



“SMARTY” SERIES

A new revolution in
reversible digital technology

Primo Florian: Founding partner - Engineering and design,
Dino Florian: Founding President - Development and design,
Renato Florian: Founding partner - Assembly and quality

PEOPLE AND IDEAS

The life of Roger Technology has always been based on the value of incredibly innovative people full of passion. People who never give up, people who choose big challenges to avoid monotony. People who believe that any bright idea leads to a great change towards a great future.

PRODUCT EXPERIENCE

In our language we translate the word "experience" as passion. For us, passion is everything, it is that great value that every day drives us towards continuous and robust criticism in the development of products and solutions that are closely tied to the real needs of our customers, who want a product designed around the way they work.



Excellent raw materials

Steel, ductile cast iron, aluminium, bronze, copper and titanium have always been the exclusive raw materials mainly used in the advanced engineering processes of our company.



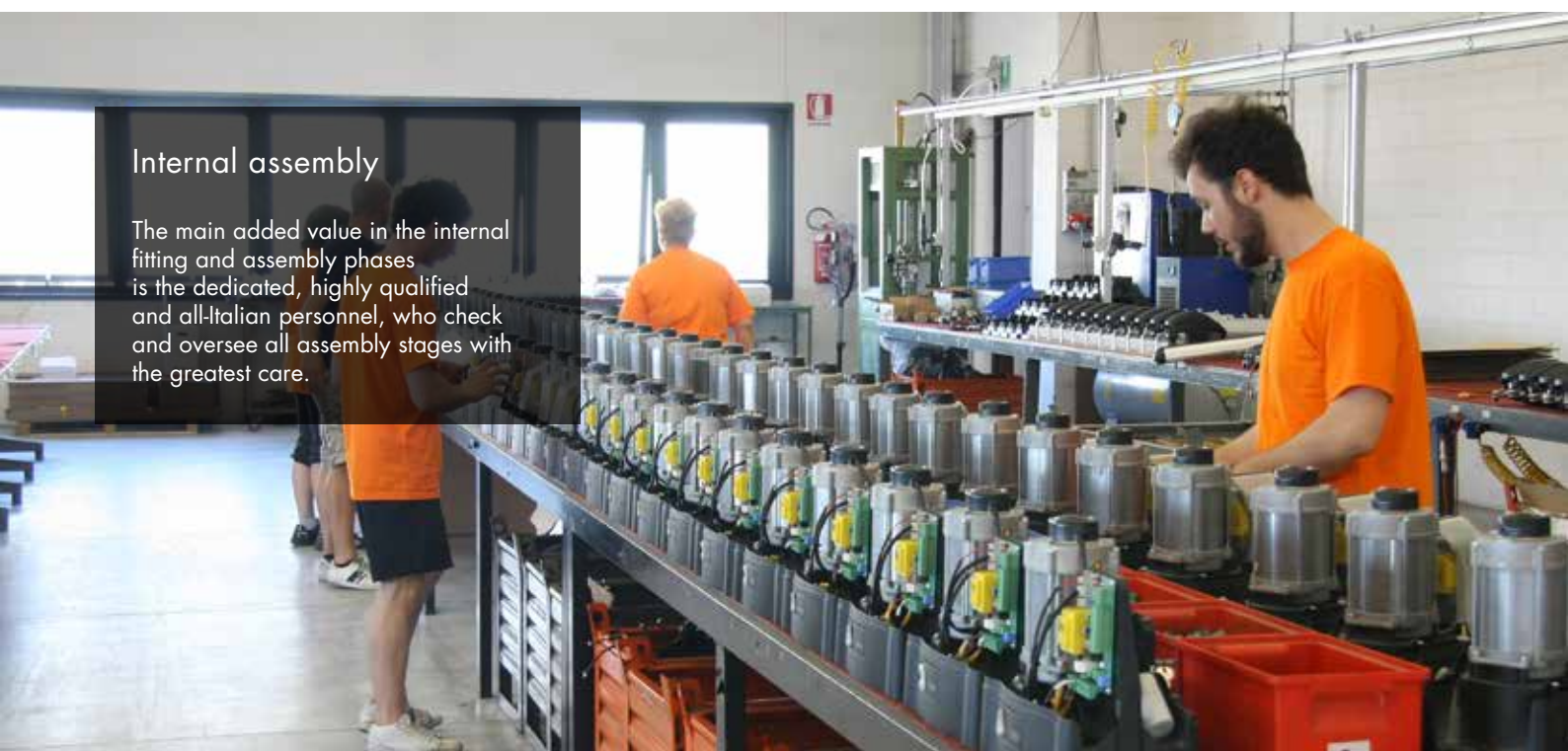
Production technology

In Roger Technology all internal manufacturing is carried out on optimised production lines which make use of very advanced technology. Cherishing every piece we produce, we have invested heavily, automating and robotising all models and manufacturing processes to ensure superior levels of reliability for all components and semi-finished products. All in full compliance with our highest quality standards.



Internal assembly

The main added value in the internal fitting and assembly phases is the dedicated, highly qualified and all-Italian personnel, who check and oversee all assembly stages with the greatest care.



Motor production

We are the creators of the heart of the product!
All the digital Brushless motors are designed,
manufactured and wound with great determination
and passion within our production process, using
dedicated automatic machines.



A digital brushless motor with permanent magnetic field, with digital electronics for complete and safe automation system control, and for super-intensive use with extremely low power consumption:

THIS IS BRUSHLESS

Digital Brushless Motor

Revolutionary, innovative three-phase sinusoidal power digital permanent magnet Brushless motor with native encoder permitting super-intensive usage of the automation system with extremely low power consumption, and ensuring 100% compliance with all control and safety requisites of the automation system.

New Generation of Electronics

The new control unit with onboard digital Brushless controller. Without traditional relays and thanks to its revolutionary mosfet quadrant system and its control technology entirely based on a DSP microcontroller, it represents a new generation of electronic cards created to safely handle all movement phases of the automation system.

Engineering Passion

All mechanical components and gears are manufactured in steel, cast iron and bronze. Automation system casings are made from titanium-reinforced die-cast aluminium. All the gears are inspected and assembled on high-quality bearings and inserted on precise seats machined to provide absolute precision between the axes.



3-PHASE DIGITAL BRUSHLESS MOTOR

Very powerful motor, with a lot of torque, but at the time very small and compact thanks to its special concentrated coil windings, and powered by a three-phase sinusoidal system.



DIGITAL AND VECTORIAL AUTOMATION CONTROLLER

The BRUSHLESS digital controller, which operates at low voltage 24V/36V DC, allows 100% control of the automation system in digital mode. Thanks to its operation entirely based on a DSP microcontroller the travel and all the movements of your automation system can therefore be programmed and customised easily, precisely and elegantly.



SPEED, ACCELERATION AND DECELERATION WITH EXTREME ELEGANCE

The automation system with BRUSHLESS digital technology creates perfect and elegant movements, with a constant force and torque at every point with maximum safety and always with the possibility of varying its speed by managing perfect deceleration and acceleration.



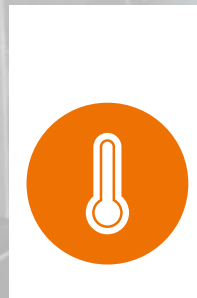
EXTREMELY LOW ENERGY CONSUMPTION

A motor that can operate at low voltage in super-intensive use and which can operate in environments with extremely demanding weather conditions while maintaining very low energy consumption and absorption levels.



NO PROBLEM IN THE EVENT OF POWER FAILURE

With the help of internal or external batteries and the associated battery charging card, your automation system continues to operate for a considerable time even during prolonged power cuts, ensuring many more operations than traditional technologies.

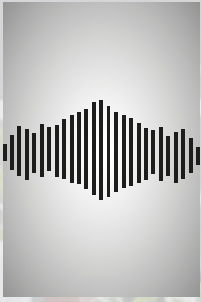


MOTOR AT AMBIENT TEMPERATURE

The BRUSHLESS motor was brought into being with the main goal of being a motor for super-intensive use with an efficiency of 99%. Regardless of how many operations the engine performs in a day, it always remains cold or at most reaches the outside ambient temperature.

COMPLETELY BRUSHLESS

The revolutionary
digital motor
which is 12 ways different



THE DIGITAL SILENCE OF THE MOTOR

Of great impact is the silence or the near absence of noise, generated by the BRUSHLESS motor during all its movements.



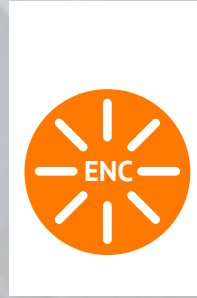
MOTOR FOR SUPER-INTENSIVE USE

We wanted to surprise you with a fundamental fact: The super intensive use of the automation system with the motor which remains permanently cold even after many days of use.



IMPACT, OBSTACLE DETECTION AND REVERSAL IN TOTAL SAFETY

Thanks to digital technology we are able to detect an obstacle and reverse the motor instantly, by simply specifying the torque of the motor, the sensitivity, the time and the travel of the reversal. And in complete compliance with all safety requisites.



ONBOARD NATIVE DIGITAL ENCODER

The BRUSHLESS motor has a highly advanced native digital encoder that controls management of automation systems in a safe, precise and extremely elegant manner.



SIMPLE INSTALLATION WITH A SINGLE 3-WIRE CABLE

And the BRUSHLESS motor can be installed by simply connecting it using a single 3-wire cable! What could be easier? This will provide fully digital management of your automation system thanks to sensorless or sensed technology depending on the type of automation system.



ADVANCED PRECISION ENGINEERING TO OBTAIN OPTIMAL MOTOR PERFORMANCE

We have created a mechanism that gives you the opportunity to get the maximum performance out of the motor. A product which combines the quality of the internal production processes, the mechanical processing and the use of high quality ferrous and non-ferrous materials.

A technology that offers
maximum performance
while consuming less than
other motors



WHY BRUSHLESS...?

Digital, smart,
powerful, elegant, robust
and all-Italian.



1 Sturdy, durable fork and ball screw

The fork and ball screw rotating on the worm screw are manufactured from superior quality materials. In particular, the bronze nut screw features a completely threaded inner surface and is press-fit onto the steel fork to ensure a precise mechanical connection.



2 High precision engineering

Dual bevel gear reduction gear unit manufactured entirely from superior quality hardened steel, cast iron and bronze. All gears are assembled with superior quality double shielded (2ZZ) ball bearings to ensure absolute precision between axes.



3 Reinforced lock release lever

The release lever is operated with a practical and sturdy customisable barrel lock and key. The operating principle is based on a extremely robust steel pin which actuates the release mechanism of the main gear, making it possible to unlock the automation system in all conditions, even when subjected to significant mechanical load by the gate leaf.



4 External lock release system

The external lock release system is quick and very easy to use, with a steel cable making it possible mechanically release the reduction gear unit directly from the exterior of the unit itself. The extremely sturdy lock release system is operated by a lever connected to a universal joint linkage.



5 Sturdy fastener brackets

The new SMARTY Brushless digital motor is equipped with weld-on brackets designed and sized specifically for installation on particularly large and heavy condominium or industrial gates. The brackets are manufactured in galvanised carbon steel. The rear bracket is available as long or short versions.



6 Brushless digital motor

Digital brushless motor based on a permanent magnetic field which uses neodymium iron-boron magnets inside the rotor. With innovative high density coil windings powered by a sinusoid three-phase power system, SMARTY series motors operate at low voltage (36V DC). The motor is extremely compact and operates at normal ambient temperature, making it suitable for extremely intense use and extraordinarily energy efficient.



7 Adjustable aluminium travel limits

The SMARTY swing gate motor is factory-fitted with two titanium-reinforced aluminium travel limits in the gate open and gate closed positions. These travel limits are adjustable feature a completely threaded inner surface to form a solid mechanical connection with the worm gear during contact with the fork in both directions of movement of the motor. The travel limits can be adjusted easily adjustable, even with the motor already installed, by simply removing the aluminium cover.



8 Removable protection brushes

The extruded aluminium casing includes two specific guides for brushes preventing accidental contact and protecting and cleaning the worm gear and the relative fork. The brushes are removable and can even be replaced with the motor installed.



9 Elegant reinforced aluminium casing

The casing enclosing the gear motor and the relative worm screw is made entirely from aluminium, while all parts of the casing subject to mechanical wear and friction are generously reinforced. The worm screw cover casing, made completely from anodised aluminium, is fastened to the motor casing with through screws passing through the entire width of the casing itself.



10 DSP technology micro-controller

The BRUSHLESS motor is controlled via a single 3-core cable between the motor itself and the 36 V DC digital controller. The new digital control unit is based on a 70 Mips micro-controller which calculates and estimates the position of the magnetic field completely digitally to permit SENSORLESS control of your automation system, or uses EMA technology to ensure absolute gate leaf position precision.



11 4 quadrant Mosfet digital inverter




Equipped with an extremely potent and revolutionary 12 Mosfet, 4 quadrant sinusoidal control digital inverter, the digital controller of the digital three-phase sinusoidal motor with field oriented control uses vector frequency modulation to control the two motors and, as a result, the two gate leaves independently.



12 Mechanical absolute positioner

The EMA (mechanical absolute encoder) is a digital mechanical encoder which measures and determines the positions of the gate leaves with absolute precision, during both opening and closing operation. This system communicates the absolute mechanical position of the gate leaves to the digital controller directly via a three-phase connection to the motor, making it unnecessary to repeat the self-acquisition procedures after prolonged power outages or manual release.

TECHNICAL specifications

| | SMARTY 5 | SMARTY 5R | SMARTY 7 | SMARTY 7R | SMARTY 4 HS |
|---|---|---|---|---|--|
| Description of part | Low voltage BRUSHLESS electromechanical gear motor for extremely heavy duty. Irreversible. For swing gates with gate leaf up to 5 m | Low voltage BRUSHLESS electromechanical gear motor for extremely heavy duty. Reversible. For swing gates with gate leaf up to 5 m | Low voltage BRUSHLESS electromechanical gear motor for extremely heavy duty. Irreversible. For swing gates with gate leaf up to 7 m | Low voltage BRUSHLESS electromechanical gear motor for extremely heavy duty. Reversible. For swing gates with gate leaf up to 7 m | Low voltage BRUSHLESS electromechanical gear motor for extremely heavy duty. Irreversible, high speed For swing gates with gate leaf up to 4 m |
| Reduction gear type | Irreversible | Reversible  | Irreversible | Reversible  | Irreversible |
| Maximum gate leaf length | Up to 5 metres per single leaf | Up to 5 metres per single leaf | Up to 7 metres per single leaf | Up to 7 metres per single leaf | Up to 4 metres per single leaf |
| Line power supply | 230V AC 115V AC 50/60Hz +10% | 230V AC 115V AC 50/60Hz +10% | 230V AC 115V AC 50/60Hz +10% | 230V AC 115V AC 50/60Hz +10% | 230V AC 115V AC 50/60Hz +10% |
| Brushless motor power supply | 36V | 36V | 36V | 36V | 36V |
| Rated power | 200W | 200W | 200W | 200W | 200W |
| Frequency of use | Super Intensive | Super Intensive | Super Intensive | Super Intensive | Super Intensive |
| Operating temperature | -20 +55°C | -20 +55°C | -20 +55°C | -20 +55°C | -20 +55°C |
| Degree of protection | IP44 | IP44 | IP44 | IP44 | IP44 |
| Maximum stroke | 370 mm total | 370 mm total | 520 mm total | 520 mm total | 370 mm total |
| Time to open to 90° | 25 - 40 s | 25 - 40 s | 35 - 50 s | 35 - 50 s | 15 - 25 s |
| Speed of operation | 1.6 - 1 cm/s | 1.6 - 1 cm/s | 1.6 - 1 cm/s | 1.6 - 1 cm/s | 1 - 2 cm/s  |
| Thrust | 600 - 7000 N | 600 - 6500 N | 600 - 7000 N | 600 - 6500 N | 600 - 4500 N |
| Encoder | Digital native encoder | Digital native encoder + EMA | Digital native encoder | Digital native encoder + EMA | Digital native encoder |
| Limit switch type | 2 adjustable open and closed position mechanical travel limits | 2 adjustable open and closed position mechanical travel limits | 2 adjustable open and closed position mechanical travel limits | 2 adjustable open and closed position mechanical travel limits | 2 adjustable open and closed position mechanical travel limits |
| Control unit | EDGE1/BOX | EDGE1/BOX | EDGE1/BOX | EDGE1/BOX | EDGE1/BOX |
| Daily operation cycles (open / close - 24 hours non-stop) | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Packaged product weight | 16,5 | 16,7 | 17,2 | 17,4 | 16,5 |
| Release | Lever with key operated cylinder lock | Lever with key operated cylinder lock | Lever with key operated cylinder lock | Lever with key operated cylinder lock | Lever with key operated cylinder lock |
| Number of packages per pallet (single motor) | 36 | 36 | 36 | 36 | 36 |



FUNCTIONS

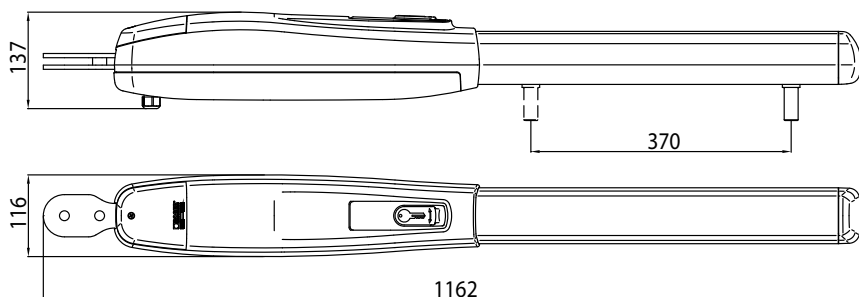
of automated swing gate motor

| DESCRIPTION | SMARTY 5 - SMARTY 5R | SMARTY 7 - SMARTY 7R | SMARTY 4 HS |
|--|--|--|--|
| Maximum length of single gate leaf | up to 5 metres | up to 7 metres | up to 4 metres |
| Digital controller | EDGE1/BOX 36V DC | EDGE1/BOX 36V DC | EDGE1/BOX 36V DC |
| Radio receiver type | H93/RX22A/1 with fixed code connection H93/RX2RC/1 with rolling code connection | H93/RX22A/1 with fixed code connection H93/RX2RC/1 with rolling code connection | H93/RX22A/1 with fixed code connection H93/RX2RC/1 with rolling code connection |
| Motor power | 36 V DC, with self-protected inverter | 36 V DC, with self-protected inverter | 36 V DC, with self-protected inverter |
| Motor power control technology (ETPC) | Field oriented control (FOC) with SENSORLESS technology | Field oriented control (FOC) with SENSORLESS technology | Field oriented control (FOC) with SENSORLESS technology |
| Encoder type | Digital, with 16 bit maximum resolution | Digital, with 16 bit maximum resolution | Digital, with 16 bit maximum resolution |
| EMA system | SMARTY 5 - optional / SMARTY 5R Standard | SMARTY 7 - optional / SMARTY 7R Standard | Optional |
| Mains power supply | 230V 50/60 Hz | 230V 50/60 Hz | 230V 50/60 Hz |
| Battery operation | (optional) 2 external batteries 12V DC, 4.5 Amp/h | (optional) 2 external batteries 12V DC, 4.5 Amp/h | (optional) 2 external batteries 12V DC, 4.5 Amp/h |
| Energy consumption | Very low consumption | Very low consumption | Very low consumption |
| Number of motors | 1 - 2 motors | 1 - 2 motors | 1 - 2 motors |
| Power supply for accessories | 24V DC | 24V DC | 24V DC |
| Flashing light type | 24V DC LED | 24V DC LED | 24V DC LED |
| Output for gate opening indicator and automation system on warning light | ✓ | ✓ | ✓ |
| Output for courtesy light | 40W | 40W | 40W |
| Timed and guaranteed automatic closing | ✓ | ✓ | ✓ |
| Gate edge safety management, 8.2KΩ or standard | ✓ | ✓ | ✓ |
| Photocell test and safety device management | ✓ | ✓ | ✓ |
| Limit switch type | Adjustable open and closed position mechanical travel limits | Adjustable open and closed position mechanical travel limits | Adjustable open and closed position mechanical travel limits |
| Separate management for motor 1 - 2 | ✓ | ✓ | ✓ |
| Force adjustment in nominal movement | ✓ | ✓ | ✓ |
| Force adjustment in start-up and deceleration | ✓ | ✓ | ✓ |
| Obstacle detection - Motor reversal | ✓ | ✓ | ✓ |
| Separate impact force setting for 2 | ✓ | ✓ | ✓ |
| Opening and closing speed setting | ✓ | ✓ | ✓ |
| Deceleration during opening and closing | ✓ | ✓ | ✓ |
| Starting acceleration (soft-start) for opening and closing manoeuvres | ✓ | ✓ | ✓ |
| Safeguarded closure/opening function | ✓ | ✓ | ✓ |
| Motor stopping distance and braking distance | ✓ | ✓ | ✓ |
| Partial opening control | Pedestrian entry | Pedestrian entry | Pedestrian entry |
| Human presence control | ✓ | ✓ | ✓ |
| Mechanical lock and mechanical electro-lock management | ✓ | ✓ | ✓ |
| Condominium function | ✓ | ✓ | ✓ |
| Safety device configuration | ✓ | ✓ | ✓ |
| Installation test function | (prog button) | (prog button) | (prog button) |
| Operating temperature | -20°C / +55°C | -20°C / +55°C | -20°C / +55°C |
| Inverter thermal protection | ✓ | ✓ | ✓ |
| Current absorption mapping system | (MCA) | (MCA) | (MCA) |
| Restore factory default values | ✓ | ✓ | ✓ |
| Information on use of motor | ✓ | ✓ | ✓ |
| Installer security password management | ✓ | ✓ | ✓ |
| Maintenance alarm management | ✓ | ✓ | ✓ |

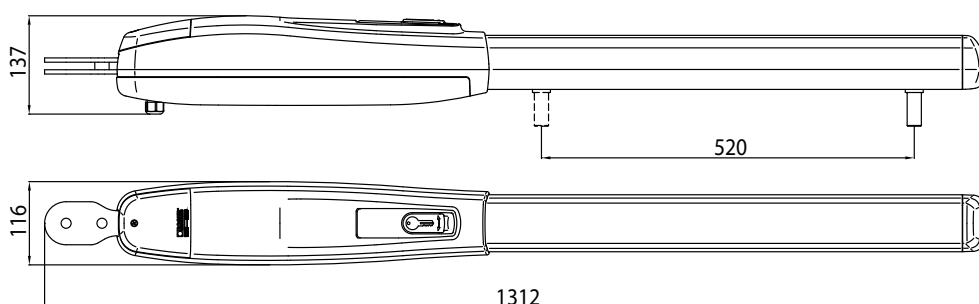
Dimensions

All measurements in mm

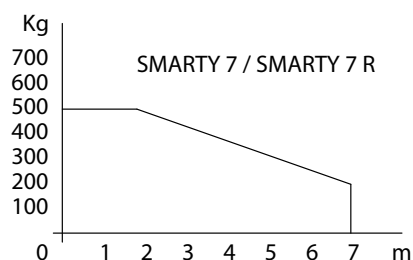
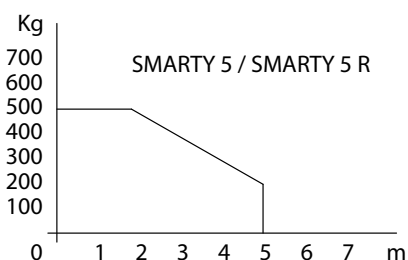
SMARTY 5/5R/4HS



SMARTY 7/7R



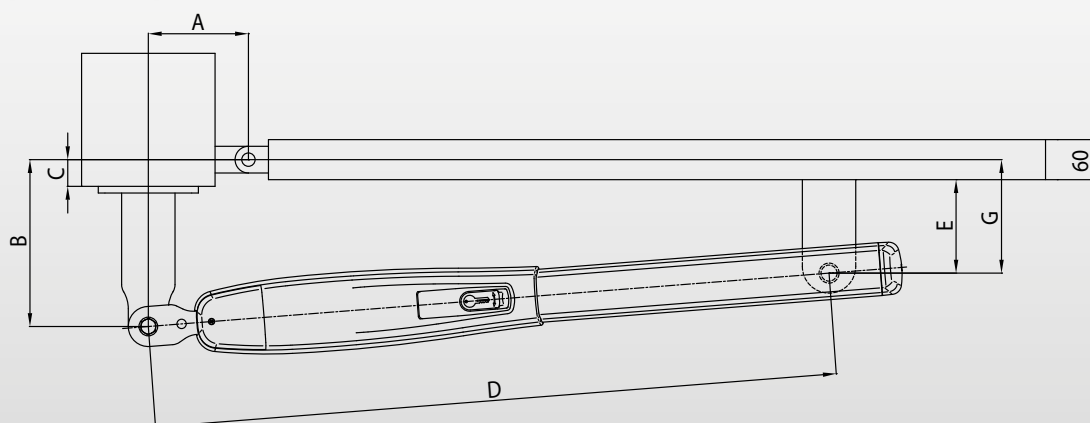
operating limits



| SMARTY 5 / SMARTY 5R MAXIMUM TRAVEL = 370 MM | | | | | | | |
|--|-----|---------|---------|-----|-----|----------------|--|
| A | B | C (max) | D (max) | E | G | α° | |
| 150 | 150 | 120 | 1030 | 100 | 130 | 97° | |
| 150 | 170 | 120 | 1030 | 100 | 130 | 96° | |
| 150 | 190 | 120 | 1030 | 100 | 130 | 95° | |
| 150 | 200 | 120 | 1030 | 100 | 130 | 95° | |
| 150 | 220 | 120 | 1030 | 100 | 130 | 90° | |
| 170 | 150 | 120 | 1030 | 100 | 130 | 103° | |
| 170 | 170 | 120 | 1030 | 100 | 130 | 102° | |
| 170 | 200 | 120 | 1030 | 100 | 130 | 90° | |
| 185 | 185 | 120 | 1030 | 100 | 130 | 90° | |
| 200 | 160 | 120 | 1030 | 100 | 130 | 92° | |

| SMARTY 7 / SMARTY 7R MAXIMUM TRAVEL = 520 MM | | | | | | | |
|--|-----|---------|---------|-----|-----|----------------|--|
| A | B | C (max) | D (max) | E | G | α° | |
| 200 | 200 | 200 | 1180 | 140 | 170 | 98° | |
| 200 | 230 | 200 | 1180 | 140 | 170 | 97° | |
| 200 | 260 | 200 | 1180 | 140 | 170 | 96° | |
| 200 | 280 | 200 | 1180 | 140 | 170 | 95° | |
| 200 | 300 | 200 | 1180 | 140 | 170 | 93° | |
| 220 | 220 | 200 | 1180 | 140 | 170 | 102° | |
| 220 | 250 | 200 | 1180 | 140 | 170 | 100° | |
| 220 | 280 | 200 | 1180 | 140 | 170 | 93° | |
| 250 | 200 | 200 | 1180 | 140 | 170 | 106° | |
| 250 | 250 | 200 | 1180 | 140 | 170 | 94° | |

preparations for standard installation



ACCESSORIES

SMARTY, everything
you need for a complete
and professional
installation

OPTIONAL ACCESSORIES



KT237

Kit with three short brackets
for SMARTY 5 series



RL669

Kit for manual external
release using existing handle
for SMARTY series



KT238

Kit with three long brackets
for SMARTY 7 series



RL670

DIN Euro profile cylinder lock
for release system for SMARTY
series



KT234

Short front bracket



RL671

3 m long cable for external
release system



KT235

Long front bracket



SMARTY EMA

Mechanical absolute encoder -
Optional accessory for SMARTY
5 and SMARTY 7 versions



KT236

Rear bracket



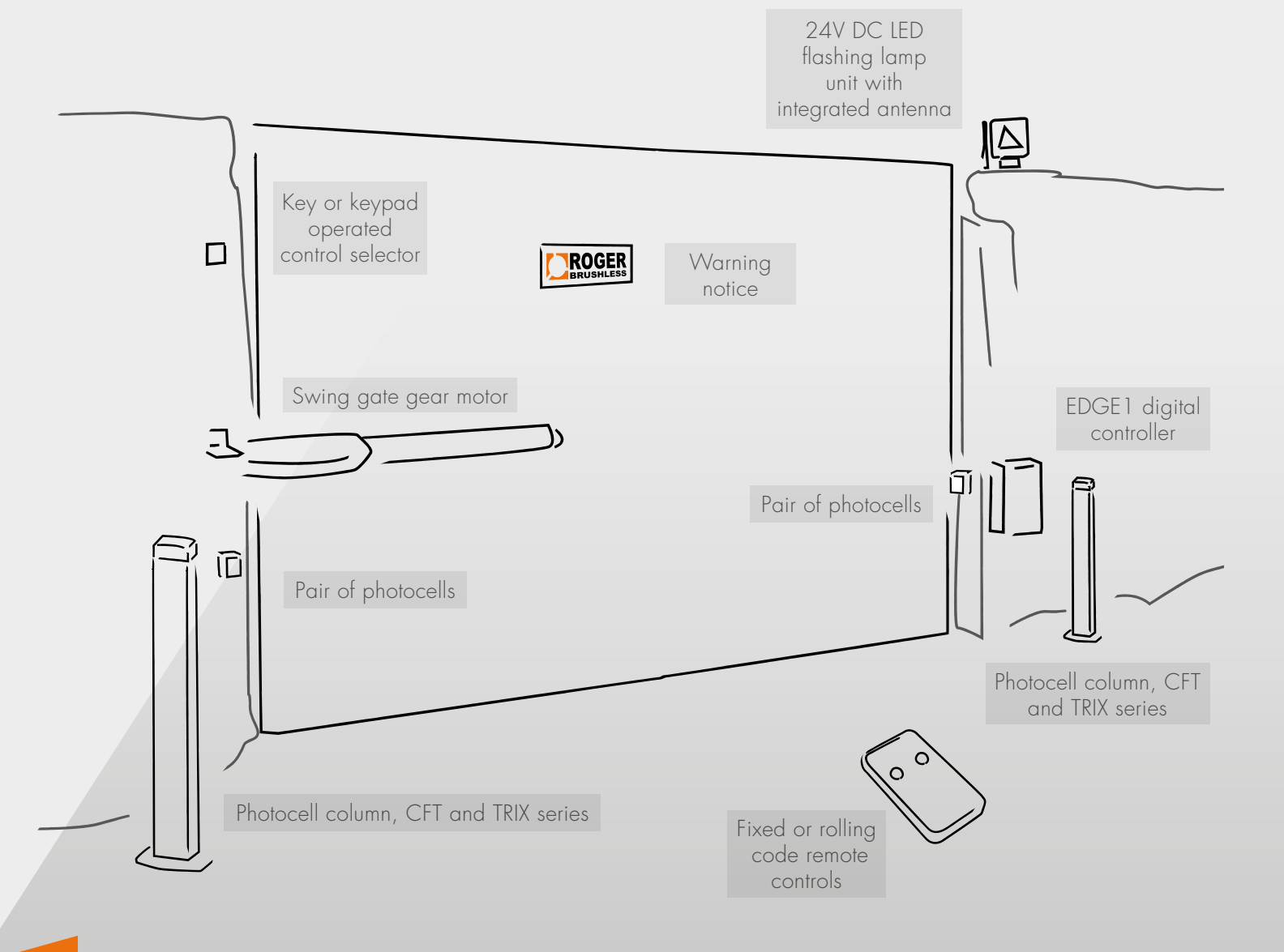
R99/C/001

“Automatic Opening”
warning notice



MC782

Mechanical stop
kit for SMARTY series



STANDARD INSTALLATION

a practical example
for your successful
installation



EMA

These are my coordinates:
25.50cm
90° opening

THE PRECISE EMA

ABSOLUTE ENCODER NEVER LOSES TRACK OF THE POSITION OF YOUR GATE FOR TOTAL SAFETY, ALWAYS!



MEASURES
WITH MILLIMETRE PRECISION



CALCULATES
THE ABSOLUTE POSITION



COMMUNICATES
THE EXACT POSITION OF YOU GATE CONTINUOUSLY

WWW.WEAREBRUSHLESS.COM



PREMIUM DEALER / AUTHORISED DEALER



ROGER TECHNOLOGY

Via S. Botticelli, 8 - 31021, Bonisiolo di Mogliano Veneto (TV) - ITALY
T. +39 041 5937023 - F. +39 041 5937024

WWW.ROGERTECHNOLOGY.COM

