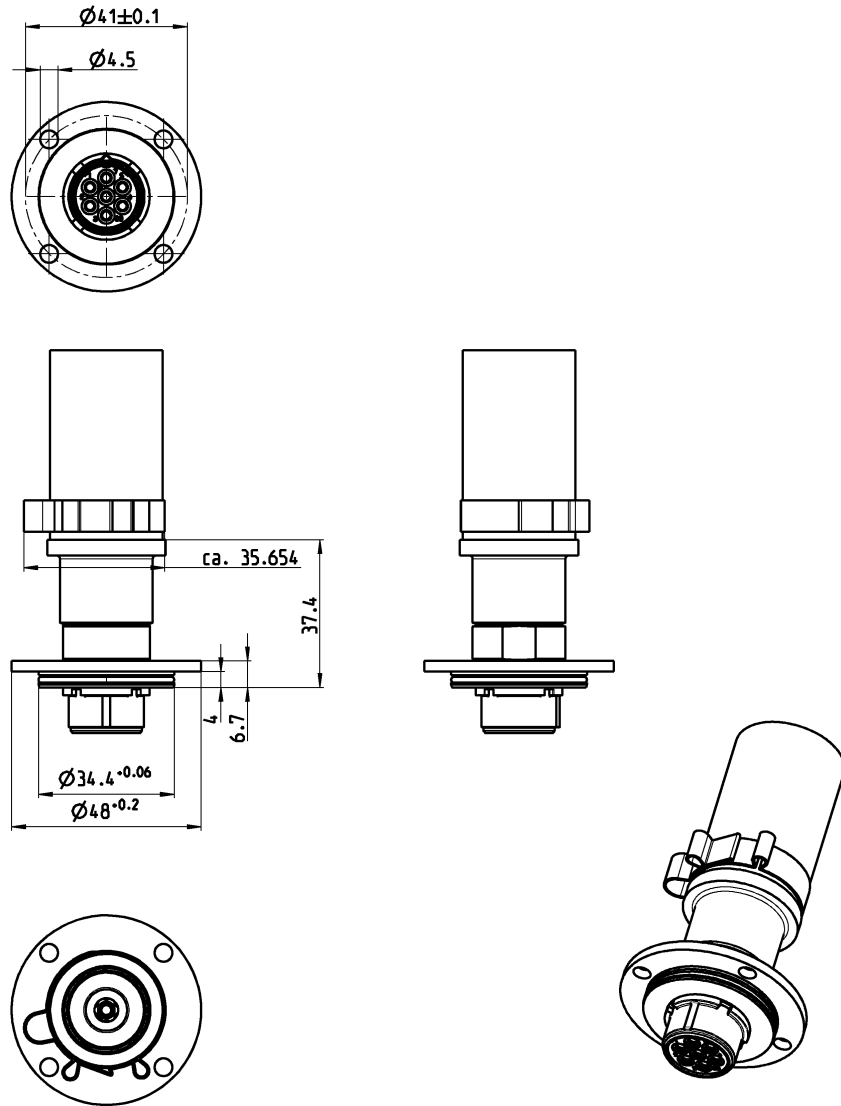


Flange sizes (mm) and drilled holes (9 mm)	
LB 6752-11	180x210, 4 holes long side plus 2 eyebolts
LB 6752-21	155x210, 4 holes long side plus 2 eyebolts
LB 6752-31	120x280, 6 holes short side
LB 6752-53	155x210, like LB 6752-21, 25 mm scintillator
LB 6752-54	180x210, like LB 6752-11, 25 mm scintillator
LB 6752-80	155x210, 4 holes long side plus 2 eyebolts, no water cooling (Attention: smaller outer dimensions 78x178)

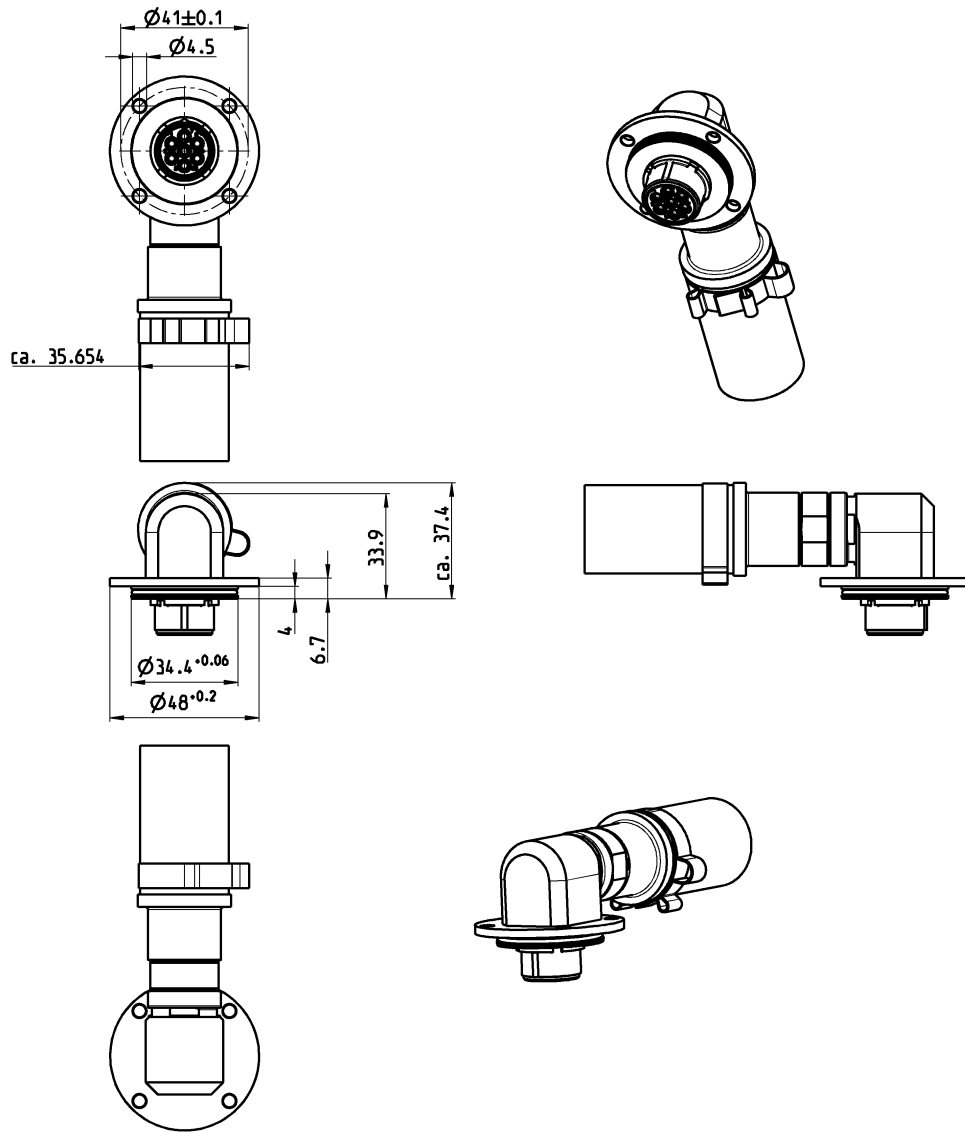
Connecting Cable: Possibilities

(all dimensions in mm)

PlugProtect Plug straight:



PlugProtect Plug 90° angled:



Connecting Cable: Technical Data

Connections	At detector: PlugProtect with straight or 90° angled plug At terminal box: open ends or HeavyCon plug
Diameter	6-wired, screened (6 x 0.5 mm ²)
Material	Inner cable: Wire insulation and coating: FEP 6Y Heat protection hose: Special Hypalon compound
Temp. Range	Inner cable: Ambient temperature: -100°C to +205°C Conductor: up to +180°C Heat protection hose: 140°C permanent Short time up to 700°C Short time (approx. 20 sec.) flame resistant at 800°C, self-extinguishing, low flammability
Resistance	Inner Cable: Absolute resistant to ozone and atmospheric attack Very good resistivity to acids, bases, solvents, oil and fuel Heat protection hose: Resistant to aging and chemicals Resistant to UV, ozone and atmospheric attack
Lengths	Length over all: 5 m, 10 m, 15 m, or 20 m of that heat protection hose: 3 m or in full cable length (not 20 m)

Lengths and Variants

3 m heat protection hose:

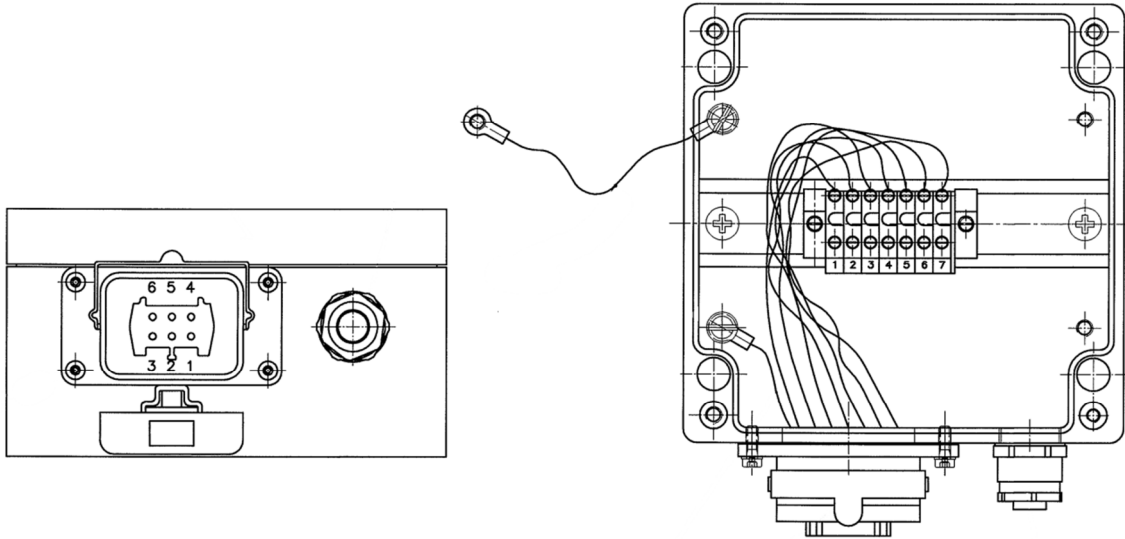
Ident-Nr.
Straight Connection, Open Ends
52592-050 (5 m)
52592-100 (10 m)
52592-150 (15 m)
52592-200 (20 m)
90° Connection, Open Ends
52593-050 (5 m)
52593-100 (10 m)
52593-150 (15 m)
52593-200 (20 m)
Straight Connection, HeavyCon Plug
52594-050 (5 m)
52594-100 (10 m)
52594-150 (15 m)
52594-200 (20 m)
90° Connection, HeavyCon Plug
52595-050 (5 m)
52595-100 (10 m)
52595-150 (15 m)
52595-200 (20 m)

Heat protection hose in full cable length:

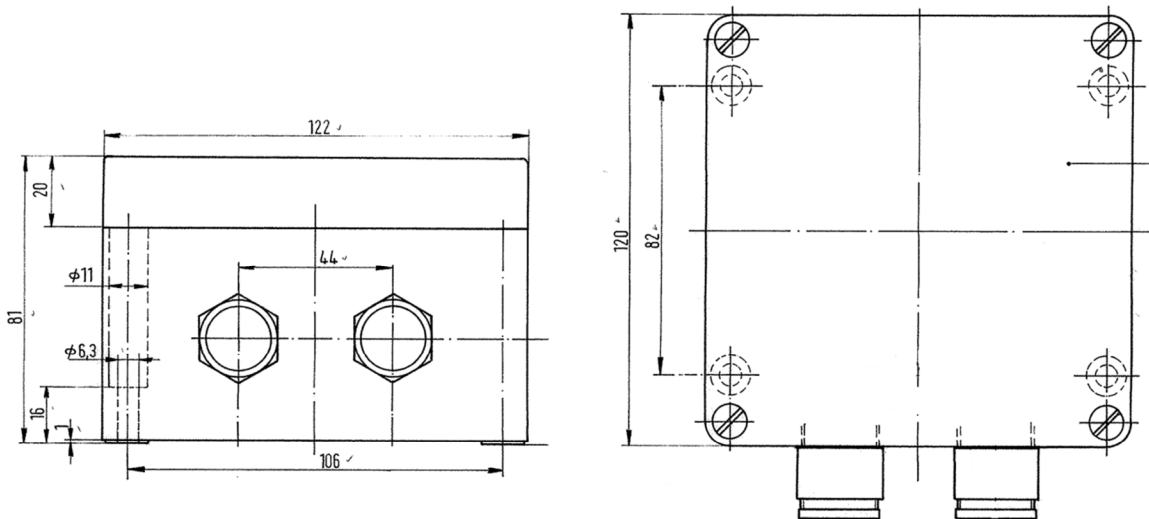
Ident-Nr.
Straight Connection, Open Ends
55249-050 (5 m)
55249-100 (10 m)
55249-150 (15 m)
90° Connection, Open Ends
55250-050 (5 m)
55250-100 (10 m)
55250-150 (15 m)
Straight Connection, HeavyCon Plug
55067-050 (5 m)
55067-100 (10 m)
55067-150 (15 m)
90° Connection, HeavyCon Plug
55252-050 (5 m)
55252-100 (10 m)
55252-150 (15 m)

Terminal Box for GAMMAcast Detectors:

with plug (34787):



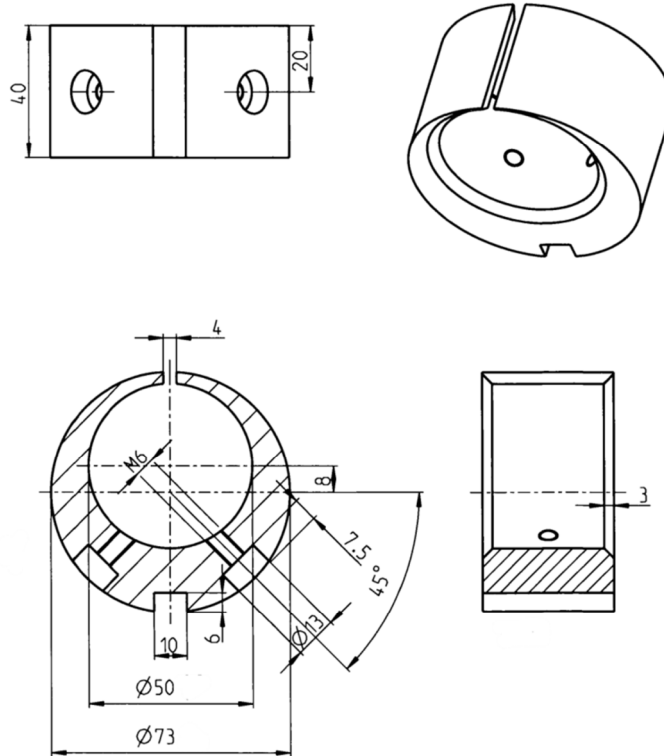
for open ends (07005):



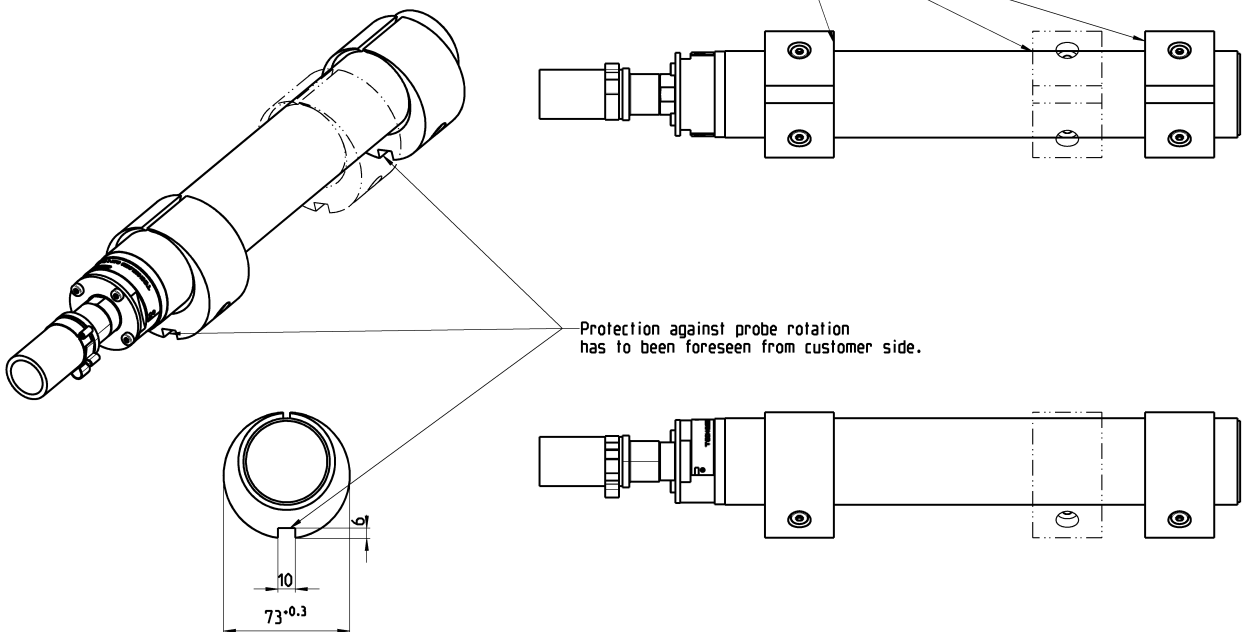
IP class: IP65

Replacement of LB 6651 with GAMMAcast LB 6739:

Changed detector dimensions are compensated by use of spacer ring (58009).

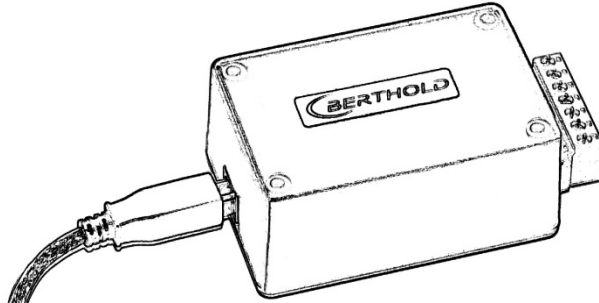


Adapter can be freely positioned on the body of the housing.



Detector Service Modem:

Modem (55105) for connection of GAMMAcast detectors to a personal computer for maintenance.

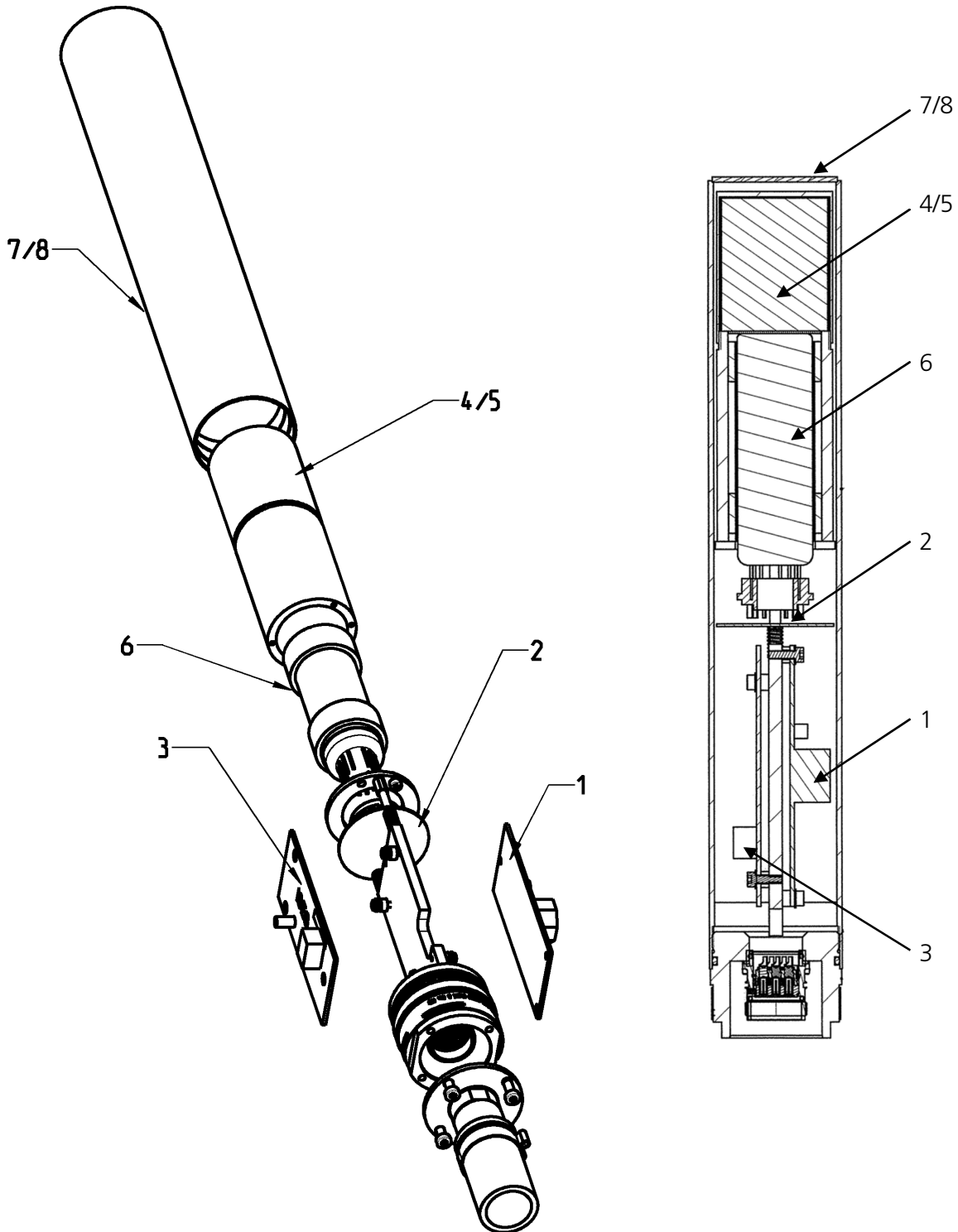


System Requirements	Menu language: English Windows XP or higher 512 MB RAM 1 Gigahertz processor USB port
Connections	USB 2.0 to the PC RS485 to the detector Supply Voltage 24 V _{DC} (100-240 V _{AC} external power supply unit included)
Software LB 67xx PC Control	Display count rate Display detector temperature Display extreme values of detector temperature Automatic and manual set up of high voltage for the photomultiplier* Automated procedure for recording the gain plateau of the photomultiplier* Access to the change log of the connected detector Access to the error log of the connected detector Software updates Reset detector to factory settings

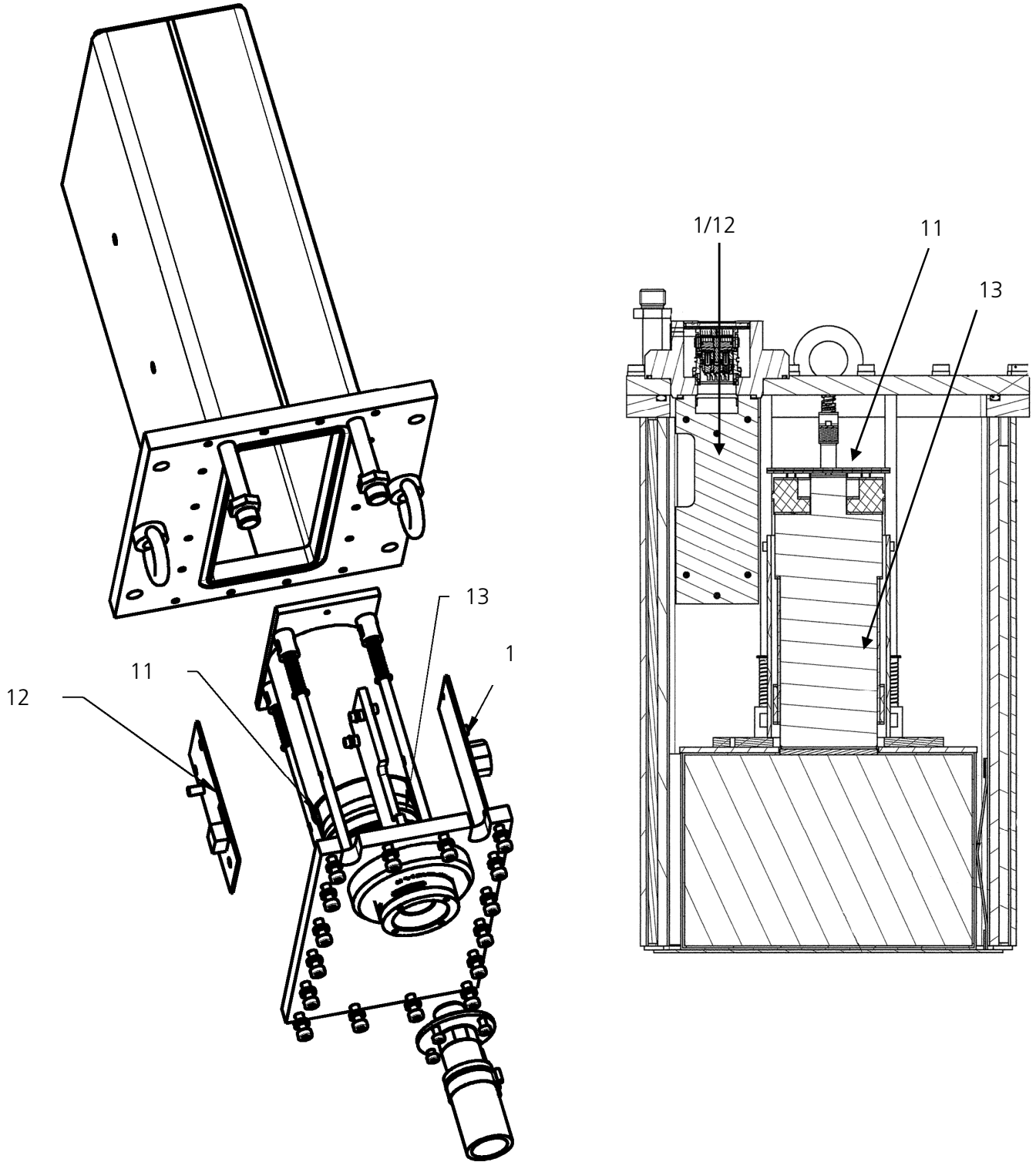
* depending on the connected detector

castxpert Assorted Spare Parts:

LB 6739 / LB 6750:



LB 6752:



Spare Parts GAMMAcast		
1	44535-S	CPU Board for GAMMAcast Detectors
2	53148-S	Photomultiplier Socket for LB 6739 with High Voltage Cascade and Voltage Divider
3	53437-S	LB 6739: HV (High Voltage) Board for LB 6739
3	57914-S	LB 6750: Signal Processing Unit for LB 6750
4	55282-S	Photomultiplier Crystal Unit for LB 6739 (CsI(Na) 40x50mm Crystal)
5	55285-S	Photomultiplier Crystal Unit for LB 6739 (CsI(Na) 25x50mm Crystal)
5	34101-S	Photodiode Crystal Unit for LB 6750 (CsI(Tl) 35x50mm Crystal)
6	55653-S	Photomultiplier Unit 1" for LB 6739
7	52496-S	Detector Housing without Water Cooling for LB 6739/6750
8	53442-S	Detector Housing with Water Cooling for LB 6739/6750
9	55873-S	Spare Part Kit for LB 6739
11	53144-S	Photomultiplier Socket for LB 6752 with High Voltage Generator
12	56085-S	Preamplifier Board for LB 6752
13	34819-S	Photomultiplier Unit 2" for LB 6752

Spare Parts castXpert LB 452	
53779-S	Front Panel with Display for castXpert LB 452
53772-S	System Control Unit for castXpert LB 452

Spare Parts for cables: all with <i>PlugProtect</i> connectors for GAMMAcast detectors; no heat protection, cable ends cut flat	
58002-050-S	Straight connector, 5 m cable
58002-100-S	Straight connector, 10 m cable
58002-150-S	Straight connector, 15 m cable
58002-200-S	Straight connector, 20 m cable
58003-050-S	90° connector, 5 m cable
58003-100-S	90° connector, 10 m cable
58003-150-S	90° connector, 15 m cable
58003-200-S	90° connector, 20 m cable