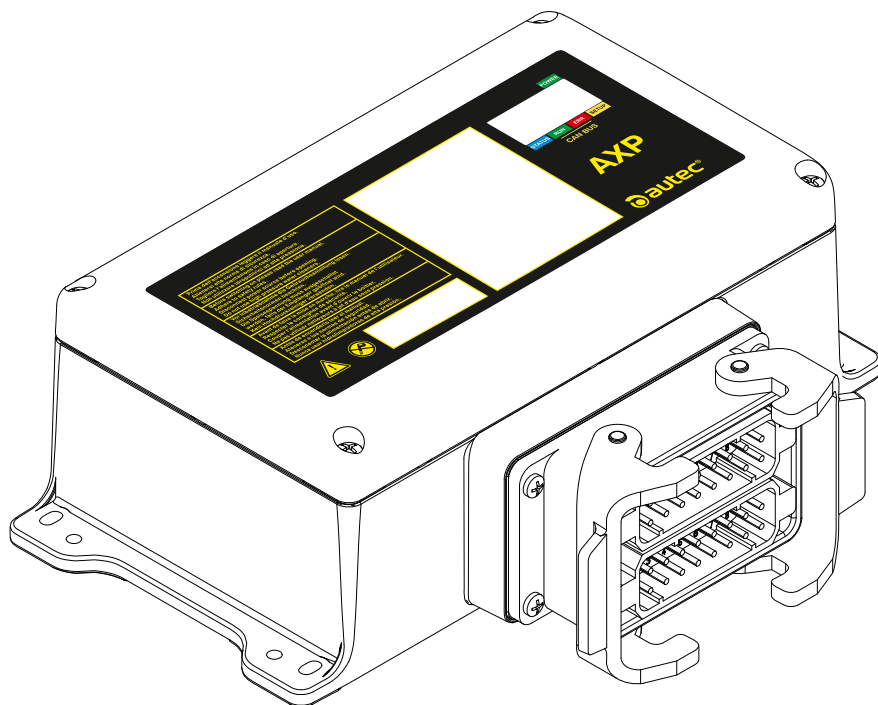


Instruction Manual for the use and the maintenance of the CCS

Original instructions



Part D: AXP Base station

DYNAMIC+P SERIES

WARNING

THIS PART OF THE MANUAL CONSISTS OF Part D - Information, instructions and warnings for the AXP Base station. The Manual consists of Part A – General, Part B – Conformity and Frequencies, Part C – Remote station, Part D – Base station, Part E – Battery and Battery Charger, plus the Technical Data Sheet.

THIS MANUAL, INCLUDING ALL PARTS THEREOF, AND ALL INSTRUCTIONS CONTAINED HEREIN, MUST BE READ CAREFULLY AND UNDERSTOOD BEFORE INSTALLING, USING, MAINTAINING OR REPAIRING THE AUTEC CCS.

FAILURE TO READ AND COMPLY WITH ALL APPLICABLE WARNINGS AND INSTRUCTIONS OR ANY ONE OF THE LIMITATIONS NOTED IN THIS MANUAL CAN RESULT IN SERIOUS BODILY INJURY OR DEATH, AND/OR PROPERTY DAMAGE.

THE AUTEC CCS IS NOT A STANDALONE PRODUCT AND IS INTENDED ONLY AS A COMPONENT ON A MACHINE:

- ON WHICH AND WHERE THE USE OF A CCS IS APPROPRIATE,
- THAT CAN BE OPERATED SAFELY AND IN ACCORDANCE WITH ALL APPLICABLE LAWS, REGULATIONS AND STANDARDS BY SUCH REMOTE CONTROL.

ACCORDINGLY, IT IS THE RESPONSIBILITY OF THE MACHINE MANUFACTURER ON WHICH THE AUTEC CCS IS INTENDED TO BE INSTALLED, to perform an in-depth and accurate risk assessment to determine if the Autec CCS is suitable for operating a Machine in conditions of safety and operational effectiveness, taking into account the conditions of use, the intended uses and the reasonably foreseeable incorrect ones, so that the installation, maintenance and use of the Autec CCS, and all its components, are performed only and entirely in compliance with this Manual and in accordance with all local regulations, safety standards and regulations (referred to herein as "Laws, Regulations and Standards").

With reference to the USA market the Laws, Regulations and Standards include all safety rules and regulations of the Occupational Safety & Health Administration (OSHA) (<http://www.osha.gov>), all federal, state and local laws, regulations and building and electrical codes, and all applicable standards, including but not limited to ANSI Standards.

It is also the responsibility of the Manufacturer and of the design professionals of the Machine on which the Autec CCS is to be installed and used to be certain that the structure, condition, organization and markings of the Machine as installed at the facility is appropriate for and will allow for the safe and reliable use and control of the Machine through the Autec CCS interface.

IT IS THE RESPONSIBILITY OF THE OWNER AND FACILITY OPERATOR, AND THEIR DESIGN PROFESSIONALS, that the installation, maintenance and operation of the Autec CCS and all of its components are done solely and completely in accordance with this Manual, and with all applicable Laws, Regulations and Standards, even local. It is also the responsibility of the Manufacturer of the Machine on which the Autec CCS is to be installed and used, and their design professionals, to be certain that the structure, condition, organization and markings of the Machine as installed at the facility is appropriate for and will allow for the safe and reliable use and control of the Machine through the Autec CCS interface.

ONLY QUALIFIED AND PROPERLY TRAINED PERSONNEL SHOULD BE PERMITTED TO OPERATE OR USE THE AUTEC CCS AND THE MACHINE OPERATED BY OR THROUGH THE AUTEC CCS. ONLY QUALIFIED AND PROPERLY TRAINED PERSONNEL SHOULD BE PERMITTED TO BE IN THE VICINITY OF MACHINE OPERATED BY OR THROUGH THE AUTEC CCS.

FAILURE TO PROPERLY INSTALL, OPERATE, MAINTAIN AND SERVICE THE AUTEC CCS CAN RESULT IN SERIOUS BODILY INJURY OR DEATH AND/OR PROPERTY DAMAGE. Refer to this Manual and each of its Parts for further assistance or contact Autec. Autec is not responsible for and shall not be held liable for any installation of the Autec CCS not performed by Autec or for any use of the Autec CCS not in complete compliance with, and/or not maintained in complete compliance with, all Autec instructions and warnings and all applicable Laws, Regulations and Standards, even local.

Autec is not responsible for and shall not be held liable for any alteration or modification of the Autec CCS, or the use of non-Autec components or products used with or incorporated into the Autec CCS.

IT IS THE RESPONSIBILITY OF THE OWNER AND FACILITY OPERATOR, AND THEIR DESIGN PROFESSIONALS, to be certain that the Autec CCS is properly maintained and serviced at all times in compliance with all Autec instructions and warnings, and with all applicable Laws, Regulations and Standards, even local.

IT IS THE RESPONSIBILITY OF THE OWNER AND FACILITY OPERATOR, AND THEIR OFFICERS, MANAGERS AND SUPERVISORS, to be certain that all Users of the Autec CCS and that all Persons who are or will be working with or near the Machine operated by or through the Autec CCS are fully and properly educated and trained by qualified Personnel in the proper and safe use of the Autec CCS and of the Machine, including without limitation complete familiarity with and understanding of Autec warnings and instructions, and all applicable Laws, Regulations and Standards, even local, and that such Users and other Persons do in fact at all times operate or work with the Autec CCS safely and ONLY in compliance with Autec instructions and warnings and with all applicable Laws, Regulations and Standards, even local. FAILURE TO DO SO CAN RESULT IN SERIOUS BODILY INJURY OR DEATH AND/OR PROPERTY DAMAGE.

IT IS THE RESPONSIBILITY OF THE OWNER AND FACILITY OPERATOR, AND THEIR OFFICERS, MANAGERS AND SUPERVISORS, to be certain that the areas in which the Machine operated by or through the Autec CCS is located and operates are clearly delineated and marked in accordance with all Autec warnings and instructions, and all applicable Laws, Regulations and Standards, even local, and otherwise sufficient to alert and warn ALL PERSONS that the Machine is operated by or through a CCS, and prohibiting any unauthorized access thereto. FAILURE TO DO SO CAN RESULT IN SERIOUS BODILY INJURY OR DEATH AND/OR PROPERTY DAMAGE.

FAILURE TO OPERATE THE AUTEC CCS SAFELY AND IN COMPLIANCE WITH AUTEC INSTRUCTIONS AND WARNINGS AND WITH APPLICABLE LAWS, REGULATIONS AND STANDARDS, EVEN LOCAL, AND/OR PERMITTING USERS OR OTHER PERSONS NOT PROPERLY TRAINED IN THE SAFE AND PROPER USE OF THE SYSTEM, OR THE MACHINE ON WHICH IT IS INSTALLED, CAN RESULT IN SERIOUS BODILY INJURY OR DEATH AND/OR PROPERTY DAMAGE.

INDEX

1	Information on the use of instructions	7
1.1	Structure of the Instruction Manual	7
1.2	Caption and terminology	9
1.3	Symbols	10
1.4	To whom the instructions are addressed	10
1.5	Instruction storage	10
1.6	Intellectual property	10
2	Brief product presentation	11
2.1	Series, CCS and Station	11
2.2	Conformity with standards	11
2.3	Contacts and useful addresses	11
2.4	Warranty	11
2.5	Technical assistance and spare parts	11
3	Description of the Base station	12
4	Technical data	13
5	Technical Data Sheet	15
6	Plates	15
7	Light signals	16
7.1	Seven-segment display	16
7.2	POWER LED	17
7.3	STATUS LED	18
7.4	RUN LED	18
7.5	ERR LED	18
7.6	SETUP LED	19
8	Values of proportional outputs	20
8.1	Accessing the REMOTE SETUP menu	21
8.2	Calibrating maximum and minimum values of proportional outputs	22
8.3	Calibrating values related to the rest position of proportional outputs (offset)	23
8.4	Restoring factory settings	24
9	Installing the Base station	25
9.1	Warnings for the Installer	25
9.2	Positioning the antenna	26
9.3	Wiring	26
9.4	At the end of installation	27
10	Maintenance	27
11	Malfunction signalled by the Base station	28
12	Decommissioning and disposal	29

1 Information on the use of instructions



Before reading this part of the Manual, you must read and understand the general part (Part A) of the Manual provided with the CCS.

1.1 Structure of the Instruction Manual

The Manual for the use and maintenance of Autec CCSs consists of different parts, that altogether form the Manual; the Manual must be read carefully, understood and applied by the CCS's Owner, User and by all those Persons that, for any reasons, may operate with the CCS or with the Machine where it is installed.

The following table describes the structure of the Instruction Manual for the use and the maintenance of the CCS.

Part	Title	Contents
A	General part	<ul style="list-style-type: none"> - General information regarding the series, - directions for risk assessment of the "Machine+CCS" system, - warnings for installation of the CCS, - warnings for use and maintenance of the CCS, - instructions for correct transportation and storage of CCS.
B	Conformity and frequencies	<ul style="list-style-type: none"> - Operating frequency bands of the CCS, - conformity and law references of the CCS.
C	Remote station	Description and instructions concerning the Remote station, including: <ul style="list-style-type: none"> - description of operation, - commands, - light signals, - malfunctions, - additional instructions to the general part.
D	Base station	Description and instructions concerning the Base station, including: <ul style="list-style-type: none"> - description of operation, - light signals, - malfunctions, - additional instructions to the general part.
E	Battery and battery charger	Description, warnings and instructions concerning batteries and battery chargers, including: <ul style="list-style-type: none"> - description of operation, - light signals, - malfunctions, - instructions for the User.

Usage and maintenance instructions are supplemented by the CCS's Technical Data Sheet, that:

- Describes the Remote station's configuration
- Indicates the relation between commands sent by the Remote station and those available on the Base station.

Usage and maintenance instruction as a whole are to be considered as an integral part both of the Autec CCS and of the Machine, system, device or Machinery system where the CCS is installed.

The Manufacturer of the Machine on which the Autec CCS is installed, and the Owner and User of the Machine, must make sure that the Instruction Manual and all of its parts are included in the Instruction Manual of the Machine.

1.2 Caption and terminology



Contact Autec if any of the instructions, symbols, warnings or images are not clear and understandable.



In this part of the Manual, the terms listed below have the same meaning explained in the corresponding paragraph of the general part (Part A):

- **Station**
- **CCS**
- **Remote station**
- **Base station**
- **Radio link**
- **Active stop**
- **Automatic stop**
- **Manual stop**
- **Passive stop**
- **Machine**
- **Manufacturer**
- **Installer**
- **User**
- **Maintenance Technician**
- **Manual or Instruction Manual**
- **Installation manual**
- **Person**
- **Owner**

Functions indicated for the Manufacturer, the Installer, the User and the Maintenance Technician may be performed by a single Person, if he/she has the needed competence and undertakes the resulting responsibilities. Each Person must be aware of the instructions contained in the Manual, depending on the activity they carry out.

For example, if a Manufacturer is also the Installer, and/or Maintenance Technician, he/she must also know and follow the instructions specifically addressed to those Persons. The same applies, for example, if a User is also the Manufacturer and/or the Installer.

1.3 Symbols

	<p>This symbol identifies the parts of text in the Manual that must be read with special attention.</p>
	<p>This symbol identifies the parts of text in the Manual containing warnings, information and/or instructions that are particularly relevant with regards to safety; failure in understanding them or in complying with them may cause hazards for People and/or property.</p>

1.4 To whom the instructions are addressed

Addressees of instructions are listed in the paragraph with the same title in the general part: please refer to that part.

1.5 Instruction storage

Regulation for the storage of instructions are described in the paragraph with the same title in the general part: please refer to that part.

1.6 Intellectual property

Restrictions connected to intellectual property are described in the paragraph with the same title in the general part: please refer to that part.

2 Brief product presentation

2.1 Series, CCS and Station

The object of this part of the Manual is the AXP Base station of an Autec Dynamic+P series' CCS.

Autec Dynamic+P series' CCSs are designed to be used on Machines and provide a command interface to their command and control system, to be used from an appropriate distance and position.

2.2 Conformity with standards

The conformity of CCSs with standards and with working requirements and conditions in the single Countries is provided in the related specific part "Conformity and frequencies" (Part B) of the Manual.

2.3 Contacts and useful addresses

The CCSs are produced by Autec Srl – Via Pomaroli, 65 - 36030 Caldogno (VI) - Italy.

You can find contacts for Autec, its distributors, dealers and authorized service centres on the website www.autecsafety.com.

2.4 Warranty

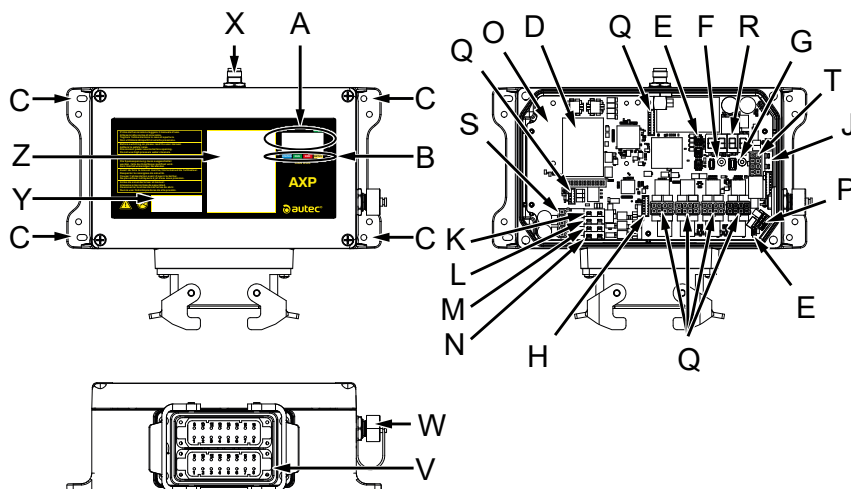
General warranty conditions are indicated both in the relevant sheet provided together with this documentation, and in the specific page on the website www.autecsafety.com.

2.5 Technical assistance and spare parts

If you need technical services and/or spare parts, please refer to contacts provided in the website www.autecsafety.com.

When applying for technical service to Autec, its distributors, dealers and authorized service centres, the CCS's serial number is required; you can find it on the identification plate on the Remote station and/or on the Base station.

3 Description of the Base station

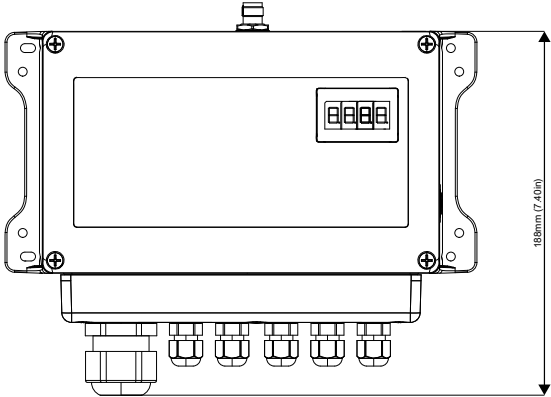
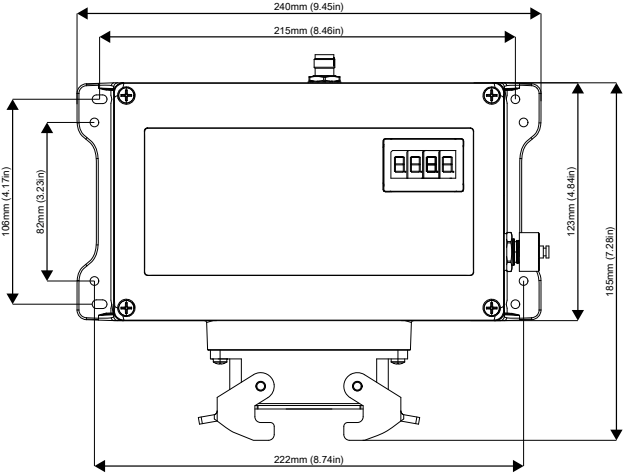
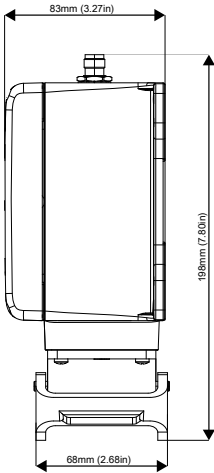


A	Seven-segment display
B	LEDs
C	Mounting holes
D	Radio area on the electronic board
E	DIP switches
F	OP-MEM connector (for the optional memory card)
G	DATA-KEY connector (for the memory card)
H	Connector for programming
J	Fuse F1
K	Fuse F2
L	Fuse F3
M	Fuse F4
N	Fuse F5
O	Internal antenna
P	Connector for CAN BUS 1 network
Q	I/O connectors
R	Seven-segment display
S	Connector for STOP and SAFETY outputs

T	Connector for power supply
V	Connectors or cable glands
W	Connector for cable control
X	TNC connector for external antenna
Y	CCS identification plate
Z	Technical data plate

4 Technical data

Power supply voltage	8-30V $\overline{---}$ (1.5A)
Internal antenna	integrated
External antenna	dedicated stylus $\frac{1}{4}\lambda$
Rated current of STP_1 and STP_2 outputs	3A (30V $\overline{---}$)
Rated current of STP_1 and STP_2 outputs (filtered)	0.5A (30V $\overline{---}$)
Rated current of SAF_1 and SAF_2 outputs	3A (30V $\overline{---}$)
Rated current of proportional outputs (PWM)	
Rated current of proportional outputs (voltage)	
Rated current of proportional outputs (voltage)	
Protection of the STP_1 output (fuse F5)	3A (32V $\overline{---}$, autofuse)
Protection of the STP_2 output (fuse F4)	
Protection of the SAF_1 output (fuse F3)	
Protection of the SAF_2 output (fuse F2)	
Protection of power supply (fuse F1)	15A (32V $\overline{---}$, autofuse)
UMFS intervention time	1s
Housing material	PA6 (20% fg)
Protection degree	IP66 (NEMA 4)
Weight	1.2kg (2.7lb)



5 Technical Data Sheet

The CCS's Technical Data Sheet:

- Describes the Remote station's configuration
- Indicates the relation between commands sent by the Remote station and those available on the Base station.

The Technical Data Sheet must be filled in, checked and signed by the Installer, who is responsible for correct wiring.

A Technical Data Sheet must always be kept together with this Manual: if you need to use the Technical Data Sheet for administrative purposes (tests, check, etc.), make a copy of it.



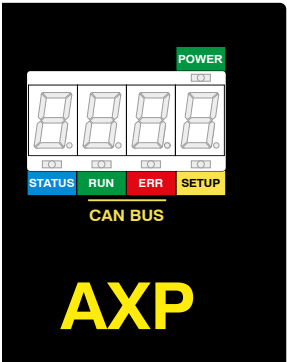
The wiring of the Base station's outputs must always reflect the wiring indicated in the Technical Data Sheet.

6 Plates

Plate	Position	Content
CCS identification plate	Base station's cover	CCS serial number (S/N), QR code and manufacturing year.
Technical data plate	Base station's cover	MODEL, TYPE and main Base station technical data, marking and possible CCS marks.

7 Light signals

The AXP Base station has four seven-segment displays and five LEDs called POWER, STATUS, RUN, ERR and SETUP.



The meaning of light signals illumination is described in the following paragraphs; possible measures to take are provided in chapter 11.

7.1 Seven-segment display

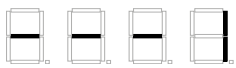
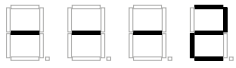
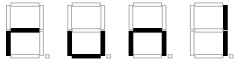

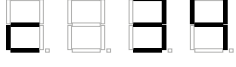

The seven-segment displays show the status of the Base station and of the radio link. In addition, the seven-segment displays signal possible errors related to the STOP and SAFETY outputs (see chapter 11).

7.1.1 CCS

Signal	Meaning
	The Remote station and Base station do not communicate.
	The CCS is started up.
	Base Station's internal temperature (°C).
	Base Station's supply voltage (V).

a. These signals alternate when the CCS is started.

7.1.2 "Take & Release" CCS

Signal	Meaning
	The Base Station is engaged by the Remote Station TU No.1, but the Stations do not communicate with each other.
	The Base Station is engaged by the Remote Station TU No.2, but the Stations do not communicate with each other.
 b	The CCS is started and the Base Station is engaged by the Remote Station TU No.1.
 c	The CCS is started and the Base Station is engaged by the Remote Station TU No.2.
 b c	Base Station's internal temperature (°C).
 b c	Base Station's supply voltage (V).

b. These signals alternate when the CCS is started and the Base station is engaged by Remote station TU No.1.

c. These signals alternate when the CCS is started and the Base station is engaged by Remote station TU No.2.

7.2 POWER LED

The POWER LED indicates the status of the Base station and of the radio link.

Signals	Meaning
The POWER LED is off.	The Base station is off.
The POWER LED is on.	The CCS is not started and the Stations do not communicate with each other.
The POWER LED repeats the sequence: a blink and a pause.	The CCS is started and the Stations communicate via radio link in the 863-870MHz or 2400-2483.5MHz frequency band.
The POWER LED repeats the sequence: two blinks and a pause.	The CCS is started and the Stations communicate via radio link in the 915-928MHz frequency band.
The POWER LED repeats the sequence: three blinks and a pause.	The CCS is started and the Stations communicate via cable control.

7.3 STATUS LED

The STATUS LED warns about anomalies on the outputs or on the power supply and indicates the reception of data from the Remote station.

Signals	Meaning
The STATUS LED is off.	The CCS is not started and the Stations do not communicate with each other.
The STATUS LED blinks slowly.	Over-voltage on power supply.
The STATUS LED blinks fast.	The Base station receives data from the Remote station.
The STATUS LED is on.	Over-current in one of the PWM proportional outputs.

7.4 RUN LED

The RUN LED indicates the status of the communication between the Base station and the CAN network Master node.

Signals	Meaning
The RUN LED is off.	The Base station does not work as a CAN network node.
The RUN LED blinks.	The Base station does not send commands in the CAN network.
The RUN LED is on.	The Base station is working correctly as a node in the CAN network.

RUN LED signals reflect the guidelines of the CANopen® standard, CiA recommendation 303-3.

7.5 ERR LED

The ERR LED indicates the status of the CAN communication.

Signals	Meaning
The ERR LED is off.	The CAN communication is working correctly.
The ERR LED blinks.	The CAN communication does not work correctly.
The ERR LED is on.	No CAN communication.

ERR LED signals reflect the guidelines of the CANopen® standard, CiA recommendation 303-3.

7.6 SETUP LED

The SETUP LED shows the status of the memory card on the connector, according to the Base station working status.

Signals	Meaning
The SETUP LED is off.	The Base station works correctly.
The SETUP LED blinks twice.	Error on the memory card.
The SETUP LED blinks three times.	Within the REMOTE SETUP procedure, calibration of the values for the proportional outputs' rest position is being performed (see paragraph 8.3).
The SETUP LED blinks four times.	Inversion of movement direction of the joysticks axis is being performed (see the Installation Manual).
The SETUP LED blinks quickly.	Within the REMOTE SETUP procedure: - two or more analogue commands are being activated simultaneously or - restoration of factory settings is being performed (see paragraph 8.4).
The SETUP LED is on.	Within the REMOTE SETUP procedure, calibration of maximum and minimum values of proportional outputs is being performed (see paragraph 8.2).

8 Values of proportional outputs

Proportional outputs in the Base station are factory set: values are specified in the Technical Data Sheet.

When testing the unit, these values must be checked and, if necessary, modified according to the Machine working mode.

The REMOTE SETUP procedure is used to modify:

- Maximum and minimum values of proportional outputs (see paragraph 8.2)
- Values related to the rest position of proportional outputs (offset) (see paragraph 8.3)
- Direction of movements of the joystick's axis (see the Installation Manual).



The REMOTE SETUP procedure can only be performed by skilled and properly trained personnel.

During the REMOTE SETUP procedure, pay particular attention to the Machine behaviour, because the Machine performs movements (depending on the Machine, functions, etc.) during the output calibration: therefore, the Person who performs this operation must make sure that it can be carried out in safety conditions, and must take all the necessary caution to prevent hazards for people and/or property. Once the REMOTE SETUP procedure is completed, the commands' functions must be tested: operational tests must be performed, in order to become familiar with the modifications.

Switch off the Remote station when the CCS is not being used to operate the Machine, or when work is otherwise interrupted, even for short periods. Do not leave the load hanging, and do not leave the Machine in dangerous conditions (even when recharging the Station or replacing the battery).

FAILURE TO DO SO CAN RESULT IN SERIOUS BODILY INJURY OR DEATH AND/OR PROPERTY DAMAGE.



The REMOTE SETUP procedure is used to modify one proportional output at a time. The procedure will not be performed if the actuators corresponding to the other proportional outputs are not in the rest position.

Calibrations are saved in the memory card on the DATA-KEY connector.

It is possible to restore factory settings at any time, if necessary (see paragraph 8.4).

8.1 Accessing the REMOTE SETUP menu

1. Power on the Base station.
2. Start up the CCS.
3. Hold the START pushbutton pressed.
4. Activate the TEACH+ and TEACH- commands three times alternately.
5. Release the START pushbutton.




6. Make sure that the Base station's display shows the following message:
 - If this message appears, access to the REMOTE SETUP menu was successful: it is now possible to adjust maximum and minimum values for the proportional outputs.
 - If this message does not appear, start again from step 3. or contact the Machine Manufacturer's after-sales service.

8.1.1 Accessing submenus

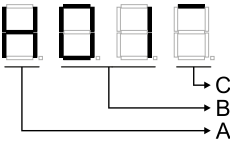
1. Press TEACH+ and START in sequence to access the submenus:





Signals	Solutions
	Adjust maximum and minimum values of proportional outputs (see paragraph 8.2)
	Adjust values related to the rest position of proportional outputs (offset) (see paragraph 8.3)
	Reverse the Machine movements' directions associated to joysticks' movements (see paragraph 8.3)


8.2 Calibrating maximum and minimum values of proportional outputs

- 1. Access the submenu until the following happens in the Base station:
 - the SETUP LED turns steadily on
 - the display shows this message: 
- 2. Set the desired values as follows.
 - For the maximum value, move the joystick or turn the potentiometer to the full extension of the semi-axis corresponding to the output you want to calibrate.
 - For the minimum value, move the joystick or turn the potentiometer slightly out of the rest position of the semi-axis corresponding to the output you want to calibrate.
 - Check the message on the display (see paragraph 8.2.1).
 - Act on the TEACH+ or TEACH- selector on the Remote station to set the desired value.
 - Press the GSS or the EMS pushbutton to save the calibration.
 - Unlock the GSS or the EMS pushbutton, press and release the START pushbutton.
- 3. Repeat the previous step to calibrate other values.

8.2.1 Caption and terminology



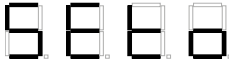
A	Direction		High
			Low
B	Number of joysticks or potentiometer		
C	Calibration		Maximum value
			Minimum value



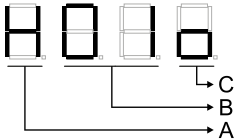
If a speed selector is available on the Remote station, minimum and maximum values have to be calibrated for each of the selector positions.



If inputs are used in the Base station to select different speeds, calibration must be performed for every input configuration being used in that specific application.

8.3 Calibrating values related to the rest position of proportional outputs (offset)

1. Start up the CCS.
2. Access the submenu until the following happens in the Base station:
 - The SETUP LED starts blinking three times
 - the display shows this message: 
3. Set the desired values as follows.
 - Move the joystick or turn the potentiometer out of the rest position on the axis corresponding to the output to calibrate. Maintain this position and act on the TEACH+ or TEACH- selector on the Remote station to set the desired value.
 - Press the GSS or the EMS pushbutton to save the calibration.
 - Unlock the GSS or the EMS pushbutton, press and release the START pushbutton.
4. Repeat the previous step to calibrate other values.

8.3.1 Caption and terminology



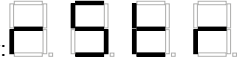
A	Direction		High
			Low
B	Number of joysticks or potentiometer		
C	Offset calibration		

8.4 Restoring factory settings

This procedure is used to restore factory settings of the proportional outputs.

1. Power on the Base station.
2. Start up the CCS.
3. Access the REMOTE SETUP menu.
4. Hold START pressed.
5. Act on the TEACH+ selector on the Remote station 3 times consecutively and hold it pressed at the third iteration; the SETUP LED blinks fast, indicating that factory settings are being

restored, and the following blinking message appears on the display:



6. Hold the TEACH+ pushbutton pressed until the SETUP LED is steadily on again. If the TEACH+ pushbutton is released before the SETUP LED is steadily on, factory settings of proportional outputs will not be restored.
7. Release START.



8. Check that the display shows this message:

9 Installing the Base station

The chapter "Installation" in "Part A" of the Instruction Manual contains the warnings for the installation that add to those provided in this chapter. Therefore, please refer to that part of the Manual.

9.1 Warnings for the Installer

The Installer must:

- Observe and comply with all instructions and warnings provided by the Machine Manufacturer.
- Observe and comply with all instructions and warnings provided by the Person responsible for the Machine commissioning or making the Machine available for work.
- Observe and comply with all instructions and warnings provided in the CCS Manual.
- Observe and comply with all applicable Laws, Regulations and Standards, even local.
- Operate the Autec CCS only in accordance with this Manual and all of its Parts, and with all Autec warnings and instructions, and with applicable Laws, Regulations and Standards, even local.
- Operate the Machine operated by or through the Autec CCS only in accordance with the Machine Manufacturer's instructions and warnings, and with applicable Laws, Regulations and Standards, even local.
- Operate the Machine operated by or through the Autec CCS only when he is in a safe condition and can perfectly see the whole Machine's working area.
- Immediately inform his supervisors and/or the people in charge for the working place and/or for the Machine about any possible failure, damage, loosening, anomalous wear, detachment and/or any other anomaly that may cause malfunction to the CCS and/or to the Machine, or that may cause damage to people and/or property.
- Keep the Remote station secure and out of reach of unauthorized and unqualified Personnel.



ADDITIONAL WARNINGS AND INSTRUCTIONS THAT ARE CONTAINED IN THE OTHER PARTS OF THIS MANUAL MUST BE FOLLOWED.

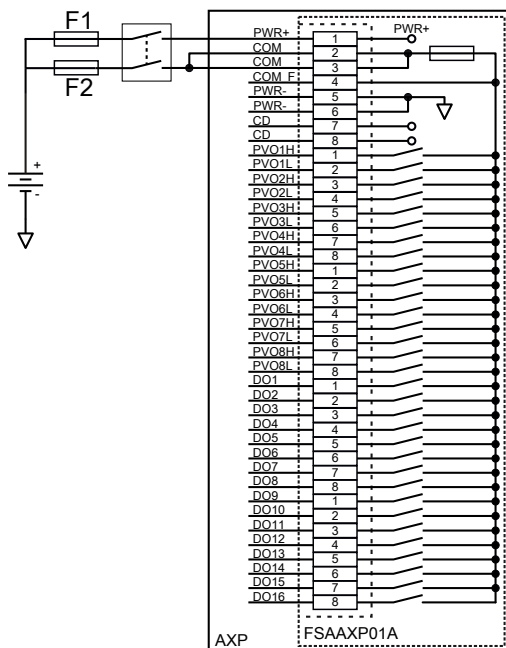
9.2 Positioning the antenna



The Base station may be configured with internal antenna or external antenna (see Technical Data Sheet).


9.3 Wiring

Power on the Base station as follows.




Fuse F1 must have the following features: 3A (32V $\overline{\text{---}}$, autofuse).

Fuse F2 must be able to interrupt the maximum fault current (including the short circuit current) allowed in the circuit.

 WARNING	<p>Wiring inside the Base station shall be made with electrical wires resistant to at least 125°C usage temperature.</p> <p>Group all cabling wires so that they are far from the radio area in the electronic board, in order to avoid interference and danger related to electrical safety.</p> <p>The current of STOP outputs is interrupted at regular intervals for approx. 1 ms every 100 ms. Risk assessment must consider this interruption. If STOP outputs are used to power electronic devices, check that they are compatible with this recurring interruption (use suitable filters if necessary).</p> <p>When failure is detected on the SAFETY outputs, the STOP outputs are automatically opened within 200 ms. Risk assessment must consider this delay.</p> <p>SAF_1 and SAF_2 outputs are designed to drive power loads and are protected by means of fuses and transils, to ensure the longest lifetime in most applications. If these outputs are connected to inductive loads (e.g. solenoid valves, relays), it is recommended to connect a reverse recovery diode close to the load, to further reduce the effects of demagnetisation currents.</p>
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9.4 At the end of installation

 WARNING	<p>Correctly close the Base station in order to maintain the protection from dust, contaminants and water:</p> <ul style="list-style-type: none"> - Make sure that the gasket is intact and correctly seated. - Check that the housing parts correctly fit so that they overlap. - Tighten the existing screws with a 70N·cm (6.2lbf·in) tightening torque.
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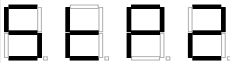


10 Maintenance

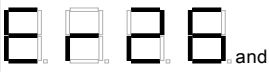
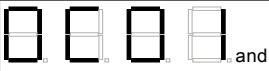
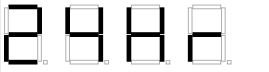
Instructions for correct CCS maintenance are described in the chapter "Maintenance" included in "Part A" of the Instruction Manual. Therefore, please refer to that part of the Manual.

11 Malfunction signalled by the Base station

The table below lists malfunctions that are signalled by LEDs on the Base station and the solution to those malfunctions.

If the problem persists after attempting the suggested solution, contact the support service of the Machine Manufacturer.

Signals	Possible reasons	Solutions
The POWER LED is off.	The Base station is off.	Make sure that the power supply protection fuse is intact (fuse F9). Correctly plug in the connecting plug and power on the Base station.
	Error on output STP_1.	Make sure that the protection fuse for output STP_1 is intact (fuse F8). Correctly plug in the connecting plug. Make sure that output STP_1 is wired correctly.
	Error on output STP_2.	Make sure that the protection fuse for output STP_2 is intact (fuse F7). Correctly plug in the connecting plug. Make sure that output STP_2 is wired correctly.
	Error on output SAF_1.	Make sure that the protection fuse for output SAF_1 is intact (fuse F6). Correctly plug in the connecting plug. Make sure that output SAF_1 is wired correctly.
	Error on output SAF_2.	Make sure that the protection fuse for output SAF_2 is intact (fuse F5). Correctly plug in the connecting plug. Make sure that output SAF_2 is wired correctly.

Signals	Possible reasons	Solutions
 and the STATUS LED blinks slowly.	Over-voltage on power supply.	Make sure that the Base station power supply is within the voltage limits provided in the technical data.
The STATUS LED blinks fast and irregularly.	The Base station loses some data sent by the Remote station.	Bring the Remote station closer to the Base station. If this signal persists, contact the support service of the Machine Manufacturer.
 and the STATUS LED is on.	Over-current in one of the PWM proportional outputs.	Contact the support service of the Machine Manufacturer.
The RUN LED blinks.	The Base station does not send commands in the CAN network.	
The ERR LED blinks.	CAN communication error.	
 and the STATUS LED is on.	The Base station has activated the automatic stop function (ATS) because it performs a self-test every twenty-four hours of continuous power on.	Start up the CCS.
The SETUP LED blinks twice.	Error on the memory card.	Contact the support service of the Machine Manufacturer.

12 Decommissioning and disposal

Instructions for correct decommissioning and disposal of CCSs are described in chapter "Decommissioning and disposal" in "Part A" of the Instruction Manual. Therefore, please refer to that part of the Manual.



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