

ROBOCAM-S **FULL HD**

Advanced digital sewer pipe CCTV inspection system capable of measuring inclination and pipe diameter changes



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WHY ROBOCAM-S?

It's not just a machine, It's a game changer

Until now, the market for pipeline inspection systems has been full of prejudices.

"Good quality products should be pricey."

"Broken parts should be sent to a repair center."

"We should be satisfied with what they have for us."

"Quality is what matters, not the design."

Because of these preconceptions, we proposed a new concept. As the world changes at a rapid pace, changes in our pipeline inspection field should be done as well.

Advanced Inspecting Technology

ROBOCAM S is a true masterpiece presented by TAP ELECTRONICS, a company that has been manufacturing Camera Crawler Systems for 40 years. It combines an exclusive design with an advanced inspecting technology for all.

User-friendly system

ROBOCAM S is a user-centered design system, which captures the imagination of the users with its exquisite appearance and outstanding robustness in real surveying situations.

Flexible scalability

Consumers will also be impressed by the fact that they can change the size and shape of the robot to their taste and create a robot.

High Versatility

ROBOCAM S can be used worldwide with its quality, performance, and design that meet's each country's sewage inspection manual standards.



Advanced digital sensor -based technology



Increased rollover accidents and operational efficiency through robot 3D motion monitoring

- Real-time robot pitch (up and down) and roll (rotate) monitoring based on gyroscope sensor
- Prevents rollover accidents while the robot is running - If the robot tilts beyond a dangerous angle, a warning signal is automatically displayed.
- Real-time monitoring of the robot camera's vertical lift height value and camera pan/tilt rotation angle allows for effective operation in various obstacle areas such as misconnected pipes, tree root obstacles, and flooding inside the pipe.



Camera & Robot 3D motion Graphic

- Real-time waterproofing performance management function based on nitrogen gas and pressure sensor
After filling the camera and robot body with nitrogen gas at high pressure, the pressure value inside the robot can be monitored using the sensor graphics on the monitor. If the pressure value drops, the operator is notified that the robot's waterproof structure is broken.

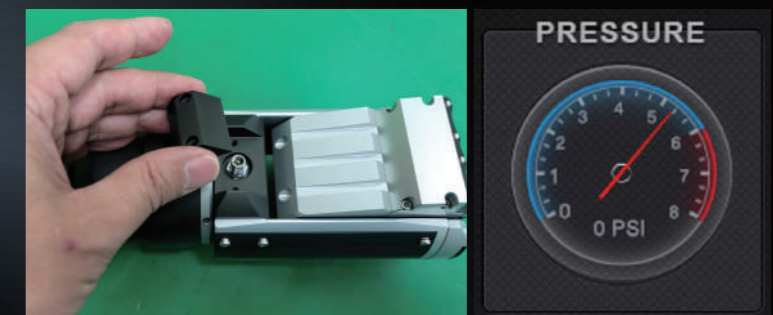
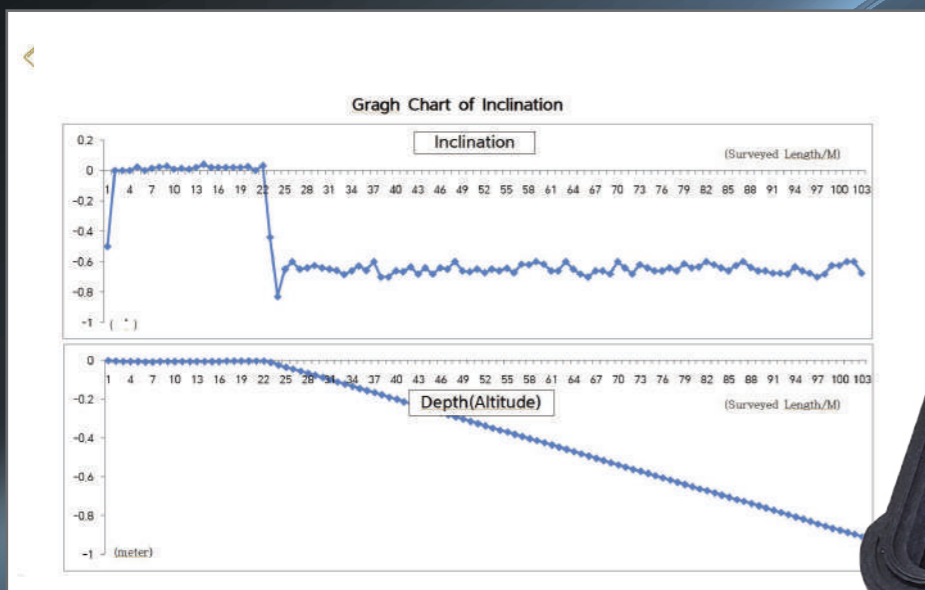
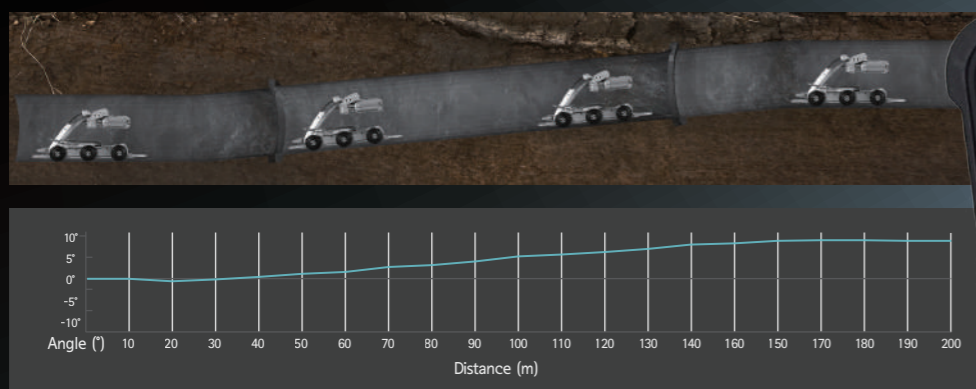


Photo of nitrogen gas filling nozzle and pressure gauge for waterproof function

Inclination measurement sensor function

- Automatic pipe inclination measurement function based on the gyroscope sensor installed inside the robot
- After measuring the inclination value based on angle, the graph and inspection angle dimensions can be converted based on depth.
- Provides the most accurate inclination data by applying average slope value calculation and filter functions
- 3-level customization function for distance and slope values
- CSV data and Excel data reports are automatically produced after starting recording mode, and automatically saved when recording ends.



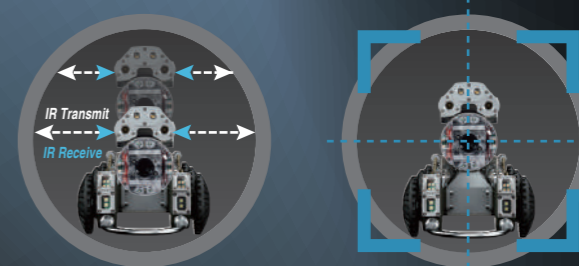
Example of graph data page among automatically generated reports

Speed sensor and system usage time monitoring function

- Speedometer: The encoder sensor-based speedometer is a speed per minute meter similar to a car's speedometer and is located in the STATUS monitoring window. It provides operating information to the operator to comply with the standard inspection speed specified by the authorities.
- System usage time monitoring function: The controller's software presents the total system usage time in the <MENU> library, which can help users and repair and recovery teams improve system management efficiency.

STATUS	WRITER	MENU
Address		
Front Camera	rtsp://192.168.0.101/1/stream1	
Rear Camera		
Ext. Camera		SET
Car Address	192.168.0.110	
Car Port	3000	
Date/Time	2020. 12. 22. 14:55:53	SET
Language	<input type="radio"/> 한국어 <input checked="" type="radio"/> English <input type="radio"/> 中国語 <input type="radio"/> 日本語	SET
Media Info		
Mount Point	/media/robocam/LEO/	
Filesystem Type	vfat	
Total Size	124203 MB	
Used Size	34851.7 MB	
Free Size	89351.5 MB	
Block Size	65536	
System total running time		
Crawler	0d 01h 07m	Controller

Automatic measurement function for pipe diameter changes

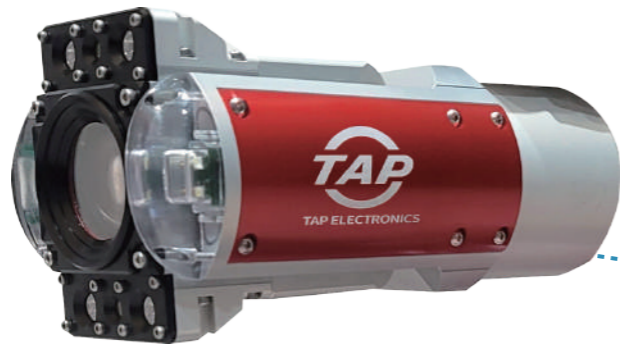


- The camera additional lighting unit has an IR sensor-based pipe diameter measurement function inside the unit.
- Measurement possible without bottom sludge influence through side wall IR Shooting and Receiving method
- Data such as pipe deformation due to earth pressure is generated in real time when the Crawler driven.
- Effective in updating pipe network maps with the automatic measurement function for pipe diameter
- CSV data and Excel reports are automatically produced after starting recording mode, and automatically saved when recording ends.



BASIC ROBOT SYSTEM

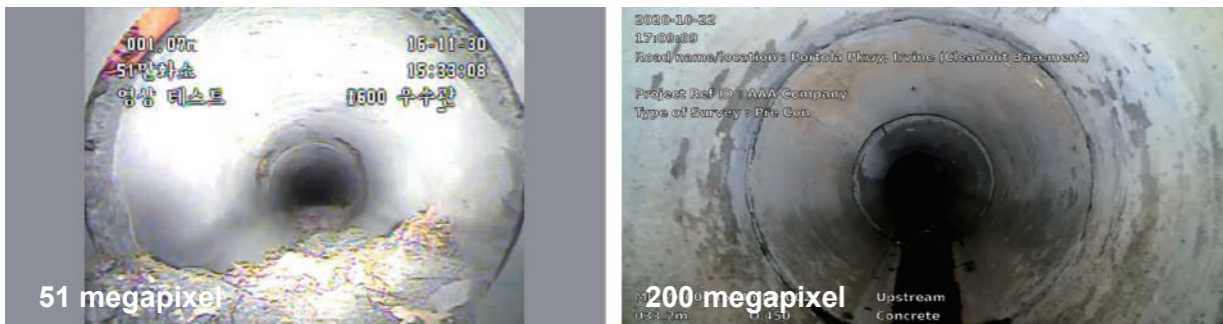
PAN TILT ZOOM CAMERA HEAD



- 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 (±110°)
- 10 Times Optical Zoom
- Use of German-made (Faulhabour/Maxon) pan-tilt motor
- Auto focus base (manual focus adjustable - right joystick)
- Mini. Illuminance: 0.11 Lux
- Nitrogen gas filled waterproof structure / Compatible with minisize crawler

Size	D86(diameter) × 230mm
Weight	1.7kg

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
- User-friendly structure that can be directly replaced by user

Size	W81 × L76 × H50mm
Weight	0.42kg

BASIC ROBOT SYSTEM

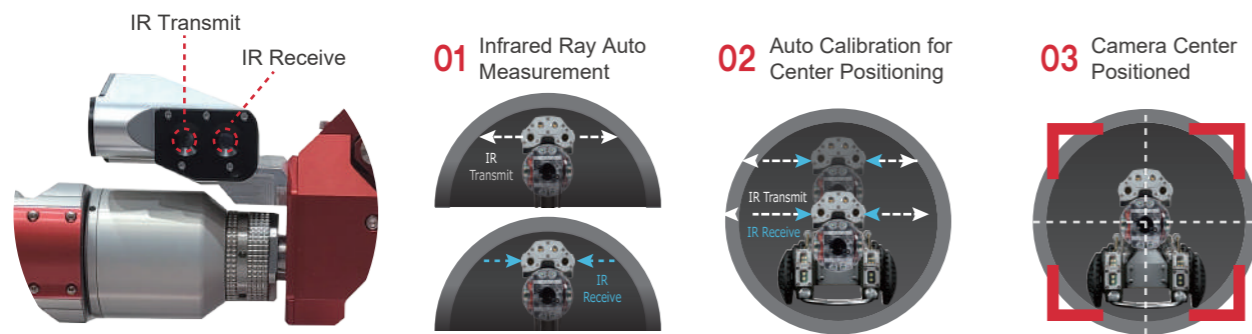
CAMERA LIFT



- Maximum rising height: max. H 200mm
- Motor performance: 12V, 15watt, 10600rpm
- Worm Gear Climbing Special Patent Design Structure
- 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)



CRAWLER (standard self-propelled vehicle)



- 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 × L720 × H180mm (with camera and 155 dia. tire)
Weight	20Kg (with camera and 155 dia. tire)



Nitrogen Gas Nozzle



PCB board installed inside of body

BASIC ROBOT SYSTEM

VARIOUS WHEEL OPTIONS for pipe diameters application

- 3 Basic wheel to accommodate pipe diameters



**BASIC
WHEEL TYPE**

Wheel	86 diameter
Pipe Dia.	200~500mm

Wheel	115 diameter
Pipe Dia.	250~550mm

Wheel	155 diameter
Pipe Dia.	300~600mm

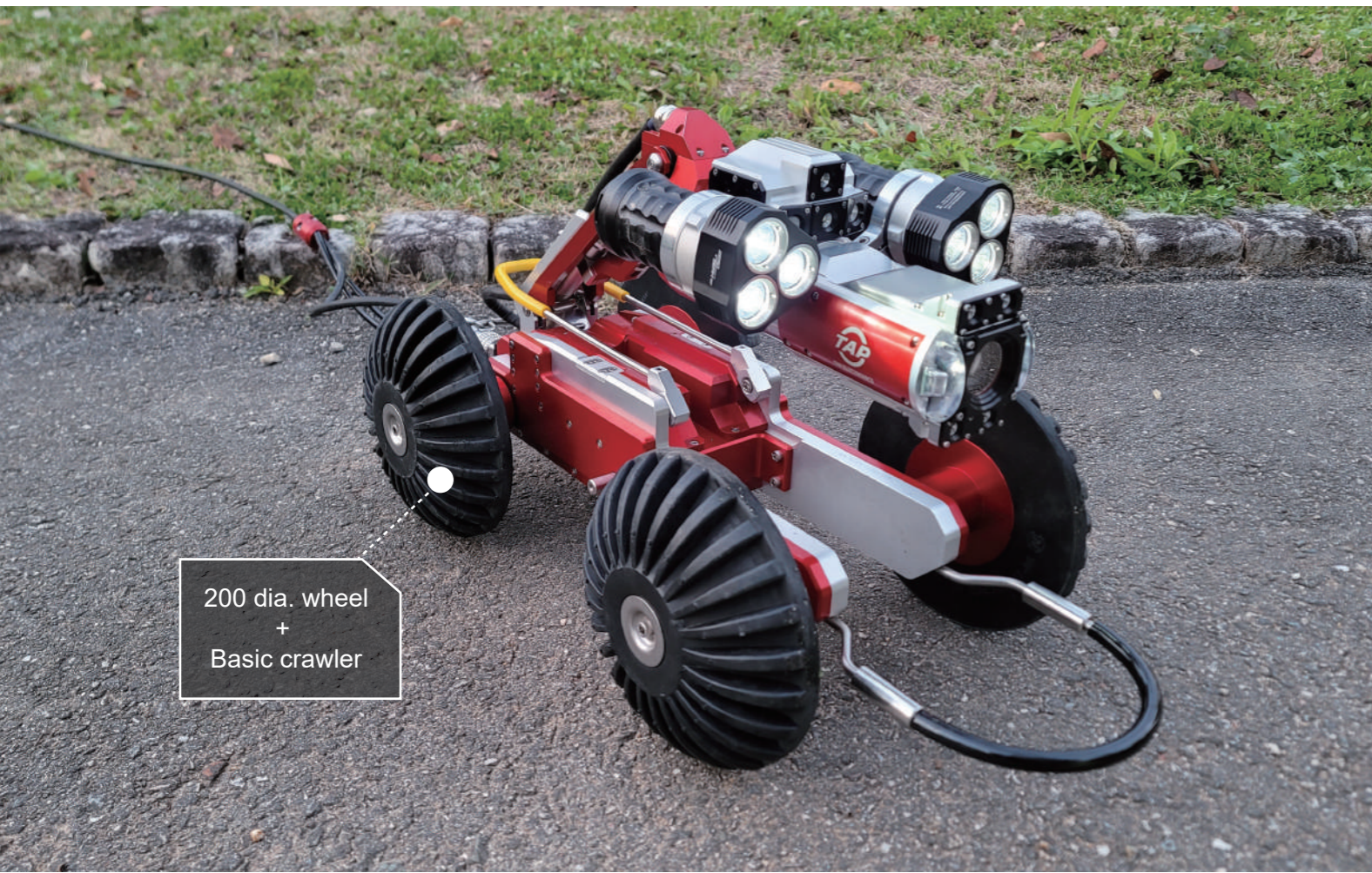
- 2 Extra large wheels



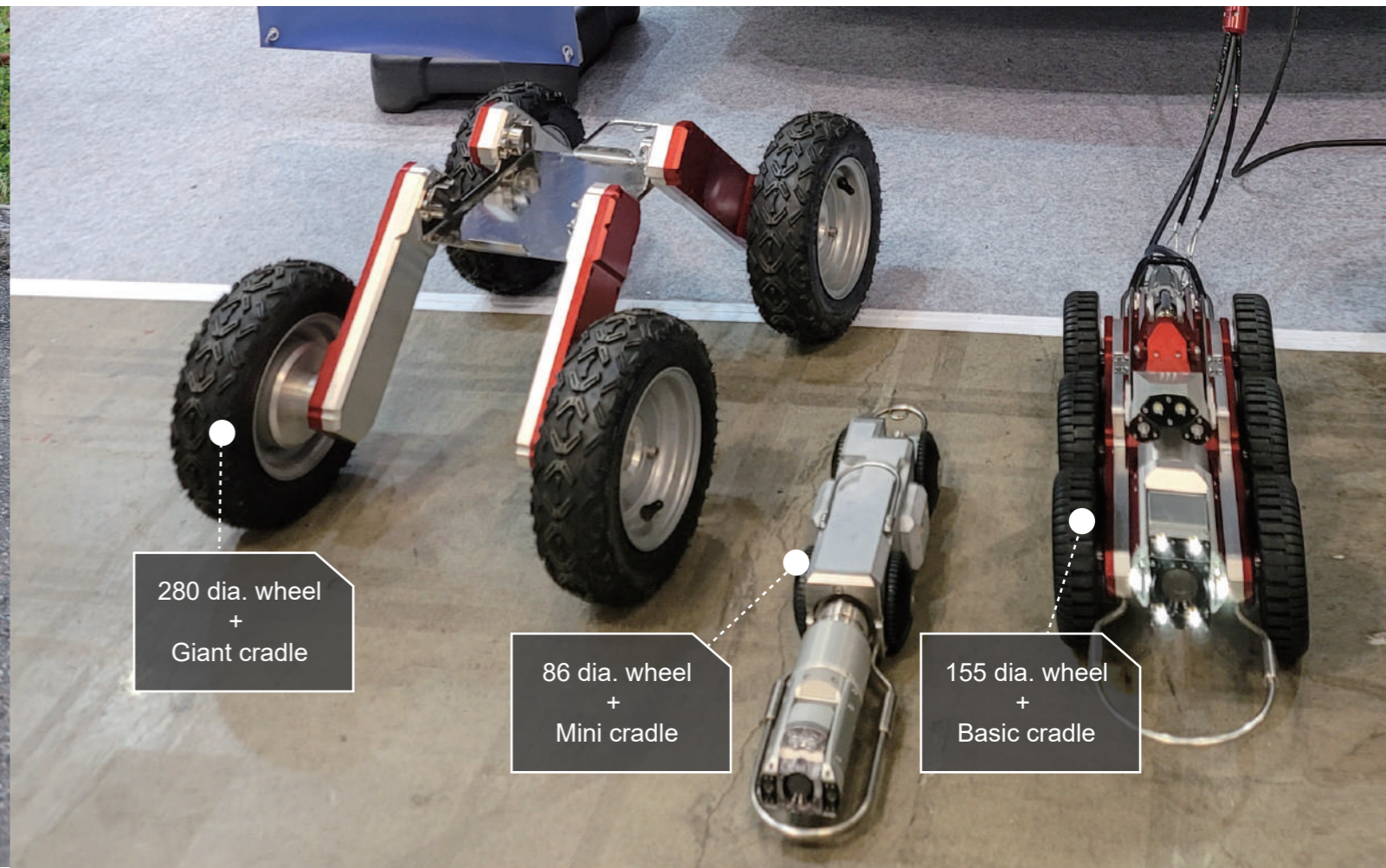
**LARGE
WHEEL TYPE**

Wheel	200 diameter
Pipe Dia.	400~700mm

Wheel	280 diameter
Pipe Dia.	500~800mm



200 dia. wheel + Basic crawler



280 dia. wheel + Giant cradle

86 dia. wheel + Mini cradle

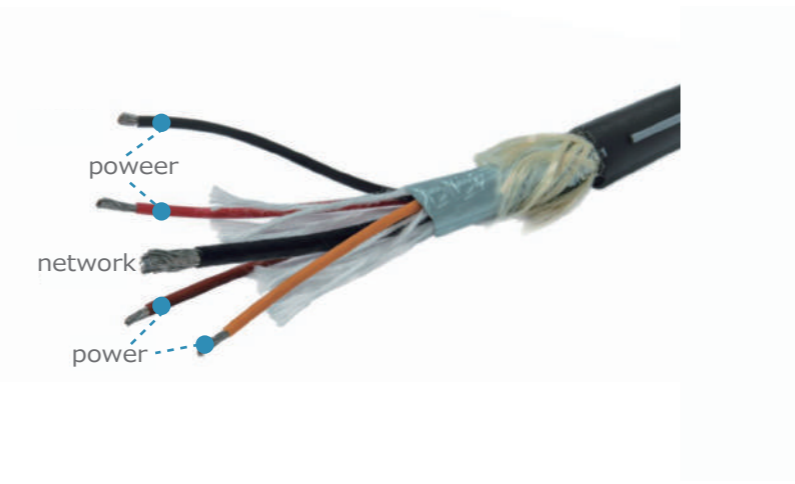
155 dia. wheel + Basic cradle

BASIC ROBOT SYSTEM

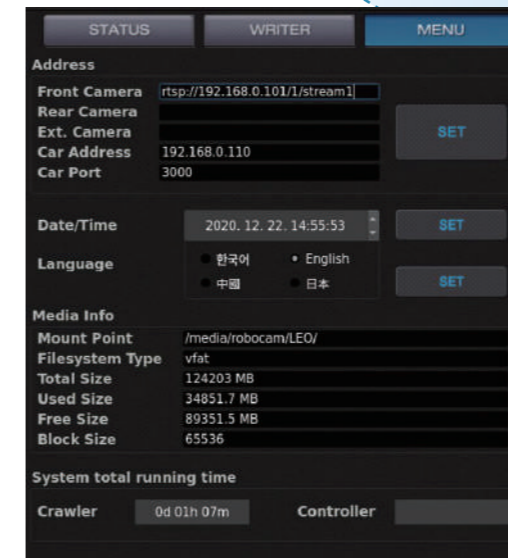
CABLES & AUTOMATED CABLE REELS

- 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 × D750 × H510mm (Excluding carrying handle)
Weight	Cable Reel 30Kg / Cable 26kg



PORTABLE All-in-one CONTROLLER (including subtitles and recording device)



- Available in 4 languages: Korean, Japanese, Chinese, and English
- Controller integrated UI screen

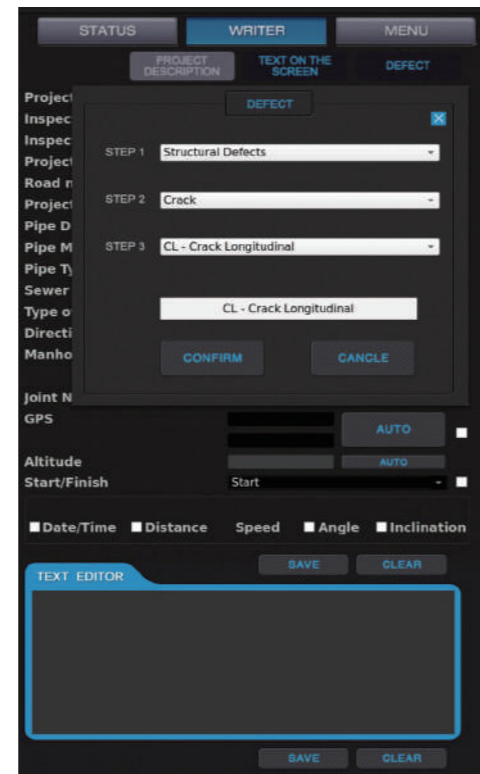
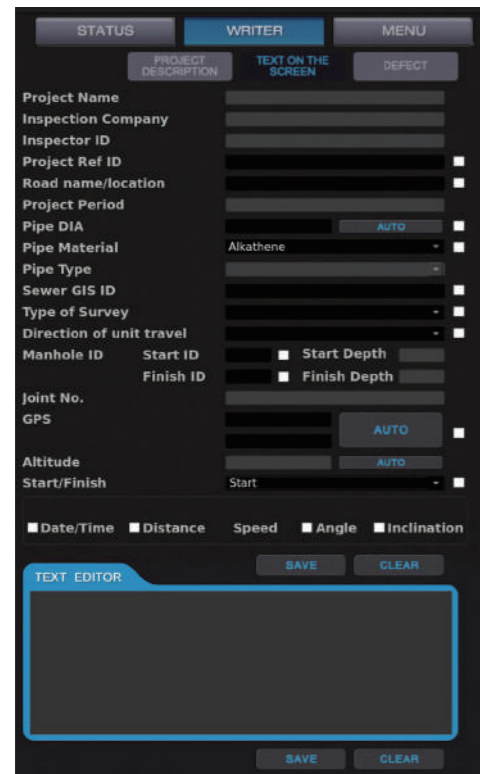
BASIC ROBOT SYSTEM

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
- 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.

- Built-in digital recording software (MP4 format, record/pause/stop/load/FF, RW, play mode)
- Save to USB external hard drive or memory stick
- Automatic usage time recording function for system maintenance (menu tab)
- Includes mini keyboard and mouse for type writer use
- Integrated control soft screen including video screen and video screen full screen mode switchable

Size	W550 × D440 × H110mm (Cover closed state)
Weight	16.6kg



- 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 sewerage pipe investigation manual established by the Ministry of Environment)



ADDITIONAL ROBOT SYSTEM

CRAWLER EXPANSION UNIT (GIANT CRADLE)



- For pipe diameters from 800~1200mm dia.
- Equipped with 4,250mm dia. tire wheels
- Use of an adapter that is easy to attach and detach
- Compatible with basic crawler (not compatible with mini crawler)

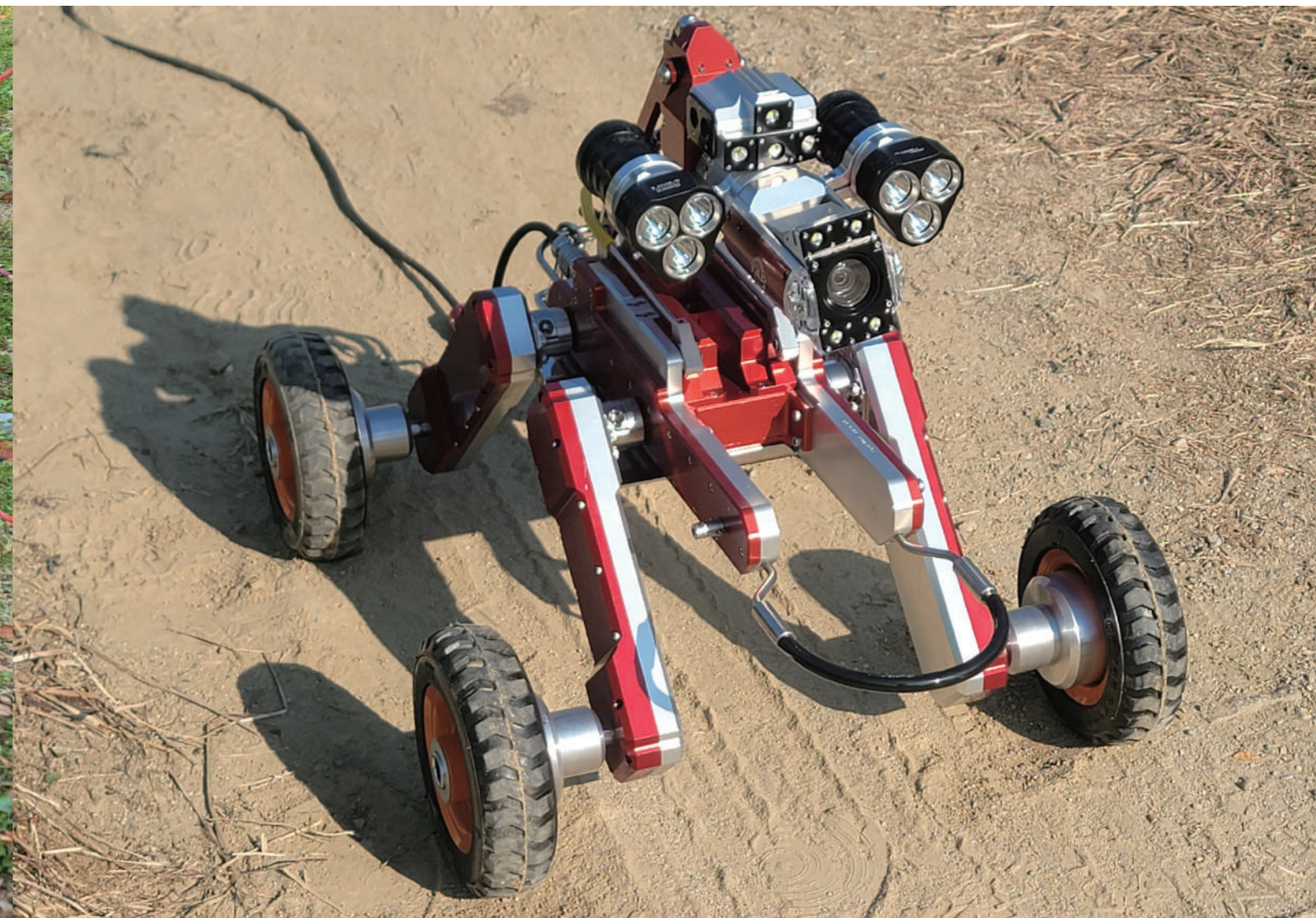
Size	W541 × L763 × H342mm (with 280 dia. wheel)
Weight	20kg

MINI P/T CAMERA



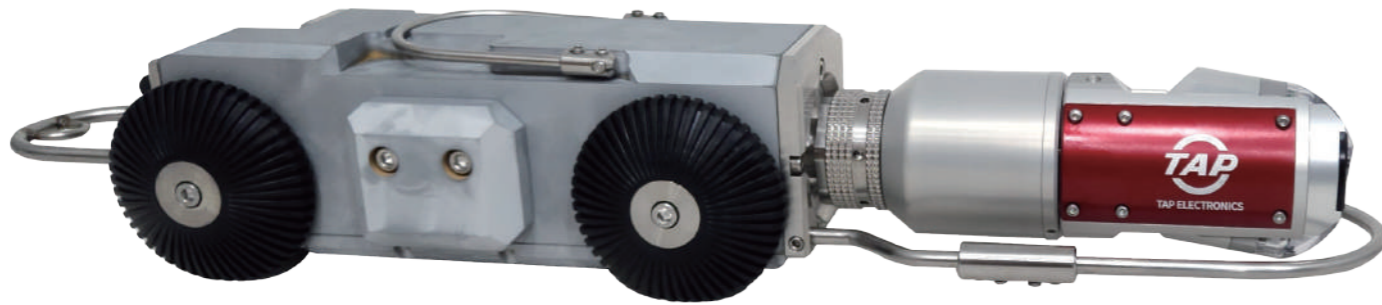
Size	69 dia. × L210 (mm)
Weight	1.3kg

- Equipped with camera origin automatic return button function
- Real-time camera rotation angle monitor display (graphics)
- 360° Endless PAN rotation, 220° vertical TILT rotation (±110°)
- FHD (1920×1080p) color camera module / IP cam module
- Use of German-made (Faulhaber) pan-tilt motor
- Manual focus adjustable - right joystick
- Minimum illuminance: 0.05Lux
- Nitrogen gas filled waterproof structure
- Compatible with standard crawler (Robocam-S)



ADDITIONAL ROBOT SYSTEM

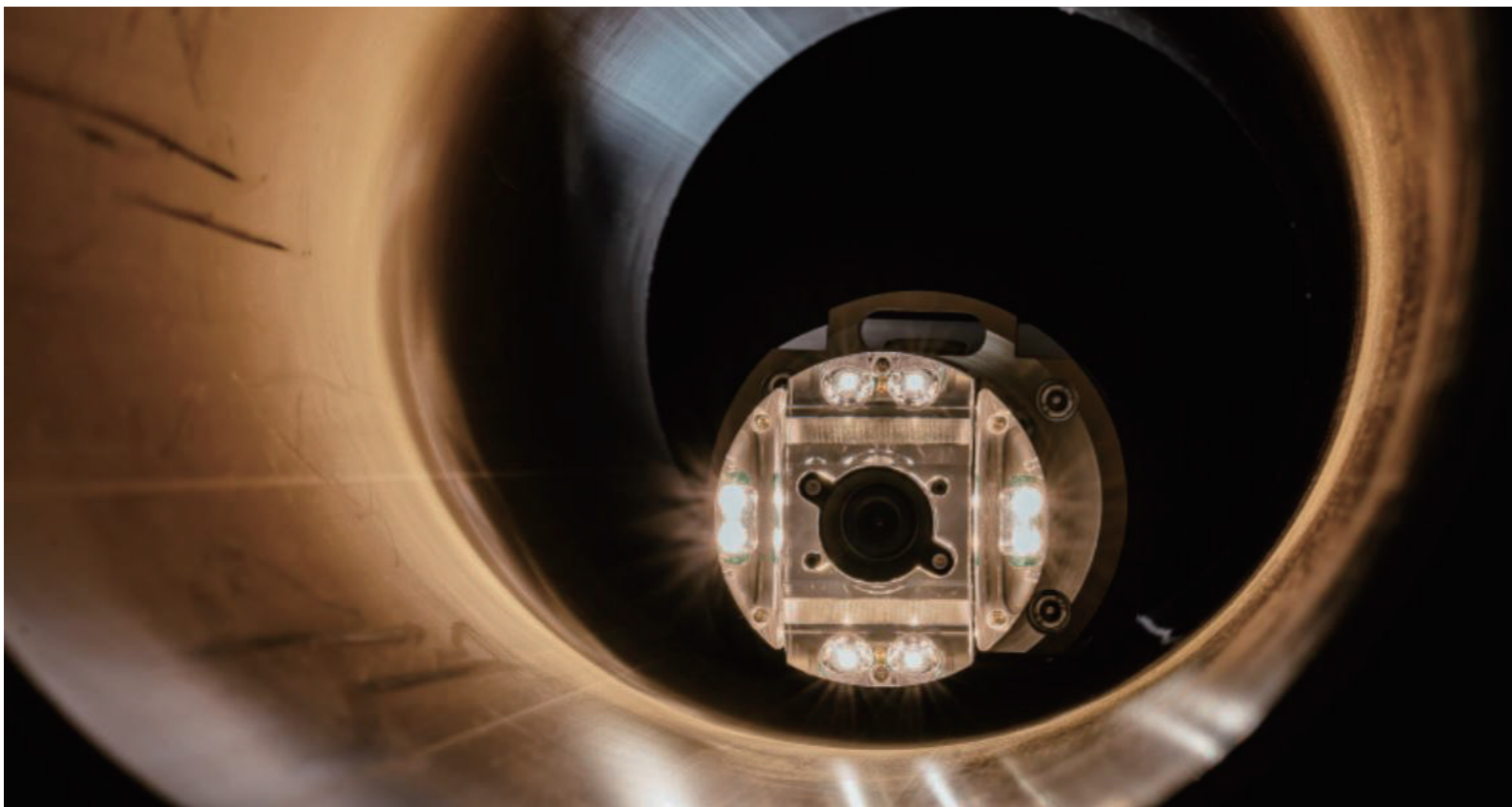
MINI CRAWLER



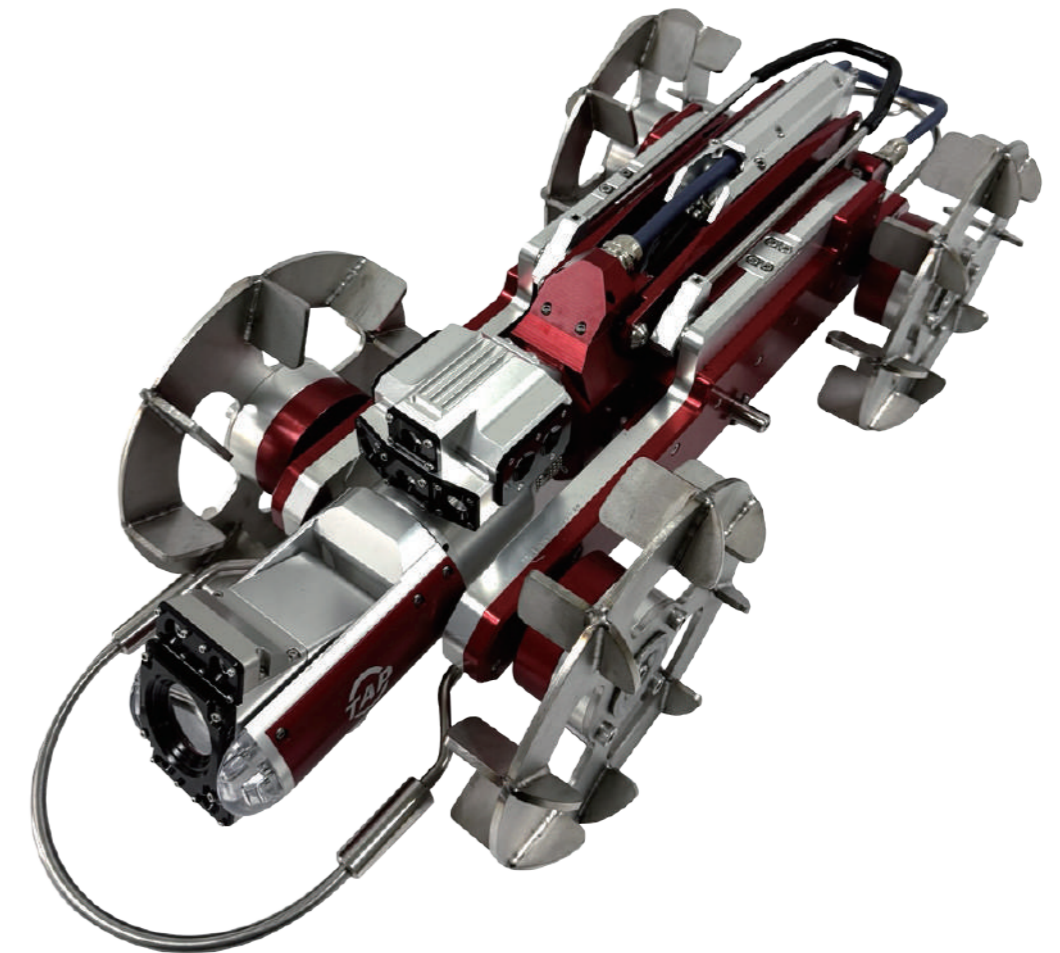
- Equipped with real-time monitoring function to crawler from rolling over
- Data communication and motor drive PCB board mounted
- Built-in German (Faulhaber/Maxon) motor (forward/reverse possible)
- Autopilot cruise function
- brake lock function
- Speed adjustable from 0 to 100% (maximum travel speed 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)

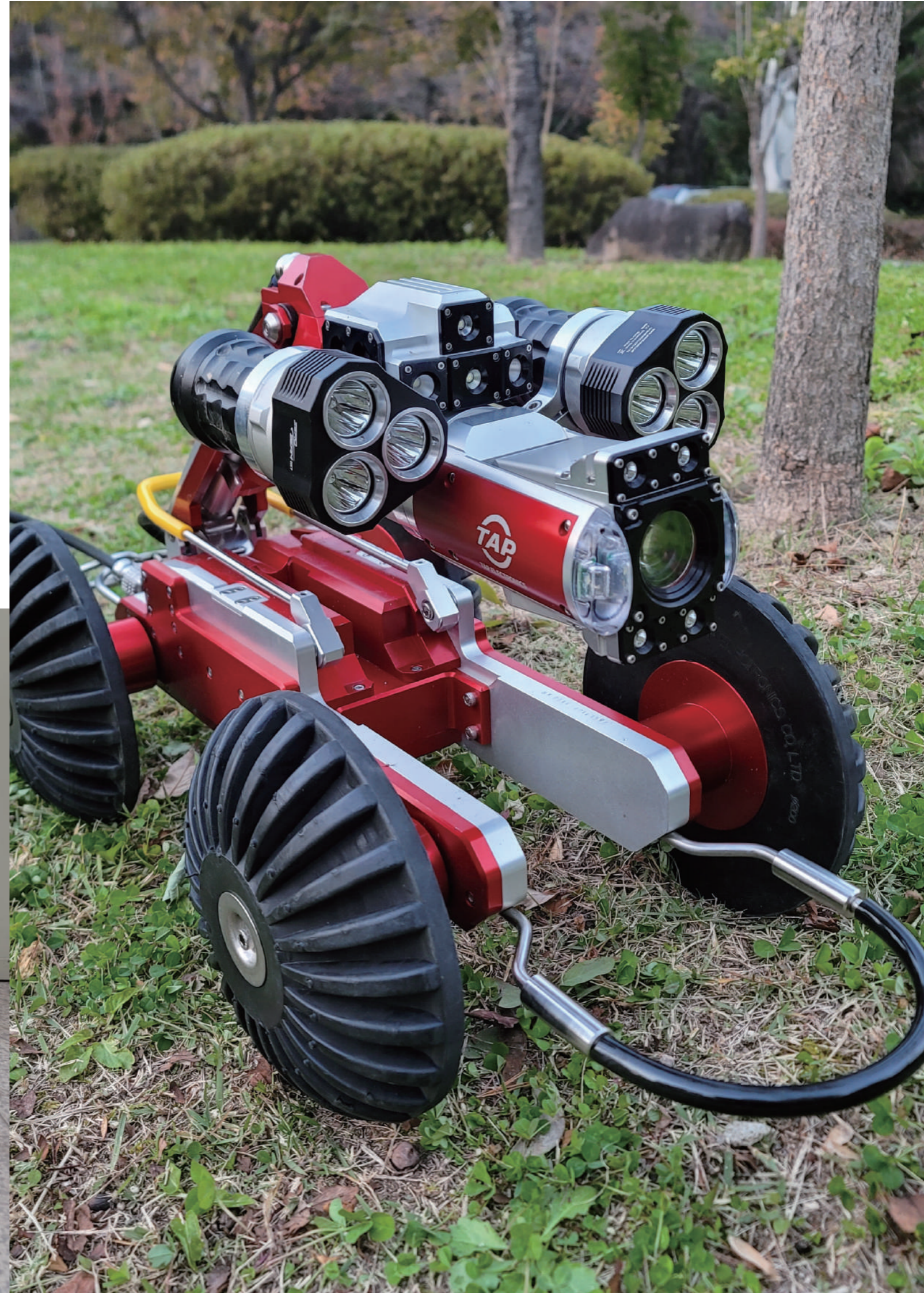


SPECIAL WHEELS for Sludge Section Driving



ADDITIONAL ROBOT SYSTEM

ADDITIONAL LIGHTING for large pipeline inspection over 1,000mm



PROCAM 50H

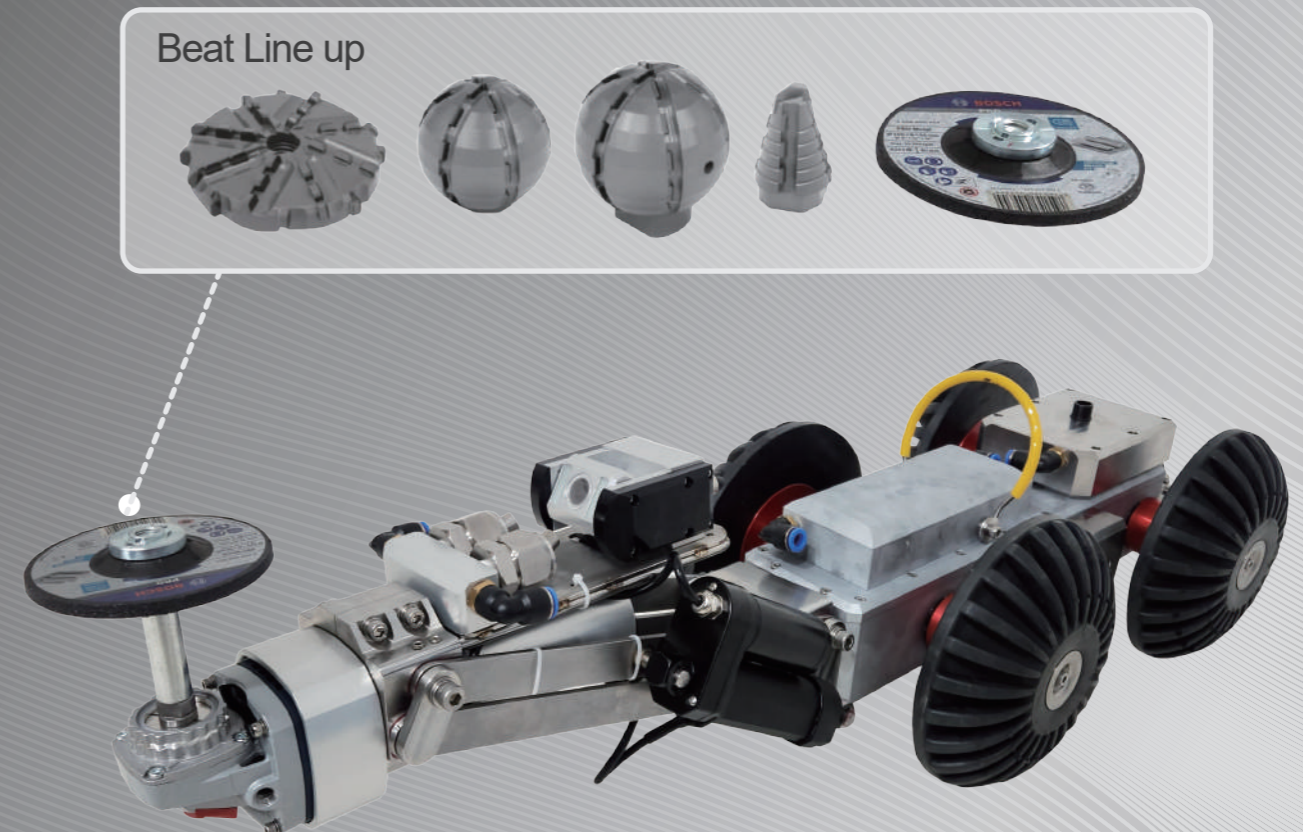
Sewer Pipe Line
Push-Rod Camera



- Push-rod type camera system
- Pipe Application : 50~100mm Dia.
- AHD high resolution Color cam.
- Super white LED lamps
- Cable length : 60M
- Character generator(English Ver.)
- Digital video recorder (.mp4)
- Distance measuring encoder sensor

ROBOCUT-S

Sewer Pipe
Line Cutting Robot



- Compatible with electric and pneumatic grinders
- Pneumatic breaker head Compatible
- Cable length:100M(Forward/Bacward)
- AHD high resolution color camera
- Camera remote cleaning system (wiper + high-pressure water jet)
- Remote control lifting system

PROCAM W

Hottaping Water
Pipe Push Camera

PROCAM WL

Hottaping Water Pipe Push
Camera (Long distance inspection)



- Endoscopic camera for water supply pipes with non-stop water flow
- Inspection range : Max.30M
- Cable thickness : 4.5mm dia.
- FHD high resolution color camera
- Super White LED lamps
- Pipe application : 80~300mm dia.

- Endoscopic camera for water supply pipes with non-stop water flow
- Inspection range : Max.100M
- Motorized camera Insertion device
- FHD high resolution color camera
- Super White LED lamps
- Special bi-directional insertion saddle