

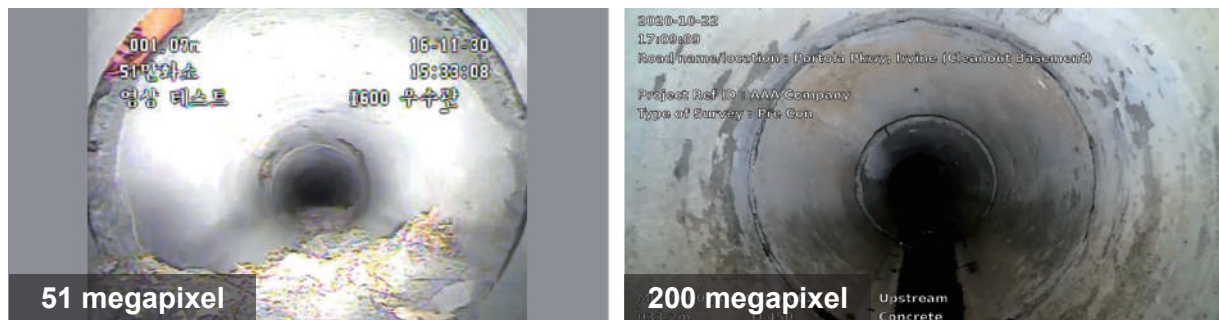
Pan Tilt Zoom Camera Head



- Equipped with laser abnormality size measurement function (scaler)

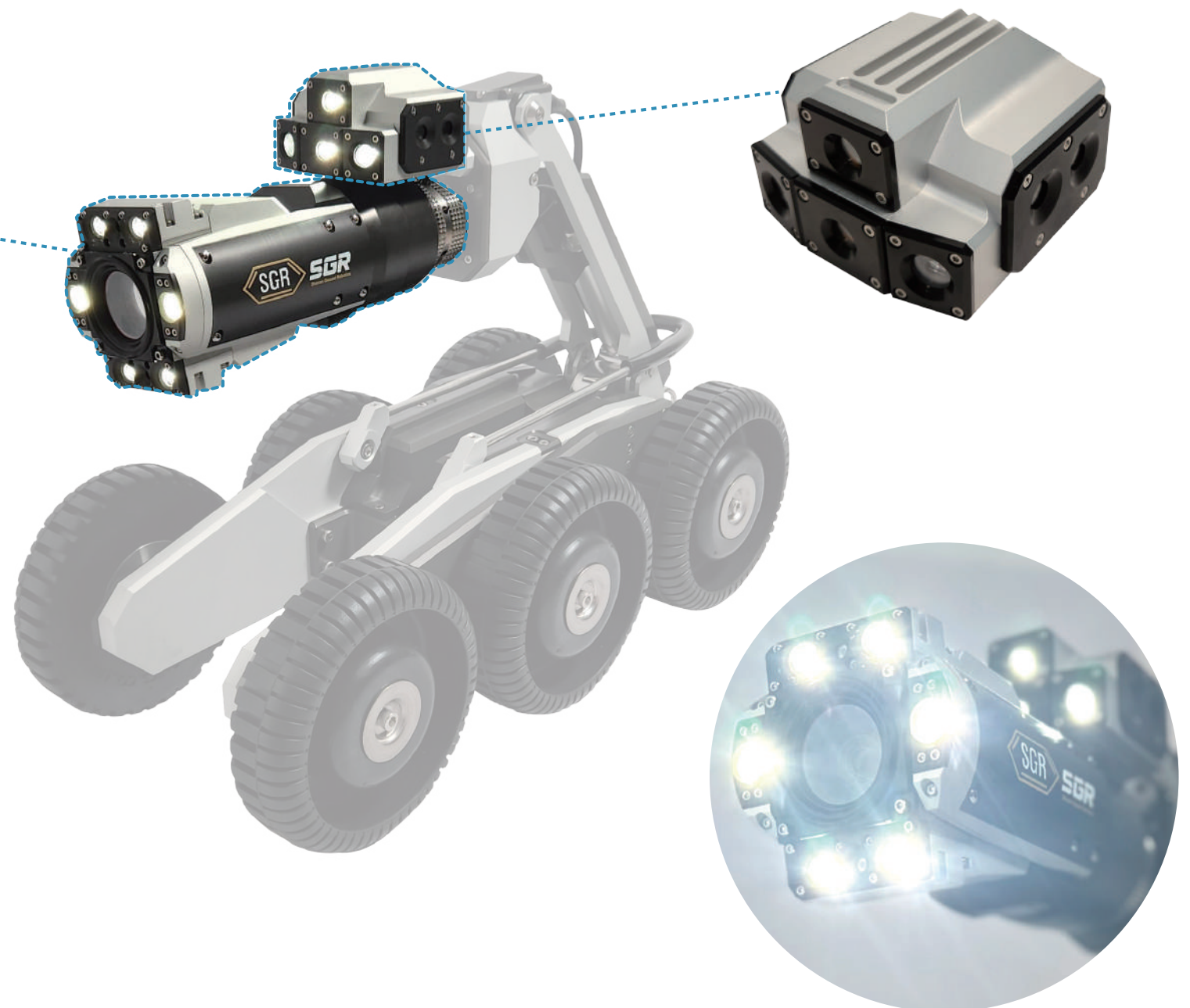


- FHD(1920×1080p) Color Camera Module / 30fps / ip cam module



- Real-time camera rotation angle monitor display (graphics)
- 360° Endless PAN rotation, 220° vertical TILT rotation ($\pm 110^\circ$)
- 10 Times Optical Zoom
- Use of German-made (Faulhaber/Maxon) pan-tilt motor
- Auto focus base (manual focus adjustable - right joystick)
- Mini. Illuminance: 0.11 Lux
- Size / Weight : D86(diameter) × 230mm / 1.7kg
- Nitrogen gas filled waterproof structure / Compatible with minisize crawler

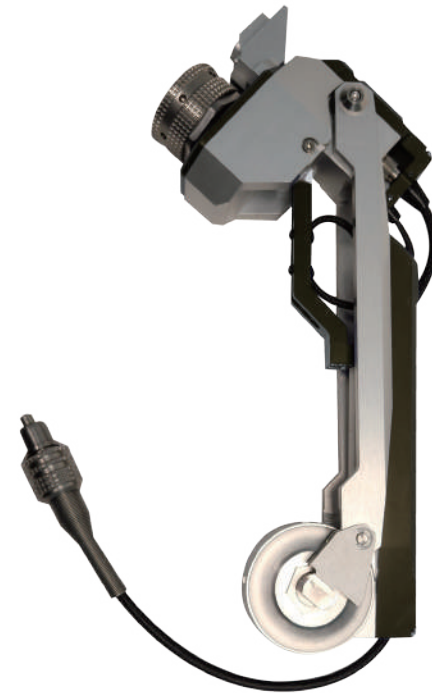
Lamp Module



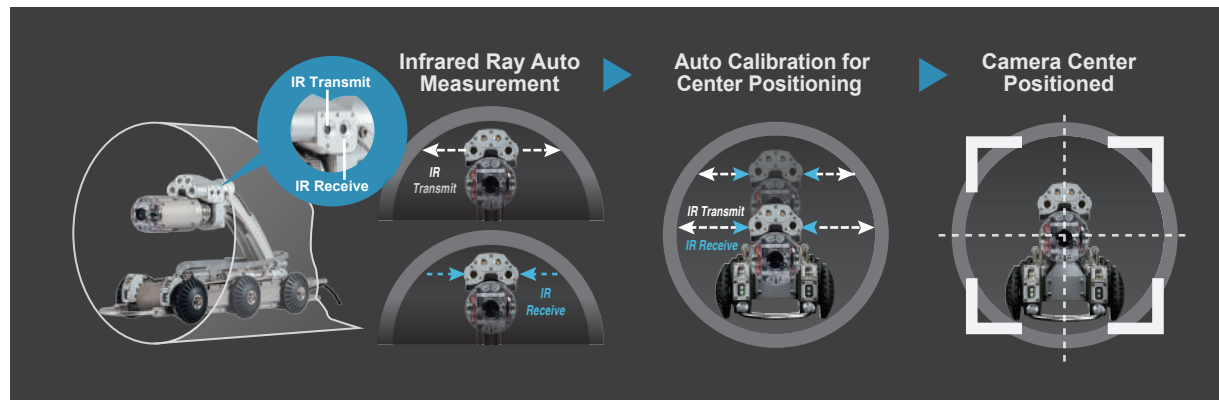
- Equipped with super white LED lighting module without color distortion
- Brightness :
 - TILT Lamps - 6 watt × 4pcs, 600Lumens
 - Foward Lamps - 6 watt × 2pcs, 300Lumens
- Additional lighting - Crown lamp kit : 10w × 4pcs, 1400Lumens
- Size: W81 × L76 × H50mm / - Weight: 0.42kg
- User-friendly structure that can be directly replaced by user

Camera Lift

- Maximum rising height: max. H 200mm
- Motor performance: 12V, 15watt, 10600rpm
- Worm Gear Climbing Special Patent Design Structure
- Connector modular structure for easy attachment and detachment
- Anti-shock shaft structure - anti-slip design
- Size : W80 × L342 × H18mm
- Weight : 2.72kg



- A function that automatically positions the camera height at the center of the pipe (center positioning function)



Robot Crawler (standard self-propelled vehicle Model 5)



- Equipped with real-time monitoring function to prevent self-propelled vehicles from rolling over (gyroscopic sensor)
- Detachable wheelbase-to-body modular structural design
- Secure expandability and waterproof performance through modular structure
- Data communication and motor drive PCB board installed in the body
- Built-in 2 German-made (Faulhaber/Maxon) motors possible to move forward and backward and turn left and right : 48V, 73watt, 10700rpm
- Autopilot cruise function
- Brake lock function
- Climbing at incline angles of 45 degrees or higher is possible.
- Speed adjustable from 0 to 100% (maximum travel speed of 25 meters per minute)
- Nitrogen gas filling method and special waterproof structure
- Size : W180(Excluding bumpers) × L556 × H115mm(Excluding cameras and lifts)
- Weight : 9.12Kg(Excluding cameras and lifts)



PCB board installed inside of body



Nitrogen Gas Nozzle

Various wheel options for pipe diameters application

» 3 basic wheel to accommodate pipe diameters (2 extra wheels)



Wheel 280 diameter
Pipe Dia. 500~800mm



Wheel 200 diameter
Pipe Dia. 400~700mm



Wheel 155 diameter
Pipe Dia. 300~600mm



Wheel 115 diameter
Pipe Dia. 250~550mm



Wheel 86 diameter
Pipe Dia. 200~500mm

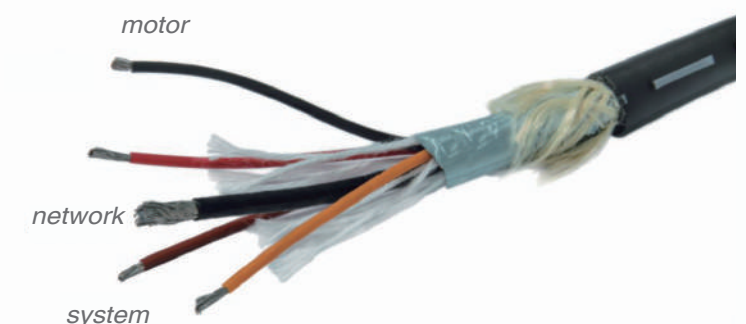
Cables and automated cable reels

- Standard 200 meter cable (optional up to 300 meters available)
- Cable outer diameter 9.2 mm diameter, composed of coaxial wire and a total of 5 core wires
- Built-in tensile steel wire to prevent disconnection (kevlar)
- Electric rewind function
- Synchronized winding function when operating in reverse
- Equipped with encoder sensor for measuring mileage
- Cable winding automatic alignment function
- User-friendly multi-stage cable lock
- Cable winding speed and tension strength can be adjusted
- Emergency stop Button
- Equipped with Wheels and multi-stage extension handle to ensure mobility
- Easy cable replacement structure design that allows users to directly replace cables
- Size : W380 × D660 × H510mm (Excluding carrying handle)
- Weight : Cable Reel 30Kg / Cable 26kg



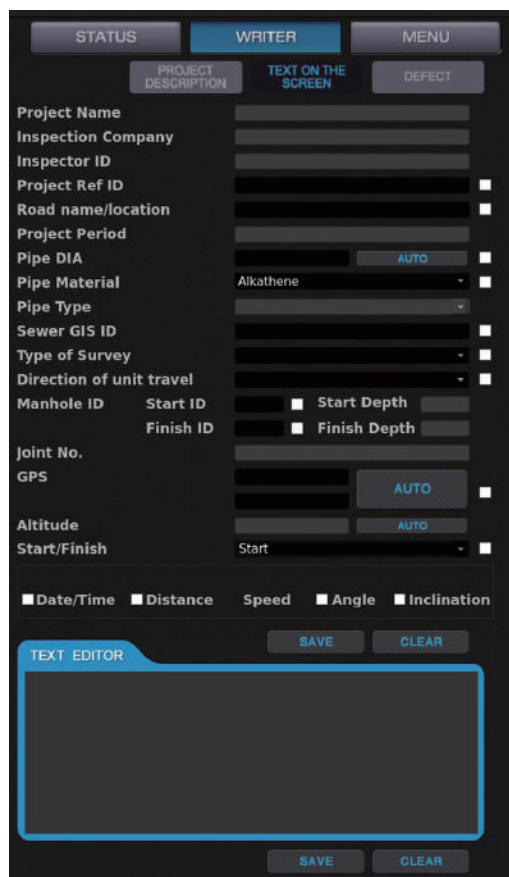
Head Pannel type / Side Pannel type

- Aluminum shield structure for electromagnetic wave shielding

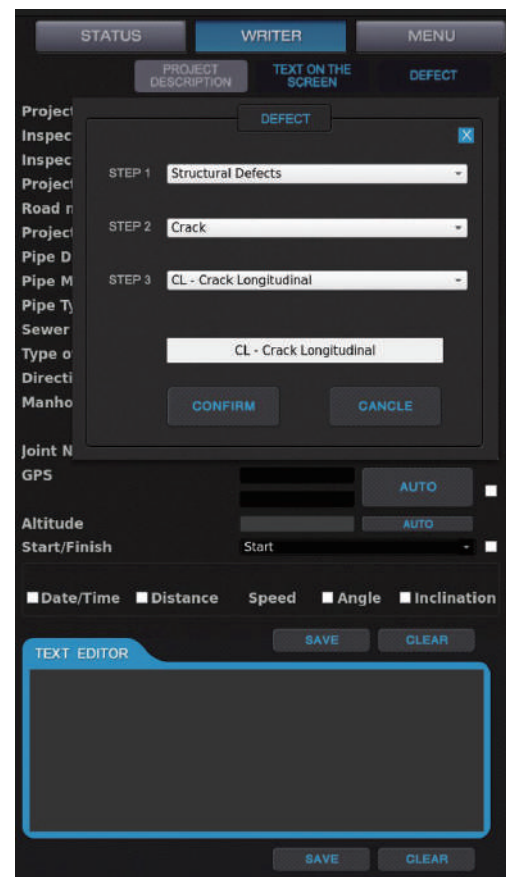


Portable All-in-one controller (including subtitles and recording device)

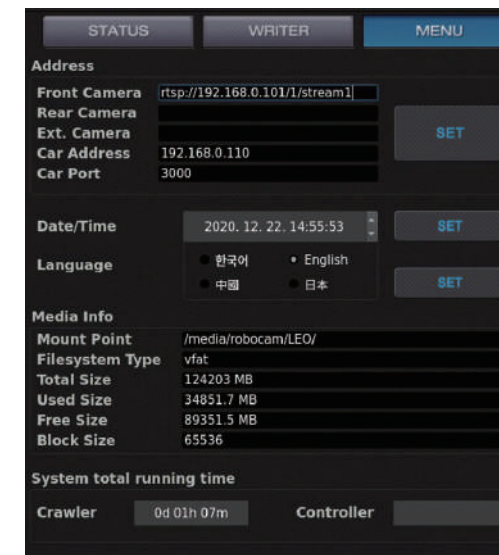
- Composite control bag unit structure for easy portability
- Monitor + control software & PC + subtitler + recording device + inclination and Pipe dia. measurement software
- 18.5 inch LED monitor
- System power supply, self-driving car driving, camera rotation, lighting brightness, and lift height control functions
- Equipped with Intel i7, 16G RAM, DDR416, SD 500G, high-performance mini PC
- Includes mini keyboard and mouse for type writer use
- Integrated control soft screen including video screen and video screen full screen mode switchable
- Additional separate subtitles, insertion function at desired location with mouse (built-in subtitle editing function and save function)
- Project information and survey start subtitle insertion function (possible to replace existing whiteboard shooting portion)
- Sewerage survey manual standards for each country are automatically reflected after selecting the language.
- Automatic usage time recording function for system maintenance (menu tab)



- Function to insert necessary information subtitles in the real-time survey screen window (date, time, distance meter, camera angle display, manhole section display, pipe type, pipe diameter, drainage method, real-time pipeline inclination display, GPS manhole coordinate value display, etc.)



- Function to insert screen with details of abnormal items during survey (based on detailed classification criteria for various abnormal items according to the sewage pipe investigation manual established by the Ministry of Environment)



- Available in 4 languages: Korean, Japanese, Chinese, and English
- Built-in digital recording software (MP4 format, record/pause/stop/load/FF, RW, play mode)
- Save to USB external hard drive or memory stick
- Size : W550 × D440 × H110mm(Cover closed state)
- Weight : 16.6kg

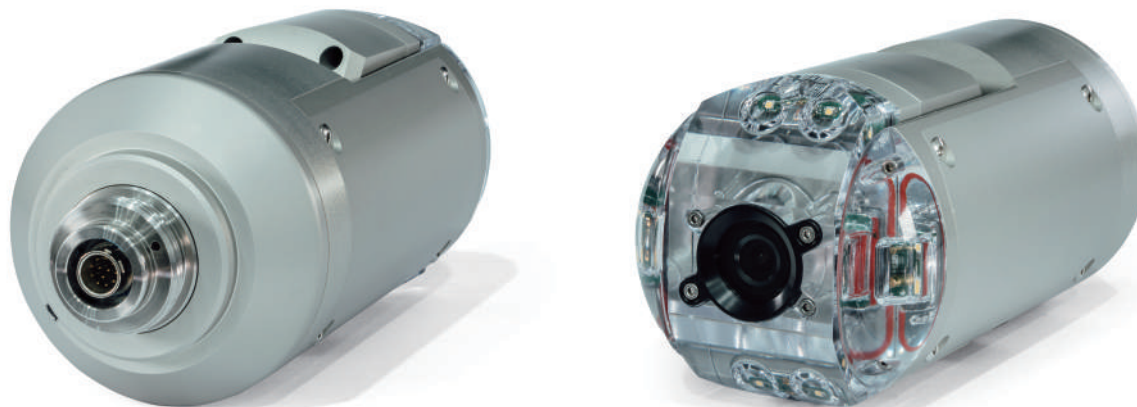


Crawler Expansion unit(Giant Cradle)



- For pipe diameters from 800mm dia.~1200mm dia.
- For pipe diameters from 800mm dia. to 1200mm dia.
- For pipe diameters from 800mm dia. to 1200mm dia.
- Equipped with 4 250mm dia. tire wheels
- Use of an adapter that is easy to attach and detach
- Compatible with basic model
(not compatible with mini crawler)
- Size : W541 × L763 × H342mm (with 280 dia. wheel)
- Weight : 24kg

Mini P/T Camera



- Equipped with camera origin automatic return button function
- Real-time camera rotation angle monitor display (graphics)
- 360° Endless PAN rotation, 220° vertical TILT rotation ($\pm 110^\circ$)
- FHD (1920×1080p) color camera module / IP cam module
- Use of German-made (Faulhabour) pan-tilt motor
- Manual focus adjustable - right joystick
- Minimum illuminance: 0.05Lux
- Size : 69 dia.× L210 (mm)
- Weight : 1.3kg
- Nitrogen gas filled waterproof structure
- Compatible with standard crawler (model 5)

Mini Crawler



- Equipped with real-time monitoring function to crawler from rolling over
- Data communication and motor drive PCB board mounted
- Built-in German (Faulhabour/Maxon) motor (forward/reverse possible)
- Autopilot cruise function
- brake lock function
- Speed adjustable from 0 to 100% (maximum travel speed of 15 meters per minute)
- Nitrogen gas filling method and special waterproof structure
- Size : W100 × L316 × H89mm (Excluding camera and wheel)
- weight : 9kg (Excluding camera and tires)



Cable guide roller

- Cable guide roller for manhole deployment and pipe joints bottom of manholes (commonly available)
- An essential device for cable protection and inclination measurement process

Rear Camera with lamp

- For rear monitoring when reversing a crawler
- Fixed color camera HD quality
- fixed focus
- Equipped with 1 LED light