Алматы (7273)495-231 Ангарск (3955)60-70-56 Архангельск (8182)63-90-72 Астрахань (8512)99-46-04 Барнаул (3852)73-04-60 Белгород (4722)40-23-64 Благовещенск (4162)22-76-07 Брянск (4832)59-03-52 Владивосток (423)249-28-31 Владикавказ (8672)28-90-48 Владимир (4922)49-43-18 Волаград (844)278-03-48 Волоград (844)278-03-48 Волоград (8472)26-41-59 Воронеж (473)204-51-73 Екатеринбург (343)384-55-89 Иваново (4932)77-34-06 Ижевск (3412)26-03-58 Иркутск (395)279-98-46 Казань (843)206-01-48 Калининград (4012)72-03-81 Калуга (4842)92-23-67 Кемерово (3842)65-04-62 Киров (8332)68-02-04 Коломна (4966)23-41-49 Кострома (4942)77-07-48 Краснодар (861)203-40-90 Краснодар (861)203-40-90 Красноярск (391)204-63-61 Курск (4712)77-13-04 Куран (3522)50-90-47 Липецк (4742)52-20-81

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Магнитогорск (3519)55-03-13 Москва (495)268-04-70 Мурманск (8152)59-64-93 Набережные Челны (8552)20-53-41 Нижний Новгород (831)429-08-12 Ноябувск (3496)41-32-12 Новосибирск (383)227-86-73 Омск (3812)21-46-40 Орел (4862)44-53-42 Оренбург (3532)37-68-04 Пенза (8412)22-31-16 Петрозаводск (8142)55-98-37 Псков (8112)59-10-37 Пермь (342)205-81-47 Ростов-на-Дону (863)308-18-15 Рязань (4912)46-61-64 Сараара (846)206-03-16 Саранск (8342)22-96-24 Санкт-Петербург (812)309-46-40 Саратов (845)249-38-78 Севастополь (8692)22-31-93 Симферополь (3652)67-13-56 Смоленск (4812)29-41-54 Сочи (862)225-72-31 Ставрополь (8652)20-65-13 Сургуг (3462)77-98-35 Сыктывкар (8212)25-95-17 Тамбов (4752)50-40-97 Тверь (4822)63-31-35 Тольятти (8482)63-91-07 Томск (3822)98-41-53 Тула (4872)33-79-87 Тюмень (3452)66-21-18 Ульяновск (8422)24-23-59 Улан-Удэ (3012)59-97-51 Уфа (347)229-48-12 Хабаровск (4212)92-98-04 Чебоксары (8352)28-53-07 Челябинск (351)202-03-61 Череповец (8202)49-02-64 Чита (3022)38-34-83 Якутск (4112)23-90-97 Ярославль (4852)69-52-93

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# Технические характеристики на блоки управления ирригационными мотопомпами и регулирования давления воды CIM, CEM компании ELCOS

# **CONTROL UNITS FOR IRRIGATION MOTOR PUMPS** AND PUMP WATER PRESSURE CONTROL

# TYPF CIM-131



- Operates the engine accelerator to keep the pressure Delayed acceleration after starting. of the system constant.
- (accelerator with 2 wires connected to the control unit) Assembly also on the machine and in the open air.
- · Controls the flow of water in the pipe.
- Electronic pressure switch to control the pump water pressure.
- Digital pump water pressure gauge.
- · Clock for programming the starting and stopping of the motor pump.
- · Delayed deceleration before stopping.
- CANBus SAE J1939 connection.

on the panel the functions of:

- pump water pressure gauge

- pump protection exclusion

- water or oil thermometer

- Frost protection.
- Pressure boost function.

#### MADE TO:

#### PROTECT

motor pump sets by stopping them in the event of:

- low oil pressure
- over-temperature
- belt breakage
- low coolant level
- low pump water pressure
- pump water overpressure
- overspeed
- A1

available

- A2

DISPLAY

- hour-meter

- tachometer

- fuel level gauge

- battery voltmeter

- emergency stop

- battery and oil lights

- protections intervention

- timer

- oil pressure gauge

## DIMENSIONS



TECHNICAL DATA				
Battery power supply	12 Vdc 24 Vdc			
Supply voltage	8÷ 32V			
Consumption in standby	3.5mA at 12V			
	2.5mA at 24V			
Consumption with engine stationary	250mA at 12V			
	150mA at 24V			
Max. Consumption	850mA at 12V			
	550mA at 24V			
Max load of the output: • (stopping) yellow • (starting motor) black • (general alarm) red/green • (auxiliary) brown • priming pump yellow/blue • pump clutch white/yellow	3A 40A 3A 3A 3A 3A			
Temperature range	-10 ÷ +60 °C			
Hour-meter	4 digits			
Engine oil pressure gauge	0 ÷ 9 bar			
Pump water pressure transmitter: • allowed max. pressure	21 bar			
Engine water and oil thermometers	+20 ÷ +145°C			
Tachometer	4000 rpm			
Timer	1' ÷ 24 h			
Serial communication parameters	9600 baud, 8 bit data,1 bit stop, even parity			
Rechargeable batteries	2x1,2V type AAA			
Installation conditions	for external use			
Degree of protection box/connector	IP54/IP20			
Control unit weight	2,2 kg			
Weight with control unit mounted on the support	4,6 kg			

ORDERI	NG DATA		7
Type CIM-131	Codice 00211101	- PRE-WIRED CONNECTOR CIM-130/1/6/ co - PUMP WATER PRESSURE	7 DE 70804397
		TRANSMITTER TYPE TPA-200 "	70500255
		- NIPPLE F1/4" GAS -M3/8"GAS "	70190241
		- NUTS KIT "	40179906

## ACCESSORIES ON REQUEST

Туре	Code
- Support KIT CRU-CIM	40493383
- Speed variator VAR-140 12V	00571543
- Flow switch FAP-100	00500312



# **CONTROL UNITS FOR IRRIGATION MOTOR PUMPS** AND PUMP WATER PRESSURE CONTROL

# TYPE • CIM-137/4G (EUROPEAN NETWORK COVERAGE • CIM-137/4GW (worldwide network coverage)



- · Operates the engine accelerator to keep the pressure of the system constant.
- (accelerator with 2 wires connected to the control unit) Assembly also on the machine and in the open air.
- · Controls the flow of water in the pipe.
- · Electronic pressure switch to control the pump water pressure.
- Digital pump water pressure gauge.
- · Clock for programming the starting and stopping of the motor pump.

#### PROTECT

motor pump sets by stopping them in the event of:

- low oil pressure
- over-temperature
- belt breakage
- low coolant level
- low pump water pressure
- pump water overpressure
- overspeed
- A1

available

- A2

#### COMPLETE OF 2G/3G/4G TELEPHONE WARNING DEVICE AND COMMAND

- Notifies via SMS message when the motor pump is in alarm condition.
- · Programming pages of telephone numbers to be dialled when the motor pump is in alarm condition.
- Possibility of displaying the status of the motor pump.
- Possibility of switching off the protection of the pump.
- · Setting of the minutes of work.
- Setting of the working pressure.
- · Possibility of starting or stopping with SMS commands.
- · Possibility to restore all the intervened protection devices and the general alarm.
- Delayed acceleration after starting.
- · Delayed deceleration before stopping.
- CANBus SAE J1939 connection.
- Frost protection.
- · Pressure boost function.

#### MADE TO:

#### DISPLAY

- on the panel the functions of:
- hour-meter
- oil pressure gauge
- water or oil thermometer
- tachometer
- pump water pressure gauge
- timer
  - fuel level gauge
  - battery voltmeter
  - pump protection exclusion
  - battery and oil lights
  - protections intervention
  - emergency stop

# DIMENSIONS

<u>Connectors o</u>diput ▼ see page 10-11



4

## **TECHNICAL DATA**

Battery power supply	12 Vdc 24 Vdc
Supply voltage	8÷ 32V
Consumption in standby	100mA at 12V
	60mA at 24V
Consumption with engine stationary	350mA at 12V
	200mA at 24V
Max. Consumption	900mA at 12V
	600mA at 24V
Max load of the output: • (stopping) yellow • (starting motor) black • (general alarm) red/green • (auxiliary) brown • priming pump yellow/blue • pump clutch white/yellow	3A 40A 3A 3A 3A 3A
Temperature range	-10 ÷ +60 °C
MODEM B1/B3/B5/B7/B8/B20/@FDD LTE B1/B5/B8@WCDMA B3/B8@GSM	
Hour-meter	4 digits
Engine oil pressure gauge	0 ÷ 9 bar
Pump water pressure transmitter: • allowed max. pressure	21 bar
Engine water and oil thermometers	+20 ÷ +145°C
Tachometer	4000 rpm
Timer	1' ÷ 24 h
Serial communication parameters	9600 baud, 8 bit data,1 bit stop, even parity
Rechargeable batteries	2x1,2V type AAA
Installation conditions	for external use
Degree of protection box/rear/connector	IP54/IP23/IP20
Control unit weight	2,2 kg
Weight with control unit mounted on the support	4,6 kg

# CONTROL UNITS FOR IRRIGATION MOTOR PUMPS AND PUMP WATER PRESSURE CONTROL

## **CONVENTIONAL ENGINES**

**Control unit type** 

- CIM-136/4G (EUROPEAN NETWORK COVERAGE)
- CIM-136/4GW (WORLDWIDE NETWORK COVERAGE)



- Digital pump water pressure gauge.
- Clock for programming the starting and stopping of the motor pump.

#### PROTECT

motor pump sets by stopping them in the event of:

- low oil pressure
- over-temperature
- belt breakage
- low coolant level
- low pump water pressure
- pump water overpressure
- overspeed
- A1

available

- A2

ENGINES EQUIPPED WITH CONTROL UNIT FOR ELECTRONIC CONTROL OF THE

#### **INJECTION SYSTEM** Control unit type

- CIM-136FPT/4G (FTP Motors)
- CIM-136JCB/4G (JCB Motors)
- CIM-136JCB/4G (John Deere Motors)
- CIM-136FPT/4GW (FTP Motors)
- CIM-136JCB/4GW (JCB Motors)
- CIM-136JCB/4GW (John Deere Motors)

#### **COMPLETE OF 2G/3G/4G TELEPHONE** WARNING DEVICE AND COMMAND

- Notifies via SMS message when the motor pump is in alarm condition.
- Programming pages of telephone numbers to be dialled when the motor pump is in alarm condition.
- Possibility of displaying the status of the motor pump.
- Possibility of switching off the protection of the pump.
- · Setting of the minutes of work.
- Setting of the working pressure.
- Possibility of starting or stopping with SMS commands.
- · Possibility to restore all the intervened protection devices and the general alarm.
- Delayed acceleration after starting.
- Delayed deceleration before stopping.
- · Assembly also on the machine and in the open air.
- CANBus SAE J1939 connection.
- Frost protection function.
- Pressure boost function.

#### MADE TO:

DISPLAY

on the panel the functions of:

- hour-meter
- oil pressure gauge
- water or oil thermometer
- tachometer
- pump water pressure gauge
- timer
- fuel level gauge
- battery voltmeter
- pump protection exclusion
- battery and oil lights
- protections intervention
- emergency stop

# DIMENSIONS







**TECHNICAL DATA** 

Battery power supply	12 Vdc 24 Vdc
Supply voltage	8÷ 32V
Consumption in standby	100mA at 12V
	60mA at 24V
Consumption with engine stationary	350mA at 12V
	200mA at 24V
Max. Consumption	900mA at 12V
	600mA at 24V
Max load of the output: • (stopping) yellow • (starting motor) black • (general alarm) red/green • (auxiliary) brown • priming pump yellow/blue • pump clutch white/yellow	3A 40A 3A 3A 3A 3A
Temperature range	-10 ÷ +60 °C
Modem B1/B3/B5/B7/B8/B20@FDD LTE B1/B5/B8@WCDMA B3/B8@ GSM	
Hour-meter	4 digits
Engine oil pressure gauge	0 ÷ 9 bar
Pump water pressure transmitter: • allowed max. pressure	21 bar
Engine water and oil thermometers	+20 ÷ +145°C
Tachometer	4000 rpm
Timer	1' ÷ 24 h
Serial communication parameters	9600 baud, 8 bit data,1 bit stop, even parity
Rechargeable batteries	2x1,2V type AAA
Installation conditions	for external use
Degree of protection box/rear/connector	IP54/IP23/IP20
Control unit weight	2,2 kg
Weight with control unit mounted on the support	4,6 kg

CONTROL UNIT FOR COMMAND AND PROTECTION OF ENGINE DRIVEN IRRIGATION PUMP

# CIM-190 CIM-196

(Complete with GSM/GPRS – UMTS – LTE module)

Controls and commands an engine driven irrigation pump. It includes water pressure transmitter with digital pressure gauge. Enables manual or automatic adjustment of the engine rpm and stopping if a fault occurs.





CONFIRM_BUTTON PUMP_PROTECTION_LED_DISABLED PUMP_PROTECTION_DISABLE_BUTTON	Confirms the action. It flashes when pump protections are disabled Press until LED starts to flash to disable pump protections. To re-enable,
ENGINE PROTECTION LED ACTIVE	ON if engine protections are active
DECELERATE BUTTON, ACCELERATE BUTTON	Decelerates/accelerates the engine. When the control unit is on, the
	buttons are always active, even when the engine is not running.
START_STOP_BUTTON	If the control unit is switched off, press the button for at least one second; the control unit will switch on, performing an LED test and checking
	for any faults.
	Starts/stops the engine when the control unit is on.
PUMP_PROTECTION_LED_ACTIVE	ON if pump protections are active.
RED_ALARM_LED	It flashes if a fault has stopped the engine. In electronic engines, steadily
	lit indicates an active RED STOP fault in the engine ECU.
YELLOW_ALARM_LED	It flashes if there is a warning fault that does not stop the engine. In
	electronic engines, steadily lit indicates an active AMBER WARNING fault in the engine ECU.
UP BUTTON, DOWN BUTTON, LEFT BUTTON	, Press the arrows to browse display menus.
RIGHT_BUTTON	Acknowledging the general alarm.
_	

ΕN

#### **GENERAL DESCRIPTION**

The control unit allows starting and stopping an engine-driven irrigation pump. It can manage a linear actuator used to vary the diesel engine's rpm. With each rpm variation there is a variation in irrigation pressure.

The operator can choose either to work with an automatic system that adjusts the working pressure to the preset value and maintains it until the irrigation cycle ends, or to work in manual mode by accelerating or decelerating the engine using the buttons on the front of the control unit. In either case, all diesel engine and pump protections will be managed.

The CIM-196 model manages the remote control with modem via app or SMS text message.

The start and stop can also be triggered via external contact.

If necessary, pump protections can be disabled temporarily by simply operating the button on the front panel. It is also possible to set an operation timer that stops the pump when the time expires.

Functions can be managed easily thanks to the messages displayed. Pop-up messages highlight statuses in progress, showing any times about to expire or indicating which buttons to press; they also display, in text form, any triggered faults or pre-alarms that could stop the engine.

TYPES					
The following table summarises the differences between the various models available:					
	TYPE	MODEM 4G	INCORPORATED EMERGENCY BUTTON		
	CIM-190	NO	NO		
	CIM-196	YES	NO		

#### LIST OF PROTECTIONS

The control unit protects the pump by stopping the engine if a fault occurs.

List of engine protections or alarms	List of pump protections
<ul> <li>List of engine protections or alarms</li> <li>Low oil pressure (from contact and/or transmitter)</li> <li>Engine overtemperature (from contact and/or transmitter)</li> <li>Alternator belt breakage</li> <li>Fuel reserve</li> <li>No fuel (from contact and/or transmitter)</li> <li>Low fuel pressure</li> <li>Low coolant level</li> <li>Battery voltage low</li> <li>Battery voltage high</li> <li>Underspeed (disabled at the factory)</li> <li>Overspeed (disabled at the factory)</li> </ul>	<ul> <li>Pump water low pressure</li> <li>Pump water high pressure</li> <li>Maximum pump water pressure</li> <li>Pump water transmitter fault</li> </ul>

#### **INSTRUMENTS**

The control unit has a backlit 240 x 128 dot graphic display. It displays instruments and provides access to parameter setting.

#### NAVIGATING ACROSS INSTRUMENTS

The instruments displayed on the control unit are divided into pages, each with a uniform group of instruments; to move from one page to another, use the RIGHT\_BUTTON and LEFT\_BUTTON; to move within the pages, use the UP\_BUTTON and DOWN\_BUTTON.



ΕN

#### TECHNICAL SPECIFICATIONS

			TECHN		SPEC	IFICATIO	JNS				
POWER SUPPLY									-		
Suitable for batteri	es					12 Vdc			24 Vdc		
	Identifier		Terminal								
Operating range	+BATT		1			(8 ÷ 48) Vdd	2				
	-BALI		2					105	105		
Absorption with en	gine not runni	ng *1)	CIM-190			150 mA	2 \ / d =		105 mA @	105 mA @24 Vdc	
Abaanstian in Chan	l D *1)		CIM-196			250 mA @1			150 mA @	24 Vac	
Absorption in Stand	а-ву *1)	~h.				Approx. 15	nA ata 0	Vda far 100ma	Approx. 10	mA	
Voltage dip on batt	ery power sup					From 10 Vd	c to U	vac for 100ms			
SIAIIC-ITPE CLUSE	DOUPUISC	IN +BALL		Termino	al				Maximum loa	4	
GLOW PLUGS				8					0.5 A		
GENERAL ALARM				9					0.5 A		
15/54				7					0.5 A	0.5 A	
Programmable				14					0.5 A		
Programmable				15					0.5 A		
Programmable				16					0.5 A		
VAR				10.11	L				3 A		
VALVE				12.13	}				3 A		
RELAY-TYPE CLOSE	D OUTPUTS O	N TERMINAL 4									
Identifier				Termino	al				Maximum load	1	
STOP				6					3A (2A@65	5°C)	
STARTING				5					3A (2A@65	5°C)	
CLEAN CONTACT C	LOSED OUTPU	TS		-							
Identifier				Termino	al N				Maximum load	1 (*C)	
				39.40	)				3A (2A@65	5'C)	
Identifier	IDE INPUTS	Terminal		In	nput		Accur	acy	Measurement	ranae	
FUEL FLOAT		31		((	0 ÷ 380	) Ω	±2%	*1)	(0 ÷ 100) %	)	
ENGINE TEMPERAT	URE TX	33		((	0 ÷ 320	, <u></u> 0) Ω	±2%	*1)	(0 ÷ 140) °(	2	
OIL PRESSURE TX		32		((	0 ÷ 380	)Ω	±2%	*1)	(0.0 ÷ 9.0)	BAR	
FREQUENCY OUTP	UTS			<b>`</b>		<u>,</u>		,			
Identifier		Terminal		N	Лeasurem	ent range			Measurement	range	
ALTERNATOR W		28		((	(0.75 ÷ 65) Vac (50 ÷ 2000) Hz				) Hz		
VOLTAGE INPUTS		-									
Identifier		Terminal		N	Measurement range						
ALTERNATOR D+				((	0.5 ÷ 30	J) Vac					
Identifier	LOSED TO NEG	IATIVE)	Terminal					Threshold H	Threshold I	Max current supplied	
OIL PRESSURE SWI	ГСН		17					mesholdm	Thireshold E	max. current supplied	
ENGINE THERMOS	TAT		18					≤ 0.8V	3.3 mA @ 48 V		
FLOAT SWITCH COM	ITACT		20								
Programmable (de	. FAULT)		22								
Programmable (de	. FAULT)		23								
Programmable (de	. CALL)		24								
Programmable (de	. PUMP PRESS	URE SWITCH)	25								
Programmable (de	. FUEL PRESSU	RE SWITCH)	21								
EMERGENCY BUTT	ON										
Identifier			Terminal					Characteristics			
E-POWER			4					Supply for STC	OP and START of	outputs	
F-IN			2		Digital input				Threshold I	Max absorbed current	
			5		> 2V			> 2V	≤ 2V	4 mA @ 48 V	
LINES OF COMMU	VICATION		<b>I</b>						<u> </u>		
Identifier		Terminal		C	haracteri	stics					
Rs-485 (Not isolato	d)	41(RT) 42(A) 42	(B)	В	Baud-rate				1200 ÷ 115200 bps		
	(NUL ISUIALEU) 41(K   ),42(A),43(B)		S	Settings				N,8,1; E,8,1			
USB 2.0 (USB-B connector)		N	Not isolated. Maximum cable length 3 m.								
ENVIRONMENTAL	CONDITIONS			-							
Operating temperature			(-	(-20 ÷ 60) °C							
Storage temperature			(-	(-20 ÷ 60) ℃							
Relative humidity			≤	≤ 80%							
Back											
Back Front											
				11	r 54						
Woight					200~						
Weight			6	b8Ug							
Dimensions (LXHXD)		2	254 X 1/6 X 64 MM								
				P	PC/ABS VU						
Identifier	FU13	Terminal		0	haracteri	stics					
					GROUND (green), POWER (BROWN +5Vdc). IN (WHITE 0÷5Vdc)						
TPA		34(GROUND).	35(POWER),36(II	N)   G	JROUN	D (green), P(	JWER	(BROWN +5Vdc	), IN (WHITE 0÷	-5Vac)	
TPA VACUUM SENSOR		34(GROUND), 38(POWER) 3	35(POWER),36(II 7(IN)	N) G	POWER	D (green), PO = BATTERY \	JWER /OLTAG	(BROWN +5Vdc GE, IN=4-20mA	<u>), IN (WHITE 0÷</u> Rin = 240Ω. Vir	-5VdC) nmax=5Vdc	

\*1) approximate value

#### **INSERTING THE SIM CARD CIM-196**



CONTROL UNIT FOR COMMAND AND PROTECTION OF ENGINE DRIVEN IRRIGATION PUMP

# CEM-190-10 CEM-196-10

(Complete with GSM/GPRS – UMTS – LTE module)

Controls and commands an engine driven irrigation pump. It includes water pressure transmitter with digital pressure gauge. Enables manual or automatic adjustment of the engine rpm and stopping if a fault occurs. It is possible to request the model with incorporated emergency button installed on the front panel (CEM-190EM or CEM-196EM).





CONFIRM_BUTTON	Confirms the action.
PUMP_PROTECTION_LED_DISABLED	It flashes when pump protections are disabled
PUMP_PROTECTION_DISABLE_BUTTON	Press until LED starts to flash to disable pump protections. To re-enable,
	press again until the LED turns off.
ENGINE_PROTECTION_LED_ACTIVE	ON if engine protections are active.
DECELERATE_BUTTON, ACCELERATE_BUTTON	Decelerates/accelerates the engine. When the control unit is on, the
	buttons are always active, even when the engine is not running.
START_STOP_BUTTON	If the control unit is switched off, press the button for at least one
	second; the control unit will switch on, performing an LED test and checking
	for any faults.
	Starts/stops the engine when the control unit is on.
PUMP_PROTECTION_LED_ACTIVE	ON if pump protections are active.
RED_ALARM_LED	It flashes if a fault has stopped the engine. In electronic engines, steadily
	lit indicates an active RED STOP fault in the engine ECU.
YELLOW_ALARM_LED	It flashes if there is a warning fault that does not stop the engine. In
	electronic engines, steadily lit indicates an active AMBER WARNING fault in
	the engine ECU.
UP_BUTTON, DOWN_BUTTON, LEFT_BUTTON	I, Press the arrows to browse display menus.
RIGHT_BUTTON	Acknowledging the general alarm.
	· –

#### **GENERAL DESCRIPTION**

The control unit allows starting and stopping an engine-driven irrigation pump. It can manage a linear actuator used to vary the diesel engine's rpm. With each rpm variation there is a variation in irrigation pressure.

The operator can choose either to work with an automatic system that adjusts the working pressure to the preset value and maintains it until the irrigation cycle ends, or to work in manual mode by accelerating or decelerating the engine using the buttons on the front of the control unit. In either case, all diesel engine and pump protections will be managed.

The CEM-196-10 model manages the remote control with modem via app or SMS text message.

The start and stop can also be triggered via external contact.

If necessary, pump protections can be disabled temporarily by simply operating the button on the front panel. It is also possible to set an operation timer that stops the pump when the time expires.

Functions can be managed easily thanks to the messages displayed. Pop-up messages highlight statuses in progress, showing any times about to expire or indicating which buttons to press; they also display, in text form, any triggered faults or pre-alarms that could stop the engine.

**TYPES** 

The following table summarises the differences between the various models available:

TYPE	MODEM 4G	INCORPORATED EMERGENCY BUTTON
CEM-190-10	NO	NO
CEM-196-10	YES	NO
CEM-190EM	NO	YES
CEM-196EM	YES	YES

#### LIST OF PROTECTIONS

The control unit protects the pump by stopping the engine if a fault occurs.

List of engine protections or alarms	List of pump protections			
<ul> <li>Low oil pressure (from contact and/or transmitter)</li> </ul>	Pump water low pressure			
<ul> <li>Engine overtemperature (from contact and/or transmitter)</li> </ul>	Pump water high pressure			
Alternator belt breakage	Maximum pump water pressure			
Fuel reserve	Pump water transmitter fault			
<ul> <li>No fuel (from contact and/or transmitter)</li> </ul>				
Low fuel pressure				
Low coolant level				
Battery voltage low				
Battery voltage high				
<ul> <li>Underspeed (disabled at the factory)</li> </ul>				
<ul> <li>Overspeed (disabled at the factory)</li> </ul>				
Emergency button				

#### INSTRUMENTS

The control unit has a backlit 240 x 128 dot graphic display. It displays instruments and provides access to parameter setting.

#### NAVIGATING ACROSS INSTRUMENTS

The instruments displayed on the control unit are divided into pages, each with a uniform group of instruments; to move from one page to another, use the RIGHT\_BUTTON and LEFT\_BUTTON; to move within the pages, use the UP\_BUTTON and DOWN\_BUTTON.



#### MAIN DASHBOARD

This is the most important instrument. It lets you provide commands and check the general status of the pump. An example is given below:



#### COMMANDS

The selected command is highlighted; to move from one command to the other, use the UP\_BUTTON and DOWN\_BUTTON and the CONFIRM\_BUTTON to execute the command. Available commands (if all enabled) are:

Symbol	Name	BRIEFLY
Mode	IRRIGATION MODE	Sets the irrigation mode: MANUAL / OFF / AUTOMATIC.
RESET	RESET	Restores the control unit; see section on restoring.
Ō	STOP TIMER	Sets up the stop timer
ġ	SPOTLIGHT	Controls the SPOTLIGHT function-output. To enable, see setting DEVICE > LIGHT
•	COMMAND	CONTROL

#### INDICATORS

They display the machine's primary data:

- ENGINE RPM
- PUMP BAR
- FUEL TANK

#### STATUSES

Symbol	Meaning
3 5 TOP	STOP TIMER
	FUNCTION-INPUT CALL ENABLED
N	START BY FUNCTION-INPUT FLOAT START / FLOAT STOP
С С	MANUAL START
Ş	STOP BY FUNCTION-INPUT FLOW SWITCH
₽	LOCK BY FUNCTION-INPUT LOCK
<b>A</b>	LOCK BY LOCK MODE
ŝ	REMOTE START BY SMS TEXT OR APP
END	END OF WORK

#### **INDICATOR LIGHTS**

Up to 10 indicator lights can be displayed simultaneously:

Symbol	Meaning
Q	TIMER ACTIVE
Ð	ENGINE PROTECTIONS ACTIVE
6	PUMP PROTECTIONS ACTIVE
*	COOLING
33	WARM-UP

#### TROUBLESHOOTING

FAULT/PROBLEM	LIKELY CAUSES, CORRECTIVE ACTIONS						
The control white is	• It could be in stand-by. Press the start/stop button.						
The control unit is	• The cable's red wires must be connected to the battery's positive pole.						
powered but the display is	• The cable's grey wire must be connected to the battery's negative pole.						
not turning on:	• Check that the battery voltage is higher than 9 V.						
The outputs are not	• The current absorbed by the loads exceeds the maximum current of the outputs.						
actuating property	• Control unit electronics and outputs are protected by the auto-resetting fuses installed in						
actuating property.	the unit. Do not attempt to replace them.						
The control unit turns off	• Check that the battery voltage is higher than 11 V.						
during start-up.	• Place a relay between the start-up output and the start-up motor.						
The starter motor is	• Out of fuel. Fill up the tank.						
working but the engine is	Defective fuel supply circuit.						
not starting	<ul> <li>Incorrect stopping system settings (solenoid valve or electromagnet).</li> </ul>						
not starting.	• Low engine temperature. Check the glow plug preheating efficiency, if any.						
Engine stop due to fault.	<ul> <li>Read the cause of the stop on the display and act accordingly.</li> </ul>						
	• Ensure the stopping system is working properly, both electrically and mechanically						
The engine is not stopping	(solenoid valve or electromagnet).						
in any way.	• If the stopping system is fitted with electromagnet, place a relay between the stopping						
	output and the electromagnet.						
The account is correct on the app but it is not accepting the serial number or the access code.	• Before connecting the app to the control unit, you must follow the steps described in the "Elcos Smart Control" manual in the order shown.						
	• The first connection to the control unit must be done on site.						
	• Insert the SIM card.						
The control unit is not	• Set the correct APN for the mobile operator.						
connecting to the app	The SIM card should be enabled for data traffic.						
	900 MB of data traffic per month should not be exceeded, not even when operating full-						
	time.						
	The telephone signal is too weak.						
The control unit is not	The SIM card should be enabled for SMS text messaging.						
sending or receiving SMS	The SMS recipient's telephone number was not stored.						
text messages.	The telephone signal is too weak.						
Forgot the account	• In the login page, press FORGOT PASSWORD; follow the procedure to receive an email						
password.	with a new password.						
The control unit signals a	• Wrong APN.						
every 30 seconds.	• The telephone signal is too weak.						

			TECH	INIC	AL SPI	ECIFICAT	IONS	5			
POWER SUPPLY											
Suitable for batterie	S				12 Vdc				24 Vdc		
	Identifier	Terminal		Colo	ur						
Operating range	+BATT	CONN A-A8	; CONN A-B8	RED		(8 ÷ 48) Vda	2				
	-BATT	CONN A-C8		GRE	Y						
Absorption with eng	gine not running	g*1)	CEM-190			130 mA @1	2 Vdc		90 mA @24 \	/dc	
	<b>D *</b> 1)		CEM-196			145 mA @1	2 Vdc		100 mA @24	Vdc	
Absorption in Stand	-By *1)	h.,				Approx. 12	mA	de for 150ms	Approx. 10m	A	
						1101111070					
Identifier	0001101301	Terminal		Colo	ur				Maximum lo	ad	
GLOW PLUGS		CONN A-C1		WHI	re/brown				0.5 A		
GENERAL ALARM		CONN A-A3		RED	/GREEN				0.5 A		
15/54		CONN A-A5			WN				0.5 A		
Programmable		CONN B-C2			OW/BLU	E			0.5 A	0.5 A	
Programmable		CONN B-C3		YELL	OW/WH	ITE			0.5 A		
Programmable		CONN B-A8		WHI	TE/BLUE				0.5 A	0.5 A	
		CONN B-A1; C	CONN B-B1	GRE	EN and YI	ELLOW			3 A	3 A	
KELAY-TYPE CLOSE	J OUTPUTS ON	E-POWER		Colo					Maximum lo		
STOP				VELL	0W/				Niaximum load		
RELAY-TYPE CLOSE	OUTPUTS ON	+BATT							37 (27,603 (	3A (2A@65 C)	
Identifier		Terminal			Colour Ma				ximum load		
STARTING		CONN A-A1; (	CONN A-B1 (Use	e both)	)	BLACK		20 /	A @12V	10 A @24V	
ANALOGUE INPUTS								-			
Identifier		Terminal	Colour		Input		Асси	iracy	Measuremen	Measurement range	
FUEL FLOAT		CONN A-C4	ORANGE/BLU	IE	(0 ÷ 38	0) Ω	±2%	*1)	(0 ÷ 100) %	(0 ÷ 100) %	
ENGINE TEMPERATURE TX		CONN A-C3	WHITE/PURP	LE	(0 ÷ 32	.00) Ω	±2%	*1)	(0 ÷ 140) °C		
OIL PRESSURE TX		CONN A-C2	WHITE/GREE	N	(0 ÷ 38	0) Ω	±2%	*1)	(0,0 ÷ 9,0) BA	(0,0 ÷ 9,0) BAR	
FREQUENCY OUTPL	115	Toursiand									
		CONNA-A4 WHITE/PED			Measurement range				(50 ÷ 2000) Hz		
		CONN A-A4	WITTE/RED		(0,75 -				(30 ÷ 2000) 112		
Identifier		Terminal	Colour		Measurement range						
ALTERNATOR D+		CONN A-B4	GREEN		(0.5 ÷ 30) Vdc						
DIGITAL INPUTS (CL	OSED TO NEGA	TIVE)									
Identifier			Terminal		Colour			Threshold H	Threshold L	Max. current supplied	
OIL PRESSURE SWIT	СН		CONN A-	B2	WHITE	VHITE					
ENGINE THERMOSTAT		CONN A-E		B6	BLUE	BLUE					
FLOAT SWITCH CON		CONN A-		B7	ORANGE						
Programmable (def.	FAULT)		CONN A-	C7	ORANGE/BROWN			> 2V	≤ 0.8V	3.3 mA @ 48 V	
Programmable (def.		CONN B-		A5	BLACK/GREEN						
Programmable (def.	PUMP PRESSU	RE SWITCH)	CONN B-	C4	PURPLE						
Programmable (def.	FUEL PRESSUR	RE SWITCH) CONN A-E			BLACK/BLUE						
EMERGENCY BUTTO	ON										
Identifier		Terminal			Colour	Colour Characteristics					
E-V_BATT		CONN A-A			BROWI	OWN Battery positive					
E-POWER			CONN A-	CONN A-A7 BLUE			ST	STOP output supply			
								gital input			
E-IN			CONN A-	CO		W/GREEN			< 7V	4 mA @ 48 V	
LINES OF COMMUN	IICATION							- •	320		
USB 2.0 (USB-B con	nector)	Inside contro	unit		Not iso	lated. Maxim	um ca	ble length 3 m.			
ENVIRONMENTAL C	ONDITIONS										
Operating temperat	ure				(-20 ÷ 6	60) °C					
Storage temperature				(-20 ÷ 60) °C							
Relative humidity				≤ 80%							
PROTECTION CLASS											
					IP 55						
CONTAINER					1.25 kg						
Veigni 1.2 Dimensions (LyHyD)						Only container: (207 x 183 x 135) mm. With fastening brackets: (215 x 196 x 135) mm					
Wiring length				2.80 m							
Material					PC-ABS V0 and front panel in metal						
MEASUREMENT IN	PUTS										
Identifier Terminal Col			Colour		Characteristics						
		CONN B-A2	CONN B-A2 GREEN			GROUND					
ТРА		CONN B-A3 BROWN			+5 Vdc						
		CONN B-A4 WHITE			Voltage input (0 - 5) VDC						
			AU 1777 /		D.01		DV/	TACE			
VACUUM SENSOR		CONN B-B4	WHITE/BLAC	K	POWER	R OUT: BATTE	RY VO	LTAGE			

\*1) approximate value

#### **MECHANICAL DIMENSIONS**









ΕN









#### **INSERTING THE SIM CARD CEM-196-10**



Алматы (7273)495-231 Ангарск (3955)60-70-56 Архангельск (8182)63-90-72 Астрахань (8512)99-46-04 Барнаул (3852)73-04-60 Белгород (4722)40-23-64 Благовещенск (4162)22-76-07 Брянск (4832)59-03-52 Владивосток (423)249-28-31 Владикавказ (8672)28-90-48 Владимир (4922)49-43-18 Волоград (844)278-03-48 Волоград (8472)26-41-59 Воронек (473)204-51-73 Екатеринбург (343)384-55-89

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