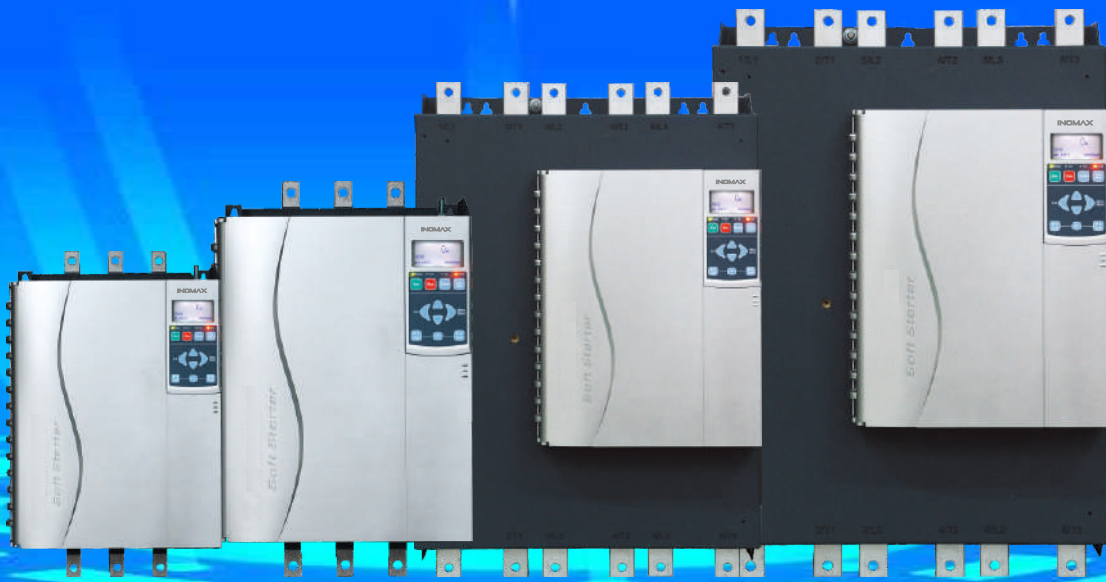


INOMAX

SOFT STARTER CATALOG



SHENZHEN INOMAX TECHNOLOGY CO.LTD

www.inomaxtechnology.com

INOMAX AST7000 integrated bypass soft starter



▶ Product description

The AST7000 is a newly developed built-in bypass soft starter and is a complete motor starting and management system. Many impressive features are concentrated on an easy-to-use product, the motor use can be easier.

► More control

- AST7000 soft starter adopts a new generation of soft starter technology, and the adaptive acceleration control enables you to control the motor acceleration curve and deceleration curve to an unprecedented level.
- The soft starter reads the motor's performance during starting and stopping and adjusts its control to achieve the best results. Simply select the curve that best fits your load type, and the soft starter automatically ensures that the load is accelerated as smoothly as possible.

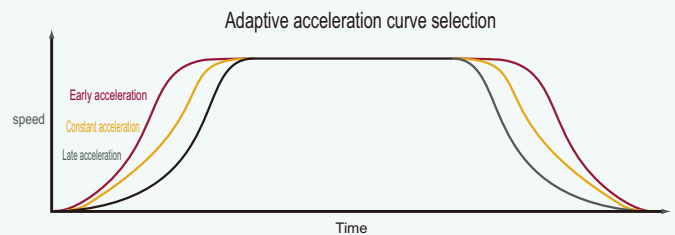
► Product feature

- AST7000 is a highly intelligent, very reliable and easy to use soft starter. AST7000 is a perfect solution with newly designed functions for quick setup or more personalized control. Its performance includes.
- A large LCD screen that displays feedback in multiple languages.
- A remote-mounted operating board.
- Intuitive programming.
- Advanced start and stop control functions.
- A series of motor protection functions.
- Extensive performance monitoring and event logging.

► Easy to use

- AST7000 is easy to use during installation, debugging, and operation, as well as during troubleshooting.
- Quick setup allows the machine to run quickly and display tripping messages in real language that indicate exactly what went wrong.
- The control entry line can be selected from the top, bottom or left, which is very flexible. The unique cable access and fixing device make the installation faster and tidy.

► Adaptive acceleration control



Adaptive acceleration offers three start and stop curves to suit your needs. AST7000 simplifies installation and operation of motor starting system, thus reducing installation cost and reducing cost Short installation time.



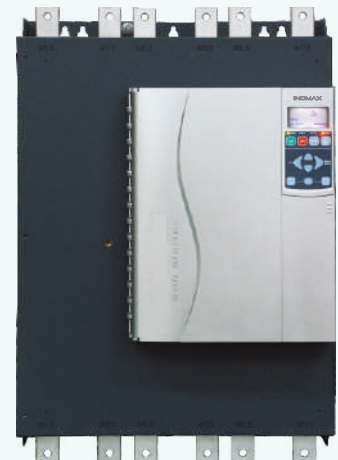
AST7000-5.5kW- 55kW



AST7000-75kW- 110kW



AST7000-132kW- 315kW



AST7000-350kW- 600kW

INOMAX AST7000 integrated bypass soft starter

► Soft starter function introduction



► Starting function

- Adaptive acceleration
- Constant current starting mode
- Current ramp starting mode
- Kick start

► Stop function

- Adaptive deceleration
- TVR soft stop
- Braking way
- Taxi stop

► Dashboard

- Remote installation options
- Status LED indicator
- Legible screen
- Real language feedback
- Multilingual selection
- Shortcut button

► Protection

- Motor thermal model
- Fully customizable protection
- Motor thermistor input
- The phase sequence
- Owe current
- Instantaneous overcurrent
- Auxiliary tripping input
- Radiator overheating
- Start time timeout
- Power frequency
- Short circuit SCR
- The power supply circuit
- Electrical connection
- RS485 fault
- Motor overload
- Current imbalance
- Earth fault (optional)

► Other features

- Starter communication timeout
- Network communication trip
- Automatic detection of external connection
- Programmable automatic start/stop
- 24VDC auxiliary power supply
- PT100 (RTD) input
- Real time clock with backup battery
- Forced pass-through - even if the power component occurs Failure, also can choose continuous work. This Production shall not be interrupted when measures are taken.
- Low speed forward and low speed reverse functions
- I/O extension card (optional)

External connection diagram

Standard

Current range 23A- 800A (rated)

Motor connection..... External or internal delta connection

BypassIntegrated built-in or external

Power supply

Power supply voltage (L1, L2, L3)

ST- 7xxx- V2.....220VAC ($\pm 10\%$)

ST- 7xxx- V4.....380VAC($\pm 10\%$)

ST- 7xxx- V7.....690VAC ($\pm 10\%$)

Control voltage (L, N) ... 110- 220VAC (+10%/-15%)
..... or 230-440VAC (+10%/-15%)

Power frequency...45- 66Hz

Input

Input..... Active 24VDC, about 8mA

Start..... Normally open

Stop..... Normally closed

Jog.....Normally open

Fault input.....Normally closed

Reset..... Normally closed

Motor thermistor (Pt100)

Output

Relay output...10A @ 250VAC resistive circuit

.....5A @ 250VAC

Programming relay (16, 17, 18)..... normally open
or normally closed

Programming relay (19, 20, 21).....normally open or
normally closed

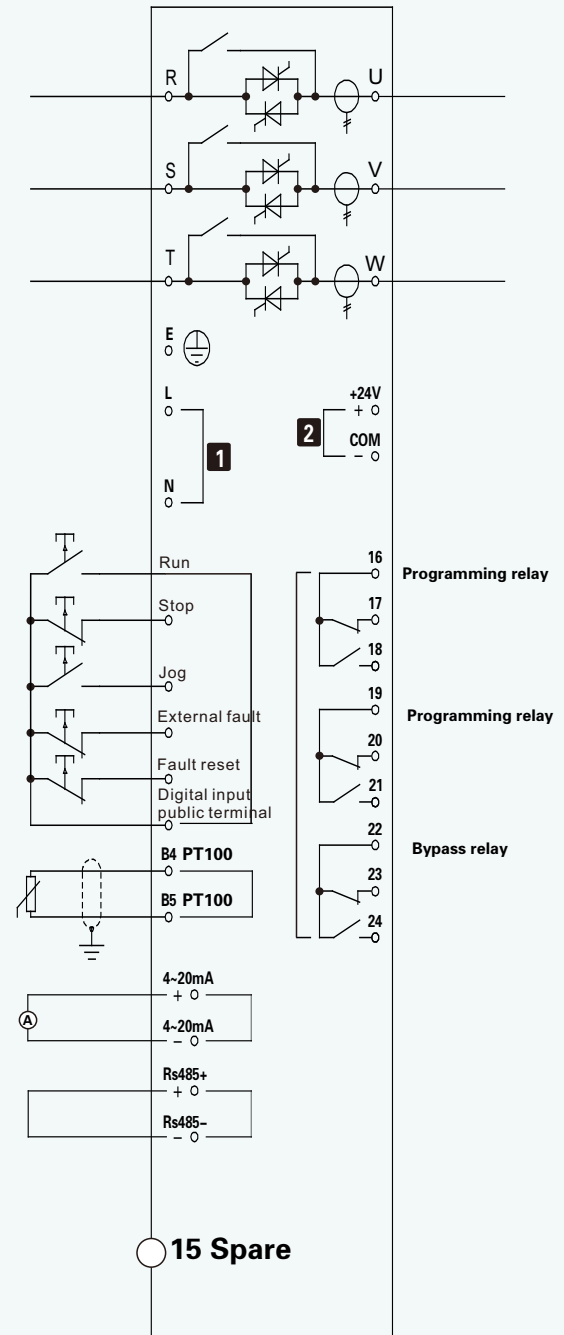
Bypass relay (22, 23, 24)..... normally open or
normally closed

Programmable output

Analog output (11, 12)... 0-20mA or 4-20mA

24VDC out (1, 2)..... 200mA

24VDC output (13, 14).....Communication output



INOMAX AST7000 integrated bypass soft starter



Real-time display of real language

We want to make your work easy and worry-free, so AST7000 displays feedback information in real language, you don't have to check the code to understand what happened. With the help of real-time metering display and 10 event log records with time-stamped operation and performance details, tracking motor performance has never been so easier.



Remote display installation

With the optional operating panel installation kit, the operating panel can be easily installed outside the cabinet. If multiple soft starters are installed in a cabinet, it is convenient for centralized control in one place and all relevant information can be obtained. You can also install multiple monitors side by side to quickly diagnose problems. (The degree of protection after installation is IP65)



Removable connector and unique wire connector

It adopts pluggable control wiring block, which is easy to install. Just unplug each terminal block and re-insert the terminal block after connecting the wires.

The AST7000 unique flexible cable routing method can be used to effectively arrange the cables. The cables can be routed from the top, left or bottom.

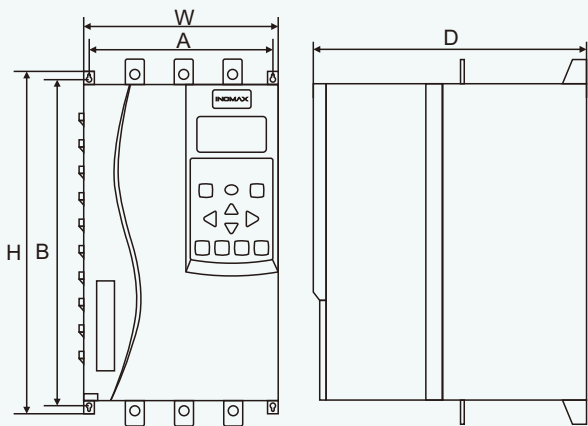
Bypass contactor

There is no need to install an external bypass contactor, the new built-in bypass contactor, compared with ordinary AC contactors, the performance is 3 times higher, the heat dissipation is 2.6 times, the safety is 25%, and the energy saving is 20%. The service life can reach more than 100,000 times.

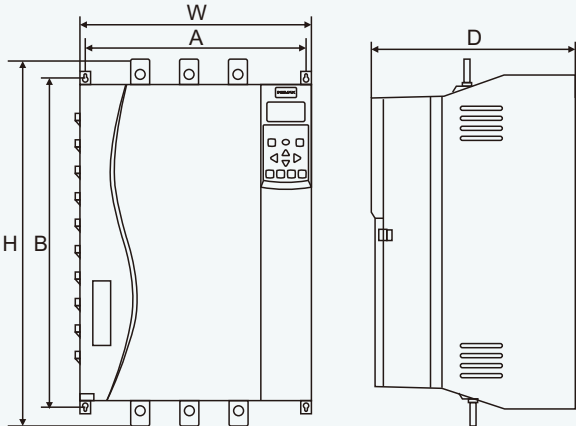


➤ Dimensions and specifications

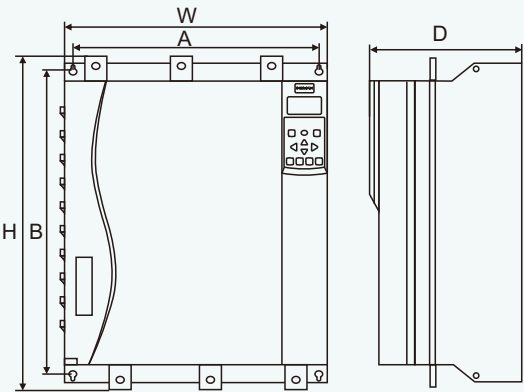
VOLTAGE	RELATED CURRENT	RELATED POWER	DISPLAY	PARAMETER	PROTECTION	TERMINAL QTY	OVERLOAD ABILITY
200V-240V	30A-350A	7.5kW-90kW	LCD keypad with english	132	20	24	150%le,35s 200%le,15s
380V-480V	22A- 800A	11kW- 500kW					
525V-690V	22A- 800A	11kW- 630kW					



F1 AST7000- 11KW~55KW



F2 AST7000- 75KW~110KW



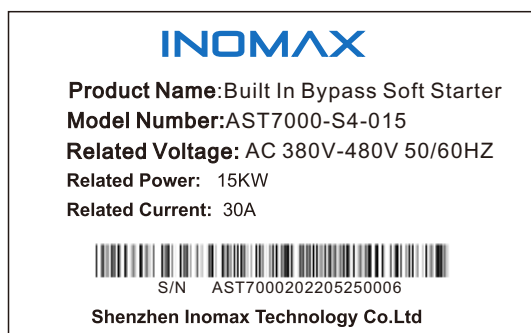
F3 AST7000- 132KW~500KW

POWER RANGE	Dimensions (mm)			Installation size (mm)			Outline
	W	D	H	B	A	d	
11kW- 55kW	152	292	215	92	269	M6	F1
75kW- 110kW	274	408	260	160	385	M8	F2
132kW- 500kW	440	530	290	320	530	M8	F3

INOMAX AST7000 integrated bypass soft starter

General technical data

Name Plate



Model code

AST7000 - S4 - 030

Rated Power
030=30KW

Product Voltage
S2: 220V-240V
S4: 380V-480V
S6: 525V-690V

Product Series

Model List

Model No.	Voltage	Power	Current	Product Size (mm)			Weight
	(V)	(KW)	(A)	W	D	H	Kg
220V-240V 3phase input 3 phase output 50/60HZ							
AST7000- S2-7.5	220V-240V	7.5KW	32A	152	215	292	7kg
AST7000- S2-011	220V-240V	11KW	45A	152	215	292	7kg
AST7000- S2-015	220V-240V	15KW	60A	152	215	292	7kg
AST7000- S2-18.5	220V-240V	18.5KW	75A	152	215	292	7kg
AST7000- S2-022	220V-240V	22KW	90A	152	215	292	7kg
AST7000- S2-030	220V-240V	30KW	110A	152	215	292	7kg
AST7000- S2-037	220V-240V	37KW	150A	274	260	408	18kg
AST7000- S2-045	220V-240V	45KW	180A	274	260	408	18kg
AST7000- S2-055	220V-240V	55KW	220A	274	260	408	18kg
AST7000- S2-075	220V-240V	75KW	320A	440	290	530	41kg

Model No.	Voltage	Power	Current (A)	Product Size (mm)			Weight
	(V)	(KW)	(A)	W	D	H	Kg
380V-480V 3phase input 3 phase output 50/60HZ							
AST7000-S4-7.5	380V-480V	7.5KW	15A	152	215	292	7kg
AST7000-S4-011	380V-480V	11KW	23A	152	215	292	7kg
AST7000-S4-015	380V-480V	15KW	30A	152	215	292	7kg
AST7000-S4-18.5	380V-480V	18.5KW	37A	152	215	292	7kg
AST7000-S4-022	380V-480V	22KW	45A	152	215	292	7kg
AST7000-S4-030	380V-480V	30KW	60A	152	215	292	7kg
AST7000-S4-037	380V-480V	37KW	75A	152	215	292	7kg
AST7000-S4-045	380V-480V	45KW	90A	152	215	292	7kg
AST7000-S4-055	380V-480V	55KW	110A	152	215	292	7kg
AST7000-S4-075	380V-480V	75KW	150A	274	260	408	18kg
AST7000-S4-090	380V-480V	90KW	180A	274	260	408	18kg
AST7000-S4-115	380V-480V	115KW	220A	274	260	408	18kg
AST7000-S4-132	380V-480V	132KW	255A	440	290	530	41kg
AST7000-S4-160	380V-480V	160KW	320A	440	290	530	41kg
AST7000-S4-185	380V-480V	185KW	370A	440	290	530	41kg
AST7000-S4-200	380V-480V	200KW	400A	440	290	530	41kg
AST7000-S4-220	380V-480V	220KW	425A	440	290	530	41kg
AST7000-S4-250	380V-480V	250KW	500A	440	290	530	44kg
AST7000-S4-280	380V-480V	280KW	560A	440	290	530	44kg
AST7000-S4-315	380V-480V	315KW	630A	440	290	530	44kg
AST7000-S4-350	380V-480V	350KW	700A	440	290	530	44kg
AST7000-S4-400	380V-480V	400KW	800A	440	290	530	44kg
AST7000-S4-450	380V-480V	450KW	900A	440	290	530	44kg
AST7000-S4-500	380V-480V	500KW	1000A	440	290	530	44kg

Model No.	Voltage	Power	Current (A)	Product Size (mm)			Weight
	(V)	(KW)	(A)	W	D	H	Kg
525V-690V 3phase input 3 phase output 50/60HZ							
AST7000- S6-045	525V-690V	45KW	67A	152	215	292	7kg
AST7000- S6-055	525V-690V	55KW	82A	152	215	292	7kg
AST7000- S6-075	525V-690V	75KW	112A	152	215	292	7kg
AST7000- S6-090	525V-690V	90KW	135A	274	260	408	18kg
AST7000- S6-115	525V-690V	110KW	172A	274	260	408	18kg
AST7000- S6-132	525V-690V	132KW	198A	274	260	408	18kg
AST7000- S6-160	525V-690V	160KW	240A	440	290	530	41kg
AST7000- S6-185	525V-690V	185KW	277A	440	290	530	41kg
AST7000- S6-200	525V-690V	200KW	300A	440	290	530	41kg
AST7000- S6-220	525V-690V	220KW	330A	440	290	530	41kg
AST7000- S6-250	525V-690V	250KW	375A	440	290	530	41kg
AST7000- S6-280	525V-690V	280KW	420A	440	290	530	41kg
AST7000- S6-350	525V-690V	350KW	525A	440	290	530	41kg
AST7000- S6-400	525V-690V	400KW	560A	440	290	530	44kg
AST7000- S6-450	525V-690V	450KW	630A	440	290	530	44kg
AST7000- S6-500	525V-690V	500KW	700A	440	290	530	44kg
AST7000- S6-560	525V-690V	560KW	800A	440	290	530	44kg

Control Types Available

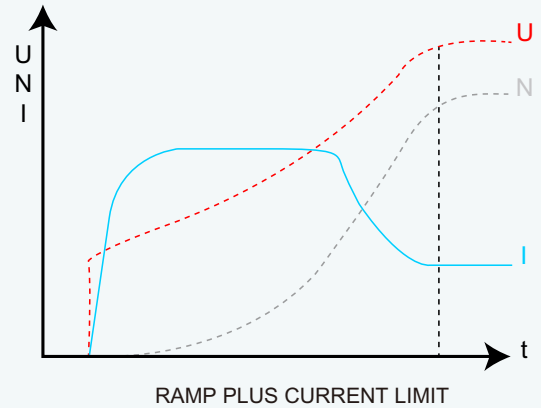
Voltage ramp (torque ramp)

Soft Starter start from a setted initial voltage, and ramp up to the nominal one in a setted time.

In addition on all family products is possible to start high friction load with kickstart that gives to the motor for 100÷300 msec 80% of full voltage, without current limit.

When is started, the motor reach the full speed and remain there, up to when stopped and it can reach zero speed by inerthia or via setted ramp down.

As an option is also available the dynamic braking with an external device.



Current ramp

Soft starter start from a setted initial current and ramp up to the nominal value in a setted time. This type of control is available on STO family.

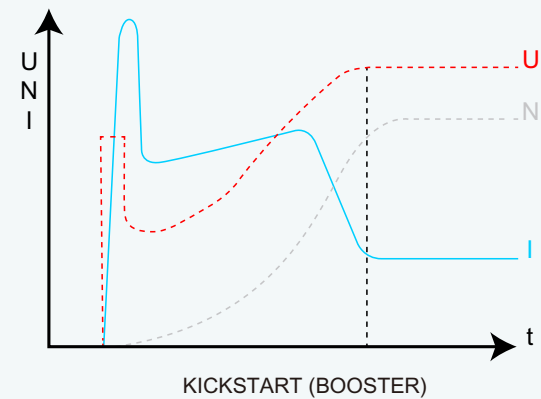
Current limit

This parameter sets the current at which to start.

This value depend on the application and must not exceed the soft starter sizing (see on next two pages).

Initial current limit

This parameter sets the initial start current for the current ramp mode.

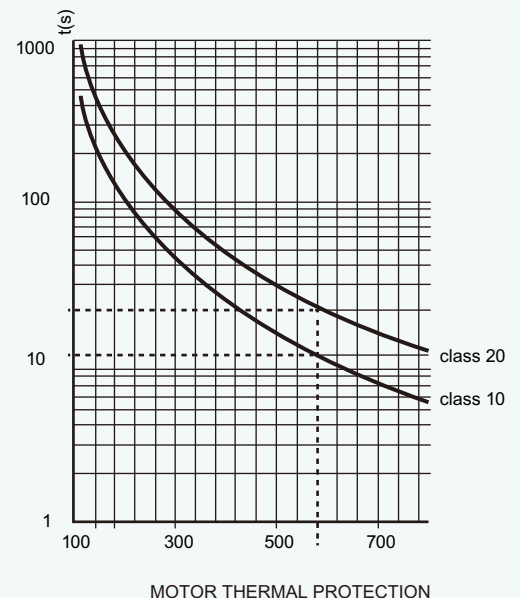


Motor protection

Inside STO soft starter families, has been implemented electronic motor thermal protection.

The curves are represented on right side, and basically one is for normal service, and the other one for severe service.

This is an overload relay.



Integrated bypass – for all-round savings

The AST7000 soft starters provides an integrated bypass to allow direct-on-line operation as an alternative. The integrated bypass offers multiple cost-saving benefits.

Reduce heat loss

Integrated bypass provides the opportunity to switch over to direct-on-line operation, after initial start-up via the soft starter. By running partially direct-on-line, you win the advantages of reduced losses and need for heat dissipation, thus saving energy due to decreased cooling requirements.

Save space

The AST7000 with integrated bypass takes up less panel space than a soft starter with an external contactor.

Save time

With only six terminals instead of twelve, it is much faster to wire an AST7000 with integrated bypass, than an alternative soft starter with external contactor. Less cable is required, which additionally reduces cost.

Save energy – fast payback

The soft starter with integrated bypass contactor saves space by comparison to an external contactor connected to a non-bypassed unit.

Select a soft starter with integrated bypass when you want to save costs. The payback time is just months, using the AST7000 with integrated bypass. See how in this example:

Example

In the example, a soft starter regulates a water pump, with motor specifications as follows:

Motor

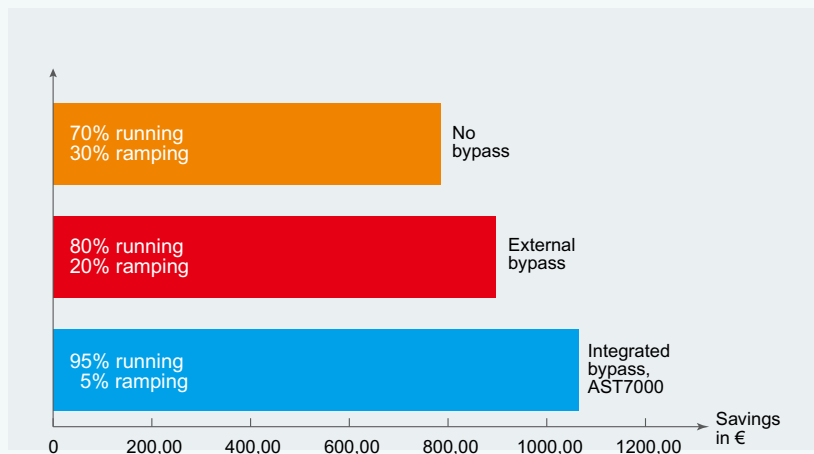
Supply400 V AC
 Rating132 kW
 FLC.....245 A
 Start duty300% for 30 seconds
 Electricity prices.....(industry – EU)

Estimated savings, non-bypassed versus bypassed

Save more with bypass, compared to no bypass.

The energy saved depends on the relationship between ramping and running.

The more the application is running the more the bypass will save



Cost saving using a bypass, showing the beneficial savings effect

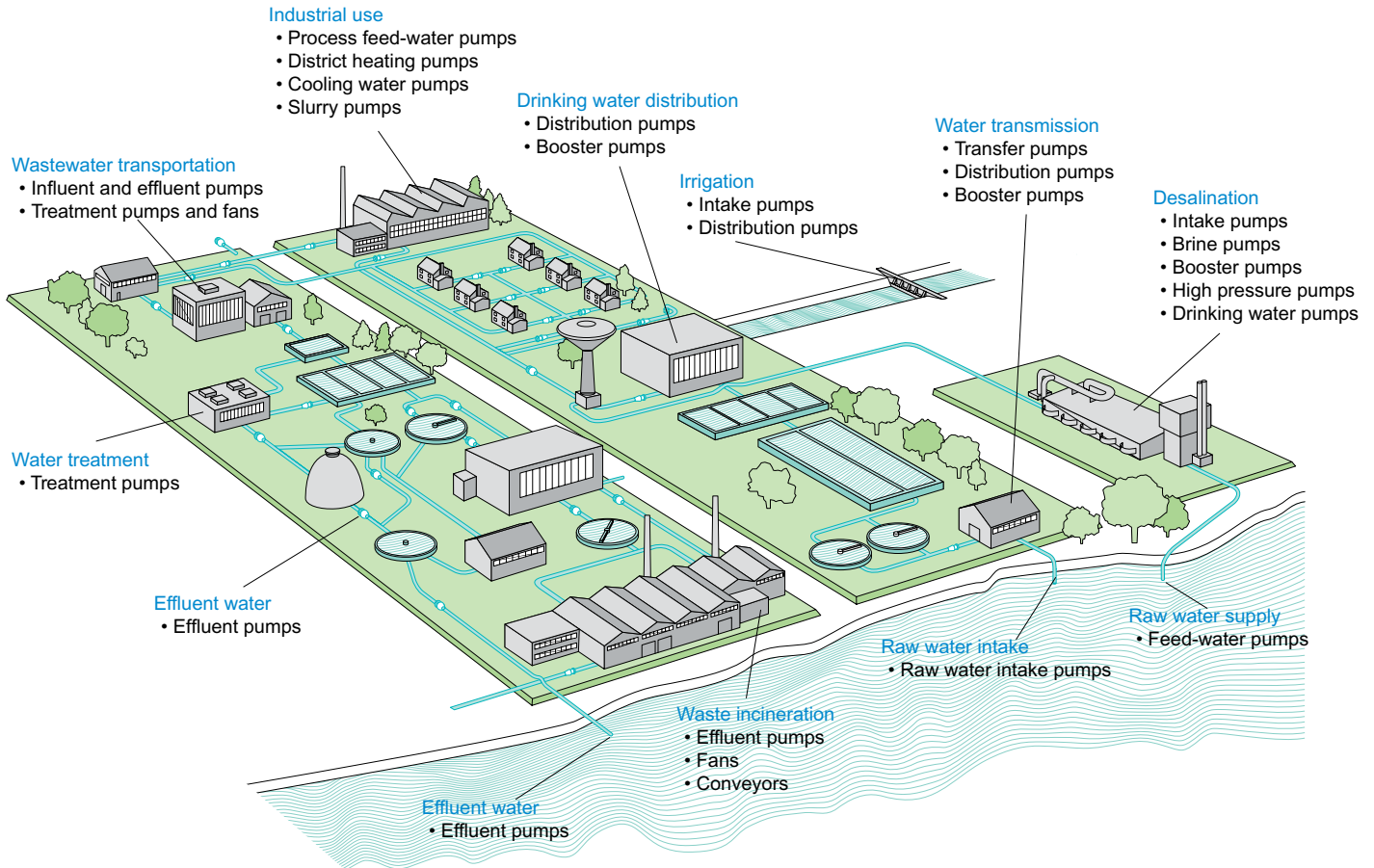
Win back your investment faster with integrated bypass, compared to external bypass. The payback period is only a few months.

Investment (indexed values)	No bypass, Direct-on-line	Soft starter with external bypass	Soft starter with integrated bypass
Soft starter	100	100	150
Bypass contactor + wiring + mounting	0	58	0
Extra panel space, parts, and labour	0	3	0
Total	100	161	150
Extra cost compared to no bypass	-	61	50
Simple payback period [months]	-	3.3	2.8

INOMAX SOFT STARTERS APPLICATION

Pumps

Water is the most important resource in the world and water facilities can be found everywhere. Examples of water applications are freshwater and wastewater systems, circulating water for heating, cooling and irrigation.



Common questions:

- How to avoid voltage drops when starting?
- INOMAX's softstarter will reduce the starting current and thereby avoid the voltage drops.
- How to avoid water hammering when stopping?
- Use our softstarters equipped with an optimized stop ramp. Or even better, with torque control.
- How to ensure high reliability in harsh environments?
- Use our softstarters equipped with coated circuit boards to better withstand those environments.
- How to protect my pumping equipment in the best possible way?
- Use INOMAX's softstarters equipped with our special designed protections such as overload, underload, and locked rotor protection.



Fans



Common questions:

- How to avoid extended voltage drops due to long starting time?
- Use INOMAX's softstarter equipped with current limit to keep control of the starting current.
- How to extend the life of the driving belts?
- Our softstarters will reduce the mechanical stress during start, thus avoiding slipping belts.
- How to ensure the operation of the fan?
- A softstarter with underload protection will detect broken belts, making the operator immediately aware of the problem.

Compressors



Common questions:

- How to ensure a long life of the compressor?
- Using a softstarter for starting will reduce the accelerating torque, thereby minimizing the mechanical stress.
- How to build a compact compressor unit?
- Using a compact softstarter like AST6100 will allow a much more compact starting equipment than for instance a Star-Delta starter.

Conveyor belts



Common questions:

- How to reduce the need for service and repair of the conveyor belt?
- A softstarter from INOMAX will ensure starts with minimal mechanical stress on the conveyor belt.
- How to avoid that the conveyor belt is running in the wrong direction?
- Use a softstarter with phase reversal protection.
- How to improve the efficiency of the conveyor belt?
- Using softstarters with high and low current warnings allow you to load on and off the conveyor belt.
- How to ensure a successful start even after longer times without operation?
- A softstarter with kick start function will provide sufficient torque to be able to overcome the initial high friction from a temporary jammed belt.

INOMAX

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