



INSTRUCTION MANUAL

Receivers: HY-R20-1, HY-R20-2, HY-R20-91, TR501

IM-HY-RX102-A01-CERT

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Chapter 1: INTRODUCTION

Thank you for purchasing a Tele Draulic™ product

READ ALL INSTRUCTIONS AND WARNINGS CAREFULLY BEFORE MOUNTING, INSTALLING AND CONFIGURATING THE PRODUCT.

These instructions are published by Tele Draulic and are not subject to any guarantee. The instructions may be removed or revised by Tele Draulic at any time and without further notice. Corrections and additions will be added to the latest version of the instructions.

IMPORTANT! Parts of these instructions are directed to installers only. The instructions containing information about the installation and configuration of the radio remote control unit on the machine are not intended to be passed on to the end user. Such information is marked "Installers only". Only information that is needed to operate the machine correctly by radio remote control may be passed on to the end user.

Tele Draulic products are covered by a guarantee/warranty against material, construction or manufacturing faults. During the guarantee/warranty period, Tele Draulic may replace the product or faulty parts. Work under guarantee/warranty must be carried out by Tele Draulic or by an authorized service center specified by Tele Draulic. Contact your Tele Draulic representative if you need support or service.

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About

Before installing or operating the product, carefully read the instructions belonging to it.

Hydra products are used together with different transmitters/receivers from the Hydra family. For your specific system see the technical documentation.

Hydra mainly caters the Hydraulic market. The systems are not standardized but adjusted to the clients needs. This manual covers safety issues, installation instructions, battery information, an operators guide and troubleshooting. All drawings are unique and delivered with your order.

Images shown in this instruction may not show the exact position for buttons, paddles and more. How the outputs are connected to control the object depends on the specific installation and will not be covered in this instruction. For exact details please see the technical documentation for your specific system.

Chapter 2: SAFETY

Safety

To ensure safe operations this manual must be carefully read and understood before installing and operating the product. Installation must be made by authorized and educated personnel and according to the local laws and regulations. Failure to follow these instructions may cause death, serious injuries and material damages.

User

The following details must be considered for all handling of the system.

- Hydra products must not be operated without access to the manual, the technical documentation and needed safety training. The purchaser of this Hydra has been instructed how to handle the system safely.
- Allow only licensed or qualified personnel to install the product.
- Allow only qualified personnel to have access to the transmitter and operate the equipment.
- Make sure that the user follows the instructions.
- Make sure that the user satisfies the age requirements in your country for operating the equipment.
- Make sure that the user is not under the influence of drugs, alcohol or medications.
- Make sure that the user does not leave the transmitter unsupervised.
- Make sure that the user always switches the transmitter off when it is not in use.
- Make sure that the user has a clear view of the work area at all times. The work area must be free from obstacles and the user must be sure of his/her footing.
- The user may not use broken products.
- The user may not change any configurations without proper training.
- The user may not remove any labels from the product.
- The user may not use the product when the battery is low.

Installing, connecting and mounting

When installing, connecting and mounting the following must be considered at all times.

- Write down the serial numbers/ID codes of the receivers and transmitters used.
- Allow only licensed or qualified personnel to install the product.
- Always switch off the power supply to the receiver before connecting the equipment.
- Check that the power supply is connected to the correct connection terminal.
- To utilize the safety of the system, use the stop relays in the safety circuitry of the object that you want to control
- Do not use damaged cables. No cables must hang loose.
- Avoid installing in areas affected by strong vibrations.
- The receiver withstands normal weather conditions but should be protected from extreme conditions. The receiver should also not be subjected to mechanical water pressure i.e. a pressure washer or similar adverse conditions.

- Avoid installing the receiver in a place where it will be subjected to high water flows and/or heavy precipitation.
- Cable glands and vent plugs must fave down to prevent water from seeping in.

Maintenance

To keep the Hydra in best possible condition always consider the following details.

- If error messages are shown, do not continue without finding out what caused them.
- If the emergency button is mechanically damaged, contact your representative for service immediately.
- Always contact your representative for service and maintenance work on the product when needed.
- Write down the serial numbers/ID codes of the receivers and transmitters used.
- Avoid registering transmitters in receivers where they are not being used.
- Keep the safety instructions for future reference.

Functionality test

Always perform a functionality test before starting to use the system. Prior to performing a functionality test, make sure that the controlled object can not do any harm in case of unexpected movement.

- Follow local safety rules and start the equipment following instructions.
- Make sure that the transmitter can control the receiver by testing all functions and make sure that the functions respond as expected.
- Make sure that all movements are as planned.
- Make sure that the emergency stop functions.
- Make sure that the stop function works correct.
- Make sure the system stops when both batteries are removed from the transmitter.

Note that further checks can bee added to this list depending on the use of the specific system.

Chapter 3: INSTALLATION

SYSTEM SPECIFICATIONS	
Carrier frequency	2.4 GHz standard
Frequency management	Direct Sequence Spread Spectrum (DSSS) Field Strength Adaptation Feature
Range (typical)	100m (328 ft), adjustable/depending on configuration
Operating temperature	-30 ... + 70 °C (-30 .. + 175 °F)
Pairing	Easy to pair without specialty tools or opening of boxes
Bluetooth	Bluetooth accessible for configuration & settings

Note that the above information may differ in customized systems, see technical documentation for each system.

RECEIVER SPECIFICATION HYDRA	
Environmental protection	IP65 (Better Nema 4)
Antenna	Internal External and Diversity Optional
Power supply	12 ... 24 VDC (-50% ... +20%)
Outputs	Fail Safe & Redundant E-Stop Relays (4 pol) xy analog / xy digital functions PWM / voltage / current – selectable & combinable Modbus standard Expandable via plug & play cards

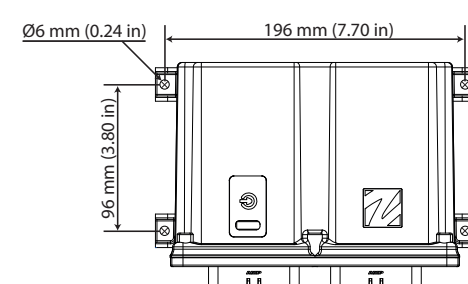
Note that the above information may differ in customized systems, see technical documentation for each system.

Installation

- Only authorized personnel may install the product.
- Before connecting the equipment, the power supply must be switched off.
- Avoid installing in areas affected by strong vibrations.
- The receiver withstands normal weather conditions but should be protected from extreme conditions. The receiver should also not be subjected to mechanical water pressure i.e. a pressure washer or similar adverse conditions.
Avoid installing the receiver in a place where it will be subjected to high water flows and/or heavy precipitation.
- Cable glands and vent plugs must face downwards to prevent water from seeping in.

Mount the receiver in such a location that the LEDs can be easily seen and the button on the receiver can be reached. Make sure to install possible accessories inside or on the receiver before permanently installing the receiver. A permanent installation of the receiver must include fuses protecting the equipment and cables from short circuit.

Only correct installation meets the safety levels for the product.



Cable glands for customized systems as well as cable diameter will be found in the technical documentation.

Chapter 4: OPERATION

Maintenance

- Use the stop button to start and switch off the transmitter as often as possible.
- If error messages are shown, it is very important to find out what caused them.
- If the stop button is mechanically damaged, contact your representative for service immediately.
- Always contact your representative for service and maintenance work on the product.
- Avoid registering transmitters in receivers where they are not being used.
- Keep the safety instructions for future reference. Always download the configuration instructions from our website for the latest available version.
- Maintenance work must be performed by qualified personnel and according to laws and regulations in the country where the system is being used.

Note: Always hold the transmitter with the control panel towards you. The user must be able to read any text on the control panel and understand the symbols on it.

Note: Transmitters not in use it must be switched off and stored in a secured storage space.

Start-up procedure

Before operating the Hydra system the following procedure must be followed.

- 1. Make sure that all safety measures have been followed.
- 2. Make sure the transmitter battery is charged.
- 3. Make sure that the emergency stop button is pushed in.
- 4. Turn the key switch to ON position (horizontal).
- 5. Twist and release the emergency stop button.
Initial start-up logo displays.
Battery LED indicators lights.

Note: The display shows "Session selection". Should the display show a warning on zero position for control switch or joystick, release affected controls if necessary to proceed.

- 6. Press the two start buttons simultaneously. Keep pressed for a second.
- 7. Release both buttons.
The transmitter logs in to the receiver in which it is registered.
The middle LED flashes quickly while waiting for the receiver confirmation.
When successful the middle LED lights with a firm light.

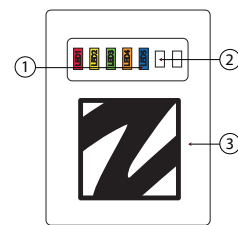
Note: If the paired receiver is not detected within 30s, login process will be cancelled and the transmitter will automatically turn OFF.

- 8. Make sure that the machine functions correspond to the transmitter functions.
- 9. Test emergency stop.

Warning: Do not use the system if the emergency stop button does not stop the equipment. Doing so may cause serious injury or death.

LEDs on receiver

The receiver has a button including seven LEDs showing the receiver status.



- 1. LEDs 1–5
- 2. DLEDs 1–2
- 3. Cap sensor button

LED	Colour	Off	On	Flashes	Indicates
1	red		x		Radio link established
		x			No transmitter is registered
				x	One or more transmitters is registered, radio link is down
2	yellow	x			No transmitter is logged in
			x		One transmitter is logged in
3	yellow				Not in use
4	orange				Not in use
5	blue	x			Bluetooth not activated by settings
				Slow	Bluetooth stand by
				Quick	Bluetooth in paring mode
			x		Bluetooth activated and communicating

LED	Colour	Action	Indicates
DLED1	red		CANopen error LED (CAN interface 1)
		Single flash	Warning limit reached
		Flickering	AutoBaud/LSS
		Double flash	Error Control Event
		Triple flash	Sync Error
		On	Bus Off
DLED1	green		CANopen run LED (CAN interface 1)
		Flickering	AutoBaud/LSS
		Single flash	Stopped
		Blinking	Pre-operational
		On	Operational
DLED2	red		CANopen error LED (CAN interface 2)
		Single flash	Warning limit reached
		Flickering	AutoBaud/LSS
		Double flash	Error Control Event
		Triple flash	Sync Error
		On	Bus Off

LED	Colour	Action	Indicates
DLED2	green		CANopen run LED (CAN interface 2)
		Flickering	AutoBaud/LSS
		Single flash	Stopped
		Blinking	Pre-operational
		On	Operational

Chapter 5: REGULATORY

CE marking

This product is in compliance with the essential requirements of directive 1995/5/EC of the European Parliament and of the Council. Latest version of the EC Declaration of Conformity can be downloaded from the Tele Radio AB website.

FCC statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To satisfy FCC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance is not recommended.

The radio module in this product is labelled with its own FCC ID and IC number. The FCC ID and IC is not visible when the radio module is installed inside another device. Therefore, the outside of the device into which the module is installed must also display a label referring to the radio module. The final end device must be labelled in a visible area with the following:

“Contains FCC ID: ONFC1602A”
“Contains IC: 4807A-CI602A”

IC statement

This product complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:
(1) This device may not cause interference; and
(2) This device must accept any interference, including interference that may cause undesired operation of device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This radio transmitter (identify the device by certification number, or model number if Category II) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Gain of antenna: 3.0 dBi max.
Type of antenna: 50 ohm, Omni-directional

Le présent émetteur radio (identifier le dispositif par son numéro de certification ou son numéro de modèle s'il fait partie du matériel de catégorie I) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Gain d'antenne: 3.0 dBi maximal
Type d'antenne: 50 ohm, Omni-directionnel

To satisfy IC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance is not recommended.

Les antennes installées doivent être situées de façon à ce que la population ne puisse y être exposée à une distance de moins de 20 cm. Installer les antennes de façon à ce que le personnel ne puisse approcher à 20 cm ou moins de la position centrale de l'antenne. La FCC des États-Unis stipule que cet appareil doit être en tout temps éloigné d'au moins 20 cm des personnes pendant son fonctionnement.

The radio module in this product is labelled with its own FCC ID and IC number. The FCC ID and IC is not visible when the radio module is installed inside another device. Therefore, the outside of the device into which the module is installed must also display a label referring to the radio module. The final end device must be labelled in a visible area with the following:

“Contains FCC ID: ONFC1602A”
“Contains IC: 4807A-C1602A”

FCC/IC label placement

The FCC/ IC label is placed on the radio module. The radio module is fitted inside the receiver.

Product label on the receiver

You will find the product label on the outside of the enclosure of the receiver.

The radio module

Each radio module is specifically designed to match a Tele Draulic product in terms of physical dimensions, connection points, voltage levels, signal interface etc. To use the radio modules in non Tele Draulic products is not permitted. The radio modules are designed to interface directly to the main board of the receiver/transmitter unit. They are power supplied by the main board and the radio circuit operates strictly according to instructions from a microprocessor on the main board. The radio circuit configuration is stored in a flash memory on the radio module. A receiver/transmitter unit with a defective/no radio module will give an error message immediately after power up, and it will not be possible to start a radio session.